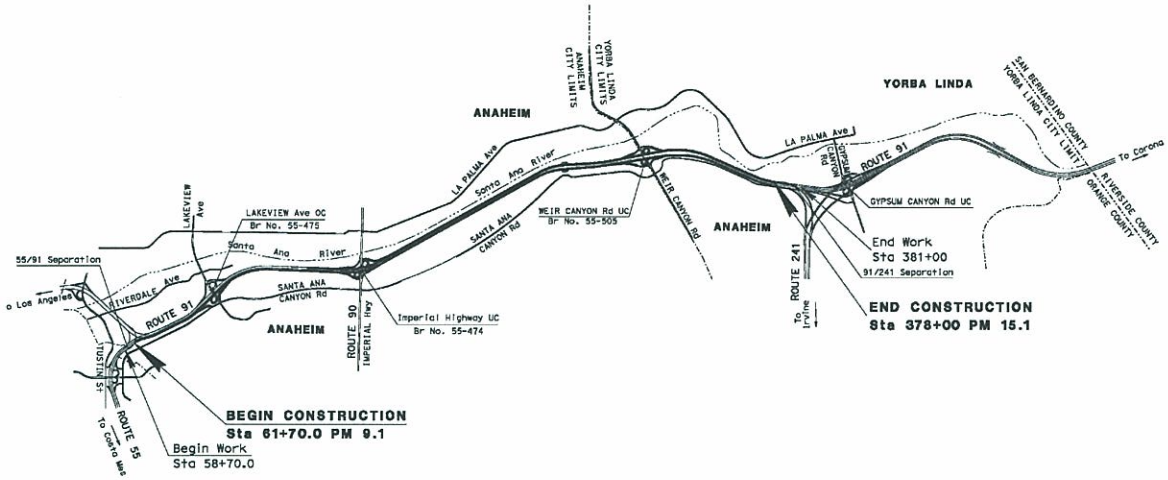
State Route 91 Widening

Between SR-91/SR-55 Separation and SR-91/SR-241 Separation
ORANGE COUNTY, CALIFORNIA
DISTRICT 12-ORA-91, PM 9.1/15.1
0G3300

Initial Study
(with Negative Declaration)



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April 2009

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SCH# 2008121122
12-ORA-91-PM 9.1/15.1)
EA 0G3300

STATE ROUTE 91 WIDENING BETWEEN SR-91/SR-55 (PM 9.1) SEPARATION AND SR-91/SR-241 SEPARATION (PM 15.1) IN ORANGE COUNTY

INITIAL STUDY (WITH NEGATIVE DECLARATION)

Submitted Pursuant to: (State) Division 13, California Public Resources Code

THE STATE OF CALIFORNIA
Department of Transportation

4.23.09
Date of Approval

Cindy Quon
District Director
California Department of Transportation
District 12

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NEGATIVE DECLARATION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SCH No. 2008121122
12-ORA-91-PM 9.1/15.1
EA 0G3300

NEGATIVE DECLARATION
Pursuant to: Division 13, Public Resources Code

Description

The California Department of Transportation (the Department) proposes to improve State Route 91 (SR-91) in Orange County by adding one general-purpose lane on SR-91 eastbound (EB) from the SR-91/State Route 55 (SR-55) separation (Post Mile [PM] 9.1) to east of the Weir Canyon Road on-ramp (PM 15.0), and on SR-91 westbound (WB) from west of the SR-91/State Route 241 (SR-241) separation (PM 15.1) to the State Route 90 (SR-90)/SR-91 separation (Imperial Highway Undercrossing) (PM 11.1).

Determination

An Initial Study has been prepared by the California Department of Transportation (Department), District 12. On the basis of this study it is determined that the proposed action will not have a significant effect upon the environment for the following reasons: The proposed project would have no effect on agricultural resources, the coastal zone, mineral resources, relocations, wild and scenic rivers, and energy.

In addition, the proposed project would have no significant effect on air quality, biological resources, cultural resources, land use, growth, traffic and circulation, hydrology, community, utilities/emergency services, visual/aesthetics, water quality, geology/soils, paleontology, hazardous waste, noise, cumulative impacts, or climate change.

Cindy Quon
District Director
District 12
California Department of Transportation

4-23-09
Date

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Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation – District 12 (Department) proposes to improve State Route 91 (SR-91) in Orange County by adding one general-purpose lane on SR-91 eastbound (EB) from the SR-91/State Route 55 (SR-55) separation (Post Mile [PM] 9.1) to east of the Weir Canyon Road on-ramp (PM 15.0), and on SR-91 westbound (WB) from west of the SR-91/State Route 241 (SR-241) separation (PM 15.1) to the State Route 90 (SR-90)/SR-91 separation (Imperial Highway Undercrossing) (PM 11.1). The proposed project would relieve congestion and improve operational efficiency on SR-91 between SR-55 and west of SR-241. The total length of the project is 6.0 miles (mi). The entire project area is located in Orange County. The Department is the Lead Agency for compliance with the California Environmental Quality Act (CEQA). The Orange County Transportation Authority (OCTA) is the local agency sponsor and a Responsible Agency under CEQA.

The regional location and the project location are shown in Figures 1-1 and 1-2, respectively. The project vicinity is shown in Figure 2.1.1-1 in the land use section of this Initial Study (IS).

The proposed project is included in the 2008 Regional Transportation Plan (RTP) prepared by the Southern California Association of Governments (SCAG) as "addition of one general purpose lane in each direction from SR-55 to Riverside County Line." The RTP is a long-range plan that identifies multimodal regional transportation needs and investments over the next 25 years in Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties. The proposed project is consistent with the project description in the RTP.

The Regional Transportation Improvement Program (RTIP), which is updated every two years, is derived from the RTP and lists specific capital projects proposed within the next six years. The project is included in the 2008 RTIP and is described as "Widening – Route 55 connector to Weir Canyon Road in Anaheim, from east of Route 55 connector to east of Weir Canyon Road, add one lane in each direction." The description of the project in the 2008 RTIP is consistent with the proposed project. The page from the 2008 RTIP that cites the proposed project is provided in

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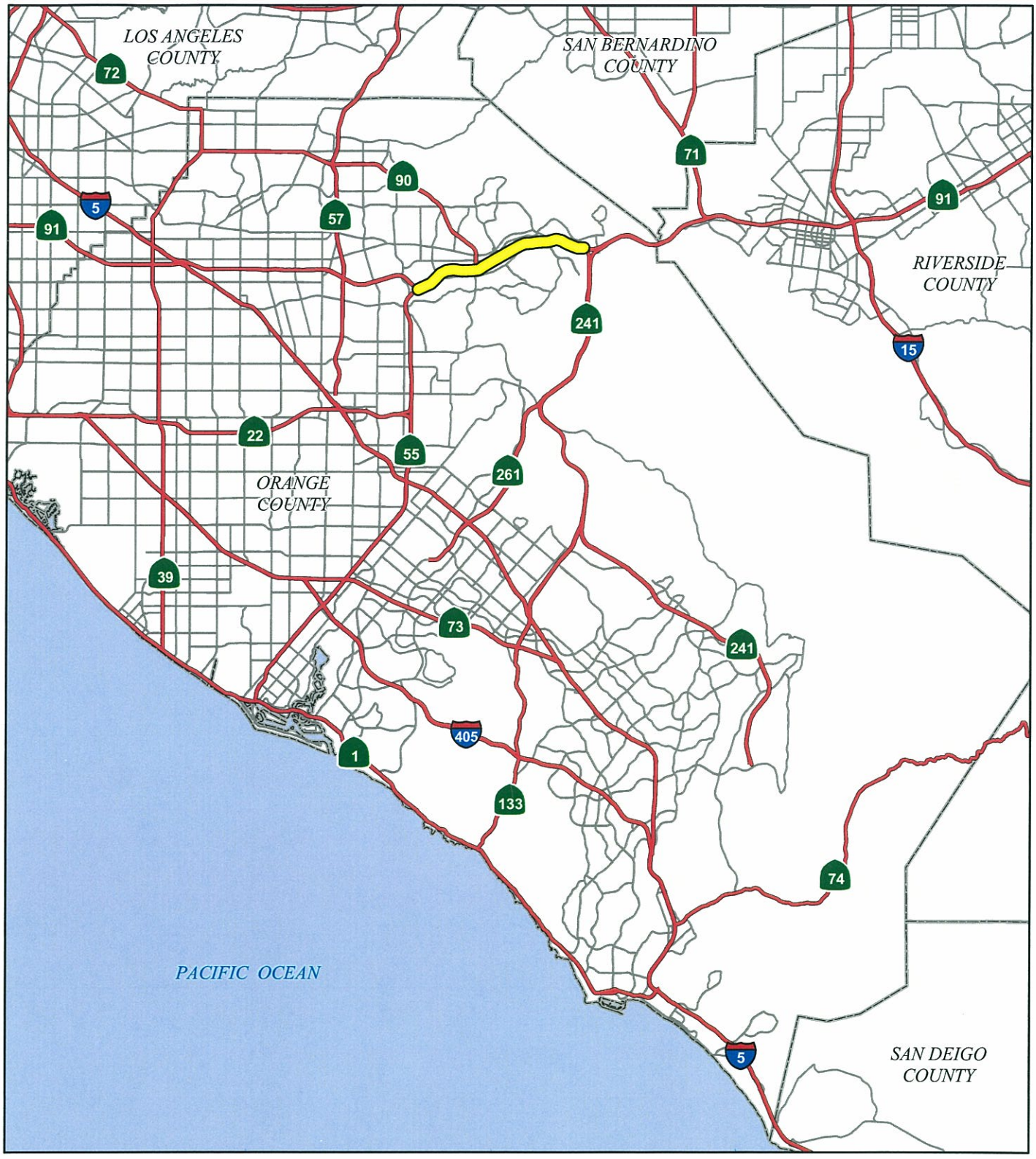

FIGURE 1-1

Project Study Area

0 2.5 5 Miles

SR-91 Widening Project
SR-55 to SR-241
Regional Location Map
12-ORA-91 PM 9.1/15.1
EA# OG330

SOURCE: Thomas Bros, (2007).

