Section 3.2

Air Quality

Section 3.2
Air Quality

Introduction

This section describes the affected environment and regulatory setting for air quality. It also describes the impacts on air quality that would result from implementation of the proposed project and the mitigation measures that would reduce these impacts.

The analysis described in this section was performed in conformance to South Coast Air Quality Management District (SCAQMD) requirements for air quality assessments and thus satisfies CEQA requirements.

Environmental Setting

Regional Context

The proposed project site is located within the South Coast Air Basin (Basin), an area covering approximately 6,745 square miles bounded by the Pacific Ocean to the west and south and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area in Riverside County. The terrain and geographical location determine the distinctive climate of the Basin, which is a coastal plain with connecting broad valleys and low hills.

The Southern California region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The extent and severity of the air pollution problem in the Basin is a function of the area's natural physical characteristics (weather and topography) as well as human-made influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and dispersion of pollutants throughout the Basin, making it an area of high pollution potential.

The greatest air pollution impacts in the Basin occur from June through September, and are generally attributed to the large amount of pollutant emissions, light winds, and shallow vertical atmospheric mixing. This condition frequently reduces pollutant dispersion, thus causing elevated air pollution levels. Pollutant concentrations in the Basin vary with location, season, and time of day. Ozone (O_3) concentrations, for example, tend to be lower along the coast, higher in the near inland valleys, and lower in the far inland areas of the Basin and adjacent desert.

The SCAQMD has recently completed the Multiple Air Toxics Exposure Study III (MATES III), an ambient air monitoring and evaluation study conducted in the Basin. MATES III was a follow up to previous air toxics studies in the Basin and is part of the SCAQMD Governing Board Environmental Justice Initiative.

Over the past 30 years, substantial progress has been made in reducing air pollution levels in Southern California. For example, compared to previous studies of air toxics in the Basin, MATES III found a decreasing risk for air toxics exposure, with the population weighted risk down by 17% from the analysis in MATES II. However, although there has been improvement in air quality regarding air toxics, the risks are still unacceptable and are higher near sources of emissions such as ports and transportation corridors. Diesel particulate continues to dominate the risk from air toxics, and the portion of air toxic risk attributable to diesel exhaust is increasing compared to the MATES II Study. The highest risks are found near the port, central Los Angeles, and transportation corridors. The results from the MATES III study underscore that a continued focus on reduction of toxic emissions, particularly from diesel engines, is needed to reduce air toxics exposure.

The MATES III study concluded that the average carcinogenic risk throughout the Basin, attributed to toxic air contaminants (TACs), is approximately 1,194 in one million. Mobile sources (e.g., cars, trucks, trains, ships, aircraft, etc.) represent the greatest contributors. About 83.6% of all risk is attributed to Diesel Particulate Matter (DPM) emissions.

Local Area Conditions

Local Climate

Data from the closest climate monitoring station—Western Regional Climate Center's (WRCC's) Tustin Irvine Ranch station—was used to characterize project vicinity climate conditions. The average project area summer (August) high and low temperatures are 85.2 and 59.1°F, respectively; the average winter (January) high and low temperatures are 66.8 and 40.2°F, respectively. The average annual rainfall is 12.86 inches (WRCC 2009).

The closest wind monitoring station is the Mission Viejo wind monitoring station, which was used to characterize study area wind conditions. Wind patterns in the project vicinity display a nearly unidirectional flow, primarily from the northwest, at an average speed of 3.6 mph. Calm wind conditions are present 0.00% of the time (SCAQMD 2009a).

Existing Pollutant Levels

The SCAQMD has divided the Basin into air monitoring areas and maintains a network of air quality monitoring stations throughout the Basin. The project site is located in the Saddleback Valley Monitoring Area (i.e., Source Receptor Area [SRA] Number 19). The nearest monitoring station is in the City of Mission Viejo. The Mission Viejo station monitors the following criteria pollutants: carbon monoxide (CO), O_3, and particulate matter less than or equal to 10 or 2.5 micrometers in diameter (PM10 and PM2.5, respectively). The nearest monitoring station for nitrogen dioxide (NO_2) and sulfur dioxide (SO_2) is the Costa Mesa monitoring station, located approximately 15 miles west of the project site in the City of Costa Mesa. The most recent data available covers 2006 to 2008.

Monitoring data (Table 3.2-1) show the following pollutant trends: state 1-hour O_3 standards were exceeded an average of 9 times per year during the 3-year reporting period. The national 8-hour O_3 standard was exceeded an average of 11 times per year during the 3-year period. CO and NO_2 concentrations are low and recorded no exceedances during the 3-year reporting period. Particulate (PM10 and PM2.5) concentrations are largely affected by meteorology and show some variability during the 3-year reporting period. The state 24-hour PM10 standard was exceeded once in 2006 and 3 times in 2007. The national PM2.5 standard was exceeded once in 2006 and twice in 2007.

Table 3.2-1. Air Quality Data from Mission Viejo Station (ARB 30002) and Costa Mesa Station (ARB 30195)

Pollutant Standards	2006	2007	2008
Ozone (O_3)			
State Standard (1-Hour Average = 0.09 ppm)			
National Standard (8-Hour Average = 0.075 ppm)			
Maximum Concentration 1-Hour Period (ppm)	0.123	0.108	0.118
Maximum Concentration 8-Hour Period (ppm)	0.105	0.090	0.104
Days State 1-Hour Standard Exceeded	13	5	9
Days National 8-Hour Standard Exceeded	12	5	15
Carbon Monoxide (CO)			
State Standard (8-Hour Average = 9 ppm)			
National Standard (8-Hour Average = 9 ppm)			
Maximum Concentration 8-Hour Period (ppm)	1.64	2.16	1.10
Days State/National 8-Hour Standard Exceeded	0	0	0
Nitrogen Dioxide (NO_2)			
State Standard (1-Hour Average = 0.18 ppm)			
Maximum 1-Hour Concentration	0.101	0.074	0.081
Days State Standard Exceeded	0	0	0
Suspended Particulates (PM10)			
State Standard (24-Hour Average = 50 µg/m³)			
National Standard (24-Hour Average = 150 µg/m³)			
Maximum State 24-Hour Concentration	56.0	74.0	41.0
Maximum National 24-Hour Concentration	57.0	74.0	42.0
Days Exceeding State Standard	1	3	0
Days Exceeding National Standard	0	0	0
Suspended Particulates (PM2.5)			
National Standard (24-Hour Average = 35 µg/m³)			
Maximum 24-Hour Concentration	46.9	46.8	31.9
Days Exceeding National Standard	1	2	0

Notes:
ppm = parts per million
µg/m³ = microgram per cubic meter
Source: ARB 2009.

Existing Health Risk in the Surrounding Area

According to the most current SCAQMD inhalation cancer risk data (MATES III Carcinogenic Interactive Map), the project area is located within a cancer risk zone of approximately 427 in one million (SCAQMD 2009b). This is largely due to the proximity of State Route (SR-) 241, just north of the project site, and Interstate (I-) 5, approximately 4 miles south of the project site. For comparison, the average cancer risk in the Basin is 1,194 per million, and thus, the project area is substantially lower.

Sensitive Receptors and Locations

Some population groups, such as children, the elderly, and acutely and chronically ill persons, especially those with cardio-respiratory diseases, are considered more sensitive to air pollution than others. Sensitive receptors in the vicinity of the project include single-family residential land uses located south of the project site and Regency Park located to the southwest of the project site.

Regulatory Setting

A number of federal, state, and local air quality regulations are relevant to the proposed project.

Federal

Federal Clean Air Act

The Clean Air Act (CAA) was first enacted in 1955 and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes the National Ambient Air Quality Standards (NAAQS) and specifies future dates for achieving compliance. The CAA also mandates that the state submit and implement a State Implementation Plan (SIP) for local areas not meeting those standards. The plans must include pollution control measures that demonstrate how the standards will be met. Because the City of Lake Forest is within the Basin it is in an area designated as *nonattainment* for certain pollutants that are regulated under the CAA.

The 1990 amendments to the CAA identify specific emission-reduction goals for areas not meeting the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones. The sections of the CAA that would most substantially affect the development of the proposed project include Title I (Nonattainment Provisions) and Title II (Mobile-Source Provisions).

Title I provisions were established with the goal of attaining the NAAQS for criteria pollutants. Table 3.2-2 shows the NAAQS currently in effect for each criteria pollutant. The NAAQS were amended in July 1997 to include an 8-hour standard for O_3 and adopt a standard for PM2.5. The Basin fails to meet national standards for O_3, PM10, and PM2.5 and therefore is considered a federal nonattainment area for these pollutants. Table 3.2-3 lists each criteria pollutant and their related attainment status.

Table 3.2-2. Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS[a]	NAAQS[b]
Ozone (O_3)	1 hour	0.09 ppm[c]	—
	8 hour	0.07 ppm	0.075 ppm
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm
	8 hour	9.0 ppm	9 ppm
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm	NA
	Annual Arithmetic Mean	0.030 ppm	0.053 ppm
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm	—
	24 hour	0.04 ppm	0.14 ppm
	Annual Arithmetic Mean	—	0.03 ppm
Respirable Particulate Matter (PM10)	24 hour	50 $\mu g/m^3$ [c]	150 $\mu g/m^3$
	Annual Arithmetic Mean	20 $\mu g/m^3$	—
Fine Particulate Matter (PM2.5)	24 hour	—	35 $\mu g/m^3$
	Annual Arithmetic Mean	12 $\mu g/m^3$	15.0 $\mu g/m^3$
Sulfates	24 hour	25 $\mu g/m^3$	—
Lead (Pb)	30 day average	1.5 $\mu g/m^3$	—
	Calendar quarter	—	1.5 $\mu g/m^3$
	Rolling 3-Month Average	—	0.15 $\mu g/m^3$
Hydrogen Sulfide	1 hour	0.03 ppm	—
Vinyl Chloride	24 hour	0.01 ppm	—

Notes:

[a] The California Ambient Air Quality Standards (CAAQS) for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM10, and PM2.5 are values not to be exceeded. All other California standards shown are values not to be equaled or exceeded.

[b] The NAAQS, other than O_3 and those based on annual averages, are not to be exceeded more than once a year. The O_3 standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than 1.

[c] ppm = parts per million by volume; $\mu g/m^3$ = micrograms per cubic meter.

Source: ARB 2010.

Table 3.2-3. Federal and State Attainment Status for the South Coast Air Basin

Pollutants	Federal Classification	State Classification
O_3 (1-hour standard)	—	Extreme Nonattainment
O_3 (8-hour standard)	Nonattainment, Severe-17	—
PM10	Serious Nonattainment	Nonattainment
PM2.5	Nonattainment	Nonattainment
CO	Attainment	Attainment
NO_2	Unclassified/Attainment	Attainment
SO_2	Attainment	Attainment

Source: ARB 2009.

State

California Clean Air Act

The California Clean Air Act (CCAA), signed into law in 1988, requires all areas of the state to achieve and maintain the California Ambient Air Quality Standards (CAAQS) by the earliest practical date. The CAAQS incorporate additional standards for most of the criteria pollutants and set standards for other pollutants recognized by the state. In general, the California standards are more health protective than the corresponding NAAQS. California has also set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The Basin is in compliance with these California standards for sulfates, hydrogen sulfide, visibility-reducing particles, and vinyl chloride. Table 3.2-2 details the current NAAQS and CAAQS, and Table 3.2-3 provides the Basin's attainment status with respect to federal and state standards.

Local

South Coast Air Quality Management District

The SCAQMD has jurisdiction over an area of approximately 10,743 square miles. This area includes all of Orange County, all of Los Angeles County except for the Antelope Valley, the non-desert portion of western San Bernardino County, and the western and Coachella Valley portions of Riverside County. The Basin is a subregion of the SCAQMD jurisdiction. While air quality in this area has improved, the Basin requires continued diligence to meet air quality standards.

SCAQMD has adopted a series of air quality management plans (AQMPs) to meet the CAAQS and NAAQS. These plans require, among other emissions-reducing activities, control technology for existing sources, control programs for area sources and indirect sources, a SCAQMD permitting system designed to allow no net increase in emissions from any new or modified (i.e., previously permitted) emission sources, and transportation control measures.

The SCAQMD adopted a comprehensive AQMP update, the 2007 AQMP for the Basin, on June 1, 2007 (SCAQMD 2007). The Final 2007 AQMP addresses several federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2007 AQMP builds upon the approaches taken in the 2003 AQMP for the Basin for the attainment of the federal air quality standards. Additionally, the plan highlights the significant amount of reductions needed and the urgent need to identify additional strategies, especially in the area of mobile sources, to meet federal criteria pollutant standards within the timeframes allowed under federal CAA.

SCAQMD adopts rules and regulations to implement portions of the AQMP. Several of these rules may apply to construction or operation of the project. For example, SCAQMD Rule 403 requires implementing the best available fugitive dust control measures during active operations capable of generating fugitive dust emissions from onsite earth-moving activities, construction/demolition activities, and construction equipment travel on paved and unpaved roads. SCAQMD has published the *CEQA Air Quality Handbook* (November 1993) to help local governments analyze and mitigate project-specific air quality impacts. This handbook provides standards, methodologies, and procedures for conducting air quality analyses in EIRs and was used extensively in the preparation of this report. In addition, SCAQMD has published two additional guidance documents—*Localized Significance Threshold Methodology for CEQA Evaluations* (June 2003) and *Particulate Matter (PM)*

2.5 Significance Thresholds and Calculation Methodology (October 2006)—that provide guidance for evaluating localized effects from mass emissions during construction. Both were used in the preparation of this analysis.

Regional Comprehensive Plan and Guide

The Southern California Association of Governments (SCAG) is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties. It addresses regional issues relating to transportation, the economy, community development, and the environment. SCAG is the federally designated metropolitan planning organization (MPO) for the majority of the southern California region and is the largest MPO in the nation. With respect to air quality planning, SCAG has prepared the Regional Comprehensive Plan and Guide (RCPG) for the SCAG region, which includes Growth Management and Regional Mobility chapters that form the basis for the land use and transportation components of the AQMP. These chapters are utilized in the preparation of air quality forecasts and the consistency analysis that is included in the AQMP.

Project Impacts and Mitigation Measures

This section presents a discussion of the potential air quality impacts associated with construction and operation of the proposed project.

Methodology

Construction

Mass daily combustion emissions, fugitive PM10 and PM2.5, and off-gassing emissions (e.g., evaporative emissions of volatile organic compounds [VOCs] from the application of architectural coatings and asphalt paving) were compiled using URBEMIS 2007, which is an emissions estimation/evaluation model developed by California Air Resources Board (ARB) that is based, in part, on SCAQMD *CEQA Air Quality Handbook* guidelines and methodologies.

The URBEMIS 2007 model separates the construction process into multiple phases that account for everything from structure demolition and site clearing to asphalt paving and the application of architectural coatings. Site preparation emissions (e.g., grading and excavation) would include fugitive dust emissions from soil disturbance activity, as well as combustion exhaust emissions from onsite construction equipment, haul truck trips, and worker commute trips. Structure erection and finishing emissions would include combustion exhaust emissions from onsite construction equipment, haul truck trips, and worker commute trips, as well as fugitive off-gassing emissions from the application of architectural coatings and asphalt paving.

Information regarding construction equipment planned for each phase was based on scheduling information ascertained via communications with City staff and preliminary grading information. A complete listing of the construction equipment by phase, construction phase duration assumptions, and changes to modeling default values used in this analysis is included within the URBEMIS 2007 printout sheets that are provided in the Air Quality appendix of this EIR (Appendix B).

Operations

The URBEMIS 2007 software was also used to compile the mass daily emissions estimates from mobile and area sources that would occur during long-term project operations. In calculating mobile-source emissions, the URBEMIS 2007 default trip assumptions were applied to arrive at the total vehicle miles traveled (VMT). Area-source emissions were compiled using URBEMIS 2007 default assumptions. Criteria pollutant emissions associated with the production and consumption of energy were calculated using emission factors from SCAQMD's *CEQA Air Quality Handbook* (appendix to Chapter 9).

Local area CO concentrations for roadways were evaluated using the CALINE 4 line-source dispersion model developed by the California Department of Transportation (Caltrans) combined with EMFAC 2007 emission factors. The analysis of roadway CO impacts followed the protocol recommended by Caltrans and published in their *Transportation Project-Level Carbon Monoxide Protocol* (Garza 1997). It is also consistent with procedures identified through the SCAQMD's CO modeling protocol. All emissions calculation worksheets and air quality modeling output files are provided in Appendix B.

Toxic Air Contaminants Impacts (Construction and Operations)

Potential TAC impacts are evaluated by conducting a screening-level analysis, followed by a more detailed analysis (i.e., dispersion modeling) if necessary. The screening-level analysis consists of reviewing the proposed project's description and site plan to identify any new or modified TAC emissions sources. If it is determined that the proposed project would introduce a new source, or modify an existing TAC emissions source, then downwind sensitive-receptor locations are identified, and site-specific dispersion modeling is conducted to determine proposed project impacts. The screening analysis is done under Impact AQ-3.

Thresholds of Significance

Appendix G, Section III of the Environmental Checklist Form in the State CEQA Guidelines states that, where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make determinations regarding air quality impacts. Because of SCAQMD's regulatory role in the Basin, the significance thresholds and analysis methodologies outlined in their *CEQA Air Quality Handbook*, *Localized Significance Threshold Methodology for CEQA Evaluations* and *Particulate Matter (PM) 2.5 Significance Thresholds and Calculation Methodology* guidance documents, were used in evaluating project impacts. The City of Lake Forest has developed and published its own *CEQA Significance Thresholds Guide* (City of Lake Forest 2010) in which it utilizes the most current adopted SCAQMD thresholds. A project would normally have a significant impact if it would:

- **AQ-1:** Conflict with or obstruct implementation of the applicable air quality plan.
- **AQ-2:** Violate any air quality standard or contribute substantially to an existing or projected air quality violation. The SCAQMD construction and operational emissions thresholds identified in Table 3.2-4 are used for this assessment.

Table 3.2-4. SCAQMD Emission Thresholds (lbs/day)

Pollutant	Construction	Operation
Nitrogen Oxides (NO_X)	100	55
Reactive Organic Compounds (ROC)	75	55
Suspended Particulate Matter (PM10)	150	150
Fine Particulate Matter (PM2.5)	55	55
Sulfur Oxides (SO_X)	150	150
Carbon Monoxide (CO)	550	550
Lead (Pb)[1]	3	3

[1] The proposed project would have no lead emissions sources during the construction or operations period. As such, lead emissions are not evaluated in this report.

Source: SCAQMD CEQA Air Quality Handbook, 1993 (As amended at http://www.aqmd.gov/ceqa/handbook/signthres.pdf).

- **AQ-3:** Expose sensitive receptors to substantial pollutant concentrations. Methodologies established by SCAQMD for assessing local impacts, including *Localized Significance Threshold Methodology for CEQA Evaluations* and *Particulate Matter (PM) 2.5 Significance Thresholds and Calculation Methodology* guidance documents, were used for this assessment. SCAQMD localized thresholds as they apply to this project are shown in Table 3.2-5.

Table 3.2-5. SCAQMD Localized Emission Thresholds (lbs/day)

Pollutant	Construction	Operation
Nitrogen Oxides (NO_X)	197	197
Suspended Particulate Matter (PM10)	12	3
Fine Particulate Matter (PM2.5)	8	2
Carbon Monoxide (CO)	1,830	1,830

Notes: Localized thresholds derived from SCAQMD Localized Significance Threshold Tables and are based on the project location (Source Receptor Area [SRA] 19, Saddleback Valley), project area disturbed in any given day (5-acres), and the distance to the nearest sensitive receptor (25 meters).

Source: SCAQMD *Localized Significance Threshold Methodology for CEQA Evaluations*, and *Particulate Matter (PM) 2.5 Significance Thresholds and Calculation Methodology.*

- **AQ-4:** Create objectionable odors affecting a substantial number of people.
- **AQ-5:** Result in a cumulatively considerable net increase of any criteria pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

Impacts and Mitigation Measures

Impact AQ-1: The proposed project would not conflict with or obstruct implementation of the applicable air quality management plan.

SCAQMD is required, pursuant to the federal CAA, to reduce emissions of criteria pollutants for which the Basin is in nonattainment (i.e., O_3, PM10, and PM2.5). The project would be subject to SCAQMD's AQMP, which contains a comprehensive list of pollution control strategies directed at reducing emissions and achieving ambient air quality standards. These strategies are developed, in part, based on regional population, housing, and employment projections prepared by SCAG.

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties, and addresses regional issues relating to transportation, the economy, community development, and the environment. With regard to air quality planning, SCAG has prepared the RCPG, which includes Growth Management and Regional Mobility chapters that form the basis for the land use and transportation control portions of the AQMP. These documents are utilized in the preparation of the air quality forecasts and consistency analysis included in the AQMP. Both the RCPG and AQMP are based, in part, on projections originating with County and City General Plans.[1]

While the proposed project is consistent with the current City of Lake Forest General Plan, the current 2007 AQMP was adopted prior to the City of Lake Forest OSA Program EIR General Plan Amendment and Zone Change that covers the proposed project area. However, it is important to note that the General Plan Amendment was evaluated for consistency with the AQMP in the Opportunities Study Program EIR. The AQMP consistency analysis contained therein concluded that the General Plan Amendment would result in a reduction in overall emissions when compared with the land use designations for the same parcels under the previous General Plan. Because the project is consistent with the current local general plan, and because criteria pollutant emissions occurring under the current General Plan build out conditions would be less than those emissions occurring under the previous General Plan build out conditions, the proposed project is considered consistent with the region's AQMP. As such, project-related emissions are accounted for in the AQMP, which is crafted to bring the Basin into attainment for all criteria pollutants. Additionally, all construction activities will be in compliance with AQMP regulatory measures, including SCAQMD rules pertaining to fugitive dust (Rules 403, 404, and 405), visibility of emissions (Rule 401), nuisance activities (Rule 402), and limiting VOC content in both asphalt and architectural coatings (Rules 1108 and 1113). Finally, as discussed below under Impact AQ-2, project operational emissions would fall below the SCAQMD thresholds of significance. Accordingly, the proposed project would be consistent with the projections in the AQMP, thus resulting in a less-than-significant impact.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

[1] SCAG serves as the federally designated MPO for the Southern California region.

Impact AQ-2: The proposed project would violate an air quality standard or contribute substantially to an existing or projected air quality violation.

As discussed above, the project site is located within the Basin, where state and federal air quality standards are occasionally exceeded. The proposed project would contribute to regional air pollutant emissions during construction (short-term) and project operations (long-term).

Construction-Period Impacts

Construction of the proposed project has the potential to create air quality impacts through the use of heavy-duty construction equipment and through vehicle trips generated from construction workers traveling to and from the project site. In addition, fugitive dust emissions would result from site work related to the export of between 495,000 and 1,380,000 total cubic yards of materials. Mobile source emissions, primarily NO_X, would result from the use of construction equipment such as graders, scrapers, bulldozers, wheeled loaders, cranes, etc. During the structure erection/finishing phase, paving operations and the application of architectural coatings (i.e., paints) and other building materials would release ROCs. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions. The assessment of construction air quality impacts considers each of these potential sources. The equipment mix and duration for each construction stage is detailed in the URBEMIS 2007 printout sheets that are provided in Appendix B.

Construction is expected to occur over approximately 62 months if the phasing occurs as anticipated. The total amount of construction, the duration of construction, and the intensity of construction activity would have a substantial effect upon the amount of construction emissions, concentrations, and resulting impacts occurring at any one time. As such, the emission forecasts provided herein reflect a specific set of conservative assumptions based on the expected construction scenario wherein a relatively large amount of construction is occurring in a relatively intensive manner. Both grading plan options are assessed separately to demonstrate the emissions associated with each option. Grading Plan 1 represents the high-pad elevation and involves a more balanced grading approach, thereby resulting in less cut/fill and overall earthmoving. As presented in Tables 3.2-6 and 3.2-7, construction-related daily (short-term) emissions would exceed the SCAQMD regional significance threshold for NO_X under both grading plans. Thus, construction emissions would result in a significant short-term air quality impact, and mitigation measures are necessary for construction impacts.

Operations-Period Impacts

Regional air pollutant emissions associated with project operations would be generated by the consumption of electricity and natural gas and by the operation of on-road vehicles. Pollutant emissions associated with energy demand (i.e., electricity generation and natural gas consumption) are classified by SCAQMD as regional stationary source emissions. Electricity is considered an area source because it is produced at various locations in and outside of the Basin. Because it is not possible to isolate where electricity is produced, these emissions are conservatively considered to occur within the Basin and to be regional in nature. Criteria pollutant emissions associated with the production and consumption of energy were calculated using emission factors from SCAQMD's *CEQA Air Quality Handbook* (Appendix to Chapter 9).

Table 3.2-6. Estimate of Construction Emissions for Grading Plan 1 (pounds per day)

	ROC	NO_X	CO	SO_X	PM10[a]	PM2.5
Phase 1 (Glass Creek)	15	136	67	<1	20	8
Phase 2 (Rados)	15	153	69	<1	17	8
Phase 3 (Baker Ranch)	7	65	46	<1	13	5
Rancho Parkway and Portola Widening	11	91	64	<1	17	7
Worst-Case Regional Emissions Total[b]	26	227	131	<1	37	15
Regional Significance Threshold	75	100	550	150	150	55
Exceed Threshold?	No	**Yes**	No	No	No	No

Notes:
Construction emission calculation worksheets are included in Appendix B.
[a] PM10 emissions estimates take into account compliance with SCAQMD Rule 403 requirements for fugitive dust suppression, which require that no visible dust be present beyond the site boundaries.
[b] Construction of Phase 1 (Glass Creek) and Rancho Parkway/Portola widening overlap; thus emissions are summed.
Source: ICF 2010.

Table 3.2-7. Estimate of Construction Emissions for Grading Plan 2 (pounds per day)

	ROC	NO_X	CO	SO_X	PM10[a]	PM2.5
Phase 1 (Glass Creek)	31	324	145	<1	28	15
Phase 2 (Rados)	22	217	97	<1	20	10
Phase 3 (Baker Ranch)	11	98	47	<1	14	6
Rancho Parkway and Portola Widening	11	91	64	<1	17	7
Worst-Case Regional Emissions Total[b]	42	415	209	<1	45	22
Regional Significance Threshold	75	100	550	150	150	55
Exceed Threshold?	No	**Yes**	No	No	No	No

Notes:
Construction emission calculation worksheets are included in Appendix B.
[a] PM10 emissions estimates take into account compliance with SCAQMD Rule 403 requirements for fugitive dust suppression, which require that no visible dust be present beyond the site boundaries.
[b] Construction of Phase 1 (Glass Creek) and Rancho Parkway/Portola widening overlap; thus emissions are summed.
Source: ICF, 2010.

Mobile-source emissions were calculated using the URBEMIS 2007 emissions inventory model, which multiplies an estimate of daily VMT by applicable EMFAC2002 emissions factors.[2] The URBEMIS 2007 model output and worksheets for calculating regional operational daily emissions are provided in Appendix B. As shown in Table 3.2-8, regional emissions resulting from the proposed project would not exceed regional SCAQMD thresholds for CO, NO_X, PM10, ROC, SO_X, or PM2.5. Thus, regional operations emissions would not result in a significant long-term regional air quality impact. No mitigation measures are necessary for operational impacts.

[2] Daily VMT estimate derived by applying URBEMIS 2007 default trip length estimates (per land use) to the proposed project default trip generation estimates (per land use).

Table 3.2-8. Estimate of Operational Emissions (pounds per day)

	ROC	NO_X	CO	SO_X	PM10	PM2.5
Project Emissions						
On Road Mobile Sources [a]	17	25	224	<1	57	11
Stationary Sources [b]	<1	4	1	<1	<1	<1
Area Source [c]	11	<1	3	<1	<1	<1
Total Project	29	29	228	1	57	11
SCAQMD Daily Significance Threshold	55	55	550	150	150	55
Exceed Significant Threshold?	No	No	No	No	No	No

Notes:

[a] Mobile emissions calculated using the URBEMIS 2007 emissions model. Model output sheets are provided in Appendix B.

[b] Emissions from project-related electricity generation are calculated based on guidance provided in SCAQMD's *CEQA Air Quality Handbook*. Worksheets are provided in Appendix B.

[c] Area sources include landscape equipment emissions and miscellaneous sources (e.g., detergents and cleaning compounds).

Source: ICF 2010.

Mitigation Measures

Mitigation Measure AQ-1: Construction-period engine/equipment emissions.

During project construction, all internal combustion engines/construction equipment operating on the project site will meet EPA-Certified Tier 2 emissions standards, or higher.

Mitigation Measure AQ-2: Construction-period engine/equipment oxides catalyst.

During project construction, all equipment operating on the project site will be fitted with an oxides catalyst.

Mitigation Measure AQ-3: Use of low-NO_X diesel fuel.

The City will require by contract specifications that all heavy-duty diesel-powered equipment operating and refueling at a project site within the project area will use low-NO_x diesel fuel to the extent that it is readily available and cost effective (up to 125 percent of the cost of California ARB diesel) in the South Coast Air Basin (this does not apply to diesel-powered trucks traveling to and from the project sites within the project area). Contract specification language will be reviewed prior to issuance of a grading permit (OSA Mitigation Measure 3.3-2).

Mitigation Measure AQ-4: Use of alternative fuel and low-emission diesel equipment.

The City will require by contract specifications that alternative fuel construction equipment (i.e., compressed natural gas, liquid petroleum gas, and unleaded gasoline) and low-emission diesel construction equipment will be utilized to the extent that the equipment is readily available and cost effective in the South Coast Air Basin. Contract specification language will be reviewed prior to issuance of a grading permit (OSA Mitigation Measure 3.3-3).

Mitigation Measure AQ-5: Turn off equipment when not in use.

The City will require by contract specifications that construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than 5 minutes. Contract specification language will be reviewed prior to issuance of a grading permit (OSA Mitigation Measure 3.3-5).

Mitigation Measure AQ-6: Use of existing electricity infrastructure.

The City will require by contract specifications that construction operations will rely on the electricity infrastructure surrounding the construction site rather than electrical generators powered by internal combustion engines to the extent feasible. Contract specification language will be reviewed prior to issuance of a grading permit (OSA Mitigation Measure 3.3-6).

Residual Impacts

Implementation of Mitigation Measures AQ-1 and AQ-2 will result in average reductions of NO_X emissions by 62%, ROG emissions by 77%, and PM10 and PM2.5 emissions by 54% for all onsite construction equipment. Mitigated emissions for Grading Plan 1 are provided in Table 3.2-9, and mitigated emissions for Grading Plan 2 are provided in Table 3.2-10. As shown therein, regional emissions of NO_X for Grading Plan 1 and Grading Plan 2 would remain above the SCAQMD Significance Threshold. As such, impacts are significant and unavoidable.

Table 3.2-9. Estimate of Mitigated Construction Emissions for Grading Plan 1 (pounds per day)

	ROC	NO_X	CO	SO_X	PM10[a]	PM2.5
Phase 1 (Glass Creek)	4	52	67	<1	16	5
Phase 2 (Rados)	8	98	69	<1	15	6
Phase 3 (Baker Ranch)	3	32	46	<1	12	3
Rancho Parkway and Portola Widening	4	57	64	<1	15	4
Worst-Case Regional Emissions Total[b]	8	109	131	<1	31	9
Regional Significance Threshold	75	100	550	150	150	55
Exceed Threshold?	No	**Yes**	No	No	No	No

Notes:

Construction emission calculation worksheets are included in Appendix B.

[a] PM10 emissions estimates take into account compliance with SCAQMD Rule 403 requirements for fugitive dust suppression, which require that no visible dust be present beyond the site boundaries.

[b] Construction of Phase 1 (Glass Creek) and Rancho Parkway/Portola widening overlap; thus emissions are summed.

Source: ICF 2010.

Table 3.2-10. Estimate of Mitigated Construction Emissions for Grading Plan 2 (pounds per day)

	ROC	NO_X	CO	SO_X	PM10[a]	PM2.5
Phase 1 (Glass Creek)	15	203	145	<1	23	11
Phase 2 (Rados)	11	137	97	<1	17	7
Phase 3 (Baker Ranch)	4	50	47	<1	13	4
Rancho Parkway and Portola Widening	4	57	64	<1	15	4
Worst-Case Regional Emissions Total[c]	19	260	209	<1	38	15
Regional Significance Threshold	75	100	550	150	150	55
Exceed Threshold?	No	**Yes**	No	No	No	No

Notes:

Construction emission calculation worksheets are included in Appendix B.

[a] PM10 emissions estimates take into account compliance with SCAQMD Rule 403 requirements for fugitive dust suppression, which require that no visible dust be present beyond the site boundaries.

[b] The project site is located in SCAQMD SRA 19. These localized significance thresholds are based on the site location SRA, distance to nearest sensitive receptor location from the project site (25 meters), and project area that could be under construction on any given day (5 acres).

[c] Construction of Phase 1 (Glass Creek) and Rancho Parkway/Portola widening overlap; thus emissions are summed.

Source: ICF 2010.

Impact AQ-3: The proposed project would expose sensitive receptors to substantial pollutant concentrations.

The proposed project would contribute to localized air pollutant emissions during construction (short-term) and project operations (long-term). A discussion of the project's localized potential construction- and operations-period air quality impacts is provided below.

Local Construction Impacts

SCAQMD has developed a set of mass emissions rate look-up tables that can be used to evaluate localized impacts that may result from construction-period emissions. If the onsite emissions from proposed construction activities are below the Localized Significance Threshold (LST) emission levels found in the LST mass rate look-up tables for the project site's SRA, then project emissions would not have the potential to cause a significant localized air quality impact.

As discussed previously, mass daily emissions during construction were compiled using the URBEMIS 2007 emissions inventory model. However, only onsite construction emissions were considered for purposes of comparison with the LST mass rate look-up tables (i.e., consistent with SCAQMD LST Guidelines, offsite delivery/haul truck activity and employee trips were not considered in the evaluation of localized impacts). A conservative estimate of the project's mitigated construction-period onsite mass emissions for Grading Plans 1 and 2 is presented in Tables 3.2-11 and 3.2-12, respectively. As shown therein, the worst-case maximum emissions for PM10 would exceed the respective SCAQMD LST significance threshold and impact would be significant.

Table 3.2-11. Estimate of Localized Construction Emissions for Grading Plan 1 (pounds per day)

	ROC	NO_X	CO	SO_X	PM10[a]	PM2.5
Phase 1 (Glass Creek)	15	136	63	<1	20	8
Phase 2 (Rados)	10	88	42	<1	14	5
Phase 3 (Baker Ranch)	6	54	27	<1	13	4
Rancho Parkway and Portola Widening	9	57	58	<1	15	7
Worst-Case Onsite Total	15	136	63	<1	20	8
Localized Significance Threshold[b]	—	197	1,830	—	12	8
Exceed Threshold?	N/A	No	No	N/A	**Yes**	**Yes**

Notes:

Construction emission calculation worksheets are included in Appendix B.

[a] PM10 emissions estimates take into account compliance with SCAQMD Rule 403 requirements for fugitive dust suppression, which require that no visible dust be present beyond the site boundaries.

[b] The project site is located in SCAQMD SRA 19. These localized significance thresholds are based on the site location SRA, distance to nearest sensitive receptor location from the project site (25 meters), and project area that could be under construction on any given day (5 acres).

Source: ICF 2010.

Table 3.2-12. Estimate of Localized Construction Emissions for Grading Plan 2 (pounds per day)

	ROC	NO_X	CO	SO_X	PM10[a]	PM2.5
Phase 1 (Glass Creek)	22	196	91	<1	22	10
Phase 2 (Rados)	14	129	61	<1	16	7
Phase 3 (Baker Ranch)	9	77	37	<1	14	5
Rancho Parkway and Portola Widening	9	57	58	<1	15	7
Worst-Case Onsite Total	22	196	91	<1	22	10
Localized Significance Threshold[b]	—	197	1,830	—	12	8
Exceed Threshold?	N/A	No	No	N/A	**Yes**	**Yes**

Notes:

Construction emission calculation worksheets are included in Appendix B.

[a] PM10 emissions estimates take into account compliance with SCAQMD Rule 403 requirements for fugitive dust suppression, which require that no visible dust be present beyond the site boundaries.

[b] The project site is located in SCAQMD SRA 19. These localized significance thresholds are based on the site location SRA, distance to nearest sensitive receptor location from the project site (25 meters), and project area that could be under construction on any given day (5 acres).

Source: ICF, 2010.

Local Operational Impacts

Within an urban setting, vehicle exhaust is the primary source of CO. Consequently, the highest CO concentrations are generally found close to congested intersections. Under typical meteorological conditions, CO concentrations tend to decrease as the distance from the emissions source (i.e., congested intersection) increases. For purposes of providing a conservative, worst-case impact analysis, CO concentrations are typically analyzed at congested intersection locations, because if impacts are less than significant close to congested intersections, impacts will also be less than significant at more distant sensitive receptor locations.

Project traffic during the operational phase of the project would have the potential to create local area CO impacts. SCAQMD recommends a hot-spot evaluation of potential localized CO impacts when volume-to-capacity ratios are increased by 2% at intersections with a level of service (LOS) of C or worse. Given these criteria, six intersections were selected for analysis based on information provided in the Traffic Impact Study prepared by Austin-Foust Associates, Inc. (2010a).

Local area CO concentrations were projected using the CALINE-4 traffic pollutant dispersion model. The analysis of CO impacts followed the protocol recommended by Caltrans, published as *Transportation Project-Level Carbon Monoxide Protocol* (1997). It is also consistent with procedures identified through SCAQMD's CO modeling protocol, with all four corners of each intersection analyzed to determine whether project development would result in a CO concentration that exceeds federal or state CO standards.

The project's CO concentrations for a.m. and p.m. 1- and 8-hour CO levels for project year 2015 are presented in Table 3.2-13. As shown therein, the project would not have a significant impact upon 1- or 8-hour local CO concentrations from mobile source emissions.

Because significant impacts would not occur at the intersections with the highest traffic volumes located adjacent to sensitive receptors, no significant impacts are anticipated to occur at any other locations in the study area because the conditions yielding CO hotspots would not be worse than those occurring at the analyzed intersections. Consequently, the sensitive receptors that are included in this analysis would not be significantly affected by CO emissions generated by the net increase in traffic that would occur under the project. Because the project does not cause an exceedance, or exacerbate an existing exceedance of an ambient air quality standard, the project's localized operational air quality impacts would be less than significant. No mitigation measures are necessary.

With respect to the project's onsite mass emissions, Table 3.2-14 shows that onsite operations-period emissions would be below SCAQMD's localized significance thresholds. Impacts from emissions of these criteria pollutants would be less than significant.

Toxic Air Contaminants

SCAQMD recommends that health risk assessments be conducted for substantial sources of diesel particulate emissions (e.g., truck stops and warehouse distribution facilities) and has provided guidance for analyzing mobile source diesel emissions. In addition, typical sources of acutely and chronically hazardous TACs include industrial manufacturing processes, automotive repair facilities, and dry cleaning facilities. Since the proposed project would not contain such uses, the proposed project does not warrant a health risk assessment. Potential project-generated air toxic impacts on surrounding land uses would be less than significant. No mitigation measures are necessary.

Table 3.2-13. Project Year 2015—Local Area Carbon Monoxide Dispersion Analysis

Intersection	Peak Period[a]	Maximum 1-Hour 2015 Base Concentration (ppm)[b]	Maximum 1-Hour 2015 With-Project Concentration (ppm)[c]	Significant 1-Hour Concentration Impact?[d]	Maximum 8-Hour 2015 Base Concentration (ppm)[e]	Maximum 8-Hour 2015 With-Project Concentration (ppm)[f]	Significant 8-Hour Concentration Impact?[d]
Lake Forest at Rancho	a.m.	4.2	4.4	No	2.7	2.9	No
	p.m.	4.5	4.8	No	2.9	3.1	No
El Toro at Portola/ Santa Margarita	a.m.	5.0	5.0	No	3.3	3.3	No
	p.m.	5.7	5.8	No	3.8	3.8	No
Lake Forest at Trabuco	a.m.	5.5	5.6	No	3.6	3.7	No
	p.m.	5.8	5.7	No	3.8	3.8	No
El Toro at Jeronimo	a.m.	5.0	5.0	No	3.3	3.3	No
	p.m.	5.1	5.1	No	3.3	3.3	No
Los Alisos at Jeronimo	a.m.	5.2	5.2	No	3.4	3.4	No
	p.m.	5.3	5.3	No	3.5	3.5	No
Lake Forest at Rockfield	a.m.	5.1	5.1	No	3.3	3.3	No
	p.m.	5.5	5.5	No	3.6	5.6	No

Notes:

CALINE4 dispersion model output sheets and EMFAC2007 emissions factors are provided in Appendix B.

ppm = parts per million

[a] Peak hour traffic volumes are based on the Traffic Impact Analysis prepared for the project by Austin-Foust Associates Inc., 2009.

[b] SCAQMD 2015 1-hour ambient background concentration (2.9 ppm) + 2015 base traffic CO 1-hour contribution.

[c] SCAQMD 2015 1-hour ambient background concentration (2.9 ppm) + 2015 with-project traffic CO 1-hour contribution.

[d] The state standard for the 1-hour average CO concentration is 20 ppm, and the 8-hour average concentration is 9.0 ppm.

[e] SCAQMD 2015 8-hour ambient background concentration (1.8 ppm) + 2015 base traffic CO 8-hour contribution.

[f] SCAQMD 2015 8-hour ambient background concentration (1.8 ppm) + 2015 with-project traffic CO 8-hour contribution.

Table 3.2-14. Estimate of Operation-Period Localized (Onsite) Emissions

	NO_X	CO	PM10	PM2.5
Onsite Area Source Emissions	<0.1	3.1	<0.1	<0.1
SCAQMD Daily Significance Threshold (lbs/day)[b]	197	1,830	3	2
Exceed Significance Threshold?	No	No	No	No

Notes:

[a] Onsite emissions calculated using the URBEMIS 2007 emissions model (area-source emissions). Model output sheets are provided in Appendix B.

[b] The project site is located in SCAQMD SRA 19. These LSTs are based on the site location SRA, distance to the nearest sensitive-receptor location from the project site (25 meters), and the project area (5 acres).

Source: ICF 2010.

Mitigation Measures

Implement Mitigation Measures AQ-1 through AQ-6.

Residual Impacts

Implementation of Mitigation Measures AQ-1 through AQ-6 will result in average reductions of NO_X emissions by 62%, ROG emissions by 77%, and PM10 and PM2.5 emissions by 54% for all onsite construction equipment. Mitigated onsite emissions for Grading Plan 1 are provided in Table 3.2-15, and mitigated onsite emissions for Grading Plan 2 are provided in Table 3.2-16. As shown therein, localized emissions of PM10 and PM2.5 for both grading plans remain above the SCAQMD Localized Significance Threshold. As such, impacts are significant and unavoidable.

Table 3.2-15. Estimate of Mitigated Localized Construction Emissions for Grading Plan 1 (pounds per day)

	ROC	NO_X	CO	SO_X	PM10[a]	PM2.5
Phase 1 (Glass Creek)	4	52	63	<1	16	5
Phase 2 (Rados)	2	34	42	<1	12	3
Phase 3 (Baker Ranch)	2	21	27	<1	11	3
Rancho Parkway and Portola Parkway	2	23	58	<1	13	4
Worst-Case Onsite Total	5	52	63	<1	16	5
Localized Significance Threshold[b]	—	197	1,830	—	12	8
Exceed Threshold?	N/A	No	No	N/A	**Yes**	No

Notes:

Construction emission calculation worksheets are included in Appendix B.

[a] PM10 emissions estimates take into account compliance with SCAQMD Rule 403 requirements for fugitive dust suppression, which require that no visible dust be present beyond the site boundaries.

[b] The project site is located in SCAQMD SRA 19. These localized significance thresholds are based on the site location SRA, distance to nearest sensitive receptor location from the project site (25 meters), and project area that could be under construction on any given day (5 acres).

Source: ICF 2010.

Table 3.2-16. Estimate of Mitigated Localized Construction Emissions for Grading Plan 2 (pounds per day)

	ROC	NO_X	CO	SO_X	PM10[a]	PM2.5
Phase 1 (Glass Creek)	5	75	91	<1	17	6
Phase 2 (Rados)	3	49	61	<1	13	4
Phase 3 (Baker Ranch)	2	29	37	<1	12	3
Rancho Parkway and Portola Widening	2	23	58	<1	13	4
Worst-Case Onsite Total	5	75	91	<1	17	6
Localized Significance Threshold[b]	—	197	1,830	—	12	8
Exceed Threshold?	N/A	No	No	N/A	**Yes**	No

Notes:

Construction emission calculation worksheets are included in Appendix B.

[a] PM10 emissions estimates take into account compliance with SCAQMD Rule 403 requirements for fugitive dust suppression, which require that no visible dust be present beyond the site boundaries.

[b] The project site is located in SCAQMD SRA 19. These localized significance thresholds are based on the site location SRA, distance to nearest sensitive receptor location from the project site (25 meters), and project area that could be under construction on any given day (5 acres).

Source: ICF, 2010.

Impact AQ-4: The proposed project would create objectionable odors affecting a substantial number of people.

According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The proposed project does not include any uses identified by the SCAQMD as being associated with odors and therefore would not produce objectionable odors.

Odors resulting from the construction of these projects are not likely to affect a substantial number of people, due to the fact that construction activities do not usually emit offensive odors. Potential odor emitters during construction activities include asphalt paving and the use of architectural coatings and solvents. SCAQMD Rules 1108 and 1113 limit the amount of VOCs from cutback asphalt and architectural coatings and solvents, respectively. Given mandatory compliance with SCAQMD rules, no construction activities or materials are proposed that would create a significant level of objectionable odors. As such, potential impacts during short-term construction would be less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Given mandatory compliance with SCAQMD rules, no construction activities or materials are proposed that would create a significant level of objectionable odors. Impacts would be less than significant.

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Section 3.3
Biological Resources

Section 3.3
Biological Resources

This section summarizes the field assessment and literature review conducted to identify biological resources in the study area. In addition, this section analyzes the direct and indirect impacts on biological resources that could occur as a result of project implementation and summarizes the applicable regulations and policies that pertain to those resources. The detailed floral and faunal compendia provided in Appendix C of this environmental impact report (EIR) identifies all plant and wildlife species observed on site.

This assessment of biological resources is based on information compiled through literature review, field surveys, and analysis of previous documentation and appropriate reference materials. The Glass Creek property was surveyed by PCR biologists in 2006 and 2007, who conducted a jurisdictional delineation to assess the presence and extent, or absence, of wetlands and waters of the United States; document plant communities; assess the potential for the study area to support sensitive species and/or habitats; and determine potential planning constraints. The need to conduct focused surveys for a variety of sensitive plants was determined, and all surveys were conducted according to established protocols and within the appropriate time periods to maximize the detection of targeted species, if present. In addition, findings of the initial investigations determined the need to conduct focused surveys for least Bell's vireo (*Vireo bellii pusillus*) and southwestern willow flycatcher (*Empidonax traillii extimus*) because of the presence of suitable habitat. The study area was surveyed again in 2009 for sensitive plants, least Bell's vireo, and southwestern willow flycatcher and again in 2010 for sensitive plants to update the results of the prior surveys and document the biological resources on the Baker Ranch and Rados properties. A detailed description of the methodologies used to prepare the biological resources assessment is provided in Appendix C of this document.

Environmental Setting

The study area encompasses approximately 91.0 acres spread over three properties (i.e., the Glass Creek property [58.6 acres], the Rados property [13.1 acres], and a portion of the Baker Ranch property [19.3 acres]) as well as a 1.4-acre off-site area. The total impact area includes approximately 77.2 gross acres (approximately 44.8 acres within the Glass Creek property, 12.6 acres within the Rados property, and 19.3 acres within the Baker Ranch property). In addition, there is approximately 0.5 acre of off-site impacts associated with the detention basin and 2.0 acres of temporary impact buffers (on and off site).

The study area is surrounded by El Toro Road to the south, industrial development to the northwest, mining to the northeast, a commercial center to the east, and residential development to the west. Aliso Creek, located just south of the study area, connects with open space areas to the east. These open space areas connect with Whiting Ranch to the northeast. Habitat within the study area is completely surrounded by development, except for a small linear strip of land (including Aliso Creek) that extends eastward. For this reason, the study area does not serve as a component of a significant regional wildlife movement corridor per se, nor does it serve as a linkage between two or more larger habitat areas.

Regulatory Setting

As part of the proposed project's review and approval, there are a number of performance criteria and standard conditions related to biological resources that must be met. These include compliance with all of the terms, provisions, and requirements of the applicable laws of the various federal, state, and local regulating agencies pertaining to impacts on sensitive plant and wildlife species, wetlands, riparian habitats, and stream courses. The following discusses the applicable regulatory framework.

State of California Fish and Game Code, Section 1602

Section 1600 et seq. of the California Fish and Game Code (FGC) (Streambed Alteration) requires any person who proposes a project that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake or use materials from a streambed to notify the California Department of Fish and Game (CDFG) before beginning the project. Similarly, before any state or local governmental agency or public utility begins a construction project that will (1) divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake; (2) use materials from a streambed; or (3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake, it must first notify the CDFG of the proposed project. The CDFG takes jurisdiction to the top of the bank of a stream or the limit of adjacent riparian vegetation when present.

In the course of the notification process, based on the notification materials submitted to the CDFG and, if necessary, an investigation of the project site by the CDFG, the CDFG will determine if the proposed project may affect fish or wildlife resources. Depending on the extent of the impact, a Streambed Alteration Agreement may be required for the project. The CDFG may place conditions in the Streambed Alteration Agreement to avoid, minimize, or mitigate the potentially significant adverse impacts within CDFG jurisdictional limits.

Federal Clean Water Act, Section 404

Section 404 of the federal Clean Water Act (CWA) regulates the discharge of dredged material, the placement of fill material, and excavation within waters of the United States and authorizes the Secretary of the Army, through the Chief of Engineers, to issue permits for such actions. *Waters of the United States* are defined by the CWA as "rivers, creeks, streams, and lakes extending to their headwaters and any associated wetlands." *Wetlands* are defined by the CWA as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions."

The permit review process entails an assessment of potential adverse effects on U.S. Army Corps of Engineers (ACOE) jurisdictional waters of the United States and wetlands. In response to the permit application, the ACOE will also require conditions amounting to mitigation measures. Where a federally listed species may be affected, the ACOE will also require Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) under the federal Endangered Species Act (ESA). Through this process, potentially significant adverse effects within the federal jurisdictional limits could be mitigated to a level that would be less than significant.

Federal Clean Water Act, Section 401

The Regional Water Quality Control Board (RWQCB) regulates "discharging waste, or proposing to discharge waste, within any region that could affect waters of the state (Water Code Section 13260[a]) pursuant to provisions of the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). *Waters of the state* are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Water Code Section 13050[e]). A RWQCB can address impacts on water quality through the issuance of Water Quality Certification pursuant to Section 401 of the CWA.

Section 401 of the CWA requires any applicant for a federal permit for activities that involve a discharge to waters of the United States to provide the federal permitting agency certification from the state in which the discharge is proposed stating that the discharge will comply with the applicable provisions of the federal CWA. Therefore, before the ACOE will issue a CWA Section 404 permit, applicants must receive CWA Section 401 Water Quality Certification from the RWQCB to demonstrate such compliance. If a CWA Section 404 permit is not required for the project, the RWQCB may still require a permit (i.e., Waste Discharge Requirement [WDR]) pursuant to the Porter-Cologne Act.

Under separate authorities granted by state law (e.g., the Porter-Cologne Act), a RWQCB may choose to regulate discharges of dredged or fill material by issuing or waiving (with or without conditions) the WDR, a type of state discharge permit, instead of taking a water quality certification action. Processing a WDR is similar to processing Section 401 certification; however, the RWQCB has more discretion to add conditions to a project under the Porter-Cologne Act than it would have under the federal CWA. In addition, the WDR is made public prior to approval to allow for public comment. WDRs must be presented at a board meeting and approved by the board. Here, the San Diego Regional Water Quality Control Board has jurisdiction over this project.

Federal Endangered Species Act, Section 10 and Section 7

Take of a threatened or endangered species is prohibited under federal law without a special permit. Section 10(a)(1)(B) of the ESA allows for take of a threatened or endangered species incidental to development activities once a Habitat Conservation Plan (HCP) has been prepared to the satisfaction of the USFWS and a permit has been issued. For federal projects (including those involving federal funding), Section 7 of the ESA allows for consultation between the affected agency and the USFWS to determine what measures may be necessary to compensate for the incidental take of a listed species. A federal project is any project that is proposed by a federal agency or is at least partially funded or authorized by a federal agency. If the listed species or federally designated critical habitat for that species occurs in a portion of the project area subject to federal jurisdiction or activity (such as waters of the United States), then consultation under Section 7 of the act is usually permissible and may be required.

Migratory Bird Treaty Act of 1918

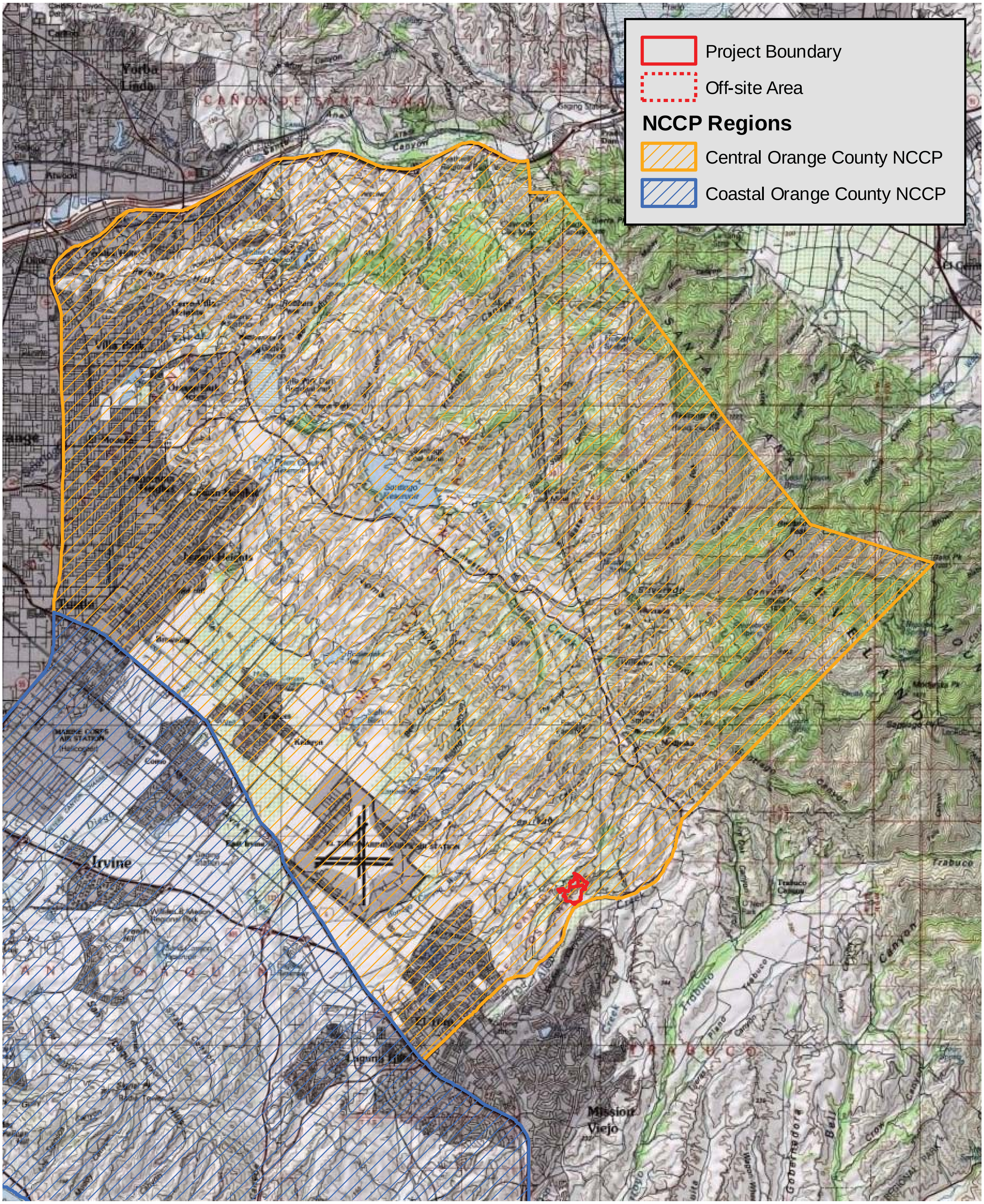
The Migratory Bird Treaty Act (MBTA) makes it unlawful to take (i.e., kill, harm, harass, etc.) any migratory bird listed in 50 Code of Federal Regulations (CFR) 10, including their nests, eggs, or products. The MBTA provides protection to more than 800 species of birds. This is a list of some very common species: American robin (*Turdus migratorius*), house finch (*Carpodacus mexicanus*), burrowing owl (*Athene cunicularia*), red-tailed hawk (*Buteo jamaicensis*), American crow (*Corvus brachyrhynchos*), and western meadowlark (*Sturnella neglecta*).

Orange County Natural Community Conservation Plan, Central Subregion

The Natural Community Conservation Act, codified at FGC Sections 2800–2840, authorizes the preparation of Natural Community Conservation Plans (NCCPs) to protect natural communities and species while allowing a reasonable amount of economic development. The study area is within the Natural Communities Conservation Plan and Habitat Conservation Plan (NCCP/HCP) – County of Orange Central and Coastal Subregion (Figure 3.3-1, *Relationship to the Orange County NCCP*). The NCCP/HCP, which was reviewed and approved by the CDFG and USFWS in 1996, addresses the protection and management of coastal sage scrub (CSS) habitat and CSS-obligate species, as well as other covered habitats and species, and mitigates anticipated impacts on those habitats and species on a programmatic, subregional level rather than on a project-by-project, single-species basis. A habitat reserve in excess of 37,000 acres was established for the protection of CSS, other upland habitats, the coastal California gnatcatcher (*Polioptila californica californica*), and the other primarily CSS-dependent species identified in the NCCP/HCP. Specifically, the NCCP/HCP, the USFWS, and CDFG authorized take of 39 identified species of plants and wildlife (including covered and conditionally covered species), as shown in Table 3.3-1, *Identified Species (Covered and Conditionally Covered) Authorized for Take by the NCCP/HCP.* Furthermore, the NCCP/HCP contains requirements for adaptive management, interim management, and funding management for the reserve as well as procedures and minimization measures related to the take of identified species and habitat. Thus, the NCCP/HCP provides for the protection and management of a broad range of plant and wildlife populations while providing certainty to the public and affected landowners regarding the location of future development and open space in the subregion.

Table 3.3-1. Identified Species (Covered and Conditionally Covered) Authorized for Take by the NCCP/HCP

Common Name	Scientific Name
Covered Species	
Amphibians	
Western spadefoot (coastal subarea only)	*Spea hammondii*
Arboreal salamander	*Aneides lugubris*
Black-bellied slender salamander	*Batrachoseps nigirventris*
Reptiles	
Coastal rosy boa	*Charina (Lichanura) trivirgata roseofusca*
Coastal whiptail	*Cnemidophorus tigris stejnegeri*
Coronado skink	*Eumeces skiltonianus interparietalis*
Orange-throated whiptail	*Cnemidophorus hyperythrus*
Northern red-diamond rattlesnake	*Crotalus ruber ruber*
Ring-necked snake	*Diadophis punctatus*
Coast horned lizard	*Phrynosoma coronatum*
Avifauna	
California gnatcatcher	*Polioptila californica californica*



Source: PCR (2010)

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Figure 3.3-1
Relationship to Orange County NCCP
City of Lake Forest Sports Park and Recreation Center

Common Name	Scientific Name
Coastal cactus wren	*Campylorhynchus brunneicapillus couesi*
Peregrine falcon	*Falco peregrinus*
Northern harrier	*Circus cyaneus*
Red-shouldered hawk	*Buteo lineatus*
Rough-legged hawk	*Buteo lagopus*
Sharp-shinned hawk	*Accipiter striatus*
Southern California rufous-crowned sparrow	*Aimophila ruficeps canescens*
Mammals	
Coyote	*Canis latrans*
Gray fox	*Urocyon cinereoargenteus*
San Diego desert woodrat	*Neotoma lepida intermedia*
Plants	
Catalina mariposa lily	*Calochortus catalinae*
Coulter's matilija poppy	*Romneya coulteri*
Heart-leaved pitcher sage	*Lepechinia cardiophylla*
Laguna Beach dudleya	*Dudleya stolonifera*
Nuttall's scrub oak	*Quercus dumosa*
Santa Monica Mountains dudleya	*Dudleya cymosa* ssp. *ovatifolia*
Small-flowered mountain mahogany	*Cercocarpus minutifolia*
Tecate cypress	*Cupressus forbesii*
Conditionally Covered Species	
Invertebrates	
Riverside fairy shrimp	*Streptocephalus woottoni*
San Diego fairy shrimp	*Branchinecta sandiegonensis*
Quino checkerspot butterfly	*Euphydryas editha quino*
Amphibians	
Arroyo toad	*Bufo californicus*
Avifauna	
Southwestern willow flycatcher	*Empidonax traillii extimus*
Least Bell's vireo	*Vireo bellii pusillus*
Golden eagle	*Aquila chrysaetos*
Prairie falcon	*Falco mexicanus*
Mammals	
Pacific pocket mouse	*Perognathus longimembris pacificus*
Plants	
Foothill mariposa lily	*Calochortus weedii* var. *intermedius*
Source: County of Orange, Natural Community Conservation Plan and Habitat Conservation Plan, 1996a.	

For properties located within the in-lieu fee area of the NCCP/HCP area, impacts on CSS can be mitigated through the payment of an in-lieu fee of $65,000 per acre (McAfee pers. comm.). If the City is using the payment of this in-lieu fee for mitigation, other mitigation available through the

NCCP/HCP can also be used (Snyder pers. comm.). The study area is located within the in-lieu fee area of the NCCP/HCP.

City of Lake Forest Regulated Trees

The City of Lake Forest regulates the maintenance of eucalyptus trees that are more than 8 feet tall or have a trunk diameter of 2 inches or more when measured at least 3 feet above ground level. The maintenance of eucalyptus trees is regulated to control infestation by a particular beetle, the eucalyptus longhorn borer. During the period from April 1 through October 31 (the restricted period) of each year, a eucalyptus cutting permit must be obtained from the City to prune, remove, or transport a eucalyptus or its logs, branches, or trunk. During this restricted period, the application for the eucalyptus tree cutting or removal permit must include the number of eucalyptus trees to be cut, pruned, moved, or removed and their location. The application must include the health, safety, or emergency reasons for pruning, moving, or removing the tree(s) during the restricted period. From November 1 through March 31, no permit is required for the pruning, cutting, removal, or transport of eucalyptus trees (City of Lake Forest 2006).

Affected Environment

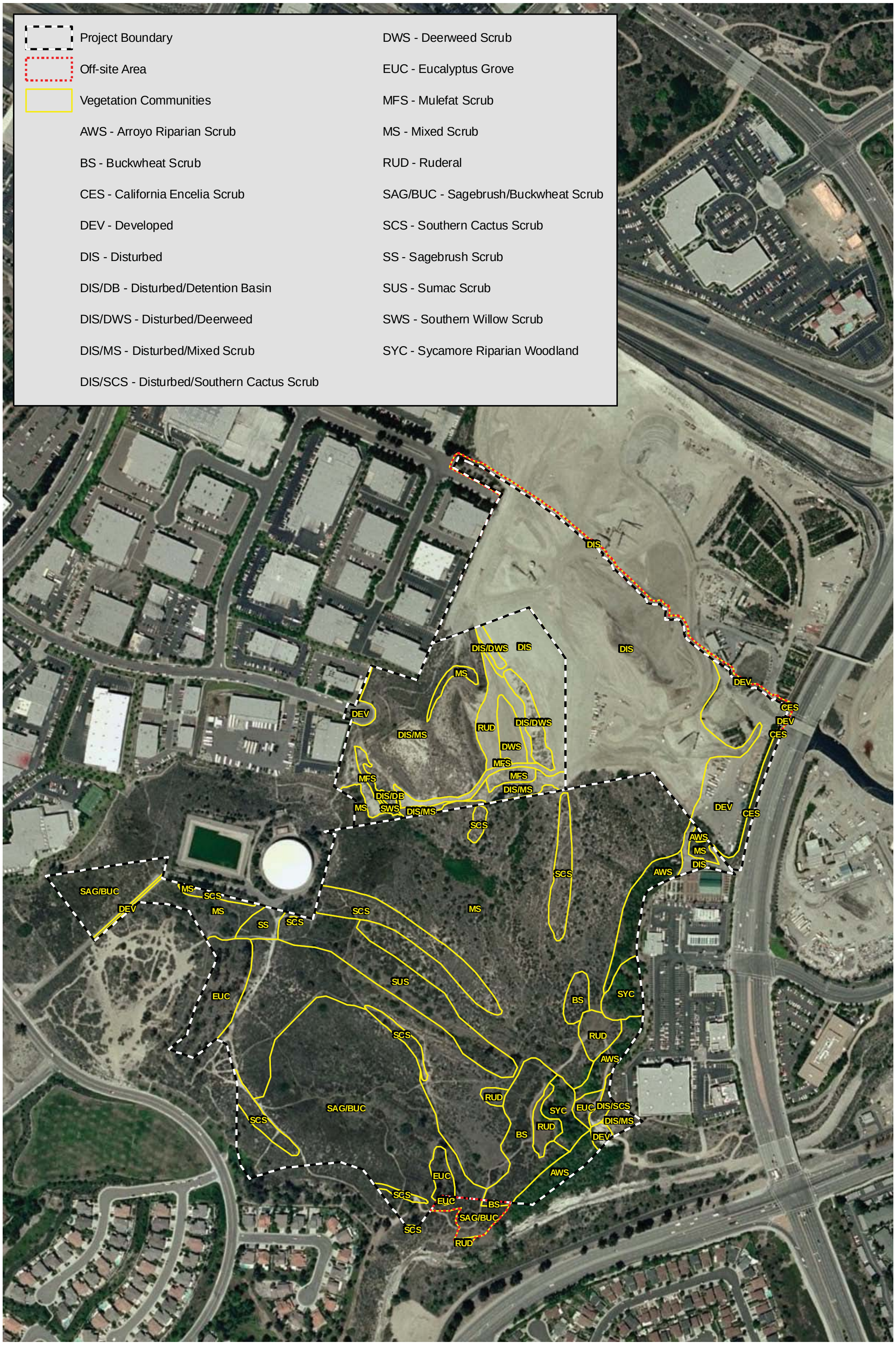
Plant Communities

The study area supports 20 plant communities, disturbed areas, and developed areas, as shown in Figure 3.3-2, *Existing Plant Communities,* and, *Plant Communities.* Plant communities located on site were noted. Plant community designations were determined according to descriptions contained in Gray and Bramlet (1992) and Sawyer and Keeler-Wolf (1995). If a community that was found on site did not conform to any of the descriptions for the communities listed in Gray and Bramlet or Sawyer and Keeler-Wolf, it was named for the dominant species composing it (e.g., California encelia scrub) and described accordingly. It should be noted that plant communities that are covered by the NCCP are indicated in Table 3.3-2, *Existing Plant Communities.*

Scrub Communities

Table 3.3-2. Existing Plant Communities

Vegetation Community	On-site Acres	Off-site Acres	Total Acres
Scrub Communities			
Buckwheat scrub*	2.2	0.1	2.3
California encelia scrub*	0.4	< 0.1[a]	0.4
Deerweed scrub*	0.5		0.5
Mixed scrub*	30.1		30.1
Sagebrush scrub*	0.4		0.4
Sagebrush-buckwheat scrub*	12.1	0.6	12.7
Southern cactus scrub*	3.7		3.7
Sumac scrub	3.0		3.0



Source: PCR (2010)

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Figure 3.3-2
Plant Communities
City of Lake Forest Sports Park and Recreation Center

Vegetation Community	On-site Acres	Off-site Acres	Total Acres
Riparian Communities			
Arroyo willow riparian scrub	2.3		2.3
Mule fat scrub	0.5		0.5
Southern willow scrub	< 0.1[a]		< 0.1[a]
Sycamore riparian woodland	1.3		1.3
Disturbed/Ornamental Communities			
Disturbed	18.5	0.5	19.0
Disturbed/deerweed scrub	0.7		0.7
Disturbed/detention basin	< 0.1[a]		< 0.1[a]
Disturbed/mixed scrub	7.1		7.1
Disturbed/southern cactus scrub	0.2		0.2
Eucalyptus grove	2.2	< 0.1[a]	2.2
Ruderal	2.0	< 0.1[a]	2.0
Other			
Developed	3.8	0.2	4.0
TOTAL	**91.0**	**1.4**	**92.4**

[*] Denotes communities that are covered under the NCCP (49.4 acres on site, 0.6 acre off site, for a total of 50 acres).
[a] This acreage is not included in the total.
Source: PCR Services Corporation, 2010.

Buckwheat scrub is characterized by nearly monotypic stands of California buckwheat (*Eriogonum fasciculatum*). This community occurs throughout the foothills and mountains of Orange County and is most often found on slopes that have been disturbed within the last 10 years. California buckwheat was the dominant plant species observed within this community. A sparse cover of white sage (*Salvia apiana*) and California sagebrush (*Artemisia californica*) was also observed. The extent of buckwheat scrub totals 2.2 acres on site and 0.1 acre off site.

California encelia scrub is characterized by California encelia (*Encelia californica*) as the sole or dominant shrub component in the shrub category. California encelia scrub was present on the planted slopes adjacent to Portola Parkway in the northeastern portion of the study area and occupies approximately 0.4 acre on site and less than 0.1 acre off site.

Deerweed scrub is characterized by deerweed (*Lotus scoparius*) as the sole or dominant shrub component in the shrub canopy. Subdominant plant species observed within this community on site included tecolote (*Centaurea melitensis*), red-stemmed filaree (*Erodium cicutarium*), mule fat, and short-podded mustard (*Hirschfeldia incana*). This plant community occupies approximately 0.5 acre on site within the northern portion of the study area.

Mixed scrub is usually dominated by an even mix of various sage scrub species. Dominant species found within the community on site include black sage (*Salvia mellifera*), California sagebrush, California buckwheat, coyote brush, and laurel sumac (*Malosma laurina*). Additional species observed include deerweed, prickly-pear, white sage, California everlasting (*Gnaphalium californicum*), and Mexican elderberry (*Sambucus mexicana*). Mixed scrub occupies 30.1 acres on site.

Sagebrush scrub consists of an almost monotypic stand of California sagebrush. This community usually occurs as small patches within other scrub types that support California sagebrush as a co-dominant species with other shrubs. Species observed within this community on site include California sagebrush (dominant), with a sparse cover of California buckwheat, coyote brush, and prickly-pear. The extent of sagebrush scrub totals 0.4 acre on site.

Sagebrush-buckwheat scrub is typically dominated by California sagebrush and California buckwheat, with several other native shrub species. This community occurs throughout the low foothills of Orange County. The dominant species observed within the study area include California sagebrush and California buckwheat. Associated species observed within the study area include black sage and California encelia. The extent of sagebrush-buckwheat scrub totals 12.1 acres on site and 0.6 acre off site.

Southern cactus scrub consists of scrub vegetation that has a 20 percent or greater cover of prickly-pear or other cactus species. This community occurs primarily on south-facing slopes on low foothills within inland areas. Dominant species observed within this community on site include prickly-pear and California buckwheat. Associated species include our Lord's candle (*Yucca whipplei*), California sagebrush, coyote brush, California everlasting, deerweed, and white sage. This community occupies 3.7 acres on site.

Sumac scrub (series) is characterized by a dominance of laurel sumac, with other native shrubs present to a lesser extent. This community occurs in shallow, coarse soils on somewhat steep slopes. Laurel sumac was the dominant species observed within this community on site. Associated species on site include California sagebrush, black sage, prickly-pear, California buckwheat, California everlasting, and dodder (*Cuscuta californica*). The extent of sumac scrub totals 3.0 acres on site.

Riparian Communities

Arroyo willow riparian scrub (series) is characterized by arroyo willow as the sole or dominant shrub or tree in the canopy. This community occurs in habitats that are seasonally flooded or saturated such as floodplains and the banks of rivers and streams. Arroyo willow was the dominant species observed within this community on site. Associated species on site include western ragweed (*Ambrosia psilostachya*), black willow (*Salix goodingii*), mule fat, and western sycamore (*Platanus racemosa*). Nonnative species observed include white sweetclover (*Melilotus alba*), giant reed (*Arundo donax*), acacia (*Acacia* sp.), and pampas grass (*Cortaderia selloana*). This community occupies 2.3 acres within Glass Creek.

Mule fat scrub consists of dense stands of mule fat, with scattered willows commonly present. This community typically occupies intermittent streambeds or disturbed areas within drainages and washes. Mule fat was the dominant species observed within this community within the study area. Associated species observed include arroyo willow. A total of 0.5 acre of mule fat is on site.

Southern willow scrub is typically dominated by two or more willow species (*Salix* spp.) and mule fat. Characteristically, southern willow scrub occupies wet and moist soils and is restricted in its distribution to the edges of ponds and lakes and other areas where water impounds, such as drainages and seeps. Within the study area, this association supports a dominance of black willow (*Salix gooddingii*) and arroyo willow. Other species observed include mule fat and white-sweet clover (*Melilotus alba*). Southern willow scrub is present as a small patch (less than 0.1 acre) within a constructed basin in the northwestern portion of the study area.

Sycamore riparian woodland consists of open to dense woodlands dominated by western sycamore with coast live oak, mule fat, and/or willow (*Salix* spp.) as an understory. This community typically occurs on large intermittent streams throughout Orange County. Western sycamore was the dominant species observed within this community on site. Associated species observed include arroyo willow, mule fat, coast live oak, western ragweed, mugwort (*Artemisia douglasiana*), and holly-leaf redberry (*Rhamnus ilicifolia*). The extent of sycamore riparian woodland totals 1.3 acres within the study area, specifically Glass Creek.

Disturbed/Ornamental Communities

Disturbed areas either lack cover by vegetation or have a sparse cover of ruderal vegetation such as black mustard, foxtail chess, and horseweed. The extent of disturbed areas total 18.5 acres on site and 0.5 acre off site.

Disturbed/deerweed scrub, disturbed/mixed scrub, and **disturbed/southern cactus scrub** contain a similar vegetation composition to mixed scrub and southern cactus scrub, except nonnative species constitute greater than 20 percent of the vegetative cover. Disturbed/deerweed occupies 0.7 acre on site within the northern portion of the study area, and disturbed/mixed scrub occupies 7.1 acres within the study area. Within the southeastern portion of the study area, disturbed/mixed scrub also contains mule fat at the base of the slope. Disturbed/southern cactus scrub occupies 0.2 acre within the study area.

Disturbed/detention basin is characterized by sparsely covered ground associated with a man-made detention basin in the northwestern portion of the study area. Disturbed/detention basin occupies less than 0.1 acre within the study area.

Two **eucalyptus groves** occur within the study area. These areas are dominated by eucalyptus (*Eucalyptus* sp.), with an understory of either ruderal vegetation and/or native shrubs. Associated species observed include California sagebrush, white sage, California buckwheat, California everlasting, and nonnative black mustard (*Brassica nigra*). Eucalyptus groves occupy 2.2 acres within the study area and less than 0.1 acre off site.

Ruderal areas are dominated by nonnative weedy species that readily colonize disturbed ground. Plant species observed within the ruderal areas on site include black mustard, horseweed (*Conyza* sp.), foxtail chess (*Bromus madritensis* ssp. *madritensis*), and doveweed (*Eremocarpus setigerus*). In addition, a sparse amount of native California buckwheat occurs within the ruderal areas of the study area. Ruderal areas occupy 2.0 acres on site and less than 0.1 off site.

Other Areas

Developed areas within the study area consist of paved pathways. Developed areas occupy 3.8 acres on site and 0.2 acre off site.

Existing Jurisdictional Waters

The study area contains one primary jurisdictional drainage, Glass Creek, which has three tributaries and two sub-tributaries on site. Additionally, one isolated drainage feature, Drainage B, was mapped within the study area.[1] Refer to Figure 3.3-3, *Jurisdictional Features*, for the location of the drainages.

Glass Creek exhibited intermittent hydrology, while its tributaries and sub-tributaries, as well as Drainage B, exhibited ephemeral hydrology. All of the drainage features on site are characterized by earthen channels with varying degrees of disturbance. In addition, Glass Creek has several short reaches in which structures have been installed (i.e., culverts or footbridges) or varying levels of other man-made modifications occur. Glass Creek carries flows from its off-site reach north of the study area and its on-site tributaries, as well as runoff from the surrounding hillsides, to Aliso Creek, located immediately south of the study area.

The total jurisdiction within the entire study area includes approximately 0.41 acre (5,678 linear feet) of ACOE/RWQCB jurisdictional non-wetland waters of the United States, 0.51 acre of ACOE/RWQCB jurisdictional wetland waters of the United States, and 4.13 acres of CDFG jurisdictional streambed and associated riparian habitat (Figure 3.3-3, *Jurisdictional Features*). The various jurisdictional acreages often overlap (i.e., ACOE and RWQCB acreage is typically included in CDFG acreages; they are not additive).

Wildlife

The plant communities discussed above provide wildlife habitat; however, because the study area is almost completely surrounded by development, wildlife diversity for the more secretive wildlife species and those species requiring large home ranges is expected to be low.

The following is a discussion of wildlife populations within the study area, segregated by taxonomic group. Representative examples of each taxonomic group either observed or expected within the study area are provided. Wildlife species actually observed, as well as those expected to occur, within the study area are indicated in Appendix C, Floral and Faunal Compendia.

Invertebrates

Focused surveys for common invertebrate species were not conducted; however, the study area would be expected to support populations that include a diverse assortment of invertebrates because of the number of diverse plant communities within the study area. Invertebrate species observed within the study area include cabbage white (*Pieris rapae*), western tiger swallowtail (*Papilio rutulus*), and nonnative red swamp crayfish (*Procamarus clarkia*).

Fish

Nonnative mosquitofish (*Gambusia affinis*) were observed within the study area in Glass Creek. All fish species observed or expected to occur within the study area are included in Appendix C, Floral and Faunal Compendia. Sensitive fish species are discussed below under "Sensitive Biological Resources."

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[1] Three isolated drainages were mapped, Drainages A, B, and C. However, upon being reviewed by the RWQCB and the CDFG, the RWQCB asserted jurisdiction over only Drainage B; the CDFG did not assert jurisdiction over any of the three.

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Source: PCR (2010)

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Figure 3.3-3
Jurisdictional Features
City of Lake Forest Sports Park and Recreation Center

Amphibians

Terrestrial amphibian species may or may not require standing water for reproduction. Terrestrial species avoid desiccation by burrowing underground; within crevices in trees, rocks, and logs; and under stones and surface litter during the day and dry seasons. Because of their secretive nature, terrestrial amphibians are rarely observed but may be quite abundant if conditions are favorable. Aquatic amphibians are dependent on standing or flowing water for reproduction. Such habitats include freshwater marshes and open water (reservoirs, permanent and temporary pools and ponds, and perennial streams). Many aquatic amphibians will use vernal pools as breeding sites. These pools are temporary in duration and form following winter and spring rains.

Glass Creek is a perennial water source. The study area has the potential to support a few amphibian species, including Pacific treefrog (*Hyla regilla*), which was observed within the study area, and California toad (*Bufo boreas halophilus*). All amphibian species expected to occur within the study area are included in Appendix C, Floral and Faunal Compendia. Sensitive amphibian species are discussed below under "Sensitive Biological Resources."

Reptiles

Reptiles, as a group, occupy a much broader spectrum of habitats than amphibians. Reptilian diversity and abundance typically varies with habitat type and character. Some species prefer only one or two natural communities; however, most will forage in a variety of communities. A number of reptile species prefer open habitats that allow free movement and high visibility. Most species occurring in open habitats rely on the presence of small mammal burrows for cover and a means of escape from predators and extreme weather. Reptile species observed within the study area include western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), and southern Pacific rattlesnake (*Crotalus viridis helleri*).