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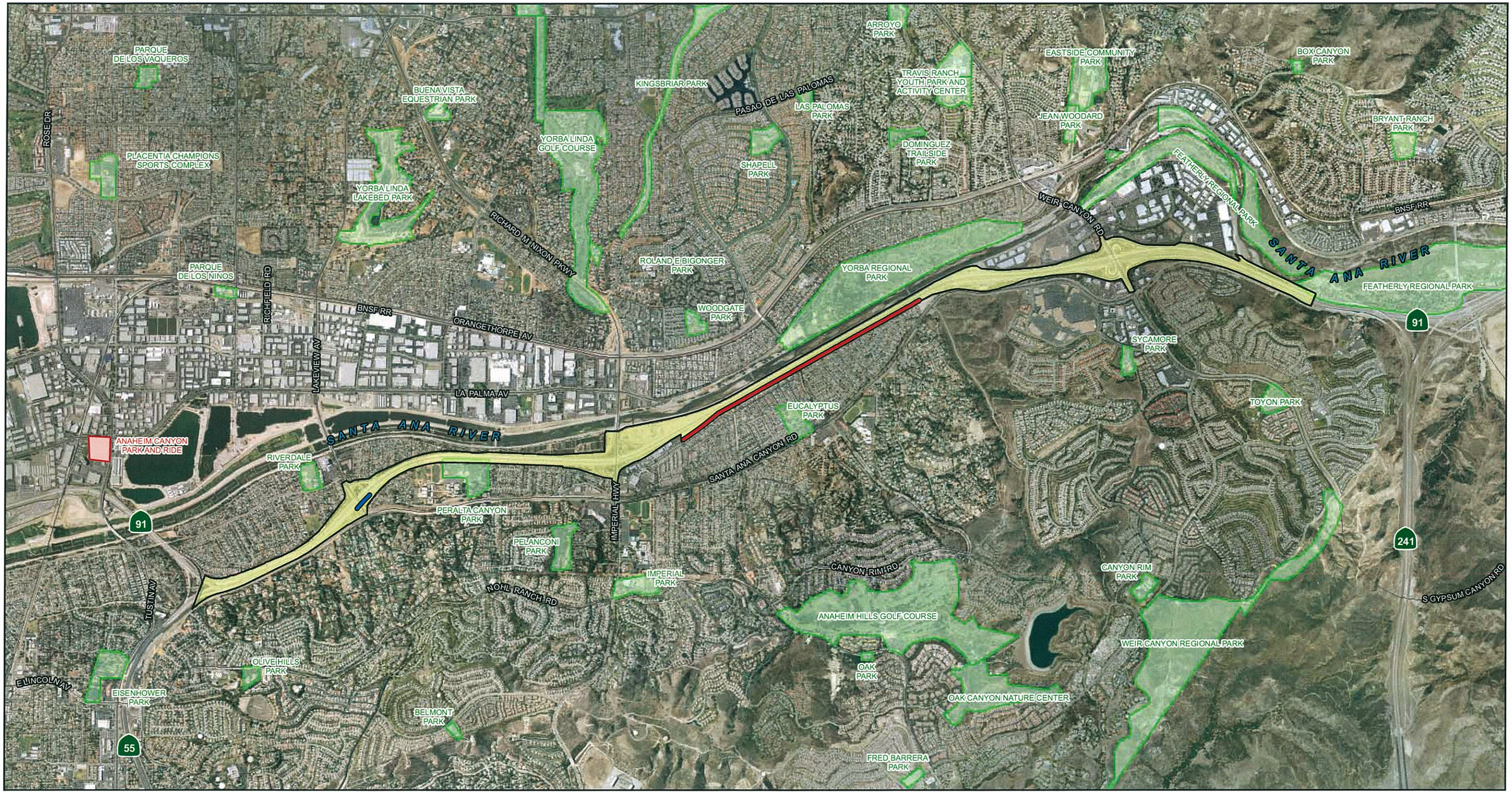

FIGURE 1-2

Project Study Area
Sound Wall
Retaining Wall

0 0.25 0.5 Miles

SOURCE: Air Photo USA (2007), Thomas Bros (2007).

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SR-91 Widening Project
SR-55 to SR-241
Project Location Map
12-ORA-91 PM 9.1/15.1
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Appendix G. The project was first adopted into the 2006 State Transportation Improvement Program (STIP) through Amendment STIP 1B-P-060. The project is described as "Widening – In Anaheim, from east of Route 55 connector to east of Weir Canyon Road, add one lane in each direction." Funding has been secured from the Corridor Mobility Improvement Account (CMIA) for $22 million for construction, and the rest of the funds are from STIP Augmentation. All this funding is from Proposition 1B.

The Department's Districts 8 and 12 prepared a report (CRAA) in January 2002 to identify a practical strategy for reducing commute-related congestion on SR-91 between Interstate 15 (I-15) in Riverside County and SR-55 in Orange County. The 17 projects analyzed in the study were chosen for their capacity to relieve congestion and improve the operational efficiency of the facility. The proposed project is included in OCTA's SR-91 Implementation Plan. The proposed project was formally initiated with a Project Study Report (PSR), which was approved by the Department on May 10, 2004. The PSR is a project initiation document that is required for all major projects before they are included in a state or local programming document, such as SCAG's RTIP.

1.2 Project Background

The project area lies within the northeastern portion of the City of Anaheim and the southeastern portion of the City of Yorba Linda. There are two parallel arterial roadway corridors, La Palma Avenue and Santa Ana Canyon Road, within the project limits that are currently being utilized in lieu of SR-91. The Featherly Regional Park, the Santa Ana River, and the Santa Ana River Trail border the north side of SR-91. To the south, the area is predominantly bordered by Peralta Canyon Park, and portions of a Natural Communities Conservation Program (NCCP) area.

SR-91 is a major east-west freeway that is located in Southern California, extending from Interstate 110 (I-110) in the City of Gardena in Los Angeles County east through Orange County, where it intersects Interstates 710 (I-710), 605 (I-605), and 5 (I-5), and State Route 57 (SR-57), SR-55, and SR-241. SR-91 extends further northeast beyond the project limits to the City of Riverside in Riverside County.

SR-91 was originally constructed in the 1960s as a controlled access freeway. A major effort to improve traffic capacity began in 1992 with the construction of the SR-91 toll lanes and the SR-241 toll road. Within the study area, SR-91 is generally

an 8- to 10- general-purpose-lane freeway with auxiliary lanes. The SR-91 express/ toll lanes provide 2 additional lanes in each direction. The toll lanes in the median are operated and maintained by OCTA under a franchise agreement with the State.

The Santa Ana River parallels the project area to the north of SR-91, and several residential and commercial communities are located south of SR-91.

SR-91 between SR-55 and Weir Canyon Road is officially designated as a Scenic Highway.

1.3 Purpose and Need

1.3.1 Project Purpose

The purpose of the proposed project is to reduce traffic congestion, improve operational efficiencies, and comply with Department design standards on SR-91 between SR-55 and SR-241. The project will accomplish the following specific objectives:

- Enhance mid-term SR-91 capacity.
- Improve operational characteristics, such as weaving and lane efficiency, at ramp junctions.
- Widen the existing 11-foot (ft) lane (from PM 11.9 to PM 13.0) and 2 ft right shoulder (from PM 13.9 to PM 14.1) in both the EB and WB directions within the project limits to the standard width of a 12 ft lane and a 10 ft right shoulder.

1.3.2 Project Need

The project is needed due to a lack of freeway capacity and roadway deficiencies and to comply with legislation for performance improvements.

Currently, SR-91 in both the EB and WB directions within the project limits experiences heavy peak-hour congestion and traffic delays due to high traffic volumes, weaving, and merging/diverging.

The need for this project is based on an assessment of the transportation demand and current and predicted future traffic on SR-91 as measured by level of service (LOS). LOS is based on the ratio of traffic volume to the design capacity of the facility. LOS

is expressed as a range from LOS A (free traffic flow with low volumes and high speeds, resulting in low traffic densities) to LOS F (traffic volumes that exceed capacity and result in forced flow operations at low speeds, resulting in high traffic densities). See Table 1.1 for a description of the LOS from A to F. Increasing traffic on the SR-91 corridor has seriously degraded the freeway LOS, particularly during the extended commuter peak hours.

The SR-91 mainline operates at LOS F during both the a.m. and the p.m. peak hours in the WB direction, west of the Lakeview Avenue Overcrossing and between the SR-90/SR-91 separation (Imperial Highway Undercrossing) and the Weigh Station. The SR-91 mainline operates at LOS F during the p.m. peak hour on the EB mainline between the SR-90/SR-91 separation (Imperial Highway Undercrossing) and the Weigh Station (See Table 1.2).

Specific operational deficiencies and bottlenecks are as follows:

- SR-55 northbound (NB) drops one general-purpose lane north of the junction with EB SR-91. The combined EB SR-91 roadway consists of six lanes, one of which becomes an auxiliary lane as a single-lane exit-only ramp to Lakeview Avenue. This creates an extremely difficult weave for EB SR-91 traffic exiting at Lakeview Avenue and seriously compromises lane efficiency at the ramp junction.
- Lane efficiency problems are experienced when general-purpose lane 5 becomes an EB auxiliary lane to Imperial Highway. The impact on traffic operations is made worse in this area because the on-ramp from Lakeview Avenue merges with general-purpose lane 5.
- The EB entrance from Imperial Highway to the Weigh Station consists of two lanes, both of which taper off from the outside general-purpose lane, resulting in queuing problems. There is a weaving movement between the on-ramp from the Weigh Station and the off-ramp to Weir Canyon Road that affects traffic operations. Although there is an auxiliary lane in this area, trucks from the Weigh Station have a difficult time reentering the traffic stream via general-purpose lane 4 without disrupting the flow of traffic.
- The EB auxiliary lane from the Weigh Station becomes a single-lane exit-only ramp to Weir Canyon Road, resulting in a queuing problem.

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Table 1.1 Various Levels of Service for Freeways

LEVELS OF SERVICE
for Freeways

Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		70	Highest quality of service. Traffic flows freely with little or no restrictions on speed or maneuverability. **No delays**
B		70	Traffic is stable and flows freely. The ability to maneuver in traffic is only slightly restricted. **No delays**
C		67	Few restrictions on speed. Freedom to maneuver is restricted. Drivers must be more careful making lane changes. **Minimal delays**
D		62	Speeds decline slightly and density increases. Freedom to maneuver is noticeably limited. **Minimal delays**
E		53	Vehicles are closely spaced, with little room to maneuver. Driver comfort is poor. **Significant delays**
F		<53	Very congested traffic with traffic jams, especially in areas where vehicles have to merge. **Considerable delays**

Source: Department Standard Environmental Reference:
www.dot.ca.gov/ser/forms.htm

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Table 1.2 Mainline Existing and Projected Levels of Average Daily Traffic (ADT)

Freeway Mainline	2007 Existing ADT	2014 Projected ADT	2035 Projected ADT
Eastbound			
West of Lakeview Avenue	174,000	189,700	231,400
Lakeview Ave to Imperial Highway	161,000	175,500	214,100
Imperial Highway to Weigh Station	148,900	162,300	198,000
Weigh Station to Weir Canyon Road	148,900	162,300	198,000
East of Weir Canyon Road	145,200	158,300	193,100
Westbound			
East of Weir Canyon Road	140,000	152,600	186,200
Weir Canyon Road to Weigh Station	141,800	154,600	188,600
Weigh Station to Imperial Highway	141,800	154,600	188,600
Imperial Highway to Lakeview Avenue	153,800	167,600	204,600
West of Lakeview Avenue	160,200	174,600	213,100

Source: Department, March 2008.

- General-purpose lane 5 WB from SR-241 becomes a single-lane exit-only ramp to Weir Canyon Road, resulting in a queuing problem.
- Substantial queuing occurs during the commuter peak hours WB at the SR-91/ SR-55 separation.
- The following existing nonstandard features found within the project limits result in additional problems:
  - Some existing travel lanes are 11 ft in width (instead of the standard width of 12 ft) between Imperial Highway and the Weigh Station.
  - The existing EB and WB outside shoulders are 2 ft in width (instead of the standard width of 10 ft) from the Weigh Station to the EB and WB exit ramps to Weir Canyon Road.

The project will meet the following requirements:

- All existing traffic lanes shall be maintained during construction.
- Toll lane operation shall be unaffected.
- Improvements shall be accommodated within the existing right-of-way (ROW) to the extent feasible.
- Cost shall be minimized through the retention of existing facilities to the extent feasible.

1.3.3 Freeway Analysis

1.3.3.1 Existing Conditions

Table 1.3 summarizes the existing LOS along the freeway and ramp merges/diverges for No Build conditions for the EB and WB directions, respectively. Based on the peak-hour traffic volumes, the table shows that SR-91 in the WB direction operates at LOS F (extreme congestion) within the project limits and in the EB direction operates at LOS E between Imperial Highway and the Weigh Station during a.m. peak hours. During the p.m. peak period, the WB direction experiences LOS D east of Weir Canyon Road and the section between Weir Canyon Road to the Weigh Station; the rest of the WB sections experience LOS E and F.

Table 1.3 Existing Freeway Level of Service Summary

Freeway Eastbound – Mainline	A.M. Peak		P.M. Peak	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR-55 to Lakeview Avenue	C	25	E	36
Lakeview Avenue to Imperial Highway	D	30	E	40
Imperial Highway to Weigh Station	E	44	F	>45
Weigh Station to Weir Canyon Road	D	28	D	34
Weir Canyon Road to SR-241	D	28	D	34
Freeway Westbound – Mainline	**A.M. Peak**		**P.M. Peak**	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR-241 to Weir Canyon Road	D	35	D	30
Weir Canyon Road to Weigh Station	E	36	D	31
Weigh Station to Imperial Highway	F	>45	F	>45
Imperial Highway to Lakeview Avenue	E	41	E	38
Lakeview Avenue to SR-55	F	>45	E	41

Source: Department, March 2008.
Bold = unacceptable LOS
LOS = level of service
pc/mi/ln = passenger cars per mile per lane
SR-55 = State Route 55
SR-241 = State Route 241

Table 1.3 shows that in the EB direction, most of the freeway sections operate at LOS D and E during the p.m. peak period, with the exception of the section from Imperial Highway to the Weigh Station. This section operates at LOS F during the p.m. peak period and at LOS E conditions during the a.m. peak period. West of the Lakeview Avenue Overcrossing and the section from Lakeview Avenue to Imperial Highway operates at LOS E conditions in the EB direction during the p.m. peak period. WB SR-91 was determined to operate at LOS E or F during the p.m. peak period, with the exception of the section between the Weir Canyon Road and the

Weigh Station and east of Weir Canyon Road. Ramp merges/diverges typically will not operate at a much higher LOS than the mainline. If the mainline is congested, vehicles entering or exiting the freeway will also experience reduced speeds and/or delay.

Bottleneck locations along EB SR-91 include the separation with NB SR-55, the auxiliary lane to Imperial Highway, the entrance from Imperial Highway to the Weigh Station, and the auxiliary lane from the Weigh Station to Weir Canyon Road. Bottleneck locations along WB SR-91 include general-purpose lane 5 from SR-241 to the Weir Canyon Road off-ramp and the SR-91/SR-55 separation.

1.3.3.2 Future Conditions

Table 1.4 shows that in the build-out year (2014), without project implementation, all freeway segments within the project limits are estimated to operate at LOS E or F, with the exception of one WB segment from the Weigh Station to Weir Canyon Road and several EB segments during the a.m. peak hour. With project implementation, all freeway segments on EB SR-91 are anticipated to operate at LOS D or better during the a.m. and p.m. peak hour except two segments (LOS E) between Lakeview Avenue and the Weigh Station, which will operate at these LOS during the p.m. peak hour only. No segments in the EB direction are anticipated to operate at LOS F with project implementation. The lane additions to the WB segments are anticipated to improve LOS to D from E (the Weigh Station to SR-241) and to E from F (Imperial Highway to the Weigh Station).

Table 1.4 also shows that in the project design year (2035), without project implementation, both directions of SR-91 are estimated to experience significant congestion (LOS F) during the a.m. and p.m. peak hours, with the exception of one EB segment between SR-55 and Lakeview Avenue that will be reaching its capacity. With project implementation, all segments on EB SR-91 are anticipated to improve the LOS to E or better, with the exception of one EB segment during the a.m. peak hour and two segments during the p.m. peak hour. The lane additions on the WB segments are anticipated to improve to LOS E from F at two segments between the Weigh Station and SR-241.

Table 1.4 Future Freeway Level of Service Summary

	Build-Out Year (2014) No Build Condition				Build Out Year (2014) Build Condition				Project Design Year (2035) No Build Condition				Project Design Year (2035) Build Condition			
	A.M. Peak		P.M. Peak		A.M. Peak		P.M. Peak		A.M. Peak		P.M. Peak		A.M. Peak		P.M. Peak	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
Freeway Eastbound – Mainline																
SR-55 to Lakeview Avenue	D	29	E	44	C	24	D	32	E	44	F	>45	D	31	E	44
Lakeview Avenue to Imperial Highway	D	41	F	>45	D	26	E	36	F	>45	F	>45	E	37	F	>45
Imperial Highway to Weigh Station	F	>45	F	>45	D	33	E	42	F	>45	F	>45	F/[D]	31*	F/E	38*
Weigh Station to Weir Canyon Road	D	33	E	42	C	24	D	29	F	>45	F	>45	D	33	E	44
Weir Canyon Road to SR-241	D	33	E	41	C	24	D	29	F	>45	F	>45	D	34	E	43
Freeway Westbound – Mainline																
SR-55 to Lakeview Avenue	F	>45	F	>45	F	>45	F	>45	F	>45	F	>45	F	>45	F	>45
Lakeview Avenue to Imperial Highway	F	>45	E	42	F	>45	E	42	F	>45	F	>45	F	>45	F	>45
Imperial Highway to Weigh Station	F	>45	F	>45	E	44	E	36	F	>45	F	>45	F/E	40	F/E	34
Weigh Station to Weir Canyon Road	E	44	D	30	D	30	D	27	F	>45	F	>45	E	40	E	38
Weir Canyon Road to SR-241	E	43	E	35	D	29	D	26	F	>45	F	>45	E	44	E	37

Source: Department March 2008
*: One lane addition/ (one lane addition plus an auxiliary lane)
Bold = unacceptable LOS
LOS = level of service
pc/mi/ln = passenger cars per mile per lane
SR-55 = State Route 55
SR-241 = State Route 241

1.3.4 Capacity, Transportation Demand, and Safety

SR-91 is the only major transportation facility connecting Orange County and Riverside County. It is also a major link connecting the Los Angeles region with the Inland Empire, and also accommodates interstate traffic. As such, it is heavily used for: goods movement, including throughput from the Ports of Los Angeles and Long Beach; commuter traffic between residential developments in the Inland Empire and employment centers in Orange and Los Angeles Counties; and interregional traffic, including weekend recreational traffic to Las Vegas and Colorado River destinations.

SR-91 is one of the most heavily congested freeways in Southern California. Normal morning delays begin at 5:00 a.m. and continue through 9:00 a.m., while afternoon delays generally extend between 3:00 p.m. and 7:00 p.m. Existing traffic averages between approximately 145,000 and 174,000 vehicles daily in the EB direction and between approximately 140,000 and 160,000 vehicles daily in the WB direction of SR-91. This data is calculated from the Department District 12 State Route 91 Widening Traffic Report (Traffic Report) dated March 2008 (see Table 1.2).

Based on field observations during the peak periods and the traffic analysis performed for this project, there is a need to relieve congestion and improve operational efficiency on SR-91 from SR-55 to SR-241. Congested conditions are particularly worse in the WB direction of travel during the a.m. peak period, and in the EB direction of travel during the p.m. peak period. As growth continues in the Southern California Region and specifically in the Inland Empire areas, the SR-91 corridor, being the only corridor that connects the east and west communities, will become increasingly more congested unless capacity enhancements are made or additional corridors are created.

The primary need for the proposed project is based on the increased projected traffic volumes along SR-91 by 2035. The projected traffic averages between approximately 158,000 and 190,000 vehicles per day in the EB direction and between approximately 153,000 and 175,000 vehicles per day in the WB direction by 2014; and between approximately 193,000 and 231,000 vehicles per day in the EB direction and between approximately 186,000 and 213,000 vehicles per day in the WB direction by 2035 (see Table 1.2). The increased traffic volumes, in conjunction with the limited capacity of the existing freeway, are expected to result in the deterioration of the LOS along SR-91. Table 1.3 provides an explanation of the various LOS ranges and corresponding traffic delays for basic freeway sections.

1.3.5 Traffic Accidents

The Department Traffic Accident Surveillance and Analysis System (TASAS) provided detailed accident rates for all highways in the State. District 12 provided accident data for EB and WB SR-91 between SR-55 and SR-241 for Orange County for the period of July 1, 2004, through June 30, 2007. The TASAS accident data are provided by the Department's Traffic Safety Unit.

During the 3-year period from July 1, 2004, through June 30, 2007, there were 2,393 accidents within the project limits, with 12 being fatal and 662 involving injury (Department, TASAS Selective Accident Retrieval [TSAR] Accident Summary, June 9, 2008). The actual accident rate for the segment from SR-55 to Imperial Highway is lower than the statewide average accident rate; however, the segment from approximately Imperial Highway to SR-241 is higher than the statewide average.

A review of the TASAS accident data also revealed that rear-end accidents were the most common, followed by side-swipe accidents. Rear-end accidents are associated with sudden attempts to stop when vehicular traffic volume has exceeded roadway capacity and are typical in chokepoint areas. The majority of the sideswipe accidents can usually be attributed to lane weaving and narrow lane widths.

1.3.6 Roadway Deficiencies

1.3.6.1 Lane Weaving and Ramp Merge/Diverge

SR-55 NB drops one general-purpose lane east of the separation with SR-91. SR-91 drops one EB general-purpose lane at Imperial Highway, which results in increased vehicle density on SR-91 and increased lane weaving that interferes with merge/ diverge operations. Traffic congestion reduces the ability of vehicles to enter and exit the freeway via interchange ramps.

1.3.6.2 Nonstandard Lane Width

It is the Department's policy to design facilities according to the Highway Design Manual (HDM) guidelines, which include standard lane widths and shoulder widths. The existing lanes and shoulders on SR-91 include nonstandard widths. To meet the Department's current design standards, the existing nonstandard lanes and shoulders within the project limits shall be widened to the standard widths.

1.3.7 Social and Economic Demands

A review of the growth projections adopted by SCAG indicates continuing growth in the region that the project serves. The population in Orange County is expected to increase from 2.8 million in 2000 to over 3.6 million in 2035, an increase of nearly 29 percent. This regional growth will continue to place demand on SR-91. Growth in Riverside County is projected to increase at a faster pace. The population in Riverside County is projected to increase from 1.5 million in 2000 (U.S. Census Bureau, 2000) to 3.6 million in 2035 (Riverside County Center for Demographic Research, 2006), an increase of 140 percent. This regional growth will continue to place a high demand on SR-91, since many residents of Riverside County use this freeway to commute to jobs in Orange County.