Birds

The upland and riparian habitats within the study area provide foraging and cover habitat for year-round and seasonal residents. Bird species detected during site visits include turkey vulture (*Cathartes aura*), Cooper's hawk (*Accipiter cooperii*), red-tailed hawk, red-shouldered hawk (*Buteo lineatus*), California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna),* common raven (*Corvus corax*), house wren (*Troglodytes aedon*), spotted towhee (*Pipilo erythrophthalmus*), song sparrow (*Melospiza melodia*), and lesser goldfinch (*Carduelis psaltria*). All bird species observed or expected to occur within the study area are included in Appendix C, Floral and Faunal Compendia. Sensitive bird species are discussed below under "Sensitive Biological Resources."

Mammals

Because of the study area's small size and proximity to development and human disturbance, mammal diversity is expected to be low, especially for large mammal species. Most mammals are either nocturnal or reclusive, or both, and usually detected by their sign, denning sites, etc., or through live trapping (rodents).

Mammal species observed within the study area include desert cottontail (*Sylvilagus audubonii*), gray fox (*Urocyon cinereoargenteus*), and coyote (*Canis latrans*). All mammal species observed or expected to occur within the study area are included in Appendix C, Floral and Faunal Compendia. Sensitive mammal species are discussed below under "Sensitive Biological Resources."

Wildlife Corridors

Wildlife corridors link together areas of suitable habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. Corridors effectively act as links between different populations of a species. A group of smaller populations (termed "demes") linked together via a system of corridors is termed a "metapopulation." The long-term health of each deme within the metapopulation is dependent upon its size and the frequency of interchange of individuals (immigration vs. emigration). The smaller the deme, the more important immigration becomes, because prolonged inbreeding with the same individuals can reduce genetic variability. Immigrant individuals that move into the deme from adjoining demes mate with individuals and supply that deme with new genes and gene combinations that increase overall genetic diversity. An increase in a population's genetic variability is generally associated with an increase in a population's health and long-term viability.

Wildlife movement activities usually fall into one of three movement categories: (1) dispersal (e.g., juvenile animals moving from natal areas, individuals extending range distributions), (2) seasonal migration, and (3) movement related to home-range activities (foraging for food or water, defending territories, searching for mates, breeding, or seeking cover). Each type of movement may also be represented at a variety of scales, from nonmigratory movement of amphibians, reptiles, and some birds on a local level to, at a regional level, the home-range movement of many square miles of large mammals.

A number of terms have been used in various wildlife movement studies, such as "travel route," "wildlife corridor," and "wildlife crossing" to refer to areas in which wildlife move from one area to another. To clarify the meaning of these terms and facilitate the discussion on wildlife movement in this section, these terms are defined as outlined below.

Travel Route: A landscape feature (such as a ridge line, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred because it provides the least amount of topographic resistance when moving from one area to another; contains adequate food, water, and/or cover for animals while moving between habitat areas; and provides a relatively direct link between target habitat areas.

Wildlife Corridor: A piece of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bounded by urban land areas or other areas that are unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and facilitate movement while in the corridor. Larger landscape-level corridors (often referred to as habitat or landscape linkages) can provide both transitory and resident habitat for a variety of species.

Wildlife Crossing: A small, narrow area, relatively short in length and generally constricted in nature, that allows wildlife to pass under or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings typically are man-made and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These are often "choke points" along a movement corridor.

The study area is surrounded by El Toro Road to the south, industrial development to the northwest, mining to the northeast, a commercial center to the east, and residential development to the west. Aliso Creek, located just south of the study area, connects with open space areas to the east. These open space areas connect with Whiting Ranch to the northeast. Habitat within the study area is completely surrounded by development, except for a small linear strip of land (including Aliso Creek) that extends eastward. For this reason, the study area does not serve as a component of a significant regional wildlife movement corridor per se, nor does it serve as a linkage between two or more larger habitat areas.

Movement on a smaller or local scale is likely to occur within the study area. In addition, the study area contains habitat that is likely to support a few common species of invertebrates, amphibians, reptiles, birds, and mammals. The home range and average dispersal distance of many of these species may be entirely contained within the study area and immediate vicinity. Populations of animals such as insects, amphibians, reptiles, small mammals, and a few bird species may find all their resource requirements within the study area and its immediate vicinity. Occasionally, individuals, when expanding their home range or dispersing from their parental range will attempt to move outside the study area. Local movement by small and medium-size mammals, such as gray fox and coyote, may occur within the study area and the adjacent open space area.

Critical Habitat

The study area does not fall within the USFWS-designated Critical Habitat boundaries for any threatened or endangered plant or wildlife species.

Sensitive Biological Resources

Special-status, or sensitive, biological resources include declining habitats as well as species that have been afforded special recognition by federal, state, or local conservation agencies and organizations. Such species are recognized as endangered, threatened, rare, or otherwise sensitive, principally because of their declining or limited range, usually resulting from habitat loss. Watch lists of such resources are maintained by the CDFG, the USFWS, and groups such as the California Native Plant Society (CNPS).

Federal Protection and Classifications

Under the ESA, an endangered species is an invertebrate, plant, or wildlife species that has been formally listed by the USFWS as one that is facing extinction throughout all or a significant portion of its geographic range. A threatened species is one that has been formally listed by the USFWS as likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Take of an endangered or threatened species or, in some cases, its habitat is prohibited by federal law without a special permit. The term *take*, under the ESA, means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or to attempt to engage in such conduct. *Harm*, as defined by the USFWS, encompasses "an act that actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering."

Federal species of concern is an informal term that refers to a species that the USFWS believes might be declining and in need of concentrated conservation actions to prevent decline. These species receive no legal protection, and the use of the term does not mean that the species will eventually be proposed for listing. The "federal species of concern" status has not been maintained on a statewide basis; therefore, this designation has been removed from the CDFG's Special Animals list. Some the USFWS field offices (e.g., Sacramento) continue to maintain lists of federal species of concern.

State of California Protection and Classifications

The State of California considers an endangered species one whose prospects of survival and reproduction are in immediate jeopardy. A threatened species is one that is present in such small numbers throughout its range that it is considered likely to become an endangered species in the near future in the absence of special protection or management. A rare species is one that is present in such small numbers throughout its range that it may become endangered if its present environment worsens. The designation "rare species," as used in the California Native Plant Protection Act, applies only to California native plants. The terms "threatened" and "endangered," as applied under the California Endangered Species Act, cover both plants and wildlife but not invertebrates. Threatened and endangered species are legally protected against take, as this term is defined under the California Endangered Species Act (California FGC, Section 2050 et seq.).

Species of special concern is an informal designation used by the CDFG for some declining wildlife species that are not officially listed as endangered, threatened, or rare. This designation does not provide legal protection or fall within the definition of "rare" or "endangered" found in Section 15380 of the California Environmental Quality Act (CEQA) Guidelines but does signify that these species are recognized as vulnerable by the CDFG.

Species that are California fully protected include those that are protected, for various reasons, by special legislation, such as the white-tailed kite (*Elanus leucurus*).

California Native Plant Society

The CNPS is a statewide resource conservation organization that has developed an inventory of California's special-status plant species (CNPS 2001). This inventory is a summary of information regarding the distribution, rarity, and endangerment of California's vascular plants. This rare plant inventory consists of four lists. CNPS List 1A plant species are presumed extinct in California because they have not been seen in the wild for many years. List 1B plants are considered rare, threatened, or endangered throughout their range. List 2 plant species are considered rare, threatened, or endangered in California but more common in other states. Plant species on Lists 1A, 1B, and 2 generally meet the CDFG criteria for listing as endangered, threatened, or rare. Plant species for which CNPS requires additional information to properly evaluate their status are included on List 3. List 4 plant species are those with limited distribution in California. Either their susceptibility to threat is considered low at this time or additional survey data must be acquired to assess whether the species is rare within the state. Therefore, while they may be considered uncommon, plants on List 4 generally do not fall within the definition of rare or endangered found in Section 15380 of the State CEQA Guidelines.

The following sections discuss the special-status plant and animal species, as well as the habitats that are present or potentially present on the site. The sources used to determine the potential occurrence of special-status resources in the vicinity of the site include the CNPS (CNPS 2010) and the California Natural Diversity Database (CNDDB) (CNDDB 2010).

Sensitive Plant Communities

The site supports plant communities that are considered sensitive by the CDFG's CNDDB because of their scarcity and/or because they support vascular plants and animals that are listed as endangered, threatened, or rare under the state and/or federal ESA. These are considered communities of highest inventory priority by the CDFG, indicating that they are declining in acreage throughout their range because of land use changes. Communities that are considered sensitive by the CDFG's CNDDB and found on site include arroyo willow riparian scrub, southern willow scrub, southern cactus scrub, and sycamore riparian woodland. Communities that are considered sensitive because they support coastal California gnatcatcher, a threatened species under the federal ESA and California species of special concern, include mixed scrub, sagebrush scrub, sagebrush-buckwheat scrub, and southern cactus scrub.

Sensitive Plant Species

Sensitive plants include those that are listed, or candidates for listing, by the USFWS and the CDFG as well as species that are considered sensitive by the CNPS (particularly Lists 1A, 1B, and 2). Several sensitive plant species that were reported in the CNDDB are from the vicinity. One was determined to be potentially present through the literature review. Information regarding each sensitive plant species that was observed, as well as those that are potentially present within the study area, is presented in Table 3.3-3, *Sensitive Plant Species*.

Paniculate tarplant (*Deinandra paniculata*) was observed on site during the focused surveys. This species is a List 4.2 species, which is a "watch list" species; no official protection is provided under this listing.

Table 3.3-3. Sensitive Plant Species

Scientific Name	Common Name	Flowering Period	Federal	State	CNPS List	Preferred Habitat	Distribution	Occurrence On Site
				Vascular Plants				
Gymnosperms								
Cupressaceae	Cypress Family							
Callitropsis forbesii	Tecate cypress	N/A	None	None	1B.1	Closed-cone coniferous forest, chaparral; occurs primarily on north-facing slopes and groves. Often associated with chaparral.	Orange and San Diego counties and Baja California.	NE
Comments: This species was not observed within the project site and is not expected to occur because of a lack of suitable habitat. This is a NCCP covered species.								
Angiosperms (dicotyledons)								
Asteraceae	Sunflower Family							
Centromadia parryi ssp. *australis*	southern tarplant	May–Nov.	None	None	1B.1	Margins of marshes and swamps, valley and foothill grassland; often occurs in disturbed sites near the coast and in alkaline soils with salt grass.	Los Angeles, Orange, Santa Barbara, San Diego, and Ventura counties and Baja California. May also occur on Santa Catalina Island.	NE
Comments: This species was not observed within the project site and is not expected to occur because of a lack of suitable habitat.								
Chaenactis glabriuscula var. *orcuttiana*	Orcutt's pincushion	Jan.–Aug.	None	None	1B.1	Coastal bluff scrub, coastal dunes.	Ventura, Los Angeles, and San Diego counties and Baja California. Extirpated from Orange County.	NE
Comments: This species was not observed within the project site and is not expected to occur because of a lack of suitable habitat.								

Scientific Name	Common Name	Flowering Period	Federal	State	CNPS List	Preferred Habitat	Distribution	Occurrence On Site
Deinandra paniculata	paniculate tarplant	Apr.–Nov.	None	None	4.2	Coastal scrub, valley and foothill grassland, vernal pools (usually vernally mesic).	Orange, Riverside, San Bernardino, and San Diego counties and Baja California.	OBS
Comments: This species was observed during focused surveys. Approximately 41,589 individuals were located within the mixed scrub and ruderal areas within the northern portion of the study area.								
Pentachaeta aurea ssp. *allenii*	Allen's pentachaeta	Mar.–Jun.	None	None	1B.1	Coastal scrub, valley and foothill grassland.	Orange County.	NE
Comments: This species was not observed during focused surveys conducted during its blooming period in 2009 and 2010; therefore, this species is not expected to occur on site.								
Pseudognaphalium leucocephalum	white rabbit-tobacco	Aug.–Nov.	None	None	2.2	Riparian woodland, cismontane woodland, coastal scrub, and chaparral in sandy, gravelly areas. Found only in alluvial situations (sometimes on benches), often by the stream course but always on sand; frequently in open cobble (Roberts pers. comm.).	Southern and central California, Arizona, New Mexico, Texas, Baja California, and Sonora, Mexico.	NE
Comments: This species was not observed within the project site is not expected to occur because of a lack of suitable habitat.								
Verbesina dissita	crownbeard	Apr.–Jul.	FT	ST	1B.1	Maritime chaparral (mainly) and coastal scrub; occurs on steep, rocky, primarily north-facing slopes within 1.5 miles of the ocean.	Orange County and Baja California.	NE
Comments: This species was not observed within the project site and is not expected to occur because of the lack of suitable habitat.								
Brassicaceae	Mustard Family							

Scientific Name	Common Name	Flowering Period	Federal	State	CNPS List	Preferred Habitat	Distribution	Occurrence On Site
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	Jan.–Jul.	None	None	1B.2	Chaparral and coastal scrub; occurs within dry soils in shrubland.	Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, and San Diego counties. Also in Baja California and on Santa Cruz Island.	NE
Comments: This species was not observed during focused surveys conducted during its blooming period in 2009 and 2010; therefore, this species is not expected to occur on site.								
Chenopodiaceae	Goosefoot Family							
Atriplex coulteri	Coulter's saltbush	Mar.–Oct.	None	None	1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland (alkaline or clay).	Most Southern California counties and Baja California.	NE
Comments: This species was not observed within the project site and is not expected to occur because of a lack of suitable habitat.								
Crassulaceae	Stonecrop Family							
Dudleya cymosa ssp. ovatifolia	Santa Monica Mountains dudleya	Mar.–Jun.	FT	None	1B.2	Chaparral and coastal scrub; occurs in canyons on sedimentary conglomerates, primarily on north-facing slopes.	Los Angeles and Orange counties.	NE
Comments: This species was not observed within the project site and is not expected to occur because of the lack of suitable habitat. This is a NCCP covered species.								
Dudleya multicaulis	many-stemmed dudleya	Apr.–Jun.	None	None	1B.2	Coastal scrub, chaparral, valley and foothill grassland; heavy clay soils or rock outcrops below 2,000 feet.	Los Angeles County to San Onofre Mountain in San Diego County.	NE
Comments: This species was not observed within the project site and is not expected to occur because of the lack of suitable habitat.								

Scientific Name	Common Name	Flowering Period	Federal	State	CNPS List	Preferred Habitat	Distribution	Occurrence On Site
Dudleya stolonifera	Laguna Beach dudleya	May–Jul.	FT	ST	1B.1	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland (rocky).	Orange County.	NE
Comments: This species was not observed within the project site and is not expected to occur because of the lack of suitable habitat. This is a NCCP covered species.								
Dudleya viscida	sticky dudleya	May–Jun.	None	None	1B.2	Coastal scrub, coastal bluff scrub, and chaparral; occurs on north- and south-facing cliffs and banks.	Orange, Riverside, and San Diego counties.	NE
Comments: This species was not observed within the project site and is not expected to occur because of the lack of suitable habitat.								
Ericaceae	Heath Family							
Comarostaphylis diversifolia ssp. *diversifolia*	summer holly	Apr.–Jun.	None	None	1B.2	Chaparral.	Orange, Riverside, and San Diego counties and Baja California.	NE
Comments: This species is not expected to occur because of the negative results of the focused surveys that were conducted during its blooming period in 2009. Only a portion of the project site was surveyed in 2009; however, this species is not expected to occur within the portion of the project site that was not previously surveyed because no chaparral is present.								
Euphorbiaceae	Spurge Family							
Euphorbia misera	cliff spurge	Dec.–Aug.	None	None	2.2	Coastal bluff scrub, coastal scrub (rocky).	Orange, Riverside, and San Diego counties and Baja California.	NE
Comments: This species was not observed within the project site and is not expected to occur because of the lack of suitable habitat.								
Fagaceae	Oak Family							
Quercus dumosa	Nuttall's scrub oak	Feb.–Apr.	None	None	1B.1	Closed-cone coniferous forest, chaparral, coastal scrub (sandy, clay loam).	Orange, Santa Barbara, San Diego counties and Baja California.	NE
Comments: This species was not observed during focused surveys conducted during its blooming period in 2009 and 2010; therefore, this species is not expected to occur on site.								

Scientific Name	Common Name	Flowering Period	Federal	State	CNPS List	Preferred Habitat	Distribution	Occurrence On Site
Hydrophyllaceae	Waterleaf Family							
Nama stenocarpum	mud nama	Jan.–Jul.	None	None	2.2	Marshes and swamps; occurs on lake shores, river banks, and intermittently wet areas.	Los Angeles, Orange, Riverside, and San Diego counties and Baja California.	NE
Comments: This species is not expected to occur because of the negative results of the focused surveys that were conducted during its blooming period in 2009. The entire project site will be surveyed in 2010.								
Phacelia suaveolens ssp. *keckii*	Santiago Peak phacelia	May–Jun.	None	None	1B.3	Closed-cone coniferous forest and chaparral in open areas and sometimes along creeks. Lowest recorded occurrence is 1,799 feet above mean sea level.	Orange and Riverside counties.	NE
Comments: This species was not observed within the project site and is not expected to occur because of the lack of suitable habitat.								
Juglandaceae	Walnut Family							
Juglans californica	Southern California black walnut	Mar.–Aug.	None	None	4.2	Chaparral, cismontane woodland, and coastal scrub.	Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, San Diego, and Ventura counties.	OBS
Comments: Twenty-one Southern California black walnuts were observed throughout the project site. These trees were located primarily in the floodplains of the larger drainages on site.								
Lamiaceae	Mint Family							
Lepechinia cardiphylla	heart-leaved pitcher sage	Apr.–July	None	None	1B.2	Closed-cone coniferous forest, chaparral, and cismontane woodland.	Orange, Riverside, and San Diego counties and Baja California.	NE
Comments: This species was not observed within the project site and is not expected to occur because of a lack of suitable habitat. This is a NCCP covered species.								

Scientific Name	Common Name	Flowering Period	Federal	State	CNPS List	Preferred Habitat	Distribution	Occurrence On Site
Monardella hypoleuca ssp. *lanata*	felt-leaved monardella	Jun.–Aug.	None	None	1B.2	Chaparral and cismontane woodland; occurs in the understory of mixed chaparral, chamise chaparral, and southern oak woodlands. Occurs on sandy soil.	Orange and San Diego counties and Baja California.	NE
Comments: This species was not observed during focused surveys conducted during its blooming period in 2009 and 2010; therefore, this species is not expected to occur on site.								
Monardella macrantha ssp. *hallii*	Hall's monardella	Jun.–Aug.	None	None	1B.3	Broadleaved upland forest, chaparral, lower montane coniferous forest, cismontane forest, cismontane woodland, valley and foothill grassland; occurs on dry slopes and ridges in openings within these communities.	Orange, Riverside, San Bernardino, and San Diego counties.	NE
Comments: This species was not observed during focused surveys conducted during its blooming period in 2009 and 2010; therefore, this species is not expected to occur on site.								
Satureja chandleri	San Miguel savory	Mar.–Jul.	None	None	1B.2	Chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland on rocky, gabbroic, or metavolcanic substrate.	Orange, Riverside, and San Diego counties and Baja California.	NE
Comments: This species was not observed during focused surveys conducted during its blooming period in 2009 and 2010; therefore, this species is not expected to occur on site.								

Scientific Name	Common Name	Flowering Period	Federal	State	CNPS List	Preferred Habitat	Distribution	Occurrence On Site
Malvaceae	Mallow Family							
Sidalcea neomexicana	Salt Spring checkerbloom	Mar.–Jun.	None	None	2.2	Alkali playas, brackish marshes, chaparral, coastal scrub, lower montane coniferous forest, and Mojavean Desert scrub in alkali springs and marshes.	Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, and Ventura counties. Also, Arizona, Nevada, New Mexico, Utah, Baja California, and Sonora, Mexico.	NE
Comments: This species was not observed within the project site and is not expected to occur because of a lack of suitable habitat.								
Onagraceae	Primrose Family							
Camissonia lewisii	Lewis' evening-primrose	Mar.–May	None	None	3	Coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland on sandy or clay soils.	Los Angeles, Orange, and San Diego counties and Baja California.	NE
Comments: This species was not observed during focused surveys conducted during its blooming period in 2009 and 2010; therefore, this species is not expected to occur on site.								
Papaveraceae	Poppy Family							
Romneya coulteri	Coulter's matilija poppy	Mar.–Jul	None	None	4.2	Chaparral and coastal scrub, often after burns.	Los Angeles, Orange, Riverside, and San Diego counties.	OBS
Comments: This species was observed during focused surveys. Approximately 250 individuals were located within the mixed scrub within the western portion of the study area.								
Polygonaceae	Buckwheat Family							
Dodecahema leptoceras	slender-horned spineflower	Apr.–Jun.	FE	FE	1B.1	Chaparral, cismontane woodland, and coastal scrub; occurs in alluvial fans on sandy soils.	Los Angeles, Riverside, and San Bernardino counties.	NE

Scientific Name	Common Name	Flowering Period	Federal	State	CNPS List	Preferred Habitat	Distribution	Occurrence On Site
Comments: This species was not observed within the project site and is not expected to occur because of a lack of suitable habitat.								
Angiosperms (monocotyledons)								
Liliaceae	Lily Family							
Brodiaea filifolia	thread-leaved brodiaea	Mar.–Jun.	FT	SE	1B.1	Sage scrub, valley and foothill grassland, cismontane woodland; vernal pools (clay soils).	Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties.	NE
Comments: This species was not observed within the project site and is not expected to occur because of a lack of suitable habitat.								
Calochortus plummerae	Plummer's mariposa lily	May–Jul.	None	None	1B.2	Variety of Southern California plant communities, including sage scrub, valley and foothill grassland, yellow pine forest; dry, rocky, or sandy sites with granitic or alluvial soil. Elevations from 100 to 1,700 m.	Ventura, Los Angeles, Riverside, and San Bernardino counties.	NE
Comments: This species was not observed during focused surveys conducted during its blooming period in 2009 and 2010; therefore, this species is not expected to occur on–site.								
Calochortus weedii var. *intermedius*	foothill mariposa lily	May–Jul.	None	None	1B.2	Chaparral, coastal scrub, and valley and foothill grasslands below 2,000 feet.	Los Angeles, Orange, and Riverside counties.	NE
Comments: This species was not observed during focused surveys conducted during its blooming period in 2009 and 2010; therefore, this species is not expected to occur on site.								
Nolina cismontana	Peninsular nolina	May–Jul.	None	None	1B.2	Chaparral, coastal sage scrub, sandstone, or gabbro.	Ventura, Orange, and San Diego counties.	NE
Comments: This species was not observed during focused surveys conducted during its blooming period in 2009 and 2010; therefore, this species is not expected to occur on site.								

Scientific Name	Common Name	Flowering Period	Federal	State	CNPS List	Preferred Habitat	Distribution	Occurrence On Site
Poaceae	Grass Family							
Hordeum intercedens	vernal barley	Mar.–Jun.	FT	SE	3.2	Coastal dunes, coastal scrub, and valley and foothill grassland (saline flats and depressions); vernal pools.	Fresno, Kings, Los Angeles, Mono, Orange, Riverside, Santa Barbara, San Benito, San Diego, San Mateo, and Ventura counties; the Channel Islands; and Baja California.	NE
Comments: This species was not observed within the project site and is not expected to occur because of a lack of suitable habitat.								
Imperata brevifolia	California satintail	Sept.–May	None	None	2.1	Coastal scrub, chaparral, riparian scrub, Mojavean scrub, and meadows and seeps; occurs in mesic alkali areas.	Throughout California. Also occurs in Arizona, New Mexico, Nevada, Texas, Utah and Baja California.	NE
Comments: This species was not observed within the project site and is not expected to occur because of a lack of suitable habitat.								

Key to Status Codes for Species Listing

FE	*Federally Listed as Endangered*	SE	*State Listed as Endangered*	SFP	*State Fully Protected*
FT	*Federally Listed as Threatened*	ST	*State Listed as Threatened*	CSC	*California Special Concern Species*
FPD	*Federal Proposed for Delisting*	SCE	*State Candidate for Endangered*		
FPE	*Federally Proposed as Endangered*	SCT	*State Candidate for Threatened*		
FPT	*Federally Proposed as Threatened*	SR	*State Listed as Rare*		
FC	*Federally Candidate Species*				

California Native Plant Society (CNPS)

List 1A: Presumed extinct in California.

List 1B: Rare, threatened, or endangered in California and elsewhere.

List 2: Rare, threatened, or endangered in California but more common elsewhere.

List 3: Plant species for which additional information is needed (a review list).

Scientific Name	Common Name	Flowering Period	Federal	State	CNPS List	Preferred Habitat	Distribution	Occurrence On Site
List 4:	*Species of limited distribution in California (a watch list).*							
.1:	*Seriously endangered in California (more than 80% of occurrences threatened/high degree and immediacy of threat).*							
.2:	*Fairly endangered in California (20%–80% occurrences threatened).*							
.3:	*Not very endangered in California (< 20% of occurrences threatened or no current threats known).*							

Paniculate tarplant is found within Orange, Riverside, San Bernardino, and Riverside counties, in addition to Baja California. The species is typically found in coastal scrub habitats, valley and foothill grasslands, and vernal pools. Approximately 41,589 individuals were located within the mixed scrub and ruderal areas within the northern portion of the study area.

Coulter's matilija poppy (*Romneya coulteri*) was observed on site during focused sensitive plant surveys. This species is a List 4.2 species, which is a "watch list" species; no official protection is provided under this listing. Coulter's matilija poppy is found within Los Angeles, Orange, Riverside, and San Diego counties, often within chaparral and coastal scrub, particularly within burned areas. Approximately 250 individuals were located within the mixed scrub within the western portion of the study area, which is outside the grading limits, as shown in Figure 3.3-4, *Sensitive Plant Species' Locations*.

Twenty-five Southern California black walnut trees are located within the study area. The location of each of these Southern California black walnut trees is shown in Figure 3.3-4, *Sensitive Plant Species' Locations.* It should be noted that point location number 18 represents one mature tree and one small tree, approximately 4 feet in height. As stated previously, this species has a CNPS listing of 4.2 (plants of limited distribution [watch list]; fairly endangered in California, with 20%–80% of occurrences threatened).

The following CNDDB and CNPS sensitive plant species were not observed during surveys on site and are not expected to occur within the study area because of a lack of suitable habitat or because the study area is outside the known distribution or elevational range for this species: Tecate cypress (*Callitropsis forbesii*), southern tarplant (*Centromadia parryi* ssp. *australis*), Orcutt's pincushion (*Chaenactis glabriuscula* var. *orcuttiana*), crownbeard (*Verbesina dissita*), Coulter's saltbush (*Atriplex coulteri*), Santa Monica Mountains dudleya (*Dudleya cymosa* ssp. *ovatifolia*), many-stemmed dudleya (*Dudleya multicaulis*), Laguna Beach dudleya (*Dudleya stolonifera*), sticky dudleya (*Dudleya viscida*), cliff spurge (*Euphorbia misera*), mud nama (*Nama stenocarpum*), Santiago Peak phacelia (*Phacelia suaveolens* ssp. *keckii*), heart-leaved pitcher sage (*Lepechinia cardiophylla*), Salt Spring checkerbloom (*Sidalcea neomexicana*), slender-horned spineflower (*Dodecahema leptoceras*), thread-leaved brodiaea (*Brodiaea filifolia*), vernal barley (*Hordeum intercedens*), California satintail (*Imperata brevifolia*), and white rabbit-tobacco (*Pseudognaphalium leucocephalum*).

Focused surveys for sensitive plant species were conducted in 2009 and covered more than 59 acres of the study area (the Glass Creek property). Focused surveys were repeated in April and June 2010 throughout the entire study area. Summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*) is not expected to occur because this species was not detected during the focused surveys that were conducted in 2009. Furthermore, it is not expected to occur in that portion of the study area that was not covered during the 2009 surveys because of the absence of suitable chaparral habitat. In addition, this species is a conspicuous perennial shrub; therefore, if it did occur within the study area, less-than-normal rainfall during winter and spring of 2009 would not affect the number of shrubs or the presence of this species. Because of the presence of potentially suitable habitat, focused surveys were also conducted in 2009 and 2010 for the following annual flowering sensitive plant species: Allen's pentachaeta (*Pentachaeta aurea* ssp. *allenii*), Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*), Nuttall's scrub oak (*Quercus dumosa*), felt-leaved monardella (*Monardella hypoleuca* ssp. *lanata*), Hall's monardella (*Monardella macrantha* ssp. *hallii*), San Miguel savory (*Satureja chandleri*), Lewis' evening-primrose (*Camissonia lewis*ii), Plummer's mariposa lily (*Calochorthus plummerae*), foothill mariposa lily (*Calochortus weedii* var. *intermedius*), and Peninsular nolina (*Nolina cismontana*). None of these species were observed on site.

Source: PCR (2010)

K:\Irvine\GIS\Projects\City_of_Lake_Forest\00270_09\mapdoc\Fig3-3-4_SensitivePlantSpeciesLocAI BB (11/05/10)

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Figure 3.3-4
Sensitive Plant Species Locations
City of Lake Forest Sports Park and Recreation Center

Sensitive Wildlife Species

Sensitive wildlife species include those species that are listed as endangered or threatened under the federal ESA or California ESA, candidates for listing by the USFWS or the CDFG, and species of special concern to the CDFG. According to the CNDDB, a number of sensitive wildlife species were reported as occurring in the vicinity of the study area. These species are included in Table 3.3-4, *Sensitive Wildlife Species*, which provides a summary of the sensitive wildlife species occurring or potentially occurring within the study area based on their known geographic ranges, distributions, and preferred habitats.

Sensitive wildlife species observed within the study area include the coastal California gnatcatcher, coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*), and yellow-breasted chat (*Icteria virens*).

Focused surveys were conducted for the following species in 2007 and 2009: willow flycatcher (*Empidonax traillii*), southwestern willow flycatcher, and least Bell's vireo. However, these species were not detected within the study area.

The following sensitive wildlife species, which have been reported as occurring within the vicinity of the study area according to the CNDDB, were not observed and are not expected to occur within the study area because of a lack of suitable habitat or because the study area is outside the known distribution range for the species: San Diego fairy shrimp (*Branchinecta sandiegoensis*), Riverside fairy shrimp (*Streptocephalus woottoni*), tidewater goby (*Eucyclogobius newberryi*), Santa Ana speckled dace (*Rhinichthys osculus* ssp. *3*), Santa Ana sucker (*Catostomus santaanae*), arroyo toad (*Bufo californicus*), western spadefoot (*Spea hammondii*), southwestern pond turtle (*Clemmys marmorata pallida*), golden eagle (*Aquila chrysaetos*), northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), bald eagle (*Haliaeetus leucocephalus*), American peregrine falcon (*Falco peregrinus anatum*), long-eared owl (*Asio otus*), burrowing owl, grasshopper sparrow (*Ammodramus savannarum*), tricolored blackbird (*Agelaius tricolor*), pocketed free-tailed bat (*Nyctinomops femorosaccus*), Pacific pocket mouse (*Perognathus longimembris pacificus*), and American badger (*Taxidea taxus*).

Because of the presence of potentially suitable habitat, the following sensitive wildlife species have some potential to occur within the study area: arroyo chub (*Gila orcuttii*), coast range newt (*Taricha torosa torosa*), coast (San Diego) horned lizard (*Phrynosoma coronatum*), orange-throated whiptail (*Aspidoscelis hyperythrus*), San Diego mountain kingsnake (*Lampropeltis zonata (pulchra)*), coast patch-nosed snake (*Salvadora hexalepis virgultea*), two-striped garter snake (Thamnophis hammondii), northern red-diamond rattlesnake (*Crotalus ruber ruber*), loggerhead shrike (*Lanius ludovicianus*), pallid bat (*Antrozous pallidus*), western red bat (*Lasiurus blossevillii*), western mastiff bat (*Eumops perotis californicus*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), San Diego desert woodrat (*Neotoma lepida intermedia*), and southern grasshopper mouse (*Onychomys torridus ramona*).

Table 3.3-4. Sensitive Wildlife Species

Scientific Name	Common Name	Federal	State	NCCP	Preferred Habitat	Distribution	Occurrence On Site
				Invertebrates			
Crustacea	Crustaceans						
Anostraca	Fairy Shrimp						
Branchinecta sandiegonensis	San Diego fairy shrimp	FE	None	IN/CC	Vernal pools in areas of shallow depressions with a clay hardpan soil layer that inhibits percolation.	Known populations in Santa Barbara and San Diego counties and northwest Baja California.	NE
Streptocephalus woottoni	Riverside fairy shrimp	FE	None	IN/CC	Vernal pools/swales; apparently prefers deeper pools through the warm weather of late April and May.	Riverside, Orange and San Diego counties and northern Baja California.	NE
				Vertebrates			
Fishes							
Cyprinidae	Minnows and Carp						
Gila orcuttii	arroyo chub	None	SSC	None	Slow water sections of streams with mud or sand substrates; spawns in pools.	Southern coastal streams of Los Angeles Basin and larger rivers of Southern California; declining because of the introduction of nonnative species and the degradation of urbanized streams.	P
Eucyclogobius newberryi	tidewater goby	FE	SSC	None	Shallow lagoons; lower stream reaches where water is brackish to fresh and slow-moving or fairly	Del Norte County south to Del Mar, California.	NE

Scientific Name	Common Name	Federal	State	NCCP	Preferred Habitat	Distribution	Occurrence On Site
					still but not stagnant.		
Rhinichthys osculus ssp. 3	Santa Ana speckled dace	None	SSC	None	Permanent flowing streams with summer water temperatures from 17°C to 20°C. Inhabit shallow cobble and gravel riffles.	Headwaters of the Santa Ana and San Gabriel rivers.	NE
Catostomidae	Suckers						
Catostomus santaanae	Santa Ana sucker	FT	SSC	None	Prefers sand-rubble-boulder bottoms; cool, clear water; and algae. Streams of varying width and depth with appropriate substrate (mix of sand, gravel, cobble, and boulders).	Larger stream sections in headwaters of Los Angeles and San Gabriel rivers, lower portions of Santa Ana River, and throughout Santa Clara River.	NE
Comments: No records for the Santa Ana sucker exist south of the Santa Ana drainage (Swift pers. comm.).							
Amphibians							
Salamandridae	Newts						
Taricha torosa torosa	coast range newt	None	SSC	None	A variety of terrestrial habitats with ponds or slow streams nearby.	Coastal drainages from Mendocino County south to San Diego County.	P
Pelobatidae	Spadefoot Toads						
Spea hammondii	western spadefoot	None	SSC	IN	Prefers burrow sites within relatively open areas in lowland grasslands, chaparral, and pine-oak woodlands as well as areas with sandy or gravelly soil in alluvial fans, washes, and floodplains. Requires temporary pools for	Coastal ranges from Point Conception, Santa Barbara County, south to the Mexican border and throughout Central Valley and adjacent foothills.	NE

Scientific Name	Common Name	Federal	State	NCCP	Preferred Habitat	Distribution	Occurrence On Site
					reproduction.		
Bufonidae	True Toads						
Bufo californicus	arroyo toad	FE	SSC	IN/CC	Washes and streams with sandy banks, willows, cottonwoods, or sycamores; riparian habitats with semiarid areas and small cobbly streambeds. Requires clear standing water for reproduction.	Southern part of the Coast Range, from northern San Luis Obispo County south to Baja California.	NE
Reptiles							
Emydidae	Box and Water Turtles						
Clemmys marmorata pallida	southwestern pond turtle	None	SSC	None	Ponds, marshes, rivers, streams, and irrigation ditches that typically have a rocky or muddy bottom and watercress, cattails, water lilies, or other aquatic vegetation.	San Francisco Bay south to Baja California and west of the Sierra-Cascade crest.	NE
Phryonosomatidae	Iguanid Lizards						
Phrynosoma coronatum (blainvillii)	coast (San Diego) horned lizard	None	SSC	IN	Valley-foothill hardwood, conifer, and riparian habitats and pine-cypress, juniper, and annual grassland habitats below 6,000 feet. Also, open country, especially sandy areas, washes, flood plains, and windblown deposits.	Coastal ranges from southern Ventura, Los Angeles, San Bernardino counties; Orange, westwen Riverside, and western San Diego counties.	P
Teiidae	Whiptails and Relatives						
Aspidoscelis hyperythrus	orange-throated whiptail	None	SSC	TN	Gently sloping hillsides, ridges, and valleys that support open coastal sage	Extreme southern Los Angeles County, southwestern San	P

Scientific Name	Common Name	Federal	State	NCCP	Preferred Habitat	Distribution	Occurrence On Site
					scrub, open chaparral, or sparse grasslands.	Bernardino County, and Orange, Riverside, and San Diego counties west of the crest of the peninsular Ranges and Baja California.	
Colubridae	Egg-Laying Snakes						
Lampropeltis zonata pulchra	San Diego mountain kingsnake	None	SSC	None	Moist woods, coniferous forests, woodland, and chaparral.	Southern Washington to northern Baja California. Mountains of coastal and interior California except deserts.	P
Salvadora hexalepis virgultea	coast patch-nosed snake	None	SSC	None	Coastal chaparral, desert scrub, washes, sandy flats, and rocky areas.	Point Conception south through Baja California.	P
Thamnophis hammondii	two-striped garter snake	None	SSC	None	Found in or near permanent freshwater, often along streams with rocky beds and riparian growth.	Coastal California from Salinas to northwest Baja California.	P
Viperidae	Vipers						
Crotalus ruber ruber	northern red-diamond rattlesnake	None	SSC	IN	Chaparral, woodland and arid desert habitats in rocky areas with dense vegetation.	San Bernardino County to tip of Baja California.	P
Birds							
Accipitridae	Hawks, Kites, Harriers, and Eagles						
Aquila chrysaetos (nesting and wintering)	golden eagle	None	SFP	IN/CC	Mountains, deserts, and open country; prefers to forage over grasslands, deserts, savannahs, and	Throughout California, with the exception of the center of the	NE

Scientific Name	Common Name	Federal	State	NCCP	Preferred Habitat	Distribution	Occurrence On Site
					early successional stages of forest and shrub habitats. Nesting sites are usually located in secluded cliffs with overhanging ledges or large trees.	Central Valley.	
Circus cyaneus (nesting)	northern harrier	None	SSC	IN	Coastal salt marshes, freshwater marshes, grasslands, and agricultural fields; occasionally forages over open desert and brushlands.	Alaska, Canada, to southern United States.	NE
Elanus leucurus	white-tailed kite	None	SFP	None	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging that are close to isolated densely topped trees for nesting and perching.	Western portions of Oregon, California, and Baja California. Coastal areas of Texas and Mexico.	NE
Haliaeetus leucocephalus	bald eagle	FD	SE	None	Found near water.	Throughout United States and Canada.	NE
Falconidae	Falcons						
Falco peregrinus anatum (nesting)	American peregrine falcon	Delisted	SE, SFP	IN	Open country and cliffs (mountains to coasts).	Occurs uncommonly throughout California, with the exception of the southeastern deserts.	NE

Scientific Name	Common Name	Federal	State	NCCP	Preferred Habitat	Distribution	Occurrence On Site
Strigidae	Owls						
Asio otus (nesting)	long-eared owl	None	SSC	None	Riparian bottomlands with tall willow and cottonwoods; belts of live oaks paralleling stream courses. Requires adjacent open land with mice and old nests of crows, hawks, or magpies for breeding.	Winter visitor in the Mojave Desert; rare winter migrant along Southern California coastline.	NE
Athene cunicularia (burrow sites)	burrowing owl	None	SSC	None	Dry grasslands, desert habitats, and open pinyon-juniper and ponderosa pine woodlands below 5,300 feet in elevation. Prefers berms, ditches, and grasslands adjacent to rivers, agricultural land, and scrub areas.	Year-round resident of lowlands of Southern California.	NE
Tyrannidae	Tyrant Flycatchers						
Empidonax traillii (nesting)	willow flycatcher	None	SE	None	Willows, alders, brushy swamps, swales.	Breeds in North America but winters in Mexico, Central America, and northern South America.	NE
Comments: This species was not observed during focused surveys conducted in 2007 and 2009.							
Empidonax traillii extimus (nesting)	southwestern willow flycatcher	FE	SE	IN/CC	Sites with low elevations; riparian woodlands that contain water and low-growing willow thickets. Sites with high elevations; large, flat, wet meadows with patches of	Southern California, from the Santa Ynez River south.	NE

Scientific Name	Common Name	Federal	State	NCCP	Preferred Habitat	Distribution	Occurrence On Site
					willow trees.		
Comments: This species was not observed during focused surveys conducted in 2007 and 2009.							
Laniidae	Shrikes						
Lanius ludovicianus	loggerhead shrike	None	SSC	None	Open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches.	Formerly a common resident throughout most of California; becoming increasingly scarce in many areas in recent years.	P
Vireonidae	Vireos						
Vireo bellii pusillus (nesting)	least Bell's vireo	FE	SE	IN/CC	Perennial and intermittent streams with low, dense riparian scrub and riparian woodland habitats below 2,000 feet in elevation; nests primarily in willows, and forages in riparian and, occasionally, adjoining upland habitats. Associated with willow, cottonwood, and mule fat.	A patchily distributed summer resident across Southern California.	NE
Comments: This species was not observed during focused surveys conducted in 2007 and 2009.							
Troglodytidae	Wrens						
Campylorhynchus brunneicapillus sandiegensis	coastal cactus wren	None	SSC	TN	Coastal sage scrub, vegetation with thickets of prickly pear or cholla cactus.	Southern Ventura County; southward through Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties; and south to northwest Baja	OBS

Scientific Name	Common Name	Federal	State	NCCP	Preferred Habitat	Distribution	Occurrence On Site
						California.	
Comments: This species has been detected on multiple occasions throughout the project site.							
Sylviidae	Gnatcatchers						
Polioptila californica californica	coastal California gnatcatcher	FT	SSC	TN	Coastal sage scrub vegetation below 2,500 feet in elevation in Riverside County and generally below 1,000 feet in elevation along the coastal slope; generally avoids steep slopes and dense vegetation for nesting.	Southern Ventura County southward through Los Angeles, Orange, Riverside, San Bernardino counties and south through the coastal foothills of San Diego County.	OBS
Comments: This species has been detected on multiple occasions throughout the project site.							
Parulidae	Wood-Warblers						
Dendroica petechia brewsteri	yellow warbler	None	SSC	None	Found in low trees and woodland edges, especially willows in wet areas.	Throughout the United States, Canada, Baja California, and other parts of Mexico.	OBS
Icteria virens (nesting)	yellow-breasted chat	None	SSC	None	Riparian woodlands with a thick understory.	Uncommon summer resident and migrant in coastal California and in the foothills of the Sierra Nevada.	OBS
Emberizidae	Sparrows, Buntings, Warblers, and Relatives						

Scientific Name	Common Name	Federal	State	NCCP	Preferred Habitat	Distribution	Occurrence On Site
Ammodramus savannarum	grasshopper sparrow	None	SSC	None	Dense grasses for foraging and nesting cover. Upland meadows, pastures, hayfields, and croplands.	Throughout the United States and Mexico.	NE
Icteridae	Blackbirds						
Agelaius tricolor	tricolored blackbird	None	SSC	None	Marshes dominated by cattails or bulrushes, upland or agricultural areas, and stands of blackberries, giant cane, tamarisk, and river-bottom trees such as willow and cottonwood.	Throughout the Central Valley and some coastal regions of California.	NE
				Mammals			
Vespertilionidae	Evening Bats						
Antrozous pallidus	pallid bat	None	SSC	None	Nests in dry, rocky habitats/caves, crevices in rocks, and arid habitats, including deserts, chaparral, and scrublands.	Common in low elevations throughout California, except for the higher elevations of the Sierra Nevada from Shasta to Kern counties and the northwest corner of the state.	P
Lasiurus blossevillii	western red bat	None	SSC	None	Roosts primarily in trees 2 to 40 feet above the ground from sea level up through mixed conifer forests. Prefers habitat edges with trees that are interspersed with open areas for foraging.	Southern British Columbia in Canada, through much of the western United States, through Mexico and Central America, to	P

Scientific Name	Common Name	Federal	State	NCCP	Preferred Habitat	Distribution	Occurrence On Site
						Argentina and Chile in South America.	
Molossidae	Free-tailed Bats						
Eumops perotis californicus	western mastiff bat	None	SSC	None	Primarily arid lowlands, especially deserts. Open semiarid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban areas.	Uncommon resident of lower elevations in the southeastern San Joaquin Valley and the Coastal Ranges from Monterey County southward through Southern California and from the coast eastward to the Colorado desert.	P
Nyctinomops femorosaccus	pocketed free-tailed bat	None	SSC	None	Variety of arid areas in Southern California; pin-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian. Rocky areas with high cliffs.	Orange, Riverside, San Bernardino, San Diego, and Imperial counties.	NE
Leporidae	Rabbits and Hares						
Lepus californicus bennettii	San Diego black-tailed jackrabbit	None	SSC	None	Open brushlands and scrub habitats between sea level and 4,000 feet in elevation.	Coastal Southern California from Ventura County to northern Baja California.	P
Heteromyidae	Kangaroo Rats, Pocket Mice, and Kangaroo Mice						
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	None	SSC	None	Sandy herbaceous areas, usually in association with rocks or coarse gravel, sagebrush, scrub, annual grassland,	Common resident in southwest California; arid coastal areas of Orange, San	P

Scientific Name	Common Name	Federal	State	NCCP	Preferred Habitat	Distribution	Occurrence On Site
					chaparral, and desert scrubs.	Bernardino, and Riverside counties and extending south into Baja California.	
Perognathus longimembris pacificus	Pacific pocket mouse	FE	SSC	IN/CC	Sandy herbaceous areas, usually in association with rocks or coarse gravel, sagebrush, scrub, annual grassland, chaparral, and desert scrubs.	Los Angeles County to extreme southwestern San Diego County. Farthest known occurrences are within 3 miles of the coast.	NE
Cricetidae	Mice, Rats, and Voles						
Neotoma lepida intermedia	San Diego desert woodrat	None	SSC	IN	Chaparral, coastal sage scrub, and pinyon-juniper woodland.	Southern California.	P
Onychomys torridus ramona	southern grasshopper mouse	None	SSC	None	Low arid and semi-scrub vegetation.	Coastal Southern California.	P
Mustelidae	Weasels, Skunks, and Otters Family						
Taxidea taxus	American badger	None	SSC	None	Drier, open stages of shrubland, forest, and herbaceous habitats with friable soils.	Throughout most California counties.	NE

Key to Species Listing Status Codes

FE	*Federally Listed as Endangered*	*SE*	*State Listed as Endangered*
FT	*Federally Listed as Threatened*	*ST*	*State Listed as Threatened*
FPE	*Federally Proposed as Endangered*	*SCE*	*State Candidate for Endangered*
FPT	*Federally Proposed as Threatened*	*SCT*	*State Candidate for Threatened*
FPD	*Federally Proposed for Delisting*	*SR*	*State Rare*
FC	*Federal Candidate Species*	*SFP*	*State Fully Protected*
		SSC	*California Special Concern Species*

Natural Community Conservation Plan (NCCP)

IN *Identified NCCP Species – Covered Species*

Scientific Name	Common Name	Federal	State	NCCP	Preferred Habitat	Distribution	Occurrence On Site

IN/CC Identified NCCP Species – Conditionally Covered Species
TN Target NCCP Species – Covered Species

U.S. Forest Service (USFS), Cleveland National Forest
USFS Cleveland National Forest Sensitive Species

Project Impacts and Mitigation Measures

Methodology

Project-related impacts on biological resources take two forms, direct and indirect. Direct impacts are considered to be those that involve the loss, modification, or disturbance of natural habitats (i.e., vegetation or plant communities), which, in turn, directly affect plant and wildlife species that are dependent on that habitat. Direct impacts also include the destruction of individual plants or wildlife, which is typically the case with species of low mobility (i.e., plants, amphibians, reptiles, and small mammals). The collective loss of individuals in these manners may also directly affect regional population numbers of a species or result in the physical isolation of populations, thereby reducing genetic diversity and, hence, population stability.

Indirect impacts are considered to be those that involve the effects of increases in ambient levels of sensory stimuli (e.g., noise, light), unnatural predators (e.g., domestic cats and other nonnative animals), and competitors (e.g., exotic plants, nonnative animals). Indirect impacts may be associated with the construction and/or eventual habitation/operation of a project; therefore, these impacts may be both short term and long term in their duration. These impacts are commonly referred to as "edge effects" and may result in changes in the behavioral patterns of wildlife as well as reduced wildlife diversity and abundance in habitats adjacent to project sites.

In addition to project-related impacts, consideration was also given to the cumulative effects of the project (i.e., the determination of an impact's potential significance considers the area-wide effects of the project when combined with the effects of past, proposed, and reasonably foreseeable projects on the same resources as are found on site). The reader should note, however, that for all species and habitats covered by the NCCP, cumulative impacts are considered to be less than significant if compliance with the NCCP is achieved.

The determination of impacts in this analysis is based on both the features of the proposed project and the biological values of the habitat and/or sensitivity of the plant and wildlife species to be affected. Relevant project features (e.g., limits of grading) were provided by the City. Much of this information was supplied in digital format, and impacts were calculated using GIS technology to maximize the accuracy of the assessment.

Thresholds of Significance

Using guidelines from Appendix G of *Guidelines Implementing the California Environmental Quality Act*, a project may have a significant impact on biological resources if it would

- 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 CDFG or the USFWS;
- 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 CDFG or the USFWS;
- Have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.), through direct removal, filling, hydrological interruption, or other means;

- 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; or
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

In addition, Section 15065(a) of the State CEQA Guidelines establishes that a significant impact may occur if the project would

- Substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of an endangered, rare, or threatened species.

The biological resources within the study area were evaluated on the basis of the above criteria in determining whether or not the proposed project would cause one or more significant impacts. The evaluation of whether an impact on biological resources would be significant considered the resource and how that resource fits into a regional or ecological context.

The definition of "significant," as applied for this assessment, considers both the local and regional status of each resource. Significant impacts are those that would substantially diminish or result in the loss of an important biological resource or conflict with local, state, or federal resource conservation plans, goals, or regulations. Impacts are sometimes adverse but not significant because, although they would result in an adverse alteration of existing local conditions, they would not substantially diminish or result in the permanent loss of an important resource on a population-wide or region-wide basis.

Impacts and Mitigation Measures

Those impacts determined to be less than significant include impacts on biological resources that are relatively common or impacts that do not meet or exceed the significance thresholds defined previously. Those impacts determined to be significant are those that meet the thresholds of significance defined above. Conclusions are based on both the features of the proposed project and the biological values of the habitat and/or sensitivity of the plant and wildlife species to be affected. Specific considerations included the overall size of the habitats to be affected, the site's previous land uses and disturbance history, the site's surrounding environment and regional context, biological diversity and abundance, the presence of sensitive and special-status plant and wildlife species, the site's importance to regional populations of these species, and the degree to which on-site habitats are limited or restricted in distribution on a regional basis and, therefore, considered sensitive in themselves.

The following discussion examines the potential impacts on biological resources that may occur as a result of project implementation. Impacts on biological resources are assessed using impact significance threshold criteria, which mirror the policy statement contained in CEQA, Section 21001(c) of the California Public Resources Code. The questions below come from the City's Initial Study checklist and CEQA Appendix G.

The mitigation measures in this section, with the exception of BIO-4, are taken directly from the OSA Program EIR. In cases where the mitigation measures apply broadly to the OSA, the measure has been reworded to apply specifically to this project. Impacts are not differentiated for the two grading options since the grading limits would be the same under both grading scenarios; therefore, impacts to biological resource would not differ.

Impact BIO-1: The project would have an 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.

Sensitive Plants

Project implementation would result in the direct removal of numerous common plant species on site, both native and nonnative. It is reasonable to assume that population losses for common plants will generally follow losses of the plant communities in which they occur in the region. Common plant species existing within disturbed areas on site are typically disturbance-tolerant and expected to be found off site in abundance and in suitable habitat throughout the region. Because common plant species present on site are not considered to be sensitive and occur in large numbers throughout the region, impacts on these species are considered less than significant.

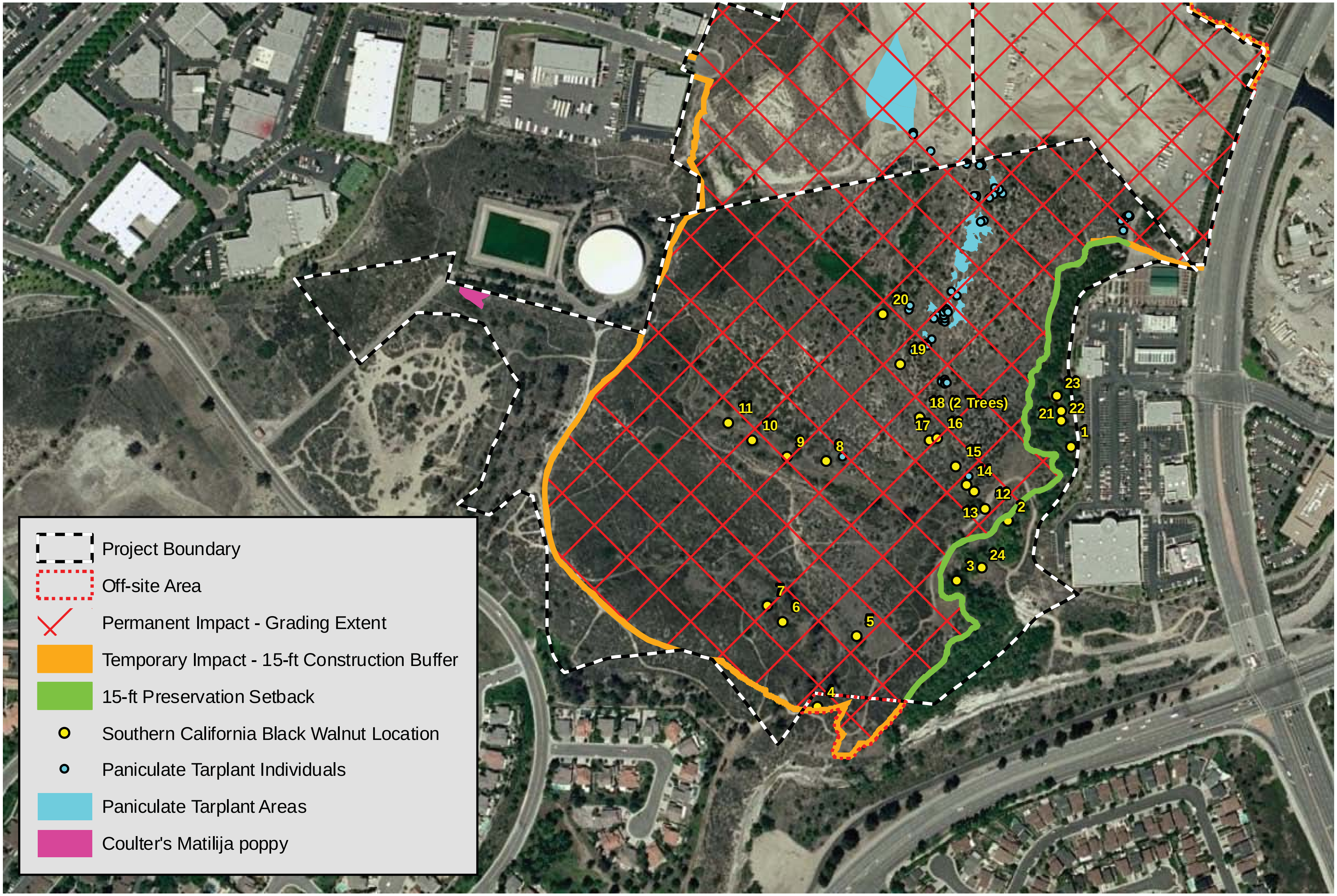
Focused surveys conducted in 2009 covered the 59-acre Glass Creek portion of the study area. Focused surveys were repeated in April and June 2010 throughout the entire study area.

As discussed previously, three sensitive plant species, Coulter's matilija poppy, paniculate tarplant, and the Southern California black walnut, were observed during the focused surveys conducted in 2009 and 2010. As shown in Figure 3.3-5, Coulter's matilija poppy is located outside the development footprint and will not be affected by the proposed project.

Two CNPS List 4.2 species were found on site, paniculate tarplant and Southern California black walnut. Neither species is covered under the NCCP/HCP. CNPS List 4.2 species are considered "watch list" species; however, no official protection is provided under this listing. The List 4 status denotes that a species has limited distribution or is found infrequently throughout a broad area of California; however, its vulnerability or susceptibility to threat appears to be low. As explained above, CNPS List 4 species are not considered rare for purposes of analysis under CEQA; however, these species are analyzed here for thoroughness.

Paniculate tarplant was observed on site during the focused surveys. Paniculate tarplant is found within Orange, Riverside, San Bernardino, and Riverside counties, in addition to Baja California. The species is typically found in coastal scrub habitats, valley and foothill grasslands, and vernal pools. The species was found within mixed scrub and ruderal communities within the study area. Although impacts on this CNPS List 4.2 species will occur, impacts are considered adverse but less than significant because of the limited degree to which populations of the species will be affected and its nonthreatened status. Additionally, this species has not been identified as locally significant in any applicable plan or policy. Finally, the paniculate tarplants identified on site are not at the periphery of the species' range or where the taxon is especially uncommon or where the species has sustained heavy losses, nor do they exhibit unusual morphology or occur on unusual substrates. The location of each of the paniculate tarplant is shown in Figure 3.3-5, *Impacts on Sensitive Plant Species' Locations.*

Southern California black walnut was observed within the study area. Southern California black walnut inhabits many areas throughout Southern California, including Orange County, Los Angeles County, Santa Barbara County, and Santa Catalina Island. In Orange County, substantial walnut



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Source: PCR (2010)

ICF Jones & Stokes
an ICF International Company

Figure 3.3-5
Impacts to Sensitive Plant Species Locations
City of Lake Forest Sports Park and Recreation Center

woodlands occur in Tonner Canyon; this species also occurs on mesic, north-facing slopes of Telegraph Canyon near Yorba Linda, throughout Chino Hills near the Prado Basin, and in Carbon Canyon near Brea Canyon Road (Reiser 1994). The project is expected to affect approximately 18 Southern California black walnuts (17 on site and one off site); seven Southern California black walnuts will be avoided. Impacts on this CNPS List 4.2 species will not substantially reduce regional population numbers. In addition, this species is assigned a nonthreatened status. Additionally, the Southern California black walnut has not been identified as locally significant in any applicable plan or policy. Finally, the trees affected by the project are not at the periphery of the species' range or where the taxon is especially uncommon or where the species has sustained heavy losses, nor do they exhibit unusual morphology or occur on unusual substrates. Therefore, impacts are considered adverse but less than significant. The location of each of these Southern California black walnut trees is shown on Figure 3.3-4, *Impacts on Sensitive Plant Species' Locations*. Planting an additional 18 Southern California black walnut trees is proposed as a project design feature within the planting palette of the proposed project.

In summary, all impacts on sensitive plants are less than significant.

Sensitive Wildlife

The proposed project would affect wildlife resources through the removal and disruption of habitat and the resulting displacement of wildlife, resulting in a less diverse and abundant local faunal population. It is reasonable to assume population losses of common wildlife species will be correlated with the loss of the habitats they use. Adverse impacts on wildlife are generally associated with the degree of habitat loss from the standpoint of physical character, quality, diversity, and abundance of vegetation. Project implementation in the short and long term would result in direct removal of wildlife habitat and the potential mortality of common wildlife species existing on site as well as the displacement of more mobile species to suitable habitat areas nearby, such as the Limestone-Whiting Wilderness Park and NCCP reserve lands to the north. However, these impacts would not be expected to reduce general wildlife populations below self-sustaining levels within the region. Impacts on common wildlife species are considered less than significant.

Potential adverse indirect impacts on vegetation and wildlife would be related to increased vehicular traffic and the corresponding increase in noise, as well as the threat of road kill by traffic; an increase in human intrusion, including hikers and bicyclists; an increase in litter, pollutants, dust, oil, and other human debris; and an increase in nighttime lighting. Common wildlife species using habitats on site would avoid habitats affected by these "spillover" impacts, thereby decreasing diversity beyond the actual development envelope. These indirect impacts would not be expected to reduce general wildlife populations below self-sustaining levels within the region and are considered less than significant.

The following sensitive wildlife species are not expected to occur within the study area because of a lack of suitable habitat or because the study area is outside the known distribution range for the species: San Diego fairy shrimp, Riverside fairy shrimp, Santa Ana speckled dace, Santa Ana sucker, arroyo toad, western spadefoot, southwestern pond turtle, golden eagle, northern harrier, white-tailed kite, bald eagle, American peregrine falcon, long-eared owl, burrowing owl, grasshopper sparrow, tricolored blackbird, pocketed free-tailed bat, Pacific pocket mouse, and American badger. As such, no impacts on these species are expected to occur. These species are summarized in Table 3.3-4, *Sensitive Wildlife Species*.

Several additional sensitive wildlife species were observed or have the potential to occur within the study area. Species that were observed on site include coastal cactus wren, coastal California gnatcatcher, and yellow-breasted chat. Species that were not observed but have the potential to occur on site include arroyo chub, coast range newt, coast (San Diego) horned lizard, orange-throated whiptail, San Diego mountain kingsnake, coast patch-nosed snake, two-striped garter snake, northern red-diamond rattlesnake, loggerhead shrike, pallid bat, western red bat, western mastiff bat, San Diego black-tailed jackrabbit, northwestern San Diego pocket mouse, San Diego desert woodrat, and southern grasshopper mouse. With the exception of the coastal California gnatcatcher, these species are listed as CDFG species of special concern and are considered sensitive. However, the coastal California gnatcatcher, as well as the orange-throated whiptail, northern red-diamond rattlesnake, coast (San Diego) horned lizard, coastal cactus wren, and San Diego desert woodrat, are covered species under the NCCP/HCP. Additionally, with respect to species of special concern observed or with the potential to be on site, these species would inhabit the riparian and coastal sage scrub habitats within the study area. With the exception of 0.1 acre of sycamore riparian woodland, 0.1 acre of arroyo willow riparian scrub, 0.5 acre of mule fat scrub, and less than 0.1 acre of southern willow scrub, the majority of riparian habitat on site would be avoided by the proposed project. Therefore, the majority of suitable habitat on site that riparian-associated wildlife (i.e., arroyo chub, coast range newt, San Diego mountain kingsnake, and two-striped garter snake) may use would be avoided, and impacts on these species would be minimal. Therefore, any loss of individuals would not threaten regional populations of these species, and removal of their habitat would represent an adverse but less than significant impact. Furthermore, as a part of the project's proposed mitigation to offset impacts on CDFG jurisdictional streambed and associated riparian habitat, all riparian habitat would be replaced at a mitigation ratio of at least 1:1. Thus, there would be no net loss of riparian habitat but, rather, the replacement, creation, and/or enhancement of riparian habitat that is to be preserved in perpetuity. For species that may inhabit the scrub communities on site (i.e., San Diego mountain kingsnake, coast patch-nosed snake, loggerhead shrike, pallid bat, western red bat, western mastiff bat, San Diego black-tailed jackrabbit, northwestern San Diego pocket mouse, and southern grasshopper mouse), impacts are proposed on 46.3 acres of scrub communities. However, although some of the species of special concern with the potential to occur on site are not covered under the NCCP/HCP, the NCCP/HCP's habitat reserve, which is in excess of 37,000 acres, provides for the long-term protection and preservation of an expansive area of coastal sage scrub and other upland habitats within the region. Thus, the loss of scrub communities would not be substantial on a regional scale, and the loss of individuals that may inhabit these communities on site would not threaten regional populations of these species; therefore, removal of their habitat represents an adverse but less than significant impact. Furthermore, the habitat that these species would use would be the same coastal sage scrub habitat that is being mitigated for through payment of the NCCP/HCP mitigation fee. Potential impacts on the coastal California gnatcatcher are discussed below.

Focused surveys were conducted for the following species in 2007 and 2009: willow flycatcher, southwestern willow flycatcher, and least Bell's vireo. However, these species were not detected within the study area.

Coastal California gnatcatchers and coastal cactus wren have been seen throughout the study area on multiple occasions during the multiple site visits conducted by PCR. The coastal California gnatcatcher and coastal cactus wren are "Target Species" of the NCCP/HCP and therefore covered species that are considered adequately mitigated for through implementation of the NCCP/HCP. Impacts on coastal sage scrub habitats that supports these species (i.e., buckwheat scrub, California encelia scrub, deerweed scrub, mixed scrub, sagebrush scrub, sagebrush/buckwheat scrub, and southern cactus scrub) would be mitigated through payment of an in-lieu fee because the study area lies within the NCCP/HCP in-lieu fee area. Specifically, the project would permanently affect 42.7 acres of coastal California gnatcatcher habitat, composed of 2.1 acres of buckwheat scrub (2.0 acres on site and 0.1 acre off site), 0.4 acre of California encelia scrub on site, 0.5 acre of deerweed scrub on site, 27.4 acres of mixed scrub on site, 9.3 acres of sagebrush/buckwheat scrub (8.9 acres on site and 0.4 acre off site), and 3.0 acres of southern cactus scrub on site. Temporary impacts on coastal California gnatcatcher would include less than 0.1 acre of buckwheat scrub off site, less than 0.1 acre of California encelia scrub off site, 0.4 acre of mixed scrub on site, 0.4 acre of sagebrush/buckwheat scrub (0.2 acre on site and 0.2 acre off site), and 0.1 acre of southern cactus scrub on site. The project would permanently affect 3.0 acres of southern cactus scrub on site, which is habitat for the coastal cactus wren. Temporary impacts would include 0.1 acre of southern cactus scrub on site. No impacts would occur on sagebrush scrub. Impacts on this species are considered potentially significant; however, with the incorporation of the mitigation provided below, the impact would be reduced to a less-than-significant level.

Mitigation Measures

The following mitigation measures are incorporated from the OSA program EIR. The only modification to these measures is an update to the NCCP fee amount referenced in mitigation measure BIO-2. The mitigation measures have been renumbered as BIO-1 though BIO-5 in this document for ease of reference. Mitigation measure 3.4-3 in the OSA program EIR is not included herein because it is not applicable to the proposed project. As explained above, the project would not cause a significant impact on any species of concern that is not covered by the NCCP/HCP. It should be noted that the sensitive species surveys conducted for the project satisfy the survey requirements in mitigation measures BIO-1 and BIO-2 (Mitigation Measures 3.4-1 and 3.4-2 of the OSA program EIR), as described in the analysis above.

Mitigation Measure BIO-1. Sensitive Species Surveys (OSA PEIR MM 3.4-1).

Where future development projects have the potential to reduce or eliminate habitat for native plant and wildlife species or sensitive habitats, including, but not limited to, those listed in Appendix E of the OSA Program EIR (Sensitive Species Potentially Occurring within the Project Area), the project applicant shall conduct biological field surveys of the project area to characterize the extent and quality of habitat that would be affected by project development. Surveys shall be conducted in accordance with current CDFG or USFWS survey protocols for the target species by qualified biologists or botanists. If no sensitive species are observed and the regulatory agencies agree with those findings, then no further mitigation will be required for the species. Similarly, if no sensitive habitats are observed and the regulatory agencies agree with those findings, then no further mitigation will be required. ***(It should be noted that the sensitive species surveys described above satisfy this mitigation measure.)***

If sensitive species or habitats are documented on a specific site and the species or habitat is covered by the NCCP/HCP, the applicant shall conform and comply with the applicable requirements of the NCCP/HCP and proceed with BIO-2 (OSA PEIR MM 3.4-2).

Mitigation Measure BIO-2. Loss of Coastal Sage Scrub Habitat and Plant and Animal Species Protected by the NCCP/HCP (OSA PEIR MM 3.4-2).

Prior to recordation of a subdivision map or issuance of a grading permit, whichever comes first, the applicant shall retain a qualified, permitted biologist to confirm the presence and quantity of coastal sage scrub habitat located on the project site. If coastal sage scrub habitat is found to be located on the project site, the applicant shall submit proof to the director of development services that in-lieu fees have been paid to the County of Orange Central/Coastal Natural Communities Conservation Plan (NCCP) Reserve. Currently, these fees are assessed at $65,000 per acre of coastal sage scrub habitat lost.

The applicant shall also demonstrate to the satisfaction of the director of development services compliance with the following NCCP construction impact avoidance measures or such measure in effect at the time of construction:

- To the maximum extent practicable, no grading of CSS habitat that is occupied by nesting gnatcatchers will occur during the breeding season (February 15 through July 15). It is expressly understood that this provision and the remaining provisions of these “construction-related minimization measures” are subject to public health and safety considerations. These considerations include unexpected slope stabilization, erosion control measures, and emergency facility repairs. In the event of such public health and safety circumstances, landowners or public agencies/utilities will provide USFWS/CDFG with the maximum practicable notice (or such notice as is specified in the NCCP/HCP) to allow for capture of gnatcatchers, cactus wrens, and any other CSS identified species that are not otherwise flushed and will carry out the following measures only to the extent as practicable in the context of the public health and safety considerations.
- Prior to the commencement of grading operations or other activities involving significant soil disturbance, all areas of CSS habitat to be avoided under the provisions of the NCCP/HCP shall be identified with temporary fencing or other markers clearly visible to construction personnel. Additionally, prior to the commencement of grading operations or other activities involving disturbance of CSS, a survey will be conducted to locate gnatcatchers and cactus wrens within 100 feet of the outer extent of projected soil disturbance activities, and the locations of any such species shall be clearly marked and identified on the construction/grading plans.
- A monitoring biologist, acceptable to USFWS/CDFG will be on site during any clearing of CSS. The landowner or relevant public agency/utility will advise USFWS/CDFG at least seven (7) calendar days (and preferably fourteen (14) calendar days) prior to the clearing of any habitat occupied by identified species to allow USFWS/CDFG to work with the monitoring biologist in connection with bird flushing/capture activities. The monitoring biologist will flush identified species (avian or other mobile identified species) from occupied habitat areas immediately prior to brush-clearing and earthmoving activities. If birds cannot be flushed, they will be captured in mist nets, if feasible, and relocated to areas of the site to be protected or to the NCCP/HCP Reserve System. It will be the responsibility of the monitoring biologist to assure that Identified bird species will not be directly affected by brush-clearing and earthmoving equipment in a manner that also allows for construction activities on a timely basis.

- Following the completion of initial grading/earth movement activities, all areas of CSS habitat to be avoided by construction equipment and personnel will be marked with temporary fencing or other appropriate markers clearly visible to construction personnel. No construction access, parking, or storage of equipment or materials will be permitted within such marked areas.

Residual Impacts

Given the analysis provided above, implementation of mitigation measures BIO-1 and BIO-2 would ensure that the project's impact would be less than significant with mitigation.

Impact BIO-2: The project would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

As shown in Figure 3.3-6, *Impacts on Plant Communities,* and summarized in Table 3.3-5, *Impacts on Plant Communities,* the proposed project would result in permanent impacts on 77.3 acres (76.7 acres on site and 0.6 acres off site) and temporarily affect 2.0 acres (1.1 acres on site and 0.9 acre off site) of plant communities and disturbed areas. This includes the following permanent impacts on nonsensitive (i.e., not considered sensitive by the CNDDB) plant communities and disturbed areas: 2.1 acres of buckwheat scrub (2.0 acres on site and 0.1 acre off site), 0.4 acre of California encelia scrub on site, 3.7 acres of developed areas (3.6 acres on site and 0.1 acre off site), 18.3 acres of disturbed areas on site, less than 0.1 acre of disturbed/detention basin on site, 0.7 acre of disturbed/deerweed scrub on site, 6.5 acres of disturbed/mixed scrub on site, 0.5 acre of deerweed scrub on site, 0.3 acre of eucalyptus grove (0.3 acre on site and less than 0.1 acre off site), 0.5 acre of mule fat scrub on site, 1.7 acres of ruderal (1.7 acres on site and less than 0.1 acre off site), and 2.7 acres of sumac scrub on site. Temporary impacts on nonsensitive plant communities and disturbed areas include less than 0.1 acre of buckwheat scrub off site, less than 0.1 acre of California encelia scrub on site, 0.4 acre of developed areas (0.2 acre on site and 0.2 acre off site), 0.6 acre of disturbed areas (0.1 acre on site and 0.5 acre off site), 0.1 acre of disturbed/mixed scrub on site, less than 0.1 acre of mule fat scrub on site, less than 0.1 acre of ruderal off site, and less than 0.1 acre of sumac scrub on site. These communities are not considered sensitive; therefore, impacts on these plant communities are considered less than significant.

Impacts on sensitive plant communities (i.e., arroyo willow riparian scrub, mixed scrub, sagebrush/buckwheat scrub, southern cactus scrub, and southern willow scrub) are considered potentially significant and are discussed below.

The proposed project would result in impacts on sensitive plant communities (refer to Figure 3.3-6, *Impacts on Plant Communities*, and Table 3.3-5, *Impacts on Plant Communities*), including (1) CNDDB sensitive plant communities (considered sensitive because of their decline in the region and/or their ability to support sensitive species) and (2) plant communities that provide habitat for the coastal California gnatcatcher. Permanent impacts on CNDDB sensitive plant communities include 0.1 acre of arroyo willow riparian scrub on site, 0.1 acre of sycamore riparian woodland on site, and 3.0 acres of southern cactus scrub on site. Temporary impacts on CNDDB sensitive plant communities include 0.1 acre of southern cactus scrub. Less than 0.1 acre of southern willow scrub would be affected because of its highly limited distribution within the development footprint. Impacts on plant communities that provide habitat for the coastal California gnatcatcher include permanent impacts on 27.4 acres of mixed scrub on site, 9.3 acres of sagebrush/buckwheat scrub (8.9 acres on site and 0.4 acre off site), and 3.0 acres of southern cactus scrub on site as well as temporary impacts on 0.4 acre of mixed scrub on site, 0.4 acre sagebrush/buckwheat scrub (0.2 acre on site and 0.2 acre off site), and less than 0.1 acre southern cactus scrub on site. Although the CNDDB does not consider buckwheat scrub, California encelia scrub, and deerweed scrub to be sensitive communities, they are considered habitat for the coastal California gnatcatcher under the NCCP/HCP and are therefore afforded special attention. The proposed project would result in the following permanent impacts on these communities: 2.1 acres of buckwheat scrub (2.0 acres on site and 0.1 acre off site), 0.4 acre of California encelia scrub on site, 0.5 acre of deerweed scrub on site as well as temporary impacts on less than 0.1 acre of buckwheat scrub off site and less than 0.1 acre of California encelia scrub on site. Impacts on these habitats are considered potentially significant. Approximately 13.2 acres of the study area occur outside of the grading limits and would not be affected by the proposed project (refer to Figure 3.3-6, *Impacts on Plant Communities*). The following design features would assist with reinstalling native plant communities (i.e., coastal sage scrub) and protecting the function of jurisdictional resources within the study area. The graded slope that would occur on the western boundary of the study area between the proposed sports fields and the existing Irvine Ranch Water District (IRWD) water tank (off site) would be replanted with native vegetation. In addition, along the eastern portion of the study area, a 15-foot preservation buffer would be placed immediately adjacent to the western side of Glass Creek to prevent any inadvertent impacts on Glass Creek and associated vegetation from the proposed parking lot and the area to the east of the parking lot. The area between the 15-foot buffer and the parking lot would contain the created habitat, as discussed below under Impact BIO-3.

The area of temporary impact includes the 15-foot construction buffer placed around the perimeter of the grading footprint for construction access and mobilization. This area would be restored to pre-project conditions with respect to grades and vegetation.

Mitigation Measures

Implementation of OSA program EIR mitigation measure BIO-2, above, would reduce impacts to a less-than-significant level by providing in-lieu funding, pursuant to the NCCP/HCP, to mitigate for 43.6 acres of temporary and permanent impacts.

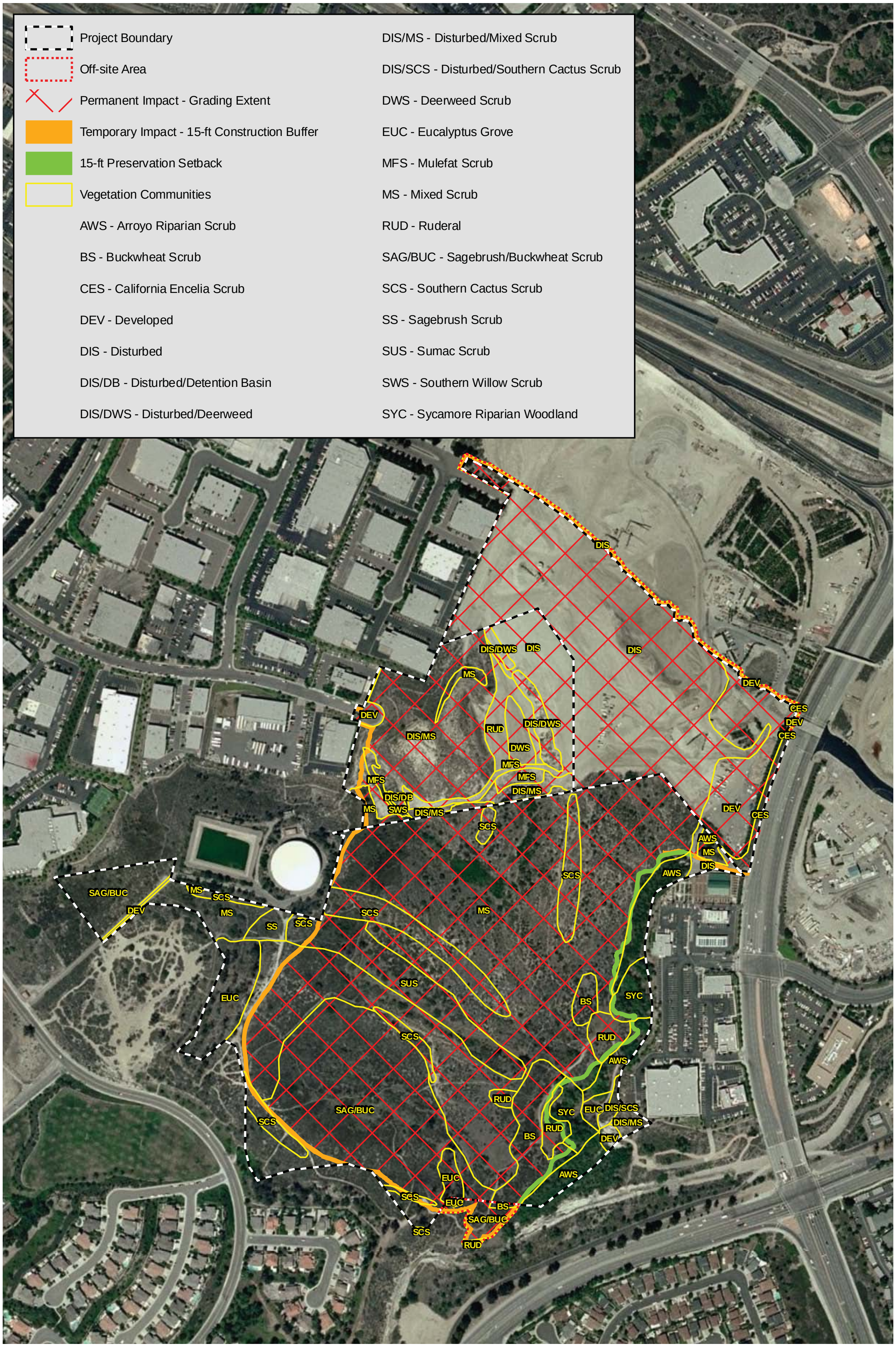
Residual Impacts

Impacts would be less than significant.

Impact BIO-3: The project would have a substantial adverse effect on federally protected wetlands, as identified 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.