1.3.8 Modal Interrelationships and System Linkages

SR-91, a major east-west regional facility in Orange County, provides the City of Anaheim with direct access to the Cities of Buena Park, Fullerton, Placentia, and Yorba Linda and the Counties of Los Angeles, Riverside, and San Bernardino. SR-91 also provides direct access to major north-south corridors, specifically SR-55, SR-57, and I-5 to the west and SR-241 to the east. There are no parallel or contiguous transportation facilities that could reduce traffic demand on SR-91 and offset the need for improvements to the project segment of SR-91.

The project site and vicinity are served by the OCTA and Metrolink. OCTA provides local bus routes throughout the study area. In addition, OCTA has a shared-ride service that provides for people who are unable to use the regular, fixed-route bus service because of functional limitations caused by a disability. OCTA has a Senior Mobility Program (SMP) that is designed to fill the gap between local fixed-route buses and Americans with Disabilities Act (ADA) paratransit or ACCESS service by providing local transportation services to seniors in participating cities in Orange County.

Metrolink is a commuter rail line that provides service to the City of Anaheim and other areas, including downtown Los Angeles, Riverside, and several locations in Orange County. Metrolink is operated by the Southern California Regional Rail Authority (SCRRA), which provides transit services to the Counties of Orange, San Bernardino, Ventura, Riverside, San Diego, and Los Angeles. There is an existing

Metrolink station (Anaheim Canyon) immediately adjacent to SR-91 at North Tustin and La Palma Avenues.

SR-91 also provides a route for the movement of goods and people between the Inland Empire region and the Ports of Long Beach and Los Angeles, Los Angeles International Airport (LAX), John Wayne Airport (SNA) in Orange County, and the Ontario International Airport (ONT) in San Bernardino County.

1.3.9 Air Quality Improvements

Transportation Demand Management (TDM) within the project limits is primarily facilitated by the City of Anaheim. According to the City of Anaheim's General Plan, the Commuter Services Office was established as part of the Public Works Department in 1989 to help facilitate federal and State Clean Air Act requirements. The Commuter Services Office offers a variety of information for City of Anaheim employees interested in bicycling, carpooling, vanpooling, and public transit, including bus and rail transportation opportunities.

The existing vanpooling program consists of 11 routes to and from inland cities during the morning and evening commute. Participants in the vanpooling program have the option of joining as part-time or full-time riders and pay rates in relation to distance traveled.

Currently, there are four park-and-ride facilities for people who carpool or use public transportation in the City of Anaheim. The nearest park and ride facility is identified as Camelot Golfland, located at La Palma Avenue and North Shepard Street. Camelot Golfland has 50 available parking spots and is located approximately 1.2 mi northwest of the western project limits.

1.4 Project Description

This section describes the proposed project and the design alternatives that were developed by a multidisciplinary team to achieve the project purpose and need while avoiding or minimizing environmental impacts. The alternatives are the "No Build Alternative," and the "Build Alternative." The Build Alternative has been identified as the Preferred Alternative. Preliminary Design Layouts can be found in Appendix H.

The project is located in Orange County on SR-91 EB from the SR-91/SR-55 separation (PM 9.1) to east of the Weir Canyon Road on-ramp (PM 15.0), and on SR-91 WB from west of the SR-91/SR-241 separation (PM 15.1) to the SR-90/SR-91 separation (Imperial Highway Undercrossing) (PM 11.1). The proposed project covers a distance of 6 mi. Within the limits of the proposed project, the SR-91 lane configuration varies. The basic lane configurations by section are shown in Tables 1.5 and 1.6.

Table 1.5 Lane Configuration along EB SR-91 Within Project Limits

Eastbound SR-91 Section	Lane Configuration
SR-55 to Lakeview Avenue	Five general-purpose lanes and an auxiliary lane
Lakeview Avenue to Imperial Highway	Four general-purpose lanes and an auxiliary lane
Imperial Highway to Weigh Station	Four general-purpose lanes
Weigh Station to Weir Canyon Road	Five general-purpose lanes
Weir Canyon Road to SR-241	Four general-purpose lanes and an auxiliary lane

Source: Department March 2008.
General-purpose lane = a mainline freeway lane open to all traffic
Auxiliary Lane = The portion of the roadway for weaving, truck climbing, speed change, or for other purposes supplementary to through traffic movement.

Table 1.6 Lane Configuration along WB SR-91 Within Project Limits

Westbound SR-91 Section	Lane Configuration
SR-241 to Weir Canyon Road	Four general-purpose lanes and an auxiliary lane
Weir Canyon Road to Weigh Station	Four general-purpose lanes and an auxiliary lane
Weigh Station to Imperial Highway	Four general-purpose lanes
Imperial Highway to Lakeview Avenue	Four general-purpose lanes and an auxiliary lane
Lakeview Avenue to SR-55	Five general-purpose lanes

Source: Department, March 2008.
General-purpose lane = a mainline freeway lane open to all traffic
Auxiliary Lane = The portion of the roadway for weaving, truck climbing, speed change, or for other purposes supplementary to through traffic movement.

The proposed project will add one general-purpose lane to both directions of SR-91 from SR-55 (PM 9.1) to SR-241 (PM 15.1) with the exception of the WB portion of the proposed project, between Imperial Highway and SR-55, where no additional lane will be added. The three separations within the project limits are: Lakeview Avenue Overcrossing (PM 10.1), SR-90/SR-91 separation (Imperial Highway Undercrossing) (PM 11.5), and Weir Canyon Road Undercrossing (PM 14.4). The auxiliary lanes, which will be removed due to the lane addition, will be restored in kind. The existing mainline and freeway ramps would be reconstructed according to Department standards. The freeway ramps will be reconstructed from and to the mainline and will tie into the existing ramps only at the separations with the local streets and highways.

The purpose of the proposed project is to relieve congestion and improve operational efficiency on SR-91 between SR-55 and west of SR-241. The alternatives are described in the following section.

1.5 Alternatives

1.5.1 No Build Alternative

The No Build Alternative would not include any improvements on SR-91 within the project limits and would maintain the existing conditions for the mainline and the separations. SR-91 will continue to operate at LOS E and F during peak hours resulting in significant delays. This alternative does not address the capacity and operational needs of SR-91 and does not meet the purpose and need. Under the No Build Alternative, it is expected that between now and 2035, traffic congestion will continue to worsen if no freeway operational improvements are implemented within and adjacent to the project area.

1.5.2 Proposed Build Alternative (Proposed Project) (Preferred Alternative)

The proposed project would improve capacity and operational deficiencies on SR-91 by adding one general-purpose lane in each direction between SR-55 (PM 9.1) and west of SR-241 (PM 15.1), with the exception of the WB portion of the project, between Imperial Highway and SR-55. In general, all existing auxiliary lanes, displaced by the addition of this general-purpose lane, would be replaced.

The new mainline geometrics will also comply with the Department HDM standards, and all existing nonstandard width lanes of 11 ft will be widened to a standard width of 12 ft. Existing general-purpose lanes from the SR-91 express/toll lanes buffer edge, including the new general-purpose lane and all auxiliary lanes, will have a 12 ft width and a 10 ft outside shoulder width.

Reconstructed on- and off-ramps, from and to the mainline, will tie to the existing ramps at the termini. Ramps will be 12 ft or wider for truck travel lanes, and will have 4 ft and 8 ft left and right shoulders, respectively. The capital cost for this alternative is estimated at $78.5 million.

1.5.2.1 SR-91 Roadway Eastbound

From the SR-91/SR-55 Separation to Lakeview Avenue Off-ramp

Currently, this area of EB SR-91 has five general-purpose lanes and one auxiliary lane that exits at Lakeview Avenue. This alternative would add one EB general-purpose lane originating from the SR-91/SR-55 separation. The general-purpose lane continues while the auxiliary lane exits at Lakeview Avenue. This will provide a two-lane off-ramp exiting to Lakeview Avenue to alleviate the existing traffic congestion during the peak hours.

The loop entrance ramp at Lakeview Avenue will merge to lane 6. The on-ramp will also merge to lane 6. From there, this alternative will continue six lanes (five general-purpose and one auxiliary) EB to the SR-90/SR-91 separation (Imperial Highway Undercrossing).

The existing interchange spacing between the SR-91/SR-55 separation to the Lakeview Avenue Overcrossing is 0.8 mi (with a Design Exception), whereas the minimum required spacing between interchanges is 1 mi in urban areas and 2 mi in rural areas. The elimination of the existing lane drop at the SR-91/SR-55 separation will improve traffic operations by having a dedicated lane to the Lakeview Avenue off-ramp.

From Lakeview Avenue On-Ramp to SR-90/SR-91 Separation (Imperial Highway Undercrossing)

Currently, there are four existing general-purpose lanes and an auxiliary lane within this portion of the project. The proposed EB general-purpose lane 5 will extend the existing auxiliary lane (that currently exits to Lakeview Avenue) to the SR-90/SR-91 separation (Imperial Highway Undercrossing). This provides a two-lane off-ramp to Imperial Highway.

From SR-90/SR-91 Separation (Imperial Highway Undercrossing) On-ramp to Weir Canyon Road On-ramp

There are four existing general-purpose lanes in this segment. The new EB general-purpose lane 5 continues on from Imperial Highway to Weir Canyon Road.

The EB loop entrance ramp will have a taper-type entrance to the general-purpose lane 5. The tangent on-ramp will introduce an auxiliary lane that will continue to the Weigh Station.

All nonstandard width lanes of 11 ft will be widened to a standard width of 12 ft. Existing general-purpose lanes from the SR-91 express/toll lanes buffer edge, including the new general-purpose lane and the auxiliary lane, will have a 12 ft width and a 10 ft wide right shoulder.

The auxiliary lane from Imperial Highway leads to a two-lane exit at the Weigh Station. Due to the number of the slow-moving trucks entering the Weigh Station, traffic frequently backs up at this location. The proposed project would widen the Weigh Station off-ramp to two lanes. Providing a two-lane off-ramp at the Weigh Station will improve traffic flow on SR-91 within this portion of the project limits.

The entrance ramp from the Weigh Station introduces an auxiliary lane, which becomes a two-lane off-ramp to Weir Canyon Road. This additional lane will improve the traffic delay caused by high traffic volumes and the existing short weaving distance at this location.

From Weir Canyon Road On-ramp to West of the SR-91/SR-241 Separation

There are four general-purpose lanes and an auxiliary lane from the Weir Canyon Road on-ramp to the SR-241 east-to-south separation. The addition of EB general-purpose lane 5 will provide a two-lane off-ramp to the SR-241 SB separation.

1.5.2.2 SR-91 Roadway Westbound

From West of the SR-91/SR-241 Separation to Weir Canyon Road Off-ramp

From west of the SR-91/SR-241 separation to Weir Canyon Road off-ramp, there are four existing general-purpose lanes and an auxiliary lane. The existing WB auxiliary lane from the north SR-241 to west SR-91 separation continues to Weir Canyon Road as a one-lane off-ramp. Due to high traffic volume exiting at Weir Canyon Road, a two-lane off-ramp is proposed at this location. Therefore, the additional general-purpose lane is extended from SR-241 NB to Weir Canyon Road to provide five lanes continuing through the separation.

From Weir Canyon Road Off-ramp to SR-90/SR-91 Separation (Imperial Highway Undercrossing) On-ramp

The Weir Canyon Road WB loop on-ramp will have a taper-type entrance to general-purpose lane 5. The on-ramp will introduce an auxiliary lane that will continue together with five general-purpose lanes WB to the Weigh Station. The auxiliary lane

from the Weir Canyon Road on-ramp will be dropped into a one-lane exit to the Weigh Station.

There are four existing WB general-purpose lanes from the on-ramp at the Weigh Station to Imperial Highway. The added general-purpose lane 5 would require some slope modification. The on-ramp from the Weigh Station will be modified to a two-lane entrance ramp that will introduce an auxiliary lane that will continue, together with five WB general-purpose lanes, to Imperial Highway. The auxiliary lane from the Weigh Station on-ramp will be dropped into a two-lane off-ramp to Imperial Highway. From that point, the freeway will extend to five WB general-purpose lanes to the Imperial Highway on-ramps and join the existing general-purpose lane 5.

From the Imperial Highway On-ramp to SR-91/SR-55 Separation

There are five existing WB general-purpose lanes from the Imperial Highway on-ramps to the SR-91/SR-55 separation. In this section no additional lane is provided. The existing on-ramp will be modified to a two-lane entrance ramp that will merge to the existing general-purpose lane 5. The additional widening for general-purpose lane 5 would impact the existing Imperial Highway loop on-ramp. This ramp will be realigned and will include a new California Highway Patrol (CHP) enforcement area that will merge into general-purpose lane 5.

1.5.2.3 Bridge Widening

The project will widen (outside widening) the bridge for Imperial Highway (Bridge No. 55-0474) and the Weir Canyon Road Undercrossing (Bridge No. 55-0505) in both the EB and the WB directions.

1.5.2.4 Noise Attenuation

On EB SR-91, the Value Analysis Team in its Value Analysis Study Report proposed one new 16 ft high noise barrier from Imperial Highway to the Weigh Station along the ROW line. A sound wall survey for the proposed noise barrier was conducted by distributing survey letters to the affected property owners on January 7, 2009. The majority of the affected property owners were in favor of the proposed 16 ft noise barrier. A final decision to construct noise abatement will be made during the final project design process.

1.5.2.5 Retaining Wall

On the EB side of SR-91, the project will build a retaining wall (approximately 761 ft in length) at the Lakeview Avenue Overcrossing (Bridge No. 55-0475) to

accommodate the additional lane at this location. No new retaining walls are proposed on WB SR-91 within the project limits.

1.5.2.6 Utilities

All existing utilities within Department ROW should be protected in place or relocated within the project limits during construction of the project. The existing Southern California Edison (SCE) overhead power line, existing underground electrical, and SR-91 express/toll lanes utilities boxes should be protected in place and/or relocated.

1.5.2.7 Electrical

The electrical work involved in this alternative includes the relocation of existing electrical systems such as relocation of lighting along the ramps, ramp metering, controller cabinets, splice vaults, changeable message sign (CMS) system, cameras, sign lighting, and fiber optics.

1.5.2.8 Drainage

The existing general drainage pattern within the project limits is from south to north of SR-91 where the EB watersheds are carried via Orange County Flood Control box culverts and underground pipe drainage systems to the north side of SR-91. WB watershed sheet flows in a northerly direction into the Santa Ana River, Reach 2. The proposed project will not change the existing drainage pattern. All existing inlets along the edge of shoulder will be extended or relocated to the new edge of shoulder, and existing inlets will either be capped or removed. The existing longitudinal drainage systems along the existing edge of shoulder will be relocated to the new edge of shoulder with additional inlets or concrete channel/ditch to carry the increased drainage associated with the widening. The Build Alternative proposes to place fill over the existing channel located adjacent to Caliber Motors. However, this existing channel will be made pervious by "punching" holes into it prior to burying. A new channel is proposed parallel to the southerly ROW line and the proposed noise barrier on EB SR-91 from Imperial Highway to the Weigh Station. The replacement channel in this location will be the same width as the existing. Storm water treatment systems will be considered. The drainage systems that may need to be modified within the project limits are discussed in Chapter 2, Section 2.2.1, Hydrology and Floodplain.

1.5.2.9 Replacement Planting and Irrigation Modification

Existing landscaping and existing irrigation systems removed during roadway construction will be replaced. Replacement plantings will be split from the roadway project and will be a separate follow-up project. Specimen trees will be used to replace mature trees removed by the roadway contract. Irrigation modification work will be included as part of the roadway contract. Irrigation modification work should include extending irrigation crossovers under roadways and ramps and inside bridge cells, and modifying existing systems to maintain water supply to undisturbed planting areas.

1.5.2.10 Signing

Signs will be removed and relocated to accommodate the widening.

1.5.2.11 Right-of-Way Acquisition

The project would not require property acquisitions. However, TCEs may be required for the construction of the noise barrier.

1.5.2.12 Weigh Station

The Weigh Stations on EB and WB SR-91 shall remain in place.

1.5.2.13 Construction

Construction for this project is expected to start Fiscal Year (FY) 2011/2012 and be completed in FY 2014/2015. The contractor shall use the designated areas within the highway ROW for staging and other required work.

A Traffic Management Plan (TMP), a standard condition placed on all construction projects, is designed to minimize construction activity-related motorist delays, queuing, and accidents by the effective application of traditional traffic-handling practices and innovative approaches. The TMP aims to relieve congestion and maintain traffic flow throughout the alternative routing and surrounding area within Riverside and Orange Counties. The preliminary TMP includes proposed Lane Closure Charts and Detour Plans. The TMP will be finalized by the time final designs are prepared.

The TMP evaluates traffic mitigation strategies for the duration of construction, addresses lane closure requirements, and seeks to inform the public and motorists. The TMP strategies include: project phasing, a detour plan, provision of temporary lanes/shoulders, consideration of construction during hours of low traffic volumes, Intelligent Transportation Systems (ITS), and reversible lanes. Traffic management

strategies will also include a public awareness campaign, traffic systems and signage, and traffic support and safety elements. The public awareness element usually involves brochures, mailers, and/or media releases to educate and inform the public of the construction activities. The motorist information strategies include message signage and a highway advisory radio to alert the motorists of road closures and/or detours. Construction Alerts, detailing the project information, alternative routes, and the Transportation Helpline Telephone number, would be made available to residents, businesses, local officials, City Halls, and the Chambers of Commerce throughout local communities.

The traffic support and safety elements involve incident management. The Transportation Management Center (TMC) aids in facilitating communication between construction personnel, the traffic management team, traffic-control officers, and the TMP Coordinator. The TMP would include provisions to minimize delays and give access to emergency personnel such as police and fire departments. Serving as a communications center, the TMC would help expedite the removal of minor and major incidents, help make decisions concerning the closing and opening of lanes, and manage traffic by providing traffic information to the media. The City of Anaheim "Anaheim Alert" program will be used to communicate traffic closures and congestion information to citizens via electronic mobile devices.

1.5.3 Identification of the Preferred Alternative

During the initial project development and evaluation process, two alternatives (one Build and one No Build) specified in the PSR (Jacobs, April 2004) and Preliminary Environmental Analysis Report (PEAR) (LSA Associates, Inc., March 2004) were reviewed by the Project Development Team (PDT). These were the only two feasible alternatives for the project and were selected for further study in the environmental document.

The Build Alternative has been selected by the PDT as the Preferred Alternative because it would meet the project's Purpose and Need identified in Section 1.3 of this environmental document. The No Build Alternative did not meet the Purpose and Need and has therefore been eliminated.

1.5.4 Alternatives Considered but Eliminated from Further Discussion

1.5.4.1 Other Build Alternatives

An analysis of the proposed project provided a comprehensive study of design solutions that were considered for addressing the need for improvements along the subject section of SR-91. The transportation concept discussed below was evaluated and eliminated from further consideration based on impacts to resources, feasibility, inability to meet the purpose and need, and/or cost.

Transportation Systems Management and Transportation Demand Management Alternatives

Transportation System Management (TSM) strategies consist of actions that increase the efficiency of existing facilities; they are actions that increase the number of vehicle trips a facility can carry without increasing the number of through lanes. Examples of TSM strategies include: ramp metering, auxiliary lanes, turning lanes, reversible lanes, and traffic signal coordination. TSM also encourages automobile, public lanes and private transit, ridesharing programs, and bicycle and pedestrian improvements as elements of a unified urban transportation system. Modal alternatives integrate multiple forms of transportation modes, such as pedestrian, bicycle, automobile, rail and transit.

TDM focuses on regional strategies for reducing the number of vehicle trips and vehicle miles traveled as well as increasing vehicle occupancy. It facilitates higher vehicle occupancy and reduces traffic congestion expanding the traveler's transportation choice in terms of travel method, time, route, costs, and the quality and convenience of the travel experience. A typical activity within this component is to provide contract funds to regional agencies that are actively promoting ridesharing, maintaining rideshare databases and providing limited rideshare services to employers and individuals.

Within the project limits, the EB and WB SR-91 consist of a combination of four to five general-purpose lanes, express/toll lanes, transition lanes, and message signs. The general-purpose lanes vary from nonstandard width to standard width and continue beyond the project limits.

The purpose of the proposed project is to reduce traffic congestion and improve traffic operations within the project limits on EB and WB SR-91. SR-91 is already served with transit and provides High Occupancy Vehicle (HOV) lanes, with the exception of the toll facility section from SR-55 to the SR-241 separation. Ramp

metering or auxiliary lanes would not address the capacity, transportation demand, and roadway deficiency needs. Therefore, additional TSM measures would not satisfy the purpose and need of the project. For these reasons, a separate TSM/TDM Alternative is not evaluated in this environmental document.

1.6 Permits and Approvals Needed

Table 1.7 lists the permits, reviews and approvals that would be required for construction of the proposed project.

Table 1.7 Required Permits, Reviews, and Approvals

Agency	Permit/Approval	Status
United States Army Corps of Engineers (Corps)	Section 404 Permit for filling/ dredging waters of the United States	Department is to obtain letter or permit.
California Department of Fish and Game (CDFG)	1602 Lake or Streambed Alteration Agreement	Department is to obtain agreement.
Santa Ana Regional Water Quality Control Board (SARWQCB)	Section 401 Water Quality Certification	Department is to obtain certification.
State Water Resources Control Board (SWRCB)	Section 402 NPDES (Construction Activity)/Department NPDES Permit CAS000003 & CAS000002 (General Permit)	Department is to obtain permit.
Orange County Flood Control District (OCFCD)	Encroachment Permit	Department is to obtain letter or permit

1.7 Environmental Decision Process

After the public circulation period, all comments were considered and responded to (see Appendix I). In accordance with CEQA, the Department certified that the project complies with CEQA and a Negative Declaration (ND) has been prepared.

Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization and/or Mitigation Measures

This Chapter examines the impacts that the proposed project would have on the human, physical, and natural environments in the project area. It describes the existing environment that could be affected by the proposed project and potential impacts on the environment from each of the alternatives. Technical studies have also been prepared for the proposed project. A list of these studies can be found in Appendix F.