Table 3.3-5. Impacts on Plant Communities

Plant Community	Permanent Impacts On Site (Acres)	Permanent Impacts Off Site (Acres)	Temporary Impacts On Site (Acres)	Temporary Impacts Off Site (Acres)	Nonaffected Areas (Acres)
Scrub Communities					
Buckwheat scrub*	2.0	0.1	0.0	< 0.1[a]	0.2
California encelia scrub*	0.4	0.0	0.0	< 0.1[a]	0.0



Source: PCR (2010)

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Figure 3.3-6
Impacts to Plant Communities
City of Lake Forest Sports Park and Recreation Center

Plant Community	Permanent Impacts On Site (Acres)	Permanent Impacts Off Site (Acres)	Temporary Impacts On Site (Acres)	Temporary Impacts Off Site (Acres)	Nonaffected Areas (Acres)
Deerweed scrub*	0.5	0.0	0.0	0.0	0.0
Mixed scrub*	27.4	0.0	0.4	0.0	2.3
Sagebrush scrub*	0.0	0.0	0.0	0.0	0.4
Sagebrush/buckwheat scrub*	8.9	0.4	0.2	0.2	3.0
Southern cactus scrub*	3.0	0.0	0.1	0.0	0.6
Sumac scrub	2.7	0.0	< 0.1[a]	0.0	0.3
Riparian Communities					
Arroyo willow riparian scrub	0.1	0.0	0.0	0.0	2.2
Mule fat scrub	0.5	0.0	< 0.1[a]	0.0	< 0.1[a]
Southern willow scrub	< 0.1[a]	0.0	0.0	0.0	0.0
Sycamore riparian woodland	0.1	0.0	0.0	0.0	1.2
Disturbed/Ornamental Communities					
Disturbed	18.3	0.0	0.1	0.5	0.1
Disturbed/deerweed scrub	0.7	0.0	0.0	0.0	0
Disturbed/detention basin	< 0.1[a]	0.0	0.0	0.0	0
Disturbed/mixed scrub	6.5	0.0	0.1	0.0	0.5
Disturbed/southern cactus scrub	0.0	0.0	0.0	0.0	0.2
Eucalyptus grove	0.3	< 0.1[a]	0.0	0.0	1.9
Ruderal	1.7	< 0.1[a]	0.0	< 0.1[a]	0.3
Other					
Developed	3.6	0.1	0.2	0.2	0.0
Total	**76.7**	**0.6**	**1.1**	**0.9**	**13.2**
Total Per Impact Type	**77.3**		**2.0**		

* Denotes communities that are covered under the NCCP (42.2 acres permanent impact on-site, 0.5 acre permanent impact off-site, 0.7 acre temporary impact on-site, and 0.2 acre temporary impact off-site for a total of 43.6 acres permanent and temporary impacts on- and off-site.)

[a] This acreage is not included in the total.

Source: PCR Services Corp., 2010.

PCR conducted an assessment of the jurisdictional wetlands and waters on the study area in February 2007. A reassessment of these jurisdictional features by PCR wetland ecologist Haywood was conducted on July 24, 2009, to determine if any of the jurisdictional features previously delineated had shifted or been modified since the original assessment. An additional jurisdictional assessment, conducted by Haywood on December 1, 2009, and Robb on January 14, 2010, delineated the jurisdictional resources that occur on the Baker Ranch and Rados properties. These resources include the three previously delineated drainage features to their upstream extents. The assessment and subsequent reassessments determined whether on-site drainages are subject to the jurisdiction of the ACOE, the RWQCB, and/or the CDFG and the extent of jurisdiction on the study area.

The project has been designed to avoid impacts on the largest jurisdictional feature within the study area, Glass Creek, which includes some wetlands features. Project impacts would occur within the unnamed ephemeral drainages, labeled as GC1, GC2, GC3, and Drainage B, as identified in Figure 3.3-3, *Jurisdictional Features*. Approximately 0.10 acre (3,014 linear feet) of ACOE/RWQCB jurisdictional nonwetland waters of the United States and 0.86 acre of CDFG jurisdictional streambed and associated riparian habitat would be permanently affected by the proposed project, as shown in Figure 3.3-7, *Impacts on Jurisdictional Features.* The various jurisdictional acreages often overlap (i.e., ACOE and RWQCB acreage is typically included in CDFG acreages; they are not additive). No impacts on wetlands would occur with implementation of the proposed project.

The project has been designed to offset impacts on jurisdictional features through the creation of new waters of the United States within the study area boundaries. It is anticipated that the linear footage of the RWQCB jurisdiction proposed to be affected would be replaced on site at a 1:1 impact-to-replacement ratio. Creation of these waters of the United States would also satisfy the impacts (based on acreage) on ACOE/RWQCB nonwetland waters of the United States and CDFG jurisdictional streambed and associated riparian habitat, which are being created at a 1:1 replacement-to-impact ratio, with the exception of the riparian area of Glass Creek within the upper extent of the on-site portion of this drainage (less than 0.01 acre of ACOE/RWQCB nonwetland waters of the United States and 0.11 acre CDFG jurisdictional streambed and associated riparian habitat), which would be mitigated at a 2:1 ratio. Should it be determined upon final park design that the entirety of the proposed impact on the RWQCB linear footage cannot be accomplished on site, the balance of the linear footage would be addressed off site at an area approved by the RWQCB. Potential off-site creation areas could include areas along Aliso Creek and/or its tributaries. The City would submit applications for a CWA Section 404 Permit from the ACOE, CWA Section 401 Water Quality Certification from the RWQCB, and a FGC Section 1602 Streambed Alteration Agreement from the CDFG, which would address the proposed project impacts, demonstration of avoided waters of the United States and wetlands, and compensatory mitigation (on-site creation of waters of the United States). All creation of waters of the United States would be subject to review and approval by ACOE, RWQCB, and CDFG.

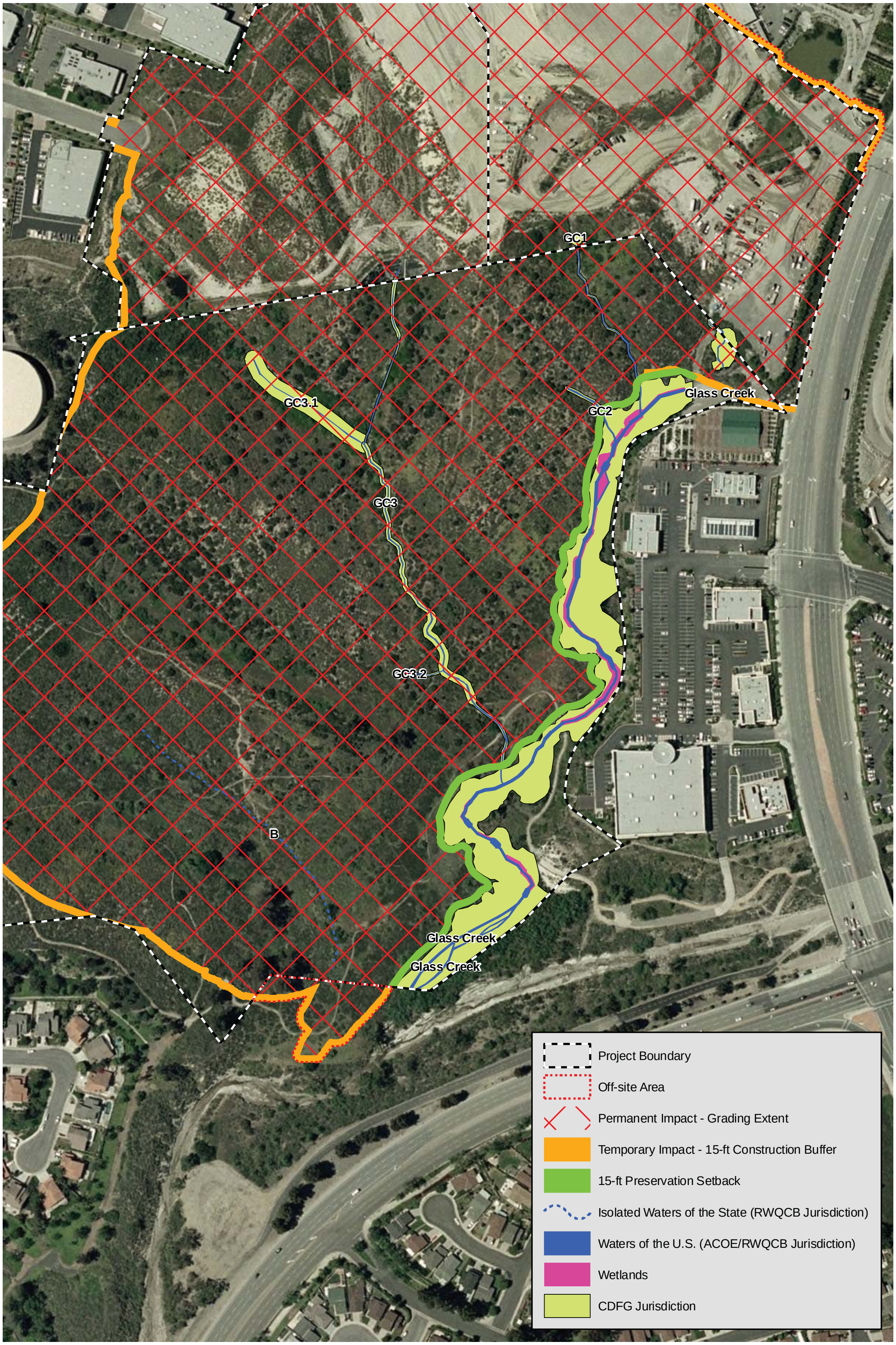
Impacts on water quality would be mitigated through the incorporation of water quality detention basins. The basins would treat the nuisance flows prior to discharge into the newly created waters of the United States. This topic is further addressed in Section 3.8, Hydrology and Water Quality.

The wetland delineation conducted for the project, as described above, as well as the jurisdictional determination conducted on site with representatives from the ACOE, RWQCB, and CDFG, and the City's submittal of the permit/certification/agreement applications, as described above, including the submittal of a conceptual habitat mitigation and monitoring plan with the applications, satisfy mitigation measure BIO-3 in the OSA program EIR.

Mitigation Measures

Mitigation Measure BIO-3. Mitigation for Impacts on Wetlands and Aquatic Habitats. (OSA PEIR MM 3.4-4)

- **Mitigation Measure BIO-3A. Wetland Delineation**. Prior to approval of Tentative Tract or Parcel Maps, a qualified wetland specialist shall conduct a wetland delineation



Source: PCR (2010)

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Figure 3.3-7
Impacts toJurisdictional Features
City of Lake Forest Sports Park and Recreation Center

in accordance with ACOE methodology of all jurisdictional waters, seeps and stream channels within a site. If appropriate, this specialist shall also submit a request for a streambed alteration agreement from CDFG because CDFG also has jurisdiction over lakes and streams under Section 1600 of the Fish and Game Code. The wetland specialist shall prepare and submit a request for a jurisdictional determination to the ACOE or CDFG as appropriate. Those waters not subject to the ACOE jurisdiction could fall under the regulatory control of the local RWQCB. The wetland specialist shall submit the delineation documents along with the ACOE jurisdictional determination to the RWQCB and request an assessment of jurisdiction. If the areas in question are subject to the ACOE or RWQCB jurisdiction then the following two measures shall be implemented as required. If the areas in question are not jurisdictional, then there is no impact on wetlands and no further action is required. (It should be noted that the wetland delineation described above satisfies this mitigation measure.)

- **Mitigation Measure BIO-3B. Permitting**. The wetland specialist shall prepare an application for fill of waters subject to the ACOE jurisdiction as determined in BIO-3A. If appropriate, this specialist shall also submit a request for a streambed alteration agreement from CDFG because CDFG also has jurisdiction over lakes and streams under Section 1600 of the Fish and Game Code. The regulatory requirements of contained within the Clean Water Act and the Streambed Alteration Agreement would mandate minimal intrusion into jurisdictional areas and compensatory mitigation for permanent impacts on these areas.
- **Mitigation Measure BIO-3C. Restoration Plan.** Once an approved wetland delineation is in place, the wetland specialist shall develop a comprehensive wetland restoration plan to offset impacts on these resources. Restoration could include on- or off-site construction of wetlands, contribution of funds to a local mitigation bank, or restoration of existing yet relatively poor quality wetlands. The ACOE goal is to permit no net loss of functions and values of wetland habitat. The replacement ratio of wetland acreage required to achieve this goal is a minimum of 1(new):1(old) *(It should be noted that the project has been designed to avoid the most significant wetland feature on the site, Glass Creek. Mitigation for impacts on unnamed tributaries is proposed at a ratio of 1:1).*

Residual Impacts

Implementation of the proposed project, as designed, and in compliance with the warranted authorizations from the ACOE, RWQCB, and CDFG, including the preparation of a mitigation plan, would reduce impacts on ACOE, RWQCB, and CDFG jurisdictional waters and associated riparian habitat to below a level of significance.

Impact BIO-4: The project could interfere 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.

The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. In the absence of habitat linkages that allow movement to adjoining open space areas, various studies have concluded that some wildlife species, especially the larger and more mobile mammals, will not likely persist over time in fragmented or isolated habitat areas because such conditions preclude the infusion of new individuals and genetic information into isolated populations (MacArthur and Wilson 1967; Soule 1987; Harris and Gallager 1989; Bennett 1990).

Corridors mitigate the effects of habitat fragmentation by (1) allowing animals to move between remaining habitats, which allows depleted populations to be replenished and promotes genetic diversity; (2) providing escape routes from fire, predators, and human disturbances, thus reducing the risk that catastrophic events (such as fires or disease) will result in population or local species extinction; and (3) serving as travel routes for individual animals as they move within their home ranges in search of food, water, mates, and other needs (Noss 1983; Fahrig and Merriam 1985; Simberloff and Cox 1987; Harris and Gallagher 1989).

Whereas the importance of corridors are acknowledged in this assessment, site and surrounding conditions are not conducive for more than local wildlife movement. Habitat within the study area is surrounded by development to the northwest, east, and southwest. Areas north and northeast of the study area are currently graded. West and southeast of the study area is undeveloped land, which includes a portion of Aliso Creek. As a result of the surrounding conditions, the study area does not serve as a component of a significant regional wildlife movement corridor, nor does it serve as a linkage between two or more larger habitat areas. The continuation of local movement would be facilitated by implementation of OSA program EIR mitigation measure BIO-5, which reads as follows:

Mitigation Measure BIO-5 Mitigation for Fragmentation of Habitat and Wildlife Movement Corridors (OSA PEIR MM 3.4-5).

In order to minimize the fragmentation of habitat and wildlife movement corridors the City shall require the applicant to include, to the extent feasible, specific design features to maintain connectivity between remaining open spaces. These features include greenbelts and other wildlife movement corridors through the proposed developments, creek setbacks and wildlife friendly stream crossings (bridges instead of culverts), and installation of wildlife-friendly landscaping (native vegetation). Any nighttime lighting shall be focused away from greenbelts and riparian corridors to preserve the nighttime integrity of these movement corridors. (*It should be noted that this mitigation measure has been satisfied as a component of the project design as discussed below.*)

In particular, the project would be designed to avoid the largest and most valuable resource on site, Glass Creek, and establish a 15-foot setback from this resource to ensure its function and maintain connectivity between the riparian area along Glass Creek and Aliso Creek. This design feature would satisfy mitigation measure BIO-5. For these reason, impacts on wildlife movement as a result of the proposed project are considered less than significant.

The study area supports trees, shrubs, and ground cover that could be used by breeding raptors and songbirds. Nesting activity typically occurs from February 15 to September 1. Disturbing or destroying active nests is a violation of the federal MBTA. In addition, nests, live young, and eggs are protected under the California FGC, Section 3503. Should active nests be present within the study area, potentially significant impacts could occur on nesting birds as a result of the proposed project. If vegetation removal occurs outside the nesting season (prior to February 15 or after September 1), no significant impacts would occur. However, if vegetation removal is not scheduled outside the nesting season, a potentially significant impact would result.

Through site design and implementation of mitigation measure BIO-5 from the OSA program EIR, impacts on wildlife movement would be less than significant. The measure below would mitigate impacts on nesting birds.

Mitigation Measure BIO-4. If construction activities must occur during the nesting season (February 15 to September 1).

All suitable habitat would be thoroughly surveyed for the presence of nesting birds by a qualified biologist before commencement of disturbance activities. If an active nest is detected, the vegetation containing the nest, along with a 200- to 300-foot buffer around it, would be flagged and avoided until the nest is no longer active, as determined by a qualified biologist.

Residual Impacts

This impact would be less than significant with mitigation.

Impact BIO-5: The project could conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Section 6.20.035 of the City of Lake Forest Municipal Code regulates the maintenance and removal of eucalyptus trees that are more than 8 feet tall or have a trunk diameter of 2 inches or more when measured at least 3 feet above ground level. The maintenance and removal of eucalyptus trees is regulated to control the infestation by the eucalyptus longhorn borer beetle. If pruning, removing, or transporting of a eucalyptus or its logs, branches, or trunk occurs during the restricted period (April 1 through October 31), a eucalyptus cutting permit must be obtained from the City. The permit may require (1) development of a maintenance and care program for remaining eucalyptus trees on the property, and (2) destruction, covering, or burying of the removed wood. If removal of eucalyptus occurs outside of the period of April 1 and October 31, impacts are less than significant; however, if eucalyptus removal occurs during the restricted period impacts would be considered potentially significant and a tree removal permit would be required prior to removal in compliance with the City's Tree Ordinance. Due to compliance with the City's tree ordinance there would be no significant impacts related to conflicts with the City's biological resource policies and ordinances.

Mitigation Measures

Through project design features and compliance with the City's tree ordinance, no impacts would occur; therefore, no additional mitigation measures are required.

Residual Impacts

Impacts would be less than significant after incorporation of project design features and compliance with the municipal code.

Impact BIO-6: The project would 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 study area is within the NCCP/HCP – County of Orange Central and Coastal Subregion (*Relationship to the Orange County NCCP*). The NCCP/HCP was reviewed and approved by the CDFG and USFWS in 1996 to address protection and management of CSS habitat and CSS-obligate species, as well as other covered habitats and species, and mitigate anticipated impacts on those habitats and species on a programmatic, subregional level rather than on a project-by-project, single-species basis. A habitat reserve in excess of 37,000 acres was established for the protection of CSS, other upland habitats, the coastal California gnatcatcher, and the other primarily CSS-dependent species identified in the NCCP/HCP. Specifically, the NCCP/HCP, the USFWS, and the CDFG authorized take of 39 identified species of plants and wildlife (including covered and conditionally covered species), as shown in Table 3.3-1, *Identified Species (Covered and Conditionally Covered) Authorized for Take by the NCCP/HCP.* Further, the NCCP/HCP contains requirements for adaptive management, interim management, and funding management for the reserve as well as procedures and minimization measures related to the take of identified species and habitat. Thus, the NCCP/HCP provides for the protection and management of a broad range of plant and wildlife populations while providing certainty to the public and affected landowners with respect to the location of future development and open space in the subregion.

The proposed project would result in permanent impacts to 27.4 acres of mixed scrub on site, 9.3 acres of sagebrush/buckwheat scrub (8.9 acres on site and 0.4 acre off site), 3.0 acres of southern cactus scrub on site, 2.1 acres of buckwheat scrub (2.0 acres on site and 0.1 acre off site), 0.4 acre of California encelia scrub on site, 0.5 acre of deerweed scrub on site as well as temporary impacts on 0.4 acre of mixed scrub on site, 0.4 acre sagebrush/buckwheat scrub (0.2 acre on site and 0.2 acre off site), less than 0.1 acre southern cactus scrub on site, less than 0.1 acre of buckwheat scrub off site, and less than 0.1 acre of California encelia scrub on site. These plant communities are considered CSS habitat regulated under the NCCP/HCP; thus, impacts on these habitats are considered potentially significant. However, the study area is located within the in-lieu fee area of the NCCP/HCP. For properties located within the in-lieu fee area of the NCCP/HCP area, impacts on coastal sage scrub can be mitigated through the payment of an in-lieu fee of $65,000 per acre (McAfee 2006). BIO-2 would ensure implementation of all construction minimization measures required by the NCCP/HCP.

In addition, the City would work with the Nature Reserve of Orange County (NROC), the administrator of NCCP/HCP, to relocate cactus and sensitive birds from the site prior to site disturbance. While not required as mitigation for potential impacts, this measure would provide for relocation and propagation of some of the on-site sensitive resources.

Mitigation Measures

Adherence to mitigation measure BIO-2 (MM 3.4-2 in the OSA Program EIR), above, would mitigate impacts to less than significant.

Residual Impacts

Impacts would be less than significant.

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Section 3.4

Cultural Resources

Introduction

This section describes the affected environment and regulatory setting for cultural resources. It also describes the impacts on cultural resources that would result from implementation of the proposed project and the mitigation measures that would reduce these impacts.

This section provides contextual background information on historical resources in the project area, including the area's prehistoric, ethnographic, and historical settings. It also summarizes the results of preliminary cultural surveys of the project site, analyzes the proposed project's potential impacts on cultural resources, and identifies mitigation measures to address adverse impacts.

The information in this section is based on the cultural resource record searches and inventories conducted by ICF. The cultural evaluation was conducted in compliance with Section 5024.1 of the California Public Resources Code (PRC) to identify archaeological or historical resources in the project area. The evaluation can be found in Appendix D of this EIR. Because of the confidential nature of the locations of cultural resources, such information has been removed from this report and is not included in the appendix.[1]

For the purposes of CEQA, the term *historical resources* generally refers to prehistoric and historical archaeological sites, as well as the built environment. Historical resources can also include areas determined to be important to Native Americans, such as "sacred sites." Sacred sites are most often important to Native American groups because of the role a given location played in traditional ceremonies or activities.

Project impacts on archaeological resources generally occur during construction, while impacts on the built environment can be either short-term construction-related impacts or indirect impacts that span the life of a project.

Environmental Setting

Prehistoric Context

Archaeological investigations along coastal southern California have produced a diverse range of human occupation, extending from the early Holocene into the ethnohistoric period. During the past 70 years, more than a dozen prehistoric cultural sequences have been presented for coastal southern California (Reddy 2000). The goal of each specific chronological sequence has varied considerably, although generally it has been to sequentially divide prehistory based on traits observed in the archaeological assemblages (Reddy 2000). Scholars have produced several terminological frameworks, using such terms as *culture*, *horizon*, *period*, *stage*, and *tradition*.

[1] State CEQA Guidelines Section 15120(d) prohibits an EIR from including information about the location of archaeological sites or sacred lands, stating that "[n]o document prepared pursuant to this article that is available for public examination shall include…information about the location of archaeological sites and sacred lands."

Relatively few archaeological studies have been conducted within the study area. A review of the culture history sections in previously generated technical reports for the project area and surrounding region revealed that no single chronological terminology has received extensive acceptance in this region. Some of the most regularly applied terminological frameworks are the approaches taken by Wallace (1955), Warren (1968), and Koerper (1981).

Wallace provided a synthesis of existing data for southern California based on broad cultural similarities. This work was based in the normative paradigm of cultural-historical archaeology, with emphasis on cultural descriptions and distributions. Many archaeologists have incorporated and continue to incorporate sites into this chronology. The new data have resulted in a necessary refinement to these chronologies because Wallace formulated his horizon scheme before the availability of radiocarbon dating (Koerper 1981). Warren introduced a terminological framework to replace Wallace's original scheme. Warren's approach reflected a changing archaeological paradigm in which the natural environment is elevated from a casual component to an important part of cultural patterning and change (Koerper 1981; Reddy 2000). Recognizing the lack of agreement concerning the best cultural chronologies for the Tustin/Plain/Newport Bay/San Joaquin Hills area, Koerper produced a subregional chronology specifically for Orange County sites.

Another widely adopted framework for southern California comes from Moratto (1984). Moratto provided a broad synthesis of prehistoric occupation in California that is separated into four temporal horizons. The earliest identified archaeological cultures are variously known as the Early Man Horizon (Wallace 1955; Moratto 1984), San Dieguito Tradition (Warren 1968), or pre-Milling Stone Cultures (Koerper 1981). According to Moratto, the Early Man Horizon is distinguished by the first appearance of people in this region, approximately 11,000 years ago, until about 5000 B.C. Although little is known about these people, it is assumed that they were seminomadic and subsisted primarily on game.

The San Dieguito/Early Man Traditions are followed by the archaeological cultures referred to as either the Milling Stone Horizon (Wallace 1955; Koerper 1981; Moratto 1984) or Encinitas Tradition (Warren 1968). However, Koerper (1981) argues that this next period begins much earlier (7500 B.C.). Typically, sites from this time period produce large numbers of millingstones, discoidals, and cogstones. According to Moratto, this horizon appears to represent a diversification of subsistence activities to include plants, as well as a more sedentary settlement pattern.

Although numerous Milling Stone Horizon sites have been identified in Orange County, the best understood of these is CA-ORA-64, which has been dated radiometrically to about 6000 B.C. (Breece et al. 1988). Excavations at CA-ORA-64, located near Newport Bay, have been instrumental in the formulation of Orange County research models (Koerper 1981). Although this site is not located within the project area, research at the site suggests that the settlement-subsistence system for Orange County during the Milling Stone Horizon reflects semisedentary populations. These populations relied on a central base camp, with small groups of individuals periodically leaving to establish satellite hunting and gathering camps. The purpose of these satellite camps was to exploit seasonally available resources not readily available at the base camp (Greenwood 1990).

Both Wallace's (1955) Intermediate Horizon and Koerper's (1981) Intermediate Cultures Tradition begin around 500 B.C. and continue to around A.D. 700 to 1000. This period is defined by a greater reliance on marine resources for coastal populations, while the interior populations develop acorn processing, as demonstrated by substantial increases in mortar and pestle use. Moratto argues that the Intermediate Horizon began around 1500 B.C. and continued until about A.D. 600 to 800. During this time period, projectile points become more abundant and, together with faunal remains, indicate increased use of both land and sea mammals.

The Late Prehistoric Period (Wallace 1955) begins around 1000 A.D., while the Shoshonean Tradition (Warren 1968), Late Prehistoric Tradition (Koerper 1981), and Moratto's Horizon IV or Late Horizon date between A.D. 600 and 800. Dense populations diversified hunting and gathering subsistence strategies, extensive trade networks, and use of the bow and arrow characterize the Late Horizon. This period ended with the arrival of Europeans in 1542. Archaeologically, this horizon is represented by the presence of arrowheads, soapstone bowls, steatite effigies, and cremations. These artifacts and practices have been linked to the arrival of Shoshonean people into Orange County.

Ethnographic Context

The southern portion of the project area borders Aliso Creek, a location traditionally noted as an ethnographic transition zone between the Gabrielino and Juaneño. Therefore, both groups are discussed in this section.

Gabrielino

When Spanish explorers and missionaries first visited the southern coastal areas of California, the indigenous inhabitants of the Los Angeles/Orange County area were given the Spanish name *Gabrielino*. Traditional definitions of Gabrielino territory include the watersheds of the San Gabriel, Santa Ana, and Los Angeles Rivers; portions of the Santa Monica and Santa Ana Mountains; the Los Angeles Basin; the coast from Aliso Creek to Topanga Creek; and San Clemente, San Nicolas, and Santa Catalina Islands (Bean and Smith 1978). The Gabrielino language is classified as belonging to the Takic family (or Cupan), Uto-Aztecan stock, and is subdivided into four or more separate dialects (Shipley 1978).

At the time of European contact, the Gabrielino inhabited some 50 to 100 permanent villages in fertile lowlands along streams and rivers and in sheltered areas along the coast. The larger permanent villages most likely had populations ranging from 50 to 200 persons. Sedentary villages also had, at varying distances, smaller satellite villages that remained connected through economic, religious, and social ties (Bean and Smith 1978). Gabrielino villages contained four basic types of structures. Houses were circular and domed, and they were made of tule mats, fern, or carrizo (Kroeber 1925; Bean and Smith 1978). The Gabrielino sweathouses were small, circular, earth-covered buildings. Villages may have included menstrual huts and open-air ceremonial structures made with willows inserted in a wicker fashion among willow stakes (Bean and Smith 1978).

The Gabrielino had a rich, varied material culture. Technological and artistic items included shell set in asphaltum, carvings, painting, an extensive steatite industry, baskets, and a wide range of stone, shell, and bone objects that were both utilitarian and decorative.

Gabrielino subsistence was based on a composite hunting and gathering strategy that included large and small land animals, sea mammals, river and ocean fish, and a variety of vegetal resources. Generally, Gabrielino settlements were created at the intersection of several ecozones: prairies with foothills, floodplains, and river courses, on the edges of marshes and seashores. Most of the population drifted in family groups throughout the year to temporary hillside or coastal camps, returning to the central location on ritual occasions or when resources were low and it was necessary to live on stored foods.

Offshore fishing was accomplished from boats made of pine planks sewn together and sealed with asphaltum or bitumen. Much of the fishing, shellfish harvesting, and fowling took place along the ocean shoreline or along freshwater courses. Sea mammals were captured with harpoons, spears, and clubs. River and ocean fishing were undertaken with the use of line and hook, nets, basket traps, spears, and poisons (Hudson and Blackburn 1982).

Land animals were hunted with bow and arrow or throwing sticks, and were trapped or clubbed, while smaller animals such as rabbits and ground squirrels were driven out with grass fires and captured with deadfall traps. Larger animals were hunted with sinew-backed bows made of holly, piñon, elder, or juniper, while small game was hunted with bows fashioned from buckeye or elderberry. Seasonal grass fires may have yielded new shoots attractive to deer. Burrowing animals could be smoked from their lairs. The transportation of plants and other resources was accomplished through the use of burden devices, such as coiled and woven baskets and hammock carrying nets commonly made from grass and other plant fibers.

The Gabrielino were apparently first contacted by Europeans in 1542, when Juan Rodríguez Cabrillo entered the area. Following subsequent Spanish visits to the region, colonization began in 1769, precipitating the establishment of Missions San Gabriel Arcángel (1771) and San Fernando Rey de España (1797). In part because of the introduction of EuroAmerican diseases and the harsh effects of mission life, the Gabrielino population and culture gradually deteriorated. Following the secularization of the missions, most surviving Gabrielino became wage laborers on the ranchos of Mexican California. In the early 1860s, a smallpox epidemic nearly wiped out the remaining Gabrielino. By the 1900 federal census, the combination of disease, forceful reduction, and poor diet had contributed to population decline of the Gabrielino and their deterioration as a culturally identifiable group (Bean and Smith 1978).

Juaneño

When Spanish missionaries established the Mission San Luis Rey near the San Luis Rey River, the indigenous inhabitants of the northern San Diego area were given the Spanish name *Luiseño*. Farther to the north, at the site of Mission San Juan Capistrano, the population was given the name *Juaneño*. While early researchers, including Kroeber and Harrington, separated the two groups, subsequent studies have indicated the two are linguistically and ethnologically the same. Therefore, the following discussion will use the collective term of *Luiseño* to address the indigenous people who were within the sphere of both the San Luis Rey and San Juan Capistrano missions. However, in some cases, the term *Juaneño* is applied when referring only to the inhabitants around the San Juan Capistrano mission lands.

The Juaneño portion of the larger Luiseño territory extended from the coastal outlet of Aliso Creek northeastward to the west side of Santiago Peak along the crest of the Santa Ana Mountains. Following the crest line southeast, the territory turned southwest just north of Las Pulgas Canyon, following this course until reaching the shoreline of the Pacific Ocean. The language of the Luiseño is classified as belonging to the Takic family (or Cupan), Uto-Aztecan stock, and is subdivided into four or more separate dialects (Bean and Shipek 1978).

Luiseño villages were typically situated in defensible positions within sheltered coves and canyons adjacent to adequate water supplies. Each village acted autonomously with specific resources that were exploited by village inhabitants. Deer, antelope, rabbit, woodrats, mice, ground squirrels, quail, doves, and ducks were the dominant game animals utilized by the Luiseño. Moreover, Luiseño subsistence included marine resources like sea mammals, fish, crustaceans, and abalone. Houses were partially subterranean, conical structures composed of locally available materials, including brush, bark, and reeds. Other structures utilized by the Luiseño were brush-covered rectangular structures that were termed *ramadas* by the Spanish. These structures provided shade for outdoor domestic activities. Others structures could have included a subterranean, earth-covered, walled enclosure commonly referred to as a *sweathouse*. The sweathouse was an important feature in the village, often used during purification and curing rituals. Another ceremonial structure located within the village was the *wámkiš*. The *wámkiš* was situated at the center of the village and was bordered by a low fence. Occasionally the *wámkiš* may have also contained an altar.

The Luiseño's first contact with European explorers was in 1769 during Gaspar de Portola's expedition and the founding of Mission San Diego de Alcala. Early Luiseño population figures are not well documented. White estimated that the Luiseño inhabited some 50 villages with a mean population of approximately 200 residents (Bean and Rawls 1993). White's population estimates suggest that as many as 10,000 Luiseño occupied the area, which doubles Kroeber's previous estimate of 4,000 to 5,000 people (Kroeber 1925). The difficulty in these population estimates can partially be attributed to some Luiseño not being accounted for in the mission accounting.

Historic Context

Spanish Period

Spanish explorers first sailed the coast of California in the sixteenth century. The first European to sail along the coast was Cabrillo in 1542, followed by Sebastian Vizcaino in 1602 (Bean and Rawls 1993). However, it was not until the eighteenth century that the Spanish colonized present-day California, establishing a tripartite system consisting of missions, presidios, and pueblos that lasted from 1769 to 1822 (Bean and Rawls 1993).

In 1769, a land expedition led by Portola was organized to establish settlements at San Diego and Monterey. The expedition included two parties made up of Spanish soldiers, Franciscan priests, Christianized Indians from Baja California, and herds of livestock. After meeting up with supply ships at San Diego, Portola and his party set out for Monterey. They traveled northward, paralleling the coast, along the route that would later be called *El Camino Real*. Each of the California missions was later established along the same route (Bean and Rawls 1993; Beck and Haase 1974; Gudde 1998; Hoover et al. 1990).

In 1772, Portola's second in command, Pedro Fages, became the first known Spanish visitor to Riverside County (Robinson 1957). In 1774, Juan Bautista de Anza, accompanied by Father Francisco Garces and Father Juan Diaz, took the same route utilized by Fages and determined it was suitable for colonists. In 1775, Anza, Garces, and Father Pedro Font left Sonora, Mexico, with 240 colonists and 1,000 head of livestock. They stayed at Mission San Gabriel Arcángel before continuing north, arriving in Monterey in 1776 (Beck and Haase 1974; Hoover et al. 1990). Both of Anza's expeditions to Mission San Gabriel Arcángel crossed into Riverside County by way of the San Jacinto Valley (Robinson 1957).

During the first half of the nineteenth century, the Temescal Valley was one of the highways for travelers between Mission San Luis Rey in San Diego, Mission San Juan Capistrano, and the Pueblo of Los Angeles (Robinson 1957). Between 1816 and 1821, the Franciscan friars at Mission San Luis Rey utilized the highway to establish Rancho San Jacinto as their farthest cattle ranch.

Mexican Period

Mexico won its independence from Spain, along with control of Spain's American colonies, in 1821. The Mexican government adopted a critical stance toward the missions in California and actively worked to undermine their wealth and power. The government's anti-mission sentiment culminated in the passage of the Secularization Act of 1833, which downgraded missions to the status of parish churches and gave the Mexican governor of California the power to redistribute the vast mission land holdings in the form of grants. In 1833, Mexico decreed the secularization of California missions, freeing both the mission lands and the native neophytes from church jurisdiction. Thousands of native neophytes were separated from their missions and forced to seek wage labor on ranchos or in the pueblos (Bean and Rawls 1993).

Although popularly referred to as "Spanish" ranchos, land grants were typically made during the Mexican period. Between 1835 and 1846, land used by the missions was mostly divided and granted into private ranches. By 1846, more than 500 ranchos existed in California. All but approximately 30 of these were the result of land grants from the Mexican government of California (Bean and Rawls 1993; Robinson 1948).

The United States vowed to honor Spanish and Mexican land grants when California was admitted to statehood in 1850. However, the process of proving legal ownership of the land was time consuming and costly, and many rancheros incurred huge debts. Bankruptcies were common, and many ranchos were mortgaged to pay legal bills. Because of their legal debts, rancheros were forced to drive up the prices of beef, hide, and tallow, making their products less competitive with out-of-state beef products. Finally, a series of bad years, including a flood in 1862 followed by 2 years of severe drought, brought down the cattle industry. When the climate returned to normal, it was too late—nearly all the herds were gone, slaughtered for hide and tallow by rancheros trying to cut their losses. Within a short time, most ranchos fell into foreclosure and were sold at sacrifice prices (Hampson 1993).

Rancho Cañada de los Alisos

In 1842, Rancho Cañada de los Alisos was granted to Jose Antonio Serrano by Governor Juan Bautista Alvarado and supplemented by Governor Pio Pico in 1846 (Hoover et al. 1990; OCCGS 1998). The Spanish translation for the rancho means *Glen of the Alders*, which are believed to have lined the drainages in historic times. The rancho was bounded by El Camino Real along the southwest, Ranchos San Joaquin and Lomas de Santiago on the west, and Rancho Trabuco on the east. Serrano had married Petra Avila in 1829, and they had 12 children. After relocating to the rancho from the pueblo at Los Angeles, Serrano constructed a house and outbuildings on a hill overlooking El Camino Real. In 1858, a new adobe residence was constructed on a low hill beside the future Trabuco Road on the southern embankment of Serrano Creek. The family raised cattle until the droughts of the 1860s forced them to divide the ranch and mortgage several sections. Serrano died in 1870 and was buried at Mission San Juan Capistrano (OCCGS 1998).

American Period

After the signing of the Treaty of Guadalupe Hidalgo in 1848, California became the 31st state to join the Union, in 1850. Disillusioned Gold Rush miners, unsuccessful in their attempts for expedited fortune, began to venture out of the foothills and into the valleys to try their hands at raising livestock and farming. Although most southern California rancheros refused to partition their lands out to the new arrivals, they lost control of their lands after the drought of 1862–1863 decimated the cattle industry; subsequently, the government acquired control of those lands (Bean and Rawls 1993). Soon after, the State of California began to sell sections of the land to European ranchers and farmers in an effort to help populate the new state.

Rancho Cañada de los Alisos was partitioned into 10 lots, of which five were acquired by Dwight Whiting in the 1880s. While Whiting only acquired half of the available lots (Lots 1, 4, 5, 9, and 10), this equated to approximately 82% of the original Rancho Cañada de los Alisos (Ruxton and Egan 1885). The land purchase also provided him with one of the Serrano adobes (State Registered Landmark 199). The adobe, which was built in 1858, was situated on the south side of Serrano Creek and became Whiting's primary residence. In the years that followed, the adobe underwent numerous alterations during the period that Whiting and his family occupied the residence (Hoover et al. 1990).

In the early 1850s, eucalyptus trees were introduced to the United States from Australia and were initially planted as ornamental trees in San Francisco. By the 1860s, eucalyptus trees were being introduced as far south as Los Angeles, where their swift growth and broad adaptability were being appreciated for potential commercial enterprises. The relative ease with which the trees attained height and stoutness led to their being planted for windbreaks, fuelwood, and as shade trees throughout much of California. At the turn of the twentieth century, the economic prospects for eucalyptus trees seemed unlimited as other possible uses were considered, including posts, railroad ties, support timbers, and pier pilings. In 1905, Whiting of El Toro (later Lake Forest) planted 1,000 acres to capitalize on these financial prospects. His ranch, which included most of the original Rancho Cañada de los Alisos, was once considered the "most extensive commercial plantation in the State" (CSBF 1908).

In the 1880s, the area was still a part of Los Angeles County. However, area residents were soon expressing their frustration with conducting commerce at great distances, resulting in a movement to establish a new county. In 1889, the California State Legislature approved the formation of the new County of Orange, with the county seat located in Santa Ana. At that time, only three cities—Anaheim, Santa Ana, and Orange—were incorporated into the new county. By the turn of the twentieth century, urban growth was infringing on agriculture in southern California. William Mulholland had brought water to Los Angeles via the Los Angeles Aqueduct in 1913; this water source allowed for explosive growth in both agricultural enterprises and population in Los Angeles and the Santa Ana River Valley. In 1906, the first Pacific Electric Railway (or Red Car) line was completed. The southern California mass transit system extended from a split in the Long Beach Line and continued through Seal Beach and Huntington Beach to its terminus at Balboa Peninsula in Newport Beach. Extension of the Pacific Electric Railway into Orange County made speculation, settlement, and travel more convenient.

The introduction of the automobile into southern California eventually led to the collapse of the Red Car. The construction of freeways had been initiated during World War II as a way to transfer goods throughout the country at a rapid pace. World War II also initiated the development of several military bases in Orange County, including the Santa Ana Army Air Base and Marine Corps Air Station El Toro. After the war, men who had been stationed in Orange County brought their families west and initiated enormous urban sprawl. Large freeway construction during the 1950s and 1960s, including Interstate (I-) 5, State Route (SR-) 55, SR-22, and I-405, magnified the urban expansion. During the subsequent years, Orange County witnessed the discovery of oil in Huntington Beach, establishment of the aerospace industry on the Irvine Ranch, and development of large amusement parks. By 1960, urban sprawl had reached even farther as neighboring Los Angeles metropolitan residents had begun to settle in the rural Santa Ana Valley.

City of Lake Forest

Development in Lake Forest began in the early 1970s as a series of residential planned communities were built within the unincorporated area of the County of Orange. Lake Forest was incorporated as a city on December 20, 1991. Since its incorporation, it has expanded its limits to include the communities of Foothill Ranch and Portola Hills. Foothill Ranch and Portola Hills are master-planned developments that brought new homes and commercial centers to the eastern boundary of Lake Forest throughout the 1990s.

The City has two lakes, from which the City derives part of its name. The lakes are manmade, and condominiums and custom homes ranging from large to small line their shores. The "forest" for which the City is named lies primarily in the area between Ridge Route Drive, Jeronimo Road, Lake Forest Drive, and Serrano Road, and consists of the eucalyptus trees planted by Dwight Whiting in 1905.

Existing Cultural Resources

Methods Used to Identify Known Cultural Resources

An examination of files, maps, and other records at the California Historical Resources Information System was conducted to identify previously recorded cultural resources in the project area. Background research also included paleoenvironmental and geoarchaeological assessments of the project area to determine the potential for buried cultural resources. In addition, a pedestrian survey of the entire parcel was conducted by qualified archaeologists.

Records Search

A records search for previously recorded archaeological sites and previous cultural resource surveys within the project area and within 1 mile of the project area was conducted through the South Central Coastal Information Center, part of the California Historical Resources Information System at California State University, Fullerton, on June 23, 2009.

Field Surveys

A Phase I reconnaissance survey for cultural resources was conducted at the project site on December 1 and 2, 2009, and January 15, 2010, by ICF archaeologists. Specifically, an intensive pedestrian survey was conducted across the entire 89.6-acre property. Field crews were deployed in regular 10- to 15-meter-wide transects. The principal properties (Baker Ranch, Rados, and Glass Creek properties) comprising the project area have experienced differing levels of disturbance in the recent past, and therefore required moderately different survey strategies. For this reason, each property is discussed separately below.

Baker Ranch Property

A field visit to the Baker Ranch property showed that the entire 18-acre parcel was highly disturbed by extensive soil removal and redistribution. Discussions with plant personnel indicated that at least 5 feet and as much as 30 feet of soil removal had occurred over the past 25 years. Furthermore, portions of the property have been subject to importation of additional materials, including rubble (e.g., piles of concrete, asphalt, brick) and stockpiles of sand and gravel. In the absence of intact soils and terrain, archaeologists from ICF conducted a subjective reconnaissance survey of the property, looking for archaeological deposits in cutbanks and road cuts. Overall, the property exhibited excellent visibility because nearly all of the vegetation had been removed.

Rados Property

The field visit to the Rados property confirmed that a significant portion of the property was disturbed extensively in recent years. While portions of the property are currently covered in bunch grasses, a 2004 aerial photograph (Historic Aerials 2009) showed the entire 13-acre project area as mechanically disturbed. On January 15, 2010, access to the project area was granted, and archaeologists from ICF conducted an intensive pedestrian survey of the property. Results of the pedestrian survey supported the assertion that the property has been greatly disturbed. However, because no specific information was available regarding the vertical disturbance on the parcel, a systematic archaeological survey was conducted. Visibility on the parcel was excellent, with 60% to100% surface visibility.

Glass Creek Property

The field visit to the 58.6-acre Glass Creek property supported the finding that the area has been relatively untouched over the past 60 years. However, a review of the available historical aerial photographs (2005, 2004, 1981, 1980, 1972, 1952, and 1946) showed that the Glass Creek property had been tilled before 1946 (Historic Aerials 2009). Primarily visible on the south-facing slopes, narrowly spaced furrows that follow the natural contours of the land are visible both on the ground and on the aerial imagery. The purpose and age of the furrows were not determined, although they are visible in the 1946 imagery (Historic Aerials 2009). The property was also disturbed with the construction of a 16-inch pipeline by the Los Alisos Water District and during grading for the construction of the reservoir water tank on the western side of the property in 1978. Given that most of the property was accessible and soils were moderately intact, a systematic pedestrian survey was conducted on December 1 and 2, 2009. Surface visibility within the Glass Creek property ranged from good to poor. Along the northeast-facing slopes and along the northern tributary to the Aliso Creek, visibility was often hampered by dense vegetation, with an average of approximately 10% visibility in those areas. However, along ridgelines and the broadly sloping basin areas, visibility was good, with an average of 50%.

Native American Consultation

ICF submitted a letter to the Native American Heritage Commission (NAHC) on June 2, 2009, requesting a review of their Sacred Lands File, as well as a list of Native American representatives to be contacted for information regarding resources of importance within the project area. On June 4, 2009, the NAHC responded, indicating that there were no known sacred sites located within the project area. The NAHC also provided a list of 14 Native American representatives to be contacted for further information. A letter describing the project was sent to each representative on June 16, 2009. Follow-up phone calls were placed the week of August 27, 2009, to each contact. To date, six tribal contacts have responded expressing interest in the project.

Results and Evaluation of Known Cultural Resources

Records Search

The review of historical registers showed no resources designated as local, state, or federal historic properties within 1 mile of the project area. The records search identified 76 previous cultural resource investigations within a 1-mile radius of the project area. Of these studies, 15 were conducted within the project area. Furthermore, the records search identified 36 archaeological sites within a 1-mile radius of the project area. A total of 35 of these are prehistoric, while one is from the historic period. The prehistoric sites include 19 groundstone and lithic scatters, nine temporary camps, three lithic scatters, a rock shelter with pictographs, a quarry site, an encampment site, a possible village site, and a possible milling site. The two “possible” sites were initially recorded in 1949, and therefore lack the level of documentation common to modern site records. Neither site has received an update since the modest data was originally documented. The only historic-era site recorded within 1 mile of the project area is the remnant of an early windmill and water tower common to ranch and agricultural areas of the region.

Overall, the project site has been surveyed, either in part or in totality, sixteen times including the ICF technical document associated with the proposed project. The sixteen surveys resulted in the identification of six archaeological and historical resources within the 58.6-acre Glass Creek property. The resources consist of four historic period resources including a eucalyptus tree grove (temporary site number ICF-LFSP-001H), a road (temporary site number ICF-LFSP-002H), a fence line (temporary site number ICF-LFSP-003H), and a eucalyptus tree line (temporary site number ICF-LFSP-004H). Two prehistoric resources were also recorded along the southern margin of the Glass Creek property and include a largely disturbed encampment site (P30-000176) and a lithic and groundstone scatter (P30-001100). Additionally, five prehistoric isolates have been identified within the Glass Creek property. No archaeological or historical resources have been identified within the Baker Ranch and Rados properties.

The four historic resources identified by ICF (temporary site numbers: ICF-LFSP-001H, ICF-LFSP-002H, ICF-LFSP-003H, and ICF-LFSP-004H) were evaluated and found to not meet California Register of Historical Resources (CRHR) criteria. In 1986, RMW Paleo Associates conducted a limited testing program at the two prehistoric sites (P30-000176 and P30-001100). The result of their testing indicated that most of P30-000176 was destroyed with the reconstruction of El Toro Road, and that the remaining portion northwest of Aliso Creek consisted of a cobble quarry area with only limited core reduction in evidence. The report also concluded that P30-001100 was a surface manifestation with an assemblage consistent with seed and fiber processing. The resources were not formally evaluated by RMW Paleo Associates, but the study concluded that no further testing was required, and suggested that ground-disturbing activities should be monitored by a qualified archaeologist.

Field Surveys

ICF identified four new historic-period sites (temporary site numbers: ICF-LFSP-001H, ICF-LFSP-002H, ICF-LFSP-003H, and ICF-LFSP-004H) and conducted a site visit to both existing documented sites, P-30-000176 and P30-001100. In addition to these sites, an attempt to locate the four previously identified prehistoric isolates was undertaken, although none was located. However, one new isolate (ICF-LFSP-001i), was recorded 8.5 meters east of the 1991 recorded location of isolate P30-100448 (Brown 1991a). All known sites and isolates within the project area occurred within the Glass Creek property.

P30-000176

P30-000176 was originally recorded by McKinney H. Smith as an encampment site with lithic tools, manos, cores, debitage, and two shark teeth on the southeastern embankment overlooking Aliso Creek (Smith 1966). The site was revisited in 1985 and tested the following year by RMW Paleo Associates (Bissell 1985, 1986). At that time, the site boundary was extended to the northwest side of Aliso Creek, with the identification of a subsurface cobble quarry (Bissell 1986). The RMW Paleo Associates investigation yielded 172 artifacts, of which 31% were recovered from the surface. The total assemblage included 67 flakes, 68 cores, 22 debitage, seven spall, two microflakes, two "spokeshaves," a mano, a hammerstone, a bowl fragment, and a stone ball (Bissell 1986). The report also indicated that the original site identified by Smith in 1966 had been destroyed by the reconstruction of El Toro Road. In 1991, RMW Paleo Associates conducted another survey in the area and identified two additional artifacts (a granitic mano and a quartzite core) 75 meters north of the original site boundary (Brown 1991a). During the 2010 survey by ICF, the general location of the site was identified and a close area inspection conducted. However, no artifacts or features associated with the site were observed within the project area.

P30-001100

In 1985, RMW Paleo Associates identified P30-001100, a sparse scatter of groundstone, lithic material, and "thermally-altered stones" along the southern slope of a southwest-trending ridge in dense vegetation (Bissell 1985a, 1985b). The following year, RMW Paleo Associates returned to the site to conduct an evaluation of the resource. They excavated two units and collected all surface artifacts, which included five manos (both complete and fragmentary specimens), three cores, three flakes, and a hammerstone (Bissell 1986). The site was revisited by RMW Paleo Associates in 1991, and a felsite scraper was located (Brown 1991a, 1991c). During the 2010 ICF survey, archaeologists identified the site location and conducted a close area inspection; they only observed one flake fragment. The fragment consisted of a mottled cream and white tertiary chert flake (3.0 by 2.0 by 0.5 centimeters) that was observed within the active hiking/bike trail along the site's northeastern boundary. No other artifacts were identified, which is consistent with the RMW Paleo Associates report, which stated that all artifacts identified during site testing were collected (Bissell 1986). Based on the previous descriptions of the site (Bissell 1985a, 1985b, 1986; Brown 1991a, 1991c), there has been no additional impact on the site in the intervening 23 years.

ICF-LFSP-001H

ICF-LFSP-001H is the extant remnant of a historic 550-foot-long (north-northeast/south-southwest) by 200-foot-long (east-southeast/west-northwest) eucalyptus tree grove. The grove is located in the southwestern portion of the property along the southwestern slope of the ridgeline. The terrain has been terraced and planted with the eucalyptus trees in rows that trend north-northeast/south-southwest, following the contour of the ridge. The grove consists of approximately 10 rows of about 50 trees each. A small percentage (less than 5%) have been cut down and hauled away. Some trees have died, but most are alive, with an average diameter of 12 inches. No associated artifacts that might provide additional information on the age or purpose of the trees were observed within the site.

ICF-LFSP-002H

The site is a 650-foot-long segment of a historic dirt road trending north-northeast/south-southwest. The road lacks any subsurface grade or gravel improvement, except for an approximately 1-inch-thick top coat of oil-infused soil. Oiling is an old technique for controlling dust along rural roads that is still used today. There is no evidence of any other road-specific improvements or signage currently within the area. However, common for isolated roadways, there is some evidence of submodern trash dumping, including an overturned vehicle east and downslope of the road.

ICF-LFSP-003H

ICF-LFSP-003H is a historic wood and barbed wire fence line that is more than 0.25 mile long. The fence line follows an east/west axis across the northern portion of the Glass Creek property, and a north/south axis along the west side of a tributary drainage of Aliso Creek. The fence line consists of 5-foot-high split redwood posts set approximately every 16 feet, with four strands of barbed wire affixed to each post with “U” nails. Approximately 60% of the posts have fallen, and there is no evidence of prolonged maintenance wherein more modern materials may have been introduced to remedy fallen segments. Many of the posts were burned in a historic fire, resulting in minor surface damage at the base of the posts.

ICF-LFSP-004H

ICF-LFSP-004H is an approximately 600-foot-long semicircular line of about 15 eucalyptus trees. The trees are fairly large, with trunks that average approximately 18 to 24 inches in diameter. Several of the trees are even larger, including at least one live tree with a trunk diameter of nearly 36 inches. At the western end of the tree line are two dead eucalyptus trees with trunks approximately 48 inches in diameter. A review of the relevant aerial photographs depict these last two western trees as having substantial growth in 1981, although in the next available aerial photograph (2004), they lack foliage and appear to be dead (Historic Aerials 2009).

Potential for Unknown Buried Cultural Resources

The Glass Creek property has the potential for subsurface deposits in an area that may be characterized as having a high potential for prehistoric resources. The topography of the property consists of a moderately southeast-sloping terrain at the confluence of the east/west-trending Aliso Creek and an unnamed north/south tributary drainage. It is very common, if not almost expected, to encounter prehistoric artifacts at the confluence of two large drainage systems. The presence of a low-relief landform at the confluence of two active drainage systems in conjunction with a moderately dense quantity of prehistoric isolates that have been previously recorded supports this assertion.

As indicated by the record search findings and results of the ICF archaeological survey, there exists a high potential for previously undiscovered subsurface deposits within the Glass Creek property (see “Impacts and Mitigation Measures” section below for further discussion).

Regulatory Setting

Federal

No federal regulations apply to the proposed project.

State

California Environmental Quality Act

CEQA requires the assessment of a proposed project’s effects on cultural resources. Pursuant to CEQA, a *historical resource* is a resource listed or eligible for listing in the CRHR. In addition, resources included in a local register of historic resources or identified as significant in a local survey conducted in accordance with state guidelines are also considered historical resources under CEQA unless a preponderance of the facts demonstrates otherwise. According to CEQA, the fact that a resource is not listed or determined eligible for listing in the CRHR, or is not included in a local register or survey, shall not preclude a lead agency, as defined by CEQA, from determining that the resource may be a historic resource, as defined in California Public Resources Code Section 5024.1. CEQA applies to archaeological resources when 1) the archaeological resource satisfies the definition of a historic resource, or 2) the archaeological resource satisfies the definition of a unique archaeological resource. A *unique archaeological resource* is an archaeological artifact, object, or site that has a high probability of meeting any of the following criteria:

- The archaeological resource contains information needed to answer important scientific research questions, and there is a demonstrable public interest in that information.
- The archaeological resource has a special and particular quality, such as being the oldest of its type or the best available example of its type.
- The archaeological resource is directly associated with a scientifically recognized important prehistoric or historic event or person.

California Register of Historical Resources

Created in 1992 and implemented in 1998, the CRHR is “an authoritative guide in California to be used by state and local agencies, private groups, and citizens to identify the state’s historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change.” Certain properties, including those listed or formally determined eligible for listing in the National Register of Historic Places (NRHP) or designated as a California Historical Landmark (770 and higher) are automatically included in the CRHR. Other properties recognized under the California Points of Historical Interest program, identified as significant in historic resources surveys, or designated by local landmark program may be nominated for inclusion in the CRHR. A resource, either individually or as a contributor to a historic district, may be listed in the CRHR if the State Historical Resources Commission determines that it meets one or more of the following criteria, which are modeled on NRHP criteria:

- **Criterion 1.** It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- **Criterion 2.** It is associated with the lives of persons important in our past.
- **Criterion 3.** It embodies the distinctive characteristics of a type, period, region, or method of construction or represents the work of an important creative individual or possesses high artistic values.
- **Criterion 4.** It has yielded, or may be likely to yield, information important in history or prehistory.

Furthermore, under California Public Resources Code Section 4852(c), a cultural resource must retain integrity to be considered eligible for listing in the CRHR. Specifically, it must retain sufficient character to be recognizable as a historical resource and convey reasons for a determination of significance. Integrity is evaluated with regard to the retention of factors such as location, design, setting, materials, workmanship, feeling, and association. Cultural sites that have been affected by ground-disturbing activities, such as grazing and off-road vehicle use (both of which occur within the project site), often lack integrity because they have been directly damaged or removed from their original location, among other changes.

Typically, a prehistoric archaeological site in California is recommended eligible for listing in the CRHR based on its potential to yield information important in prehistory or history (Criterion 4). Important information includes chronological markers such as projectile point styles or obsidian artifacts that can be subjected to dating methods, or undisturbed deposits that retain their stratigraphic integrity. Sites such as these have the ability to address research questions.

California Historical Landmarks

California Historical Landmarks are buildings, structures, sites, or places that have anthropological, cultural, military, political, architectural, economic, scientific, technical, religious, experimental, or other value and have been determined to have statewide historical significance by meeting at least one of the criteria listed below. The resource also must be approved for designation by a county board of supervisors (or the city or town council in whose jurisdiction it is located), be recommended by the State Historical Resources Commission, and be officially designated by the director of California Department of Parks and Recreation. The specific standards now in use were first applied in the designation of California Historical Landmark 770. (Note that California Historical Landmark 770 and above are automatically listed in the CRHR.)

To be eligible for designation as a California Historical Landmark, a resource must meet at least one of the following criteria:

- It is the first, last, only, or most significant of its type in the state or within a large geographic region (northern, central, or southern California).
- It is associated with an individual or group having a profound influence on the history of California.

- It is a prototype for, or an outstanding example of, a period, style, architectural movement, or type of construction or is one of the more notable works or the best surviving work in a region of a pioneer architect, designer, or master builder.

California Points of Historical Interest

California Points of Historical Interest are sites, buildings, features, or events that have local (city or county) significance and anthropological, cultural, military, political, architectural, economic, scientific, technical, religious, experimental, or other value. Points of historical interest designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the CRHR. No historic resource may be designated as both a landmark and a point. If a point is later granted status as a landmark, the point designation will be retired. In practice, the point designation program is most often used in localities that do not have a locally enacted cultural heritage or preservation ordinance.

To be eligible for designation as a California Point of Historical Interest, a resource must meet at least one of the following criteria:

- It is the first, last, only, or most significant of its type within the local geographic region (city or county).
- It is associated with an individual or group having a profound influence on the history of the local area.
- It is a prototype for, or an outstanding example of, a period, style, architectural movement, or type of construction or is one of the more notable works or the best surviving work in the local region of a pioneer architect, designer, or master builder.

Native American Heritage Commission

California Public Resources Code Section 5097.91 established the NAHC, the duties of which include inventorying places of religious or social significance to Native Americans and identifying known graves and cemeteries of Native Americans on private lands. California Public Resources Code Section 5097.98 specifies a protocol to be followed when the NAHC receives notification of a discovery of Native American human remains from a county coroner.

California Public Records Act

Sections 6254(r) and 6254.10 of the California Public Records Act were enacted to protect archaeological sites from unauthorized excavation, looting, or vandalism. Section 6254(r) explicitly authorizes public agencies to withhold information from the public related to "Native American graves, cemeteries, and sacred places maintained by the Native American Heritage Commission." Section 6254.10 specifically exempts from disclosure requests for "records that relate to archaeological site information and reports maintained by, or in the possession of, the Department of Parks and Recreation, the State Historical Resources Commission, the State Lands Commission, the Native American Heritage Commission, another state agency, or a local agency, including the records that the agency obtains through a consultation process between a Native American tribe and a state or local agency."

California Health and Safety Code Sections 7050.5 and 7052

California Health and Safety Code (HSC) Section 7050.5 declares that in the event of the discovery of human remains outside a dedicated cemetery, all ground disturbance must cease and the county coroner must be notified. California Health and Safety Code Section 7052 establishes a felony penalty for mutilating, disinterring, or otherwise disturbing human remains, except by relatives.

California Penal Code Section 622.5

California Penal Code Section 622.5 provides misdemeanor penalties for injuring or destroying objects of historic or archaeological interest located on public or private lands, but specifically excludes the landowner.

California Public Resources Code Section 5097.5

California Public Resources Code Section 5097.5 defines as a misdemeanor the unauthorized disturbance or removal of archaeological, historic, or paleontological resources located on public lands.

Project Impacts and Mitigation Measures

This section describes the impact analysis related to cultural resources for the proposed project. It describes the methods used to determine the impacts of the project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

Methodology

To evaluate the project's potential effects on significant cultural resources, including prehistoric and historic archaeological sites, archaeologists conducted a Phase I inventory that included a literature review, Native American consultation, and field surveys of the project site. The impact analysis presented below is based on the methods and results of the ICF cultural resources report in Appendix D.

Thresholds of Significance

Because the City's 2010 CEQA Significance Thresholds do not cover cultural resources, the following thresholds of significance are based on Appendix G of the State CEQA Guidelines. For purposes of this section of the EIR, implementation of the proposed project would create a potentially significant impact if any of the following conditions would occur as a result of such implementation:

- a substantial adverse change in the significance of known archaeological or historical resources as defined in Section 15064.5 of the State CEQA Guidelines;
- a substantial adverse change to the significance of previously unidentified archaeological or historical resources pursuant to Section 15064.5 of the State CEQA Guidelines; or
- disturbance of any human remains, including those interred outside of formal cemeteries.

Impacts and Mitigation Measures

Impact CR-1: The proposed project would not cause a substantial adverse change in the significance of known archaeological or historical resources as defined in Section 15064.5 of the State CEQA Guidelines.

The proposed development of the Glass Creek property would result in a substantial impact on two of the sites (ICF-LFSP-003H and ICF-LFSP-004H). However, both sites were evaluated by ICF as part of the Phase I inventory and found to not meet the CRHR criteria. In addition, neither qualifies as a unique archaeological resource. The remaining sites (ICF-LFSP-001H, ICF-LFSP-002H, P30-000176, and P30-001100) are located in close proximity to the proposed grading limits and could potentially be affected by the proposed project. However, indirect impacts on sites ICF-LFSP-001H, ICF-LFSP-002H, P30-000176, and P30-the 001100 are not considered significant because each site has been evaluated and found to not meet CRHR criteria and none of the sites meet the definition of a "unique archaeological resource" (Public Resources Code 21083.2 (g)). Therefore, the project would not cause a substantial adverse change to the significance of a known archaeological or historical resource as defined in Section 15064.05 of the State CEQA Guidelines.

No archaeological or historical resources have been identified within the Baker Ranch and Rados properties. Both properties have been subject to a high level of disturbance. Due to the high level of disturbance identified within the Baker Ranch and Rados properties, an archaeological monitor is not recommended.

Mitigation Measures

No mitigation is required.

Residual Impacts

There would be no impact.

Impact CR-2: The proposed project has the potential to cause a substantial adverse change to the significance of previously unidentified archaeological or historical resources pursuant to Section 15064.5 of the State CEQA Guidelines.

Ordinarily, the five prehistoric isolates would not require additional protection; however, their presence within a depositional environment at the confluence of two active drainages suggests a potential for a buried context. Furthermore, following the archaeological testing of sites P30-000176 and P30-001100 by RMW Paleo Associates, it was recommended that an archaeological monitor be present in the vicinity of the two sites to identify any subsurface prehistoric deposits that might be encountered during construction. Therefore, buried cultural deposits that were not identified during the surface survey may be encountered during construction. Due to the high level of disturbance identified within the Baker Ranch and Rados properties, an archaeological monitor is not recommended there. Disturbance of potential buried deposits within the Glass Creek property would constitute a significant impact. Therefore, the proposed project has the potential to cause a substantial adverse change to the significance of previously unidentified archaeological or historical resources pursuant to Section 15064.5 of the State CEQA Guidelines. However, implementation of Mitigation Measure CR-1 would reduce this impact to a less-than-significant level.

Mitigation Measures

Mitigation Measure CR-1: Archaeological construction monitoring.

Because there is the potential for significant subsurface deposits, a qualified archaeologist will monitor ground-disturbing activities during construction within the Glass Creek property.

In accordance with Public Resources Code Section 21083.2(i), should unidentified cultural resources be encountered during construction, work in the immediate vicinity of the find shall cease until a qualified archaeologist can evaluate the find for CRHR eligibility and determine whether it constitutes a unique archaeological resource for purposes of CEQA. Should the accidental discovery be identified as a significant historical resource, or a unique archaeological resource, appropriate treatment recommendations will be developed, which may include avoidance, data recovery excavation, or other mitigation. The following mitigation measures from the OSA PEIR would be applicable to archaeological construction monitoring (Mitigation Measure CR-1) for the proposed project:

- Prior to issuance of a grading permit for any site within the project area, a qualified archaeologist shall be retained by the applicant for that grading permit to provide professional archaeological services. The archaeologists shall be present at the pre-grading conference to establish procedures for archaeological resources surveillance. Those procedures shall include provisions for temporarily halting or redirecting work to permit sampling, identification, and evaluation of resources deemed by the archaeologist to potentially be historical resources or unique archaeological resources under CEQA. If, before grading, and portions of the property subject to the grading permit have been identified as sites, which may have such resources present and may be impacted by development, the archaeologist shall conduct a site survey and records search and such further examination as may be needed to assess the significance of the resources. If the archaeological resource is determined to be a unique archaeological resource, options for avoidance or preservation in place shall be evaluated and implemented if feasible. In the event that avoidance or preservation in place is infeasible and the archaeologist determines that the potential for significant impacts to such resources exists, a data recovery program shall be expeditiously conducted. The archaeologists also shall conduct on-site archaeological monitoring for the grading operations. Should historical resources or unique archaeological resources be discovered during the grading operation, grading activities shall be modified to allow expeditious and proper analysis and/or salvage of the resources. Disposition of the resources shall be within the discretion of the City of Lake Forest (OSA Mitigation Measure 3.5-1).
- The qualified archaeologist retained shall prepare monthly progress reports to be filed with the City of Lake Forest (OSA Mitigation Measure 3.5-2).
- Artifacts recovered shall be prepared, identified, and cataloged before donation to the accredited repository designated by the City of Lake Forest. State of California Guidelines for the Curation of Archaeological Collections shall be consulted regarding the treatment of recovered artifacts. Any artifacts determined to be insignificant shall be offered to local schools for use in education programs (OSA Mitigation Measure 3.5-3).
- The qualified archaeologist retained shall prepare a final report to be filed with the City. The qualified archaeologist retained shall prepare a final report to be filed with the site developer(s), the City of Lake Forest, and the South Coast Central Information Center. The

report shall include a list of specimens recovered, documentation of each locality, and interpretation of artifacts recovered as well as all specialists' reports as appendices (OSA Mitigation Measure 3.5-4).

Residual Impacts

With the incorporation of Mitigation Measure CR-1, this impact would be less than significant.

Impact CR-3: The proposed project has the potential to cause a disturbance to human remains, including those interred outside of formal cemeteries.

Because the project would involve grading and excavation for the construction of building footings, utilities, and other infrastructure, buried cultural deposits, including human remains, that were not identified during the surface survey may be encountered during construction. If this were to occur, impacts would be significant, and the following mitigation measure would be required. Implementation of Mitigation Measure CR-2 would reduce this impact to a less-than-significant level.

Mitigation Measures

Mitigation Measure CR-2: Consultation with county coroner and notification of most likely descendant.

If human remains are encountered, California Health and Safety Code Section 7050.5 states that no further disturbance can occur until the county coroner has made a determination of origin and disposition pursuant to California Public Resources Code Section 5097.98. The county coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the coroner will notify the NAHC, which will determine and notify the most likely descendent (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

Residual Impacts

With the incorporation of Mitigation Measure CR-2, this impact would be less than significant.

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Section 3.5

Geology and Soils

Section 3.5
Geology and Soils

Introduction

This report analyzes the proposed project's potential impacts related to geology and geologic hazards, including earthquake and landslide hazards. Key sources of data used in the preparation of this chapter include the following:

- Draft Preliminary Geotechnical Evaluation for the Proposed Lake Forest Sports Park, City of Lake Forest, California, prepared by Lawson & Associates Geotechnical Consulting, Inc. (LGC) (LGC 2010) (Appendix E);
- Regional geologic maps and fault maps prepared by the California Department of Conservation's California Geological Survey (CGS) (formerly the California Division of Mines and Geology [CDMG]) and U.S. Geological Survey (USGS);
- Soils information made available on the Web Soil Survey, based on soils mapping by the Soil Conservation Service (SCS) (now the Natural Resources Conservation Service [NRCS]); and
- Seismic activity data from the CGS, USGS, and Southern California Earthquake Data Center.

Specific reference information is provided in the text.

Environmental Setting

Regional Geology

The project area is located in the Peninsular Ranges geomorphic province. This province is located in the southwestern portion of California. The Peninsular Ranges province includes the Los Angeles Basin and is bounded by the Transverse Ranges geomorphic province to the north and northeast and the Colorado Desert geomorphic province to the southeast (CGS 2003:3). Its topography is similar to the Coast Ranges geomorphic province, but its geology is similar to the Sierra Nevada geomorphic province because of its granitic rock, which intrudes upon the older metamorphic rock.

The structure of the Peninsular Ranges geomorphic province is dominated by faults of the San Andreas system. The two major faults are the San Jacinto fault zone in the eastern portion of the province and the Elsinore fault zone in the central portion of the province. Ranges and valleys in this province are subparallel to these northwest-trending fault zones.

The Santa Ana Mountains form the northernmost extent of the Peninsular Ranges. Exposed in the foothills of these mountains are 2,500 feet of Early to Middle Miocene sandstones and siltstones, which record deposition during a progressive marine transgression.

Topography

The project area is located near the southern edge of the Los Angeles Basin in the western foothills of the Santa Ana Mountains. The Santa Ana Mountains are generally characterized by southwest-trending canyons, washes, and ridges; the nearby Santiago Canyon, however, is perpendicular to these features (CDMG 2000:5). The foothills are incised by numerous streams.

Topography within the project area consists generally of rolling hills. The elevation ranges from approximately 715 feet above mean sea level (MSL) in the northwestern portion of the project area to approximately 860 feet above MSL in the southeastern portion. Glass Creek and several tributaries to Glass Creek run through the southern end of the project area. Mining on the Baker Ranch property and grading on the northern half of the Rados property has greatly changed the topography in that area.

Site Geology

The site-specific geology was mapped as part of the preliminary geotechnical evaluation. The bedrock geologic unit on the project site is the Oso Member of the Tertiary-aged Capistrano Formation (LGC 2010). Surficial units consisting of stockpiled materials, documented and undocumented fill, and topsoil/colluvium overlie the bedrock material (LGC 2010). A brief description of the units is presented below (from youngest to oldest).

Artificial Fill – Stockpile

As a result of the ongoing mining operations in the northern portion of the project site, many areas with stockpiled materials are present on the Baker Ranch property. The materials that make up these stockpiles include concrete rubble, crushed aggregate base, various graded sands, and dozer-pushed mixtures of gravel to cobble, sand, and silt. In general, the stockpiled artificial fill materials are loose, potentially compressible, and unsuitable for the placement of additional fill and/or supporting the proposed improvements.

Artificial Fill – Undocumented

Areas of undocumented artificial fill soils were observed at various locations on the site but are concentrated primarily in the northern portion. The three largest areas with undocumented fill material appeared to be associated with in-filled drainage channels, which occur on the western and central portion of the Rados parcel. The thickest area with undocumented fill materials is located in approximately the central portion of the Rados property. These materials, which contain clayey materials, were encountered to depths of up to approximately 35 feet below the ground surface; however, deeper areas may be encountered during site grading. Undocumented fill associated with backfill of the non-potable waterline crosses the central portion of the Glass Creek property in a roughly east-west direction (ASL Consulting Engineers 1998 [in LGC 2010]). In general, the undocumented fill materials are considered potentially compressible and unsuitable for the placement of additional fill and/or supporting the proposed improvements.

Artificial Fill – Older

Older fill materials identified on the site are associated with grading for the reservoir on the western side of the site. Based on a review of the as-built plans for the Zone II Reservoir (Boyle Engineering Corporation 1978 [in LGC 2010]), these materials are believed to have been placed during grading for the construction of the reservoir, circa 1978. In general, these materials are considered suitable for the placement of additional fill and/or supporting the proposed improvements, with the exception of the near-surface material, which is anticipated to be desiccated and likely to include animal burrows and plant roots (approximately the upper 5 feet).

Topsoil/Colluvium (Map Symbol: Qcol)

A relatively thin veneer of topsoil/colluvium mantles the bedrock materials on the site. Generally, topsoil develops as a result of weathering of the underlying materials, whereas colluvium is a general term that refers to loose and incoherent deposits that accumulate, typically in the lower portions of slopes as a result of gravity. Because these lithologies develop concurrently and are typically intermixed, they are grouped together herein for both mapping and discussion purposes. It should also be noted that while alluvial deposits (i.e., materials deposited by streams or running water) are present on the site, for the purposes of this report, they have also been grouped with colluvium.

In general, topsoil and colluvium were not mapped across much of the site because of their relatively thin nature and variable lateral extents; however, known thicker areas of colluvium were mapped. These soils are typically massive, porous, and likely to contain roots and organics. The upper portion of these materials (up to approximately 7.5 feet below existing grades) is considered to be potentially compressible and should be removed to expose suitable material in areas of proposed development.

Capistrano Formation – Oso Member

The Oso Member of the Tertiary Capistrano Formation is exposed across much of the site and underlies the entire site at depth. The Oso Member was deposited in a submarine fan complex environment. As encountered, these materials generally consist of medium to coarse, weakly cemented, very dense sandstone. In general, the Oso Member material was found to be moderately bedded, consistently dipping approximately 10 degrees to the west.

Groundwater

During the subsurface evaluation conducted as part of the preliminary geotechnical evaluation, groundwater was encountered at a depth of 24 feet below the existing grade. During site grading, it should be expected that groundwater may be encountered locally in perched conditions within bedrock, colluvium, and undocumented fill during grading.

Soils

Several soils occur in the project area (Figure 3.5-1). Table 3.5-1 summarizes the characteristics of soil units in the project area. As seen in Table 3.5-1, two issues of concern are expansive soils (linear extensibility and shrink-swell potential) and soil corrosivity. In particular, the Mocho loam and Myford soils are both expansive and corrosive (NRCS 2008). In addition, wind erodibility is a concern on several soils, and water erosion is also likely to be a concern because of the high sand content of several of the soils. Representative samples of the onsite materials indicate expansion potentials that range from low to very low. In addition, soil testing revealed that the onsite soils are non-corrosive.

Mining has and will continue to alter the soils on the Baker Ranch property. On the Baker Ranch property, all topsoil and overburden has been or will be removed prior to development of the property. No topsoil or overburden will be left on this property after the property has been reclaimed (El Toro Materials Company 2003:47).

Table 3.5-1. General Characteristics of Soils in the Project Area

Soil Map Unit	Landform	Soil Texture	Drainage	Linear Extensibility	Shrink-Swell Potential	Wind Erodibility[a]	Risk of Corrosion	
							Uncoated Steel	Concrete
Capistrano Sandy Loam, 2% to 9% slopes	Alluvial fans	Sandy loam to fine sandy loam	Well drained	0.0 to 2.9	Low	3	Low	Low
Capistrano Sandy Loam, 9% to 15% slopes	Alluvial fans	Sandy loam to fine sandy loam	Well drained			3	Low	Low
Cieneba Sandy Loam, 30% to 75% slopes, eroded	Hills	Sandy loam	Somewhat excessively drained			3	Low	Low
Mocho Loam, 2% to 9% slopes	Alluvial fans	Loam to sandy or fine sandy loam	Well drained	0.0 to 5.9	Low to moderat e	4L	High	Low
Myford Sandy Loam, 2% to 9% slopes	Terraces	Sandy loam to sandy clay	Moderately well drained				High	Moderate
Myford Sandy Loam, 9% to 15% slopes	Terraces	Sandy loam to sandy clay	Moderately well drained	0.0 to 8.9	Low to high	3	High	Moderate
Myford Sandy Loam, 9% to 30% slopes, eroded	Terraces	Sandy loam to sandy clay	Moderately well drained	0.0 to 8.9	Low to high	3	High	Moderate
Riverwash	Fans	Sand, stratified coarse sand, to sandy loam		0.0 to 2.9	Low	1		
San Andreas Sandy Loam, 15% to 30% slopes	Hills	Sandy loam	Well drained	0.0 to 2.9	Low	3	Moderate	Moderate

[a] Soils with similar properties with respect to their susceptibility to wind erosion in cultivated areas. Soils in Group 1 are the most susceptible to wind erosion, and those in Group 8 are the least susceptible.

Source: Natural Resources Conservation Service 2008.

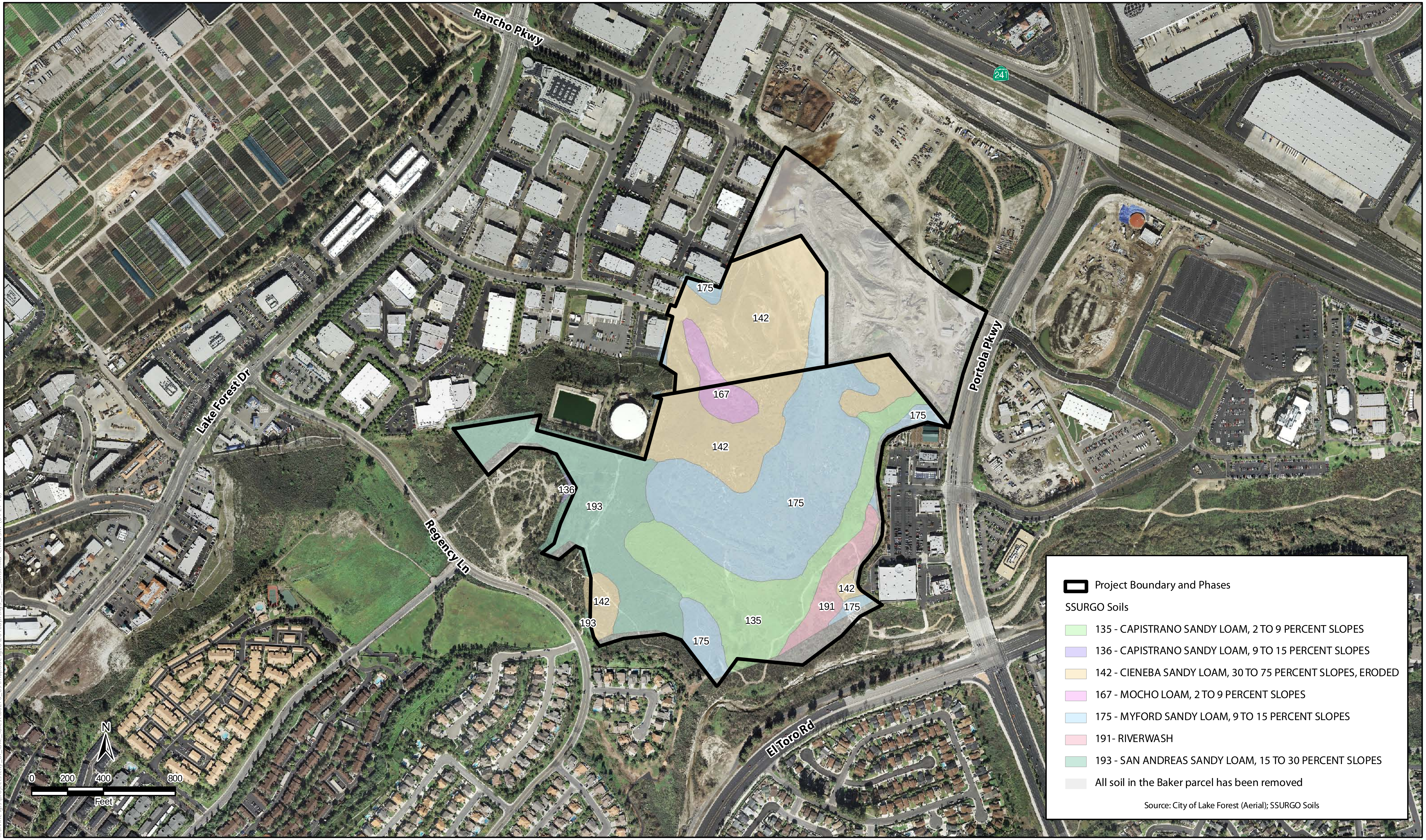

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Figure 3.5-1
Soils Map

Geologic Hazards

Primary Seismic Hazards

The State of California considers two aspects of earthquake events *primary seismic hazards*: surface fault rupture (disruption at the ground surface as a result of fault activity) and seismic ground shaking.

Surface Fault Rupture

The project site is not located within an Alquist-Priolo Earthquake Fault Zone, and no active faults were identified on the site during the geologic evaluation; therefore, the risk of surface fault rupture at the project site is considered low(LGC 2010). The nearest active faults to the project site are the Newport-Inglewood fault zone, approximately 13 miles to the southwest, and the Elsinore fault zone, approximately 11 miles to the northeast (refer to Figure 3.5-2, Principal Active Faults) (USGS 2006).

Strong Ground Shaking

Unlike surface rupture, ground shaking is not confined to the trace of a fault, but rather, it propagates into the surrounding areas during an earthquake. The intensity of ground shaking typically diminishes with distance from the fault, but ground shaking may be locally amplified and/or prolonged by some types of substrate materials.

Like all of Southern California, the project area is in a seismically active area and is likely to experience at least moderate ground shaking during the lifespan of the proposed project. Table 3.5-2 summarizes current information on earthquake recurrence intervals and the maximum credible earthquake for key structures near the project area.

Table 3.5-2. Maximum Credible Earthquake and Recurrence Interval for Principal Active Faults in the Project Vicinity

Fault	Magnitude of Maximum Credible Earthquake	Approximate Recurrence Interval	Most Recent Major Rupture
Coronado Bank Fault Zone and Palos Verdes–Coronado Bank Fault Zone	6.0–7.0	Unknown	Holocene[a]
Newport-Inglewood Fault Zone	6.0– 7.4	Unknown	1933
Elsinore Fault Zone	6.5–7.5	250 years	1910
Whittier Fault	6.0–7.2	Unknown	Holocene[a]
San Jacinto Fault Zone	6.5–7.5	100 and 300 years	Within past few centuries
San Andreas Fault Zone	6.8 –8.0	20 to 300 years	1857 (Mojave segment)

[a] The Southern California Earthquake Data Center defines the Holocene as occurring within the last 10,000 years, which differs from the Alquist-Priolo Act definition of the Holocene (past 11,000 years).

Source: Southern California Earthquake Data Center 2009.

Secondary Seismic Hazards

Secondary seismic hazards refers to seismically induced landsliding, liquefaction,[1] and related types of ground failure. As discussed in the Regulatory Setting section, the State of California maps areas that are subject to secondary seismic hazards pursuant to the Seismic Hazards Mapping Act of 1990.

Landslide and Other Slope Stability Hazards

Based on a review of the State of California Seismic Hazard Zones, El Toro 7.5-minute quadrangle (CDMG 2001), a portion of the southern half of the Glass Creek parcel is located in a zone with the potential for earthquake-induced landslide. This zone generally extends from the slope below the offsite Irvine Ranch Water District (IRWD) tank to the northwest to the natural canyon located northwest of El Toro Road (refer to Figure 3.5-3, Seismic Hazard Zones) (LGC 2010). In addition, the Capistrano Formation has been identified as prone to landsliding (Morton and Miller 2006:21). The Puente Formation—considered one of the area's most landslide-prone geologic units (CDMG 2000b:25)—underlies the Capistrano Formation in the project vicinity (CDMG 2000b:24).

Liquefaction and Other Types of Ground Failure

Liquefaction is the process in which soils and sediments lose shear strength and fail during seismic ground shaking. The vibration caused by an earthquake can increase pore pressure in saturated materials. If the pore pressure is raised to be equivalent to the load pressure, this causes a temporary loss of shear strength, allowing the material to flow as a fluid. This temporary condition can result in severe settlement of foundations and slope failure. The susceptibility of an area to liquefaction is determined largely by the depth to groundwater and the properties (e.g., texture and density) of the soil and sediment within and above the groundwater. The sediments most susceptible to liquefaction are saturated, unconsolidated sand and silt within 50 feet of the ground surface (CDMG 1997).

Liquefaction may be an issue in the project area. Although the project area is not in a liquefaction zone, as designated on the Seismic Hazard Zone Map for the El Toro quadrangle (CDMG 2001) (refer to Figure 3.5-3, Seismic Hazard Zones), it is adjacent to a liquefaction zone. The late Quaternary alluvial and fluvial deposits found in the project area are generally susceptible to liquefaction (CDMG 2000b:6). According to the preliminary geotechnical evaluation, groundwater depth is expected to be approximately 24 feet below the ground surface. Based on the proposed finish grades, the depth of the compacted fill, the lack of a shallow groundwater table, and the depth of groundwater, the potential for post-construction liquefaction and liquefaction-induced settlement is considered to be very low (LGC 2010).

Lateral spreading is a type of liquefaction-induced ground failure that is associated with the lateral displacement of surficial blocks of sediment, resulting from liquefaction in a subsurface layer. Once liquefaction transforms the subsurface layer into a fluid mass, gravity plus an earthquake's inertial forces may cause the mass to move downslope toward a free face (such as a river channel or an embankment). Lateral spreading may cause large horizontal displacements. Such movement typically damages pipelines, utility infrastructure, bridges, and structures. Because of the low potential for liquefaction, the potential for lateral spreading is also considered to be very low (LGC 2010).

[1] *Liquefaction* is a phenomenon in which the strength and stiffness of a soil are reduced by earthquake shaking or other rapidly applied loading. Liquefaction and related types of ground failure are of greatest concern in areas where well-sorted, sandy, unconsolidated sediments are present in the subsurface and the water table is comparatively shallow.

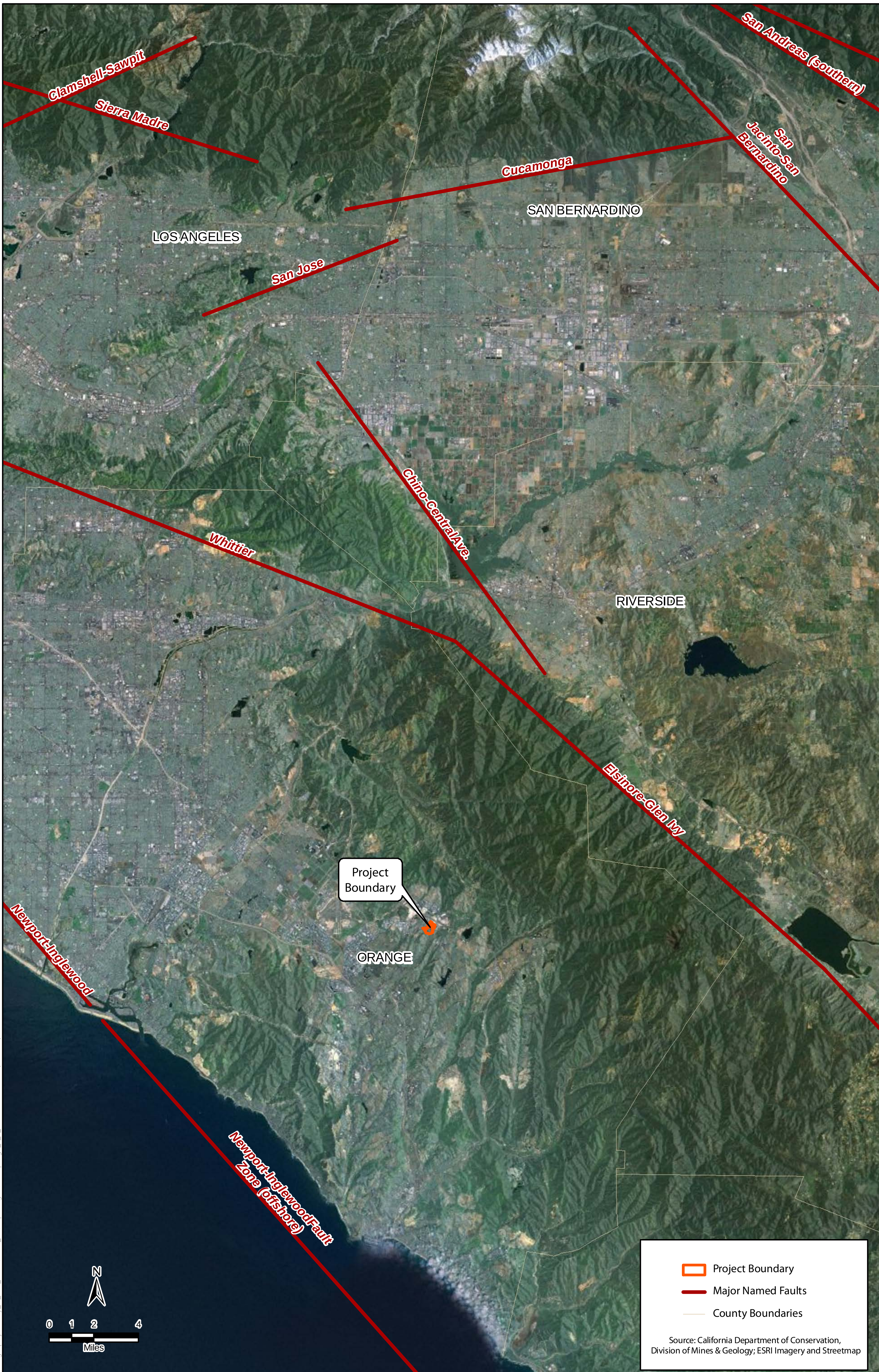

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Figure 3.5-2
Principal Active Faults

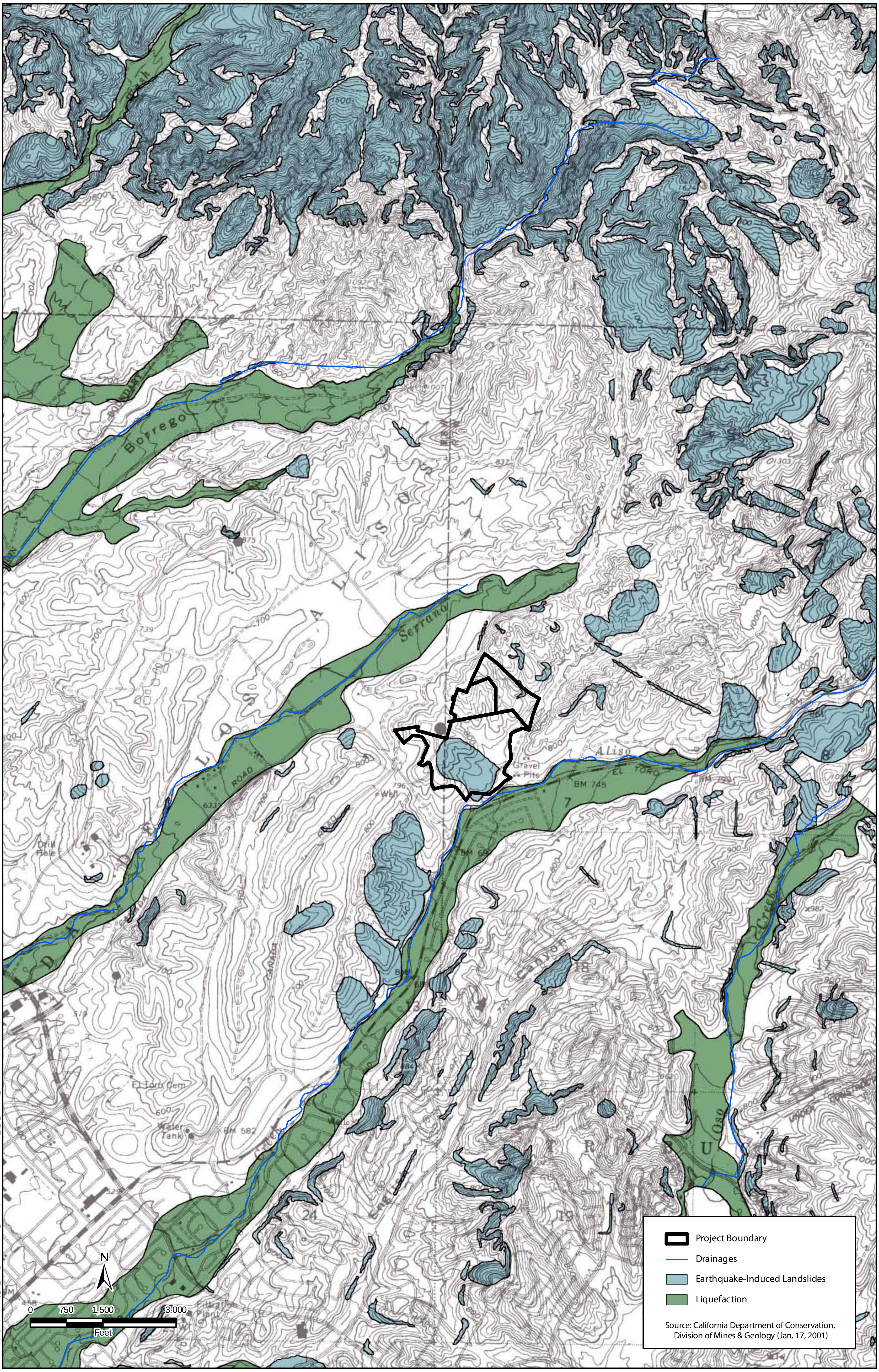

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Figure 3.5-3
Seismic Hazard Zones

Regulatory Setting

State

Alquist-Priolo Earthquake Fault Zoning Act

California's Alquist-Priolo Earthquake Fault Zoning Act (Public Resources Code Section 2621 et seq.), originally enacted in 1972 as the Alquist-Priolo Special Studies Zones Act and renamed in 1994, is intended to reduce risks to life and property from surface fault rupture during earthquakes. The Alquist-Priolo Act prohibits the location of most types of structures intended for human occupancy[2] across the traces of active faults and strictly regulates construction in the corridors along active faults (earthquake fault zones). It also defines criteria for identifying active faults, giving legal weight to terms such as *active*, and establishes a process for reviewing building proposals in and adjacent to earthquake fault zones.

Under the Alquist-Priolo Act, faults are zoned, and construction along or across them is strictly regulated if they are "sufficiently active" and "well defined." A fault is considered *sufficiently active* if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined for purposes of the act as referring to approximately the last 11,000 years). A fault is considered well-defined if its trace can be identified clearly by a trained geologist at the ground surface, or in the shallow subsurface using standard professional techniques, criteria, and judgment (California Geological Survey 2007a).

Seismic Hazards Mapping Act

Like the Alquist-Priolo Act, the Seismic Hazards Mapping Act of 1990 (Public Resources Code Sections 2690–2699.6) is intended to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including strong ground shaking, liquefaction, and seismically induced landslides. Its provisions are similar in concept to those of the Alquist-Priolo Act: The state is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped seismic hazard zones.

Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development. Specifically, cities and counties are prohibited from issuing development permits for sites within seismic hazard zones until appropriate site-specific geologic and/or geotechnical investigations have been carried out and measures to reduce potential damage have been incorporated into the development plans.

Construction Activities Stormwater General Permit (2009-0009-DWQ Permit)

Dischargers whose projects disturb one or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Discharges of Storm Water Associated

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[2] With reference to the Alquist-Priolo Act, a *structure for human occupancy* is defined as one "used or intended for supporting or sheltering any use or occupancy, which is expected to have a human occupancy rate of more than 2,000 person-hours per year" (California Code of Regulations, Title 14, Div. 2, Section 3601[e]).

with Construction Activity Construction General Permit Order 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading and disturbances to the ground such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP should contain a site map(s) which shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP must list Best Management Practices (BMPs) the discharger will use to protect storm water runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. Section A of the Construction General Permit describes the elements that must be contained in a SWPPP.

If a single project traverses more than one Regional Water Quality Control Board (RWQCB) jurisdiction, a complete Notice of Intent package (Notice of Intent, site map, and fee) and Notice of Termination (upon completion of each section), must be filed for each RWQCB.

Municipal Separate Storm Sewer System Program (MS4s)

The U.S. EPA defines a Municipal Separate Storm Sewer System (MS4) as any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, country, or other public body having jurisdiction over storm water, that are designed or used for collecting or conveying storm water. As part of the NPDES program, U.S. EPA initiated a program requiring that entities having MS4s apply to their local RWQCBs for storm water discharge permits. The program proceeded through two phases. Under Phase I, the program initiated permit requirements for designated municipalities with populations of 100,000 or greater to obtain NPDES permit coverage for their stormwater discharges. Phase II expanded the program to municipalities with populations less than 100,000 as well as small MS4s outside the urbanized areas that are designated by the permitting authority, to obtain NPDES permit coverage for their stormwater discharges.

Generally, Phase I MS4s are covered by individual permits and Phase II MS4s are covered by a general permit. Each regulated MS4 is required to develop and implement a stormwater management program (SWMP) to reduce the contamination of stormwater runoff and prohibit illicit discharges.

Regional

Orange County Stormwater Program 2003 Drainage Area Management Plan

The Drainage Area Management Plan (DAMP) satisfies NPDES permit conditions for creating and implementing an Urban Runoff Management Program (URMP) to reduce pollutant discharges to the maximum extent practicable for protection of receiving water body water quality and support of designated beneficial uses. This DAMP contains guidance on both structural and nonstructural BMPs for meeting these goals. Priority projects as defined in the DAMP generally include:

- residential development of 10 units or more,
- commercial and industrial development greater than 100,000 square feet (sf), including parking area,
- automotive repair shops,
- restaurants of greater than 5,000 sf land area,
- hillside development greater than 5,000 sf for the San Diego Region,
- hillside developments on 10,000 sf or more located on areas with known erosive soil conditions or where natural slope is 25 percent or more for the Santa Ana Region,
- impervious surface of 2,500 sf or more located within, directly adjacent to (within 200 feet), or discharging directly to receiving waters within Environmentally Sensitive Areas (ESAs),
- parking lots 5,000 sf or more, or with 15 parking spaces or more,
- potentially exposed to urban stormwater runoff, streets, roads, highways, and freeways, which would create a new paved surface that is 5,000 sf or greater (San Diego Region), and
- all significant redevelopment projects where significant redevelopment is defined as the addition of 5,000 sf or more of impervious surface on an already developed site (Santa Ana Region).

The Land-Use Planning for New Development and Redevelopment Component of the DAMP requires each co-permittee to minimize the short and long-term impacts on receiving water quality from new development and redevelopment. Each co-permittee's general plan or equivalent plan (e.g., comprehensive, master, or community plan) will include water quality and watershed protection principles and policies to direct land use decisions and require implementation of consistent water quality protection measures for development projects.

The specific water pollutant control program elements of the Orange County NPDES Stormwater Program are documented in the 2003 DAMP and corresponding Local Implementation Plans (LIPs), which serve as the permittees' primary policy and implementation documents for compliance with the NPDES Stormwater permits that were issued by the RWQCBs to the County of Orange, the Orange County Flood Control District (OCFCD), and the incorporated cities of Orange County (collectively referred to as permittees). The County DAMP and LIP identify acceptable BMPs and methods to incorporate BMPs into proposed projects. The City of Lake Forest, as a permittee, has prepared a LIP which details how the stormwater programs within the County's DAMP would be implemented by the City. It should be noted that the Lake Forest LIP takes precedence over DAMP requirements.

Local

City of Lake Forest Municipal Code

Chapter 8.02, California Building Code

The City has adopted the California Building Code, with certain amendments, to regulate the erection, construction, enlargement, alteration, repair, improving, removal, conversion, demolition, occupancy, equipment, use, height, area and maintenance of all buildings and structures in the City.

Chapter 8.30, Lake Forest Grading and Excavation Code

The City's Grading and Excavation Code sets forth rules and regulations to control excavation, grading, and earthwork construction, including fills and embankments, and establishes administrative requirements for issuance of grading permits and approval of plans and inspection of grading construction in accordance with the requirements for grading and excavation as contained in the Uniform Building Code then in effect as adopted and modified by City ordinance.

The City's grading manual is the latest edition of the Orange County Grading Manual. If the grading manual and Grading and Excavation Code conflict, the Grading and Excavation Code takes precedence. According to the Grading and Excavation Code, a geotechnical report is required for all grading projects with excavation exceeding 50 cubic yards, unless the requirement is waived by the building official (LFMC 8.30).

Chapter 15.14, Stormwater Quality Management

The City's municipal codes related to stormwater quality management are designed to comply with the Clean Water Act and the California Water Code by prohibiting the discharge of pollutants to navigable waters of the United States from a point source unless authorized by a permit issued pursuant to the National Pollutant Discharge Elimination System (NPDES).

Lake Forest General Plan

Geologic Hazards

The following goals and policies in the Safety and Noise Element are intended to minimize the risks associated with geologic hazards through appropriate planning.

Goal 1.0: Reduction in the risk to the community from hazards associated with geologic conditions, seismic activity and flooding.

Policy 1.1: Reduce the risk of impacts from geologic and seismic hazards.

Project Impacts and Mitigation Measures

The impacts associated with the proposed project's exposure to the existing known geologic hazards on the site are discussed below. Mitigation measures are provided, where appropriate.

Methodology

Evaluation of the geology and soils impacts in this section is based on information from published maps, reports, and other documents that describe the geologic, seismic, and soil conditions of the project area as well as professional judgment. The analysis assumes that the project will conform to the latest California Building Code standard, City's General Plan, the City's Grading and Excavation Code, and NPDES requirements.

Thresholds of Significance

Because the City's 2010 CEQA significance thresholds do not cover geology, soils, and seismicity, the following thresholds of significance are based on Appendix G of the 2009 State CEQA Guidelines. For purposes of this section of the draft EIR, implementation of the proposed project would create a potentially significant impact if any of the conditions outlined below would occur as a result of such implementation.

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - i. Strong seismic ground shaking;
  - ii. Seismic-related ground failure, including liquefaction; or
  - iii. Landslides;
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse; or
- Be located on expansive soil, as defined in the Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.

The project site is not in an Alquist-Priolo Earthquake Fault Zone, and no active faults are located in or adjacent to the site. In addition the proposed project would not include installation of septic systems or alternative wastewater disposal. Therefore, these two topics were dismissed from further discussion during the scoping period, and there is no need to address impacts related to these CEQA criteria.

Impacts and Mitigation Measures

Impact GEO-1: Implementation of the proposed project would not increase exposure of people or structures to hazards related to strong seismic ground shaking.

The project area is approximately mid-way between the Newport Inglewood and the Elsinore fault zones. As a result, the project area, as with most of Southern California, could experience ground shaking as a result of earthquake activity during the project lifespan. Damage could rise to the level of a significant impact if it increases the exposure of people and/or new structures to substantial risks including loss, injury, or death. However, all facilities and retaining walls would be designed and constructed to meet relevant requirements of the current California Building Code as required by the state and the City's Municipal Code. These regulations were designed to minimize the impacts of ground shaking; thus, project compliance with these regulations would reduce such impacts to a less than significant level. Although there would be some level of unavoidable risk, as in any seismically active area, residual impacts are expected to be less than significant. No mitigation is required.

Mitigation Measures

No mitigation is required.

Residual Impact

There would be no impact.

Impact GEO-2: Implementation of the proposed project would not increase exposure of people or structures to liquefaction.

The project area is adjacent to a liquefaction zone, as designated on the Seismic Hazard Zone Map for the El Toro quadrangle, and has characteristics associated with liquefaction. The late Quaternary alluvial and fluvial deposits found in the project area are generally susceptible to liquefaction (CDMG 2000b:6). Groundwater may also be encountered at the geologic point of contact between bedrock and overlying materials during site grading (LGC 2010). However, according to the preliminary geotechnical evaluation, it was determined that, based on the proposed finish grades, depth of compacted fill, and lack of a shallow groundwater table, the potential for post-construction liquefaction and liquefaction-induced settlement is very low (LGC 2010). Therefore, impacts are considered less than significant, and no mitigation is required.

Mitigation Measures

No mitigation is required.

Residual Impact

There would be no impact.

Impact GEO-3: Implementation of the proposed project would increase exposure of people or structures to hazards related to landsliding.

Based on a review of the State of California Seismic Hazard Zones, El Toro 7.5-minute quadrangle, most of the southern half of the Glass Creek Parcel is located in a zone with the potential for earthquake-induced landslide. A very small area located on the northern limits of the Baker Ranch parcel near the proposed Rancho Parkway extension is also located in a zone with the potential for earthquake-induced landslides. Development on or in the vicinity of the landslide hazard zone could potentially expose people and/or structures to significant hazard impacts. Impacts are therefore considered significant. A slope stability analyses was performed as part of the preliminary geotechnical evaluation, which identified site-specific recommendations to reduce potential impacts from earthquake-induced landslides to a less-than-significant level. Implementation of the following mitigation measures, which include the recommendations of the Preliminary Geotechnical Evaluation and City grading requirements, would help minimize impacts..

Mitigation Measures

Mitigation Measure GEO-1: Implement and enforce recommendations in the preliminary geotechnical investigation.

During grading and site preparation, all onsite earthwork will be performed in accordance with the recommendations contained in Section 5.0, Preliminary Recommendations, of the preliminary geotechnical evaluation; the City grading requirements; and the General Earthwork and Grading Specifications for Rough Grading included in Appendix F of the preliminary geotechnical evaluation. In case of conflict, the recommendations contained in Section 5.0 shall supersede those included in Appendix F of the preliminary geotechnical evaluation. The recommendations, which are considered preliminary, may be revised based on actual conditions encountered during earthwork and grading. In addition, they will be revised if the site plan is modified. The final grading plans will specify the recommended geotechnical engineering measures to minimize effects from landslides. These recommendations will include the following:

- Prior to grading of areas to receive structural fill or engineered structures, the areas will be cleared of surface obstructions and potentially compressible material (such as stockpiled materials, undocumented fill, colluvium, desiccated older fill, weathered bedrock, and vegetation), and holes resulting from the removal of buried obstructions, which extend below proposed finish grades, will be replaced with suitable compacted fill material;
- All potentially compressible/collapsible materials not removed by the planned design cuts will be excavated to competent material and replaced with appropriate compacted fill soils to at least 90% relative compaction (based on American Society for Testing and Materials [ASTM] Test Method D1557), in a manner approved by geotechnical monitors in the field;
- All excavations will be made in accordance with California Occupational Safety and Health Administration (Cal/OSHA) requirements to minimize hazards associated with remedial grading and temporary slopes during construction;
- The cut portion of cut/fill transitions will be overexcavated a minimum of 5 feet vertically and to at least one half the maximum fill thickness under the building envelope, not exceeding 15 feet vertically, and extending at least 5 horizontal feet outside of the proposed building footprints;
- The bottom of the overexcavation will be graded to flow towards deeper fill areas, and the overexcavated material will be replaced by compacted fill material to design grade;
- All design cut pads will be undercut a minimum of 2 feet below ultimate finish pad grade, and the overexcavation bottom will be graded with a minimum 2% tilt toward deeper fill areas to reduce the potential for ponding water (this will necessitate some areas being over excavated more than 2 feet);
- Future streets and parking lot areas will be undercut a minimum of 2 feet below finished asphalt elevation, and all overexcavated material will be replaced with compacted fill materials free of oversize material (material lager than 8 inches in maximum dimension);
- If cut slopes are to be overexcavated and replaced with fill, they will be constructed as replacement fill slopes in accordance with the recommendations provided on the Stabilization Fill detail provided in Appendix F of the preliminary geotechnical evaluation;
- Properly outletted back drains will be constructed along stabilization fill backcuts;
- To reduce the potential for backcut failures, the keyway backcuts will be planned to minimize the time the backcut is left exposed, and the backcuts will not be initiated prior to forecasted rain or where they will be left open for extended periods;
- Fill slope faces will be compacted to minimum project specifications, which may require overbuilding of the slope face and trimming back to design grades;

- To improve surficial stability, vegetation specified by the landscape architect will be established on the slope face as soon as it is practical;
- Although top-of-slope improvements including fences, walls, sidewalks, etc., are generally not considered structural, it is recommend that these improvements and other landscaping features be constructed with flexibility to accommodate the effects of slope creep. Typical remediation methods include construction joints, separation joints, flexible pavers, flexible structures, or additional reinforcement to limit cracking (Refer to Section 5.9, Nonstructural Concrete Flatwork, in the preliminary geotechnical evaluation).

Residual Impacts

With implementation of the mitigation measure identified above, impacts would be reduced to less-than-significant levels.

Impact GEO-4: The proposed project would result in substantial soil erosion or the loss of topsoil.

The project site's topography consists generally of rolling hills, and soil conditions within the project area appear to be prone to erosion. The proposed project involves two grading options, Grading Scenario 1, Lowest Pad Elevation, and Grading Scenario 2, Highest Pad Elevation, both of which involve substantial amounts of ground disturbance. Grading Scenario 1 involves approximately 1,826,800 cubic yards of grading, including approximately 1,633,800 cubic yards of cut and approximately 193,000 cubic yards of fill, exporting of approximately 1,440,800 cubic yards offsite. Grading Scenario 2 would be more balanced grading, and would involve approximately 1,671,700 cubic yards of grading, including approximately 995,400 cubic yards of cut and approximately 676,300 cubic yards of fill, with the export of approximately 319,134 cubic yards offsite. The impacts related to soil erosion are discussed separately for construction and operational effects below.

Construction

Ground-disturbing earthwork associated with construction of the proposed project will increase soil erosion rates, especially on soils with high susceptibility to water or wind erosion, potentially causing accelerated erosion and deposition from the project site (refer to Table 3.5-1). These activities, which include excavation, trenching, grading, and compaction, would cause groundbreaking and vegetation removal on the Rados and Glass Creek properties. As a result, soil would be exposed to rain and wind, potentially causing accelerated erosion, thereby resulting in significant impacts. An approved SWPPP, as required by the Regional Water Quality Control Board, is required when a project involves greater than 1 acre of disturbance. A SWPPP specifies BMPs that would minimize or prevent construction pollutants from contacting stormwater with the intent of keeping all products of erosion from moving offsite into receiving waters. Compliance with the federal and local erosion-related regulations applicable to the proposed project (i.e., the SWPPP that is developed for the site and the requirements of the City's Stormwater Quality Management Code) would minimize the potential for construction activities to result in significant erosion, and reduce impacts to a less-than-significant level. In addition, all construction activities would be required to comply with the California Building Code, which regulates excavation activities and the construction of foundations and grading activities, including drainage and erosion control. In addition, compliance with South Coast Air Quality Management District's Rule 403 which would require the implementation of Best Available Control Measures such as the use of water application in order to stabilize wind erodible soils during construction would also help reduce the potential for wind erosion during grading and excavation activities. Implementation of mitigation measures MM GEO-2 below would reduce significant impacts to less-than-significant levels.

When mining is completed on the Baker Ranch parcel, the ground would be prepared and hydroseeded. However, the ground would be bare or sparsely vegetated for some time and would be exposed to the forces of erosion, which could lead to increased runoff. Ground-disturbing earthwork associated with construction of the proposed project may also increase erosion rates. Concentrated runoff could result in the formation of erosional channels and larger gullies that could compromise the integrity of slopes. Such an effect would be significant because it could result in erosional effects on downstream water resources. However, compliance with the federal and local erosion-related regulations applicable to the proposed project (i.e., the SWPPP that is developed for the site and the requirements of the City's Stormwater Quality Management code) would minimize the potential for construction activities to result in significant erosion impacts. Implementation of mitigation measure MM GEO-2 would minimize impacts from erosion, and would reduce impacts to a less-than-significant level. Erosion and sedimentation issues are further addressed in Section 3.7, Hydrology and Water Quality.

Operation

Operation of the proposed project would not result in substantial soil erosion or loss of topsoil. As part of the proposed project, landscaping would be planted on exposed soils in order to stabilize and anchor soils. Stormwater conveyance and storage structures would be constructed as part of the proposed project to collect and channelize stormwater flows and reduce erosion. A portion of the project site would contain impervious surfaces, such as the asphalt for the parking lots, recreation center, and other concrete structures (e.g., curbs, stormwater conveyance structures) that are not susceptible to erosion. The addition of paved and landscaped areas would over the long-term, decrease the potential for erosion because fewer soils would be exposed at the site. Therefore, erosion impacts as a result of operations of the proposed project would be less than significant.

Mitigation Measures

In order to minimize or avoid potential effects involving geology, soils, seismicity, and erosion, the following measure would be implemented in order to reduce impacts to a less than significant level:

Mitigation Measure GEO-2: Reduce topsoil erosion through minimization of grading and re-use of stockpiled soils.

During construction grading and site preparation, to reduce the loss of topsoil, the City will:

- limit the extent of disturbance to the minimum needed for construction, staging, and access, and
- stockpile topsoil removed during grading for onsite reuse during site landscaping. Topsoil stockpiles will be kept separate from other excavated materials to facilitate effective reuse.

Residual Impacts

With implementation of the mitigation measures above, impacts would be reduced to less-than-significant levels.

Impact GEO-5: Implementation of the proposed project would locate structures on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.

A large portion of the Glass Creek property is in an earthquake-induced landslide hazard zone, as designated on the state's Seismic Hazard Zone Map for the El Toro quadrangle. In addition, the Capistrano Formation has been identified as being prone to landsliding. Construction of the proposed project would entail large quantities of excavation and grading. Excavation can result in short-term destabilization of existing slopes, and "made" slopes (i.e., cut or filled) may also be unstable over the long term, if improperly designed or constructed.

Based on the proposed finish grades, depth of compacted fill, and lack of a shallow groundwater table, the potential for post- construction liquefaction and liquefaction-induced settlement is considered very low (LGC 2010). Because of the low potential for liquefaction, the potential for lateral spreading is also considered very low (LGC 2010).

The City will enforce compliance with the recommendations provided in the site-specific geotechnical report that was prepared for the proposed project and local policies and regulations, such as the City's Grading and Excavation Code and General Plan policy (see Impact GEO-1 and mitigation measure GEO-1). The City's monitoring and enforcing of the California Building Code would minimize impacts from unstable soils or geologic units. Because the requirements of the City's building code must be satisfied prior to project construction, the potential hazards posed by unstable soils or geologic units would be regulated by existing regulations and requirements; therefore, any potentially significant impacts would be reduced to a less-than-significant level.

Mitigation Measures

Implement mitigation measure GEO-1, identified above.

Residual Impacts

With implementation of the mitigation measures above, impacts would be reduced to less-than-significant levels.

Impact GEO-6: Implementation of the proposed project could locate structures on expansive soil, as defined in Table 18-1 A of the California Building Code (2001), creating substantial risks to life or property.

Based on the results of limited laboratory testing, site soils are anticipated to have a very low to low expansion potential. Generally, it is anticipated that the less prevalent, highly expansive soils can be diluted by mixing with less expansive soils, which are present on the majority of the site (LGC 2010). To ensure that impacts would remain at a less-than-significant level, all park facilities would be designed and constructed in accordance with California Building Code requirements and would incorporate recommendations from the preliminary geotechnical evaluation (see mitigation measure GEO-1). Because the requirements of the City's building code must be satisfied prior to project construction, the potential hazards posed by unstable soils would be regulated by existing regulations and requirements; therefore, impacts would be reduced to a less-than-significant level.

Mitigation Measures

Implement mitigation measure GEO-1, identified above.

Residual Impacts

With implementation of the mitigation measures above, impacts would be reduced to less-than-significant levels.

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Section 3.6
Greenhouse Gases

Introduction

This section evaluates potential greenhouse gas (GHG) impacts associated with the proposed project. All analyses have been performed consistent with the SCAQMD, Governors Office of Planning and Research (OPR), and the State CEQA Guidelines for greenhouse gas assessments to satisfy CEQA requirements.

Environmental Setting

State Greenhouse Gas Emissions

Worldwide, California is the 12th to 16th largest emitter of carbon dioxide (CO_2) and is responsible for approximately 2% of the world's CO_2 emissions (CEC 2006).

Transportation is responsible for 41% of the state's GHG emissions, followed by the industrial sector (23%), electricity generation (20%), agriculture and forestry (8%), and other sources (8%) (CEC 2006). Emissions of CO_2 and nitrous oxide (N_2O) are byproducts of fossil fuel combustion, among other sources. Methane (CH_4), a highly potent GHG, results from off-gassing associated with agricultural practices and landfills, among other sources. Sinks of CO_2 include uptake by vegetation and dissolution into the ocean. California GHG emissions in 2006 totaled approximately 479.8 million metric tons (MMT) in carbon dioxide equivalents (CO_2e). Greenhouse gas emissions other than CO_2 are commonly converted into carbon dioxide equivalents, which takes into account the differing global warming potential (GWP) of different gases. For example, the Intergovernmental Panel on Climate Change (IPCC) finds that N_2O has a GWP of 310 and methane has a GWP of 21. Thus, emissions of 1 ton of N_2O and 1 ton of $CH_4$are represented as the emissions of 310 tons and 21 tons of CO_2e, respectively. This method allows for the summation of different greenhouse gas emissions into a single total.

Climate change could impact the natural environment in California in the following ways (among others):

- rising sea levels along the California coastline, particularly in San Francisco and the San Joaquin Delta due to ocean expansion;
- extreme-heat conditions, such as heat waves and very high temperatures, which could last longer and become more frequent;
- an increase in heat-related human deaths, infectious diseases, and a higher risk of respiratory problems caused by deteriorating air quality;
- reduced snow pack and stream flow in the Sierra Nevada mountains, affecting winter recreation and water supplies;
- potential increase in the severity of winter storms, affecting peak stream flows and flooding;

- changes in growing season conditions that could affect California agriculture, causing variations in crop quality and yield; and
- changes in distribution of plant and wildlife species due to changes in temperature, competition from colonizing species, changes in hydrologic cycles, changes in sea levels, and other climate-related effects.

These changes in California's climate and ecosystems are occurring at a time when California's population is expected to increase from 34 million to 59 million by the year 2040 (CEC 2006). As such, the number of people potentially affected by climate change as well as the amount of anthropogenic GHG emissions expected under a "business as usual" (BAU) scenario are expected to increase. Similar changes as those noted above for California would also occur in other parts of the world with regional variations in resources affected and vulnerability to adverse effects. GHG emissions in California are attributable to human activities associated with industrial/manufacturing, utilities, transportation, residential, and agricultural sectors (CEC 2006) as well as natural processes.

Description of Relevant Pollutants

GHGs include CO_2, CH_4, N_2O, and fluorinated gases. Presented below is a description of each GHG and their known sources.

CO_2 enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, and trees and wood products; through respiration; and as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (or *sequestered*) when it is absorbed by plants as part of the biological carbon cycle.

CH_4 is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal solid waste landfills (CEC 2006).

N_2O is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste (CEC 2006).

Fluorinated gases are synthetic, strong greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as high global warming potential gases. (CEC 2006)

- *Chlorofluorocarbons (CFCs)* are greenhouse gases covered under the 1987 Montreal Protocol. They are used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Because they are not destroyed in the lower atmosphere (i.e., the troposphere or stratosphere), CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are being replaced by other compounds that are greenhouse gases covered under the Kyoto Protocol.
- *Perfluorocarbons (PFCs)* are a group of human-made chemicals composed of carbon and fluorine only. These chemicals (predominantly perfluoromethane [CF_4] and perfluoroethane [C_2F_6]) were introduced as alternatives to ozone-depleting substances. In addition, PFCs are emitted as

by-products of industrial processes and are also used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they are strong greenhouse gases.

- *Sulfur Hexafluoride (SF_6)* is a strong greenhouse gas used primarily in electrical transmission and distribution systems as a *dielectric*, which is an electrical insulator that is highly resistant to the flow of an electric current.
- *Hydrochlorofluorocarbons (HCFCs)* contain hydrogen, fluorine, chlorine, and carbon atoms. Although HCFCs are ozone-depleting substances, they are less potent than CFCs. They have been introduced as temporary replacements for CFCs and are also greenhouse gases.
- *Hydrofluorocarbons (HFCs)* contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing. They do not significantly deplete the stratospheric ozone layer, but they are strong greenhouse gases.

The different GHGs have varying global warming potential (GWP). GWP is the ability of a gas to trap heat in the atmosphere. By convention, CO_2 is assigned a GWP of 1. By comparison, CH_4 has a GWP of 21, which means that it has a global warming effect 21 times greater than CO_2 on an equal-mass basis. N_2O has a GWP of 310, which means that it has a global warming effect 310 times greater than CO_2 on an equal-mass basis. To account for their GWPs, GHG emissions are often reported as a CO_2e. The CO_2e is calculated by multiplying the emission of each GHG by its respective GWP and summing the values.

Regulatory Setting

Federal

Federal Climate Change Policy

Twelve U.S. states and cities (including California), in conjunction with several environmental organizations, sued to force the EPA to regulate GHGs as a pollutant pursuant to the federal CAA (*Massachusetts vs. Environmental Protection Agency et al*. [U.S. Supreme Court No. 05–1120; argued November 29, 2006; decided April 2, 2007]). The court ruled that the plaintiffs had standing to sue, that GHGs fit within the CAA's definition of a pollutant, and that the EPA's reasons for not regulating GHGs were insufficiently grounded in the CAA. Despite the Supreme Court ruling, there are no promulgated federal regulations to date limiting GHG emissions.

On December 7, 2009, the EPA Administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the Clean Air Act:

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs--CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6--in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

These findings do not themselves impose any requirements on industry or other entities. Nevertheless, the Council on Environmental Quality (CEQ) issued draft guidance on consideration of the effects of climate change and GHG emissions on February 18, 2010. The CEQ guidance instructs federal agencies to include a discussion of climate change within the scope of its NEPA analysis when an analysis of the direct and indirect of GHG emissions from proposed actions "may provide meaningful information to decision makers and the public." However, the draft guidance does not address what climate-change related impacts rise to a level of significance under NEPA.

State

California Climate Change Policy

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05, the goal of which is to reduce California's GHG emissions to (1) 2000 levels by 2010, (2) 1990 levels by 2020, and (3) 80% below 1990 levels by 2050. In 2006, this goal was further reinforced with the passage of AB 32, the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases."

In response to the state's efforts to reduce GHG emissions, the Secretary of the California Environmental Protection Agency (Cal/EPA) created the Climate Action Team (CAT), which, in March 2006, published the first Climate Action Team Report to Governor Schwarzenegger and the Legislature (the "2006 CAT Report"). The 2006 CAT Report identifies a recommended list of strategies that the state could pursue to reduce climate change GHG emissions. These are strategies that could be implemented by various state agencies to ensure that the Governor's targets are met and can be met with existing authority of the state agencies. Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

In consultation with ARB and the California Public Utilities Commission (CPUC), the California Energy Commission (CEC) established a GHG emission performance standard for local, public-owned electric utilities (pursuant to SB 1368). This standard limits the rate of GHG emissions to a level that is no higher than the rate of emissions of GHGs for combined-cycle natural gas baseload generation.

In October 2007, Governor Schwarzenegger signed SB 97, which required the Governor's Office of Planning and Research (OPR) to prepare CEQA guidelines for the mitigation of GHG emissions. OPR prepared these guidelines and transmitted them to the Natural Resources Agency on April 13, 2009. On July 3, 2009, the Natural Resources Agency commenced the Administrative Procedure Act rulemaking process for certifying and adopting these amendments pursuant to PRC 21083.05. Having reviewed and considered all comments received, the Natural Resources Agency has revised the text of the proposed amendments. From October 23, 2009, to November 10, 2009, the Natural Resources Agency held a public comment period on the proposed revisions to the CEQA Guidelines amendments. The Natural Resources Agency transmitted the adopted amendments and the entire rulemaking file to the Office of Administrative Law on December 31, 2009. On February 16, 2010, the Office of Administrative Law approved the amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The Amendments became effective on March 18, 2010. OPR and the Natural Resources Agency are required to periodically review the guidelines to incorporate new information or criteria adopted by the ARB pursuant to AB 32.

Local

South Coast Air Quality Management District

To provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents, the SCAQMD staff is convening an ongoing GHG CEQA Significance Threshold Working Group. Members of the working group include government agencies implementing CEQA and representatives from various stakeholder groups that provide input to the SCAQMD staff on developing GHG CEQA significance thresholds.

On December 5, 2008, the SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold of 10,000 metric tons per year for industrial permitting projects where the SCAQMD is lead agency. The board letter, resolution, interim GHG significance threshold, draft guidance document, and attachments can be found under the Board Agenda Item 31 on the December 5, 2008, Governing Board meeting agenda.

Project Impacts and Mitigation Measures

This section presents a discussion of the potential GHG impacts associated with construction and operation of the proposed project.

Methodology

Section 15064.4 of the State CEQA Guidelines establishes a two-step process for the determination of significance of greenhouse gas emissions. First, it requires lead agencies to calculate or estimate the overall magnitude of a project's greenhouse gas emissions. Second, once the magnitude of emissions has been estimated, it must analyze those emissions using applicable factors (i.e., does the project increase or decrease emissions; does project emissions exceed an applicable threshold; does the project comply with applicable regulations or an applicable plan).

Project-related GHG emissions were estimated using the following methodology: (1) the URBEMIS 2007 software was utilized to calculate CO_2 emissions, and (2) formulas provided in the *California Climate Action Registry, General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, version 3.1* were utilized to calculate CH_4 and N_2O emissions.

Following the methodology prescribed by the SCAQMD CEQA Significance Threshold Working Group, project emissions calculated include direct and indirect emissions during short-term construction and long-term project operations. Construction emissions were amortized over the life of the project, defined as 30 years, and added to the operational emissions to obtain total annual GHG emissions.

Thresholds of Significance

According to Appendix G in the State CEQA Guidelines (amended in December 2009, effective March 2010), a lead agency should consider in its initial study whether a project would:

- generate greenhouse gas emission, either directly or indirectly, that may have a significant impact on the environment, or

- conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

While there are currently no definitive quantitative thresholds for GHG emissions, the screening level threshold for non-industrial development projects suggested to date in SCAQMD's *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans* documentation is a CO_2 equivalent of 3,000 metric tons per year. Other agency thresholds include 1,100 metric tons per year (Bay Area Air Quality Management District) and 900 metric tons per year (California Air Pollution Control Officers Association). Given the wide range and lack of consensus on suggested quantitative thresholds, the City has determined that no quantitative threshold is applicable to the proposed project.

The OPR *Technical Advisory on CEQA and Climate Change* suggests that in absence of regulatory guidance or standards, lead agencies such as City of Lake Forest must undertake a project-by-project analysis that is consistent with available guidance and current CEQA practice to ascertain project impacts under CEQA. It is unknown exactly what quantity or percentage reduction in project-related GHG emissions are definitively needed from the proposed project to provide its share of GHG reduction necessary to meet the AB 32 state-wide GHG reduction target of 1990-level GHG emissions by year 2020, without relying on speculation.

Impacts and Mitigation Measures

Impact GHG-1: The proposed project would generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Construction of the proposed project would generate GHG emissions through the use of onsite heavy-duty construction equipment and offsite vehicle trips generated from construction workers, as well as haul/delivery trucks that travel to and from the project site. Mobile source emissions would result from the use of construction equipment such as graders, scrapers, bulldozers, wheeled loaders, cranes, etc. Construction of the proposed project would take approximately 62 months to complete. Operation of the proposed project is expected to result in emissions of GHG emissions related to vehicular trips (i.e., mobile-source emissions) and energy consumption related to building illumination, heating and cooling, as well as water conveyance and treatment.

Table 3.6-1 presents an estimate of project-related GHG emissions of CO_2, CH_4, and N_2O, expressed in terms of CO_2e. Construction-related GHG emissions are presented for both Grading Scenarios 1 and 2 as described in the Project Description.

Table 3.6-1. Estimate of Project-Related Greenhouse Gas Emissions

Proposed Project Emissions	Annual CO_2e (metric tons)
Amortized Grading Plan 1 Construction Emissions (6,137 metric tons total)	210
Amortized Grading Plan 2 Construction Emissions (8,717 metric tons total)	299
Operations-Period Emissions	
Mobile Sources	4,239
Natural Gas Combustion	154
Electricity Demand	339
Water Consumption	231
Total Operations-Period Emissions	6,941
Total Project Related GHG Emissions (Grading Plan 1) [a]	7,151
Total Project Related GHG Emissions (Grading Plan 2) [a]	7,240

[a] Includes total operational emissions plus construction period emissions amortized over 30 years.
Source: ICF 2010. URBEMIS 2007 outputs and GHG calculation sheets are provided in Appendix B.

The proposed project's annual GHG emissions are estimated to be 7,151 metric tons CO_2e under Grading Plan 1, or 7,240 metric tons CO_2e under Grading Plan 2. These estimates reflect emissions from all construction and operation activity. To put this number into perspective, statewide CO_2e emissions for year 2006 were estimated to be 479.8 million metric tons.

While vehicle miles traveled (VMT) has not been quantified for the proposed project, the development of the proposed sports park could potentially reduce VMT as future users of the park are currently traveling greater distance to use active sports fields. This analysis conservatively assumes that all VMT and energy use associated with the proposed project is 'new'.

As discussed previously, historic and current global GHG emissions are known by the State and the global scientific community to be causing global climate change. Increases in GHG emissions associated with proposed project could contribute to significant adverse environmental effects. Furthermore, increased GHG emissions associated with the proposed project could potentially impede implementation of the State's mandatory requirement under AB 32 to reduce statewide GHG emissions to 1990 levels by the same year.

The City does not have adopted plans or programs explicitly mandating GHG emission reductions. The City has adopted a voluntary green building program; however, the program only applies to home remodels. The proposed project would contribute, to some degree, to increased greenhouse gas emissions, which have been determined to be a significant contribution to the effects of climate change. The OSA Program EIR concluded that the program would contribute to significant and unavoidable impacts from greenhouse gas emissions that contribute to climate change. Because the proposed project is considered part of the overall OSA, the project-generated GHGs would contribute to the significant and unavoidable impacts previously disclosed. The City has evaluated the project's potential contribution and has made a careful judgment based on scientific and factual data presented herein. Though no technical data and methodologies currently exist that would allow the City to determine what level of GHG emissions, on a project-level, would result in a significant cumulative contribution, the City has conservatively concluded that the project's potential contribution is significant.

This conclusion notwithstanding, the proposed project has committed to reduce its energy use and water consumption by a minimum of 10% and 20%, respectively. This would amount to an approximately 96 metric ton per year reduction in project-related CO_2e emissions. In addition, the construction-period air quality Mitigation Measure AQ-1, as well as existing ARB regulations (13 CCR 2480, 2485) that limit idling of diesel-fueled commercial motor vehicles, would have the co-benefit of reducing GHG emissions associated with project construction.

Mitigation Measures

Mitigation Measure GHG-1 (OSA PEIR Mitigation Measure GCC1): The City shall comply with the future requirements for implementation of AB 32 and SB 97 once those implementation requirements are developed.

Mitigation Measure GHG-2 (OSA PEIR Mitigation Measure GCC2): During final design, the City shall ensure the project complies with the requirements of Title 24 of the California Code of Regulations.

Mitigation Measure GHG-3 (OSA PEIR Mitigation Measure GCC3): During final design, site plans shall include prioritized parking for electric vehicles, hybrid vehicles, and alternative fuel vehicles.

Mitigation Measure GHG-4 (OSA PEIR Mitigation Measure GCC4): The City shall identify energy efficient street lights and water and wastewater pumps and treatment systems which are currently available and which when installed will provide for a 10 percent reduction beyond the 2007 baseline energy use for this infrastructure, and shall require the use of this technology in all new development. All new traffic lights installed within the City shall use LED technology.

Mitigation Measure GHG-5 (OSA PEIR Mitigation Measure GCC5): The City shall recycle and/or salvage at least 25 percent of nonhazardous construction and demolition debris. The City shall prepare a construction waste management plan which identifies materials to be diverted from disposal and whether the materials will be stored on-site or commingled. Excavated soil and land-clearing debris do not contribute to this credit. Calculation can be done by weight or volume but must be documented. The construction waste management plan shall be part of the plans and specifications given to the construction contractor who will be responsible for implementing the plan during construction.

Mitigation Measure GHG-6 (OSA PEIR Mitigation Measure GCC6): During final design, the City shall demonstrate use of reclaimed water for public and common area landscaping where available; install 50 percent native/drought-tolerant plant species; and utilize "smart" advanced capability controllers (e.g., Weather-Trac) to reduce water and energy consumption.

Mitigation Measure GHG-7 (OSA PEIR Mitigation Measure GCC7): During final design, the site plans must incorporate any combination of the following strategies to reduce heat gain created by impervious areas:

- Utilizing shade trees in common area landscaping;
- Reducing the street widths to minimize impervious areas and reduce the use of asphalt;

- Utilizing light-colored and reflective roofing materials and paint;
- Incorporating bioswales where feasible in development areas to capture urban runoff and increase the amount of pervious surfaces.

Mitigation Measure GHG-8 (OSA PEIR Mitigation Measure GCC8): All development in the Opportunities Study Area shall be required to post signs and limit idling time for commercial vehicles, including delivery trucks to no more than 5 minutes.

Mitigation Measure GHG-9: Reduce onsite energy consumption by a minimum of 10 percent.

The City will incorporate energy conservation measures in Title 24's 2008 Building Energy Efficiency Standards that go above mandatory requirements into the design of the proposed project, and may include, but will not be limited to, the following:

- building form and orientation will maximize use of natural lighting;
- indoor/outdoor lighting will apply energy efficient technologies;
- insulation and window glazing will minimize heat transfers to regulate internal temperatures;
- building envelope and internal layout will be designed for efficient insulation, heating, and cooling of space;
- hot water systems will incorporate the latest technologies; and
- installation of efficient heating, ventilation, and air conditioning (HVAC) units will minimize energy demands.

Mitigation Measure GHG-10: Reduce onsite water consumption by a minimum of 20 percent.

The City will incorporate water conservation measures into the design of the proposed project, and may include, but will not be limited to, the following:

- use water-efficient landscaping, including drought tolerant, native, and appropriate climate zone species;
- incorporate efficient irrigation systems, including drip, micromisters, and smart irrigation controls;
- use recycled wastewater for irrigation, and potentially non-potable purposes, available to the site from IRWD;
- minimize the use of turf grass, and limit it to the athletic fields and smaller portions of the passive park areas; and
- reduce potable water demands by installing water-conserving fixtures (low-flow faucets, toilets, urinals, etc.).

Residual Impacts

Implementation of Mitigation Measures GHG-1 through GHG-10 would reduce the incremental GHG emissions associated with implementation of the proposed project, although the precise degree of the reduction is not quantifiable and therefore not known. The City, therefore, conservatively assumes that GHG emissions reductions would not be to a level less than significant. Even with these mitigation measures, implementation of the proposed project will continue to contribute to the global climate change impacts of development. Therefore, GHG emissions that occur as a result of proposed project implementation are considered significant and unavoidable.

Impact GHG-2: The proposed project would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

AB 32 identified a 2020 target level for GHG emissions in California of 427 MMT of CO_2e, which is approximately 28.5% less than the year 2020 BAU emissions estimate of 596 MMT CO_2e. To achieve these GHG reductions there will have to be widespread reductions of GHG emissions across California. Some of those reductions will need to come in the form of changes in vehicle emissions and mileage standards, changes in the sources of electricity, and increases in energy efficiency by existing facilities. The remainder will need to come from requiring new facility development to have lower carbon intensity than BAU conditions. Therefore, this analysis uses a threshold of significance that is in conformance with the state's goals.

On December 12, 2008, ARB adopted the AB 32 Scoping Plan, which details specific GHG emission reduction measures that target specific GHG emissions sources. While none of the Scoping Plan measures are applicable to the proposed project, nevertheless, project-related GHG emissions would be reduced as a result of several AB 32 Scoping Plan measures. The Scoping Plan considers a range of actions that include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market based mechanisms (e.g., cap-and-trade system. Some examples include the following:

- Mobile-source GHG emissions reduction measures
  - Pavley emissions standards (19.8% reduction)
  - Low carbon fuel standard (7.2% reduction)
  - Vehicle efficiency measures (2.8% reduction)
- Energy production related GHG emissions reduction measures
  - Natural gas transmission and distribution efficiency measures (7.4% reduction)
  - Natural gas extraction efficiency measures (1.6% reduction)
  - Renewables (electricity) portfolio standard (33.0% reduction)

These reductions in mobile-source and energy production GHG emissions would occur in addition to the project-specific GHG emissions reductions discussed above that are related to prescribed mitigation measures above that would reduce project-specific GHG emissions related to energy consumption and water use by 10 and 20%, respectively. Overall, the proposed project would be consistent with the AB 32 goal of reducing state-wide GHG emissions to 1990 levels by year 2020. Currently no other GHG reduction plan (i.e., SCAG, SCAQMD, County or City) applies to the proposed project. The proposed project would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases; therefore, impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

References

California Climate Action Registry (CCAR). 2009. General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, version 3.1. Available: http://www.climateregistry.org/. January.

California Climate Change Center (CCCC). 2006. *Our Changing Climate: Assessing the Risks to California*. July.

California Energy Commission (CEC). 2006. Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004. December.

Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis: Summary for Policymakers*. February.

South Coast Air Quality Management District. 2008. Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans. December

Section 3.7

Hazards and Hazardous Materials

Hazards and Hazardous Materials

Introduction

This section describes the affected environment and regulatory setting for hazards and hazardous materials. It also describes CEQA Thresholds of Significance, the impacts from hazards and hazardous materials that would result from implementation of the proposed project, and mitigation measures that would reduce these impacts.

A hazardous material is defined as any material that, due to its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the work place or environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous wastes, and any material that a business or the local implementing agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

Hazards specifically associated with earthquakes, soil stability, and other geologic conditions are discussed in the Geology section of the draft EIR. Hazards specifically associated with flooding, dam failure, and other hydrologic conditions are discussed in the Hydrology and Water Quality section of the Draft EIR.

One NOP comment letter was received from the California Department of Toxic Substances Control (DTSC) requesting that the EIR identify the historic and current uses of the project site that may have resulted in a release of hazardous wastes or substances (see Appendix A). The letter also lists the procedures and regulations governing demolition, excavation, investigation, and remediation of hazardous wastes and substances.

Environmental Setting

The environmental setting as it relates to hazards and hazardous materials is described separately for each of the three properties that comprise the project site. The Glass Creek Parcel is currently undeveloped as open space with some developed trails used by the public. There are no hazardous uses associated with the Glass Creek Parcel. Both the Baker Ranch and Rados Parcels have a mineral resources overlay in the City's General Plan. The Baker Ranch Parcel is currently developed with an active aggregate mine and a commercial nursery. The Rados Parcel is vacant and undeveloped, and is characterized by varying topography with native and nonnative vegetation. The Rados Parcel has the same mineral resources as the Baker Ranch Parcel, but mining operations have not historically occurred and are not currently occurring on site. There are no hazardous uses associated with the Rados Parcel.

The Baker Ranch has active sand mining operations permitted under the Surface Mining and Reclamation Act (SMARA). The El Toro Materials Company has been mining at this site since 1965. As of November 15, 2010, El Toro Materials Company has vacated the property. The property is scheduled to be transferred to the City before the end of 2010. Baker Ranch Properties has requested to keep the mining permit open for only the portion of the site north of Rancho Parkway.

Sand is mined at the site by excavation in an open-pit manner, using a combination of dozers, loaders, excavators, scraper and similar earthwork equipment along with trucks, belt loaders, and conveyors to transfer the materials within the site to a semi-portable screening and processing plant. Processing is a dry process. No blasting or explosives are used in the mining process. The dry process of mining includes running the excavated sandy materials through a series of screens, each one finer than the previous, to separate the sand by specific grain size. This process does not include the use of hazardous materials or hazardous chemicals. The site is currently being mined in such a way as to create a final landform that matches the desired rough grading plan for future planned development. The mining conducted at the Baker Ranch site from 2005 to the present is considered the final phase of the mining at the site. For additional details regarding active mining, please refer to Section 3.8, Mineral Resources. For additional details regarding the geology of the mining areas please refer to Section 3.5, Geology and Soils.

Existing Hazardous Materials Sites

A Phase I Environmental Site Assessment was conducted for the Glass Creek site in 2008 (Dudek 2008). This Phase I study included a search of environmental databases within 1 mile of the Glass Creek property, which included both the Baker Ranch and Rados Parcels because those sites are within 1 mile of the Glass Creek site. The review was conducted to evaluate whether the Glass Creek site or properties within the vicinity of the site have been reported as having substantial unauthorized releases of hazardous substances or other events with potentially adverse environmental effects.

The Glass Creek Property was not listed in the computerized regulatory databases searched by Environmental Data Resources (EDR). According to the Phase I study, the property has been undeveloped land since at least 1938. Adjacent properties have consisted of urban activity/sand and gravel pits, a public facility, a retail shopping center, and residential and commercial developments. Agricultural land was historically located south of the property. Based on a review of historical aerial photographs, the subject property has not been used for agriculture.

The environmental database search did identify 10 sites within 1 mile of the Glass Creek Parcel that are known to handle hazardous materials. These sites are identified in Table 3.7-1.

Based on the review of the EDR report and the direction of groundwater flow in the vicinity of the project site (estimated as to the southeast), it is unlikely that offsite properties have affected the environmental conditions at the project site.

A Phase I Environmental Site Assessment was also conducted for the El Toro Materials Company on the Baker Ranch Property in September 2010 (Dudek 2010a). The subject property is approximately 15 acres and currently consists of a sand mine which includes office trailers and a maintenance shop area. The site had been undeveloped scrub land since at least 1938. Mining operations have taken place on the subject property since the late 1980s. Adjacent properties have consisted of urban activity/sand and gravel pits, a public park, retail shopping center, and commercial developments. According to Ms. Pittman, the general manager for the site, all administrative and maintenance activities were located on the eastern adjoining property until

2003. By 2003, El Toro Materials transferred all mining operations to the subject property when the eastern adjoining property was sold.

Currently, eight 55 gallon drums of oil, two 30 gallon drums of grease, two 500 gallon aboveground storage tanks (ASTs) of oil, one 500 gallon AST of waste oil, and one 1,000 gallon diesel fuel AST are stored in the maintenance area on the El Toro Materials Company site. The drums and ASTs were located within secondary containment with aboveground piping. Minor oil staining was observed on the concrete in the maintenance area and within the AST secondary containment. In addition, one gallon of San Equivalent Solution to test sand content in the soil is stored in the onsite laboratory. Quick lime is stored in a tank on the western portion of the subject property. Based on the interview conducted as part of the Phase I ESA, the maintenance area, including the 30 and 55 gallon drums as well as the ASTs, has been located on the site since 2003.

El Toro Materials was listed in the unmapped portion of the computerized regulatory databases searched by EDR. El Toro Materials was listed on the following databases: Facility Index System/Facility Identification Initiative Program Summary Report (FINDS), Emissions Inventory Data (EMI), Mines Master Index File (MINES), Occupational Health and Safety Administration (OSHA), and California Hazardous Material Incident Reporting System (CHMIRS). El Toro Materials Company was listed in the FINDS and EMI databases due to the air emissions from the mining activities. El Toro Materials reports the tons per year of Total Organic Hydrocarbon gases, reactive organic gases, carbon monoxide emissions, oxides of nitrogen, oxides of sulphur, and particulate matter releases to the atmosphere. The subject property is listed in the MINES database as a sand mine and plant. The OSHA database listing pertained to worker safety violations in 2000. No hazardous substances were reported as a part of the OSHA violations. These database listings do not present an environmental condition for the subject property.

The CHMIRS listing indicated that a release of cement slurry was discovered in October 1999 entering a storm water drain to the Whiting Ranch County Park. The waterway affected was a tributary of Aliso Creek. No additional information was available regarding this release. However, due to the release date and type of release (cement slurry); it is unlikely that the release has impacted the environmental conditions of the subject property

Dudek conducted a Phase I ESA of a nearby property in 2008. The 2008 radius report listed the El Toro Materials Company on the AST database. Dudek contacted EDR regarding the AST record for the subject property; EDR stated that there are currently no AST records for the subject property. The 2008 EDR AST listing did not provide information on the age or contents of the AST.

El Toro Materials, the Arco Facility No. 06540 and Saddleback Valley Ornamental Iron, Inc were identified within the specified search distances were identified in the computerized regulatory databases searched by EDR. Based on the review of the EDR report for the Baker Ranch property, it is unlikely that off-site properties have impacted the environmental conditions at the subject property.

A search of EnviroStor using APN numbers for the Rados Parcel (APN 612-022-10), and a search of Geotracker using the City of Lake Forest were conducted on July 23, 2009 (California EPA 2009). The search of Geotracker or EnviroStor did not identify the Rados Parcel as being hazardous material sites or as having previous hazardous material releases.

Table 3.7-1. Sites Identified by EDR Database Search

Name	Address and Distance from Site	Reason for Identification
Arco Facility No. 06540	29080 Portola Parkway Eastern adjoining the Glass Creek site	Was listed in the RCRA Non-GEN, FINDS, HAZNET, and UST databases. No violations were reported. No information on the age of the UST(s) or the contents was included in the EDR report. This site was not listed in any databases that would indicate that a release has occurred
El Toro Materials Company	Rocky Road and Portola Parkway Baker Ranch Parcel	Registered aboveground storage tank with State of California. Also listed on the following databases: FINDS, EMI, MINES, OSHA, and CHMIRS. .
Saddle Back Valley Ornamental Iron, Inc	26891 Vista Terrace 0.13 mile northwest of the Glass Creek site; between ⅛ and ¼ mile west southwest of Baker Ranch Parcel,	Registered small quantity generator of hazardous materials under RCRA GEN and HAZNET database. Database listing did not indicate that a release occurred at the site.
Power Professional Cleaners Corp.	20562 Regency Lane Less than 0.25 mile west of the Glass Creek site	Listed on the HAZNET and CLEANERS database. Registered drycleaner with EPA Identification Number. EDR report noted the offsite transportation and disposal of liquids with halogenated organic compounds and oxygenated solvents. Based on the closed status and inferred groundwater flow direction the dry cleaner site is not considered an environmental concern.
Arco	20572 Lake Forest Drive Less than 0.22 mile west of the Glass Creek site	UST and LUST. LUST release was closed on September 12, 2002. No additional information was available regarding the LUST release. Because the release affected soil only, the Arco site is not considered an environmental concern.
Standard Concrete Co.	20851 El Toro Road Located 0.29 mile east of the Glass Creek site	Listed in RCRA GEN, FINDS, LUST, HIST UST, CA WDS, AIRS, HAZNET, and Cortese databases. Diesel fuel LUST release reported on November 10, 1986. Not considered an environmental concern because it is located hydraulically down gradient from the project site.
Beacon Bay Carwash	20602 Lake Forest Drive Located 0.25 mile southwest of the Glass Creek site	Site was listed on the HAZNET and LUST database. LUST release closed on September 12, 2002. No additional information was available. Not considered an environmental concern due to distance and estimated hydraulic gradient.
Chevron	20731 Lake Forest Drive Located 0.36 mile southwest of the Glass Creek site	Listed on the LUST, HAZNET, Cortese, and SWEEPS UST database. LUST release reported on September 12, 1997. Case closed on April 20, 1998. Three active USTs are located on the site. The site is not considered an environmental concern because soil was the only media affected by the LUST release.
Chevron	27650 Santa Margarita	Site was on the LUST, HAZNET, RCRA, GEN, FINDS,

Name	Address and Distance from Site	Reason for Identification
	Parkway Located 0.85 mile southeast of the Glass Creek site	and UST databases. LUST release reported in April 1997 and case closed in June 1997. The Chevron site is not considered an environmental concern because soil was the only media affected.
Not Identified	Corner of Los Alisos and Santa Margarita Parkway Located approximately 0.62 mile southeast of the Glass Creek site	Site was listed on the Notify 65 database. The site was not listed in any databases that would indicate that a release has occurred.

AIRS—Emissions Inventory Data
RCRA—Resource Conservation and Recovery Act
RCRA GEN—RCRA registered small or large generation of hazardous waste
HAZNET—Hazardous Waste Information System
FINDS—Facility Index System/Facility Identification Imitative Program Summary Report
UST—Underground Storage Tank
LUST—Leaking Underground Storage Tank
HIST UST—Historic Underground Storage Tank
CA WDS—Waste Discharge System
Cortese—State Index of Properties with Hazardous Waste
SWEEPS UST—UST listing maintained by the Regional Water Quality Control Board in the 1980s.
Sources: EDR 2008 in Dudek 2008; Dudek 2008, 2010a

As of November 15, 2010, El Toro Materials has vacated the project site and has moved operations to the area north of the project site on the Baker Ranch Parcel. The property is scheduled to be transferred to the City before the end of 2010. A Phase I Environmental Site Assessment Addendum (Dudek 2010b) was prepared in late November 2010 to document the site conditions at the Baker Ranch parcel after El Toro Materials vacated the site. A site reconnaissance was conducted on November 16, 2010. Observed on the site were large piles of Class 2 Road Base crushed concrete, graded land, two catchment basins, a wheel wash, a desilting basin, and two concrete pads. The water and sewer PCV pipelines for the former office trailer were observed to be cut near the ground surface and these features remain in place underground. A septic tank is also located approximately 10 feet from the cut off wastewater pipes.

El Toro Materials maintains one 250 gallon gasoline AST and one 10,000 gallon reclaimed water AST north of the project site. A pad mounted transformer was also observed east of the water tank. El Toro Materials subleases areas north of the subject property to R&S Soil and Instant Jungle. According to Ms. Pittman, R&S Soil makes top soil and Instant Jungle is a landscaping company.

Regulatory Setting

There are many federal, state, and local laws that regulate the management of hazardous materials. Implementation of these laws and management of hazardous materials are regulated independently of the CEQA process through various programs administered by different agencies at all levels of government. A brief overview of the federal, state, and local laws is included below.

Federal

Primary federal agencies with responsibility for hazardous materials management include the Environmental Protection Agency (EPA), Department of Labor (Federal Occupational Health and Safety Administration [OSHA]), Department of Transportation (DOT), and Nuclear Regulatory Commission (NRC).

Federal laws and regulations relevant to the proposed project are discussed in detail below.

Resource Conservation and Recovery Act of 1976 (42 USC Sections 6901–6987)

The goal of the Resource Conservation and Recovery Act of 1976 (RCRA) is the protection of human health and the environment, the reduction of waste, the conservation of energy and natural resources, and the elimination of the generation of hazardous waste as expeditiously as possible. The Hazardous and Solid Waste Amendments of 1984 significantly expanded the scope of RCRA by adding new corrective action requirements, land disposal restrictions, and technical requirements. The corresponding regulations in 40 CFR 260–299 provide the general framework for managing hazardous waste, including requirements for entities that generate, store, transport, treat, and dispose of hazardous waste.

Emergency Planning and Community Right-to-Know Act (42 USC 11001 et seq.)

Also known as Title III of the Superfund Amendments and Reauthorization Act (SARA), the Emergency Planning and Community Right-to-Know Act (EPCRA) was enacted by Congress as the national legislation on community safety. This law was designated to help local communities protect public health, safety, and the environment from chemical hazards. To implement EPCRA, Congress required each state to appoint a State Emergency Response Commission (SERC). The SERCs were required to divide their states into Emergency Planning Districts and to name a Local Emergency Planning Committee (LEPC) for each district. EPCRA provides requirements for emergency release notification, chemical inventory reporting, and toxic release inventories for facilities that handle chemicals.

State

Primary state agencies with jurisdiction over hazardous chemical materials management are the DTSC and the Regional Water Quality Control Board (RWQCB). Other state agencies involved in hazardous materials management are the Department of Industrial Relations (state OSHA implementation), state Office of Emergency Services (OES—California Accidental Release Prevention implementation), California Department of Fish and Game (CDFG), California Air Resources Board (ARB), California Department of Transportation (Caltrans), state Office of Environmental Health Hazard Assessment (OEHHA—Proposition 65 implementation), and California Integrated Waste Management Board (CIWMB).

State statutes relevant to the proposed project are discussed in detail below.

Hazardous Waste Control Law (California Health and Safety Code, Division 20, Chapter 6.5)

The CalEPA DTSC is authorized by the U.S. EPA to enforce and implement federal hazardous materials laws and regulations. Most state hazardous materials regulations are contained in Title 22 of the California Code of Regulations (CCR). DTSC provides cleanup and action levels for subsurface contamination; these levels are equal to, or more restrictive than, federal levels. DTSC acts as the lead agency for some soil and groundwater cleanup projects, and has developed land disposal restrictions and treatment standards for hazardous waste disposal in California.

DTSC is responsible for the enforcement of the Hazardous Waste Control Law, which implements the federal RCRA cradle-to-grave waste management system in California. California hazardous waste regulations can be found in Title 22, Division 4.5, "Environmental Health Standards for the Management of Hazardous Wastes."

Hazardous Material Release Response Plans and Inventory Law (California Health and Safety Code, Chapter 6.6)

This state right-to-know law requires businesses to develop a Hazardous Material Management Plan or a business plan for hazardous materials emergencies if they handle or store more than 500 pounds, 55 gallons, or 200 cubic feet of hazardous materials at any given time during the reporting year. The business plan must be prepared within 30 days of bringing the hazardous materials on-site and if the quantities exceed the storage thresholds. In addition, updates must be prepared within 30 days if new materials are brought on-site or if there is a change to the amounts that were originally reported. In addition, the business plan would include an inventory of all hazardous materials stored or handled at the facility above these thresholds. This law is designed to reduce the occurrence and severity of hazardous materials releases. The Hazardous Materials Management Plan or business plan must be submitted to the Certified Unified Program Agency (CUPA). The County of Orange Environmental Health Division was designated by the State Secretary for Environmental Protection on January 1, 1997, as the CUPA for Orange County (County of Orange 2010). The CUPA is the local administrative agency that coordinates the following six programs regulating hazardous materials and hazardous wastes in Orange County: Hazardous Waste, Underground Storage Tanks (UST), Aboveground Petroleum Storage Tanks (APST), Hazardous Materials Disclosure (HMD), Business Plan, and California Accidental Release Program (CalARP). County and city fire agencies within Orange County, including the City of Lake Forest, have joined the CUPA as participating agencies to form a partnership with the County's Unified Program. In most cities, the environmental health departments administer the Hazardous Waste, UST, and APST Programs while the fire agencies administer HMD, Business Plan, and CalARP (County of Orange 2010). The state has integrated the federal EPCRA reporting requirements into this law; once a facility is in compliance with the local administering agency requirements, submittals to other agencies are not required.

California Code Section 65962.5

Section 65962.5 requires that DTSC will compile and update as appropriate, but at least annually, and shall submit to the Secretary for Environmental Protection, a list of all the following:

- all hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, which include all facilities where DTSC has taken or contracted for corrective action because the facility has failed to comply with corrective action orders;
- all land designated as hazardous waste property or border zone property pursuant to Article 11 (commencing with Section 25220) of Chapter 6.5 of Division 20 of the Health and Safety Code;
- all information received by the Department of Toxic Substances Control pursuant to Section 25242 of the Health and Safety Code on hazardous waste disposals on public land;
- all sites listed pursuant to Section 25356 of the Health and Safety Code, which include hazardous substance release sites selected for and subject to a response action;
- all sites included in the Abandoned Site Assessment Program.

DTSC maintains the "Cortese Lists," which is a list of information and the locations of hazardous material release sites as identified in Section 65962.5. This list is comprised from various data resources by different agencies (California EPA 2009). The Cortese List includes information from Geotracker, which identifies leaking underground storage tanks; EnviroStor, which identifies hazardous waste and substance sites; and the CDO and CAO database, which includes sites that have received cease and desist orders.

Other State Requirements

California regulates the management of hazardous wastes through Health and Safety Code Section 25100 et seq.; CCR Title 22, Division 4.5, "Environmental Health Standards for the Management of Hazardous Wastes"; and CCR Title 26, "Toxics." The state regulates air particulates during construction, demolition, and operation through the SCAQMD rules.

Local

City of Lake Forest General Plan

The following goals and policies are related to hazards and hazardous materials, in general, and are taken from the Safety and Noise Element from the Lake Forest General Plan. These are the goals and policies that are generally relevant to the proposed project.

Goal 2.0: Protection of the community from hazards associated with aircraft overflights, hazardous materials use, fire, and ground transportation.

Policy 2.2: Reduce the risk of the community from the use and transport of hazardous materials.

City of Lake Forest Municipal Code

The following sections of the Lake Forest City Municipal Code are related to hazards and hazardous materials and are generally relevant to the proposed project.

According to Section 6.16.030 of the City Municipal Code, a substance may be deemed a hazardous material or hazardous waste upon a finding by the Director of Fire Services that the substance, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the community. The Director of Fire Services may use the Uniform Fire Code published by the Western

Fire Chiefs to assist in requiring the types and amounts of such substances to be disclosed (Ord. 171 § 1 (Exh. A (part)), 2007).

According to Section 6.16.040 of the City Municipal Code, a hazardous material disclosure form must be filed annually with the Orange County Fire Department by any person who uses or handles hazardous materials that are not exempt from disclosure, as identified in Section 6.16.060. The disclosure form must include, but is not limited to, the following information: a listing of the chemical name and any common names of every hazardous material used, the maximum amount of each hazardous material that is handled or used at any one time by the user over the course of the year, specific information on how and where the hazardous materials are handled or used by the user, and disclosure of the hazardous characteristics of every hazardous material used. Any person using or handling less than 500 pounds or 55 gallons per year, whichever is the lesser, of a hazardous material shall be exempted from the requirement of disclosure of that use or handling unless the Fire Chief has provided notice that the weight or volume limits of this exemption for a specific hazardous material has been lowered in response to public health concerns or to meet the intent and requirements of the Uniform Fire Code (Section 6.16.060).

Project Impacts and Mitigation Measures

The impacts associated with the exposure of the project to the hazards and hazardous materials are discussed below. Mitigation measures are provided, where appropriate.

Methodology

The analysis in this section focuses on hazardous materials sites compiled pursuant to Government Code Section 65962.5 and whether they would create a significant hazard to the public or the environment. The analysis is based on database searches conducted for the project site and surrounding properties, and summarizes the results of the Phase I Environmental Site Assessment was conducted for the Glass Creek site in 2008 (Dudek 2008).

Thresholds of Significance

The following CEQA thresholds resulted in less than significant impacts or no impacts when originally analyzed in the Initial Study (Appendix A) and therefore do not warrant further analysis in this EIR:

- would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school;
- would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;

- 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;
- for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 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; or
- 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.

Because the City's 2010 CEQA Significant Thresholds do not cover issues related to hazards and hazardous materials, the following threshold is based on Appendix G of the 2009 CEQA Guidelines. For purposes of this EIR, the proposed project would result in a significant impact related to hazards and hazardous materials if it would:

- 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 create a significant hazard to the public or the environment.

For a discussion of potential impacts related to pesticide use associated with park landscaping please refer to Section 3.8, Hydrology and Water Quality.

Impacts and Mitigation Measures

Impact HAZ-1: The proposed project is not 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 not create a significant hazard to the public or the environment.

The Glass Creek Parcel is undeveloped and does not have a history or record of any chemical storage. As described above under the Environmental Setting section, the environmental database searches conducted did not identify any locations within the Glass Creek Parcel that are included on a hazardous materials site list compiled pursuant to Government Code Section 65962.5. The environmental database search did identify several sites near the Glass Creek Parcel that are known to handle hazardous materials (see Table 3.7-1). Based on the review of the EDR report and the direction of groundwater flow in the vicinity of the project site (estimated as to the southeast), it is unlikely that offsite properties have affected the environmental conditions at the project site. The Phase I study recommended no further environmental investigation of the Glass Creek Parcel (Dudek 2008). Therefore, no impacts would occur.

As of early November 15, 2010, El Toro Materials has moved operations to the area north of the project site on the northern portion of the Baker Ranch Parcel and has vacated the southern portion of the Baker Ranch parcel that makes up a portion of the project site. El Toro Materials maintains one 250 gallon gasoline AST and one 10,000 gallon reclaimed water AST north of the project site. A pad mounted transformer was observed east of the water tank. The El Toro Materials was listed on the following databases: FINDS, EMI, MINES, OSHA, and CHMIRS. A cleanup plan is in place in the event of a spill at the El Toro Materials Company. The site is subject to inspections once a year by the Orange County Fire Authority and the Orange County Health Care Agency. . According to the

Phase I ESA, the database listings do not present an environmental condition for the project site or the surrounding properties.