As part of the scoping and environmental analysis conducted for the proposed project, the following environmental resources were considered, but no potential for adverse impacts to these resources were identified. Consequently, this document does not discuss these resources in further detail. These environmental resources are discussed in Appendix A, IS Checklist, and are summarized briefly below. Appendix A also has a summary of the determination of significance for environmental impacts associated with the proposed project.

- **Agriculture Resources/Farmlands/Timberlands:** The project site is an existing highway and does not contain Farmlands/Timberlands or lands designated by the California Resources Agency as Important Farmlands (Prime Farmlands, Unique Farmlands, and Farmland of Statewide Importance). No change in land use designation is required to implement the proposed project. As such, no further discussion of Agriculture Resources, Farmlands, or Timberlands is provided in this IS.
- **Coastal Zone:** The project is located outside of and is noncontiguous to the Coastal Zone and is not anticipated to have any effects on coastal resources. Therefore, it would not impact coastal resources and no further discussion is necessary.
- **Mineral Resources:** There are no mineral resources located within or adjacent to the proposed project; therefore, no further discussion is necessary.
- **Relocations:** No relocations will be necessary as a result of the proposed project; therefore, no further discussion is necessary.
- **Wild and Scenic Rivers:** There are no wild or scenic rivers located within or adjacent to the proposed project; therefore, no further discussion is necessary.

- **Energy:** When balancing energy used during construction and operation against energy saved by relieving congestion and other transportation inefficiencies, the project would not have significant energy impact.

2.1 Human Environment

2.1.1 Land Use

2.1.1.1 Affected Environment

This section describes the current and planned land uses for the project area and discusses potential direct and indirect land use impacts that could result from implementation of the proposed project. The section also examines the project's compatibility with adjacent land uses and consistency with applicable General Plans and regional plans.

The City of Anaheim and the City of Yorba Linda General Plans were reviewed to identify designated land uses, and planning policies and goals. Aerial photographs were examined to identify existing land uses, and the SCAG Draft 2008 Regional Comprehensive Plan was reviewed to identify foreseeable development projects within the project area (Figure 2.1.1-1).

Existing and Future Land Uses

According to land use data provided by the Cities of Anaheim and Yorba Linda, the land uses surrounding the project area include residential, recreational, commercial, light industrial, institutional, and vacant property. However, the majority of the land uses to the north and south of SR-91 within the project area are residential developments, except at the interchanges at Imperial Highway, Weir Canyon Road, and Lakeview Avenue. The project limits are within the Cities of Anaheim and Yorba Linda (Figure 2.1.1-1). However, the City of Anaheim surrounds the majority of the project limits to the north and south of SR-91, with the exception of an area located north of SR-91. This area, which is under the jurisdiction of the City of Yorba Linda, extends from the Weir Canyon Road Undercrossing to the eastern endpoint of the project near the SR-91/SR-241 separation. The segment of SR-91 within the project limits has been designated as a State Scenic Highway. The significance of a State Scenic Highway designation is further discussed in Section 2.1.6, Visual and Aesthetics.

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Anaheim Canyon
Park and Ride
1039 N. Pacific Center Dr

Project Limit

FAUNA
FINCH
SAGEMORE
PAGEANT
REDROCK
BARRYKNOLL
TORREYS
CLAYTOR
HOLTWOOD
BLUEROCK
SWEETWATER
DEERFIELD
BAINBRIDGE
RIVERDALE ELEMENTARY SCHOOL
STARFIRE
BEAUTY
ELKSTONE

City of Anaheim

91

SANTA ANA CANYON

BELLEZA
PERALTA HILLS
SIERRA
TOBY
LEOTA
CERRO VISTA
MAPLE TREE

LEGEND

Project Improvements
Existing Right-of-Way
Sound Wall
City Boundary

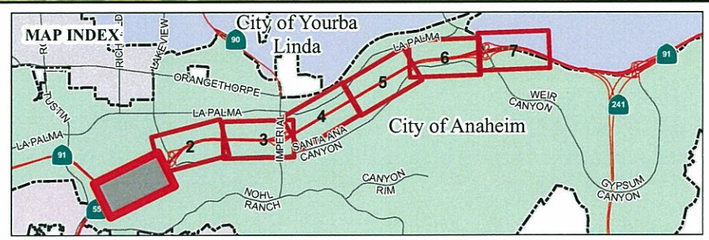
Existing Land Use
Agriculture
Hotel\Motel
Industrial
Office

Public Facilities
Recreation
Residential
Retail
School

Utilities
Vacant
Water

Public Elementary School
Public Intermediate School

0 150 300 Feet



SOURCE: DigitalGlobe (4/08); SCAG (2005); TBM (2008); Caltrans (11/19/08)

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FIGURE 2.1.1-1
Sheet 1 of 7

SR-91 Widening Project
SR-55 to SR-241
Existing Land Uses

12-ORA-91 PM 9.1/15.1
EA# OG330

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SANTA ANA RIVER
MAYCHELLE
ASTORIA
MANTI
CITRUS VIEW
MCKAY
RONI
SHASTA
PARK ROSE
GAYANN
MCKINNON
RIVERDALE
N LAKEVIEW AV
LAKEDALE
STARFIRE
MENTARY
STERLING
91
City of Anaheim
WASATCH
DENNA
FLORENCE
DESERET
Lakeview Avenue Overcrossing
CRESCENT INTERMEDIATE SCHOOL
CRESCENT PRIMARY SCHOOL
BEAUTY
E SANTA ANA CANYON RD
SANTA ANA CANYON
LAKEVIEW
GERDA
PINNEY

LEGEND

Project Improvements
Existing Right-of-Way
Sound Wall
City Boundary

Existing Land Use
Agriculture
Hotel\Motel
Industrial
Office

Public Facilities
Recreation
Residential
Retail
School

Utilities
Vacant
Water

Public Elementary School
Public Intermediate School

0 150 300 Feet

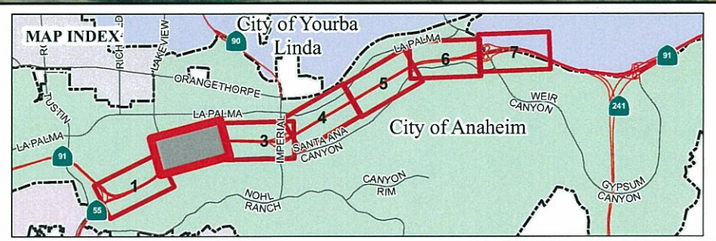

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FIGURE 2.1.1-1
Sheet 2 of 7

SR-91 Widening Project
SR-55 to SR-241
Existing Land Uses

12-ORA-91 PM 9.1/15.1
EA# OG330

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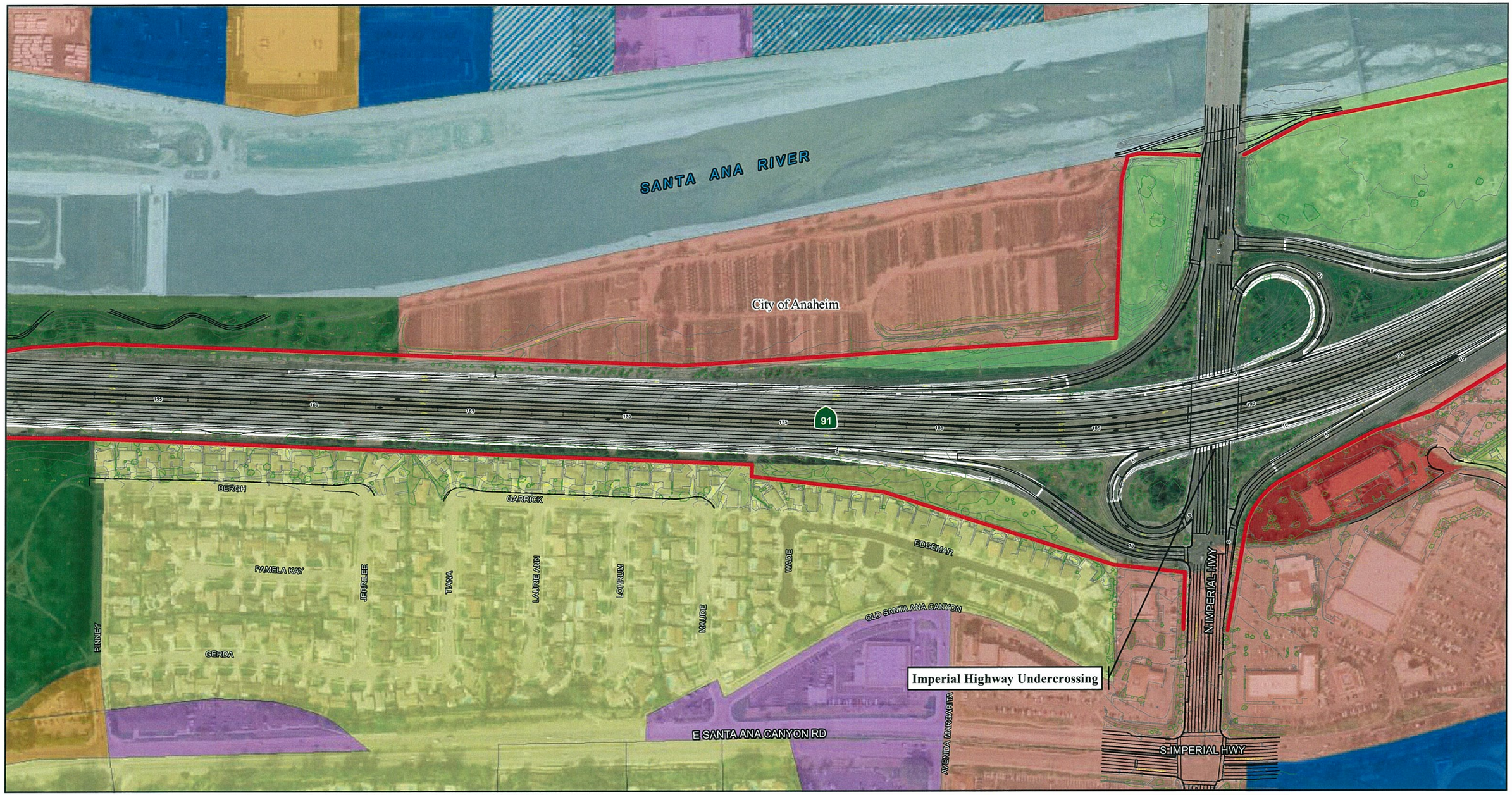

LEGEND

- Project Improvements
- Existing Right-of-Way
- Sound Wall
- City Boundary

Existing Land Use

- Agriculture
- Hotel\Motel
- Industrial
- Office
- Public Facilities
- Recreation
- Residential
- Retail
- School
- Utilities
- Vacant
- Water

0 150 300 Feet

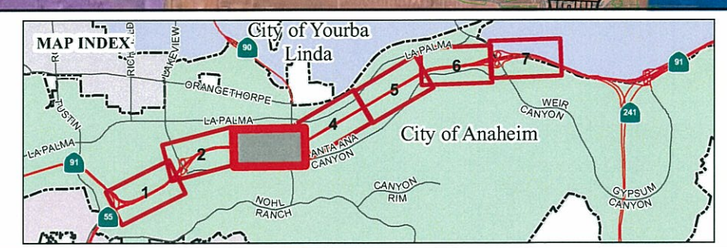

FIGURE 2.1.1-1
Sheet 3 of 7

SR-91 Widening Project
SR-55 to SR-241
Existing Land Uses

12-ORA-91 PM 9.1/15.1
EA# OG330

SOURCE: DigitalGlobe (4/08); SCAG (2005); TBM (2008); Caltrans (11/19/08)