Currently there is an approved reclamation plan in place. The reclamation plan identifies that the sand aggregate currently mined will be completely removed prior to closure, along with all equipment and structures used to support the mining operation. Per the requirements of the reclamation plan, the site has been vacated as of November 15, 2010 and the equipment and structures used to support the mining operation have been removed and some of the equipment has been relocated north of the project site. Removal of the small septic tank and associated PVC piping, piles of Class 2 Road Base crushed concrete, two catchment basins, wheel wash, desilting basin, and two concrete pads would be required prior to grading activities. No hazards are anticipated to be associated with the removal of the septic tank, concrete, PVC piping due to the age and small size of the septic tank, and quantity of piping and concrete.

The environmental database search identified two sites (Arco Facility No. 06540 and Saddleback Valley Ornamental Iron) near Baker Ranch that are known to handle hazardous materials (see Table 3.7-1). Based on the review of the EDR report for the Baker Ranch property, it is unlikely that off-site properties have impacted the environmental conditions at the subject property.

The Rados Parcel was included in the Glass Creek and Baker Ranch EDR environmental database searches. The EDR environmental database searches did not identify any locations within the Rados Parcel that was included on a hazardous materials site list compiled pursuant to Government Code Section 65962.5. Furthermore, the search of Geotracker or EnviroStor did not identify the Rados Parcel as being a hazardous material site or as having previous hazardous material release. The Rados Parcel is an undeveloped site and lacks hazardous conditions.

The proposed project is not located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would not create a significant hazard to the public or the environment. Therefore, no impacts would occur. No mitigation measures are required.

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Dudek. 2008. *Phase I Environmental Site Assessment County Open Space APNs 104-541-26, 104-143-38, and 104-143-30 El Toro Road and Portola Parkway Lake Forest CA 92630*. Final. Encinitas, CA. Prepared for: City of Lake Forest.

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Section 3.8

Hydrology and Water Quality

Section 3.8
Hydrology and Water Quality

Introduction

This section provides information on the physical and regulatory setting relative to surface and groundwater hydrology and water quality, analyzes potential impacts resulting from the proposed project, and provides recommendations for mitigation measures to reduce potential adverse effects. Preliminary hydrologic analyses have been completed by Psomas as part of the site design and engineering; however, final engineering design is ongoing and would not be completed prior to the release of the Draft EIR. Thus, recommendations for hydrologic improvements made as part of this EIR would be incorporated into the final design, as appropriate.

Environmental Setting

The proposed project is located in the City of Lake Forest on three parcels including the Glass Creek Parcel, the Rados Parcel, and the Baker Ranch Parcel. The Glass Creek and Rados Parcels are predominately undeveloped areas that contain several small ephemeral drainages that discharge to Glass Creek, which flow into Aliso Creek. A sand and gravel aggregate mine is currently operating on the Baker Ranch Parcel.

Regional Hydrology and Water Quality

Climate

Lake Forest has a Mediterranean climate with warm dry summers and cool wet winters. The hottest month is typically August with an average maximum temperature of 82.2 degrees Fahrenheit (F) and an average minimum temperature of 63.2 degrees F. January has the coolest average minimum temperature, while December records indicate it has the coolest of the average maximum temperatures. The maximum monthly average precipitation is 1.68 inches, which occurs in November, with an annual average of 6.43 inches. See Table 3.8-1 for local climate data.

Table 3.8-1. Climate Data for the City of Lake Forest

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec	Avg.
Average Max Temperature (°F)	66.7	67.8	71.3	71.0	74.0	74.8	80.0	82.2	79.6	76.5	70.2	64.7	73.2
Average Min Temperature (°F)	41.3	44.6	47.4	49.8	54.4	57.2	61.3	63.2	57.4	53.8	49.8	41.8	51.8
Average Overall Temperature (°F)	54.0	56.2	59.3	60.4	64.2	66.0	70.6	72.7	68.5	65.2	60.0	53.2	62.5
Average Precipitation (inches)	0.79	1.17	0.24	0.60	0.00	0.00	0.00	0.00	1.04	0.21	1.68	0.70	6.43

Source: http://climate.fizber.com/california-city-lake-forest-climate.html

Watersheds

The City of Lake Forest and the project study area are located within the Aliso Creek and San Diego Creek watersheds (City of Lake Forest 2008). The Aliso Creek Watershed covers approximately 30 square miles and includes portions of the cities of Aliso Viejo, Dana Point, Laguna Niguel, Laguna Woods, Laguna Beach, and Lake Forest. Its main tributary, Aliso Creek, originates in the Santa Ana Mountains inside the boundaries of Cleveland National Forest. Smaller tributaries include Wood Canyon, Sulphur Creek, Aliso Hills Channel, and English Channel. The project site west of Portola Parkway to the existing water tank, Vista Terrace, and existing Rancho Parkway terminus are located within the Aliso Creek watershed.

The San Diego Creek Watershed (also referred to as the Newport Bay watershed) drains approximately 154 square miles to the Pacific Ocean within southern Orange County and encompasses all waters draining to Newport Bay (Orange County Public Works 2010). It includes portions of the cities of Costa Mesa, Irvine, Laguna Woods, Lake Forest, Newport Beach, Orange, Santa Ana, and Tustin. A small portion of the project site west of the existing water tank, just above the existing ridgeline, is located in the San Diego Creek watershed. Its main tributary, San Diego Creek, drains into Upper Newport Bay. Serrano Creek, located approximately 5 miles downstream from the proposed project site, is an intermittent tributary to San Diego Creek (Orange County 2009).

All of the grading and construction would occur on the east side of the ridgeline that delineates the watersheds within the Aliso Creek Watershed under the jurisdiction of the San Diego RWQCB.

Surface Water

The proposed project is within the Coastal and Peninsula Range of California, and within both the Santa Ana River Basin and the San Diego River Basin (City of Lake Forest 2008). Each basin comprises a separate regulatory region and is governed by its respective regional board. Designated beneficial uses and associated water quality objectives/goals are listed in the respective Regional Water Quality Control Plans (Basin Plans) (City of Lake Forest 2008). The San Diego Regional Water Quality Control Board maintains jurisdiction over the surface waters on the project site, and the project site itself. While a portion of the site drains to San Diego Creek within the Santa Ana River Basin, no changes related to the proposed project would occur to this basin. Therefore, no additional discussion of the Santa Ana River Basin or the San Diego Creek Watershed is provided in this EIR.

The San Diego River Basin Region is divided into a coastal plain area, central mountain-valley area, and eastern mountain valley area (City of Lake Forest 2008). The proposed project site is located within the coastal plain area. This area is composed of a series of wave cut benches overlain by smooth, eroded, terrace deposits. The terrace deposits are steeply incised by streams that drain directly towards the Pacific Ocean. The San Juan Hydrologic Unit of the San Diego Region is composed of five hydrologic areas, including the Laguna Hydrologic Area. The Aliso Creek Hydrologic Subarea of the Laguna Hydrologic Area, in which the proposed project area is located, conveys flow from the Cleveland National Forest to the Pacific Ocean. The Aliso Creek Watershed is under the jurisdiction of the San Diego RWQCB Region 9.

Existing or potential beneficial uses for Aliso Creek are identified in the Basin Plan and include:

- agriculture (AGR)—Includes uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
- Non-contact water recreation (REC2).
- warm freshwater habitat (WARM).
- wildlife habitat (WILD).
- potential for contact water recreation (REC1).

Aliso Creek has been specifically excluded from the municipal supply designation (MUN) in accordance with the criteria specified in the Sources of Drinking Water Policy.

Reaches of Aliso Creek and Aliso Creek (mouth) have been listed (303(d)) as impaired for several pollutants. See Table 3.8-2 for a description of the pollutants by reach, including those being addressed by established TMDLs and those not yet addressed by TMDLs.

Table 3.8-2. CWA Section 303(d) List of Water Quality Limited Segments (Those requiring TMDLs [A] and those being addressed by TMDLs [B])

Name	Pollutant	Potential Sources	TMDL Status	Estimated Size Affected	Proposed or USEPA Approved TMDL Completion
Aliso Creek	Indicator Bacteria	Nonpoint/Point Source Unknown Point Source Urban Runoff/Storm Sewers	A	19 miles	2005
	Phosphorus	Unknown Nonpoint Source Unknown Point Source Urban Runoff/Storm Sewers	A	19 miles	2019
	Toxicity	Source Unknown	A	19 miles	2019
Aliso Creek (mouth)	Indicator Bacteria	Nonpoint/Point Source	A	0.29 Acres	2005

Source: 2006 CWA Section 303(d) List. USEPA Approval Date: June 28, 2007.

A basin plan must identify the beneficial uses of the water to be protected, establish water quality objectives for the reasonable protection of the beneficial uses, and establish a program of implementation for achieving the water quality objectives. Beneficial uses are the uses of water necessary for the survival or well being of humans, plants, and wildlife. Water quality objectives are the limits or levels of water quality constituents or characteristics that are established for reasonable protection of beneficial uses of water or the prevention of nuisance within the specific area. These can either be present in numeric form or as a narrative. The water quality objectives

(WQOs) for the San Diego RWQCB are included below in Table 3.8-3. It is the RWQCB's goal to achieve and maintain water quality objectives that are necessary to protect all beneficial uses of the waters in the region. This is accomplished through control of point source pollutants, control of non-point source pollutants, remediation of pollution, and other programs (i.e., 303(d) process).

Table 3.8-3: Surface Water Quality Objectives, San Diego Basin Plan (Concentrations not to be exceed more than 10% of the time during any one year)

	Constituent (mg/L or as noted)												
Hydrologic Unit (HA)	**TDS**	**Cl**	**SO_4**	**%Na**	**N&P**	**Fe**	**Mn**	**MBAS**	**B**	**Odor**	**Turb NTU[1]**	**Color Units**	**F**
Laguna HA (901.10)	1,000	400	500	60	a	0.3	0.05	0.5	0.75	None	20	20	1.0

1: Concentration of nitrogen and phosphorus, by themselves or in combination with other nutrients, shall be maintained at levels below those which stimulate algae and emergent plant growth. Threshold total Phosphorus (P) concentrations shall not exceed 0.05 mg/L in any stream at the point where it enters any standing body of water, nor 0.025 mg/L in any standing body of water. A desired goal in order to prevent plant nuisances in streams and other flowing waters appears to be 0.1 mg/L total P. These values are not to be exceeded more than 10% of the time unless studies of the specific body in question clearly show that water quality objective changes are permissible and changes are approved by the Regional Board. Analogous threshold values have not been set for nitrogen compounds; however, natural ratios of nitrogen to phosphorus are determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N:P = 10:1 shall be used.

Source: San Diego RWQCB, 2008. Table 3-3.

While the objectives in the San Diego Basin Plan are more specific, both thresholds are set to ensure that beneficial uses of the waters are not impacted. The following water quality objectives are from the Santa Ana RWQCB Basin Plan.

- Suspended and Settleable Solids: Inland surface waters shall not contain suspended or settleable solids in amounts which cause a nuisance or adversely affect beneficial uses as a result of controllable water quality factors.
- Turbidity: Increases in turbidity which result from controllable water quality factors shall comply with the following:

Natural Turbidity	Maximum Increase
0-5 NTU	20%[2]
50-100 NTU	10 NTU
Greater than 100 NTU	10%

  All inland surface waters shall be free of changes in turbidity which adversely affect beneficial uses.
- Oil and Grease: Waste discharges shall not result in deposition of oil, grease, or wax, or other material in concentrations, which result in a visible film or in coating objects in the water, or which cause a nuisance or adversely affect beneficial uses.

[1] NTU = nephelometric turbidity units (measure of light scattered by suspended particles in the water)
[2] San Diego RWQCB's maximum increase is "20% over natural turbidity level"

The Basin Plans also provide the technical basis for determining waste discharge requirements, taking enforcement actions, and evaluating clean water grant proposals. These plans are updated and reviewed every 3 years.

National Pollutant Discharge Elimination System (NPDES) permits issued to control pollution must implement requirements of the applicable regional basin plans.

Chapter 7 of Volume II of the Opportunities Study Program Recirculated PDEIR and Comments and Responses (2008b) discusses the existing runoff coefficients of local creeks and washes. Runoff coefficients are generated for various land uses based on generalized amounts of impervious surface associated with specific land uses. The runoff coefficient quantifies the percent of water that will run off the surface of the land during a storm event. It depends on the type of terrain, soil infiltration, vegetative cover, and surface storage. Generally as the runoff coefficient approaches 1.0 the more impervious surface there is in the watershed and the higher the percentage of runoff generated during a storm event. For example, concrete roads typically have a runoff coefficient of 0.90 to 0.95. The Aliso Creek Watershed has an existing runoff coefficient of 0.48. The Opportunities Study reduced the runoff coefficients to 0.37 for the Aliso Creek Watershed.

Groundwater

The Coastal Plain of the Orange County Groundwater Basin (Orange County Basin) underlies a coastal alluvial plain in the northwestern portion of Orange County. The basin is bounded by consolidated rocks exposed on the north in the Puente and Chino Hills, on the east in the Santa Ana Mountains, and on the south in the San Joaquin Hills. The basin is bounded by the Pacific Ocean on the southwest and by a low topographic divide approximated by the Orange County–Los Angeles County line on the northwest. The basin underlies the lower Santa Ana River watershed.

The proposed project site does not overlay any groundwater basin. Aliso Creek does not overlay a groundwater basin or contribute to groundwater recharge; however, approximately 5 miles downstream from the proposed project site, Serrano Creek does contribute to the Coastal Plain of the Orange County Basin (DWR 8-1)(Orange County Water District 2008). The underlying geology of the groundwater aquifer is a thick accumulation of fresh water-bearing interbedded marine and continental sand, silt, and clay deposits. The proportion of fine materials increases from the mountain areas towards the coast, resulting in areas of recharge (forebay area) where materials are coarser and more interconnected, and pressure areas where materials are finer and the aquifer becomes confined. These consolidated rocks surround and underlie thick unconsolidated alluvial deposits. The major surface water drainage overlying this groundwater basin is the Santa Ana River, the headwaters of which lie outside the basin (City of Lake Forest 2008).

The Orange County Water District (OCWD) is charged with managing this groundwater basin by authority granted to it in the California Water Code Appendix Chapter 40. Approximately 75 percent of OCWD demands are met with groundwater from this basin. Recharge occurs from percolation of Santa Ana River flow, infiltration of precipitation, spreading of reclaimed water in recharge areas, and injection into wells. Additionally, the Santa Ana River flow, itself, contains natural flow, reclaimed water, and imported water that is spread in the groundwater basin forebay area (City of Lake Forest 2008).

Groundwater levels in the basins have periodically declined due to gradually increasing groundwater production over the last ten years and due to drought conditions, which have reduced the amount of local water available to refill the basin. To address these low groundwater levels and seawater intrusion along the coastal areas, the OCWD has reduced the amount of groundwater available to its water retailers and increased the cost of groundwater to pay for more imported water to recharge the basin (City of Lake Forest 2008).

Local Hydrology and Water Quality

Surface Water

The project study area supports one named primary drainage system, Glass Creek, which has three tributaries and two sub-tributaries on site and is within the Aliso Creek watershed. In addition, three hydrologically isolated drainages, referred to in the section as Drainages A, B, and C, are located in the study area (PCR 2009). Figure 3.8-1 shows the surface waters and drainages on site and in the project vicinity. Surface water generally flows south or southeast across the property to Aliso Creek, located immediately south of the study area. The hydrology of Glass Creek is likely augmented by nuisance runoff from commercial areas and residences within the vicinity.

Water quality data for Glass Creek and/or the smaller tributaries is not immediately available; however, while conducting a site visit, it was noted that the tributaries to Glass Creek are highly incised indicating erosion, and are therefore potentially a source for sediment entering Glass Creek.

The total jurisdiction within the entire study area includes approximately 0.65 acre of U.S. Army Corps of Engineers (USACE)-jurisdictional non-wetland waters of the United States and 0.53 acre of USACE-jurisdictional wetland waters of the United States. The study area also contains approximately 0.67 acre of RWQCB-jurisdictional non-wetland waters of the State and 0.53 acre of RWQCB-jurisdictional wetland waters of the State. Additionally, 6.74 acres of CDFG jurisdictional streambed and associated riparian habitat occur throughout the entire study area.

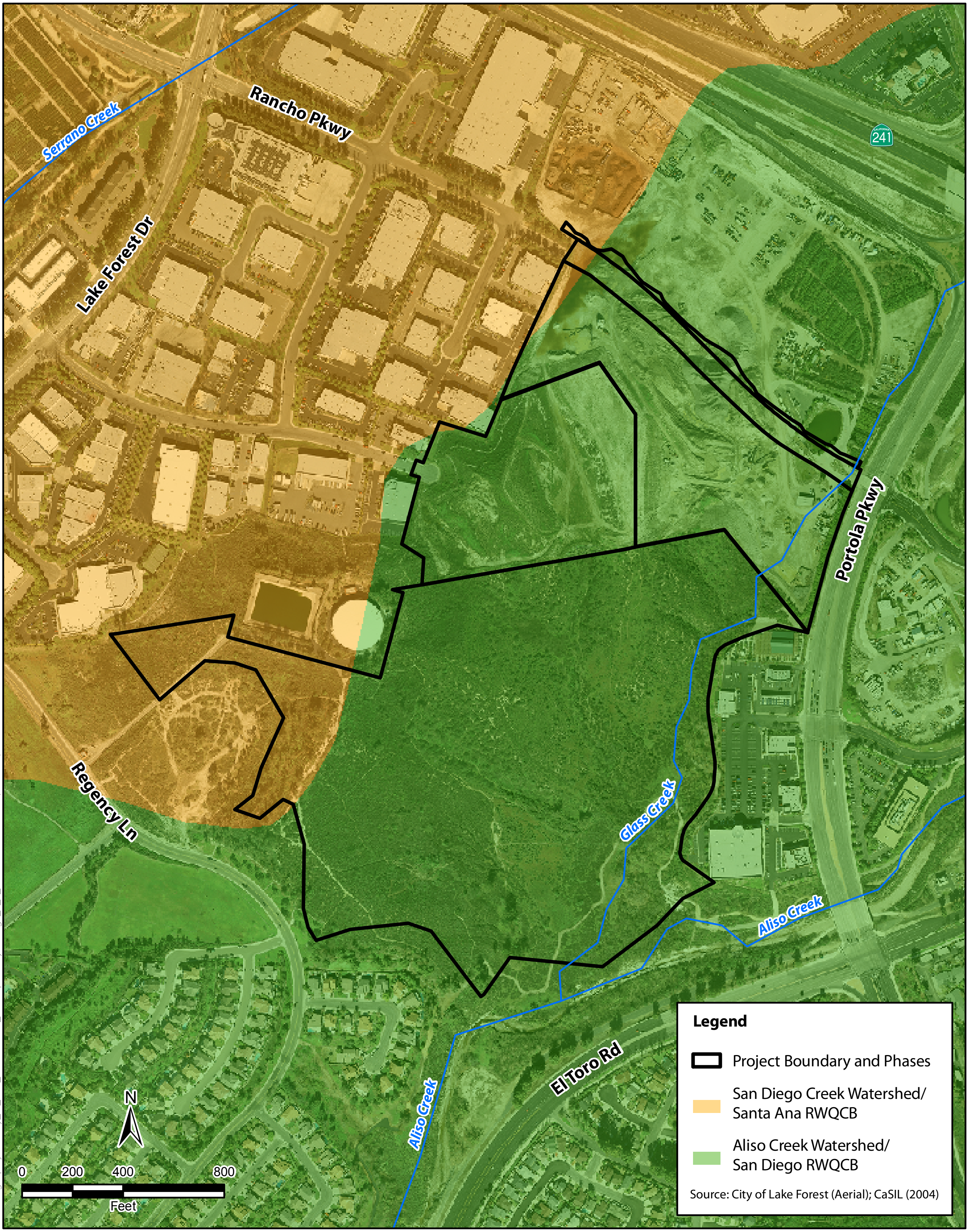

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Figure 3.8-1
Aliso Creek and San Diego Creek Watersheds
City of Lake Forest Sports Park and Recreation Center

Glass Creek (Intermittent)

Glass Creek originates to the north and enters the study area as an earthen, trapezoidal channel that traverses the eastern portion of the study area in a southerly direction. A maintained flood control access road crosses the tributary in the northeastern corner, but it was constructed with a culvert to allow surface flows to pass underneath. Further downstream, a steel footbridge associated with the Limestone Canyon & Whiting Ranch Wilderness Park hiking trail spans the Glass Creek. The drainage continues in a southwesterly direction for approximately 2,000 linear feet before its confluence with Aliso Creek off site. Glass Creek exhibits intermittent hydrology and contains 1 to 6 inches of flowing surface water, which occasionally form deeper, slow-water pools and backwaters along its length. Evidence of wetland hydrology found within Glass Creek included standing or flowing water, sand bar and shelf formation within the stream corridor, drift patterns, water-stained leaves, and coarse woody debris within and along the streambed.

Tributary Glass Creek (GC)1 (Ephemeral)

Tributary GC1 is an earthen, trapezoidal drainage to Glass Creek that originates just off site to the north of the study area. The ephemeral tributary contained erosive slopes with near vertical banks and sediment deposits within the active channel.

Tributary GC2 (Ephemeral)

Tributary GC2 is an earthen, trapezoidal drainage to Glass Creek that originates within the northwestern portion of the study area. Like Tributary GC1, the ephemeral tributary contained erosive slopes with near vertical banks and sediment deposits within the active channel.

Tributary GC3 (Ephemeral)

Tributary GC3 is an earthen, trapezoidal drainage tributary to Glass Creek that originates just off site, north of the study area. Like Tributaries GC1 and GC2, Tributary GC3 is an ephemeral wash that contains erosive slopes with near vertical banks and sediment deposits within the active channel.

Drainage A (Ephemeral; Isolated)

Drainage A originates within the center of the study area and traverses the property in a northwest to southeast direction for approximately 385 linear feet before losing its channel morphology and allowing surface water to sheet flow. Drainage A is an earthen, U-shaped channel bottom and exhibits ephemeral hydrology.

Drainage B (Ephemeral; Isolated)

Drainage B also originates within the center of the study area and traverses the property in a northwest to southeast direction for approximately 755 linear feet before losing its channel morphology and allowing surface water to sheet flow. Drainage B exhibits ephemeral hydrology.

Drainage C (Ephemeral; Isolated)

Drainage C also originates within the center of the study area and traverses the property in a northwest to southeast direction for approximately 748 linear feet before losing its channel morphology and allowing surface water to sheet flow. Drainage C is an earthen, V-shaped channel bottom and exhibits ephemeral hydrology and supports a sagebrush/buckwheat scrub plant community.

Flooding

As part of the nationwide flood insurance program, the Federal Emergency Management Agency (FEMA) has mapped flood prone areas extensively in the project area. Figure 3.8-2 depicts the existing FEMA 100-year and 500-year floodplains. The majority of the project site is outside 100-year and 500-year floodplain. Aliso Creek is a designated floodway and is designated as Zone AE (100-year floodplain with base flood elevations [BFEs] having been determined). The project site contains a small portion of the 100-year floodplain near the location where Glass Creek exits the project site, but this area would not be disturbed by development of the project. During the 100-year storm event, some flooding is expected along Aliso Creek, off site of the project area.

Soils

There are eight different soils located on the project site, including:

- Capistrano Sandy Loam, 2 to 9 percent slopes;
- Capistrano Sandy Loam, 9 to 15 percent slopes;
- Cieneba Sandy Loam, 30 to 75 percent slopes;
- Mocho Loam, 2 to 9 percent slopes;
- Myford Sandy Loam, 2 to 9 percent slopes;
- Myford Sandy Loam, 9 to 15 percent slopes;
- Riverwash; and
- San Andreas Sandy Loam, 15 to 30 percent slopes

Most of the soils have slight erosion potential, defined as erosion being unlikely under ordinary climatic conditions. Myford Sandy Loam, 9 to 15 percent slopes, and San Andreas Sandy Loam, 15 to 30 percent slopes, both have moderate soil erosion potential. Moderate soil erosion potential is defined as some erosion is likely and erosion control measures may be needed. A single soil type, Cieneba Sandy Loam, 30 to 75 percent slopes, has very severe erosion potential. Very severe erosion potential is defined as significant erosion is expected, loss of soil productivity and offsite damage are likely, and erosion control measures are costly and generally impractical (NRCS 2009). Additional information on soils can be found in Section 3.5, Geology and Soils.

Regulatory Setting

Federal

Clean Water Act

The Clean Water Act (CWA) was designed to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The CWA also directs states to establish water quality standards for all waters of the United States and to review and update such standards on a triennial basis. Other provisions of the CWA related to basin planning include Section 208, which authorizes the preparation of waste treatment management plans, and Section 319, which mandates specific

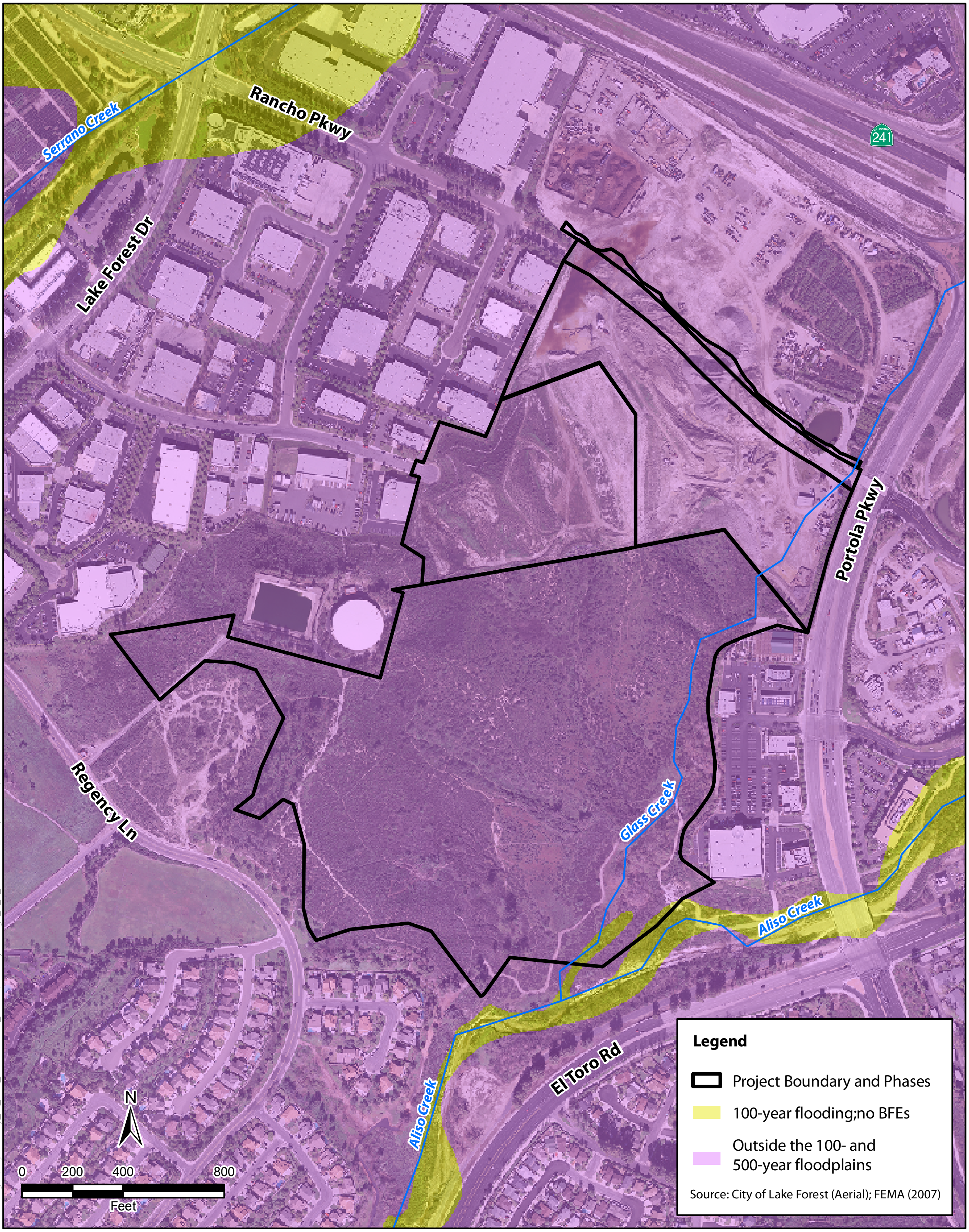

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Figure 3.8-2
FEMA Flood Zones
City of Lake Forest Sports Park and Recreation Center

actions for the control of pollution from nonpoint sources. The USEPA has delegated responsibility for implementation of portions of the CWA to the SWRCB and the RWQCBs, including water quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) Program.

Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. Section 304(a) requires the USEPA to publish water quality criteria that accurately reflects the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. Water quality standards are typically numeric, although narrative criteria based upon biomonitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards. Section 303(c)(2)(b) of the CWA requires states to adopt numerical water quality standards for toxic pollutants for which USEPA has published water quality criteria and which reasonably could be expected to interfere with designated uses in a water body.

Stormwater discharges to waters of the United States are regulated under the CWA §402, 33 USC §1342; 40 CFR Parts 122–136. In the project area, this requirement is regulated by two RWQCBs—the Santa Ana Region and San Diego Region—under the NPDES program. Most of the project site (all areas east of the existing water tank and east of the existing Vista Terrace and Rancho Parkway termini) is under the jurisdiction of the San Diego RWQCB Region 9. The Santa Ana RWQCB Region 8 has jurisdiction over the westernmost portion of the project site, which consists of a small area southwest of the existing water tank and directly north of Normandale Park. Within these regions, the Aliso Creek Watershed, San Diego Creek, and Newport Bay are listed as Section 303(d) impaired water bodies that do not meet water quality standards.

There are several sections of the CWA that pertain to regulating impacts on waters of the United States. Section 101 specifies the objectives of this act, which are implemented largely through Title III (Standards and Enforcement) and Section 30 (Prohibitions). The discharge of dredge or fill material into waters of the United States is subject to permitting specified under Title IV (Permits and Licenses) of this act and, specifically, under Section 404 (Discharges of Dredge or Fill Material) of the CWA. Section 401 (Certification) specifies additional requirements for permit review, particularly at the state level. Section 404 of the CWA regulates the placement of fill materials into the waters of the United States and is administered by the USACE. Section 401 of the CWA requires applicants for a federal permit to conduct any activity that may result in a discharge of a pollutant to obtain water quality certification (or a waiver). Water quality certification requires an evaluation of water quality considerations associated with dredging or the placement of fill material into waters of the United States. Water quality certifications are issued by one of the nine geographically separated RWQCBs in California. Under the CWA, the RWQCB must issue or waive Section 401 water quality certification for the project to be permitted under Section 404.

National Flood Insurance Act

Congress acted to reduce the costs of disaster relief by passing the *National Flood Insurance Act of 1968* and the *Flood Disaster Protection Act of 1973*. The intent of these acts was to reduce the need for large, publicly funded flood control structures and disaster relief efforts by restricting development in floodplains (California Department of Water Resources 2005 in City of Lake Forest 2008)). FEMA administers the National Flood Insurance Program (NFIP), which provides federal flood insurance subsidies and federally financed loans for eligible property owners in flood-prone areas. FEMA issues Federal Insurance Rate Maps (FIRMs) of communities participating in the NFIP. These maps delineate flood hazard zones in the community. Participating jurisdictions must exercise land use controls and purchase flood insurance as a prerequisite for receiving funds to purchase or build a structure in a flood hazard area. The Orange County Flood Control District (OCFCD) manages local storm drain facilities and is responsible for regional flood control planning within the County.

State

Porter-Cologne Water Quality Control Act (PCWQCA)

The PCWQCA established the SWRCB and divided the state into nine regional basins, each with its own water quality control board. The SWRCB is the primary state agency responsible for protecting the quality of the state's surface water and groundwater supplies. PCWQCA authorizes SWRCB to draft state policies regarding water quality. It also authorizes SWRCB to issue waste discharge requirements for discharges to state waters. PCWQCA requires the SWRCB, or one of the nine RWQCBs under the SWRCB, to adopt water quality control plans or basin plans for the protection of water quality.

As mentioned in the Environmental Setting, the project is under the jurisdiction of two regional boards (San Diego and Santa Ana Regional Boards). It will be reviewed under the jurisdiction of the San Diego RWQCB Region 9 because the majority of the site and the Aliso Creek watershed is located under its jurisdiction.

Section 13263 of the California Water Code

All projects resulting in discharges, whether to land or water, are subject to Section 13263 of the California Water Code and are required to obtain approval of Waste Discharge Requirements (WDRs) by the RWQCBs. Land- and groundwater related WDRs (i.e., non-NPDES WDRs) regulate discharges of process and wash-down wastewater and privately or publicly treated domestic wastewater. WDRs for discharges to surface waters also serve as NPDES permits, which are further described below.

NPDES Permits

National Pollutant Discharge Elimination System Phase I General Construction Activities Permit

Pursuant to CWA Section 402(p), which requires regulations for permitting of certain stormwater discharges, the SWRCB has issued a statewide general NPDES Permit for stormwater discharges from construction sites (Construction General Permit). Construction activity subject to the NPDES General Permit includes clearing, grading, and disturbances to the ground, such as stockpiling or excavation that results in soil disturbances of at least 1 or more acres (Phase 1) of total land area. Construction activity that results in soil disturbances less than 1 acre is subject to this General Construction Permit if the construction activity is part of a larger common plan of development that encompasses 1 or more acres of soil disturbance, or if there is significant water quality impairment resulting from the activity. The SWRCB permits all regulated construction activities under Order No. 99-08-DWQ (1999). This order requires that prior to beginning any construction activities, the permit applicant must obtain coverage under the General Construction Permit by preparing and submitting a Notice of Intent (NOI) and appropriate fee to the SWRCB. Additionally, coverage would not occur until an adequate Stormwater Pollution Prevention Plan (SWPPP) has been prepared prior to grading and is implemented during construction. The primary objective of the SWPPP is to identify, construct, implement, and maintain Best Management Practices (BMPs) to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the construction site during construction. BMPs include programs, technologies, processes, practices, and devices that control, prevent, remove, or reduce pollution.

Because construction of the proposed project would disturb more than 1 acre, it would be subject to these permit requirements. These permit requirements are enforced through the Orange County Drainage Area Management Plan (DAMP), with which the City must comply, and City Municipal Code Ordinances.

Construction Dewatering

Clean or relatively pollutant-free, non-stormwater, construction-generated water that poses little or no threat to water quality may be discharged directly to surface water under certain conditions pursuant to the Santa Ana RWQCB's General Waste Discharge Requirements for Short-Term Groundwater-Related Discharges and De Minimus Wastewater Discharges to Surface Waters within the San Diego Creek/Newport Bay Watershed, Order No. R8-2004-0021 (NPDES No. CAG998002) for drainage within the Santa Ana Region. Permit conditions for the discharge of these types of wastewaters to surface water are specified in that order. Discharges may be covered by the permit provided either (1) they are 1 year or less in duration, or (2) the discharge does not pose a threat to water quality, generally because it is de minimus in nature. Construction dewatering, well development water, pump/well testing, and miscellaneous dewatering/low-threat discharges are among the types of discharges that may be covered by the permit. The general permit also specifies standards for testing, monitoring and reporting, receiving water limitations, and discharge prohibitions. Construction dewatering in the San Diego Region would be covered under the General Waste Discharge Requirements Groundwater Extraction Waste Discharges from Construction, Remediation, and Permanent Groundwater Extraction Projects to Surface Waters within the San Diego Region Except for San Diego Bay (Order No. 2001-96, NPDES AG919002).

General Waste Discharge Requirements

The General Waste Discharge Requirements for Dredged or Fill Discharges to Waters Deemed by the U.S. Army Corps of Engineers to be outside of Federal Jurisdiction was adopted by the SWRCB on May 4, 2004. In this order, the SWRCB adopted General Waste Discharge Requirements (General WDRs) for some discharges of dredged or fill materials to waters outside federal CWA regulations. To be eligible for the General WDRs, the discharge must be to a water body deemed by the USACE to be outside of its jurisdiction for the issuance of federal Clean Water Act Section 404 permits. The General WDRs require dischargers to prepare and implement mitigation plans. The mitigation plans must demonstrate how the dischargers would sequentially avoid, minimize, and compensate for adverse impacts on water bodies, including wetlands, that receive the dredged or fill materials.

Regional

Orange County Stormwater Program 2003 Drainage Area Management Plan

The Drainage Area Management Plan (DAMP) satisfies NPDES permit conditions for creating and implementing an Urban Runoff Management Program (URMP) to reduce pollutant discharges to the maximum extent practicable for protection of receiving water body water quality and support of designated beneficial uses. This DAMP contains guidance on both structural and nonstructural BMPs for meeting these goals.

The Land-Use Planning for New Development and Redevelopment Component of the DAMP requires each co-permittee to minimize the short and long-term impacts on receiving water quality from new development and redevelopment. Each co-permittee's general plan or equivalent plan (e.g., comprehensive, master, or community plan) will include water quality and watershed protection principles and policies to direct land use decisions and require implementation of consistent water quality protection measures for development projects.

The specific water pollutant control program elements of the Orange County NPDES Stormwater Program are documented in the 2003 DAMP and corresponding Local Implementation Plans (LIPs), which serve as the permittees' primary policy and implementation documents for compliance with the NPDES Stormwater permits that were issued by the RWQCBs to the County of Orange, the Orange County Flood Control District (OCFCD), and the incorporated cities of Orange County (collectively referred to as permittees). The County DAMP and LIP identify acceptable BMPs and methods to incorporate BMPs into proposed projects. The City of Lake Forest, as a permittee, has prepared a LIP which details how the stormwater programs within the County's DAMP would be implemented by the City. It should be noted that the more specific Lake Forest LIP requirements control in the event of a conflict with DAMP requirements.

Environmentally Sensitive Areas

Aliso Creek is a 303(d)-listed Environmentally Sensitive Area (ESA). Part of San Diego Creek is also an ESA with impaired 303(d) status; however, the ESA designation for San Diego Creek stops at the Lake Forest boundary and is not located in the City. If a new development or redevelopment project in Orange County involves the addition of 2,500 square feet or more of impervious surface and is located within, directly adjacent to (within 200 feet), or discharging directly into receiving waters within ESAs, then it qualifies as a priority project and is subject to additional requirements. For the area of Orange County within the Santa Ana Regional Water Quality Control Board jurisdiction, the Model Water Quality Management Plan (WQMP) (DAMP Exhibit 7.II) explains the requirements placed upon all new development and significant redevelopment projects. For the area of Orange County within the San Diego Regional Water Quality Control Board jurisdiction, each municipality was required by the permit to develop a Local WQMP, based on the Model WQMP, to oversee new development and significant redevelopment within their local jurisdiction. The City of Lake Forest's WQMP template is available on their website and is discussed further below under Local Regulations.

City of Lake Forest

City of Lake Forest Ordinances include protection of water resources. The proposed project site includes several intermittent, ephemeral, and isolated water resources. Furthermore, these water resources are tributaries to larger streams in the area (San Diego Creek and Aliso Creek). The ordinances are summarized below are meant to reduce pollution discharges generated during the construction and operation of projects into receiving waters and maintain the water quality of the receiving waters. Since the proposed project would include disturbance of several water resources and earth moving during construction and it would generate runoff during operation these ordinances are applicable to the proposed project. Title 13 Parks and Recreational Facilities (Chapter 13.04 Parks and Recreation Facility Regulations, Section 13.04.032)

This ordinance prohibits people from swimming, fishing, bathing, wading, releasing pet animals in, or polluting the water of any fountain, pond, lake, stream, or reservoir. (Ord. 25 § 2 (part), 1992: Ord. 91-10 § 4 (part), 1991). Because the proposed project is a park adjacent to existing streams, this ordinance would apply to the proposed project.

Title 15 Water and Sewers (Chapter 15.14 Stormwater Quality Management)

Since the proposed project would generate runoff during construction and operational activities, the following sections of this ordinance to prevent pollutants from being discharged into receiving waters and maintain water quality would be applicable.

- Section 15.14.040—prohibits discharges of pollutants in stormwater that have not been reduced to the maximum extent practicable.
- Section 15.14.050—for all development, requires development of a stormwater pollution prevention plan in accordance with the state General NPDES Permit; submit a stormwater pollution control plan, prepared in accordance with City Requirements, prior to obtaining a grading or building permit; incorporation of watershed/drainage area specific requirements.
- Section 15.14.060—authorizes the enforcement of best management practices and requires implementation of technologically and economically feasible best management practices to prevent and/or reduce the discharge of pollutants into receiving waters.
- Section 15.14.070—requires compliance with general NPDES permits with regard to all discharges regulated by NPDES.
- Section 15.14.090—Watercourse protection: Every person owning property through which a watercourse passes, or the occupant of such property, shall keep and maintain the property reasonably free of trash, debris, vegetation, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, all existing structures within or adjacent to the watercourse shall be maintained so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse. The said owner or occupant shall not remove healthy bank vegetation beyond that actually necessary for said maintenance, nor remove said vegetation in such a manner as to increase the vulnerability of the watercourse to erosion. (Ord. 76 § 2 (part), 1997)
- Section 15.14.100—a permit must be obtained to: modify the natural flow of water in an MS4; deposit in, plant in, or remove any material from an MS4 including its banks, except as required by maintenance, construct; and place any loose or unconsolidated material along the side of or

within an MS4, or so close to the side as to cause a diversion of the flow, or to cause a probability of such material as being transported by stormwaters passing through the MS4.

Title 8 Buildings and Construction (Chapter 8.30 Lake Forest Grading and Excavation Code)

This Code sets forth rules and regulations to control excavation, grading, and earthwork construction and establishes administrative requirements for issuance of grading permits and approval of plans and inspection of grading construction in accordance with the requirements for grading and excavation as contained in the Uniform Building Code as well as water quality requirements relevant to activities subject to this chapter. Since the proposed project would require construction for a period of time and would require grading and other earth moving activities, the following sections of this ordinance would be applicable to the proposed project. The plans and specifications required by Title 8 are reviewed and approved by the City prior to the issuance of grading permits for the proposed project once the final design of the proposed project has been determined.

- Section 8.30.030— No person shall conduct any grading, clearing, brushing, or grubbing on natural or existing grade that is preparatory to grading, without first having obtained a grading permit from the Building Official. Relevant exceptions include: Earthwork construction regulated by the Federal, State, County, or City governments, or by any local agency as defined by Government Code Sections 53090 through 53095 (special districts); and, exploratory excavations under the direction of soil engineers or engineering geologists, provided all excavations are properly backfilled (which are required to comply with applicable sections of Title 8 of the State Orders, Division of Industrial Safety).
- Section 8.30.032—Grading permit— paving. A valid grading permit is required to construct pavement surfacing in excess of 3,000 square feet.
- Section 8.30.034— Grading permit--Watercourse alteration. No person shall alter an existing watercourse, channel, or revetment by excavating, or placing fill, rock protection, or structural improvements without a valid grading permit unless waived by the Building Official or performed as interim protection under emergency flood-fighting conditions. (Ord. 107 § 1 (part), 1999)
- Section 8.30.058—Soil engineering and engineering geology reports.
    - A soil engineering and engineering geology report shall be required for grading projects, unless otherwise waived by the Building Official. The reports shall include information appropriate for the site including any information required by the Building Official. Recommendations included in the reports and approved by the Building Official shall be incorporated in the grading plans or specifications.
- Section 8.30.100—Cut restrictions
    - Cut slopes shall be no steeper than two horizontal to one vertical (2:1) unless otherwise recommended in the soil engineering or engineering geology report and approved by the Building Official. The slope of cut surfaces shall be no steeper than is safe for the intended use.
- Section 8.30.130—Drainage and terracing restrictions

- Drainage facilities and terracing shall conform to the provisions of subarticle 11 of the grading manual unless otherwise approved by the Building Official and delineated on the approved grading plan.

- Section 8.30.150—Erosion control system;
  - Stabilize slopes, incorporate use of temporary or permanent devices as necessary during the rainy season, grading amount restrictions during rainy season, debris maintenance, facilities installation and maintenance by qualified personnel, desilting facilities at drainage outlets with minimum capacities and design criteria, revegetation of slopes, and others.
- Section 8.30.152—Erosion control plan specifications
  - Erosion control plans prepared in accordance with subarticle 13 of the grading manual shall be submitted to the Building Official for approval by September 15th each year for projects under grading permit. The erosion control plan may be waived for grading projects on single residential lot projects providing that an erosion control system, meeting the approval of the Building Official, has been installed, placed, planted, or constructed before October 15th.

General Plan Goals and Policies

The City's General Plan includes a number of goals and policies specific to hydrology and water quality. The Recreation and Resources Element includes policies related to water resources, and the Safety and Noise Element includes policies related to flooding. The General Plan notes that the City is co-permittee with the County of Orange in the NPDES program, which is designed to reduce pollutants in runoff. Also mentioned, is that some flooding along the water courses are inevitable, and the degree of hazard associated with the flood is related to the type of land uses in the floodplain.

Recreation and Resources

Goal 2.0: Preservation and enhancement of important natural resources and features.

Policy 2.2: Coordinate water quality and supply programs with the responsible water agencies.

Policy 2.3: Encourage the expansion of reclaimed water production and use.

Policy 2.4: Conserve and protect important topographical features, watershed areas, and soils through appropriate site planning, grading techniques, re-vegetation, and soil management practices, and other resource management techniques.

Safety and Noise

Goal 1.0: Reduction in the risk to community from hazards associated with geologic conditions, seismic activity, and flooding.

Policy 1.2: Protect the community from flooding hazards.

Lake Forest Water Quality Management Plan

The preparation of a development project WQMP is a requirement of the City's Urban Runoff Management Program. This program was developed by the City to comply with state and federal regulations to control and eliminate runoff pollution into receiving waters such as creeks, lakes, and the ocean. In any case where a WQMP is required, a draft WQMP must be submitted with the application for a development permit. The main purpose of the WQMP is to identify the potential development hydrologic and water quality impacts that could result from a project and to specify the BMP measures that would be incorporated into the project reduce or eliminate identified impacts to the maximum extent practicable (City of Lake Forest 2010).

Project Impacts and Mitigation Measures

Impacts with respect to water resources and the hydrologic environment are evaluated below, and mitigation measures are identified as appropriate.

Methodology

A site visit was conducted on July 29, 2009, and the onsite tributaries to Glass Creek were examined. Background information was gathered from sources such as the City of Lake Forest Opportunities Study EIR, RWQCB Basin Plans, and CWA 303(d) List. Mapping was done to determine watershed location and soils located on site. Additionally, the jurisdictional delineation completed by PCR in September 2009 was used to determine impacts to onsite tributaries.

Thresholds of Significance

For this analysis, an impact pertaining to surface water and flooding was considered significant under CEQA if it would result in any of the following environmental effects, which are based on the City of Lake Forest's *CEQA Significance Thresholds Guide* and *Local Guidelines for Implementing the California Environmental Quality Act* and (City of Lake Forest 2010):

- 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 above pre-development condition in a manner which would result in flooding on or off site,
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage,
- Deposit sediment and debris materials within existing channels obstructing flows,
- Exceed the capacity of a channel and cause overflow during design storm conditions, or
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects (this threshold is from Section 3.10, Public Services and Utilities, but has been moved to this section).

An impact pertaining to water quality was considered significant under CEQA if it would result in any of the following environmental effects, which are based on the City of Lake Forest's *Local Guidelines for Implementing the California Environmental Quality Act* (City of Lake Forest 2010):

- Violate any water quality standards or water discharge requirements,
- Cause a significant alteration of receiving water quality during or following construction,
- Substantially degrade groundwater quality,

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in the substantial erosion or siltation on or off site,
- Create or contribute runoff water that would generate substantial additional sources of polluted runoff,
- Substantially degrade water quality by discharge which affects the beneficial uses (i.e., swimming, fishing, etc.) of the receiving or downstream waters, or
- Increase in any pollutant for which the receiving water body is already impaired as listed on the Clean Water Act Section 303(d) list.

An impact pertaining to groundwater was considered significant under CEQA if it would result in any of the following environmental effects, which are based on the City of Lake Forest's *Local Guidelines for Implementing the California Environmental Quality Act* (City of Lake Forest 2010):

- 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 (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted),
- Adversely change the rate, direction, or flow of groundwater, or
- Have an impact on groundwater that is inconsistent with a groundwater management plan prepared by the water agencies with the responsibility for groundwater management.

Impacts and Mitigation Measures

Surface Water Hydrology

Impact HWQ-1: The proposed project has the potential to 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 above pre-development condition in a manner which would result in flooding on or off site.

Short-Term (Construction) Impacts

Construction of the proposed project would alter site hydrology and could alter regional hydrology. During construction, the unnamed drainages on site would be removed and the site would be graded to accommodate the proposed park facilities. This would substantially alter the existing drainage pattern of the site, and could increase runoff from the site during construction activities. Existing City ordinances require a grading permit prior to initiation of construction, which would require prior approval and project requirements that would be identified during the permitting process. The project site is approximately 90 total acres with approximately 69 acres proposed to be graded, which would therefore require a SWPPP under the General Construction NPDES Permit (as discussed above in the Regulatory Section, a SWPPP is required for projects with 1 or more acres of disturbed soil area). The construction BMPs that would be incorporated in the project would be identified during final design and before the final grading permits are issued by the City. However, typical construction BMPs used by the City of Lake Forest are described in Table 8-7 of the Orange County DAMP (2003) and include, but are not limited to, the following examples:

- Diversion of off-site runoff away from the construction area
- Prompt revegetation of proposed landscaped areas
- Perimeter straw wattles or silt fences and/or temporary basins to trap sediment before it leaves the site
- Regular sprinkling of exposed soils to control dust during construction during the dry season
- Installation of a minor retention basin(s) to alleviate discharge of increased flows
- Specifications for construction waste handling and disposal
- Erosion control measures maintained throughout the construction period
- Preparation of stabilized construction entrances to avoid trucks from imprinting debris on City roadways
- Contained wash out and vehicle maintenance areas
- Training of subcontractors on general construction area house keeping
- Construction scheduling to minimize soil disturbance during the wet weather season
- Regular maintenance and storm event monitoring

Preparation of, and compliance with, a required SWPPP would effectively prevent runoff from the site during construction. Water from the drainages would be contained for water quality purposes in detention basins, thus reducing the flows into Glass Creek. Compliance with City of Lake Forest Grading and Excavation Code, Stormwater Pollution Prevention Plan (SWPPP), and DAMP would avoid potential construction activity impacts on runoff to Aliso Creek to less-than-significant levels.

Long-Term (Operation) Impacts

The drainage pattern of the site would be substantially altered from the existing drainage pattern because the site would be graded and would include stormwater retention facilities for operational purposes designed in accordance with the DAMP, City of Lake Forest WQMP requirements, and Stormwater Management Code. The existing drainages, including three tributaries and two sub-tributaries to Glass Creek, currently drain the site and discharge into Glass Creek. These existing drainages would be removed and water quality detention facilities would be installed west of Glass Creek and east of the proposed parking areas to collect stormwater runoff generated during operation of the project site via the onsite drainage system. Due to the proposed development, operational runoff from the site would increase as a result of increased impervious development (i.e., parking lots, roadways, hardscape) and irrigation of the project site. If not properly retained, the runoff from the site would potentially increase flooding downstream.

The City proposes to collect stormwater in water quality detention facilities prior to discharge into Glass Creek to minimize downstream flooding, as well as for water quality purposes associated with nitrate and phosphorus impairments. The project will be designed to minimize runoff below existing levels (in accordance with the OSA PEIR Mitigation Measure MM 3.8-5), and will include a series of retention basins to retain first flush of storm events to minimize potential flooding downstream and to minimize surface water pollutants throughout the watershed. The design of the water quality detention facilities will attempt to mimic the current hydrology, to avoid major hydro-modification of Glass Creek, and account for the hydrological and biological functions of Glass Creek, to minimize potential impacts on the onsite and offsite hydrology. The final design of the water quality detention facilities is currently in process, and the specific features to be incorporated into the drainage site design will be subject to review and approval by the City's Director of Public Works/City Engineer. The preliminary grading and drainage studies that have been done for the proposed project show that the design will include avoidance of impacts to Glass and Aliso Creek. The design will be developed in coordination with the RWQCB, USACE, and CDFG as necessary to ensure the site in compliance with the CWA 401 and 404 permits and CDFG Streambed Alteration Agreement and to ensure runoff is controlled and downstream flooding does not result. Permits from the RWQCB and USACE will specify performance standards for mitigation. The City or its contractor will develop the WQMP and hydrology study prior to issuance of the grading permit in accordance with applicable City requirements. The WQMP will include Best Management Practices (BMPs) in accordance with the latest City of Lake Forest Water Quality Management Plan Template User Guide. The WQMP will be prepared for both the construction and operation phases of the project and will include stormwater detention/retention features to mitigate impacts of changes in stormwater rates or volumes as identified in the site-specific hydrology study. Implementation of the WQMP and Mitigation Measure HWQ-1 below would reduce potential impacts to less than significant levels.

Mitigation Measures

Mitigation Measure HWQ-1: Prepare Hydrology and Hydraulics Study (OSA Mitigation Measure MM 3.8-5)

Prior to issuance of a grading permit, the City shall conduct a hydrology and hydraulics study to determine potential stormwater runoff rates and peak flows for the City of Lake Forest and County of Orange design storms, as well as the 100-year storm for both existing and Proposed Project conditions. Sufficient detail shall be provided to develop the existing conditions and Proposed Project conditions potential hydrograph and timing of peak flows. Studies shall be completed by a qualified professional and be consistent with standard engineering practices for the region, including the use of the criteria of the Orange County Hydrology Manual. The studies shall demonstrate that the effect of stormwater discharge to any City, County, or Other Agency-owned drainage or flood control facility as mitigated shall be designed and implemented to prevent post-construction stormflows from exceeding pre-construction volumes and rates.

Residual Impacts

With the incorporation of the WQMP and Mitigation Measure HWQ-1, impacts would be less than significant.

Impact HWQ-2: The project has the potential to create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage.

Short-Term (Construction) Impacts

The project site is currently undeveloped and does not include improved stormwater drainage facilities. As discussed above, existing drainage occurs through a series of onsite drainages that discharge to Glass Creek. Similar to the discussion under Impact HWQ-1, construction activities associated with the proposed project would alter the site, which would modify the runoff and potentially increase flows in downstream surface water bodies, which currently serve as stormwater drainage from the site. Compliance with existing City ordinances involve preparation of a SWPPP and incorporation of BMPs into the grading permit, and would result in compliance with the Construction NPDES Permit. Water from the drainages would be contained for water quality purposes in detention basins, thus reducing the flows into Glass Creek. Compliance with existing statutory requirements would avoid significant impacts to stormwater drainage during construction.

Long-Term (Operational) Impacts

The proposed project design would include compaction of soils; development of park facilities, including permeable/pervious pavement, roadways, and other hardscape; as well as irrigation of the site. Similar to the discussion under Impact HWQ-1, the proposed project operations would modify the runoff and potentially increase flows in downstream surface water bodies, which currently serve as stormwater drainage. The City proposes to collect stormwater in water quality detention facilities and would attempt to replicate the existing hydrology and runoff discharges from the site into Glass Creek. In addition, OSA PEIR MM 3.8-5 requires studies be conducted prior to the issuance of grading permits that allow the design and implementation of facilities (such as the water quality detention facility under the proposed project) prevent operation (i.e., post-construction) stormwater flows from exceeding pre-construction volumes and rates. Therefore, implementation of Mitigation Measure HWQ-2 would reduce potential impacts to less-than-significant levels.

Mitigation Measures

Implement Mitigation Measure HWQ-1.

Residual Impacts

With the incorporation of Mitigation Measure HWQ-1, impacts would be less than significant.

Impact HWQ-3: The project has the potential to deposit sediment and debris materials within existing channels obstructing flows.

Short-Term (Construction) Impacts

During construction of the project, particularly during the substantial amount of grading activities taking place on site, vegetation would be removed, increasing the amount of soil exposed to erosion forces (i.e., wind and water). As discussed in the environmental setting, soils in the area range from slight erosion potential to very severe erosion potential, with some possessing moderate erosion potential. The disturbance of these soils, combined with proximity to Glass Creek, would increase the likelihood of erosion leading to sedimentation of Glass Creek, and potentially Aliso Creek, which could obstruct flows. The deposition potential would be most prominent during the initial mass grading of the site and would be considered significant. Compliance with existing City ordinances involving preparation of a SWPPP and incorporation of BMPs into the grading permit, and would result in compliance with the Construction NPDES Permit. Sediment and debris from construction would be contained for water quality purposes in detention basins, thus reducing the flows into Glass Creek and downstream Aliso Creek. Compliance with existing statutory requirements would avoid significant impacts associated with deposition of sediment and debris materials that could obstruct flows during construction.

Long-Term (Operational) Impacts

The proposed project, when operational, would include predominately vegetated areas with little to no exposed soils. With the highly vegetated project area, sources for sediment and debris material would be limited. The proposed project includes removal of several ephemeral drainages on the Glass Creek Parcel of the project. These drainages are tributaries to Glass Creek and are therefore considered waters of the United States and waters of the state, and they fall under CDFG jurisdiction for a Streambed Alteration Agreement. The tributary identified in the Final Investigation of Jurisdictional Wetlands and Waters of the U.S. (PCR 2009) as AC 2.3 includes highly vegetated areas next to the defined channel, as well as highly incised reaches with very steep banks (4 or more feet). Implementation of Mitigation Measures BIO-3A, BIO-3B, and BIO-3C (referenced in Section 3.3, Biological Resources) and HWQ-2 would involve the creation of detention basin facilities that would also replace and compensate for the permanent loss of existing jurisdictional ephemeral drainages on site.

Mitigation Measures

Implement Mitigation Measure HWQ-1, and BIO-3A, BIO-3B, and BIO-3C.

Residual Impacts

With the incorporation of Mitigation Measure HWQ-1 and BIO-3A, BIO-3B, and BIO-3C, impacts would be reduced to less-than-significant levels.

Impact HWQ-4: The project has the potential to exceed the capacity of a channel and cause overflow during design storm conditions.

Short-Term (Construction) Impacts

Grading activities would disrupt and potentially increase site drainage by removing ephemeral drainage courses on site and removing vegetation that would normally regulate drainage. As a requirement of the General Construction NPDES permit, a SWPPP would be prepared and implemented prior to construction, which would include BMPs to control stormwater and runoff generated during construction activities The SWPPP would identify Best Management Practices (BMPs) to be constructed and maintained to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the construction site during construction. Compliance with existing City ordinances involving preparation of a SWPPP and incorporation of BMPs into the grading permit, and would result in compliance with the Construction NPDES Permit. Water from the drainages would be contained for water quality purposes in detention basins, thus reducing the flows into Glass Creek. Compliance with existing statutory requirements would avoid significant impacts to stormwater drainage during construction.

Long-Term (Operational) Impacts

As previously discussed above, the proposed project design would potentially increase flows in downstream surface water channels as a result of removing existing drainages and increasing pervious surfaces throughout the site. As discussed above, OSA PEIR MM 3.8-5 requires studies to be conducted prior to the issuance of grading permits that allow the design and implementation of facilities (such as the water quality detention facility under the proposed project) prevent operation (i.e., post-construction) stormwater flows from exceeding pre-construction volumes and rates.

Furthermore, the site drainage plan would be prepared, involving designing and implementing series of retention basins to retain first flush of storm events to minimize potential flooding downstream and to minimize surface water pollutants throughout the watershed. Therefore, implementation of Mitigation Measure HWQ-1 would reduce potential impacts to less-than-significant levels.

Mitigation Measures

Implement Mitigation Measure HWQ-1.

Residual Impacts

With the incorporation of Mitigation Measure HWQ-1, impacts would be reduced to less-than-significant levels.

Impact HWQ-5: The project would require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Short-Term (Construction) Impacts

The construction of the water quality detention facilities located east of Glass Creek could alter site hydrology, remove vegetation that would normally regulate drainage into Glass Creek, and alter regional hydrology. The onsite drainage system would be designed to discharge into the detention facilities prior to releasing stormwater or irrigation runoff into Glass Creek, and ultimately Aliso Creek. These features are part of the proposed project, and construction impacts of these facilities have been evaluated accordingly throughout the respective sections of this EIR. Compliance with existing City ordinances involving preparation of a SWPPP and incorporation of BMPs into the grading permit, and would result in compliance with the Construction NPDES Permit. Water from the drainages would be contained for water quality purposes in detention basins, thus reducing the flows into Glass Creek. Compliance with existing statutory requirements would avoid significant impacts to stormwater drainage during construction.

Long-Term (Operational) Impacts

The project will be designed to minimize runoff below existing levels (in accordance with the OSA PEIR Mitigation Measure MM 3.8-5), and will include a series of retention basins to minimize impacts on downstream stormwater drainage facilities. The design of the water quality detention facilities will attempt to mimic the current hydrology and avoid one large input to Glass Creek, and account for the hydrological and biological functions of Glass Creek, to minimize potential impacts on the onsite and offsite hydrology. The final design of the water quality detention facilities is currently in process, and the specific features to be incorporated into the drainage site design will be subject to review and approval by the City's Director of Public Works/City Engineer. The design will be developed in coordination with the RWQCB, USACE, and CDFG as necessary to ensure the site in compliance with the CWA 401 and 404 permits and CDFG Streambed Alteration Agreement and to ensure runoff is controlled and downstream flooding does not result. The City or its contractor will develop and implement the WQMP in accordance with applicable permits. This would minimize potential long-term impacts related to flooding and water quality from site runoff, as well as preserve the hydrological and biological functions of Glass Creek. These features are part of the proposed project, and the operational impacts of these facilities have been evaluated accordingly throughout the respective sections of this EIR.

Mitigation Measures

Implement Mitigation Measure HWQ-1.

Residual Impacts

With the incorporation of Mitigation Measure HWQ-1, this impact would be less than significant.

Water Quality

Impact HWQ-6: The project has the potential to violate any water quality standards or waste discharge requirements.

As described in the environmental setting, the proposed project is primarily located in the Aliso Creek watershed regulated by the San Diego RWQCB. The water quality objectives (WQOs) for this watershed are described in the Regulatory Setting under the Porter-Cologne Water Quality Control Act.

Short-Term (Construction) Impacts

During construction, water quality can be affected by disturbed soil (sediment) causing an increase in turbidity, as well as potential emissions or discharges from construction vehicles (oils and gas, metals). Pollutant transport occurs from stormwater runoff washing off sediment that has accumulated on land surfaces. Contaminants in runoff could lower the quality of stormwater runoff during construction. Erosion and sedimentation are major visible water quality impacts attributable to construction activities. Sediment impact on water quality includes interference with photosynthesis, oxygen exchange, and respiration, growth, and reproduction of aquatic species. Other pollutants, such as nutrients, trace metals, and hydrocarbons, can attach to sediment and be transported by it. Implementation of the proposed project would include construction activities, such as excavation, grubbing and clearing, soil compaction and moving, cut and fill activities, and grading that would disturb soil and could decrease permeability. Unprotected disturbed soil is susceptible to high rates of erosion from wind and rain, resulting in sediment transport from the site. Increased runoff from the site resulting from decreased permeability during construction would further exacerbate the amount of sediment transport. Sediment-laden runoff resulting from construction at the site could enter receiving waters such as Aliso Creek.

Delivery, handling, and storage of construction materials and wastes, as well as use of construction equipment on site during the construction phase of the project, also introduce a risk for stormwater contamination that could impact water quality. Spills or leaks from heavy equipment and machinery can result in oil and grease contamination of stormwater. Some hydrocarbon compound pollution associated with oil and grease can be toxic to aquatic organisms at low concentrations. Staging areas or building sites can be the source of pollution due to paints, solvents, cleaning agents, and metals contained in the surface of equipment and materials. The impacts associated with metal pollution of stormwater include toxicity to aquatic organisms, bioaccumulation of metals in aquatic animals, and potential contamination of drinking supplies. Gross pollutants such as trash, debris, and organic matter are additional potential pollutants associated with the construction phase of the project.

Impacts include health hazards and aquatic ecosystem damage associated with bacteria, viruses, and vectors that can be harbored by gross pollutants.

Prior to obtaining a grading permit, the City would be required to obtain coverage under the existing NPDES General Construction Permit and SDRWQCB Order No. 2001-96 if construction dewatering is necessary. Alternatively, membership in a watershed working group or proving in the NOI that the discharge to the surface waters cannot be reasonably avoided, reduced, or eliminated would result in compliance with the selenium provision. The City would further be required to develop a plan and schedule for an offset program to ensure no net increase in loading of selenium and to comply with remaining permit requirements. If discharges are in compliance, construction dewatering discharges would be expected to be de minimus. For the proposed project, the City would be required to participate in the Nitrogen and Selenium Working Group to be eligible for the de minimus permit for construction dewatering discharges (OSA Mitigation Measure MM 3.8-3).

Prior to the issuance of a grading permit, the City would need to file a Notice of Intent (NOI) with the RWQCB and comply with the requirements of the NPDES General Construction Permit and de minimus permit. This would include the preparation of a SWPPP incorporating BMPs for construction-related control of the Proposed Project site runoff. Requirements include construction sediment and erosion control plans in connection with Proposed Project grading activities.

Preparation of, and compliance with, a required SWPPP and Erosion Control Plan (ECP) would effectively prevent Proposed Project construction activity degradation of water quality. Compliance with City of Lake Forest Grading and Excavation Code and Stormwater Management Code, Stormwater Pollution Prevention Plan (SWPPP), and DAMP would reduce potential construction activity impacts on water quality in San Diego Creek and Aliso Creek to less-than-significant levels. Therefore, beneficial uses of Aliso Creek as well as its tributaries would not be significantly impacted.

Additionally, the existing TMDL requires only a reduction in total existing load (by 50 percent). Incorporation of stormwater detention, minimization of directly-connected impervious area, and implementation of a construction SWPPP, all activities required for compliance with existing regulations, would create conditions that would reduce potential sediment load to Aliso Creek to the less than-50-percent level. Compliance with these regulations, as mandated by state and federal water quality laws, would result in less-than-significant sediment-related water quality impacts.

Long-Term (Operational) Impacts

The project site primarily drains into Aliso Creek Watershed via Glass Creek. While Aliso Creek does not have any designated TMDLs, it does have impairments for bacteria, phosphorous and toxicity. Long-term impacts to water quality could result from parking lot and roadway runoff containing heavy metals, debris, oils and grease from vehicles, as well as potential fertilizers and pesticides applied to landscaping. Heavy metals and oil and grease concentrations will likely increase, as well as fecal coliforms and other pathogen indicator concentrations compared to undeveloped runoff.

More directly connected impervious area will generally result in more surface area for pollutants to accumulate and be available for transport, as well as contribute to greater quantities of runoff. The initial flow of each storm often contains the highest concentrations of pollutants, but this is not always the case because the phenomenon is dependent on the duration of the preceding dry weather period, rainfall patterns, rainfall intensity, the chemistry of individual pollutants, and other site-specific conditions. Urban contaminants in runoff from the proposed project could lower the quality of stormwater runoff during operations.

Erosion and sedimentation can occur following construction during operation of the proposed project that can contribute to water quality impacts. Other pollutants, such as nutrients, trace metals, and hydrocarbons, can attach to sediment and be transported by it. Increased runoff from the site resulting from decreased permeability after construction would further exacerbate the amount of sediment transport. Sediment-laden runoff resulting from post-construction operations at the site could enter receiving waters such as Aliso Creek.

In the post-construction phase, major sources of pollution in runoff will be contaminants that have accumulated on the land surface over which stormwater passes. In developed areas, driveways, parking lots, sidewalks, streets, and gutters are often connected directly to storm drains that collect and guide stormwater runoff. Between rainstorms, materials are deposited on these surfaces from debris dropped or scattered by individuals, street sweepings, debris, and other particulate matter washed into roadways from adjacent areas, wastes and dirt, fecal droppings from animals, remnants of refuse dropped during collection or scattered by animals or wind, oil and various residues contributed by automobiles, and fallout of airborne particles.

Nutrients that may be contributed to stormwater in the post-construction phase are primarily nitrogen and phosphorous from fertilizers applied to landscaping and organic debris degradation. Excess nutrients can impact water quality by promoting excessive and/or rapid growth of aquatic vegetation; reducing water clarity, and resulting in oxygen depletion. Pesticides also may enter into stormwater after application on landscaping areas of the project. Pesticides impact on water quality because they are toxic to aquatic organisms and some can bioaccumulate in larger species such as birds and fish. Oil and grease may be contributed to stormwater in the post-construction from automobile leaks. Metals may enter stormwater in the post-construction phase as surfaces corrode, decay, or leach. Potential gross pollutants associated with the post-construction phase include clippings from landscape maintenance, street litter, and animal excrement. If uncontrolled, the accumulation of urban pollutants could have a detrimental effect during post-construction operational phases of the project because overland flow from paved surfaces and landscaped areas transport many of the above-mentioned constituents, thereby contributing to the deterioration of the quality of stormwater runoff. The result could be the deterioration of water quality in Aliso Creek.

Measured concentrations of chlorpyrifos and diazinon in San Diego Creek are elevated, and to meet TMDL requirements, existing conditions runoff concentrations will need to be reduced by 90 to 97 percent. Chlorpyrifos and diazinon have been banned for all non-agricultural uses. However, measured concentrations of chlorpyrifos and diazinon from some residential areas in Orange County have exceeded TMDL requirements. Chlorpyrifos has been banned or phased out from nearly all indoor and outdoor residential uses, and as of 2004, is banned from use in new construction. However, chlorpyrifos may still be used in some professional applications. Diazinon was banned for all household retail sales and manufacturing production has been reduced by 50 percent (2003). These reductions in use and manufacturing will contribute towards meeting TMDLs; however, additional BMPs are necessary as indicated by existing measured concentrations in urban runoff.

To minimize the need for fertilizers and pesticides, minimum-maintenance plant species will be required for all new development landscape elements. This will reduce the potential for nutrient and pesticide transport in stormwater runoff. Species should be identified that are minimum maintenance, but will also protect bare surfaces from erosion and provide a suitable matrix for infiltration of stormwater. Amount, timing of application, and form of many landscape chemicals can affect subsequent transport in stormwater. Application of chemicals prior to a storm event or over-application of chemicals increases their susceptibility to mobilization in runoff water. Surface applications compared to soil incorporated applications will also increase potential for transport in runoff; and, dissolved forms of chemicals are more likely to be mobilized compared to solid forms that may be released over a longer time frame. A nutrient and pesticide management program that includes guidelines, application regulations, applicator training, and encourages minimization of chemical use would minimize the risk of pollutants associated with landscape maintenance practices in runoff waters.

The City of Lake Forest provides contractors and City personnel with maintenance specifications for weed, pest and rodent control and fertilization at City parks. The City has also developed an Integrated Pest Management (IPM) Policy and Implementation Guidelines. The IPM results in less reliance on synthetic chemical pesticides, and moves the City toward an integrated approach that combines limited pesticide use with more environmentally friendly pest control techniques. This system is a strategy that focuses on the long-term prevention of pests or their damage through a combination of techniques, including preventative, cultural, mechanical, environmental, biological, and chemical control tactics. Developing a comprehensive IPM Program approach allows the City to focus on efforts of pollution prevention. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and non-target organisms and the environment, with the use of pesticides often as a measure of last resort. The IPM policy will be made a part of the City's Water Quality Local Implementation Plan, and the City's Public Works Supervisor, Landscape Inspectors, and contractors have qualified applicators licenses to ensure that proper application of pesticides occurs. While significant and unavoidable impacts were identified for this issue under the OSA PEIR, the proposed project would not result in a significant contribution to this impact. Because the proposed project is a City-sponsored project and would be operated and maintained by the City, existing programs and policies can be better implemented and controlled, rather than having multiple developers, property owners, and landscape contractors that would be more difficult to regulate and enforce. Implementation of the City's IPM Policy is an example of a non-structural BMP that would be used to handle pesticides and nutrients.

Implementation of the Proposed Project could increase nutrient concentrations in stormwater runoff due to landscaping practices and degradation of organic debris on impervious surfaces. Since the majority of the existing condition landscape is primarily undeveloped, raw/bare land, nutrient contributions from existing conditions are likely to be low. Landscaping and vegetation is encouraged for aesthetic purposes, erosion protection, and reduced stormwater runoff. However, over application or incorrect timing of nutrient and pesticide applications could result in higher amounts of these pollutants in stormwater entering receiving water bodies. Implementation of appropriate BMPs, such as biofilters or a nutrient management program, as well as design guidelines and ordinances encouraging use of native plant species and other minimal maintenance plants in landscaping would reduce potential nutrient impacts from the proposed project on Aliso Creek to less-than-significant levels with incorporation of mitigation measures below.

Post-construction water quality impacts are often as much a function of changes in runoff quantity as of quality. As discussed previously, compliance with the DAMP and incorporation of water quality BMPs, to the maximum extent practicable (MEP), will result in compliance with general waste discharge requirements and the NPDES permit. Meeting NPDES and DAMP requirements include implementation of BMPs (structural and nonstructural) best suited to maximized reduction of the pollutants of concern. Non-Structural BMPs to be implemented as part of the project include conducting regular parking lot sweeping to handle metals, oil & grease and the implementation of the City's IPM policy. Structural BMPs include the creation of the detention basins to address pollutants of concerns. BMPs listed in the DAMP are considered "likely to have significant impact" beneficial to water quality for targeted pollutants that are of concern within the watershed. Other BMPs can be used if shown to be better suited to mitigating potential pollutant impacts.

The City proposes to collect stormwater in water quality detention facilities prior to discharge into Glass Creek to minimize downstream flooding, as well as for water quality purposes associated with nitrate and phosphorus impairments. The project will be designed to minimize runoff below existing levels (in accordance with the OSA PEIR Mitigation Measure MM 3.8-5), and will include a series of retention basins to retain first flush of storm events to minimize potential flooding downstream and to minimize surface water pollutants throughout the watershed. The design of the water quality detention facilities will attempt to mimic the current hydrology and avoid one large input to Glass Creek, and account for the hydrological and biological functions of Glass Creek, to minimize potential impacts on the onsite and offsite hydrology. The final design of the water quality detention facilities is currently in process, and the specific features to be incorporated into the drainage site design will be subject to review and approval by the City's Director of Public Works/City Engineer. The design will be developed in coordination with the RWQCB, USACE, and CDFG as necessary to ensure the site in compliance with the CWA 401 and 404 permits and CDFG Streambed Alteration Agreement and to ensure runoff is controlled and downstream flooding does not result. The City or its contractor will develop and implement the WQMP in accordance with applicable permits.

Water quality impacts to Aliso Creek, associated with sediment, metals, pesticides, and nutrients would be less than significant with the incorporation of mitigation measures.

Mitigation Measures

Implement Mitigation Measure HWQ-1.

Mitigation Measure HWQ-2: Implement Turbidity Monitoring During Construction

To avoid turbidity levels from exceeding thresholds identified in the Basin Plan, the City will retain a qualified water quality specialist to monitor turbidity levels 50 feet upstream and 300 feet downstream of grading activities occurring within 500 feet of Aliso Creek and Glass Creek when flow is present. To determine turbidity level compliance, the difference between the upstream turbidity data and downstream data is compared. The increase in turbidity is then evaluated against the Water Quality Objectives, identified in the San Diego Basin Plan. A negative increase indicates that water from the site is cleaner than the water upstream, and no correction is necessary. If turbidity levels reach within 2 percent of the Water Quality Objectives, grading will be stopped, construction control measures will be installed to further prevent or control erosion, and construction will not resume until turbidity returns to an acceptable level. Monitoring will be required on a daily/weekly basis throughout the grading and construction phases until the drainage and landscaping improvements are installed that would minimize erosion from the site. When Glass Creek and Aliso Creek are dry, sampling will not be required.

Mitigation Measure HWQ-3: Landscaping Requirements (OSA Mitigation Measure MM 3.8-2)

The City will prepare a landscape design plan including the following elements:

- Maximize use of native plant species with minimum water and fertilizer requirements
- Watering shall be kept to the minimum necessary to maintain new landscaping
- Drip irrigation shall be used only until the native landscaping is established
- Minimal use of fertilizers and pesticides

Mitigation Measure HWQ-4: Develop a Nutrient Management Program (OSA Mitigation Measure MM 3.8-4)

Prior to the issuance of a grading permit, the City shall develop and implement appropriate best management practices such as a nutrient management and monitoring program, to reduce the amount of nutrients entering the watershed. Water quality monitoring for nutrients (phosphate and nitrate) shall be conducted biannually for 7 years after the site is operational. One monitoring event will occur immediately following a large rain event, and one will be completed during the summer months (the dry season). As each phase becomes operational, monitoring for water receiving runoff will continue for 7 years past when that phase is completed. Following each monitoring event and based on the information collected during monitoring, fertilizer application methods and amounts will be re-evaluated and modified as necessary to ensure water quality thresholds are not negatively affected by the project. If monitoring identifies water quality thresholds for phosphates and nitrates are being exceeded by the project, the City will immediately reduce the use of fertilizers on site and determine the cause of the threshold exceedance by examining records for fertilizer application, conducting discussions internally, and consulting with other Orange County cities as needed.

Residual Impacts

With the incorporation of Mitigation Measures HWQ-1 through HWQ-6, impacts on water quality would be reduced to less than significant.

Impact HWQ-7: The project has the potential to cause a significant alteration of receiving water quality during or following construction

Short-Term (Construction) Impacts

As discussed above, the proposed project construction activities would increase the potential for the project to affect receiving water quality. This is particularly a concern during grading due to the amount of disturbed soil area and the filling of the ephemeral tributaries to Glass Creek and Aliso Creek. Construction also has the potential for spills and construction equipment leakage. Prior to obtaining a grading permit, the City would comply with the requirements of the existing NPDES General Construction Permit and applicable SDRWQCB Orders. This would include the preparation of a SWPPP incorporating BMPs for construction-related control of the proposed project site runoff quantity and quality. Requirements include construction sediment and erosion control plans in connection with Proposed Project grading activities. Preparation of, and compliance with, a required SWPPP and ECP would effectively prevent Proposed Project construction activity degradation of water quality in receiving waters. Compliance with City of Lake Forest Grading and

Excavation Code and Stormwater Management Code, Stormwater Pollution Prevention Plan (SWPPP), and DAMP would reduce potential construction activity impacts on water quality in receiving waters to less-than-significant levels.

Long-Term (Operational) Impacts

As discussed above, water quality concerns include those from site runoff containing parking lot and roadway contaminants containing heavy metals, debris, oils and grease from vehicles, sediment from unvegetated areas, and nutrients from fertilizers and pesticides used on site during post-construction operation.

As discussed previously, compliance with the DAMP and incorporation of water quality BMPs (structural and nonstructural), to the maximum extent practicable (MEP), will result in beneficial effects on water quality for targeted pollutants that are of concern within the watershed.

Additionally, implementation of BMPs targeted to reducing pesticides and continued monitoring of program success will be necessary. Implementation of education and training programs to assure appropriate application by professionals, and structural controls would also be required to reduce concentrations of these pollutants in stormwater.

The City proposes to collect stormwater in water quality detention facilities prior to discharge into Glass Creek to minimize downstream flooding, as well as for water quality purposes. The project will be designed to retain first flush of storm events to minimize surface water pollutants throughout the watershed. The City or its contractor will develop and implement the WQMP in accordance with applicable permits. Implementation of Mitigation Measures HWQ-1 through HWQ-4 would reduce potential impacts to less than significant levels.

Mitigation Measures

Implement Mitigation Measures HWQ-1 through HWQ-4.

Residual Impacts

With the incorporation of Mitigation Measures HWQ-1 through HWQ-4, this impact would be reduced to less-than-significant levels.

Impact HWQ-8: The project does not have the potential to substantially degrade groundwater quality.

Short-Term and Long-Term Impacts

As discussed in the environmental setting, the project area does not overlay a groundwater basin. Any degradation of groundwater quality that would be associated with the project would be from surface water contaminants that percolate into the groundwater after they flow downstream. The discussion of the impacts and mitigation associated with these contaminants is being covered by the surface water quality impacts analysis in Impacts HWQ-6, HWQ-7, HWQ-9, HWQ-10, HWQ-11, and HWQ-12. Implementation of Mitigation Measures HWQ-1 through HWQ-4 would reduce impacts to less-than-significant levels

Mitigation Measures

Implement Mitigation Measures HWQ-1 through HWQ-4.

Residual Impacts

With the incorporation of Mitigation Measures HWQ-1 through HWQ-4, impacts would be reduced to less-than-significant levels.

Impact HWQ-9: The project has the potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in the substantial erosion or siltation on-or off-site.

Short-Term (Construction) Impacts

The project site's drainage pattern with be substantially altered as the site is graded for the proposed project. As previously analyzed in Impact HWQ-3, this would require removal of ephemeral drainages to Glass Creek and would result in alteration and a redesign of site drainage. Prior to obtaining a grading permit, the City would comply with the requirements of the existing NPDES General Construction Permit and applicable SDRWQCB Orders. This would include the preparation of a SWPPP incorporating BMPs for construction-related control of the proposed project site runoff quantity and quality. Requirements include construction sediment and erosion control plans in connection with Proposed Project grading activities. Preparation of, and compliance with, a required SWPPP and ECP would effectively prevent Proposed Project construction activity degradation of water quality in receiving waters. Compliance with City of Lake Forest Grading and Excavation Code and Stormwater Management Code, Stormwater Pollution Prevention Plan (SWPPP), and DAMP would reduce potential construction activity impacts on water quality in receiving waters to less-than-significant levels.

Long-Term (Operational) Impacts

The project, when operational, would have a different drainage pattern than under existing conditions. However, following construction, the site would be revegetated and landscaped, and would result in minimal erosion or siltation off site. As discussed previously, compliance with the DAMP and incorporation of water quality BMPs (structural and nonstructural), to the maximum extent practicable (MEP), will result in beneficial effects on water quality to minimize erosion or sedimentation within the watershed. The City proposes to collect stormwater in water quality detention facilities prior to discharge into Glass Creek to minimize downstream flooding, as well as for water quality purposes. The project will be designed to retain first flush of storm events to minimize erosion and sedimentation impacts throughout the watershed. The City or its contractor will develop and implement the WQMP in accordance with applicable permits. Implementation of Mitigation Measures HWQ-1 through HWQ-4 would reduce potential impacts to less than significant levels.

Mitigation Measures

Implement Mitigation Measures HWQ-1 through HWQ-4.

Residual Impacts

With the incorporation of Mitigation Measures HWQ-1 through HWQ-4, impacts would be reduced to less-than-significant levels.

Impact HWQ-10: The project does not have the potential to create or contribute runoff water that would generate substantial additional sources of polluted runoff.

Short-Term (Construction) Impacts

As discussed under Impact HWQ-6, the proposed project could potentially generate polluted runoff from construction activities, including sedimentation and oils, greases, and other potential hazardous materials used in the construction process. Prior to obtaining a grading permit, the City would comply with the requirements of the existing NPDES General Construction Permit and applicable SDRWQCB Orders. This would include the preparation of a SWPPP incorporating BMPs for construction-related control of the proposed project site runoff quantity and quality. Requirements include construction sediment and erosion control plans in connection with Proposed Project grading activities. Preparation of, and compliance with, a required SWPPP and ECP would effectively prevent Proposed Project construction activity degradation of water quality in receiving waters. Compliance with City of Lake Forest Grading and Excavation Code and Stormwater Management Code, Stormwater Pollution Prevention Plan (SWPPP), and DAMP would reduce potential construction activity impacts on water quality in receiving waters to less-than-significant levels.

Long-Term (Operational) Impacts

As discussed under Impact HWQ-6, operation of the project would result in potential increase of polluted runoff from parking lots and roadways containing heavy metals, debris, oils and grease from vehicles, as well as potential fertilizers from landscaping. As discussed previously, compliance with the DAMP and incorporation of water quality BMPs (structural and nonstructural), to the maximum extent practicable (MEP), will result in beneficial effects on water quality to minimize polluted runoff. The City proposes to collect stormwater in water quality detention facilities prior to discharge into Glass Creek to minimize downstream flooding, as well as for water quality purposes. The project will be designed to retain first flush of storm events to minimize polluted runoff impacts throughout the watershed. The City or its contractor will develop and implement the WQMP in accordance with applicable permits. Implementation of Mitigation Measures HWQ-1 through HWQ-4 below would reduce potential impacts to less than significant levels.

Mitigation Measures

Implement Mitigation Measures HWQ-1 through HWQ-4.

Residual Impacts

With the incorporation of Mitigation Measures HWQ-1 through HWQ-4, impacts would be reduced to less-than-significant levels.

Impact HWQ-11: The project has the potential to substantially degrade water quality by discharge which affects the beneficial uses (i.e., swimming, fishing, etc.) of the receiving or downstream waters

Short-Term and Long-Term Impacts

As described in the environmental setting, beneficial uses for Aliso Creek are:

- Existing Agriculture;

- Existing Non-Contact Water Recreation;
- Existing Warm Freshwater Habitat;
- Existing Wildlife Habitat; and
- Potential Water Contact Recreation.

Potential sedimentation associated with the project would affect warm freshwater habitat because increased sedimentation can alter water temperature and dissolved oxygen levels can make areas unsuitable for fish to occupy. In addition, sediment and the associated grading/removal of the ephemeral tributaries would affect wildlife habitat. These impacts could occur on site as well as downstream of the project area. Section 3.3, Biological Resources, provides further discussion of wildlife and habitat impacts. The Aliso Creek watershed does not provide for agriculture, groundwater recharge, or contact recreation within the vicinity of the project area. These types of beneficial uses downstream would not be affected from construction of the project because they would only be affected by direct impacts. Non-contact water recreation may be present in the area due to hikers and cyclists that use the trails along the banks of the surface waters. Prior to obtaining a grading permit, the City would comply with the requirements of the existing NPDES General Construction Permit and applicable RWQCB Orders. This would include the preparation of a SWPPP incorporating BMPs for construction-related control of the proposed project site runoff quantity and quality. Requirements include construction sediment and erosion control plans in connection with Proposed Project grading activities. Preparation of, and compliance with, a required SWPPP and ECP would effectively prevent Proposed Project construction activity degradation of water quality that could impair beneficial uses in receiving waters. Compliance with City of Lake Forest Grading and Excavation Code and Stormwater Management Code, Stormwater Pollution Prevention Plan (SWPPP), and DAMP would reduce potential construction activity impacts on water quality in receiving waters to less-than-significant levels.

Following construction, the proposed project would offer a comparable level of non-contact water recreation opportunities due to the preservation of Glass Creek on site. Warm freshwater habitat and wildlife beneficial uses would be preserved and restored in the immediate area of Glass Creek within the project area following construction. No impacts to agriculture are expected because no agriculture exists in the project area, and no agriculture areas downstream would utilize surface water for irrigation purposes. As discussed previously, compliance with the DAMP and incorporation of water quality BMPs (structural and nonstructural), to the maximum extent practicable (MEP), will result in beneficial effects on water quality to minimize polluted runoff. The City proposes to collect stormwater in water quality detention facilities prior to discharge into Glass Creek to minimize downstream flooding, as well as for water quality purposes. The project will be designed to retain first flush of storm events to minimize polluted runoff impacts throughout the watershed. The City or its contractor will develop and implement the WQMP in accordance with applicable permits. Implementation of Mitigation Measures HWQ-1 through HWQ-4 would reduce potential impacts to less than significant levels.

Mitigation Measures

Implement Mitigation Measures HWQ-1 through HWQ-4.

Residual Impacts

With the incorporation of Mitigation Measures HWQ-1 through HWQ-4, impacts would be reduced to less-than-significant levels.

Impact HWQ-12: The project has the potential to increase in any pollutant for which the receiving water body is already impaired as listed on the Clean Water Act Section 303(d) list.

Short-Term (Construction) Impacts

The Aliso Creek watershed is listed as impaired on the CWA Section 303(d) list. Sedimentation and siltation is of particular concern due to the substantial amount of grading and associated disturbed soil area, as well as the erodiblility of the soil. During construction, the SWPPP would include BMPs to be used to limit erosion and/or sedimentation. Prior to obtaining a grading permit, the City would comply with the requirements of the existing NPDES General Construction Permit and applicable RWQCB Orders. This would include the preparation of a SWPPP incorporating BMPs for construction-related control of the proposed project site runoff quantity and quality. Requirements include construction sediment and erosion control plans in connection with Proposed Project grading activities. Preparation of, and compliance with, a required SWPPP and ECP would effectively prevent Proposed Project construction activity degradation of water quality in receiving waters. Additionally, Turbidity Monitoring (Mitigation Measure HWQ-2), would minimize the potential for increased construction turbidity levels downstream of the project area and would verify that turbidity levels are within the WQOs when compared with turbidity data from upstream of the construction. Monitoring turbidity would minimize the amount of sediment entering the water body from the project area, and result in the correction of any potential problems prior to allowing construction to continue.

Long-Term (Operational) Impacts

As previously noted in the environmental setting, there are TMDLs established for Aliso Creek. Aliso Creek is impaired for indicator bacteria, phosphorus, and toxicity, with TMDLs set for indicator bacteria. Because the project site is currently undeveloped and therefore not fertilized, the nutrient impairments (phosphorus and nitrate) are of particular concern because the project includes new fertilized areas. Fertilizers are composed of nitrate and phosphorus, and runoff containing these constituents could lead to violations of water quality standard identified in the TMDLs.

The City currently has precautions in place to help avoid and minimize runoff so that contaminant levels are below the TMDL levels. These precautions include not applying fertilizer 48 hours before a predicted rain event, coordinating with other cities in Orange County to compare levels of fertilizer application, and using formulas that are best suited for use during specific times of year. While a significant and unavoidable impact was identified for this issue under the OSA PEIR, the proposed project would reduce impacts to less than significant levels with the incorporation of mitigation measures. Because the proposed project is a City-sponsored project and would be operated and maintained by the City, existing programs and policies can be better implemented and controlled, rather than having multiple developers, property owners, and landscape contractors that would be more difficult to regulate and enforce. The City of Lake Forest provides contractors and City personnel with maintenance specifications for weed, pest and rodent control and fertilization at City parks, and has developed an Integrated Pest Management (IPM) Policy and Implementation Guidelines. The IPM results in less reliance on synthetic chemical pesticides, and moves the City toward an integrated approach that combines limited pesticide use with more environmentally friendly pest control techniques. This system is a strategy that focuses on the long-term prevention of pests or their damage through a combination of techniques, including preventative, cultural, mechanical, environmental, biological, and chemical control tactics. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and non-target organisms and the environment, with the use of pesticides often as a measure of last resort. The IPM policy will be made a part of the City's Water Quality Local Implementation Plan, and the City's Public Works Supervisor, Landscape Inspectors, and contractors have qualified applicators licenses to ensure that proper application of pesticides occurs.

Because of the TMDL impairments, before runoff water flows from the site it would flow through treatment BMPs. Potential treatment BMPs for nutrients include infiltration devices, detention devices (for phosphorus only), dry weather flow diversions (only address non-stormwater flows), media filters (phosphorus and nitrogen for the Austin sand filter; phosphorus only for the Delaware sand filter), and/or wet basins (reductions observed for dry weather flow only).

As discussed previously, compliance with the DAMP and incorporation of water quality BMPs (structural and nonstructural), to the maximum extent practicable (MEP), will result in beneficial effects on water quality to minimize erosion or sedimentation within the watershed. The City proposes to collect stormwater in water quality detention facilities prior to discharge into Glass Creek to minimize downstream flooding, as well as for water quality purposes. The project will be designed to retain first flush of storm events to minimize erosion and sedimentation impacts throughout the watershed. The City or its contractor will develop and implement the WQMP in accordance with applicable permits. Implementation of Mitigation Measures HWQ-1 through HWQ-4 would reduce potential impacts to less than significant levels.

Mitigation Measures

Implement Mitigation Measures HWQ-1 through HWQ-4.

Residual Impacts

With the incorporation of Mitigation Measures HWQ-1 through HWQ-4, this impact would be reduced to less-than-significant levels.

Groundwater Impacts and Mitigation

Impact HWQ-13: The project does not have the potential to 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 (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).

The proposed project would not bring about an appreciable change in the quantity of groundwater through direct additions or withdrawal, substantial loss of groundwater recharge capability, or interception of an aquifer by cuts or excavation. Glass Creek and Aliso Creek in the vicinity of the project site do not provide groundwater recharge capabilities. No new wells are proposed, and no significant impacts on groundwater recharge or recharge potential would occur. Although the proposed project would add additional impervious area, this area is small and the runoff from the impervious area would be directed into the onsite detention basins or swales where much of it would infiltrate. Therefore, the project is not anticipated to have a substantial impact on groundwater recharge. Impacts are considered less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts are considered less than significant.

Impact HWQ-14: The project would not adversely change the rate, direction, or flow of groundwater.

The proposed project would not bring about an appreciable change in the quantity of groundwater through direct additions or withdrawal, substantial loss of groundwater recharge capability, or interception of an aquifer by cuts or excavation. The proposed project would not adversely change the rate, direction, or flow of groundwater. Although the proposed project would add additional imperious area, this is not anticipated to have a substantial impact on the rate, direction, or flow of groundwater recharge. Impacts are considered less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts are considered less than significant.

Impact HWQ-15: The project would not have an impact on groundwater that is inconsistent with a groundwater management plan prepared by the water agencies with the responsibility for groundwater management.

Development of the proposed project would likely increase the demand on water supplies. The proposed project would generate a water demand of approximately 198 acre-feet per year. The proposed project's water demand was analyzed in IRWD's Draft Lake Forest Area Sub-Area Master Plan and the Water Supply Assessment (WSA) that was prepared for the OSA PEIR. IRWD has determined that this project was covered in that WSA and that there are adequate water resources available to meet the proposed project's needs without contributing to degradation of the groundwater basin. The IRWD, Orange County Water District, and member agencies manage groundwater resources to minimize impacts to groundwater. These agencies may use recycled water, imported water for groundwater storage, spreading grounds for groundwater recharge, and injection wells; they also conduct monitoring and research programs to further manage groundwater resources. Additionally, existing NPDES stormwater regulations would prevent direct contamination and degradation of groundwater resources. Compliance with existing NPDES General Construction Activity Permit, the DAMP, Groundwater Management Plan, and City of Lake Forest Codes would ensure potential impacts would remain at a less-than-significant level.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts are considered less than significant.

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Section 3.9

Land Use and Planning

Section 3.9
Land Use and Planning

Introduction

This section describes the existing land use and planning characteristics of the project site and surrounding area; applicable federal, state, regional, and local regulations; potential conflicts of the proposed project with surrounding land uses and applicable planning programs; and potentially significant land use changes that would result from the implementation of the proposed project. Information for this section is based on the City of Lake Forest General Plan and the Lake Forest Municipal Code.

Environmental Setting

Lake Forest covers approximately 16 square miles in south Orange County and Saddleback Valley, between the coastal floodplain and the Santa Ana Mountains. The City is primarily a residential community served by a commercial and business sector. Before 1991, Lake Forest was part of unincorporated Orange County, and many of the residential areas were planned, entitled, and developed under County jurisdiction. In 1991, when the City incorporated, it inherited many established planned communities. Therefore, development of most of the City is governed by planned community texts encompassing nine planned communities:

- Lake Forest
- El Toro
- Baker Ranch
- Pacific Commercentre
- Rancho de los Alisos
- Rancho Serrano
- Serrano Highlands
- Foothill Ranch
- Portola Hills

Whiting Ranch Wilderness Park is a prominent feature in the northern portion of Lake Forest, located generally between the planned communities of Portola Hills and Foothill Ranch. Two creeks—Aliso Creek and Serrano Creek—extend through the City and include trails and open space. Commercial development is primarily located along Interstate 5 and the primary arterials of El Toro Road, Lake Forest Drive, Bake Parkway, and Portola Parkway. The southern portion of the City is the most intensely developed (City of Lake Forest 2008b).

The project site is located in two planned communities: Rancho de los Alisos and Baker Ranch. It is located on three separate parcels: the Rados, Baker Ranch, and Glass Creek properties. It covers approximately 90 gross acres, and is located southwest of the intersection of Portola Parkway and

El Toro Road and south of SR-241. The Glass Creek property was formerly part of Orange County open space and is undeveloped, with varying topography and native and nonnative vegetation. The Rados property is also vacant, with limited vegetation, and a large part of the property has been disturbed by prior grading activities. The Baker Ranch property currently has an active sand mining operation and commercial nursery and is highly disturbed. Topography within the study area consists generally of rolling hills.

The surrounding land uses comprise a mix of residential, commercial, and light industrial uses. Light industrial complexes are located to the west, SR-241 is located to the north, Saddleback Church and commercial uses are located to the east, and residential uses are the primary use to the south.

Regulatory Setting

Federal and State

There are no federal or state regulations applicable to land use.

Regional

Southern California Association of Governments

SCAG's RCPG (SCAG 2008) and Regional Housing Needs Assessment (RHNA) (SCAG 2007) are tools for coordinating regional planning and development strategies in southern California. The RCPG includes policies related to growth management, water quality, open space, and transportation.

Orange County Central and Coastal Subregion Natural Community Conservation Plan and Habitat Conservation Plan

The Orange County Central and Coastal Subregion Natural Community Conservation Plan (NCCP) and Habitat Conservation Plan (HCP) was approved in July 1996 and establishes a 37,380-acre reserve system that includes significant areas of 12 major habitat types and covers 39 sensitive plant and animal species (County of Orange 1996). The NCCP/HCP includes reserve areas where development is not allowed, allowable development areas, and areas that are not designated for either conservation or development. The purpose of the NCCP/HCP is to protect and perpetuate sensitive plant and animal species (particularly California gnatcatcher, cactus wren, and orange-throated lizard) in the coastal sage scrub of Orange County. The NCCP/HCP establishes a regional habitat planning and management system while allowing growth and development. The NCCP/HCP, part of a comprehensive NCCP/HCP for the entire southern California region, is based on voluntary and collaborative participation among property owners, local governments, state and federal agencies, and environmental organizations. The City is a participant in the NCCP/HCP. The project site is located within the broad planning boundaries of the NCCP/HCP, and potential impacts on habitat and species are addressed through the NCCP/HCP.

Local

City of Lake Forest General Plan

The City of Lake Forest General Plan contains goals, policies, and plans that are intended to guide land use and development decisions. The General Plan serves as a policy guide for determining the appropriate physical development and character of Lake Forest. It is founded on the community's vision for Lake Forest and expresses the community's long-term goals (City of Lake Forest 1994).

The General Plan consists of a land use policy map and the following six elements, or chapters, which together fulfill the state requirements for general plan contents: the Land Use, Recreation and Resources, Housing, Circulation, Safety and Noise, and Public Facility/Growth Management Elements. Applicable goals and policies from these elements are discussed below.

The land use designations for the properties involved with the proposed project vary. They are summarized in Table 3.9-1 and shown in Figure 3.9-1.

Table 3.9-1. Existing General Plan Land Use Designations

Property	General Plan Designation	Overlay Designations
Glass Creek	Regional Park/Open Space and Community Park/Open Space	None
Rados	Business Park	Mineral Resources, Public Facilities
Baker Ranch	Commercial	Mineral Resources, Public Facilities

The Regional Park/Open Space designation includes open-space land uses and regional park land uses. The Commercial designation allows for retail, professional office, and service-oriented business activities serving a community-wide area and population. The Business Park designation allows for a mixture of all uses allowed under Commercial, Professional Office and Light Industrial land use designations.

The General Plan Land Use Element's definition for both Community Park/Open Space (CP/OS) and Regional Park/Open Space (RP/OS) states:

> "…provides for public recreational uses designed to meet the active and passive needs of the community."

However, the two designations differ in the degree of active recreation commonly found on the properties within each category. The CP/OS designation includes public parkland, open space and associated public recreational activities such as sports fields. All of the City's active parks, including Heroes Park are designated CP/OS. Land designated RP/OS most often maintained as natural open space with minimal improvements, such as Whiting Ranch Regional Wilderness Park and the open space areas along Serrano and Aliso Creeks.

The Mineral Resources overlay applies to areas classified as an important mineral resource zone (MRZ-2) by the California Geological Survey. This overlay provides for the management and utilization of mineral resources on an interim basis.

The Public Facilities overlay applies to areas designated as Commercial, Business Park, and Residential. The Public Facilities overlay is placed on properties with land use designations that would allow public facilities and parks. The intent of this overlay is to indicate potential sites for future public facilities, government buildings, and community parks.

The Housing, Safety and Noise, and Public Facility/Growth Management Elements are either discussed in other resource sections (e.g., noise) or are not directly relevant to land use. Therefore, these elements are not discussed in detail in this section. Relevant goals and policies of the Circulation, Land Use, and the Recreation and Resources Elements are discussed below.

Circulation Element

The Circulation Element is intended to provide a safe, efficient, and adequate circulation system for the City. It guides the continued development of the circulation system to support planned growth; therefore, it identifies improvements required to maintain the service levels of the circulation system. The extension of Rancho Parkway between Lake Forest Drive and Portola Parkway is shown as a primary arterial (four-lane divided roadway) on Figure C-1 (Arterial Highway Plan) of the Circulation Element. The element contains goals and policies to improve overall circulation in Lake Forest (City of Lake Forest 2008a).

Goal 1.0: Support for the development of an efficient network of regional transportation facilities.

Policy 1.1: Support the completion of the Orange County Master Plan of Arterial Highways

Goal 2.0: A system of roadways in the community that meets local needs.

Policy 2.1: Provide and maintain a City circulation system that is in balance with planned uses in the Lake Forest and surrounding areas in the region.

Policy 2.3: Improve the Lake Forest circulation system roadways in concert with land development to ensure adequate levels of service.

Land Use Element

The Land Use Element guides land use planning in Lake Forest, and provides a framework for the environmental and infrastructure issues examined in the other General Plan elements.

Goal 3.0: New development that is compatible with the community.

Policy 3.1: Ensure that new development fits within the existing setting and is compatible with the physical characteristics of available land, surrounding land uses, and public infrastructure availability.

Policy 3.2: Preserve and enhance the quality of Lake Forest residential neighborhoods by avoiding or abating the intrusion of disruptive, non-conforming buildings and land uses.

Policy 3.4: Blend residential and non-residential development with landscaping and architectural design techniques to achieve visual compatibility.

Goal 4.0: New development conforming to the established planned community plans and agreements.

Policy 4.1: Ensure that all development proposals within the planned community areas conform to applicable development plans and agreements.

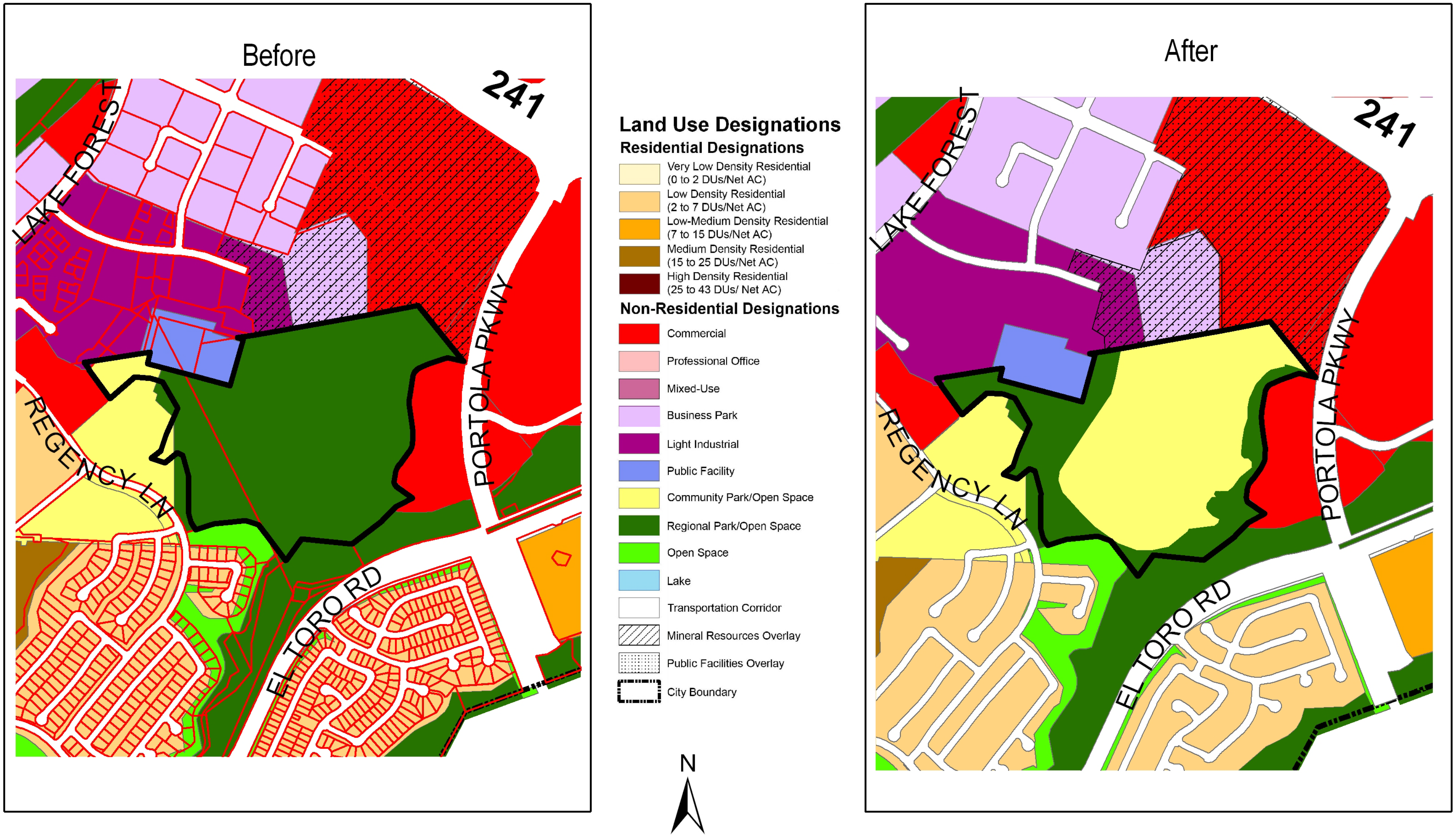

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Figure 3.9-1
General Plan Land Use Designations
City of Lake Forest Sports Park and Recreation Center

Recreation and Resources Element

The Recreation and Resources Element[1] contains goals and policies to protect and maintain natural resources, such as water, soils, wildlife, and minerals, and prevent wasteful resource exploitation, degradation, and destruction. It must contain goals and policies to manage open space areas, including undeveloped lands and outdoor recreation areas.

Goal 1.0: Ample recreational and cultural opportunities and facilities.

Policy 1.1: Promote the development and maintenance of a balanced system of public and private recreational lands, facilities, and programs to meet the needs of the Lake Forest population.

Policy 1.2: Maximize the utilization of existing parks, recreational facilities, and open space within Lake Forest.

Policy 1.3: Operate and maintain public park and recreational facilities in a manner that ensures safe and convenient access for all members of the community.

Policy 1.4: Require parkland improvements and facilities that are durable and economical to maintain.

Policy 1.5: Promote a high level of public outreach regarding park and recreation opportunities in Lake Forest.

Policy 1.6: Promote the future development of community centers as focal points for local activities.

Policy 1.7: Develop a network of multipurpose trails to provide convenient, safe access to recreational, residential, and commercial areas.

Policy 1.9: Preserve all designated open space areas until sufficient parkland exists in the City to meet the established parkland standard to provide adequate recreational opportunities for the community except any land within the Regional Park/Open Space designation requiring reconfiguration to create a continuous open space link.

Goal 2.0: Preservation and enhancement of important natural resources and features.

Policy 2.1: Conserve and protect important natural plant and animal communities, such as areas supporting rare and endangered species, riparian areas, wildlife movement corridors, wetlands, and significant tree stands through appropriate site planning and grading techniques, re-vegetation and soil management practices, and other resource management techniques.

Policy 2.4: Conserve and protect important topographical features, watershed areas, and soils through appropriate site planning and grading techniques, re-vegetation and soil management practices, and other resource management techniques.

Goal 3.0: Extraction of mineral resources and reclamation of mined land, while preserving the City's plans for future use as described in the Land Use Element.

Policy 3.1: Provide for the conservation and development of significant identified mineral resource sites within Lake Forest.

[1] Goals and policies in the Recreation and Resources Element related to paleontological resources are addressed in Section 3.12, "Paleontological Resources."

Policy 3.2: Provide for the reclamation of mineral resource sites in concert with future use as described in the Land Use Element and required environmental mitigation.

Policy 3.5: Promote land use decisions that ensure, to the greatest extent possible, compatibility between mineral resource extraction and adjacent land uses.

City of Lake Forest Zoning Code

The project site falls within two planned communities, which provide the zoning classifications for each of the properties. Each of the planned communities is described in greater detail below. The relevant planned communities' text and zoning are summarized in Table 3.9-2 and shown in Figure 3.9-2.

Table 3.9-2. Existing Planned Communities and Zoning Designations for Project Parcels

Property	Planned Community	Zoning
Glass Creek	Rancho de los Alisos	Regional Open Space
Rados	Baker Ranch	Urban Activity/Business Park
Baker Ranch	Baker Ranch	Urban Activity/Sand & Gravel/Commercial

Rancho de los Alisos Planned Community

The purpose of the Rancho de los Alisos planned community is to provide a diversity of uses, relationships, heights, and bulks of buildings. The planned community covers approximately 1,072 acres, and allows for approximately 830 acres of residential development and a maximum of 4,966 dwelling units. Approximately 88 acres are identified as Regional Open Space, and 83 acres are identified as Other Open Space. The remaining acreage is designated as Community Commercial, Neighborhood Commercial, and Streets. The planned community text is designed to act as an extension of the goals, policies, and guidelines of the General Plan. Within the project area, the Glass Creek property falls within the Rancho de los Alisos planned community (County of Orange 1991).

The Open Space zone in the Rancho de los Alisos planned community is established to preserve lands of notable scenic or cultural attraction; areas with special ecological, wildlife, or scientific study potential; or areas of topographical, geographical, agricultural, and historic importance. Uses are permitted that are complementary to and can existing in harmony with the above purposes. These uses include basketball courts, picnic facilities, greenbelts, tennis facilities, country clubs, and other active recreational uses (County of Orange 1991).

Baker Ranch Planned Community

The purpose of the Baker Ranch planned community is to provide a diversity of employment-generating and employment-servicing activities, and the opportunity for site design–maximizing benefits to both the public and private sectors. The planned community provides a community design that has an orderly development and protects sensitive and natural resources. As with Rancho de los Alisos, it is designed to act as an extension of the goals, policies, and guidelines of the General Plan. Within the project area, both the Rados and Baker Ranch properties fall within the Baker Ranch planned community (County of Orange 1988).

The Urban Activity zone in the Baker Ranch planned community allows a variety of compatible commercial, office, and industrial land uses and facilities supportive of the general region and consistent with the mixed use concept. Section V of the Baker Ranch Planned Community

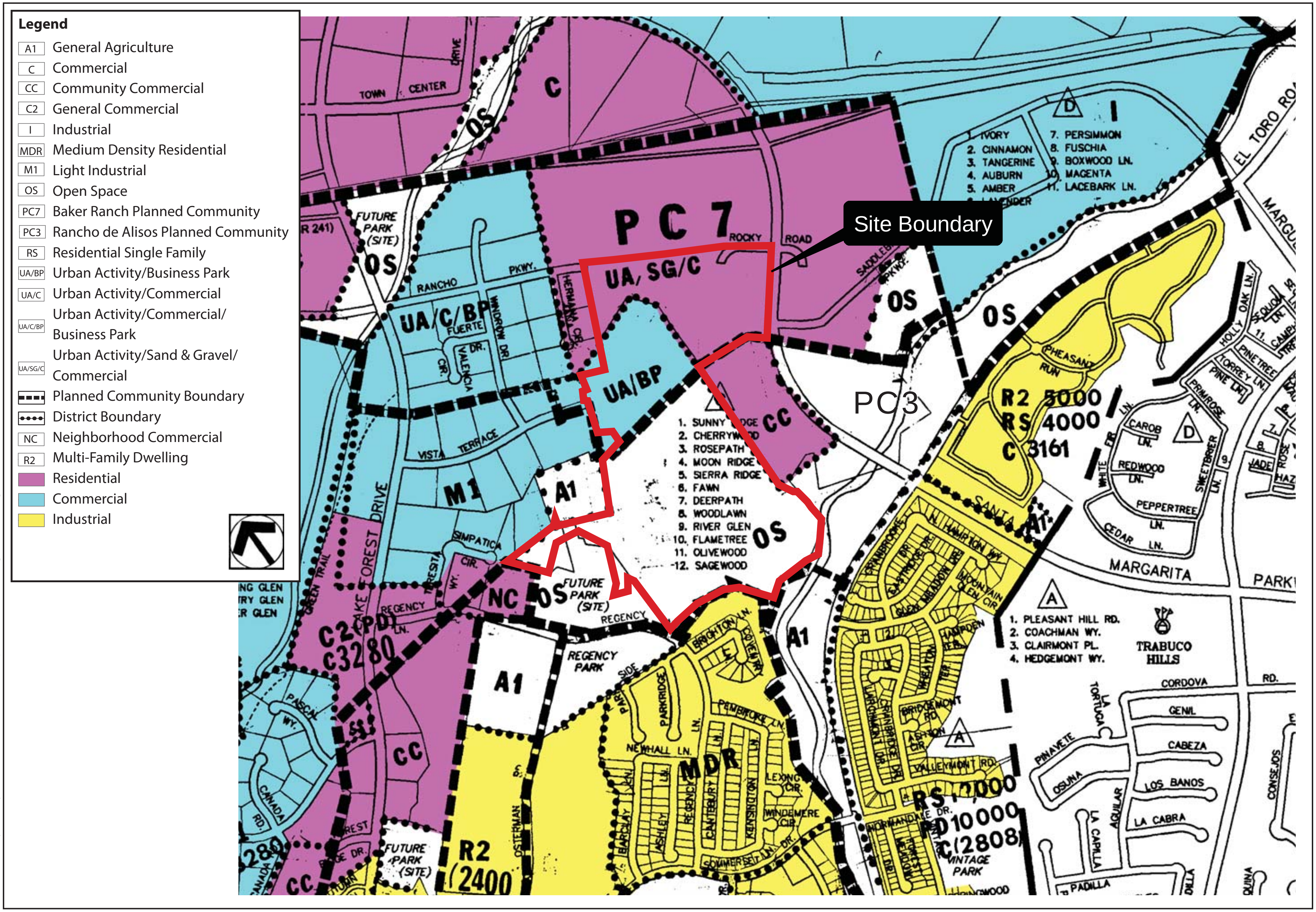

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Figure 3.9-2
Zoning
City of Lake Forest Sports Park and Recreation Center

Development Plan provides regulations for mining, quarrying, and commercial extraction and processing of sand and gravel materials in a manner that is both environmentally sensitive and compatible with existing and future land uses. The recovery of these valuable materials in a responsible manner is encouraged as an interim land use within Baker Ranch Planned Community Planning Area 5, which has an approved Sand & Gravel overlay zone.

Development Agreements and Land Exchange

The City entered into development agreements with four Opportunities Study Area (OSA) land owners in July and August 2008: the private owners of the Portola Center, Whisler, and Madison Investors properties, and the Irvine Ranch Water District. A fifth development agreement was approved by the City Council on July 20, 2010 and became effective in October 2010. These development agreements provide the City with a package of public benefits in exchange for protection of the landowners' rights during the term of the agreement. One of the public benefits the development agreements provide is dedicated land and funding for public facilities benefiting the entire City.

The City entered into an agreement to exchange open space lands with Orange County (the County) to add public facilities land contiguous to the Rados and Baker Ranch properties. The land exchange agreement was approved by both the City and the County in May 2009. The City obtained the 58.6-acre Glass Creek property from the County via the exchange. The terms of the land exchange agreement provided for 20.6 acres to be encumbered with a permanent open space/trail easement in favor of the County and the remaining 38 acres to be unencumbered for the intended use as an active-use sports park.

Project Impacts and Mitigation Measures

This section presents a discussion of the potential land use and planning impacts associated with the construction and operation of the proposed project.

Methodology

The analysis in this section focuses on whether the proposed project would conflict with on-site or adjacent land uses, or conflict with applicable NCCP/HCPs. The proposed project was determined to result in less-than-significant impacts or no impacts when the following CEQA thresholds were originally analyzed in the NOP/IS (Appendix A):

- Physically divide an established community.

Therefore, the discussion of project impacts does not include an analysis of the division of communities

Thresholds of Significance

For this analysis, an impact pertaining to land use and planning was considered significant under CEQA if it would result in any of the following environmental effects, which are based on the City of Lake Forest's 2010 *Local Guidelines for Implementing the California Environmental Quality Act* (City of Lake Forest 20010):

- Substantially conflict with existing on-site or adjacent land uses due to project-related significant, unavoidable indirect effects (e.g., noise, aesthetics) that preclude use of the land as it was intended by the General Plan; and
- Conflict with any applicable HCP or NCCP.
- Conflict with any applicable land use 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, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

Impacts and Mitigation Measures

Impact LU-1: The proposed project would not substantially conflict with existing on-site or adjacent land use due to project-related significant, unavoidable indirect effects that preclude use of the land as it was intended by the General Plan.

The proposed project would not substantially conflict with the existing on-site land uses such that the conflict would preclude the use of the land as it was intended by the General Plan. As discussed, the Public Facilities overlay is placed on properties with General Plan land use designations that would allow public facilities and parks. The intent of the overlay is to indicate potential sites for future public facilities, government buildings, and community parks. The Baker and Rados properties are designated with the Public Facility overlay, and the proposed project would construct and operate these properties with park and community center uses. The project site is currently vacant with the exception of the Baker Ranch property.

The proposed project would generally increase vehicle trips and noise during off-peak hours (evenings and weekends) because these off-peak times are when people would typically tend to use the sports facilities of the proposed project. The proposed project would also increase light in the area associated with the parking facilities and sports facilities lighting. Sky glow is generated by the accumulation of lights in an urban setting, and it would increase in the area over the existing conditions. Air quality impacts would occur during construction as a result of site grading and development of the park. As described in Sections 3.1 and 3.2, these impacts would be significant and unavoidable, despite the incorporation of mitigation measures to reduce impacts to the greatest degree possible.

The surrounding land uses are a mix of residential, commercial, and light industrial uses. The proposed project would support the mix of surrounding land uses and serve the residential areas with recreational amenities. Furthermore, it would support the policies of the General Plan by providing ample recreational opportunities and by promoting the development and maintenance of a balanced system of public and private recreational lands. The air quality impacts and increases in traffic, noise, and light discussed above would primarily be confined to the site or, in the case of traffic and noise, could extend off site during off-peak hours. However, these impacts would not result in substantial conflicts with adjacent land uses, or create impacts to such a magnitude that the conflict would preclude the use of the land as it was intended by the General Plan. Existing land uses, while potentially experiencing some increase in potential impacts, would remain in operation as their current uses. Therefore, this impact is less than significant.

Mitigation Measures

No mitigation is required.

Residual Impact

This impact would be less than significant.

Impact LU-2: The proposed project would not conflict with any applicable habitat conservation plan or natural community conservation plan.

As discussed above and under Impact BIO-6 in Section 3.3, "Biological Resources," the project occurs within the Orange County Central and Coastal Subregion NCCP/HCP. The project site has not been identified by the NCCP/HCP as part of a wildlife movement corridor. With the incorporation of the eight mitigation measures identified and defined in Section 3.3 (listed below), the project will fully adhere to all the provisions and requirements of the NCCP/HCP. Therefore, the proposed project would not conflict with any applicable NCCP/HCP, and impacts would be less than significant.

Mitigation Measures

Implement Mitigation Measures BIO-2 (OSA Program EIR Mitigation Measure 2) to ensure compliance with the NCCP/HCP.

Residual Impact

With implementation of Mitigation Measures BIO-2, this impact would be reduced to a less-than-significant level.

Impact LU-3: The proposed project would conflict with applicable land use 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, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

The proposed project includes a General Plan Amendment (GPA) to re-designate portions of the property to reflect the active and passive areas of the proposed Sports Park use. The majority of the Glass Creek property is currently designated for Regional Park/Open Space in the City of Lake Forest General Plan as shown in Table 3.9-3.

Table 3.9-3. Proposed General Plan Amendment Glass Creek Property

General Plan Designation	Existing Acres	Proposed Acres
Regional Park/Open Space	51.1	20.6
Community Park/Open Space	7.5	38.0
Total	58.6	58.6

The General Plan Land Use Element's definition for both Community Park/Open Space (CP/OS) and Regional Park/Open Space (RP/OS) states:

> "…provides for public recreational uses designed to meet the active and passive needs of the community."

However, the two designations differ in the degree of active recreation commonly found on the properties within each category. The CP/OS designation includes public parkland, open space and associated public recreational activities such as sports fields. All of the City's active parks, including Heroes Park are designated CP/OS. Land designated RP/OS most often maintained as natural open space with minimal improvements, such as Whiting Ranch Regional Wilderness Park and the open space areas along Serrano and Aliso Creeks.

Overall there is no net loss of parks and open space with the proposed GPA. The change represents the plan to utilize 38.5 acres of the existing open space for active recreation. As discussed in the Project Description, 38.5 acres adjacent to Whiting Ranch have been added to the City's passive open space resources through a land swap. The 38.5 acres of land traded for the Glass Creek Property was redesignated as RP/OS with the 2008 Opportunities Study GPA. As part of the proposed project, 20.1 acres planned for passive uses, trails, and buffers will now have the RP/OS designation with the new GPA.

The proposed project, including the GPA, would meet Goals 1.0 and 2.0 and Policies 1.1 - 1.9 of the City's Recreation and Resources Element by ensuring that the passive recreation areas adjacent to Whiting Ranch are preserved, and by providing needed active recreation facilities in the community. Therefore, the proposed project would not conflict with any applicable land use 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, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

The proposed project would be in conflict with Recreation and Resources Element Goal 2.0, Policy 2.1 and 2.4, which calls for the preservation and enhancement of important natural resources and features, such as natural plant and animal communities, rare and endangered species, riparian areas, wildlife movement corridors, wetlands, and significant tree stands. However, implementation of mitigation measures BIO-1 through BIO-5, GEO-1, and GEO-2 would ensure that appropriate site planning and grading techniques, re-vegetation and soil management practices, and other resource management techniques would be implemented in order to minimize potential conflicts with this General Plan goal and policies.

The EIR analysis assumes that the proposed project would be constructed and would preclude future mining of the mineral resources on the 13-acre Rados property. Recreation and Resources Element Goal 3.0 and Policies 3.1 and 3.2 support the extraction of mineral resources and reclamation of mined land. However, these goals and policies of the General Plan do not require mineral resource extraction and does not prohibit other uses of the property. Accordingly, the future use of the Rados property for the proposed Sports Park and Recreation Center is not in conflict with the General Plan.

A notice of exemption was filed for the land swap with the County in April 2009; therefore, the discussion of project impacts does not include the land swap.

Mitigation Measures

Implement Mitigation Measures BIO-1 through BIO-5, GEO-1, and GEO-2.

Residual Impact

Impacts would be less than significant.

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Section 3.10

Mineral Resources

Introduction

This chapter analyzes the proposed project's potential impacts on sand and gravel (aggregate) mineral resources. Key sources of data used in the preparation of this chapter include the following:

- Update of Mineral Land Classification of Portland Cement Concrete Aggregate in Ventura, Los Angeles, and Orange Counties, California, Part III – Orange County (Miller 1994).

Specific reference information is provided in the text.

The focus of this section is on aggregate resources, which are the only mineral resource of importance in the project vicinity. Aggregate resources are important because they are necessary for most construction, they cannot be replaced with other products, and they are most economical when used close to the area where they are mined because of the high cost of transportation (California Geological Survey 2007b:2).

The geology of the area is described in Section 3.5, Geology and Soils, and Section 3.12, Paleontology.

Environmental Setting

Regional

Mining was a booming industry in the 1800s, and resources historically extracted in Orange County included zinc, silver, and lead. More recently, however, land use changes related to urbanization have precluded most mining. Some aggregate production does continue in the County (Orange County 2005, VI-15 and16).

Aggregate production in Orange County has averaged approximately 4.5 million tons since 1980. Mine operations permitted by the state over the last two decades have included mining from the Santiago Creek Channel, Lake Irvine, Capistrano Formation along Aliso Creek (the proposed project area), and Sespe Formation on the south side of Santa Ana Canyon (Division of Mines and Geology 1994:12 and 13).

Orange County has one of the state's greatest expected needs for aggregate resources. The Temescal Valley-Orange County area is expected to need 1 billion tons by 2055 (California Geological Survey 2006:3),[1] yet aggregate in Orange County is nearly depleted (California Geological Survey 2006:8) and the County has permitted only 32% of the aggregate resources it is expected to need over the next 50 years (California Geological Survey 2006:4). The County's anticipated need for aggregate over the next 50 years is 1,122 million tons, while the permitted

[1] Orange County relies on Temescal Valley, in adjacent Riverside County, for most of its aggregate resources so the two areas were grouped into a single aggregate study area (California Geological Survey 2006:8).

amount for the same timeframe is 355 million tons (California Geological Survey 2006, map). In addition, Orange County has had a significant decrease in permitted aggregate resources (California Geological Survey 2006:11).

Local

The El Toro Materials Company (ETMC) has been mining in the project vicinity since 1965. ETMC originally began mining operations on the property immediately north of the Baker Ranch parcel. When the resources on that parcel were depleted, ETMC then started mining on the Baker Ranch parcel. (Division of Mines and Geology 1994:10.)

The Baker Ranch and Rados properties are located in an MRZ-2 zone as designated by the State (see definition of mineral resource zones in Regulatory Setting below) (Division of Mines and Geology 1994:10 and plate 1). These properties are designated for commercial and business park use, respectively, with a mineral resources overlay in the City's General Plan (City of Lake Forest 1994:12). According to the general plan, "This overlay provides for the management and utilization of mineral resources on an interim basis. The underlying land use designation represents the future planned use of the land following reclamation from mining."

Baker Ranch Parcel

The Baker Ranch parcel formerly contained a sand and gravel mine within the state-designated MRZ-2 area (Division of Mines and Geology 1994:10 and plate 1). The mining operation was permitted under the Surface Mining and Reclamation Act (SMARA) and a local Sand and Gravel Mining Permit (S&G 89-01 and S&G 89-02 originally issued by the County, and Changed Plan [CP] 2005-08 issued by the City). El Toro Materials Company has an approved closure plan in place. As November 15, 2010, El Toro Materials Company has vacated the property. The property is scheduled to be transferred to the City before the end of 2010. Baker Ranch Properties has requested to keep the mining permit open for only the portion of the site north of Rancho Parkway.

Portland cement concrete (PCC)-grade aggregate is mined at the site. The quality of the material on site varies, however, and the coarser fraction is used as PCC sand. Because of the variability in the quality of the material currently being mined, the quality of the material in surrounding areas is unknown. (Division of Mines and Geology 1994:10).

ETMC expects the site to produce approximately 500,000 tons of processed sand annually and estimates the total production of sand from the site at approximately 2,350,000 tons. The maximum anticipated depth of operation permitted at the site is 755 feet above mean sea level (msl) (El Toro Materials 2005).

The material is excavated from an open pit using heavy earthwork equipment (e.g., bulldozers, loaders, excavators, scrapers), placed on conveyors, and transported to the onsite semiportable screening and processing plant to be dry processed. No wet processing is permitted (El Toro Materials 2005). The site is being mined to create the final rough grade for future development (El Toro Materials 2005). When the aggregate resources at the site have been depleted, there will be no overburden remaining, and the site will be hydroseeded (El Toro Materials 2005).

Rados Parcel

The Rados parcel is also in the state-designated MRZ-2 area. Mineral resources at the Rados parcel are believed to be similar in kind to those on the Baker Ranch parcel, but the parcel has not been mined and no permit is in place.

Glass Creek Parcel

The Glass Creek parcel is not in the state-designated MRZ-2 area.

Regulatory Setting

Mineral resources are regulated at the state and local levels.

State

California Surface Mining and Reclamation Act of 1975

The principal legislation addressing mineral resources in California is the SMARA (Public Resources Code Sec. 2710–2719), which was enacted in response to land use conflicts between urban growth and essential mineral production. The stated purpose of SMARA is to provide a comprehensive surface mining and reclamation policy that will encourage the production and conservation of mineral resources while ensuring that adverse environmental effects of mining are prevented or minimized; that mined lands are reclaimed and residual hazards to public health and safety are eliminated; and that consideration is given to recreation, watershed, wildlife, aesthetic, and other related values. SMARA governs the use and conservation of a wide variety of mineral resources, although some resources and activities are exempt from its provisions, including excavation and grading conducted for farming, construction, or recovery from flooding or other natural disaster.

SMARA provides for the evaluation of an area's mineral resources using a system of Mineral Resource Zone (MRZ) classifications that reflect the known or inferred presence and significance of a given mineral resource. The MRZ classifications are based on available geologic information, including geologic mapping and other information on surface exposures, drilling records, and mine data; and socioeconomic factors such as market conditions and urban development patterns. The MRZ classifications are defined as follows:

- **MRZ-1**—areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence;
- **MRZ-2**—areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood for their presence exists;
- **MRZ-3**—areas containing mineral deposits, the significance of which cannot be evaluated from available data; and
- **MRZ-4**—areas where available information is inadequate for assignment into any other MRZ.

Although the state of California is responsible for identifying areas containing mineral resources, the City is responsible for SMARA implementation and enforcement by providing annual mining inspection reports and coordinating with the State Division of Mines and Geology.

Local

Lake Forest General Plan

The following goals and policies in the Recreation and Resources Element are intended to allow for the mining of mineral resources while providing for compatible land uses.

Goal 3.0: Extraction of mineral resources and reclamation of mined land, while preserving the City's plans for future use as described in the Land Use Element.

Policy 3.1: Provide for the conservation and development of significant identified mineral resource sites within Lake Forest.

Policy 3.2: Provide for the reclamation of mineral resource sites in concert with future use as described in the Land Use Element and required environmental mitigation.

Policy 3.3: Regulate mineral extraction activities to minimize hazards and conflicts with other land uses by the issuance of sand and gravel site permits.

Policy 3.4: Address and mitigate the significant environmental effects of surface mining operations.

Policy 3.5: Promote land use decisions that ensure, to the greatest extent possible, compatibility between mineral resource extraction and adjacent land uses.

Municipal Code, City of Lake Forest, California—Chapter 9.150 Surface Mining and Land Reclamation Regulations

The City implements the SMARA through its municipal code regulations. The regulations are designed to "provide for surface mining, and quarrying, and processing of these materials in a manner which is both environmentally sensitive and compatible with existing and future land uses." Mining is to occur in a safe and reasonable manner and is allowed only in sand and gravel extraction overlay districts (SG districts).

All surface mining operations are required to have a reclamation plan. Sites are to be progressively reclaimed to a natural-looking condition (or otherwise suitable condition) that is compatible with adjacent areas. Reclamation must minimize environmental effects, such as water quality degradation, air pollution, aquatic or wildlife habitat impacts, flooding, and erosion. Site-specific reclamation requirements are defined as part permitting process.

Project Impacts and Mitigation Measures

This section presents a discussion of the potential impacts on mineral resources associated with the construction and operation of the proposed project.

Methodology

The mineral land classification map for Orange County (Division of Mines and Geology 1994) and the City's General plan were reviewed to determine whether any portion of the project area was in or near an area designated as an MRZ-2. Impacts were analyzed by a qualitative comparison.

Thresholds of Significance

For this analysis, an impact pertaining to mineral resources was considered significant under CEQA if it would result in either of the following environmental effects, which are based on guidelines in Appendix G of the State CEQA Guidelines:

- 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; or
- result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other lands use plan.

Impacts and Mitigation Measures

Impact MR-1: Implementation of the proposed project could cause the loss of a known mineral resource of regional or local importance.

As discussed above, the Baker Ranch and Rados properties are in a state-designated MRZ-2 area for PCC-grade aggregate and sand resources deemed important by the state, as described in SMARA. The on-site resources are also considered locally important mineral resources, as delineated on the City's mineral resource overlay.

Mining has occurred on the Baker Ranch property since the 1960s but has not occurred on the Rados property. The sand and gravel resources are assumed to be the same on both properties. Specifically, the Baker property contains PCC-grade aggregate, which is used in making Portland cement concrete. Minerals from the Baker property are also used as fill sand, Class 2 base, and washed sands. These products are typically used in the construction industry. As indicated above, these materials are in high demand in the region during times of robust land development. Thus, the loss of the designated mineral resource would result if it were unavailable for use in the construction industry.

The applicable policies for resource recovery under SMARA, the City's General Plan, and LFMC 9.150 all allow for the mining of mineral resources while providing environmental sensitivity and compatibility with surrounding land uses. Avoidance of the loss of a resource does not require processing the resource on-site. Processing the resources at a permitted mining facility within the region would avoid loss of the use of the resource for its identified mineral purpose.

The following discussion will review the potential impacts related to the loss of mineral resources for each of the properties that make up the project site.

Glass Creek Property

The Glass Creek property is not within a state or locally designated mineral resource area; therefore, no impacts on mineral resources would occur in conjunction with development of the property for park uses.

Baker Ranch Property

As proposed, project construction of the park would occur following the completion of current mining operations and related reclamation on the Baker Ranch parcel. There would be no loss of availability of a known mineral resource, and therefore, there would be no impacts on mineral resources related to development of the Baker Ranch Property for the proposed uses. No mitigation is required.

Rados Property

The Rados property is expected to be delivered to the City by the Portola Center property owner pursuant to the terms of a development agreement. The development agreement allows for flexibility in the delivery of the property to allow recovery of known mineral resources, if feasible.

Loss of a known mineral resource would result if none of the resource is produced and permanent uses are constructed, precluding future production of the resource. Because the proposed grading plan calls for lowering of the current elevation of the Rados property, the removal of 405,000 CY of material is anticipated. The total amount of mineral resources on the Rados property is not known. There is no approved permit for mining on the Rados property, nor is there any current proposal to mine that property. Excavation and export of material from the property as part of the project, however, is not subject to SMARA's requirements. Therefore, if feasible, the material would be exported to an existing permitted mine or processing site in the region for processing.

The grading concept for the Rados property may involve removal of a significant quantity of material. A significant impact on mineral resources would occur if the material is (a) removed from the site but not processed for utilization of the mineral resources or (b) if the material remains on site and development of the project precludes future mining of the resource.

Future market conditions for mineral resources at the time grading for the sports park occurs are unknown. It is also unknown whether an operating mine will be available to process the surplus material to be excavated at the Rados property at the time the Rados property becomes available. Even if some materials from the Rados property are processed at a mining facility, some unknown quantity of the mineral resource may remain. Therefore, this analysis assumes that the project will be constructed and will preclude future mining of the mineral resources on the 13-acre Rados property, resulting in a significant and unavoidable impact (refer to Appendix F, Statement of Reasons).

Mitigation Measures

No mitigation is available to reduce the impact to less-than-significant levels.

Residual Impacts

Impacts would be significant and unavoidable.

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Section 3.11

Noise

Introduction

This section describes the affected environment and regulatory setting for noise. It also describes the noise impacts that would result from implementation of the proposed project and the mitigation measures that would reduce these impacts.

Noise Terminology

Noise is generally defined as unwanted sound. It may be loud, unpleasant, unexpected, or undesired sound typically associated with human activity that interferes with or disrupts the normal, ongoing noise-sensitive activities of others. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance and suitability of the noise in a particular setting, the time of day and type of activity during which the noise occurs, and the sensitivity of the individual. The response to vibration is similar. First, the vibration needs to be of sufficient magnitude to be perceived; second, it typically would have to interfere with a desirable activity to cause annoyance.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium such as air and are sensed by the human ear. Sound is generally characterized by frequency and intensity. Frequency describes the sound's pitch and is measured in hertz (Hz); intensity describes the sound's level, volume, or loudness and is measured in decibels (dB). Sound frequency is a measure of how many times each second the crest of a sound pressure wave passes a fixed point. For example, when a drummer beats a drum, the skin of the drum vibrates at a certain number of times per second. Vibration of the drum skin at a rate of 100 times (or cycles) per second generates a sound pressure wave that is said to be oscillating at 100 Hz; this pressure oscillation is perceived as a tonal pitch of 100 Hz. Sound frequencies between 20 Hz and 20,000 Hz are within the range of sensitivity of the human ear.

Sound from a tuning fork contains a single frequency and may therefore be referred to as a pure tone. However, most sounds heard in the environment do not consist of a single frequency, but rather a broad band of frequencies differing in individual sound levels. The method commonly used to quantify environmental sounds consists of evaluating all the frequencies of a sound according to a weighting system that recognizes that human hearing is less sensitive at low frequencies and extremely high frequencies than at mid-range frequencies. This frequency-dependent modification is called A-weighting, and the decibel level measured is called the A-weighted sound level (dBA). In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve.

For informational purposes, typical community sound levels are presented in Table 3.11-1. A sound level of 0 dBA is approximately the threshold of human hearing. Normal speech at a typical conversational distance has a sound level of approximately 60 dBA. Sound levels above about 120 dBA begin to be felt inside the human ear as discomfort and eventually pain at still higher levels.

Table 3.11-1. Sound Levels of Typical Noise Sources

Noise Level dBA	Extremes	Home Appliances/Tools	Speech at 3 Feet	Motor Vehicles at 50 Feet	General Type of Community Environment
120	Jet aircraft at 500 feet				
110					
100		Chain saw			
90		Power lawnmower		Diesel truck (not muffled)	
80		Shop tools	Shout	Diesel truck (muffled)	
70		Blender	Loud voice	Automobile at 70 mph	Major metropolis
60		Dishwasher	Normal voice	Automobile at 40 mph	Urban (daytime)
50		Air-conditioner	Normal voice (back to listener)	Automobile at 20 mph	Suburban (daytime)
40		Refrigerator			Rural (daytime)
30					
20					
10					
0	Threshold of hearing				

Source: Harris, Miller, Miller & Hanson, Inc. 2003.

The minimum change in the sound level of individual events that an average human ear can reliably detect in a community environment is approximately 3 dBA. A change of 5 dBA is more easily perceived. A change in sound level of 10 dBA is usually perceived by the average person as a doubling (or halving) of the sound's loudness; this relation holds true for loud and quiet sounds. Because of the logarithmic scale of the decibel unit, sound levels cannot be added or subtracted arithmetically and are somewhat cumbersome to handle mathematically. However, a simple rule is useful in dealing with sound levels: If a sound's physical intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. For example, 60 dB plus 60 dB equals 63 dB, and 80 dB plus 80 dB equals 83 dB.

Although the A-weighted sound level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a mixture of noise from distant sources, creating a relatively steady background noise setting in which no particular source is identifiable. A single descriptor called the L_{eq} (equivalent sound level) is used to describe the average acoustical energy in a time-varying sound. L_{eq} is the energy-mean A-weighted sound level present or predicted to occur during a specified interval. It is the "equivalent" constant sound level that a given source would need to produce to equal the fluctuating level of measured sound.

It is often desirable to also know the range of acoustic levels of the noise source being measured. This is accomplished through the L_{max} and L_{min} noise descriptors. They represent the root-mean-square maximum and minimum obtainable noise levels measured during the monitoring interval. The L_{min} value obtained for a particular monitoring location represents the quietest moment occurring during the measurement period and is often called the acoustic floor for that location. Likewise, the loudest momentary sound during the measurement is represented by L_{max}.

To describe the time-varying character of environmental noise, the statistical noise descriptors L_{10}, L_{50}, and L_{90} (or other percentile values) may be used. They are the noise levels equaled or exceeded 10%, 50%, and 90% of the time, respectively, during the measured interval. The percentile descriptors are most commonly found in nuisance noise ordinances to allow different noise levels for various portions of an hour. For example, the L_{50} value would represent 30 minutes of an hour period, L_{25} would be associated with 15 minutes of an hour, and so on.

Of particular interest in this analysis are other descriptors of noise that are commonly used to help determine noise/land use compatibility and predict an average community reaction to adverse effects of environmental noise, including traffic-generated and industrial noise. One of the most universal descriptors is the day-night average sound level (L_{dn}). The L_{dn} noise metric represents a 24-hour period and applies a time-weighted factor designed to penalize noise events that occur during nighttime hours when relaxation and sleep disturbance are primary concerns. Noise occurring during "daytime" hours, between 7 a.m. and 10 p.m., receives no penalty. Noise occurring between 10 p.m. and 7 a.m. is penalized by adding 10 dB to the measured level. In California, the use of the community noise equivalent level (CNEL) descriptor is also permitted (and is used by the City). CNEL is similar to L_{dn} except that CNEL adds a 5-dB penalty for noise occurring between 7 p.m. and 10 p.m.

Environmental Setting

This section describes the surrounding land uses and noise receptors and discusses existing ambient traffic noise. As described in more detail in Chapter 2, "Project Description," the City is proposing to develop a number of active and passive park facilities on the project site. Existing access is available, and new access locations would be provided, along with the necessary infrastructure. The proposed project is anticipated to occur in two to three phases as property is acquired.

The project site encompasses approximately 90 gross acres southwest of the intersection of Portola Parkway and El Toro Road and south of SR-241. Figure 3.11-1 shows the project site location and vicinity. Figure 2-4 depicts the proposed active and passive recreational amenities associated with the proposed project.

Existing Land Uses

The project site currently has a variety of land uses, including vacant/undeveloped, designated open space, and active aggregate mining. The individual sites have varying topography, and portions of the property are highly disturbed, while others have areas of native and nonnative vegetation.

The surrounding land uses consist of a mix of residential, commercial, and light industrial uses. Light industrial and business park complexes are located to the west; the Baker Ranch parcel, a commercial nursery, and SR-241 are located to the north; Portola Parkway, Saddleback Church, and commercial uses are located to the east; and El Toro Road and residential uses are located primarily to the south and southwest. Figure 3.11-1 shows these surrounding land uses.

Ambient Noise Levels

A noise survey was conducted on July 23, 2009, by ICF Jones & Stokes. Noise measurements were taken to evaluate existing sound levels and assess potential project noise impacts on the surrounding area. Short-term noise measurements were taken at existing noise-sensitive receptors adjacent to the project area, as shown in Figure 3.11-1.

Short-term (1 hour or less) attended sound level measurements were taken with a Larson Davis Model 812 sound level meter (SLM). This instrument is categorized as Type 1, Precision Grade. Noise was measured at five representative locations (ST-1 to ST-5) at residences south and east of the project site. Land uses on the north and west sides of the project site are commercial and industrial, and are not considered to be noise-sensitive.

The sound-measuring instrument used for the survey was set to the "slow" response time, and the dBA scale was used for all of the noise measurements. To ensure accuracy, the laboratory calibration of the instrument was field checked before and after each measurement period using an acoustical calibrator. The accuracy of the acoustical calibrator is maintained through a program established through the manufacturer and traceable to the National Institute of Standards and Technology.

The sound measurement instrument meets the requirements of the American National Standards Institute, Section 1.4-1983, and International Electrotechnical Commission Publications 804 and 651. In all cases, the microphone height was 5 feet above the ground and the microphone was equipped with a windscreen.

During field measurements, physical observations of the predominant noise sources were noted. The noise sources in the project area consisted of traffic, distant landscaping activities, distant aircraft, birds, and other community noises. The results of the sound level measurements are summarized in Table 3.11-2. As shown, measured noise levels varied from 44 dBA L_{eq} at ST-1 to 57 dBA L_{eq} at ST-3.

Table 3.11-2. Short-Term Sound Level Measurement Results

		Measurement Period[1]			Measurement Results (dBA)					
Site	Location	Start Time (a.m.)	Duration (mm:ss)	Noise Sources	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}
ST-1	2704 Brighton Ln.	8:56	15:00	Traffic, distant aircraft, birds	43.5	54.1	39	40.7	42.3	45.2
ST-2	20858 Parkridge	9:25	15:00	Traffic, birds, distant landscaping activities	56.4	74.2	46.1	48.5	51.6	60.1
ST-3	27255 Cranbrooke Dr.	10:00	15:00	Traffic, distant aircraft, birds, distant dogs	56.9	70.2	37.5	44.5	55.6	59.8
ST-4	20702 El Toro Rd.	10:40	15:00	Traffic, birds, distant landscaping activities	54.4	69.5	43.9	46.2	50.6	56.6
ST-5	20952 N. Hampton Way	11:15	15:00	Traffic, distant aircraft	50.7	65.1	39.6	42.8	47.1	53.6

[1] All measurements taken July 23, 2009.
Source: ICF Jones & Stokes 2009.

ICF INTERNATIONAL

Figure 3.11-1
Noise Measurement Locations
City of Lake Forest Sports Park and Recreation Center

Regulatory Setting

Federal

There are no federal noise requirements or regulations applicable to local actions of the City. However, there are federal regulations that influence the audible landscape when federal funding is involved.

State

The Governor's Office of Planning and Research (OPR) has published recommended guidelines for the preparation and content of a noise element of a general plan. Each jurisdiction is required to consider these guidelines when developing its general plan noise element and determining acceptable noise levels within the community. The purpose of the noise element is to limit the exposure of the community to excessive noise levels. A noise element must identify and appraise noise problems in the community by analyzing and quantifying current and projected noise levels for all stationary and mobile noise sources in the community. Noise contours are then developed and shown for all noise sources in the community and eventually used as a guide for establishing a pattern of land use that minimizes exposure of community residents to excessive noise.

Title 24 of the California Code of Regulations (CCR) includes sound transmission control requirements that establish uniform minimum noise insulation performance standards for new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family units. Specifically, Title 24 states that interior noise levels due to exterior sources shall not exceed 45 dBA CNEL in any habitable room of new dwellings. Dwellings are to be designed so that interior noise levels meet this standard for at least 10 years from the time of application for the building permit.

Local

City of Lake Forest Municipal Code

The City has adopted the County of Orange Noise Control Ordinance. The Lake Forest Noise Ordinance is designed to protect people from non-transportation noise sources such as music, construction activity, and machinery. Noise from onsite project-related activities such as sports events would also be regulated by the Noise Ordinance. Enforcement of the ordinance ensures that adjacent properties are not exposed to excessive noise from stationary sources. Enforcing the Noise Ordinance includes requiring proposed development projects to show compliance with the ordinance, and requiring construction activity to comply with established work schedule limits.

Pursuant to the Noise Ordinance, the exterior noise standard for residential property is 55 dBA L_{50} from 7 a.m. to 10 p.m. and 50 dBA L_{50} from 10 p.m. to 7 a.m. Certain activities, including special events (providing these have been issued a special event permit), are exempted from these noise standards. Additionally, construction and maintenance work (provided that the work takes place between the hours of 8 p.m. and 7 a.m. on weekdays, including Saturday, and not at any time on Sunday or a federal holiday) are exempted from the City's noise standards.

City of Lake Forest Safety and Noise Element

The Lake Forest General Plan Safety and Noise Element states that, for single- and multi-family residential land uses, exterior noise levels of up to 65 dBA CNEL (45 dBA CNEL interior) are acceptable for noise/land use compatibility planning purposes. The noise standard for parks and playgrounds is also 65 dBA CNEL.

The Safety and Noise Element contains the following goals and policies pertaining to noise that are applicable to this project:

Goal 5.0: Consideration of the effects of noise in land use planning.

Policy 5.1: Utilize noise/land use compatibility standards as a guide for future planning and development decisions.

Policy 5.2: Provide noise control measures, such as berms, walls, and sound attenuating construction in areas of new construction or rehabilitation.

Goal 6.0: Reduction in the impact of transportation-related noise.

Policy 6.1: Reduce noise impacts to sensitive land use from transportation noise sources.

Goal 7.0: Reduction in non-transportation noise impacts.

Policy 7.1: Minimize the impacts of noise-producing land uses and activities on noise-sensitive land uses.

Project Impacts and Mitigation Measures

This section presents a discussion of the potential noise impacts associated with the construction and operation of the proposed project.

Methodology

Traffic noise effects were assessed for the project using the FHWA's Traffic Noise Model (TNM), Version 2.5. The parameters used to estimate vehicular traffic noise were the typical distance between the roadway centerline and receiver; typical average daily traffic (ADT) volumes and posted speed limits; percentages of automobiles, medium trucks, buses, motorcycles, and heavy trucks; roadway grade; and site conditions (terrain or structural shielding and ground propagation characteristics) (FHWA 2004).

Construction noise and onsite operational noise were assessed for the project by gathering source noise data, measuring distances to the nearest noise-sensitive uses, and estimating the resultant noise levels at the noise-sensitive uses using standard formulas for noise propagation. The level of impact or effect is determined by comparing the predicted noise levels to the relevant impact criteria.

Thresholds of Significance

For this analysis, an impact pertaining to noise was considered significant under CEQA if it would result in any of the following environmental effects, which are based on the City's 2010 *Local Guidelines for Implementing the California Environmental Quality Act* (City of Lake Forest 2010) and the *CEQA Significance Thresholds Guide*.

Traffic Noise

A proposed project would normally have a significant offsite traffic noise impact if both of the following criteria are met:

- Project traffic would cause a noise-level increase of 3 dB or more on a roadway segment adjacent to a noise-sensitive land use. Noise-sensitive land uses include the following: residential (single-family, multi-family, mobile home); hotels; motels; nursing homes; hospitals; parks, playgrounds and recreation areas; and schools.
- The resulting "Future with Project" noise level would exceed the noise standard for sensitive land uses as identified in the City of Lake Forest General Plan.

Stationary Noise

The project would normally have a significant noise impact if the associated stationary (i.e., non-transportation) noise would:

- exceed the stationary source noise criteria for the City of Lake Forest as specified by the exterior noise standards set forth in the Noise Control Chapter of the Lake Forest Municipal Code.

Impacts and Mitigation Measures

Traffic Noise

Impact NOI-1: Project traffic would not cause a noise-level increase of 3 dB or more on a roadway segment adjacent to a noise-sensitive land use.

Construction

The project would result in additional construction vehicle trips along nearby and regional arterial roadways from worker vehicles, material deliveries, and haul trucks. The typical number of haul truck trips (the loudest source of offsite construction traffic noise) was estimated based on the project description and construction phasing information. Depending on the project phase, the number of typical haul truck trips would vary from approximately 30 to 130 per day under Grading Scenario 1, or approximately 50 to 205 per day under Grading Scenario 2. The haul trucks would not arrive and depart at the same time, but would generally be sequenced throughout a typical 8- or 9-hour workday. The nature of traffic noise is such that for the noise level to increase by 3 dB, traffic volume would need to double. The trucks would travel on major arterials such as El Toro Road or Portola Parkway. Because these roadways carry tens of thousands of vehicles per day, the additional truck trips would result in traffic noise increases of less than 1 dB, under either of the two grading scenarios. Therefore, offsite construction-related traffic noise would be a less-than-significant impact.

Operation

Noise from Existing, Future (2015) without Project, and Future with Project traffic was predicted using the TNM. Traffic data from the project's traffic study (Austin Foust 2010c) was used to model traffic noise levels at a reference distance of 150 feet from the roadway centerline for key roadway segments in the vicinity of the project site. The results of the traffic noise analysis are summarized in Table 3.11-3, which shows that existing noise levels range from 58 dBA CNEL along El Toro Road north of Portola Parkway to 63 dBA CNEL along portions of Portola Parkway. Future noise levels are predicted to range from 57 dBA CNEL along Rancho Parkway to 64 dBA CNEL along portions of Portola Parkway, either with or without the project. Noise levels from the proposed project compared with the Future without Project scenario would result in noise-level changes at noise-sensitive land uses ranging from -1 to 1 dB.

Because project-related traffic noise would not result in a noise-level increase of 3 dB or more on a roadway segment adjacent to a noise-sensitive land use, the increase in traffic noise from the proposed project would be less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact NOI-2: The resulting Future with Project noise levels would not exceed the noise standard for sensitive land uses as identified in the City of Lake Forest General Plan.

As discussed for Impact NOI-1, noise from Existing, Future without Project, and Future with Project traffic was predicted using the TNM, and the results of the traffic noise analysis are summarized in Table 3.11-3. Existing noise levels range from 58 dBA CNEL along El Toro Road north of Portola Parkway to 63 dBA CNEL along portions of Portola Parkway. Future noise levels are predicted to range from 57 dBA CNEL along Rancho Parkway to 64 dBA CNEL along portions of Portola Parkway, either with or without the project. Future with Project noise levels would not exceed the City of Lake Forest's 65-dBA-CNEL noise standard at noise-sensitive land uses.

Because project-related traffic noise would not cause an exceedance of the 65-dBA-CNEL noise standard for sensitive land uses as identified in the City of Lake Forest General Plan, the traffic noise impacts from the proposed project would be less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Table 3.11-3. Traffic Noise Data Summary

Roadway	Segment Location	Existing	Year 2015 without Project	Year 2015 with Project	Difference: Year 2015 with Project minus Existing	Difference: Year 2015 with Project minus Year 2015 without Project
		dBA CNEL at 150 feet			dB	
El Toro Road	South of Portola Parkway/Santa Margarita Parkway	61	62	62	1	0
El Toro Road	North of Portola Parkway/Santa Margarita Parkway	58	59	59	1	0
Santa Margarita Parkway	East of El Toro Road	62	63	63	1	0
Portola Parkway	West of El Toro Road	62	63	64	2	1
Portola Parkway	South of SR-241	62	63	62	0	-1
Portola Parkway	North of SR-241	63	63	62	-1	-1
Portola Parkway	Glenn Ranch Road/Lake Forest Drive	63	64	64	1	0
Portola Parkway	West of Lake Forest Drive	61	62	62	1	0
Lake Forest Drive	South of Rancho Parkway	62	61	62	0	1
Lake Forest Drive	Rancho Parkway to SR-241	61	62	61	0	-1
Lake Forest Drive	SR-241 to Portola Parkway	59	60	59	0	-1
Glenn Ranch Road	North of Portola Parkway	60	62	62	2	0
Rancho Parkway	Bake Parkway to Lake Forest Drive	N/A	57	59	N/A	N/A
Rancho Parkway	Lake Forest Dr to Portola Parkway	N/A	57	61	N/A	N/A

N/A = the roadway and/or noise-sensitive use receptor does not exist under this scenario.

Stationary Noise

Impact NOI-3: The proposed project would not exceed the stationary noise criteria for the City of Lake Forest as specified by the exterior noise standards set forth in the Noise Control chapter of the Lake Forest Municipal Code.

Stationary (i.e., non-transportation) noise would be generated by the proposed project during construction and operation. Each of these is addressed in the following discussion, for both potential grading scenarios (Grading Scenarios 1 and 2).

During construction, noise would be generated by construction activities such as site excavation and grading, paving for the parking areas and hard courts, and erection of structures such as the recreation center and lighting.

Construction

Project construction is anticipated to temporarily increase noise levels at residences adjacent to the project site. The magnitude of the increases depends on the type of construction activity, the noise level generated by various pieces of construction equipment, site geometry (i.e., shielding from intervening terrain or other structures), and the distance between the noise source and receiver.

Noise from construction activity is generated by the broad array of powered, noise-producing mechanical equipment used in the construction process. This equipment ranges from hand-held pneumatic tools to bulldozers, dump trucks, and front loaders. The exact complement of noise-producing equipment that would be in use during any particular period has not yet been determined, and noisy construction activities could be in progress on more than one part of the project site at a given time. However, the noise levels from construction activity during various phases of a typical construction project have been evaluated based on reasonable assumptions for the type of construction expected, and their use provides an acceptable prediction of a project's potential noise impacts.

To assess the potential noise effects from construction, this noise analysis uses data from an extensive field study of various types of construction projects, including recreational use projects Noise levels associated with various construction phases where all pertinent equipment is present and operating, at a reference distance of 50 feet, are shown in Table 3.11-4. Because of vehicle technology improvements and stricter noise regulations since the field study was published, this analysis uses the average noise levels shown in Table 3.11-4 for the loudest construction phase. This information indicates that the overall average noise level generated on a construction site could be 89 dBA at a distance of 50 feet during excavation and finishing phases. The noise levels presented are value ranges; the magnitude of construction noise emission typically varies over time because construction activity is intermittent and the power demands on construction equipment (and the resulting noise output) are cyclical.

Noise levels generated by construction equipment (or by any "point source") decrease at a rate of approximately 6 dB per doubling of distance from the source. Therefore, if a particular construction activity generated average noise levels of 89 dBA at 50 feet, the L_{eq} would be 83 dBA at 100 feet, 77 dBA at 200 feet, 71 dBA at 400 feet, etc. This calculated reduction in noise level is based on the loss of energy resulting from the geometric spreading of the sound wave as it leaves the source and travels outward; this is also referred to as the "inverse square law effect." Intervening structures that block the line of sight, such as existing walls or terrain, would further decrease the resultant noise level. The effects of molecular air absorption and anomalous excess attenuation would reduce the noise level from construction activities at more distant locations at the rates of 0.7 and 1.0 dBA per 1,000 feet, respectively. Additional noise reduction from ground effects and from intervening terrain were estimated using the finished-grade elevation information in the conceptual grading plans for the project and from available topographic elevation data for the surrounding area.

Table 3.11-4. Typical Noise Levels from Construction Activities for Recreation Projects

Construction Activity	Average Sound Level at 50 feet (dBA L_{eq})[1]	Standard Deviation (dB)
Ground clearing	84	9
Excavation	89	6
Foundations	77	4
Erection	84	9
Finishing	89	7

[1] Sound level with all pertinent equipment operating.
Source: EPA 1971.

Grading Scenario 1: Highest Pad Elevation, Balanced Grade

At the project site, the closest adjacent noise-sensitive receptors are located approximately 240 feet southwest of the nearest edge of project construction work and approximately 2,900 feet from the farthest edge of project construction work. As shown in Table 3.11-5, the noise level from construction is predicted to range from approximately 39 dBA L_{eq} to 63 dBA L_{eq}. At 830 feet, the acoustic center of construction activity, a construction noise level of 89 dBA L_{eq} at 50 feet would attenuate to approximately 54 dBA L_{eq}. This noise level is approximately 10 dB higher than the noise level measured at ST-1. The noise from construction would be clearly audible and would dominate the noise environment in the relatively quiet neighborhood represented by ST-1 while the noisiest phases of construction are underway.

The next-closest noise-sensitive receptors are located approximately 620 feet south of the nearest edge of the project construction work and approximately 3,200 feet from the farthest edge of project construction work. As shown in Table 3.11-5, the noise level from construction is predicted to range from approximately 43 dBA L_{eq} to 60 dBA L_{eq}. At 1,400 feet, the acoustic center of construction activity, a construction noise level of 89 dBA L_{eq} at 50 feet would attenuate to approximately 53 dBA L_{eq}. This noise level is approximately 4 dB lower than the noise level measured at ST-3 (57 dBA L_{eq}). The noise from construction would for the most part be audible as a relatively low background noise in the neighborhood environment represented by ST-3.

Construction noise levels under Grading Scenario 1 would be higher than under Grading Scenario 2. However, the typical noise level from construction would be lower than commonly accepted measures for community annoyance (e.g., EPA Levels Document) and would be temporary in nature. Construction activities would not be conducted between the hours of 8 p.m. and 7 a.m., and would not take place on Sundays or federal holidays. Therefore, noise from construction activities would be a less-than-significant impact.

Table 3.11-5. Construction Noise, Grading Scenario 1

Location	Distance between Source and Receiver (feet)	Calculated Sound Level (dBA)
Nearest residences (southwest of project site)	240	63
	830	54
	2,900	39
Next-nearest residences (south of project site)	620	60
	1,400	53
	3,200	43
Note: Calculations based on FTA 1995.		

Grading Scenario 2: Lowest Pad Elevation, Grading Export

Under Grading Scenario 2, finished grades on site would be lower (in general, approximately 15 feet lower) than under Grading Scenario 1. Therefore, noise from construction activities would generally be less audible to nearby receptors because there would be a greater degree of noise reduction from terrain shielding and ground absorption effects.

As shown in Table 3.11-6, the noise level from construction is predicted to range from approximately 27 dBA L_{eq} to 55 dBA L_{eq}. At 830 feet, the acoustic center of construction activity, a construction noise level of 89 dBA L_{eq} at 50 feet would attenuate to approximately 44 dBA L_{eq}. This noise level is approximately equivalent to the noise level measured at ST-1. The noise from construction would be audible in the relatively quiet neighborhood environment represented by ST-1, but would be well below levels normally associated with interruption of conversation or other measures of annoyance.