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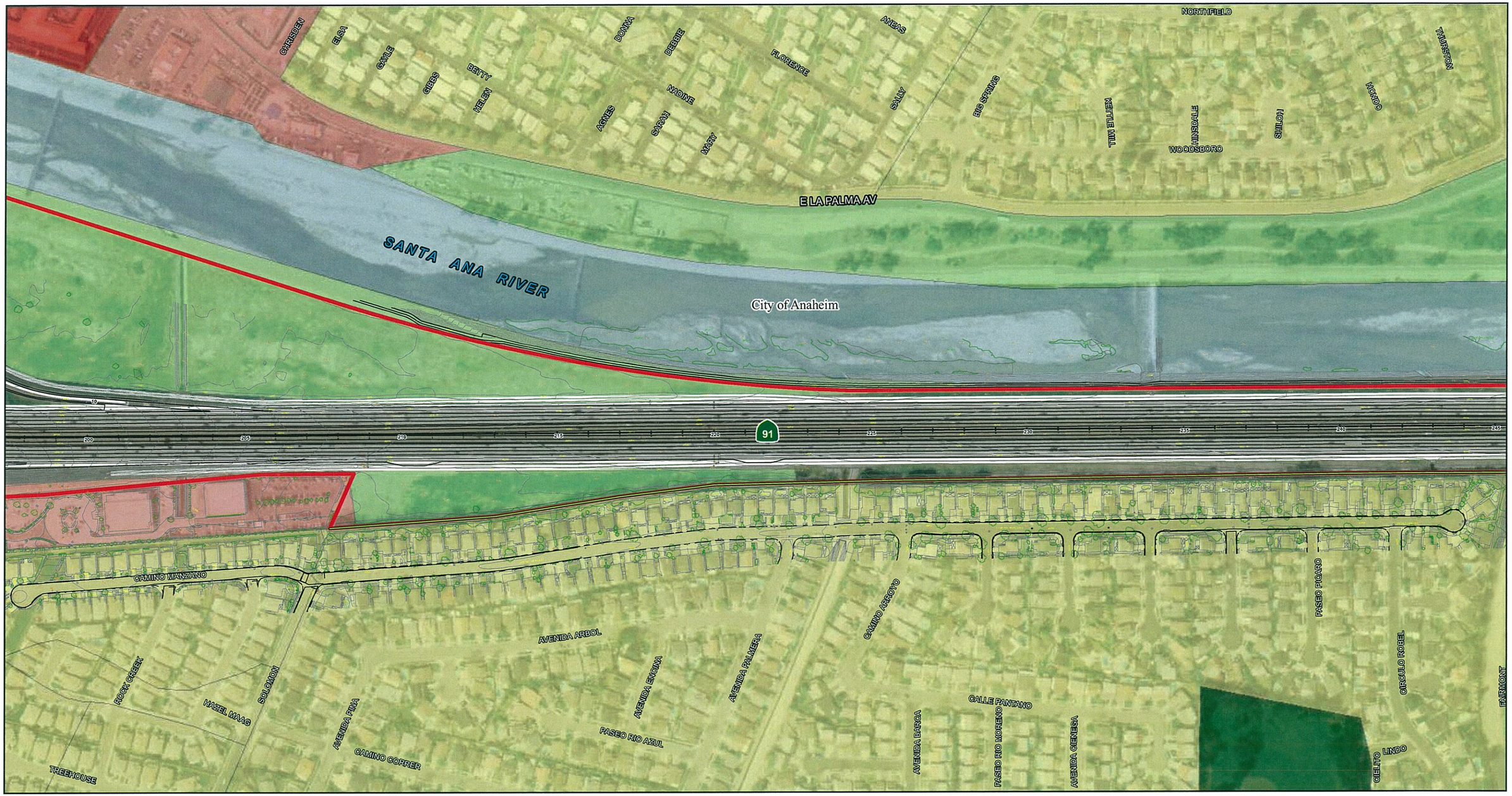

LEGEND

- Project Improvements
- Existing Right-of-Way
- Sound Wall
- City Boundary

Existing Land Use

- Agriculture
- Hotel\Motel
- Industrial
- Office
- Public Facilities
- Recreation
- Residential
- Retail
- School
- Utilities
- Vacant
- Water

0 150 300 Feet

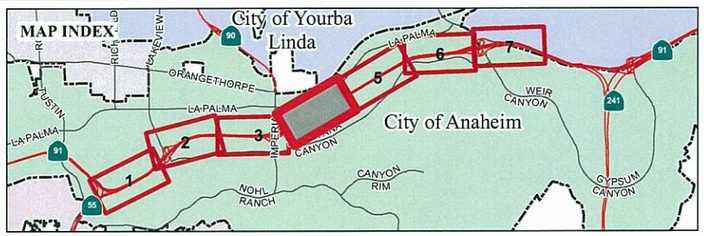

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FIGURE 2.1.1-1
Sheet 4 of 7

SR-91 Widening Project
SR-55 to SR-241

Existing Land Uses

12-ORA-91 PM 9.1/15.1
EA# OG330

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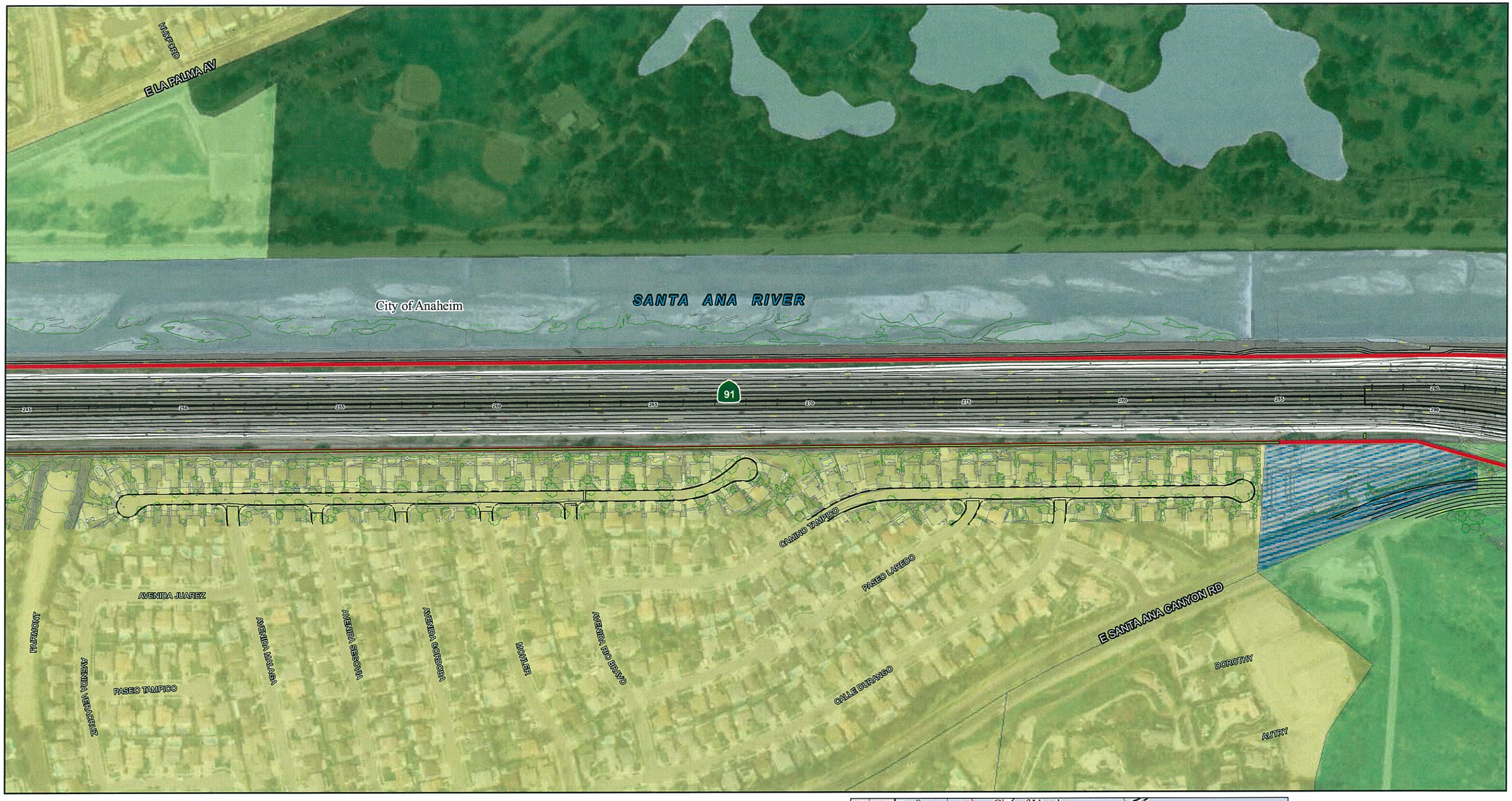

LEGEND

- Project Improvements
- Existing Right-of-Way
- Sound Wall
- City Boundary

Existing Land Use

- Agriculture
- Hotel\Motel
- Industrial
- Office
- Public Facilities
- Recreation
- Residential
- Retail
- School
- Utilities
- Vacant
- Water