The next-closest noise-sensitive receptors are located approximately 620 feet south of the nearest edge of the project construction work, and approximately 3,200 feet from the farthest edge of project construction work. As shown in Table 3.11-6, the noise level from construction is predicted to range from approximately 32 dBA L_{eq} to 54 dBA L_{eq}. At 1,400 feet, the acoustic center of construction activity, a construction noise level of 89 dBA L_{eq} at 50 feet would attenuate to approximately 44 dBA L_{eq}. This noise level is approximately 13 dB lower than the noise level measured at ST-3 (57 dBA L_{eq}). The noise from construction would for the most part be inaudible or perceivable as a low background noise in the neighborhood represented by ST-3.

Construction noise levels under Grading Scenario 2 would be relatively low compared with the ambient noise levels at adjoining noise-sensitive land uses. Construction activities would not be conducted between the hours of 8:00 p.m. and 7:00 a.m., and would not take place on Sundays or federal holidays. Therefore, noise from construction activities would be a less-than-significant impact.

Operations

During project operation, noise would be generated by sports activities such as baseball, softball, soccer, basketball, and tennis, as well as from ancillary activities such as parking lot noise. Noise measurement data from sports activities and parking lot activities (car door slams, engine start-ups, etc.) was used to predict the resultant noise levels at adjacent noise-sensitive land uses. As a conservative measure, for this analysis, it was assumed that up to 12 separate games would be in progress simultaneously on site.

Table 3.11-6. Construction Noise, Grading Scenario 2

Location	Distance between Source and Receiver (feet)	Calculated Sound Level (dBA)
Nearest residences (southwest of project site)	240	55
	830	44
	2,900	27
Next-nearest residences (south of project site)	620	54
	1,400	44
	3,200	32
Note: Calculations based on FTA 1995.		

Grading Scenario 1: Highest Pad Elevation, Balanced Grade

At the project site, the closest adjacent noise-sensitive receptors are located approximately 400 feet southwest of the nearest proposed athletic field and approximately 2,200 feet from the farthest proposed athletic field. As shown in Table 3.11-7, the noise level from sports activities is predicted to range from approximately 30 dBA L_{eq} to 47 dBA L_{eq}. At 940 feet, the acoustic center of sports activity noise, a noise level of 39 dBA is predicted. This noise level is approximately 5 dB below the existing ambient noise level measured at ST-1. Therefore, the noise from sports activities would be faintly audible or audible as a low background noise in the relatively quiet neighborhood environment represented by ST-1, and would be below the City's noise standard for stationary noise of 55 dBA L_{50} between the hours of 7 a.m. and 10 p.m. Single-event type noises such as cheering could be more distinctly audible for brief periods of time; however these would also be lower than the relevant noise standards.

The next-closest noise-sensitive receptors are located approximately 870 feet south of the nearest edge of the proposed athletic field and approximately 2,600 feet from the farthest proposed athletic field. As shown in Table 3.11-7, the noise level from sports activities is predicted to range from approximately 33 dBA L_{eq} to 46 dBA L_{eq}. At 1,500 feet, the acoustic center of sports activity noise, a noise level of 39 dBA is predicted. This noise level is approximately 18 dB lower than the noise level measured at ST-3 of 57 dBA L_{eq}. The noise from sports activities would for the most part be inaudible in the neighborhood represented by ST-3 and would be well below the City's noise standard for stationary noise of 55 dBA L_{50} between the hours of 7 a.m. and 10 p.m.

As shown in Table 3.11-7, parking lot noises were also analyzed and the noise levels summarized. As with the athletic field noise levels, parking lot noise levels would be relatively low at the nearest noise-sensitive land uses, after accounting for attenuation due to distance, ground absorption effects, intervening terrain or structures, and atmospheric attenuation. Typical parking lot noise levels would be in the 30- to 40-dB range, and would therefore be below the City's noise standard for stationary noise of 55 dBA L_{50} between the hours of 7 a.m. and 10 p.m.

Operational levels under Grading Scenario 1 would be relatively low compared with the ambient noise levels at adjoining noise-sensitive land uses and below the City's noise standard for stationary noise of 55 dBA L_{50} between the hours of 7 a.m. and 10 p.m. The park's hours of operation would be limited to between the hours of 7 a.m. and 10 p.m. Therefore, noise from operational activities would be a less-than-significant impact.

Table 3.11-7. Operational Noise, Grading Scenario 1

Noise Source	Location	Distance between Source and Receiver (feet)	Calculated Sound Level (dBA)
Field sports (lacrosse and softball)	Nearest residences (southwest of project site)	400	47
		940	39
		2,200	30
	Next-nearest residences (south of project site)	870	46
		1,500	39
		2,600	33
Parking noise (door slams, engine start-ups, car passbys)	Nearest residences (southwest of project site)	520	37
		1,190	29
		2,700	19
	Next-nearest residences (south of project site)	700	39
		1,400	33
		2,800	24
Parking lot maintenance (sweeper/vacuum)	Nearest residences (southwest of project site)	520	45
		1,190	37
		2,700	27
	Next-nearest residences (south of project site)	700	47
		1,400	41
		2,800	32

Note: Calculations based on FTA 1995.

Grading Scenario 2: Lowest Pad Elevation, Grading Export

Under Grading Scenario 2, finished grades on site would be lower (in general, approximately 15 feet lower) than under Grading Scenario 1. Therefore, noise from operational activities would generally be less audible to nearby receptors because there would be a greater degree of noise reduction from terrain shielding and ground absorption effects.

As shown in Table 3.11-8, the noise level from sports activities is predicted to range from approximately 23 dBA L_{eq} to 43 dBA L_{eq}. At 940 feet, the acoustic center of sports activity noise, a noise level of 34 dBA is predicted. This noise level is approximately 10 dB below the existing ambient noise level measured at ST-1. Therefore, the noise from sports activities would be largely inaudible or barely audible in the relatively quiet neighborhood environment represented by ST-1 and would be well below the City's noise standard for stationary noise of 55 dBA L_{50} between the hours of 7 a.m. and 10 p.m.

The next-closest noise-sensitive receptors are located approximately 870 feet south of the nearest edge of the proposed athletic field and approximately 2,600 feet from the farthest proposed athletic field. As shown in Table 3.11-8, the noise level from sports activities is predicted to range from approximately 27 dBA L_{eq} to 43 dBA L_{eq}. At 1,500 feet, the acoustic center of sports activity noise, a noise level of 34 dBA is predicted. This noise level is approximately 23 dB lower than the noise level measured at ST-3 (57 dBA L_{eq}). The noise from sports activities would for the most part be inaudible in the neighborhood represented by ST-3 and would be well below the City's noise standard for stationary noise of 55 dBA L_{50} between the hours of 7 a.m. and 10 p.m.

As shown in Table 3.11-8, parking lot noises were also analyzed and the noise levels summarized. As with the athletic field noise levels, parking lot noise levels would be relatively low at the nearest noise-sensitive land uses, after accounting for attenuation due to distance, ground absorption effects, intervening terrain or structures, and atmospheric attenuation. Typical parking lot noise levels would be in the 20- to 30-dB range, and would therefore be well below the City's noise standard for stationary noise of 55 dBA L_{50} between the hours of 7 a.m. and 10 p.m.

Operational levels under Grading Scenario 2 would be relatively low compared with the ambient noise levels at adjoining noise-sensitive land uses and below the City's noise standard for stationary noise of 55 dBA L_{50} between the hours of 7 a.m. and 10 p.m. The park's hours of operation would be limited to between the hours of 7 a.m. and 10 p.m. Therefore, noise from operational activities would be a less-than-significant impact.

Table 3.11-8. Operational Noise, Grading Scenario 2

Noise Source	Location	Distance between Source and Receiver (feet)	Calculated Sound Level (dBA)
Field sports (lacrosse and softball)	Nearest residences (southwest of project site)	400	43
		940	34
		2,200	23
	Next-nearest residences (south of project site)	870	43
		1,500	34
		2,600	27
Parking noise (door slams, engine start-ups, car passbys)	Nearest residences (southwest of project site)	520	28
		1,190	19
		2,700	7
	Next-nearest residences (south of project site)	700	32
		1,400	23
		2,800	12
Parking lot maintenance (sweeper/vacuum)	Nearest residences (southwest of project site)	520	28
		1,190	19
		2,700	7
	Next-nearest residences (south of project site)	700	32
		1,400	23
		2,800	12

Note: Calculations based on FTA 1995.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

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Section 3.12

Paleontological Resources

Section 3.12
Paleontological Resources

Introduction

This section describes the environmental and regulatory setting for paleontological resources (fossil remains, such as bones, teeth, shells, and wood, occur naturally in sedimentary rocks and unconsolidated sediments), describes CEQA Thresholds of Significance applied to the impact analysis, analyzes the proposed project's potential impacts to paleontological resources resulting from implementation of the proposed project, and identifies any necessary mitigation measures that would reduce these impacts. Key sources of data used in the preparation of this section include the following:

- Orange County guidance on paleontological resources (Eisentraut and Cooper 2002).
- City of Lake Forest General Plan (City of Lake Forest 1994).
- City of Lake Forest Opportunities Study EIR (City of Lake Forest 2008b).
- Databases of paleontological resources, such as University of California Museum of Paleontology (UCMP), Los Angeles County Natural History Museum, and San Diego Natural History Museum.

Specific reference information is provided in the text.

Environmental Setting

According to the City's general plan, most of Orange County is sensitive for paleontological resources, and many discoveries have been made in the project area:

> Many of the geologic formations underlying Orange County contain important paleontologic resources, (fossil evidence of life from previous geologic periods). Paleontologic resources potentially occur throughout most of the City, (see Figure RR-6). Surveys within the City have revealed crocodile, bony fish, and shark fossils. Most fossil discoveries have occurred at the El Toro materials sand and gravel operation. Grading has most likely disturbed some of the paleontologic resources that were once present (page 27).

The paleontological resources associated with the three geologic units exposed in the project study area (i.e., very old axial-channel deposits, young axial-channel deposits, and the Oso Member of the Capistrano Formation) are described below. The units are also described in Section 3.5, Geology and Soils.

Axial-Channel Deposits

The UCMP database does not contain records of fossil finds in either of the axial-channel deposits, but it does contain several records of fossil finds in other continental units of Pleistocene age in Orange County (University of California, Berkeley Museum of Paleontology 2009). These deposits are assumed to correlate to the Pleistocene stream terrace deposits, which have yielded terrestrial vertebrate fossils (Eisentraut and Cooper 2002).

Oso Member of the Capistrano Formation

The bedrock geologic unit mapped on the site is Oso Member of the Tertiary-aged Capistrano Formation (Lawson & Associates Geotechnical Consulting, Inc. 2010). Surficial units consisting of stockpiled materials, documented and undocumented fill, and topsoil/colluvium overlie the bedrock material (Lawson & Associates Geotechnical Consulting, Inc. 2010). The Oso Member of the Capistrano Formation is highly fossiliferous. Several localities have been documented from the Oso Member on and adjacent to the project site. These localities have produced an extensive composite fossil fauna of predominantly marine vertebrates (Natural History Museum of Los Angeles County 2009).

A records search conducted by the Natural History Museum of Los Angeles County was performed for the project in November 2009. The record search for the project indicates that fossils have been found in and adjacent to the project study area. Sea lions (*Otariidae*), dugongid sea cows (*Dugongidae*), and horse fossils (*Pliohippus*) have been recorded from one locality in the study area (Natural History Museum of Los Angeles County 2009). Many fossils have also been recorded just outside the project study area. These fossils represent a composite fauna of primarily marine vertebrates. Species recorded include cartilaginous fish, such as sharks and rays; bony fish, such as salmon and sturgeon; leatherback turtles; crocodiles; diving birds; horses; rhinoceroses; camels; sea lions; and several types of whales, such as right, rorqual, and sperm whales (Natural History Museum of Los Angeles County 2009).

South of the project area in the vicinity of San Juan Capistrano and Dana Point, the unit contains late Miocene and early Pliocene foraminifera, shark teeth, echinoids, and whalebones (Morton and Miller 2006: 97). In addition, a nearly complete blue marlin (*Makaira nigricans*) skull was collected in the Oso Member near Mission Viejo, just south of the project area (Fierstine 2007). The database of the San Diego Natural History Museum contains many records of fossils from the Capistrano Formation in Orange County, including sharks (*Otodontidae* and *Cetorhinidae*), auk (*Alcidae*) (a type of flightless seabird), dolphin (*Pontoporiidae*), walrus (*Odobenidae*), seal (*Otariidae*), and camel (*Camelidae*) (San Diego Natural History Museum 2000). The UCMP database also has seven records of vertebrate fossils found in the Capistrano Formation. These records are of a baleen whale (*Balaenidae*), several birds (including *Oceanodroma hubbsi*, a type of sea bird), and cartilaginous fish (class *Chondrichthyes*, which includes the sharks, skates, and rays) (University of California, Berkeley Museum of Paleontology 2009).

Subsurface Geology

According to the Preliminary Geotechnical Evaluation, the Oso Member of the Tertiary Capistrano Formation is exposed across much of the project site and underlies the entire project site at depth. The Oso Member was deposited in a submarine fan complex environment. As encountered during the geotechnical investigation, these materials generally consist of medium to coarse, weakly cemented, very dense sandstone. The material is generally light gray to off white in color. In general, the Oso Member material was found to be moderately bedded, consistently dipping approximately 10 degrees to the west. Surficial units consisting of stockpiled materials, documented and undocumented fill, and topsoil/colluvium overlie the bedrock material (Lawson & Associates Geotechnical Consulting, Inc. 2010).

Data on the subsurface geology of the project site are limited. In some locations, it is estimated that the Oso Member is almost 1,500 feet thick (Morton and Miller 2006: 47). Depending on location, the Capistrano Formation may be underlain by either the Puente Formation or the Monterey Formation. In the project vicinity, the Oso Member is likely underlain by the Puente Formation (Department of Conservation, Division of Mines and Geology 2000: 24). The Puente Formation and Monterey Formation outcrop adjacent to the Capistrano Formation in the project vicinity (Morton and Miller 2006: map).

Sensitive Paleontological Resources and Assessment Criteria

The assessment of potential paleontological sensitivity presented in this EIR is based on professional judgment in light of published data. The evaluation criteria are the guidelines developed by Orange County (Eisentraut and Cooper 2002). Orange County has ranked the paleontological sensitivity of most of the sedimentary geologic units that occur in Orange County (Eisentraut and Cooper 2002). The geologic formations that contain the paleontotological resources are rated or ranked according to their paleontologic sensitivity, which, in turn, is determined by the scientific significance (importance) of the fossils: These rankings are based on the following criteria.

- Taxonomy—fossils that are scientifically judged to be important for representing rare or unknown taxa, such as defining a new species.
- Evolution—fossils that are scientifically judged to represent important stages or links in evolutionary relationships, or fill gaps or enhance under-represented intervals in the stratigraphic record.
- Biostratigraphy—fossils that are scientifically judged to be important for determining or constraining relative geologic (stratigraphic) age, or for use in regional to interregional stratigraphic correlation problems.
- Paleoecology—fossils that are scientifically judged to be important for reconstructing ancient organism community structure and interpretation of ancient sedimentary environments.
- Taphonomy—fossils that are scientifically judged to be exceptionally well or unusually/uniquely preserved, or are relatively rare in the stratigraphy.

Table 3.13-1 shows the sensitivity scale used by Orange County to classify the significance of the paleontological resources and the sensitivity ranking of geologic units.

Table 3.12-1. Orange County Sensitivity of Geologic Units in the Project Area

Sensitivity Rating*	Basis	Stratigraphic Unit	Stratigraphic Age
Very high	Scientifically very significant fossils and critical age—very important for research	Capistrano Formation (Oso Sand member and siltstone member)	Late Miocene to early Pliocene
		Monterey Formation	Middle to late Miocene
High	Quality preservation and scientifically significant fossils—important for research and/or very important for display	Puente	Late Miocene
		Nonmarine terrace deposits	Pleistocene

*Sensitivity ratings of formations/members can increase with improved productivity/increased significant of recovered fossils.

As discussed above, the geologic units exposed in the project study area have the potential to contain paleontological resources, including vertebrate fossils. According to the Orange County guidelines (Eisentraut and Cooper 2002), the Capistrano Formation has the highest sensitivity rating, a very high sensitivity for paleontological resources, which means fossils are considered as scientifically very significant and very important for research. In addition, fossils in the Capistrano Formation are well documented in the Natural History Museum of Los Angeles County, UCMP, and San Diego Natural History Museum databases and the scientific literature. The Oso Member of the Capistrano Formation is therefore considered highly sensitive for paleontological resources and contains fossils that are considered as scientifically very significant and important for research.

The Orange County guidelines (Eisentraut and Cooper 2002) rank nonmarine Pleistocene terrace deposits, which are assumed to include the axial-channel deposits found in the project area, as having a high sensitivity for paleontological resources. The UCMP database also contains several records of Pleistocene fossil finds in Orange County. Although none of these finds was from the Pleistocene strata exposed in the immediate project area, these units are nonetheless considered paleontologically sensitive, scientifically significant and are very important for display because of the large number of important vertebrate finds made in other continental sedimentary units of Pleistocene age throughout California.

Regulatory Setting

State

California Public Resources Code

Several sections of the California Public Resources Code protect paleontological resources. Section 5097.5 (a) states that no person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over the lands. Violation of this section is a misdemeanor. Section 5097.5 (b) states that "public lands" as used in this section means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.

Local

Lake Forest General Plan

The following goals and policies in the Recreation and Resources Element are intended to conserve the City's paleontological resources.

Goal 4.0: Conservation of important historic, archaeological, and paleontologic resources.

Policy 4.1: Protect areas of important historic, archaeological, and paleontologic resources.

Orange County

Orange County has established methods and standards to mitigate for impacts on paleontological resources (Eisentraut and Cooper 2002: 21). Orange County provides guidance on data collection, level of monitoring, and qualifications of the paleontologist. For data collection, Orange County has established specifics on data collection techniques (such as standardized data collection forms). These techniques and forms are provided in Eisentraut and Cooper (2002). The County has also established a system for correlating the paleontological sensitivity of the unit with the level of monitoring that may be needed (Table 3.13-2). Orange County also requires that the monitoring be conducted by an Orange County certified paleontologist (Eisentraut and Cooper 2002: 21).

Table 3.12-2. Orange County Guidance on Expected Field Monitoring Time Based on Paleontological Sensitivity of a Geologic Unit

Sensitivity	Field Time
Very high	Full
High	Minimum three-quarter
Moderate	Half
Low	One-quarter
None	No

Notes:

Full-time and three-quarter time monitoring do not refer to a single person for the project but to a person per single area of concentrated grading activity. If a project has more than one area of concentrated grading activity, more monitors may be required.

If paleontological resources are discovered that merit increased monitoring, the field time needed should be left to the paleontologist.

Source: Eisentraut and Cooper 2002: 24.

Project Impacts and Mitigation Measures

Paleontological resources, including fossil remains and associated scientific data, fossil sites and fossiliferous rocks, could be affected by the direct and indirect environmental impacts accompanying the excavation activities for the construction of the fields and building pads, roads, parking lots, and slope modification. The impacts associated with the paleontological resources are discussed below. Mitigation measures are provided, where appropriate.

Methodology

Impacts on paleontological resources were evaluated according to guidelines developed by Orange County Archaeological and Paleontological Guidelines, Procedures and Policies (Eisentraut and Cooper 2002).

Thresholds of Significance

Because the City's 2010 CEQA Significance Thresholds do not cover paleontological resources, the following thresholds of significance are based on Appendix G of the 2010 CEQA Guidelines. For purposes of this section of the EIR, implementation of the proposed project would create a potentially significant impact if any of the following conditions would occur as a result of such implementation:

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

According to the County's Archaeological and Paleontological Guidelines, Procedures and Policies, the definition of significant paleontological resources is based on the scientific significance of the fossils, which is related to its rarity, quality of preservation, geologic age, and paleoecology (see Sensitive Paleontological Resources and Assessment Criteria above) (Eisentraut and Cooper 2002, 12). The potential significance level (high, low, unknown, or none) of project impacts is based on the paleontological sensitivity of the formation underlying the area and the potential for disturbing fossil localities and remains therein. The impacts on any fossil locality containing identifiable remains, as well as on the fossiliferous bed that produced them, depends on the paleontological sensitivity of the formation in which the locality and bed occur, the extent of the impact, and the occurrence of other comparable remains nearby. Based on the information contained in the geologic reports and record search conducted for the proposed project, it was concluded that the geologic units found on site have a high to very high potential to contain significant fossils.

Impacts and Mitigation Measures

Impact PALEO-1: The proposed project would result in the destruction of significant paleontological resources as a result of construction activities.

According to the County's paleontological sensitivity guidelines, all geologic units in the project area have been identified as having a high to very high paleontological sensitivity rating and the fossils found within these geologic units are considered as scientifically very significant and very important for research and display (Eisentraut and Cooper 2002: 13) . According to the Natural History Museum of Los Angeles County (2009), any excavation in the Capistrano Formation is likely to encounter fossils. Any fossils present could be damaged or destroyed as a result of earthwork during project construction. Substantial damage to or destruction of fossils associated with the geologic units found at the project site(Eisentraut and Cooper 2002: 13) would result in a potentially significant impact.

Mitigation Measures

Implementation of Mitigation Measures Paleo-1 through Paleo-7 would reduce impacts to a less-than-significant level.

Mitigation Measure Paleo-1: Conduct Preconstruction Survey, Salvage, and Protection in all Paleontologically Sensitive Areas.

Before site preparation (including vegetation clearing) and project earthwork begin, the City will retain an Orange County–certified professional paleontologist to conduct a surface survey and salvage operation in all parts of the project site where paleontologically sensitive materials are exposed at the surface. The goal of the operation will be to ensure that exposed paleontological materials are recovered and properly prepared and curated, or protected from damage using exclusion fencing or other appropriate means. Protection measures will be designed and installed in consultation with the City and the project engineering consultant to ensure that it is appropriate and effective but does not unduly impede construction activities. The work will be conducted in conformance with the Orange County guidelines as defined in Eisentraut and Cooper (2002) and meet the requirements for surface prospecting and surface collection.

Mitigation Measure Paleo-2: Educate Construction Personnel in Recognizing Fossil Material.

The City will ensure that all construction personnel receive training provided by an Orange County–certified professional paleontologist experienced in teaching non-specialists to ensure that they can recognize fossil materials in the event any are discovered during construction.

Mitigation Measure Paleo-3 (OSA MM 3.5-5): Retain a Qualified Professional Paleontologist to Monitor Ground-Disturbing Activities.

Prior to issuance of a grading permit, a qualified paleontologist shall be retained by the City to provide professional paleontological services. Specifically, during grading activities, the qualified paleontologist shall conduct on-site paleontological monitoring for the project site. Monitoring shall include inspection of exposed surfaces and microscopic examination of matrix to determine if fossils are present. The monitor shall have authority to divert grading away from exposed fossils temporarily in order to recover the fossil specimens. Cooperation and assistance from on-site personnel will greatly assist timely resumption of work in the area of the fossil discovery.

Mitigation Measure Paleo-4: Stop Work if Fossil Remains Are Encountered During Construction; Conduct Treatment as Appropriate.

If fossil remains are discovered during project-related activities, activities in the vicinity of the find will stop immediately until a qualified professional paleontologist can assess the nature and importance of the find and a qualified professional paleontologist can recommend appropriate treatment. Treatment may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection and may also include preparation of a report for publication describing the finds. The City will be responsible for ensuring that recommendations regarding treatment and reporting are implemented. The work will be conducted in conformance with the Orange County guidelines as defined in Eisentraut and Cooper (2002) and meet the requirements for recovery, salvage, laboratory preparation, preparation to the point of taxonomic identification, transferral, and preparation and submittal.

Mitigation Measure Paleo-5 (OSA MM 3.5-6): Prepare Monthly Progress Reports.

The qualified paleontologists retained shall prepare monthly progress reports to be filed with the City.

Mitigation Measure Paleo-6 (OSA MM 3.5-7): Prepare, Identify and Catalog Recovered Fossils.

Fossils recovered shall be prepared, identified, and catalogued before donation to the accredited repository designated by the City of Lake Forest.

Mitigation Measure Paleo-7 (OSA MM 3.5-8): Prepare Final Paleontological Monitoring Report.

The retained qualified paleontologist shall prepare a final report to be filed with the City. The report shall include a list of specimens recovered, documentation of each locality, interpretation of fossils recovered and shall include all specialists' reports as appendices.

Residual Impacts

With implementation of the mitigation measures identified above, impacts would be reduced to less-than-significant levels.

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Section 3.13

Public Services and Utilities

Section 3.13
Public Services and Utilities

Introduction

This section describes the environmental and regulatory setting for public services and utilities. It also describes the CEQA thresholds of significance, potential impacts on public services and utilities and service systems resulting from implementation of the proposed project, and necessary mitigation measures to reduce impacts. This includes impacts related to the availability of emergency service providers (fire and police), the availability of water supplies from existing entitlements and resources, and the availability of wastewater infrastructure to serve the project's projected demand in addition to the provider's existing commitments. Impacts related to wastewater treatment and solid waste, as well as schools and libraries, were determined to be less than significant during the scoping period and will not be discussed further in this draft EIR.

Information used to prepare this section was taken from various sources, including the City of Lake Forest General Plan and General Plan Final Master EIR, the Opportunity Study Program, the Irvine Ranch Water District Urban Water Management Plan, the Fuscoe Engineering Utility Report for the Opportunity Study Program, the Final Lake Forest Opportunities Study Program Environmental Impact Report, the Draft Lake Forest Area Sub-Area Master Plan, and written and verbal communication from various service providers.

The City received one comment letter concerning public utilities in response to the notice of preparation (NOP). The IRWD stated that the project may increase sewer demand and that a Water Supply Assessment may need to be prepared for the project. The letter requested that the draft EIR discuss the use of or demand for recycled water and advised that IRWD owns various facilities in the project area.

Environmental Setting

Public Services

Public services described in this draft EIR include emergency response services provided by the Orange County Fire Authority (OCFA) and the Orange County Sheriff's Department (OCSD).

Fire Services

The OCFA is a regional fire service agency that provides structure fire protection, emergency medical and rescue services, hazardous inspections and response, and public education activities to 23 member agencies in Orange County (including cities and unincorporated areas) (OCFA 2005). As of June 2009, OCFA was made up of six divisions, eight battalions, 62 fire stations (including two specialty), 863 firefighters (captain, engineer, pilot, etc.), and 41 fire management personnel (battalion and division chiefs) (OCFA 2009d). In 2008/2009, and forecast for 2010, there has been a hiring freeze because of declining property tax revenues in the area (OCFA 2009d). A total of 31 positions were frozen in mid-year 2008/2009, and 31 additional positions were frozen in

2009/2010 (OCFA 2009d). It is expected that most of these positions will remain frozen throughout 2010; however, vacant captain and engineer positions are expected to be filled slowly over the next year (OCFA 2009d). In 2009, the OCFA had a total of 82,549 incidents; the City of Lake Forest represented 4,272 of those incidents (5.2%) (OCFA 2009c). Response times in the City of Lake Forest vary based on the level of emergency. According to the 2009/2010 budget report for OCFA, the service ratio of firefighters to residents has remained relatively constant, while emergency call loads have increased by approximately 30%; however, between 2001 and 2009, the average response time for emergency calls has remained relatively constant, at a little over 5 minutes per call, which is considered adequate (OCFA 2009c).

According to the OCFA Fire Hazard Map, as well as the Statewide CalFire Map, the proposed project is not located in an area designated as a Special Fire Protection Area or within an area designated by the state as a Fire Hazard Severity Zone (OCFA 2009b; CalFire 2007).

There are a total of six fire stations within the vicinity of the proposed project that would provide fire services to the proposed project. These fire stations are described below in Table 3.13-1.

Table 3.13-1. Fire Stations in the Project Vicinity

Station No.	Address	Distance and Direction from Project Site	Description
No. 54	19811 Pauling Avenue, Lake Forest	0.75 mile north	This station employs three captains, three engineers, and three firefighters and houses one engine and a search and rescue task force. In 2008, this station experienced a total of 1,048 calls.
No. 42	19150 Ridgeline Road, Lake Forest	2.24 miles northeast	This station employs three captains, three engineers, and three firefighters and houses two engines. In 2008, this station experienced a total of 518 calls.
No. 31	22426 Olympiad Road, Mission Viejo	2.26 miles southeast	This station employs three captains, three engineers, and nine firefighters and houses two engines and one medic vehicle. In 2008, this station experienced a total of 4,322 calls.
No. 38	26 Parker, Irvine	2.88 miles southwest	This station employs three captains, three engineers, and nine firefighters and houses one engine and one medic vehicle. In 2008, this station experienced a total of 2,607 calls.
No. 19	23022 El Toro Road, Lake Forest	3.43 miles southwest	This station employs three captains, three engineers, and three firefighters and houses one engine and squad car. In 2008, this station experienced a total of 3,936 calls.
No. 45	30131 Aventura, Rancho Santa Margarita	3.46 miles southeast	This station employs three battalion chiefs, six captains, six engineers, and 12 firefighters and houses one battalion vehicle, one engine, and one truck. In 2008, this station experienced a total of 4,035 calls.

Police Services

The OCSD is responsible for providing law enforcement protection within unincorporated areas of the county as well as those incorporated cities, including the City of Lake Forest, that contract with OCSD for protection. The California Highway Patrol (CHP) also provides police services in the region but is limited primarily to the state and interstate highways. However, CHP does provide secondary support services to both county and city police service providers when the need arises.

The proposed project is located within the service area of the South Orange County Sheriff's Department substation in Aliso Viejo. Additionally, management staff is stationed at Lake Forest City Hall to assist in the management of criminal activity and administer crime prevention programs in the City. The City and the project area are currently served by the OCSD Community Policing Center located at 25550 Commercentre Drive, which is responsible for public safety and general law enforcement, including patrol services, traffic enforcement and criminal investigation. The Police Services Department also provides a variety of community policing programs for the public including crime prevention, community awareness, crossing guards, neighborhood watch, business watch, and the community police trailer.

The Police Services Department has established service goals and response times for emergency calls. It is the goal of the City to work with the OCSD to ensure that service corresponds to the number of residents and businesses in the City as well as current crime problems (City of Lake Forest 1994). Average response times range from 7minutes and 21 seconds for Priority 1 calls to 21 minutes and 30 seconds for Priority 3 calls. These are considered adequate response times for the project area and the OCSD (Dawes pers. comm.). As of April 2010, the Orange County Sheriff's Department has 1,851 sworn personnel, while the City of Lake Forest has 47. Of the 47 sworn personnel in Lake Forest, 38 are assigned for patrol (Cervantes pers. comm.).

Utilities and Service Systems

Utilities and service systems described in this draft EIR include water supply and wastewater treatment and transmission provided by IRWD. The water supply and treatment portion of this section is based on supply and demand data from IRWD.

Water Supply Services

The City of Lake Forest is served by the El Toro Water District, the Trabuco Canyon Water District, and the IRWD. The IRWD would be the main water supply provider to the project area.

IRWD provides potable and nonpotable water supply and wastewater treatment services to a population of approximately 325,000 covering an area of 132 square miles. The IRWD service area boundary, which includes all of the City of Irvine and a majority of the City of Lake Forest, is bounded by the Cities of Tustin, Santa Ana, Costa Mesa, and Newport Beach to the west; the Pacific Ocean and Laguna Beach to the south; the Santa Ana Mountains to the north; and the City of Lake Forest to the east. The potable and nonpotable water supply services are each described separately below, as both are relevant to the proposed project.

Potable Water Supply System

Currently, approximately 50% of the IRWD potable water supply comes from imported water deliveries purchased from the Metropolitan Water District of Southern California (MWD). The balance of the IRWD potable supplies come from locally-developed groundwater, primarily the Dyer

Road Well Field (DRWF) and the Deep Aquifer Treatment System (DATS), both located in the City of Santa Ana. Other groundwater sources include the Irvine Subbasin wells and the Irvine Desalter. The DRWF produces groundwater from the principal aquifer of the Orange County Groundwater Basin and the DATS wells produce groundwater from a deeper aquifer generally assumed to be below the principle aquifer. The Orange County Groundwater Basin is managed by the Orange County Water District (OCWD). Under agreement with OCWD and the City of Santa Ana, IRWD has an annual production limit of 28,000 acre-fee per year (AFY) in the DRWF and 8,000 AFY from the DATS wells. Currently, 18 wells with a capacity of 5 cubic feet per second (cfs) per well are operational. The groundwater produced from these systems is conveyed to the IRWD distribution system via a 54-inch-diameter transmission main located in Dyer Road in the City of Irvine. According to the IRWD, annual potable water demand is expected to increase from about 67,700 AFY in 2005 to 95,600 AFY at General Plan buildout in 2025 (City of Lake Forest 2008a). Within the project area, there is a 16-inch water main located in Portola Parkway and Rancho Parkway, and an 8-inch water main located within Vista Terrace (Fuscoe Engineering 2005). There are currently no capacity problems within the water supply mains to the proposed project (Lew pers. comm.).

Reclaimed / Nonpotable Water Supply System

The City's existing nonpotable water system is supplied by four primary sources: reclaimed water produced at the Michelson Water Reclamation Plan (MWRP) and Los Alisos Water Reclamation Plant (LAWRP); native water collected and stored at Irvine Lake; untreated water purchase from MWD; and groundwater from the Irvine Subbasin and the Irvine Desalter. The nonpotable water system delivers reclaimed water, supplemental untreated water, and limited nonpotable water usage (toilets), and various industrial users. Irvine Lake provides storage and captures local runoff for the untreated water system, and delivers through the Irvine Lake Pipeline. Sand Canyon and Rattlesnake reservoirs provide storage for reclaimed water within the system. According to IRWD, annual nonpotable water demand is expected to increase from about 1,530 AFY in 2005 to 2,052 AFY at General Plan buildout in 2025 (City of Lake Forest 2008a). Water mains providing reclaimed/irrigation water to the project area are located in Portola Parkway and Rancho Parkway (Fuscoe Engineering 2005). An existing 16-inch reclaimed water line is located within the Glass Creek property, running west to east from the reservoir west of the site toward the commercial center at the corner of El Toro and Portola and connecting to a reclaimed water main in Portola Parkway. There are no current capacity issues associated with this reclaimed water line (Lew pers. comm.).

Existing Project Site Water Demand

The Glass Creek property is currently vacant and undeveloped and does not have an existing water demand. The mining operations located in the northeastern portion of the project area have not had any demands since 2007 (Lew pers. comm.) .

The project area is vacant and undeveloped; there is no existing water demand (Lew pers. comm.).

Wastewater/Sewer System

Wastewater generated in the City of Lake Forest is conveyed and treated by Los Alisos Water Reclamation Plant (LAWRP). Treatment at LAWRP is comprised of a pond system for biological treatment followed by a conventional treatment process consisting of rapid mix, floculation, sedimentation, and filtration. Tertiary treated reclaimed water produced at the plant is disinfected with chlorine, and meets Title 22 requirements. Effluent that is not reclaimed to meet irrigation demands is sent to the South Orange County Water Agency (SOCWA) outfall for ocean disposal. This water receives secondary treatment only. The current capacity of the Los Alisos Water Reclamation Plant is 7.8 million gallons per day (mgd), and the average daily flow to the plant is currently 4.3 mgd. There are no capacity issues at this plant (Lew pers. comm.).

Within the project area there is a 12-inch sewer stub located in Portola parkway and Rancho Parkway, and an 8-inch sewer stub in Vista Terrace. There are currently no capacity issues with either of these sewer lines (Lew pers. comm.).

Regulatory Setting

Water Supply and Wastewater Treatment

Federal and State

IRWD is responsible for meeting federal and state laws and regulations regarding water supply and water quality. Such regulations include water supply treatment system testing and monitoring as specified in Title 23, Division 4, Chapter 1, Article 4, of the California Code of Regulations (CCR) and federal regulations promulgated by the U.S. Environmental Protection Agency (EPA).

California Health and Safety Code

State fire regulations are set forth in Sections 13000 *et seq.* of the California Health and Safety Code, which include regulations concerning building standards (as also set forth in the California Building Code), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

Urban Water Management Planning Act (California Water Code, Division 6, Part 2.6, Sections 10610 et seq.)

The Urban Water Management Planning Act was developed due to concerns for potential water supply shortages throughout the State of California. It requires information on water supply reliability and water use efficiency measures. Urban water suppliers are required, as part of the act, to develop and implement Urban Water Management Plans (UWMPs) to describe their efforts to promote efficient use and management of water resources. IRWD completed its most recent UWMP in 2005.

Water Conservation Projects Act

The State of California's requirements for water conservation are codified in the Water Conservation Projects Act of 1985 (Water Code Sections 11950–11954), as reflected below:

> 11952. (a) It is the intent of the Legislature in enacting this chapter to encourage local agencies and private enterprise to implement potential water conservation and reclamation projects….

Local

City of Lake Forest General Plan

The following goals and policies are related to public services and utilities, and are generally relevant to the proposed project.

Recreation and Resources Element

Water Supply and Treatment

Goal 2.0: Preservation and enhancement of important natural resources and features.

Policy 2.2: Coordinate water quality and supply programs with the responsible water agencies.

Policy 2.3: Encourage the expansion of reclaimed water production and use.

Public Facilities/Growth Management Element

Water Supply and Treatment and Wastewater Treatment

Goal 1.0: Effective coordination with local water and sewer service districts.

Policy 1.1: Work closely with local water and sewer districts in determining and meeting community needs for water and sewer service.

City of Lake Forest Municipal Code

Chapter 7.08 (Standards of Design)

Section 7.08.110 (Sewers) of this chapter requires that all lots intended for development shall be connected to a sanitary sewer system unless the Health Officer has determined that each lot is adequate to accept a private septic system.

Public Services

Local

City of Lake Forest General Plan

The Land Use Element of the City's General Plan contains several goals and policies related to public services that would be applicable to the proposed project. These goals/policies include:

Goal 1.0: A balanced land use pattern that meets existing and future needs for residential, commercial, industrial, and community uses.

Policy 1.1: Achieve a land use composition in Lake Forest that promotes a balance between the generation of public revenues and the costs of providing public facilities and services.

Goal 3.0: New development that is compatible with the community

Policy 3.1: Ensure that new development fits within the existing setting and is compatible with the physical characteristics of available land, surrounding land uses, and public infrastructure availability.

Policy 3.3: Ensure that the affected public agencies can provide necessary facilities and services to support the impact and intensity of development in Lake Forest and in areas adjacent to the City.

Goal 4.0: New development conforming to the established planned community development plans and agreements

Policy 4.2: Ensure that all proposed amendments to approved planned community development plans and agreements will not create unacceptable impacts to surrounding existing and planned development, the natural characteristics of the sites, fiscal stability of the City, and the public facilities and services that support development.

Project Impacts and Mitigation Measures

This section presents a discussion of potential impacts to public services and utilities from construction and operation of the proposed project. Mitigation measures are provided where necessary to reduce potential impacts.

Methodology

To estimate the potential for implementation of the proposed project to affect levels of service for utilities and service systems in a manner to require new or physically altered facilities, future demands on these services were estimated based on the increase public facilities that would result from implementation of the proposed project. The analysis of utility and service systems impacts is based on the increases in demand compared to existing and projected service levels.

Thresholds of Significance

During the NOP and scoping process for the proposed project, some public service and utilities impacts were found to result in "less than significant" or "no impact" analysis from project implementation and, therefore, were not carried forward as part of this draft EIR. The impacts that have been removed from further analysis include impacts related to

- schools,
- libraries,
- other public facilities, and
- solid waste.

Because the City's Significance Thresholds Guide does not address utilities and service systems, impacts are evaluated using Appendix G of the 2010 CEQA Guidelines. For purposes of this draft EIR, the proposed project would result in significant impacts related to utilities and public services if it would:

- Result in substantial adverse physical impacts associated with the provision of 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 any of the following public services:
    - fire protection,

  - police protection; and

- Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? In making this determination, the City shall consider whether the project is subject to the water supply assessment requirements of Water Code Section 10910, et. seq. (Senate Bill [SB] 610), and the requirements of Government Code Section 664737 (SB 221).
- 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.

Impacts and Mitigation Measures

Impact PSU-1: The proposed project would result in substantial adverse physical impacts associated with the provision of 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.

Impacts to emergency fire and police protection related to the construction and operations of the proposed project are discussed separately below.

Construction

During construction of the proposed uses, emergency/security services could be required periodically at the site. However, construction sites are typically fenced and have security personnel onsite. During the duration of construction of the proposed project, it is likely that there may be an increase in emergency response needs for such things as worker related injuries, thefts, or trespassing. This increase would be temporary and is not expected to require the need for additional police and fire personnel or additional facilities and equipment such that there would be a significant impact to the provision of services that would require construction of new facilities.

Operations

Operation of the proposed project would increase the use of the site for recreational activities by local residents, which would lead to an increased demand in the area for local emergency services, including police and fire. Increased use of the park would occur due to the active use park amenities (baseball and soccer fields, basketball and tennis courts, tot lots, recreation center, etc) planned for the proposed project, as well as well as the passive uses (hiking and biking trails).

Currently, the City does not have standard criteria for evaluating acceptable service levels for police response. However, as indicated in the previous discussion of current response services provided, response levels for the proposed project area are considered adequate; averaging at seven minutes and 21 seconds for Priority 1 calls (Dawes pers. comm.). The ability of the OCSD to support the needs of future growth is dependent on their financial ability to hire additional sworn personnel. Generally, staffing needs are addressed in OCSD's annual budgeting process. The City's General Plan has established goals and policies (listed above) to address these issues and to ensure compliance with standard levels of service. These include ensuring that the affected public agencies can provide necessary facilities and services to support the impact and intensity of development in Lake Forest and in areas adjacent to the City. Implementation Policy 13 in Appendix A (Implementation Program) of the City's General Plan prescribes specific actions to implement the goals of providing substantive levels of police protection, including ensuring that contracted staffing levels correspond to the population and geography of the City when renewing the service contract with the OCSD; ensuring that mutual aid agreements between the OCSD and police departments of surrounding jurisdictions are in place for emergency situations; using defensible space and light concepts in development project design to enhance public safety; and continue to administer and effective graffiti removal and avoidance program. Therefore, this project would not create a need for new police facilities. With these provisions in place, the proposed project would not significantly impact the OCSD's ability to provide emergency services to the area. Impacts would be less than significant.

Increases in the amount of local residents using the project site may impact the ability for the OCFA to maintain their existing response time, which is considered adequate (OCFA 2009d). Between 2005 and 2010 population growth in the Lake Forest area has been negligible. In 2005, the City's population was estimated at 77, 638 and grew slightly to 78,720 in 2010 (California Department of Finance 2010a). Housing growth in the City has also been negligible over the past 5 years. The total estimated housing units in the City went from 26,385 in 2005 to 26,384 in 2010 (California Department of Finance 2010b). Over the past 4 years, the ratio of firefighters to 10,000 residents has remained constant (approximately six), even with the increased incidence of calls received (approximately 85,000 in 2009) response times have also remained constant (around 5 minutes). However, at this time there is a current hiring freeze within the OCFA and it is unknown when this freeze will be removed. Should the proposed project increase incidents and calls for the area, impacts to OCFA may result as they are currently not able to increase firefighter provisions due to the hiring freeze. Therefore, increases in the number of firefighters to serve the area may be necessary as a result of increased incidences and emergency calls. However, it is unlikely that the proposed project would need additional fire facilities or stations in the area, as there are currently a number of stations within the vicinity of the proposed project. While potential increases in service demands and the resulting potential increase to response times may occur, impacts are considered less than significant because the project would not result in the construction of new facilities that could cause significant environmental impacts.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact PSU-2: The proposed project would have sufficient water supplies available to serve the project from existing entitlements and resources.

The proposed project would generate a water demand of approximately 198 acre-feet per year. Table 3.13-2 describes the different demand factors for each project element and area.

The proposed project's water demand was analyzed in IRWD's Draft Lake Forest Area Sub-Area Master Plan. It is noted within the report that planned expansions to the existing distribution system and established pressure zones would be able to provide for all of the planned projects within the draft master plan, including the Proposed Sports Park (Dudek 2010).The total water supplies available to IRWD during normal, single-dry and multiple-dry years within a 20-year projection will meet the projected water demand of the proposed project in addition to the demand of existing and other planned future uses. Furthermore, the estimated water demand for the proposed project is considered to be conservative and represents a worst-case scenario as it does not include the reduction in water demand that would occur should the project use artificial turf for a portion of its play fields, as well as the potential use of reclaimed water for irrigation and restroom facilities. These potential project components would substantially reduce the estimated water demand for the project. As it is the intent of the City to include these types of components in the proposed project design plans, it is expected that water demand would be further reduced compared to the above estimates. In the comment letter received during the scoping period, IRWD stated that reclaimed water would be made available for the proposed project. Impact would be less than significant.

In addition, the projected water demand for the proposed sports park project was analyzed in the Water Supply Assessment that was prepared by IRWD in January 2005 for the OSA Program EIR. IRWD has confirmed that the proposed project is covered under the expected water demand for build out of the OSA area (Welch pers. comm). No impacts are anticipated since it has been confirmed by the local water provider that there would be sufficient water supplies available to serve the project from existing entitlements and resources.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact PSU-3: The proposed project would 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.

The proposed project would generate wastewater flows from the recreation center as well as restroom and concession facilities located throughout the park. Wastewater flow generation factors are not estimated by IRWD for Community or Regional Parks due to that fact that flows are generally very low compared to residential and commercial land uses, and are rarely considered to have flow increases that would have significant impacts. However, due to the planned recreation center at the sports park, it was considered that a more-than-average parkland wastewater flow would be created on site, and the recreation center was analyzed for wastewater flow increases. The recreation center will be located in the northerly portion of the development area with a likely

Table 3.13-2 Project Water Demand Estimates

Project	Land Use	Project size (acre/sf)	Proposed Asphalt* (acre/sf)	Adjusted Project Size (Project Size – Proposed Asphalt) (acre/sf)	Irrigation Factor** (gal/ac-sf/day)	gal/ac-sf/day	gal/year	AFY
Glass Creek	Park – Community	34	7	27	3,400	90,610	33,072,650	101.50
	Comm. – Recreation ***	30	n/a	30	60	1,800	657,000	2.02
Rados	Park – Community	12	3	9	3,400	31,620	11,541,300	35.42
Baker Ranch	Park – Community	18	2	16	3,400	53,040	19,359,600	59.41
TOTALS						143,650	64,630,550	198.34

* Proposed asphalt estimates are derived from construction assumptions provided by RJM Design Group Inc. (June 2009).

** Irrigation factors are found from the Water Resources Master Plan (2002).

*** Comm. – Recreation represents a 30,000 sf recreation center. Demand factor of 60 gal/KSF/day.

sewer connection at Vista Terrance, feeding to the trunk pipeline in Lake Forest Drive. It was estimated in the 2010 Draft IRWD Lake Forest Area Sub-Area Master Plan, that the proposed sports park, at the peak dry weather flow, would create an estimated wastewater flow of 1,580 gallons per day (gpd). The proposed project's wastewater demand was analyzed in IRWD's Draft Lake Forest Area Sub-Area Master Plan. It is noted within the report that the existing wastewater system would be able to provide for the proposed project (Dudek 2010).

The Los Alisos Water Reclamation Plant (LAWRP) would provide wastewater service needs to the project area. The LAWRP has an existing capacity of 7.8 mgd with an average daily flow of 4.3 mgd; the remaining daily average capacity of the plant is approximately 3.5 mgd. The proposed project's estimated 1,580 gpd would be a minimal amount of increased flow when compared to the average daily flow, and would not create a significant increase to the remaining 3.5 mgd capacity of the LAWRP. The capacity of the plant is currently adequate, and there are no existing capacity issues within the sewer lines adjacent to the project. According to the Lake Forest Area Sub Area Master Plan, two gravity mains are being planned by IRWD for construction along the northern border of the sports park and near Vista Terrace on the western side of the sports park (Dudek 2010). These will assist in moving wastewater from the sports park adequately. It is anticipated that the flows from the proposed sport parks would be adequately managed through the LAWRP. (Lew pers. comm.; Dudek 2010).

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

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Section 3.14
Transportation and Circulation

Section 3.14
Transportation and Circulation

Introduction

This section describes the existing conditions relative to transportation and circulation, the regulatory setting associated with transportation and circulation, the traffic and circulation impacts on the transportation network that would result from the project, and mitigation measures that would reduce potential impacts. The study area for the transportation and traffic analysis includes the immediate project area and surrounding roadways that could potentially be affected by traffic generated by the proposed project during construction and after the project is completed. Existing traffic conditions and impacts caused by the proposed project that are described in this section are primarily based on the City of Lake Forest Sports Park and Recreation Center Traffic Studies prepared by Austin-Foust Associates (2010a and 2010b). The traffic study it its entirety is provided in Appendix G.

The California Department of Transportation (Caltrans) District 12 and cities of Rancho Santa Margarita, Irvine, and Mission Viejo provided comment letters during the NOP scoping period. The comments have been considered and the issues identified by these agencies have been addressed in this EIR where applicable.

Environmental Setting

As discussed in Chapter 2, the proposed project is located in the northeastern portion of the City of Lake Forest, in the County of Orange. The proposed project site encompasses approximately 90 gross acres of land in the northeastern portion of the City near the intersection of Portola Parkway and El Toro Road. The City is bordered by the cities of Laguna Hills and Laguna Woods to the southwest, Irvine to the west, and Mission Viejo to the east and southeast. Regional access to the project site is provided by SR-241 (Foothill Transportation Corridor), located to the north of the project site, and Interstates 5 (I-5) and 405 (I-405) to the southwest.

Regional Roadway Network

The following is a description of the existing regional roadway network including the locations of on- and off-ramps in the study area:

- **Interstate 5 (I-5)** is a 10-lane freeway providing the primary regional access to the study area, which is located at the south end of the City. I-5 extends from Northern California to San Diego and serves as a major commuter route between Los Angeles County and Orange County. In the vicinity of the traffic study area, I-5 has southbound and northbound on- and off-ramps at Lake Forest Drive and at El Toro Road. At Lake Forest Drive, there is a southbound direct on-ramp and a loop on-ramp. At El Toro Road, there are both northbound and southbound direct and loop on-ramps. I-5 has auxiliary lanes northbound and southbound between Lake Forest Drive and El Toro Road.

- **State Route 241 (SR-241)** a four-lane tollway providing the primary regional access to the project study area, which is located at the north end of the City. SR-241 is a 12-mile tollway that travels parallel to I-5, connecting the Eastern Toll Road outside of the City of Irvine with Oso Parkway near the City of Mission Viejo. In the vicinity of the study area, SR-241 has southbound and northbound on- and off-ramps at Alton Parkway and at Portola Parkway, as well as a northbound on-ramp and southbound off-ramp at Lake Forest Drive. There are auxiliary lanes northbound and southbound between the Lake Forest City limits and Bake Parkway.
- **El Toro Road, Trabuco Road, and Muirlands Boulevard** are three roadways with regional traffic characteristics within the City of Lake Forest that carry traffic to and from areas outside the City. According to the County of Orange Master Plan of Arterial Highways (MPAH), El Toro Road at its ultimate capacity is an eight-lane major arterial between I-5 and Trabuco Road, and a six-lane major arterial between Trabuco Road and Live Oak Canyon Avenue. Trabuco Road within the City limits between Bake Parkway and El Toro Road is a six-lane major arterial, and Muirlands Boulevard is considered a four-lane primary arterial.

Local Roadway Network

The following is a description of the existing local roadway network in the study area, including the number of lanes and the roadway classification per the City of Lake Forest General Plan. The existing circulation system within the study area is shown in Figure 3.14-1.

- **El Toro Road** is a north/south commercial street from I-5 to Muirlands Boulevard; an eight-lane divided principal arterial from Muirlands Boulevard to Trabuco Road; and a six-lane divided major arterial from Trabuco Road north to the City limit and from Glenn Ranch Road to the City limit. El Toro Road also provides regional access to the project site. It serves as a major commuter route between I-5 and SR-241. In the City of Laguna Hills, El Toro Road between Avenida De La Carlota and I-5 is a north/south six-lane street.
- **Portola Parkway** is an east/west six-lane divided major arterial from Alton Parkway to SR-241, then a north/south eight-lane divided principal arterial from SR-241 to El Toro Road.
- **Los Alisos Boulevard** is a north/south six-lane divided major arterial from I-5 to the City limit. In the Cities of Laguna Hills and Mission Viejo, Los Alisos Boulevard between Paseo de Valencia and Trabuco Road is a north/south street.
- **Bake Parkway** is a north/south four-lane divided primary arterial within the study area from Trabuco Road to Portola Parkway.
- **Lake Forest Drive** is a north/south commercial street from I-5 to Muirlands Boulevard; a six-lane divided major arterial from Muirlands Boulevard to Trabuco Road; a four-lane divided primary arterial from Trabuco Road to Rancho Parkway; and a commercial street from Rancho Parkway to Portola Parkway. In the City of Laguna Hills, between Moulton Parkway and I-5 it is an east/west street.
- **Trabuco Road** is an east/west six-lane divided major arterial. In the City of Mission Viejo, between Lake Forest City limits and Los Alisos Boulevard, it is an east/west street.
- **Rancho Parkway** is an east/west four-lane divided primary arterial from Bake Parkway to its eastern terminus, and a commercial street from Bake Parkway to its western terminus.

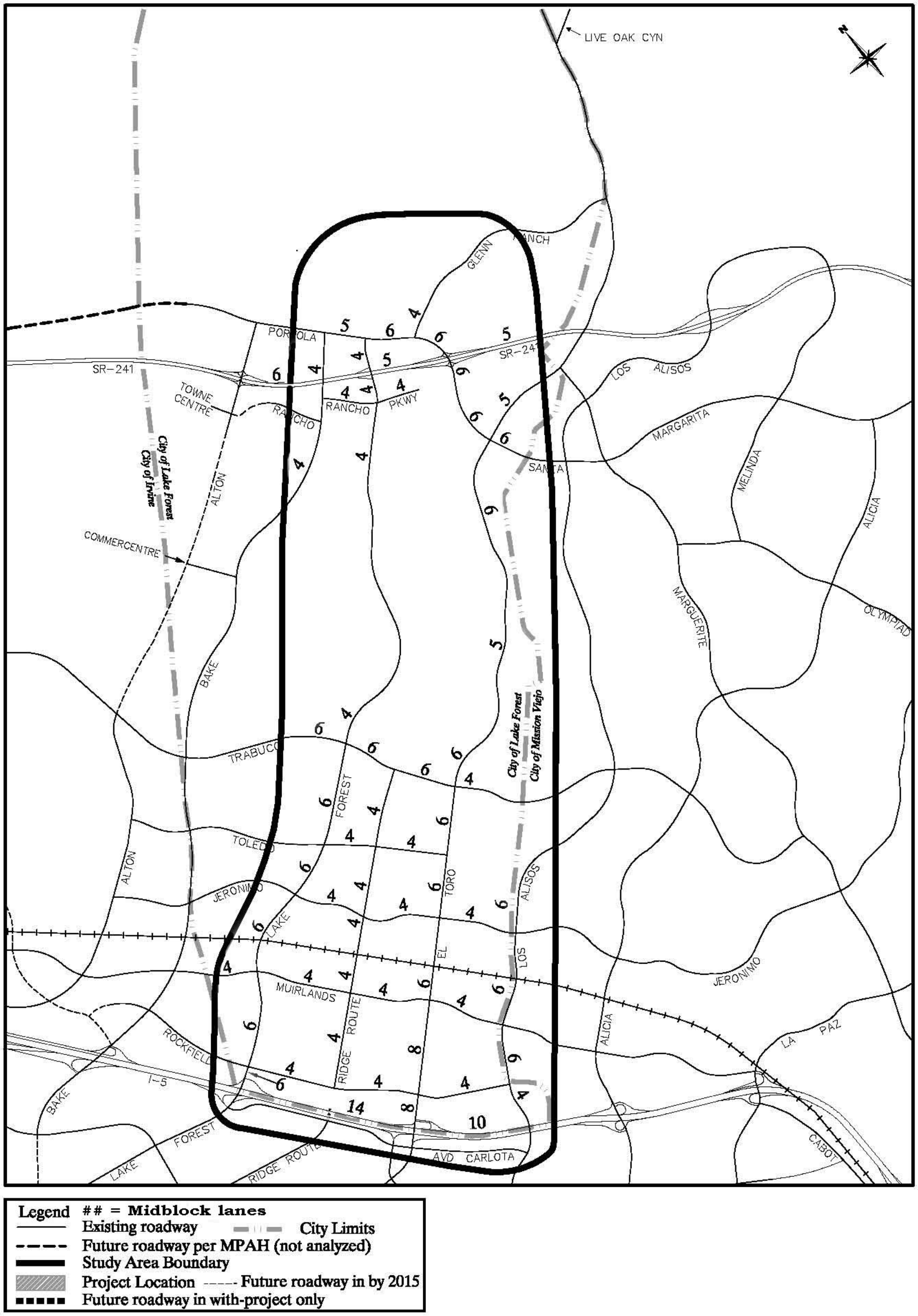

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Figure 3.14-1
Existing Circulation System within the Study Area

- **Muirlands Boulevard** is an east/west four-lane divided primary arterial. In the City of Mission Viejo, Muirlands Boulevard between the Lake Forest City limits and Alicia Parkway is an east/west street.
- **Rockfield Boulevard** is an east/west commercial street from the City limits to Ridge Route Drive, then a four-lane divided primary arterial.
- **Jeronimo Road** is an east/west four-lane divided primary arterial. In the City of Mission Viejo, between the Lake Forest City limits and Alicia Parkway it is an east/west street.
- **Toledo Way** is an east/west four-lane undivided secondary arterial.
- **Avenida De La Carlota** is in the City of Laguna Hills and is an east/west street between Lake Forest Drive and Los Alisos Boulevard.
- **Towne Centre Drive** is a north/south loop road connecting Alton Parkway on the north and south sides of SR-241.
- **Paseo De Valencia** is in the City of Laguna Hills; between I-5 and Avenida De La Carlota it is an east/west street.
- **Alicia Parkway** is in the City of Mission Viejo; between I-5 and Trabuco Road it is a north/south street.

Existing Intersection Level of Service

Roadway performance is most often controlled by the performance of intersections, specifically during peak traffic periods. This is because traffic control at intersections interrupts traffic flow that would otherwise be relatively unimpeded except for the influences of on-street parking, access to adjacent land uses, or other factors resulting in interaction of vehicles between intersections. For this reason, traffic analyses for individual projects typically focus on peak hour operating conditions for key intersections rather than roadway segments. Operating conditions at intersections are typically described in terms of level of service (LOS). LOS is a measure of a roadway's operating performance and is a tool used in defining thresholds of significance. It is described with a letter designation from A to F, with LOS A representing the best operating conditions and LOS F the worst. LOS D (ICU not to exceed 0.90) is the performance standard for the roadway signalized intersections in the study area as adopted by the City of Lake Forest and Orange County Transportation Authority (OCTA) as part of the County's Congestion Management Program (CMP)[1].

LOS for signalized intersections is defined in terms of either average control delay that is measured in seconds (Highway Capacity Manual [HCM] methodology) or intersection capacity utilization (ICU). Caltrans also calculates LOS using average delay using the HCM methodology. Tables 3.14-1 and 3.14-2 describe the LOS concept and the operating conditions expected under each LOS for signalized intersections and freeways/tollways, respectively.

The freeway/tollway mainline and freeway/tollway ramp criteria are based on peak hour volume-to-capacity (V/C) ratios. The V/C ratio indicates the volume of traffic present compared to the capacity of the facility. Higher V/C ratios indicate a higher level of congestion. The freeway/tollway mainline and ramp capacities applied in this analysis are based on information contained in the Caltrans Highway Design Manual and the Caltrans Ramp Meter Design Manual. LOS E (V/C not to

[1] As adopted by the City of Lake Forest, LOS D (ICU not to exceed 0.90) is the performance standard except where Critical Intersection where LOS "E" (peak hour ICU less than or equal to 1.00) is acceptable with the requirement that regular monitoring take place.

exceed 1.00) has been established by Caltrans as the operating standard for freeway/tollway mainline segments and ramps. This standard is also consistent with the LOS E standard specified in the Orange County CMP for CMP facilities (the freeway/tollway system in the study area is included in the CMP roadway network).

Table 3.14-1. Levels of Service Descriptions – Signalized Intersections

LOS	Description	Average Delay (sec)[1]	ICU[2]
A	LOS A describes operations with low control delay, up to 10 seconds per vehicle. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.	≤ 10.0	≤ 0.60
B	LOS B describes operations with control delay greater than 10 and up to 20 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than the LOS A causing higher levels of delay.	10.1 – 20.0	0.61 – 0.70
C	LOS C describes operations with control delay greater than 20 and up to 35 seconds per vehicle. These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.	20.1 – 35.0	0.71 – 0.80
D	LOS D describes operations with control delay greater than 35 and up to 55 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	35.1 – 55.0	0.81 – 0.90
E	LOS E describes operations with control delay greater than 55 and up to 80 seconds per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent.	55.1 – 80.0	0.91 – 1.00
F	LOS F describes operations with control delay in excess of 80 seconds per vehicle. This level, considered unacceptable to most drivers, often occurs with oversaturation; that is, when arrival flow rates exceed the capacity of lane groups. It may also occur at high V/C ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.	> 80.0	> 1.00

[1] Source: Highway Capacity Manual 2000 (HCM 2000), Transportation Research Board, National Research Council in Austin-Foust Associates, Inc. 2010a.

[2] Source: Orange County CMP.

Table 3.14-2. Levels of Service Descriptions – Freeway/Tollways

LOS	Description	Volume/Capacity[1]
A	LOS A describes free-flow operations. Free-flow speeds (FFS) prevail. Vehicles are almost completely unimpeded in their ability to maneuver with the traffic stream. The effects of incidents or point breakdowns are easily absorbed at this level.	0 – 0.30
B	LOS B represents reasonably free-flow, and FFS are maintained. The ability to maneuver with the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high. The effects of minor incidents and point breakdowns are still easily absorbed.	0.31 – 0.50
C	LOS C provides for flow with speeds at or near the FFS of the freeway/tollway. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver. Minor incidents may still be absorbed, but the local deterioration in service will be substantial. Queues may be expected to form behind any significant blockage.	0.51 – 0.71
D	LOS D is the level at which speeds begin to decline slightly with increasing flows and density begins to increase somewhat more quickly. Freedom to maneuver within the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort levels. Even minor incidents can be expected to create queuing, because the traffic stream has little space to absorb disruptions	0.72 – 0.89
E	At its highest density value, LOS E describes operation at capacity. Operations at this level are volatile, because there are virtually no usable gaps in the traffic stream. Vehicles are closely spaced, leaving little room to maneuver with the traffic stream at speeds that still exceed 49 miles per hour. Any disruption of the traffic stream, such as vehicles entering from a ramp or a vehicle changing lanes, can establish a disruption wave that propagates throughout the upstream traffic flow. At capacity, the traffic stream has no ability to dissipate even the most minor disruption, and any incident can be expected to produce a serious breakdown with extensive queuing. Maneuverability with the traffic stream is extremely limited, and the level of physical and psychological comfort afforded the driver is poor.	0.90 – 1.00
F	LOS F describes breakdowns in vehicular flow. Such conditions generally exist within queues forming behind breakdown points, and are the result of a bottleneck downstream point. LOS F is also used to describe conditions at the point of the breakdown or bottleneck and the queue discharge flow that occurs at speeds lower than the lowest speed for LOS E, as well as the operations within the queue that forms upstream. Whenever LOS F conditions exist, they have the potential to extend upstream for significant distances	>1.00

[1]Source: Highway Capacity Manual 2000 (HCM 2000), Transportation Research Board, National Research Council in Austin-Foust Associates, Inc. 2010a.

Existing Traffic Conditions

The existing circulation system in the study area is illustrated in Figure 3.14-1, which shows existing midblock lanes on arterial roadways and the number of existing travel lanes on freeway/tollway mainline segments. Current average daily traffic (ADT) volumes are shown in Figure 3.14-2. The arterial volumes are from 2008 existing ADT and peak hour counts. Traffic volumes on I-5 and SR-241 are 2007 counts published by Caltrans for the California State Highway system. The economic downturn in the last two years has caused counts to decrease from 2007/2008 levels. The existing counts presented in this traffic analysis are intended to represent existing travel behavior under "normal" economic conditions.

Existing Peak Hour Intersection Levels of Service

Peak hour intersection turn movement counts were collected in 2008 for the select study intersections in the study area (see Figure 3.14-3 for the intersection locations). The ICU Values and AM and PM peak hour counts for the study intersections are summarized in Table 3.14-3. The AM and PM peak hour is typically determined from counts that are conducted in a 7:00 to 9:00 AM peak period and 4:00 to 6:00 PM peak period, respectively. As shown in Table 3.14-3, all study intersection locations are operating at LOS D or better and meet the performance criteria.

Table 3.14-3. Existing (2008) Study Intersection LOS Summary

Location Number**	North-South (NS) Road at East-West (EW) Road	AM Peak Hour		PM Peak Hour	
		ICU	LOS	ICU	LOS
2	Bake Parkway and Portola Parkway	0.55	A	0.61	B
3	Lake Forest Drive and Portola Parkway	0.46	A	0.65	B
4	Glenn Ranch Road and Portola Parkway	0.60	A	0.55	A
5	Portola Parkway and SR-241 Ramp	0.44	A	0.63	B
7	Lake Forest Drive and SR-241 NB Ramp	0.31	A	0.38	A
8	Lake Forest Drive and SR-241 SB Ramp	0.48	A	0.45	A
9	Bake Parkway and Rancho Parkway North	0.70	B	0.66	B
10	Lake Forest Drive and Rancho Parkway	0.40	A	0.47	A
11	Bake Parkway and Rancho Parkway South	0.60	A	0.74	C
12	El Toro Drive and Portola/Santa Margarita Parkway	0.63	B	0.66	B
15	Lake Forest Drive and Trabuco Road	0.63	B	0.65	B
16	Ridge Route Drive and Trabuco Road	0.49	A	0.58	A
17	El Toro Road and Trabuco Road	0.68	B	0.62	B
19	Lake Forest Drive and Toledo Way	0.54	A	0.49	A
20	Ridge Route Drive and Toledo Way	0.35	A	0.28	A
21	El Toro Road and Toledo Way	0.54	A	0.47	A
23	Lake Forest Drive and Jeronimo Road	0.62	B	0.64	B
24	Ridge Route Drive and Jeronimo Road	0.52	A	0.49	A
25	El Toro Road and Jeronimo Road	0.67	B	0.82	D
26	Los Alisos and Jeronimo Road	0.65	B	0.79	C
27	Lake Forest Drive and Muirlands Boulevard	0.51	A	0.45	A

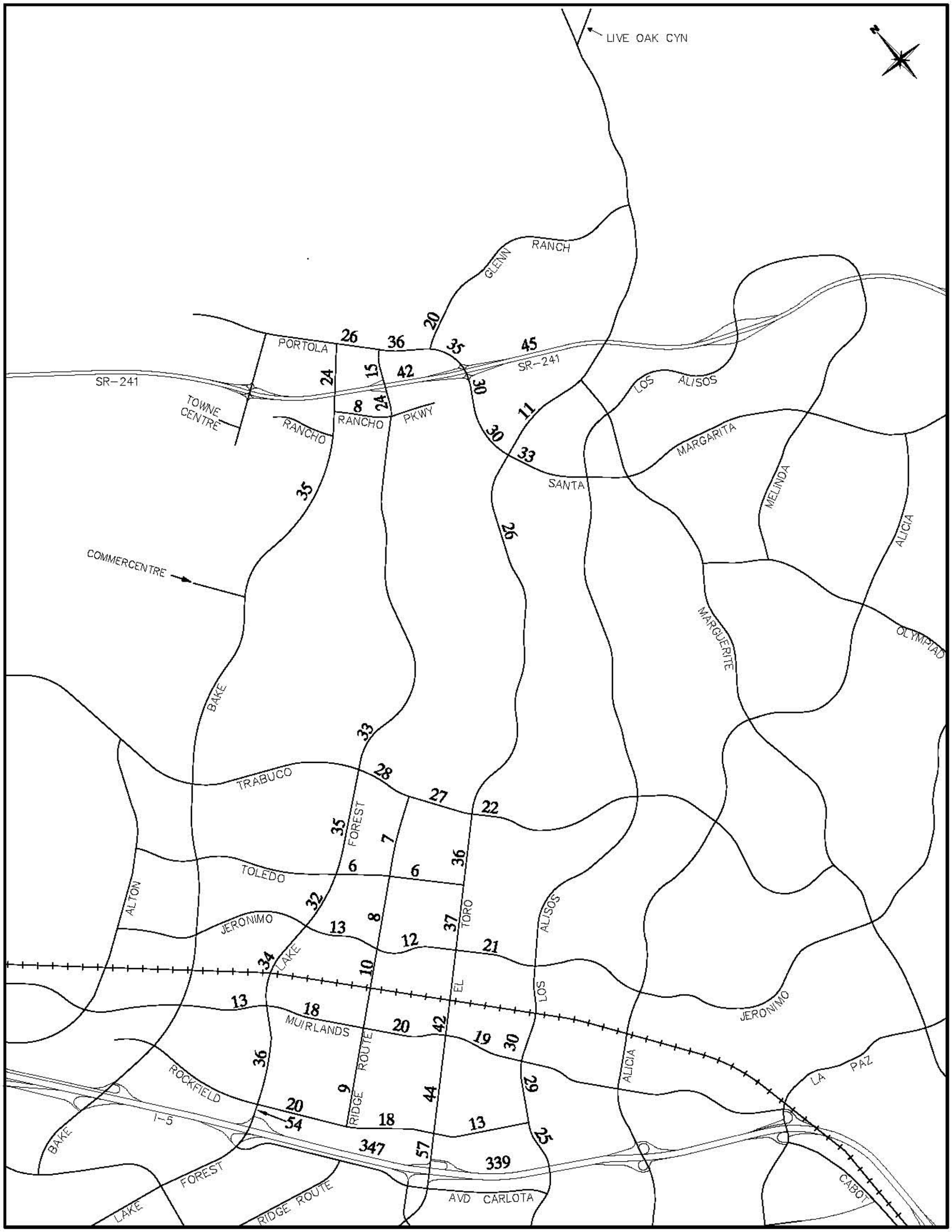
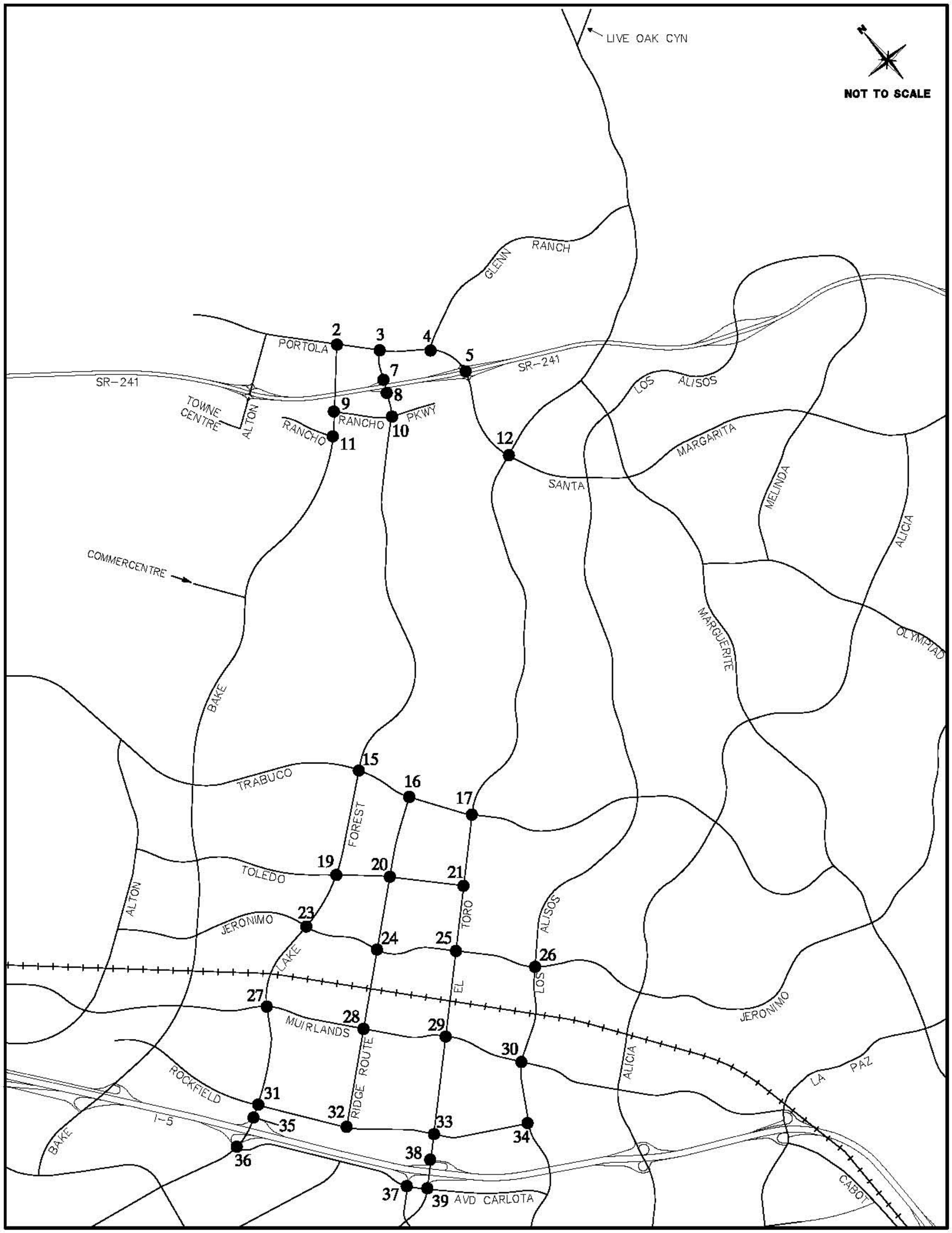


Figure 3.14-2
Existing ADT Volumes (000s)



Legend

●x Intersection location

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Figure 3.14-3
Existing Study Intersection Location Map

Location Number**	North-South (NS) Road at East-West (EW) Road	AM Peak Hour		PM Peak Hour	
		ICU	LOS	ICU	LOS
28	Ridge Route Drive and Muirlands Boulevard	0.48	A	0.59	A
29	El Toro Road and Muirlands Boulevard	0.62	B	0.54	A
30	Los Alisos Boulevard and Muirlands Boulevard	0.58	A	0.71	C
31	Lake Forest Drive and Rockfield Boulevard	0.61	B	0.69	B
32	Ridge Route Drive and Rockfield Boulevard	0.37	A	0.49	A
33	El Toro Road and Rockfield Boulevard	0.54	A	0.63	B
34	Los Alisos and Rockfield Boulevard	0.65	B	0.61	B
35	Lake Forest Drive and I-5 NB Ramps	0.45	A	0.62	B
36	Lake Forest Drive and I-5/Avenida Carlota	0.66	B	0.70	B
37	Paseo De Valencia and Avenida Carlota	0.47	A	0.55	A
38	El Toro Road and Bridger/I-5 NB Ramps	0.60	A	0.66	B
39	El Toro Road and Avenida Carlota	0.56	A	0.82	D

Abbreviations: ICU – intersection capacity utilization, NB - Northbound, SB – Southbound, LOS – Level of Service

** Location number corresponds to intersection locations identified on Figure 3.14-3.

Analysis of Peak Periods

The peak use for the proposed project is assumed to occur on Saturday and the analysis presented in the traffic report was for an average weekday in which peak conditions of the adjacent street system are analyzed. In order to address a comment made during the NOP review period by the City of Mission Viejo regarding impacts within their city limits, peak hour traffic counts were taken on Santa Margarita Parkway just south of El Toro Road on an average weekday (Tuesday/Thursday) and weekend days (from Thursday to Tuesday) to determine if the average weekend peak is different than the average weekday peak. These counts are shown in the Table 3.14-4.

Table 3.14-4. Santa Margarita Parkway just east of El Toro Road Peak Hour Traffic Counts

Day	Date	Daily Count
Thursday/Tuesday *	July 30/August 4	33,178
Friday	July 31	34,412
Saturday	August 1	28,025
Sunday	August 2	24,894
Monday	August 3	30,570

* Partial day of counts that were combined.

Figure 3.14-4 shows a comparison of the counts that were taken, on a combination Thursday/ Tuesday (partial counts were taken on these days), and Friday through Monday. As can be seen from this figure, during a typical weekday on this road, two peak periods (8:00 AM – 10:00 AM and 5:00 PM – 7:00 PM) occur and two peak periods in a typical weekend day (in this case, Saturday, between 12:00 PM and 3:00 PM and 4:00 PM to 6:00 PM). The two weekday peak periods present the worst case over the two weekend peak periods, which occur Saturday. In addition, the combination of the weekday background traffic with project traffic results in higher traffic volumes than the combination of weekend (i.e., Saturday) background traffic with project traffic. Therefore, the traffic forecasts presented in the traffic report are based on the worst case weekday scenario due to the higher amount of traffic volumes.

Existing Peak Hour Freeway/Tollway Ramp Levels of Service

Existing AM and PM peak hour ramp volumes were taken from intersection counts at each location in the traffic study area where freeway/tollway ramps intersect the arterial system. Table 3.14-5 summarizes existing peak hour V/C ratios for freeway/tollway ramps in the traffic study area. The results indicate that all freeway/tollway ramp locations in the study area currently operate better than the acceptable LOS E performance standard.

Table 3.14-5. Existing Freeway/Tollway Ramp LOS Summary

				AM Peak Hour			PM Peak Hour		
Interchange	Ramp	Lanes	Peak Hour Capacity	Volume	V/C	LOS	Volume	V/C	LOS
I-5 at Lake Forest Drive	SB Direct On	1	1,500	291	0.19	A	509	0.34	A
	SB Direct Loop On	1	1,080	446	0.41	A	399	0.37	A
	NB On	2	1,800	906	0.50	A	783	0.44	A
	SB Off	2	3,000	1,730	0.58	A	2,309	0.77	C
	NB Off	1	1,500	984	0.66	B	568	0.38	A
I-5 at El Toro Road	SB Direct On	1	1,080	245	0.23	A	507	0.47	A
	SB Loop On	1	1,500	595	0.40	A	834	0.56	A
	NB Direct On	1	1,500	1,236	0.82	D	948	0.63	B
	NB Loop On	1	1,080	707	0.47	A	898	0.60	A
	SB Off	2	3,000	1,536	0.51	A	1,263	0.42	A
	NB Off	1	1,500	893	0.60	A	1,198	0.80	C
SR-241 at Lake Forest Drive	NB On	2	2,250	170	0.08	A	424	0.19	A
	SB Off	1	1,500	533	0.36	A	212	0.14	A
SR-241 at Portola (East)	SB On	1	1,500	249	0.17	A	747	0.50	A
	NB On	2	2,250	763	0.34	A	321	0.14	A
	SB Off	1	1,500	251	0.17	A	516	0.34	A
	NB Off	2	2,250	961	0.43	A	326	0.14	A

Abbreviations: V/C volume-to-capacity, NB Northbound, SB Southbound

Existing Peak Hour Freeway/Tollway Mainline Levels of Service

To determine existing peak hour operating conditions for the mainline freeway and tollway segments, peak hour traffic count data was compiled for the freeway and tollway system in the traffic analysis study area. AM and PM peak hour traffic count data was obtained from Caltrans, and that data was supplemented with AM and PM peak hour ramp volumes taken from intersection count data at locations where freeway/tollway ramps intersect the arterial system. Table 3.14-6 summarizes existing AM and PM peak hour V/C ratios for freeway/tollway mainline segments in the

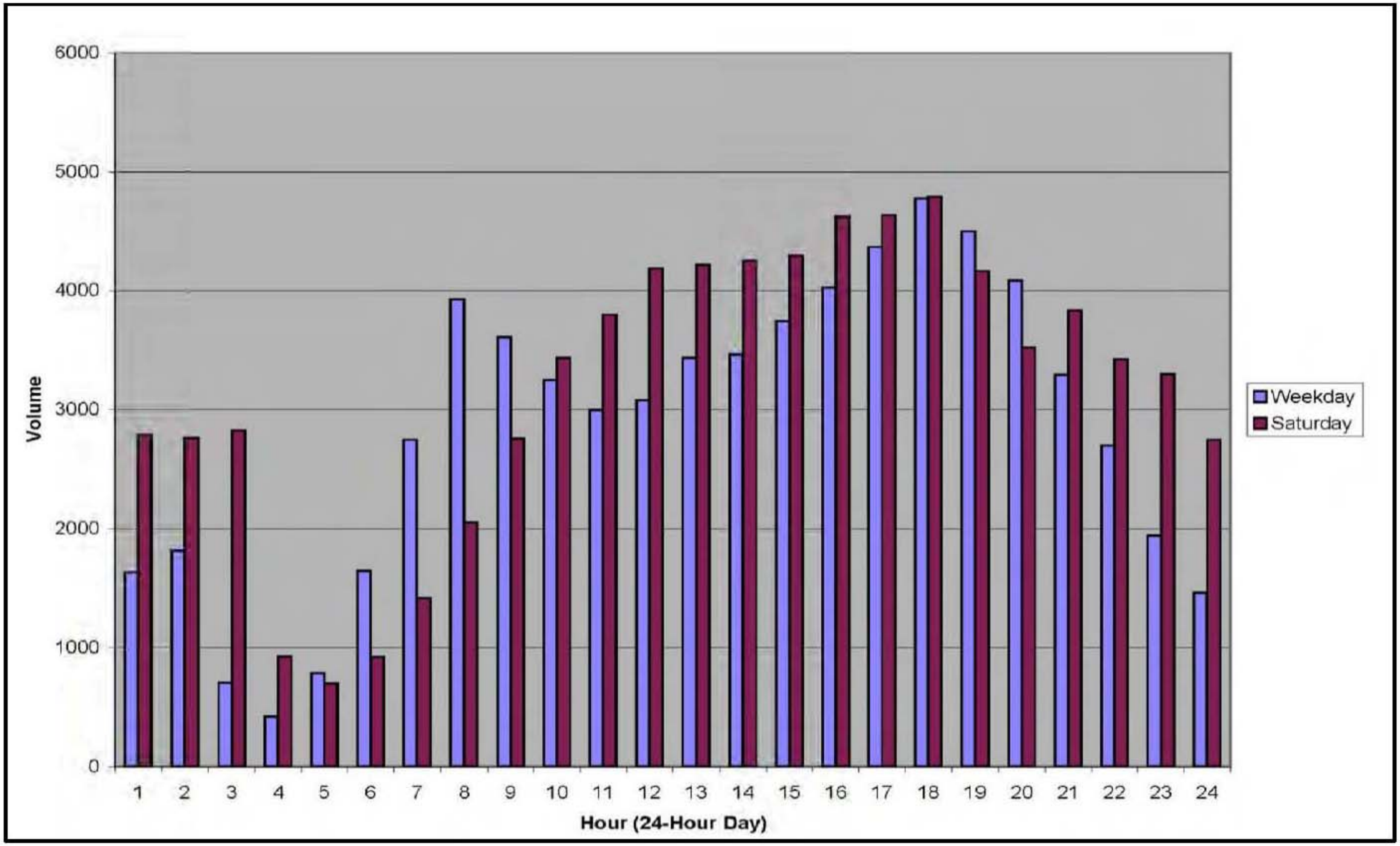

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Figure 3.14-4
Santa Margarita Parkway South of El Toro Road
24 Hour Traffic Counts

study area. The existing peak hour freeway/tollway mainline segment V/C or speed/travel time survey LOS analysis results indicate that I-5 in the study area currently operates at LOS F (i.e., worse than the LOS E performance standard).

Regulatory Setting

Federal

There are no federal transportation regulations that apply to the proposed project.

State

There are no state transportation regulations that apply to the proposed project. The proposed project would not result in the need for any construction work within or adjacent to Caltrans' right-of-way.

Local

Congestion Management Plan

The Orange County CMP was created as a result of Proposition 111 (gas tax increase) and has been implemented locally by OCTA. The goals of the CMP are to reduce traffic congestion and to provide a mechanism for coordinating land use development and transportation improvement decisions. The CMP for Orange County requires that the traffic impacts of individual development projects of potential regional significance be analyzed. The requirements of the CMP legislation include, among other things, analysis of impacts of land use decisions on the CMP Highway System. Each jurisdiction in Orange County selected a CMP Traffic Impact Analysis (TIA) process to analyze impacts of development project submittals on the CMP Highway System. The 2005 Orange County CMP includes CMP TIA Guidelines, which must be applied to all development projects meeting the adopted trip generation thresholds (i.e., 2,400 or more daily trips for proposed developments, and 1,600 or more daily trips for proposed developments that directly access the CMP Highway System). The CMP identifies LOS E as the minimum acceptable LOS for CMP intersections. When an intersection is already operating at LOS E, a project must cause a 3% increase in the ICU value for an impact to be considered significant (City of Lake Forest 2009a).

A specific system of arterial roadways plus all freeways comprise the CMP system. The following CMP roadways and monitoring intersections are located in the City of Lake Forest (City of Lake Forest 2009a):

- El Toro Road
- Trabuco Road west of El Toro Road
- Intersection of Trabuco Road/El Toro Road
- Intersection of I-5 Northbound/Bridge/El Toro Road

Table 3.14-6. Existing I-5 Freeway/SR-241 Tollway Mainline Peak Hour LOS Summary

				AM Peak Hour				PM Peak Hour			
Location	Direction	Lanes	Peak Hour Capacity	Volume	V/C	V/C LOS	Caltrans LOS[a]	Volume	V/C	V/C LOS	Caltrans LOS[a]
I-5 n/o Lake Forest	Northbound	8+2H	19,500	14,570	0.75	D	F[0]	11,200	0.57	C	E
	Southbound	8+2H	19,500	10,420	0.53	C	E	14,780	0.76	D	F[2]
I-5 n/o El Toro	Northbound	6+2H	15,500	14,648	0.95	E	F[0]	10,985	0.71	C	E
	Southbound	6+2H	15,500	9,427	0.61	C	E	13,379	0.86	D	F[3]
I-5 n/o Alicia	Northbound	4+1H	9,600	13,598	1.42	F	F[3]	10,337	1.08	F	E
	Southbound	4+1H	9,600	8,731	0.91	E	E	13,457	1.40	F	F[3]
SR-241 n/o Lake Forest	Northbound	3	6,000	4,560	0.76	D	D	1,630	0.27	A	B
	Southbound	3	6,000	1,290	0.22	A	B	3,730	0.62	C	D
SR-241 n/o Portola East	Northbound	3	6,000	4,390	0.73	D	D	1,206	0.20	A	B
	Southbound	2	4,000	757	0.19	A	B	3,518	0.88	D	D
SR-241 n/o Los Alisos	Northbound	3	6,000	4,588	0.76	D	D	1,211	0.20	A	B
	Southbound	2	4,000	755	0.19	A	B	3,749	0.94	E	D

Abbreviations: n/o north of; H – high-occupancy vehicle lane; LOS – level of service; V/C – volume/capacity ratio

[a] Caltrans LOS values are from speed and travel time surveys carried out by Caltrans as summarized in the 2007 Orange County Congestion Management Program. The measured speeds in each segment reflect queue build-up from a downstream deficient segment and/or other prevailing conditions at the time the surveys were conducted. The superscript values for LOS F (i.e., 0, 1, 2, 3) represent different lengths of time during which congested conditions occur in the peak period.

The overall performance criteria are summarized in Table 3.14-7. The criteria include components for intersections, freeway/tollway ramps, and freeway/tollway mainline segments and are based on LOS calculation methodologies and performance standards that have been adopted by the City of Lake Forest and OCTA as part of the CMP. The performance criteria applied here is the same as used in OSA traffic analyses.

Table 3.14-7. Freeway/Tollway Ramp Performance Criteria

Freeway/Tollway Ramps	
V/C Calculation Methodology	Level of service to be based on peak hour V/C ratios calculated using the following capacities: Metered On-Ramps A maximum capacity of 900 vehicles per hour (vph) for a one-lane metered on-ramp with only one mixed-flow lane at the meter. A maximum capacity of 1,080 (20% greater than 900) vph for a one-lane metered on-ramp with one mixed-flow lane at the meter plus one high occupancy vehicle (HOV) preferential lane at the meter. A maximum capacity of 1,500 vph for a one-lane metered on-ramp with two mixed-flow lanes at the meter. A maximum capacity of 1,800 vph for a two-lane metered on-ramp with two mixed-flow lanes at the meter. Toll Ramps (On-Ramps and Off-Ramps) A maximum capacity of 1,500 vph for a one-lane toll ramp with one cash (stopped) lane and one FasTrak (unstopped) lane. Non-Metered and Non-Tolled On-Ramps and Off-Ramps A maximum capacity of 1,500 vph for a one-lane ramp. A maximum capacity of 2,250 (50% greater than 1,500) vph for a two-lane on-ramp that tapers to one merge lane at or beyond the freeway mainline gore point and for a two-lane off-ramp with only one auxiliary lane. A maximum capacity of 3,000 vph for a two-lane on-ramp that does not taper to one merge lane and for a two-lane off-ramp with two auxiliary lanes.
Performance Standard	LOS E (peak hour V/C less than or equal to 1.00).
Mitigation Requirement	For V/C greater than the acceptable LOS, mitigation of the project contribution is required to bring ramp back to acceptable LOS or to no project conditions if the project's contribution is 0.02 or greater for all ramps in the study area.
Freeway/Tollway Mainline Segments	
V/C Calculation Methodology	LOS to be based on peak hour V/C ratios calculated using the following capacities: 2,000 vehicles per hour per lane (vphpl) for mixed-flow (general purpose) lanes. 1,600 vphpl for a one-lane buffer-separated HOV facility. 1,750 vphpl for a two-lane buffer-separated HOV facility.
Performance Standard	LOS E (peak hour V/C less than or equal to 1.00).
Mitigation Requirement	For V/C greater than the acceptable LOS, mitigation of the project contribution is required to bring freeway/tollway mainline location back to acceptable LOS or to no project conditions if project contribution is greater than 0.03 (the impact threshold specified in the CMP).
Source: Austin-Foust Associates, Inc. 2010a	

County of Orange Master Plan of Arterial Highways

The County of Orange MPAH is an important element for the overall transportation planning in Orange County because it defines a countywide circulation system in response to existing and planned land uses. As the administrator of the MPAH, OCTA is responsible for maintaining the integrity of the MPAH map through coordination with cities and the County and determinations of cities' and County consistency with the MPAH map. Consistency with the MPAH is required for local agencies to be eligible for the Orange County Combined Transportation Funding Programs (City of Lake Forest 2009a). The following MPAH facilities (per General Plan ultimate build-out) are within the City of Lake Forest (City of Lake Forest 2009a):

- Principal Arterial (Eight-lane divided roadway)
  - El Toro Road (I-5 to Trabuco Road)
- Major Arterial (Six-lane divided roadway)
  - Trabuco Road (Bake Parkway to El Toro Road)
  - Lake Forest Drive (I-5 to Trabuco Road)
  - El Toro Road (north of Trabuco Road to the City limit)
  - Los Alisos Boulevard (north of I-5)
  - Bake Parkway (Muirlands Boulevard to Trabuco Road)
  - Alton Parkway (within the City limits)
  - Portola Parkway (within the City limits)
- Primary Arterial (Four-lane divided roadway)
  - Bake Parkway (north of Trabuco Road)
  - Rancho Parkway
  - Lake Forest Drive (north of Trabuco Road)
  - Glenn Ranch Road
  - Jeronimo Road
  - Muirlands Boulevard
  - Rockfield Boulevard
  - Ridge Route Drive (southern City boundary to Rockfield Boulevard)
- Secondary Arterial (Four-lane undivided roadway)
  - Toledo Way
  - Ridge Route Drive (Rockfield Boulevard to Trabuco Road)
  - Commercentre Drive

City of Lake Forest General Plan

The Circulation Element of the City of Lake Forest General Plan identifies performance criteria based on peak hour intersection data as intersection performance dictates the LOS experience by drivers. The performance criteria are summarized in Table C-3 of the General Plan Circulation Element and included below in Table 3.14-8.

Table 3.14-8. City of Lake Forest Performance Criteria

Calculation Methodology	Level of service (LOS) to be based on peak hour intersection capacity utilization (ICU) values calculated using the following values: Saturation Flow Rate: 1,700 vehicles/hour/lane Clearance Interval: 0.05 Right-Turn-On-Red Utilization Factor*: 0.75 * "De-facto" right-turn lane is assumed in the ICU calculation if 19 feet from edge to outside of through-lane exists and parking is prohibited during peak periods.
Performance Standard	LOS D (peak hour ICU less than or equal to 0.90) for all intersections except Critical Intersections where LOS E (peak hour ICU less than or equal to 1.00) is acceptable with the requirement that regular monitoring take place.
Mitigation Requirement for Project Impacts	For ICU greater than the acceptable level of service, mitigation of the project contribution is required to bring intersection back to acceptable level of service or to no project conditions if project contribution to the ICU is greater than 0.01.

Source: City of Lake Forest General Plan Circulation Element Table C-3, July 2008.

The Circulation Element of the City of Lake Forest General Plan outlines goals and policies related to circulation, and provides performance criteria for evaluating the City's intersections. The following goals and polices from the Circulation Element would apply to the proposed project.

Goal 1.0: Support for the development of an efficient network of regional transportation facilities.

Policy 1.1: Support the completion of the Orange County Master Plan of Arterial Highways.

Goal 2.0: A system of roadways in the community that meets local needs.

Policy 2.1: Provide and maintain a City circulation system that is in balance with planned land uses in Lake Forest and surrounding areas in the region.

Policy 2.3: Improve the Lake Forest circulation system roadways in concert with land development to ensure adequate levels of service.

Goal 5.0: Convenient and suitable parking facilities for motorized and non motorized vehicles.

Policy 5.1: Require sufficient off street parking for all land uses and maximize the use of parking facilities in Lake Forest.

Policy 5.2: Eliminate the use of on street parking on identified arterial streets where maximum traffic flow is desired.

Policy 5.3: Promote the provision of access between the parking areas of adjacent properties along arterial roadways to improve overall traffic flow.

City of Lake Forest Municipal Code

Section 9.168

Parking requirements for the City of Lake Forest are outlined in Section 9.168 of the Municipal Code. When assessing the parking impacts of an individual project, the parking requirements outlined in the Municipal Code should be used, unless otherwise determined by the City. Section 9.168.070, Off-Street Parking Requirements, does not list a specific parking requirement for parks; the regulations state that "If no provisions for the required number of off-street parking spaces are set forth in these regulations, or the provisions are not clear for any specific use or uses, the Director of Development Services, shall determine the number of off-street parking spaces required."

Lake Forest Transportation Mitigation Program

A citywide traffic model (Lake Forest Traffic Analysis Model [LFTAM]) was developed as part of the Opportunities Study, which allows for detailed review of citywide traffic impacts. Based on the LFTAM, the Lake Forest Traffic Mitigation Fee Program (LFTM) was developed and provides for a Development Mitigation Program, Comprehensive Phasing Program, and Performance Monitoring Program as described in the City's Public Facilities and Growth Management Element. The LFTM Program provides improvements to 18 intersections potentially affected by future development of the OSA properties. The LFTM includes funding for the improvements at the intersection of Lake Forest Drive and Rancho Parkway in the vicinity of the project site.

The LFTM Program builds on those citywide improvements that are currently committed and funded without dependence on the unfunded MPAH improvements. It establishes the additional improvements needed to achieve acceptable LOS standards and establishes a process for the timing, prioritization, and monitoring of improvements. Development of an improvement program that is not dependent on the unfunded MPAH improvements ensures that the program can achieve its goals and mitigate project traffic impacts in the event that the unfunded MPAH improvements are not built in the timeframe anticipated in the General Plan (City of Lake Forest 2008b).

LFTM addresses the potential for lag time between the creation of vehicle trips and improvement implementation by (1) creating an annual monitoring and prioritizing process and (2) providing a trip allocation formula and financing alternatives that will front-load traffic mitigation (City of Lake Forest 2008b).

Project Impacts and Mitigation Measures

This section presents a discussion of potential impacts to traffic and circulation from construction and operation of the proposed project. Mitigation measures are provided where necessary to reduce potential impacts.

Methodology

The traffic analysis identifies project-induced changes in the LOS, V/C, and ICU in the traffic study area. The V/C ranges listed for arterial roads are designated in the Orange County CMP and the City's General Plan. The V/C ranges listed for freeway/tollway segments are based on the V/C and LOS relationships specified in the 2000 Highway Capacity Manual (HCM 2000) for basic freeway sections.

The methodology includes components for intersections, freeway/tollway ramps, and freeway/tollway mainline segments, and is based on LOS calculation methodologies and performance standards that have been adopted by the City and OCTA as part of the CMP. The overall performance criteria for the traffic analysis were shown in Table 3.14-7. The freeway/tollway ramp and freeway/tollway mainline criteria are based on peak hour V/C ratios. As mentioned previously, the freeway/tollway ramp and mainline capacities applied in the traffic analysis are based on information contained in the Caltrans Highway Design Manual and the Caltrans Ramp Meter Design Manual. LOS E (V/C not to exceed 1.00) has been established by OCTA for CMP facilities as the operating standard for freeway/tollway ramps and freeway/tollway mainline segments.

The traffic analysis analyzes short-range and long-range traffic impacts resulting from the proposed project. The scenarios examined in the traffic analysis include the following:

- No Project
- Year 2011 Short-Term
- Year 2015 Cumulative

The proposed project is anticipated to occur in two to three phases as property becomes available; however, for purposes of the traffic analysis, full buildout of the proposed project is assumed to occur in one phase with the proposed project opening in the year 2011, which is referred to as the "Year 2011 Short-Term" scenario. This is considered as the worst-case analysis because it would place all the project trips on the current roadway network without the benefit of any future improvements particularly those that would be funded by the LFTM. The "Year 2011 Short-term" scenario also assumes only ambient growth in the area (i.e., no growth assumed in the OSA).

An analysis in which other growth in the OSA is assumed, as well as other proposed roadway improvements along with cumulative projects identified in Chapter 4 (Table 4-1, Projects Potentially Contributing to Cumulative Impacts), was also performed and as is referred to as the "Year 2015 Cumulative" scenario. A comparison is made of the levels of service of the With Project to the No Project conditions, which has existing land uses (i.e., mining and passive park uses) assumed on the project site. The No Project refers to the existing conditions plus a small growth factor of 2% per year for 3 years, for a total of 6% (2008 through 2011)[2]. This represents the magnitude of impacts that would occur with the project in the opening year, which is projected in 2011. The extension of Rancho Parkway to Portola Parkway is also included under the With Project conditions because it is a project feature.

ADT and peak hour volumes on the circulation system for existing conditions in the traffic study area are first identified, followed by the ADT and peak hour forecasts for the Year 2011 Short-Term and Year 2015 Cumulative scenarios. Year 2011 Short-Term Forecast volumes used in the analysis were derived using two steps: first, a growth factor of 2% per year for 3 years, for a total of 6%, was applied to the existing 2008 counts to derive Year 2011 No Project conditions; then the City's LFTAM was used to derive the change in traffic due to the proposed land uses including the addition of the Rancho Parkway extension to Portola Parkway. The LFTAM is derived from the Orange County Transportation Analysis Model (OCTAM). The LFTAM was developed according to the Orange County sub-area traffic modeling guidelines that have been adopted by OCTA. OCTA

[2] Prior to 2007 and 2008, the growth trend was around two percent per year according to traffic counts taken in the area.

has certified the LFTAM as being consistent with the OCTAM regional model. The circulation system for Year 2011 assumes existing conditions. Refer to Figure 3.14-5 for the midblock travel lanes on individual arterial roads and freeway/tollway mainline segments under Year 2011 conditions.

In the Year 2015 Cumulative Scenario, Alton Parkway is assumed to be connected between Towne Centre Drive and Irvine Boulevard. Refer to Figure 3.14-6 for the midblock travel lanes on individual arterial roads and freeway/tollway mainline segments under the Year 2015 conditions. Also, a linear growth of traffic and development in the OSA is assumed between now and the year 2030; therefore, a growth of 25% in the OSA by 2015 is assumed for cumulative analysis purposes including the recently approved General Plan Amendment for the Shea Baker Ranch property[3].

If necessary, mitigation measures needed to reduce project impacts to a level of insignificance are identified for Year 2011 Short-Term and/or Year 2015 Cumulative scenarios. Should the project require mitigation measures, reference will be first made to any LFTM improvements because the proposed project is part of the OSA Program.

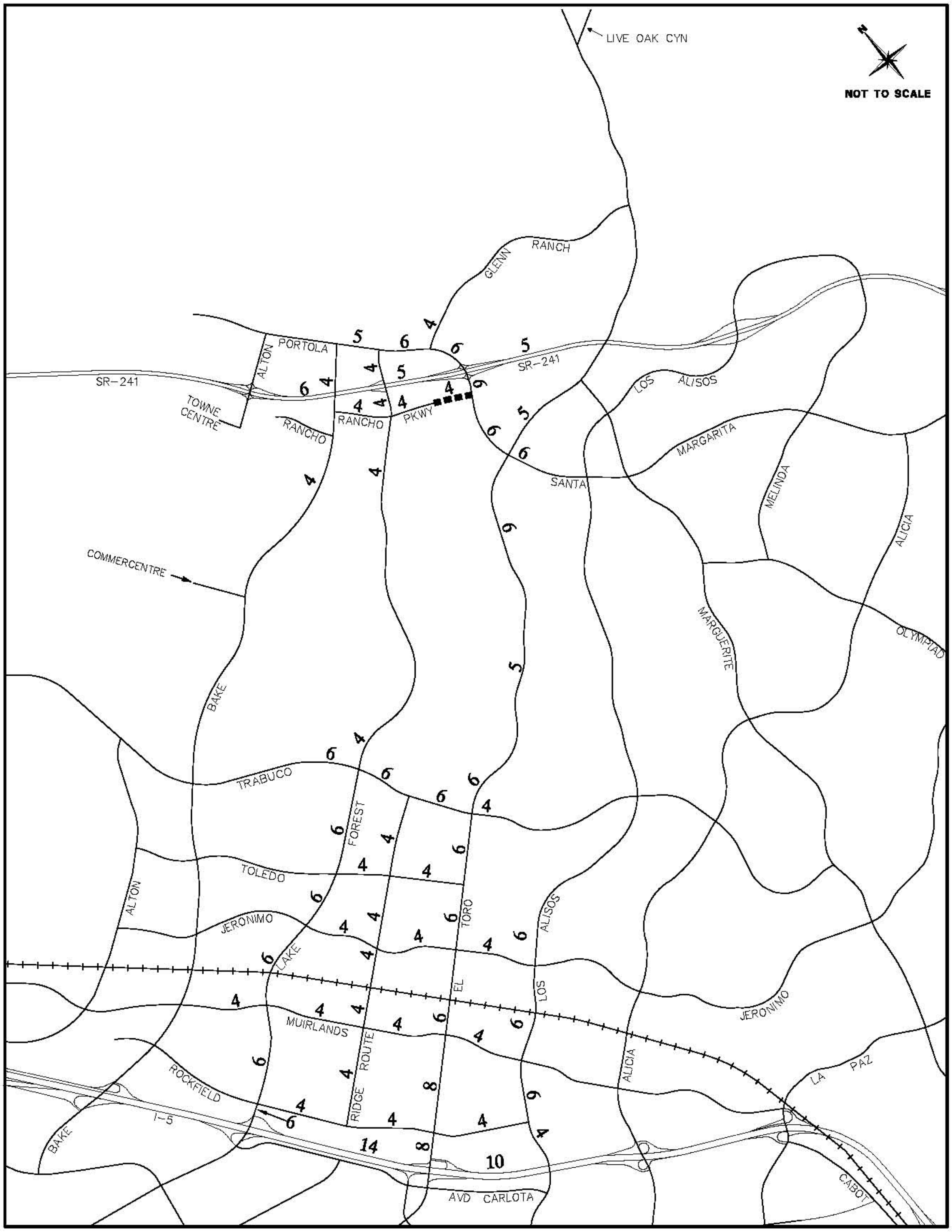
Thresholds of Significance

For this analysis, an impact pertaining to Traffic and Circulation is considered significant under CEQA if it would result in any of the following environmental effects, which are based on the City of Lake Forest's 2010 *Local Guidelines for Implementing the California Environmental Quality Act* (City of Lake Forest 2010)

- ICU values at intersections with the proposed project exceed the City of Lake Forest performance criteria as specified in Table C-3 of the General Plan Circulation Element;
- The proposed project includes design features or uses that may cause traffic hazards such as sharp curves, tight turning radii from streets, limited roadway visibility, short merging lanes, uneven road grades, or any other conditions determined by the City traffic engineer to be a hazard; and
- The project provides less parking than required, applying the standards found in the City of Lake Forest Municipal Code.

During the NOP and scoping process for the proposed project, impacts from air traffic hazards and conflicts with alternative transportation policies were found to either result in "less than significant" or "no impact" analysis from project implementation and, therefore, were not carried forward as part of this draft EIR.

[3] The City approved a General Plan Amendment/Zone Change/Development Agreement (GP/ZC/DA) for the Shea Baker Ranch Associates property (Site 1 in the OSA) on July 20, 2010. The GP/ZC/DA would change the proposed land uses on the Shea Baker property from mostly business park uses to residential uses.



Legend

▪▪▪▪▪ Roadway in with-project only

XX Midblock lanes

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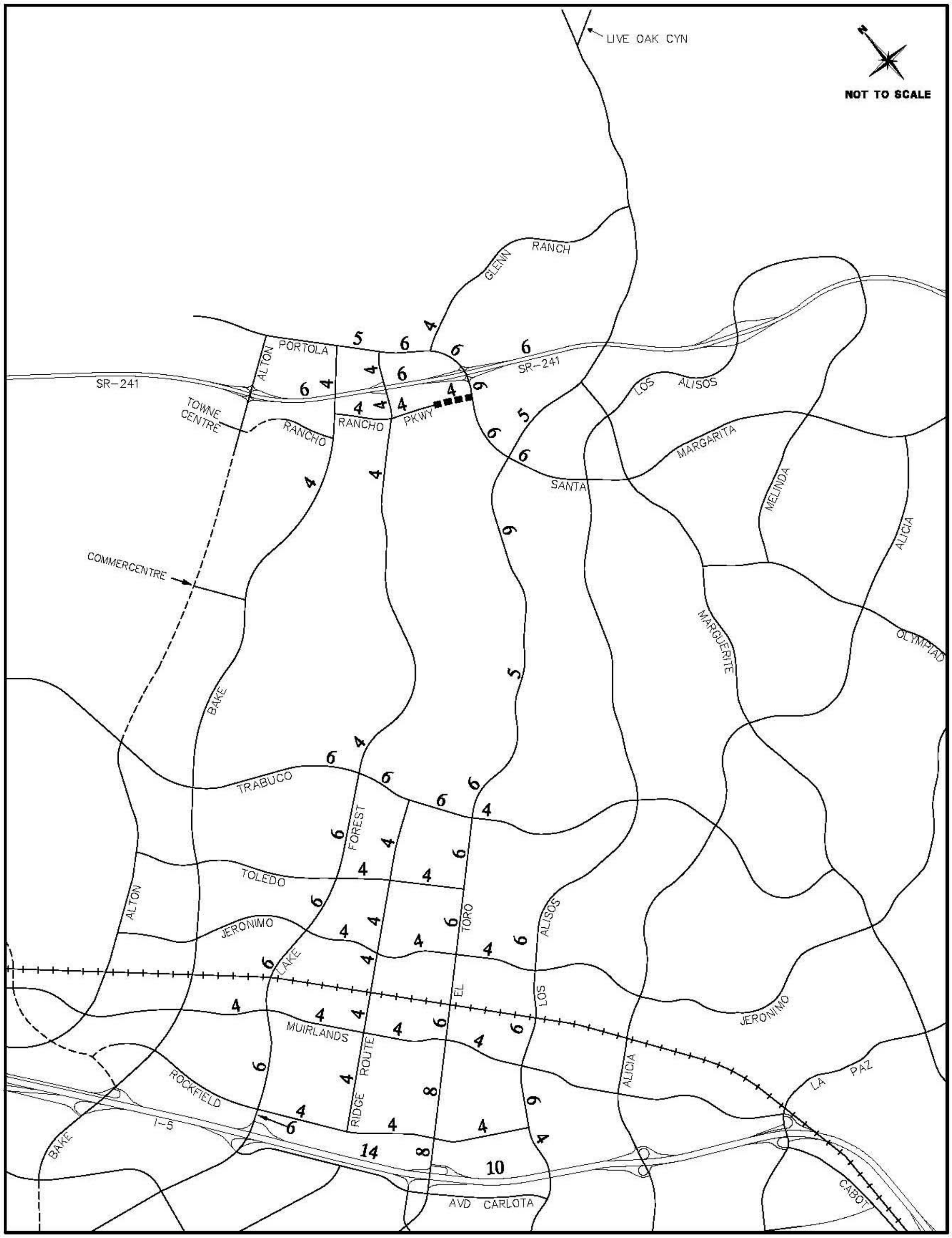
Figure 3.14-5
Year 2011 Short-Term Conditions –
Circulation System in the Study Area



Legend

- - - - Future roadway in by 2015

■■■■■ Future roadway in with-project only

XX Midblock lanes

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Figure 3.14-6
Year 2015 Cumulative Conditions –
Circulation System in the Study Area

Impacts and Mitigation Measures

Impact TC-1. ICU Values at Intersections, With the Proposed Project Do Not Exceed the City of Lake Forest Performance Criteria.

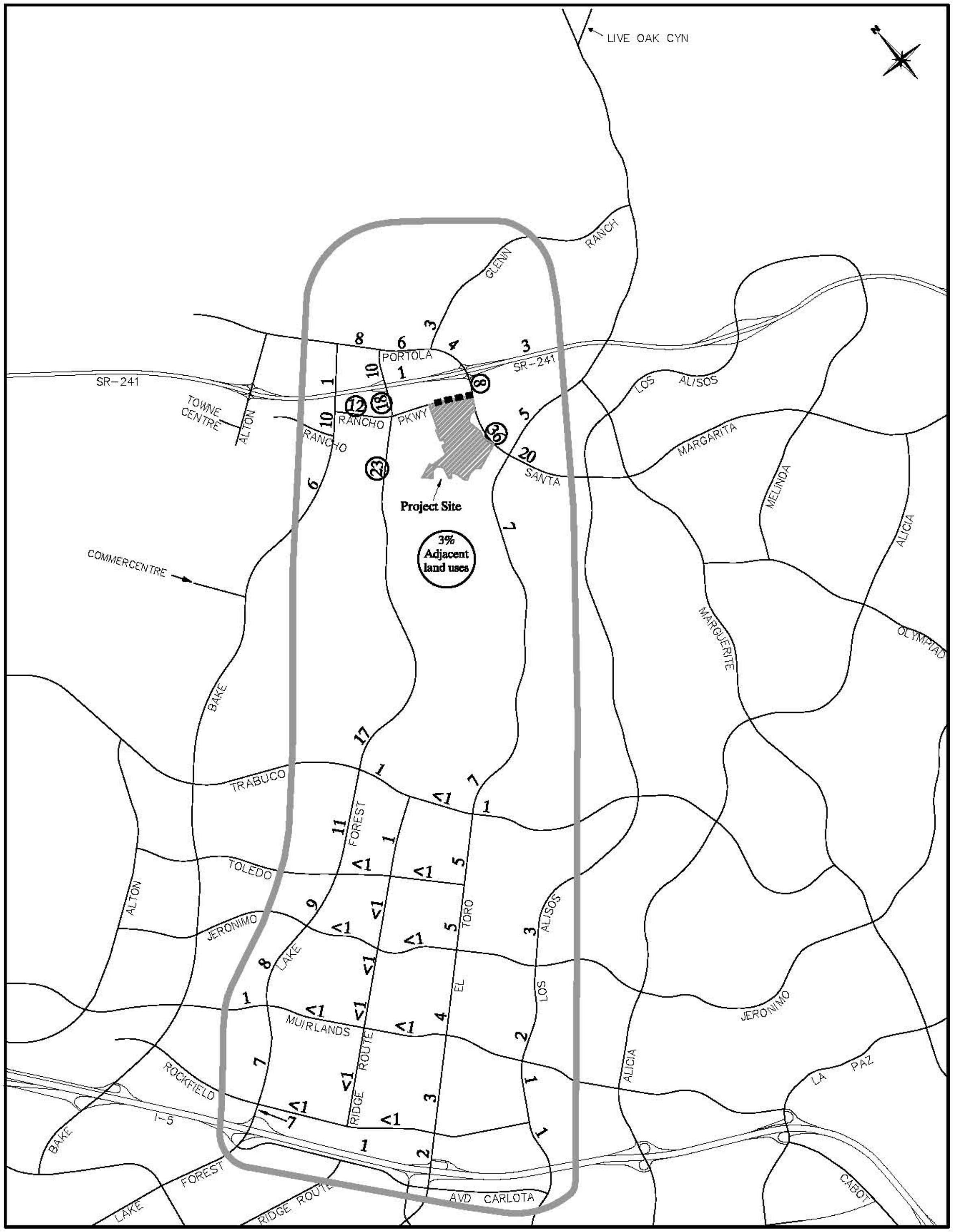
The proposed project would generate new vehicle trips to the site, which would cause increases in traffic volumes along local and regional roadway and highways and at nearby intersections. The analysis below presents the detailed results of the traffic modeling that was conducted for the proposed project. Additionally, construction could result in temporary impacts within the site and on the surrounding area roadways, and is discussed separately.

Construction Traffic

Construction of the proposed project would generate truck and other vehicular traffic associated with construction worker commutes, transport and staging of construction equipment, transport of construction materials to the construction site, and hauling excavated soil and materials away from the site. Construction of the proposed project would take approximately 62 months to complete, if the phasing occurs as anticipated. Construction equipment staging areas and construction worker parking would all occur on the project site. Grading associated with the proposed project and the export and import of soil is expected to generate the most amount of traffic during construction. Other construction traffic, i.e., equipment and worker trips, is difficult to quantify; however, it would primarily occur off-peak, and would vary on a daily and monthly basis, depending upon the specific construction aspects occurring at any given time. Construction impacts can be qualitatively assessed based on the types of impacts that are generated during peak construction periods. Potential construction effects on roadway operations include the following:

- A temporary increase in traffic associated with construction worker commutes, delivery of construction materials, and/or excavated materials and soil, and general deliveries would increase travel demand on roadways.
- During proposed project construction, parking demand would increase from construction workers and from construction equipment that is not in use.
- Temporary lane or road closures could occur adjacent to proposed project, which could interfere with bicycle or pedestrian circulation within the proposed project vicinity.
- Heavy and slow-moving construction vehicles would mix with general-purpose vehicular and nonmotorized traffic in the area.

See Chapter 2, Project Description, for detailed descriptions of the construction activities and planned phasing of the elements associated with the proposed project. Impacts from construction activities would be temporarily adverse but not significant given the limited number of construction trips necessary and the lack of congestion on surrounding streets. Preparation and implementation of a construction traffic management plan as presented in Mitigation Measure TC-1 below would, however, further minimize construction-related impacts. Therefore, impacts related to construction would be considered less than significant.



Legend

——	Existing Roadway; ▬ Study Area Boundary
▪▪▪▪▪	Future roadway in with-project only
ⓍⓍ	Project cordon trip distribution (adds to 100)
XX	Percent of project trip distribution
<1	Denotes insignificant/nominal trip distribution

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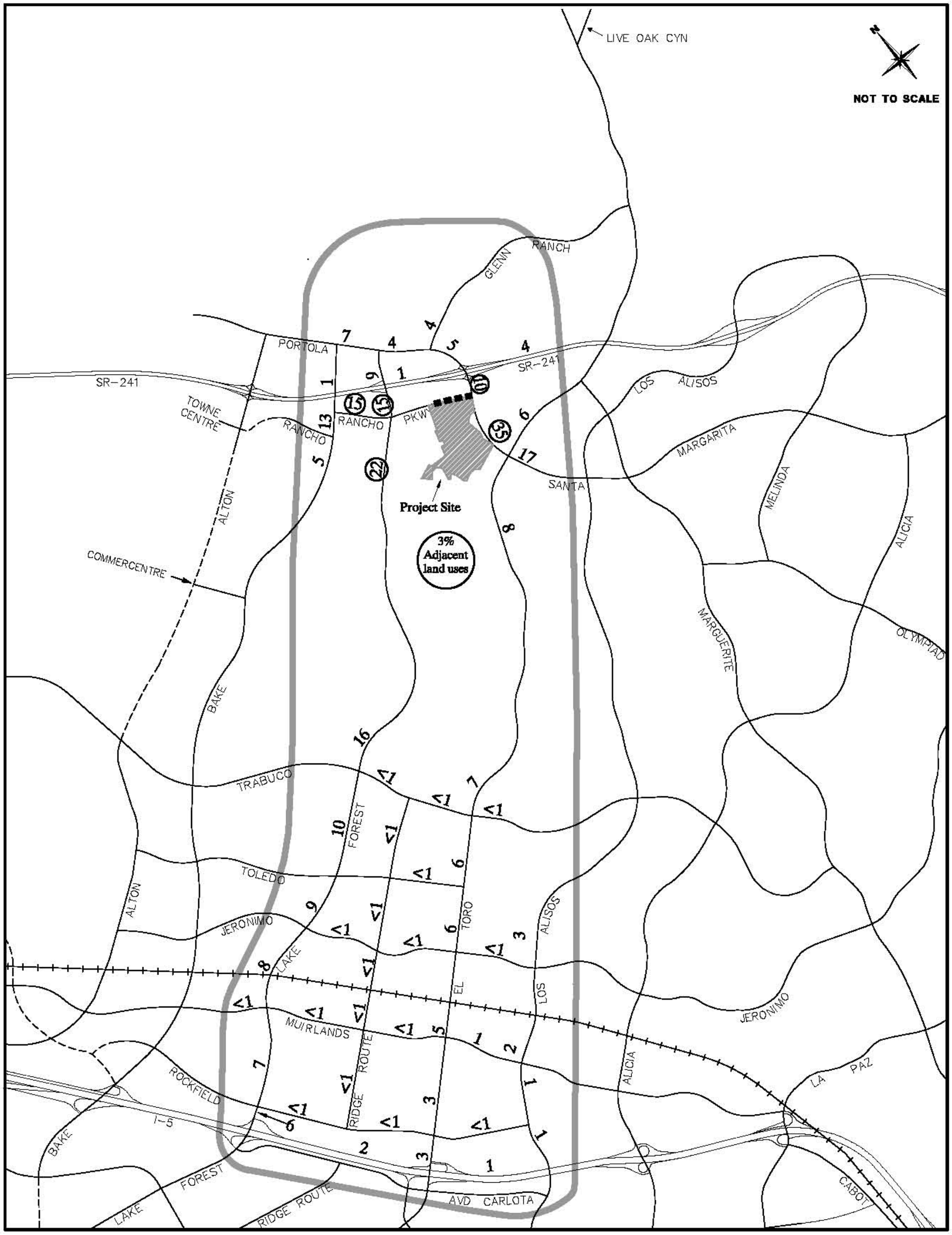
Figure 3.14-7
Year 2011 Short-Term Conditions–
Project Trip Distribution



Legend
Existing Roadway — Study Area Boundary
Future Roadway in by 2015
Future roadway in with-project only
(XX) Project cordon trip distribution (adds to 100)
XX Percent of project trip distribution
<1 Denotes insignificant/nominal trip distribution

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Figure 3.14-8
Year 2015 Cumulative Conditions – Project Trip Distribution

Operation Traffic

Trip Generation

Land use and trip generation rates were developed for the proposed project based on case studies of similar parks conducted throughout Orange County and Los Angeles County and assume that all of the proposed facilities/park amenities (i.e., community/recreation center and all fields) are in concurrent use. As shown in Table 3.14-9, the proposed project would generate 3,642 ADT under both Year 2011 Short-Term Conditions and Year 2015 Cumulative Conditions. Because the existing mining uses and passive park currently generate 494 ADT, with 41 AM Peak Hour and 23 PM peak hour trips, these trips were factored into the analysis. Therefore, the project is estimated to generate a total of 3,148 net ADT, with 480 PM peak hour trips and an overall reduction of 41 AM peak hour trips.

Table 3.14-9. Existing Land use and Proposed Project Trip Generation Summary—Year 2011 Short-Term and Year 2015 Cumulative

			AM Peak Hour			PM Peak Hour			
Land Use	**Parcel**	**Units**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**ADT**
No Project									
Vacant	Rados	13 Acre	0	0	0	0	0	0	0
Mining/Utility	Baker	16.1 Acre	25	15	40	9	12	21	401
Park[a]	County	58.6 Acre	1	0	1	1	1	2	93
Total		***87.7 Acre***	***26***	***15***	***41***	***10***	***13***	***23***	***494***
Project Trips									
Sports Park	Rados	13 Acre	0	0	0	44	53	97	699
Sports Park	Baker	16.1 Acre	0	0	0	55	66	121	866
Park[b]	County	20.6 Acre	0	0	0	0	0	0	33
Sports Park	County	38 Acre	0	0	0	129	156	285	2,077
Total		***87.7 Acre***	***0***	***0***	***0***	***228***	***275***	***503***	***3,642***
Trip Generation Rates									
Park		Acre	0.01	0.00	0.01	0.02	0.02	0.04	1.59
Sports Park		Acre	0.01	0.00	0.01	3.40	4.10	7.50	53.80
Mining/Utility		Acre	1.57	0.92	2.49	0.59	0.73	1.32	24.9
Vacant		Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00

[a] Currently a passive use park.
[b] Passive use easement.
Abbreviation: ADT – average daily trips

Trip Distribution and Assignment

Trip distribution patterns for the proposed land uses are presented in Figures 3.14-7 and 3.14-8 for the Year 2011 Short-Term and Year 2015 Cumulative scenarios. Trip distribution patterns are based on the City of Lake Forest's traffic model's distribution of daily project traffic. As shown in Figures 3.14-7 and 3.14-8, the majority of project trips would be headed southbound on Portola

Parkway/Santa Margarita Parkway, westbound on Rancho Parkway, and southwest on Lake Forest Drive.

The study area used for the analysis was determined from the distribution of project trips on the adjacent circulation system and impact criteria guidelines defined in this report. It is based on where project traffic dissipates to less-than-significant levels (i.e., change in ICU of less than 0.03). Generally these thresholds are met when the project trip distribution is below 10%. For example, the intersection of Bake Parkway and Rancho Parkway South carries a significant amount of project traffic, but beyond that location, project traffic dissipates to a less-than-significant amount.

Year 2011 Short-Term Scenario

ADT Volumes

Short-term ADT forecasts are illustrated in Figures 3.14-9 and 3.14-10 for the No Project and With Project conditions, respectively. As mentioned earlier, the existing circulation system assumes the Rancho Parkway extension to Portola Parkway under the With Project conditions.

Peak Hour Intersection LOS Summary

Table 3.14-10 summarizes the AM and PM peak hour ICU values and the corresponding LOS for the intersection locations that were analyzed based on the Year 2011 Short-Term Scenario for the With Project and No Project conditions. Actual turn volumes and ICU calculation worksheets are provided in Appendix C of the Traffic Study. Based on the peak hour intersection performance criteria and impact thresholds established for the analysis, no intersections within the traffic study area are significantly affected by the proposed project under the Year 2011 Short-Term Scenario. As shown in Table 3.14-10, traffic conditions at the Portola Parkway and SR-241 ramps; Lake Forest and Portola Parkway; and Glenn Ranch and Portola Parkway would actually improve due to the addition of the Rancho Parkway extension to Portola Parkway.

Peak Hour Freeway/Tollway Ramp LOS Summary

The AM and PM peak hour ramp volumes and V/C ratios for the With Project and No Project under the Year 2011 Short-Term Scenario are summarized in Table 3.14-11. Based on the peak hour ramp performance criteria and impact thresholds established for the analysis, no freeway ramp is forecast to be significantly affected by the proposed project under the Year 2011 Short-Term Scenario.

Peak Hour Freeway/Tollway Mainline LOS Summary

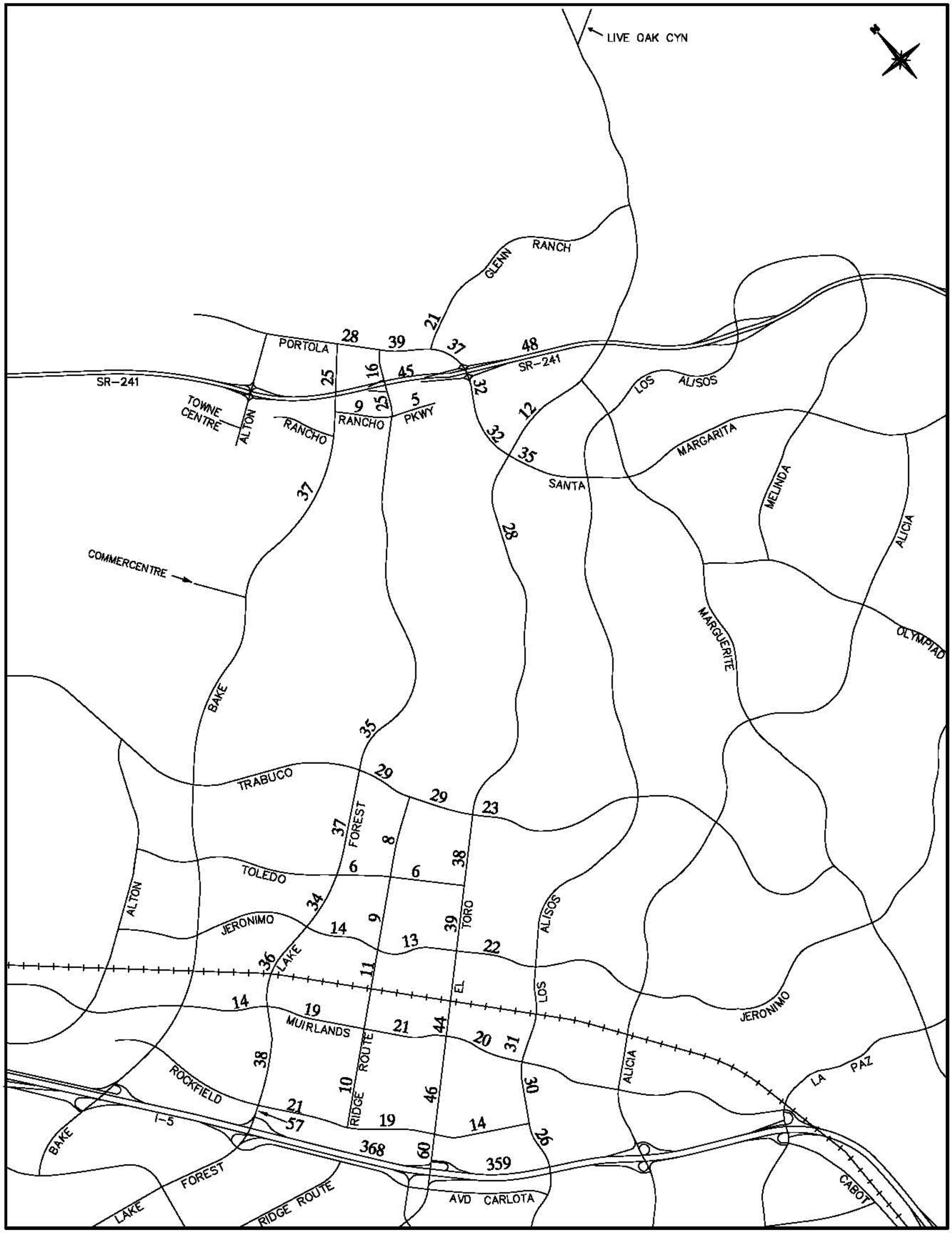
AM and PM freeway mainline peak hour volumes and V/C ratios for the With Project and No Project under the Year 2011 Short-Term Scenario are summarized in Table 3.14-12. Based on the peak hour mainline performance criteria and impact thresholds established for the analysis, no freeway mainline segment is forecast to be significantly affected by the proposed project under the Year 2011 Short-Term Scenario. It should be noted that the LOS thresholds and significance criteria used here are from the CMP and do not necessarily represent Caltrans policy. However, since Caltrans does not currently have a defined impact threshold criteria the traffic analysis defers to the Orange County CMP guidelines for determining project impacts on State facilities (the freeway/tollway system in the study area is included in the CMP roadway network).

Table 3.14-10. Year 2011 Short-Term Intersection LOS within the Study Area

	No Project				With Project				Difference	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
Intersection	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM
2. Bake & Portola	0.59	A	0.65	B	0.56	A	0.63	B	-0.03	-0.02
3. Lake Forest & Portola	0.49	A	0.68	B	0.44	A	0.55	A	-0.05	-0.13
4. Glenn Ranch & Portola	0.64	B	0.57	A	0.55	A	0.54	A	-0.09	-0.03
5. Portola & SR-241 Ramps	0.46	A	0.65	B	0.43	A	0.56	A	-0.03	-0.09
7. Lake Forest & SR-241 NB	0.34	A	0.40	A	0.29	A	0.35	A	-0.05	-0.05
8. Lake Forest & SR-241 SB	0.51	A	0.48	A	0.42	A	0.41	A	-0.09	-0.07
9. Bake & Rancho North	0.74	C	0.70	B	0.80	C	0.70	B	0.06	0.00
10. Lake Forest & Rancho	0.42	A	0.49	A	0.62	B	0.77	C	0.20	0.28
11. Bake & Rancho South	0.63	B	0.78	C	0.64	B	0.80	C	0.01	0.02
12. El Toro & Portola/Santa Margarita	0.66	B	0.67	B	0.78	C	0.76	C	0.12	0.09
15. Lake Forest & Trabuco	0.68	B	0.68	B	0.70	B	0.69	B	0.02	0.01
16. Ridge Route & Trabuco	0.51	A	0.61	B	0.50	A	0.60	A	-0.01	-0.01
17. El Toro & Trabuco	0.72	C	0.70	B	0.69	B	0.69	B	-0.03	-0.01
19. Lake Forest & Toledo	0.55	A	0.52	A	0.55	A	0.50	A	0.00	-0.02
20. Ridge Route & Toledo	0.37	A	0.31	A	0.36	A	0.30	A	-0.01	-0.01
21. El Toro & Toledo	0.57	A	0.49	A	0.59	A	0.49	A	0.02	0.00
23. Lake Forest & Jeronimo	0.65	B	0.68	B	0.65	B	0.66	B	0.00	-0.02
24. Ridge Route & Jeronimo	0.55	A	0.51	A	0.54	A	0.50	A	-0.01	-0.01
25. El Toro & Jeronimo	0.70	B	0.86	D	0.69	B	0.84	D	-0.01	-0.02
26. Los Alisos & Jeronimo	0.68	B	0.84	D	0.68	B	0.82	D	0.00	-0.02
27. Lake Forest & Muirlands	0.55	A	0.48	A	0.55	A	0.47	A	0.00	-0.01
28. Ridge Route & Muirlands	0.50	A	0.61	B	0.50	A	0.61	B	0.00	0.00
29. El Toro & Muirlands	0.65	B	0.56	A	0.64	B	0.55	A	-0.01	-0.01
30. Los Alisos & Muirlands	0.61	B	0.75	C	0.60	A	0.76	C	-0.01	0.01
31. Lake Forest & Rockfield	0.64	B	0.73	C	0.65	B	0.74	C	0.01	0.01
32. Ridge Route & Rockfield	0.39	A	0.52	A	0.39	A	0.50	A	0.00	-0.02
33. El Toro & Rockfield	0.55	A	0.66	B	0.57	A	0.68	B	0.02	0.02

Intersection	No Project				With Project				Difference	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM
34. Los Alisos & Rockfield	0.68	B	0.66	B	0.68	B	0.65	B	0.00	-0.01
35. Lake Forest & I-5 NB	0.47	A	0.66	B	0.48	A	0.65	B	0.01	-0.01
36. Lake Forest & I-5/Carlota	0.70	B	0.73	C	0.67	B	0.73	C	-0.03	0.00
37. Paseo De Valencia & Carlota	0.50	A	0.58	A	0.50	A	0.59	A	0.00	0.01
38. El Toro & Bridger/I-5 NB	0.63	B	0.70	B	0.62	B	0.69	B	-0.01	-0.01
39. El Toro & Avd Carlota	0.59	A	0.85	D	0.60	A	0.86	D	0.01	0.01
40. Portola & Rancho	--	--	--	--	0.49	A	0.68	B	0.49	0.68

Abbreviations: ICU – intersection capacity utilization, LOS – level of service, NB – northbound, SB – southbound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PORTOLA
SR-241
TOWNE CENTRE
ALTON
RANCHO
RANCHO PKWY
LOS ALISOS
MARGARITA
SANTA
MELINDA
ALICIA
COMMERCENTRE
MARGUERITE
OLYMPIAD
BAKE
TRABUCO
FOREST
TOLEDO
JERONIMO
LAKE
TORO
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RIDGE ROUTE
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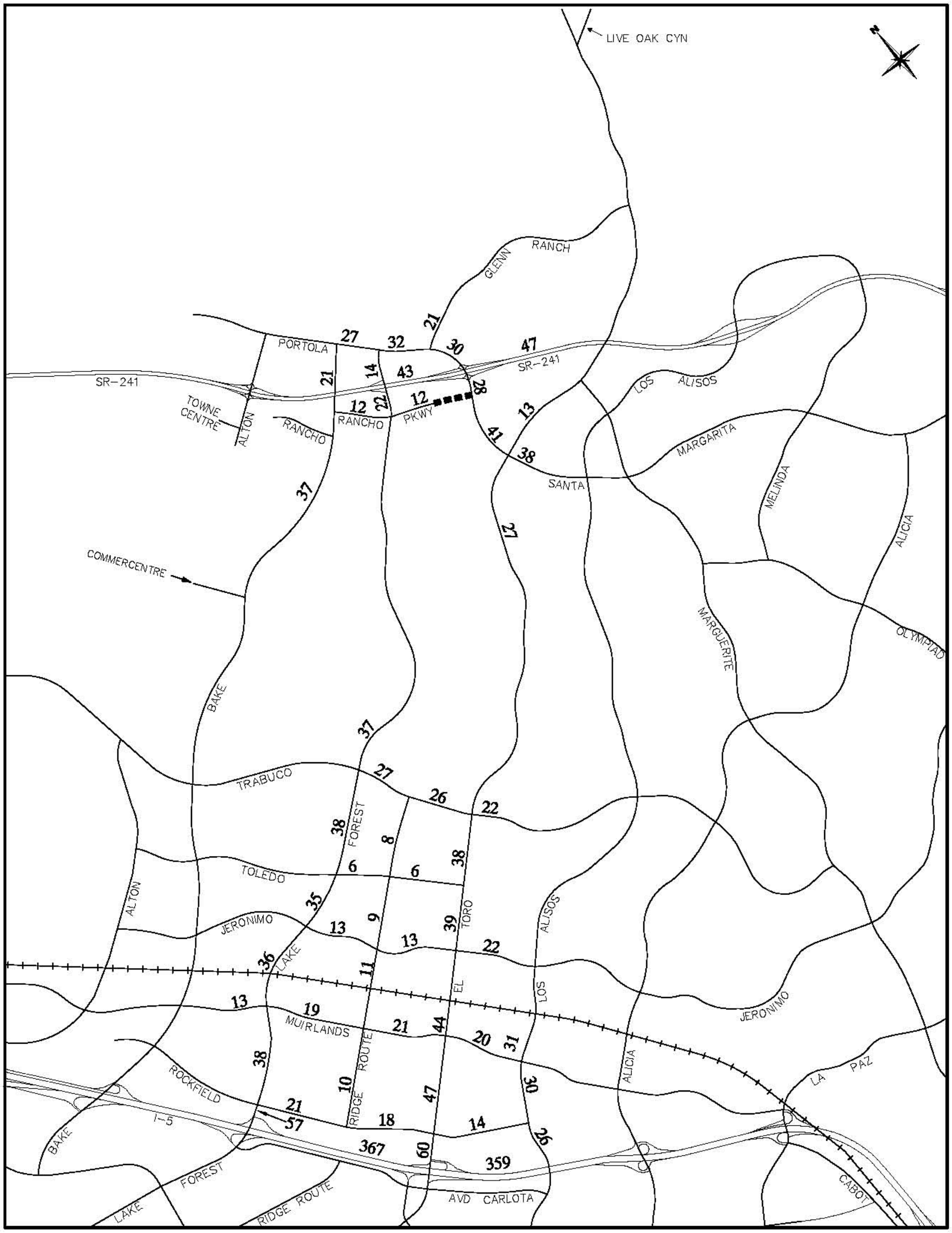

Legend

—— Existing Roadway

■■■■■ Future roadway in with-project only

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Figure 3.14-10
Year 2011 Short-Term Conditions ADT Volumes (000s) – With Project

Table 3.14-11. Year 2011 Short-Term—Freeway/Tollway Ramp LOS Summary

				No Project						With Project						Difference	
			Peak Hour	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				
Interchange	Ramp	Lanes	Capacity	Volume	V/C	LOS	Volume	V/C	LOS	Volume	V/C	LOS	Volume	V/C	LOS	AM	PM
I-5 at Lake Forest	SB Direct On	1	1,500	309	0.21	A	540	0.36	A	297	0.20	A	550	0.37	A	-0.01	0.01
	SB Loop On	1	1,080	473	0.44	A	423	0.39	A	478	0.44	A	417	0.39	A	0.00	0.00
	NB On	2	1,800	960	0.53	A	830	0.46	A	995	0.55	A	834	0.46	A	0.02	0.00
	SB Off	2	3,000	1,834	0.61	B	2,448	0.82	D	1,808	0.60	A	2,383	0.79	C	-0.01	-0.03
	NB Off	1	1,500	1,043	0.70	B	602	0.40	A	1,030	0.69	B	595	0.40	A	-0.01	0.00
I-5 at El Toro	SB Direct On	1	1,080	261	0.24	A	538	0.50	A	254	0.24	A	531	0.49	A	0.00	-0.01
	SB Loop On	1	1,500	631	0.42	A	883	0.59	A	634	0.42	A	871	0.58	A	0.00	-0.01
	NB Direct On	1	1,500	1,311	0.87	D	1,005	0.67	B	1,353	0.90	D	998	0.67	B	0.03	0.00
	NB Loop On	1	1,500	749	0.50	A	952	0.63	B	749	0.50	A	969	0.65	B	0.00	0.02
	SB Off	2	3,000	1,628	0.54	A	1,338	0.45	A	1,654	0.55	A	1,327	0.44	A	0.01	-0.01
	NB Off	1	1,500	947	0.63	B	1,270	0.85	D	946	0.63	B	1,277	0.85	D	0.00	0.00
SR-241 at Lake Forest	NB On	2	2,250	180	0.08	A	449	0.20	A	208	0.09	A	448	0.20	A	0.01	0.00
	SB Off	1	1,500	565	0.38	A	224	0.15	A	546	0.36	A	258	0.17	A	-0.02	0.02
SR-241 at Portola (East)	SB On	1	1,500	264	0.18	A	792	0.53	A	242	0.16	A	843	0.56	A	-0.02	0.03
	NB On	2	2,250	809	0.36	A	341	0.15	A	771	0.34	A	356	0.16	A	-0.02	0.01
	SB Off	1	1,500	266	0.18	A	547	0.36	A	278	0.19	A	513	0.34	A	0.01	-0.02
	NB Off	2	2,250	1,019	0.45	A	345	0.15	A	1,086	0.48	A	341	0.15	A	0.03	0.00

Abbreviations: LOS – level of service, NB – northbound, SB – southbound, V/C – volume/capacity ratio

Table 3.14-12. Year 2011 Short-Term—Freeway/Tollway Ramp LOS Summary

				No Project						With Project						Difference	
				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				
Location	Direction	Lanes	Peak Hour Capacity	Volume	V/C	LOS	Volume	V/C	LOS	Volume	V/C	LOS	Volume	V/C	LOS	AM	PM
I-5 n/o Lake Forest	Northbound	8+2H	19,500	15,444	0.79	D	11,872	0.61	C	15,499	0.79	D	11,877	0.61	C	0.00	0.00
	Southbound	8+2H	19,500	11,045	0.57	C	15,667	0.80	D	11,045	0.57	C	15,667	0.80	D	0.00	0.00
I-5 n/o El Toro	Northbound	6+2H	15,500	15,527	1.00	E	11,644	0.75	D	15,536	1.00	E	11,644	0.75	D	0.00	0.00
	Southbound	6+2H	15,500	9,993	0.64	C	14,182	0.91	E	9,993	0.64	C	14,188	0.92	E	0.00	0.01
I-5 n/o Alicia	Northbound	4+1H	9,600	14,414	1.50	F	10,957	1.14	F	14,414	1.50	F	10,957	1.14	F	0.00	0.00
	Southbound	4+1H	9,600	9,255	0.96	E	14,264	1.49	F	9,255	0.96	E	14,264	1.49	F	0.00	0.00
SR-241 n/o Lake Forest	Northbound	3	6,000	4,834	0.81	D	1,728	0.29	A	4,834	0.81	D	1,728	0.29	A	0.00	0.00
	Southbound	3	6,000	1,367	0.23	A	3,954	0.66	C	1,367	0.23	A	3,954	0.66	C	0.00	0.00
SR-241 n/o Portola East	Northbound	3	6,000	4,653	0.78	D	1,278	0.21	A	4,653	0.78	D	1,278	0.21	A	0.00	0.00
	Southbound	2	4,000	802	0.20	A	3,729	0.93	C	818	0.21	A	3,729	0.93	C	0.01	0.00
SR-241 n/o Los Alisos	Northbound	3	6,000	4,863	0.81	D	1,284	0.21	A	4,863	0.81	D	1,284	0.21	A	0.00	0.00
	Southbound	2	4,000	800	0.20	A	3,974	0.99	C	800	0.21	A	3,974	0.99	C	0.01	0.00

Abbreviations: H – high-occupancy vehicle lane, LOS – level of service, V/C – volume/capacity ratio

Year 2015 Cumulative Scenario

ADT Volumes

ADT forecasts for the Year 2015 Cumulative Scenario are illustrated in Figures 3.14-11 and 3.14-12 for the No Project and With Project, respectively. In the Year 2015 Cumulative Scenario, the roadway network assumes that Alton Parkway is connected between Towne Centre Drive and Irvine Boulevard and that Rancho Parkway is extended to Portola Parkway under the With Project conditions.

Peak Hour Intersection Levels of Service

Table 3.14-13 summarizes the AM and PM peak hour ICU values and the corresponding LOS for study intersections under the Year 2015 Cumulative Scenario. Actual turn volumes and ICU calculation worksheets are provided in Appendix C of the Traffic Study. Based on the peak hour intersection performance criteria and impact thresholds established for the analysis, one intersection within the study area, Lake Forest Drive and Rancho Parkway, is significantly affected by the proposed project under the Year 2015 Cumulative Scenario. The ICU for this intersection increases from 0.67 to 0.92, and the LOS degrades from LOS B to LOS E.

The LFTM Program includes improvements at the intersection of Lake Forest Drive and Rancho Parkway, which would mitigate the project impact resulting from the Sports Park/Recreation Center project. These improvements are not considered new mitigation; rather they are included in the list of LFTM improvements and are fully funded. The improvements listed in LFTM for the intersection of Lake Forest Drive and Rancho Parkway surpass what is required to mitigate the impacts of the project. Therefore, implementation of Mitigation Measure TC-2 would ensure that the minimum improvements necessary to accommodate the proposed project (a second eastbound through lane on Rancho Parkway) be constructed no later than year 2015.

According to the Austin-Foust Traffic Study, three intersections (Lake Forest Drive and Portola Parkway, Los Alisos and Muirlands, and El Toro and Avenida Carlota) are forecast to operate deficiently under the No Project and With Project conditions. However, these intersection deficiencies are not attributable to the proposed project and will be improved with implementation of the traffic improvements identified in the LFTM Program.

Peak Hour Freeway/Tollway Ramp Levels of Service

Year 2015 Cumulative AM and PM peak hour ramp volumes and V/C ratios for the With Project and No Project are not forecast to be significantly affected by the proposed project under Year 2015 Cumulative Scenario.[4]

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[4] The results for the 2015 General Plan conditions (formerly applying Alternative 8 of the OSA PEIR in the March 2010 Traffic Study by Austin Foust Associates), indicated that the proposed project would not adversely impact any freeway ramps and mainline segments (see Tables 13 and 14 of the March 2010 Traffic Study). By applying Alternative 7 of the OSA PEIR to the 2015 cumulative conditions (see August 2010 Traffic Study), the volumes and the volume differences at the ramp intersections and mainline segments for with and without project would be similar to those previously presented for General Plan conditions. Because of the negligible difference, these were not quantified for the report.

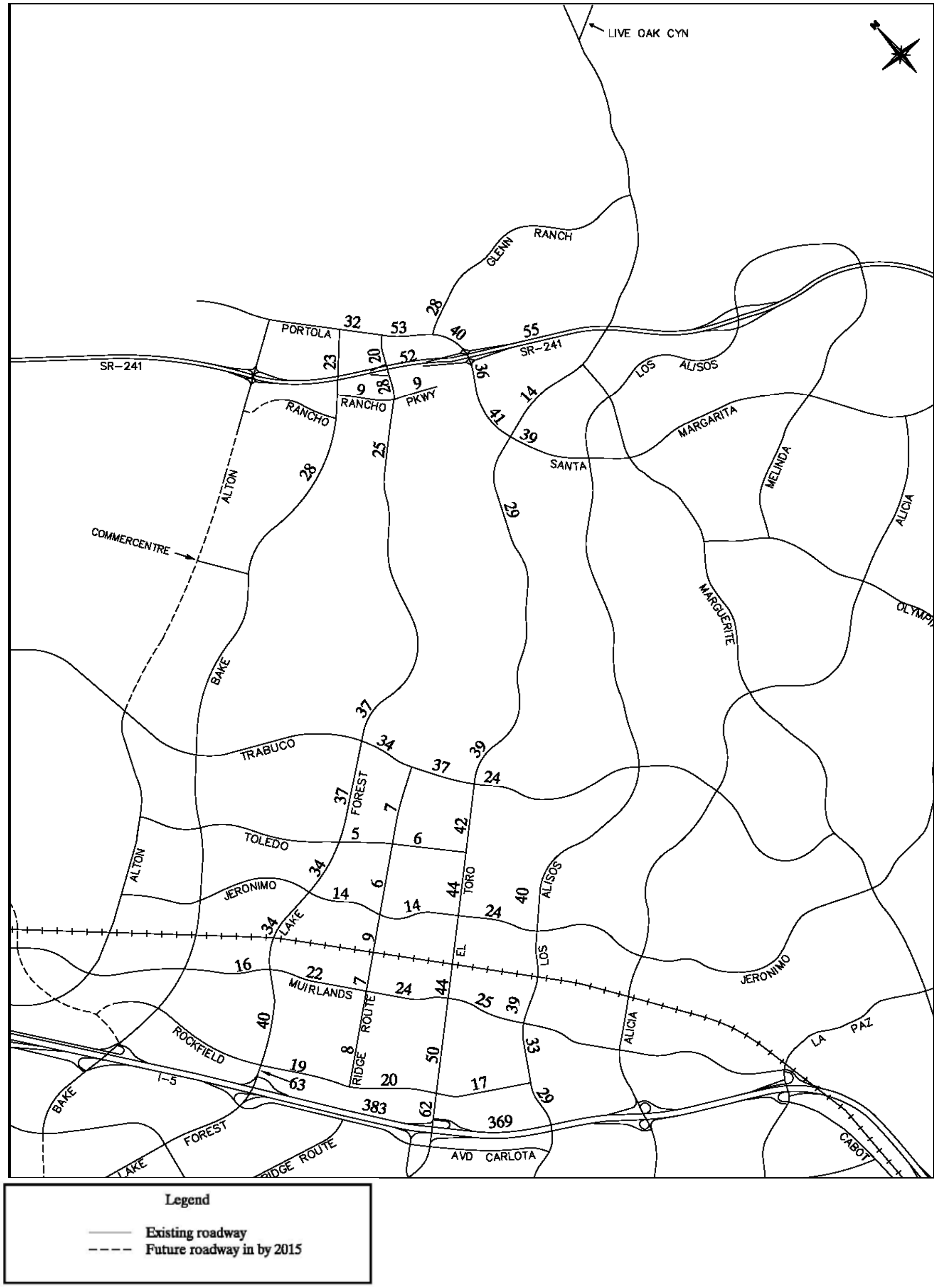

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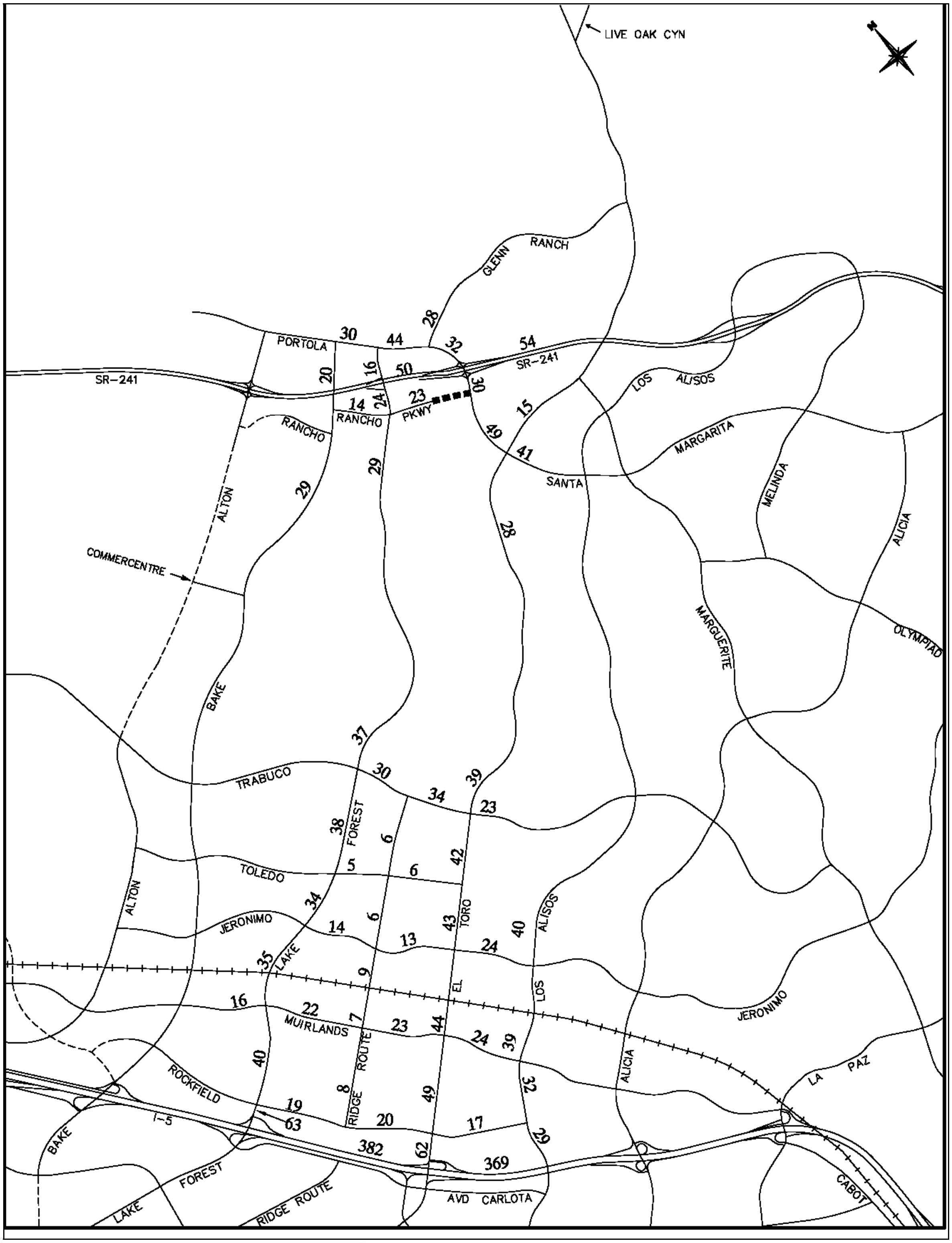
Figure 3.14-11
Year 2015 Cumulative Conditions ADT Volumes (000s) – No Project



Legend
- Existing roadway
- Future roadway in by 2015
- Future roadway in with-project only

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Figure 3.14-12
Year 2015 Cumulative Conditions ADT Volumes (000s) – With Project

Peak Hour Freeway/Tollway Mainline Levels of Service

Year 2015 Cumulative AM and PM mainline peak hour volumes and V/C ratios for the With Project and No Project are not forecast to be significantly affected by the proposed project under Year 2015 Cumulative Scenario.[5]

Mitigation Measures

Mitigation Measure TC-1. Prepare and Implement a Construction Traffic Management Plan.

Prior to initiating construction, the City will prepare a construction traffic management plan to be approved by the City Engineer. The traffic management plan will include, but will not be limited to:

- a street and site layout showing the location of construction activity and surrounding streets to be used as detour routes, including special signage,
- a tentative start date and construction duration period for each phase of construction,
- the name, address, and emergency contact number for those responsible for maintaining the traffic control devices during the course of construction,
- provisions for maintaining access for emergency vehicles at all times,
- requirements for contractors to avoid intersections currently operating at congested conditions, either by choosing routes that avoid these locations or by receiving deliveries during nonpeak times of day,
- provision of traffic controls within the site that may include flag persons wearing Occupational Safety and Health Administration–approved vests and using a "Stop/Slow" paddle to warn motorists of construction activity, and
- standard construction warning signs in advance of the construction area and at any intersection that provides access to the construction area.

Mitigation Measure TC-2. Construct Second Eastbound Through Lane on Rancho Parkway at Lake Forest Drive by 2015.

The City will construct the second eastbound through lane on Rancho Parkway at Lake Forest Drive to be operational no later than the year 2015.

Residual Impacts

With implementation of Mitigation Measures TC-1 and TC-2, impacts would be considered less than significant.

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[5] Ibid.

Impact TC-2. The Proposed Project Does Not Include Design Features or Uses That May Cause Traffic Hazards.

The proposed project would not cause traffic hazards due to design features or uses. The project is anticipated to occur in two to three phases as property is acquired (refer to Chapter 2, Project Description, for additional detail on project phasing). Phase 1 would occur on the Glass Creek property. Access to this phase is anticipated to occur via an existing access easement from Portola Parkway (1A). Rancho Parkway Phase 1 includes the extension of Rancho Parkway from Hermana Circle to Portola Parkway. It is anticipated that construction associated with the Rancho Parkway extension would last approximately 11 months and will occur concurrently with construction of Phase 1 of the park. Phase 2 would occur on the Rados property. Access to this phase is anticipated to occur via a potential secondary access from Vista Terrace Drive (1B). Phase 3 would occur on approximately 16.1 acres of the Baker Ranch property located south of the Rancho Parkway extension. This phase would likely include development of access to Rancho Parkway (2 and/or 3). Impacts from construction and operation are discussed separately below.

Construction

The proposed project would not alter the shape of any of the adjacent roads or introduce any new uses that would cause a traffic hazard during construction. During construction, temporary lane or road closures could occur adjacent to the proposed project site, which could interfere with bicycle or pedestrian circulation within the proposed project vicinity. Heavy and slow-moving construction vehicles would also mix with general-purpose vehicular and nonmotorized traffic in the area. Impacts from construction activities would be temporarily adverse but would not be considered significant under CEQA. As mentioned earlier, the proposed project would implement a construction traffic management plan that would reduce any traffic hazards during construction (see Mitigation Measure TC-1 above) by alleviating or minimizing work-related traffic delays near the project site and local roadways. Therefore, impacts related to construction traffic hazards would be less than significant.

Operations

During operation, the proposed project would not substantially increase vehicular or pedestrian hazards due to a design feature or incompatible uses. Pedestrian improvements would be provided throughout the project area, providing dedicated hiking and biking trails and pedestrian crossing areas. All proposed access improvements would be reviewed by the City's Public Works Department. The site plan and circulation concepts included within the Draft EIR are considered conceptual and subject to change and further refinement. Impacts would be considered less than significant.

The City of Irvine provided a comment letter during the scoping period requesting that the EIR address the potential weaving problem that vehicles may have at the intersection of Portola Parkway and Rancho Parkway with the southbound SR-241/Portola Parkway that could be caused as a result of the proposed project. The City of Lake Forest implements OCTA's CMP TIA guidelines when TIAs are required and the guidelines contain no policy direction for weaving analysis requirements. The Highway Capacity Manual, the basis for the TIA guidelines, notes that a weaving analysis is not appropriate for conventional highways (surface streets) and should be limited to freeway analysis. In addition, the TIA has been prepared to meet the HCM and OCTA Guidelines. Lastly, the latest TIA did not find any impacts related to the southbound SR-241 off-ramp at Portola Parkway.

Mitigation Measures

No additional mitigation is required with implementation of Mitigation Measure TC-1.

Residual Impacts

No residual impacts are anticipated.

Impact TC-3. The project provides adequate parking, applying the standards found in the City of Lake Forest Municipal Code.

The City of Lake Forest currently has no standards established for this type of land use in the existing Municipal Code. Based on previous case studies of similar sports park facilities, an average of 26 parking spaces per baseball/soccer field should be provided, and up to three spaces per tennis court (Austin-Foust Associates, Inc. 2002). Additionally, space must be provided for passive recreational uses, such as picnicking, hiking, and open play areas.

The City also recognizes that a condition of "overlap" parking may occur when there are two consecutive events or special large-scale events. For example, in some circumstances, overlap parking may occur during the time period between the end of one event and the beginning of the next event. General observations indicate that arrivals occur approximately 15–30 minutes before the start of an event and departures occur within approximately 20 minutes after an event. Overlap parking and special event demand could increase the parking requirement by 80–100%. In order to accommodate this overlap, the City intends to provide a total of 50 spaces per field and approximately 120 spaces for the community center. While detailed design of the proposed sports park has not progressed to demonstrate the final parking layout and allocation, the City's proposed allocation would be more than sufficient to satisfy parking demand based on similar case studies.

Provision of adequate parking on site would discourage park users from parking in the adjacent residential neighborhood, commercial center, and industrial business parks, as well as avoid potential vehicle/pedestrian conflicts if patrons of the park were to park across Portola Parkway and attempt to cross two-way traffic. Additionally, due to the proximity of Regency Lane and uncontrolled informal access to the site from this roadway to the southwest, it is possible that some park users could potentially park along Regency Lane within the Normandale neighborhood and walk into the site. However, as mentioned earlier the sports park should have more than adequate parking spaces for park patrons. In order to ensure that potential neighborhood parking intrusion impacts are minimized, the City would implement Mitigation Measure TC-3.

Normal use of the park would be accommodated by the City's proposed allocation of parking within the site. However, there may be special events at the park that require overflow parking, which could result in parking in the adjacent residential neighborhood, commercial center, and industrial business parks. The City can address increased parking demand for special events through "bagging," which is the placement of bags over the no parking signs found along arterial roadways, or by making arrangements with local businesses with extra available parking areas. Implementation of Mitigation Measure TC-3 would reduce potential neighborhood parking intrusion impacts and ensure that impacts would be less than significant.

Mitigation Measures

Mitigation Measure TC-3. Make Arrangements with Surrounding Businesses for Overflow.

The City will arrange for overflow parking at local businesses to accommodate parking during special large-scale events, or provision of "temporary" allocated parking areas on adjacent arterial roadways to ensure that adjacent residential, industrial, and commercial areas do not experience overflow parking impacts.

Residual Impacts

With implementation of Mitigation Measure TC-3, no residual parking impacts are anticipated.

References

Austin-Foust Associates, Inc. 2002. Draft Traffic Study for the Brea Sports Park and Middle School. Prepared for the City of Brea. August 22, 2002.

Austin-Foust Associates, Inc. 2010a. Traffic Study for the City of Lake Forest Sports Park and Recreation Center. Prepared for the City of Lake Forest. March 2010.

Austin-Foust Associates, Inc. 2010b. Traffic Study for the City of Lake Forest Sports Park and Recreation Center Alternative 7 Sensitivity Analysis. Prepared for the City of Lake Forest. August 2010.

City of Lake Forest. 2008. Final Program Environmental Impact Report for the Opportunities Study Program Draft Environmental Impact Report. Prepared for the City of Lake Forest. Prepared by EIP Associates. May 2008.

City of Lake Forest. 2010. *City of Lake Forest CEQA Significance Thresholds Guide*. Published November 20, 2001, Revised March, 2009. Adopted June 15, 2010. Lake Forest, CA.