0 150 300 Feet

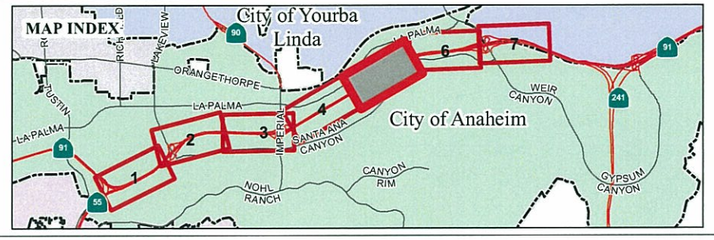

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FIGURE 2.1.1-1
Sheet 5 of 7

SR-91 Widening Project
SR-55 to SR-241
Existing Land Uses

12-ORA-91 PM 9.1/15.1
EA# OG330

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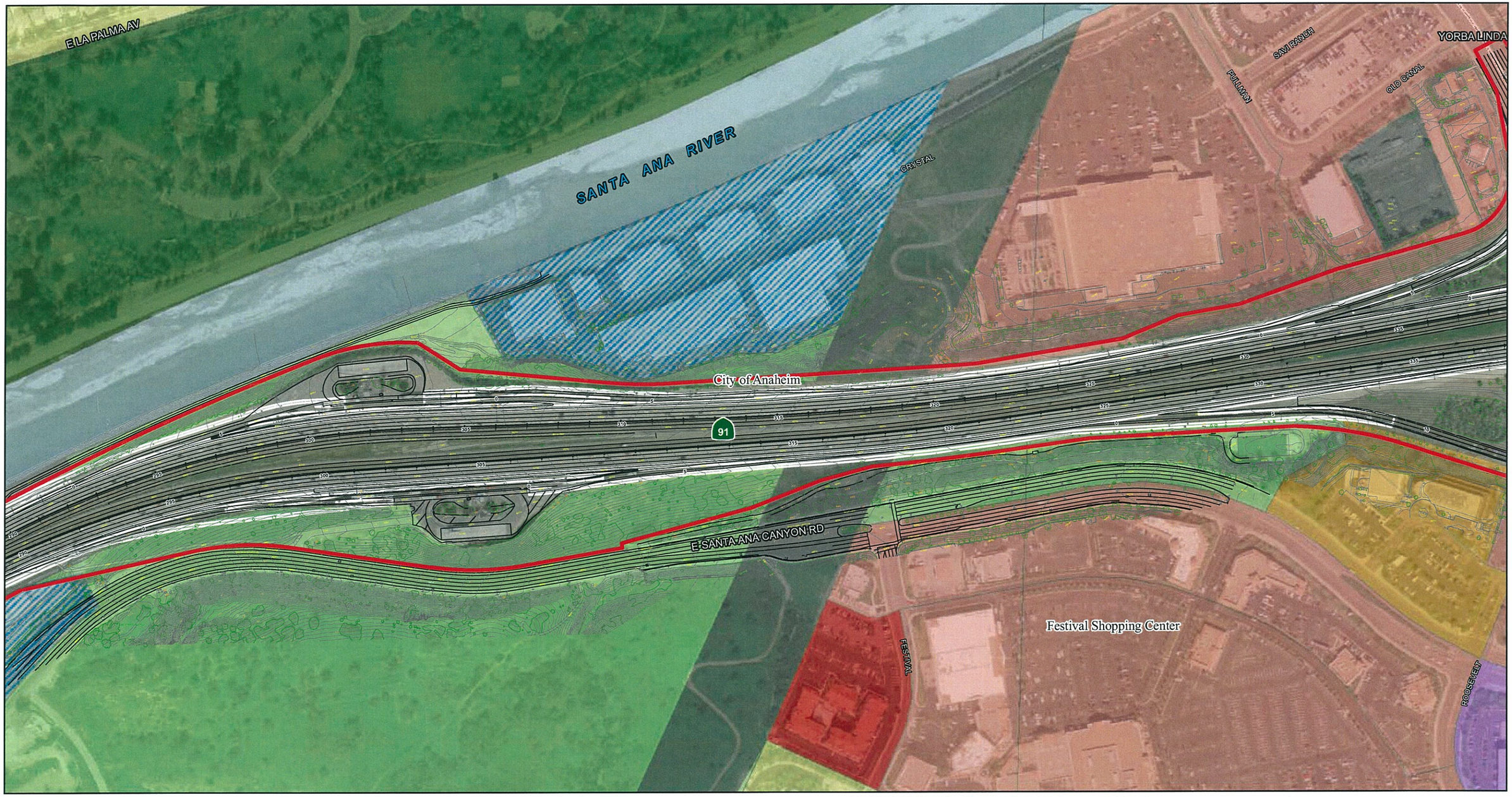

LEGEND

- Project Improvements
- Existing Right-of-Way
- Sound Wall
- City Boundary

Existing Land Use

- Agriculture
- Hotel\Motel
- Industrial
- Office
- Public Facilities
- Recreation
- Residential
- Retail
- School
- Utilities
- Vacant
- Water

0 150 300 Feet

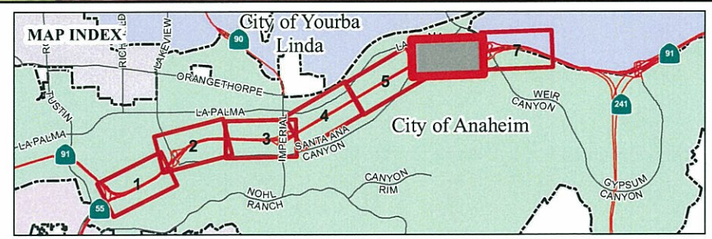

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FIGURE 2.1.1-1
Sheet 6 of 7

SR-91 Widening Project
SR-55 to SR-241

Existing Land Uses

12-ORA-91 PM 9.1/15.1
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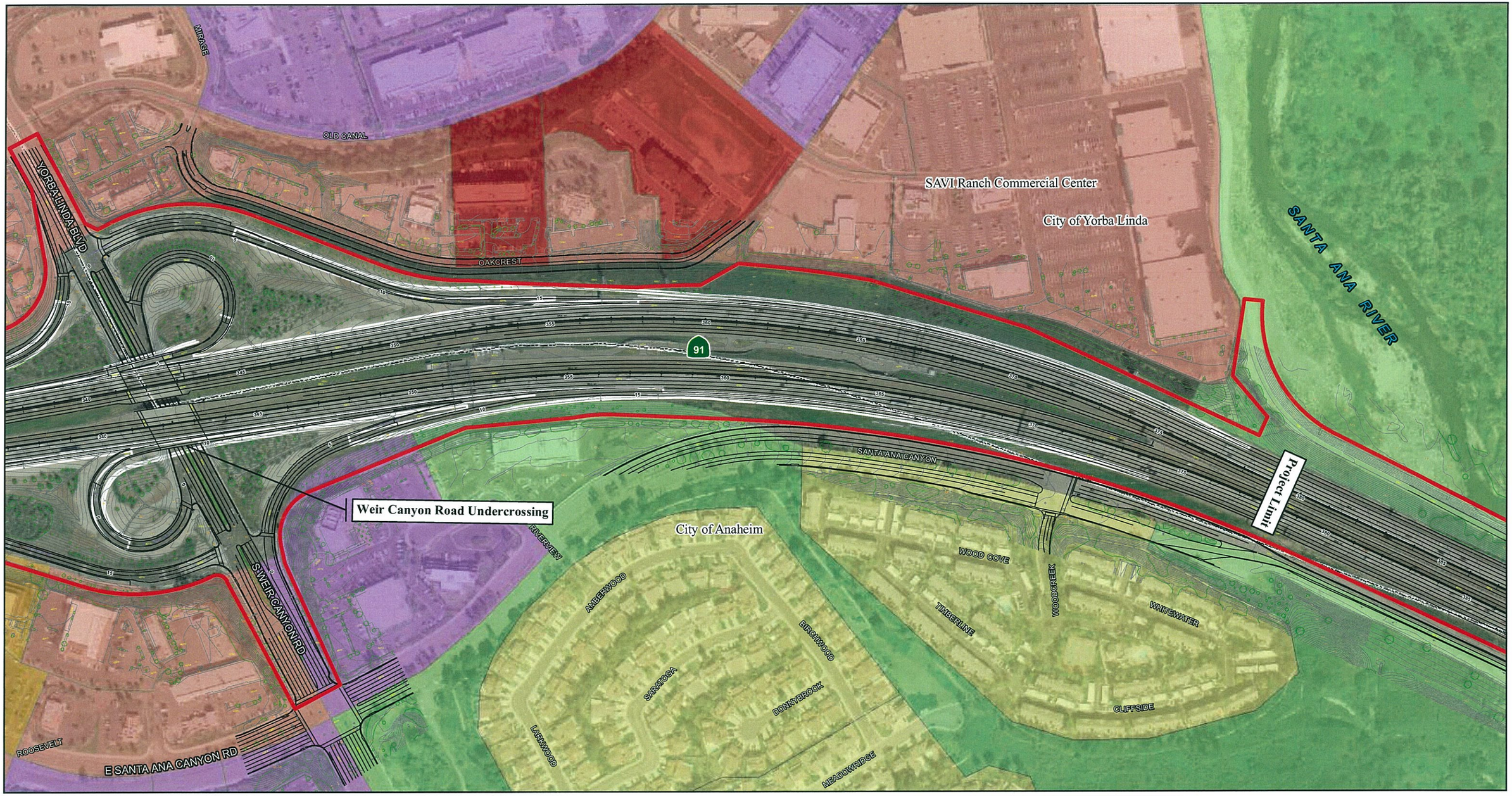

LEGEND

- Project Improvements
- Existing Right-of-Way
- Sound Wall
- City Boundary

Existing Land Use

- Agriculture
- Hotel\Motel
- Industrial
- Office
- Public Facilities
- Recreation
- Residential
- Retail
- School
- Utilities
- Vacant
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0 150 300 Feet

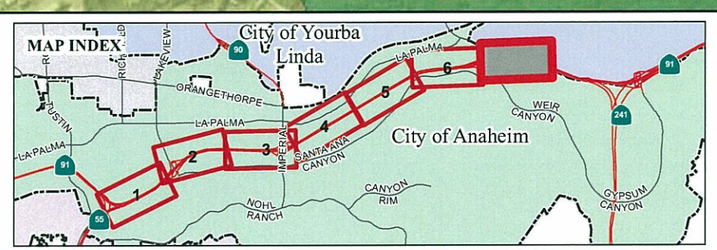

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FIGURE 2.1.1-1
Sheet 7 of 7

SR-91 Widening Project
SR-55 to SR-241

Existing Land Uses

12-ORA-91 PM 9.1/15.1
EA# OG330

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As referenced in Figure 2.1.1-1, residential development largely consists of hillside communities on the south side of SR-91. These hillside developments extend along the length of the southern project limits to SR-241. Other residential developments on relatively flat land are located north of the Santa Ana River and east of Imperial Highway, and generally south of the Santa Ana River at the SR-91/SR-55 separation. Other uses along the north side of SR-91 include a Kaiser Permanente Medical Center and a nursery.

A commercial center is located at the intersection of Imperial Highway and Santa Ana Canyon Road. Northeast of the project area are commercial and industrial uses, including the SAVI Ranch Commercial Center. The Festival Shopping Center, is located on the south side of SR-91, near the intersection of Santa Ana Canyon Road and South Festival Drive.

Existing land use designations in the area of the project site are shown in Figure 2.1.1-1. Existing land uses adjacent to the project limits are detailed in Table 2.1.1-1.

Table 2.1.1-1 Existing Land Uses

Name	Jurisdiction	Category
Riverdale Elementary School	City of Anaheim	Institutional/Government
Crescent Intermediate School	City of Anaheim	
Kindred Community Church	City of Anaheim	
Kaiser Permanente Medical Center	City of Anaheim	
Single-Family Residential Developments	City of Anaheim	Residential
The Cascades Luxury Apartments	City of Anaheim	
SAVI Ranch Business Park and Retail Center	City of Yorba Linda	Commercial/Office
Festival Shopping Center	City of Anaheim	
Mobil Gasoline Station	City of Anaheim	
Sunny Slope Tree Nursery	City of Anaheim	
Mercedes Benz of Anaheim	City of Anaheim	
StorQuest Self Storage	City of Anaheim	
The Home Depot	City of Anaheim	
Car Dealerships	City of Anaheim	
East Hills Center Retail Strip Mall	City of Anaheim	
76 Gasoline Station	City of Anaheim	
EZ Lube	City of Anaheim	
Conroy's Flowers	City of Anaheim	
Anaheim Business Center	City of Anaheim	
Ayres Suites	City of Yorba Linda	Entertainment/Lodging
Extended Stay America	City of Yorba Linda	
Fairfield Inn	City of Anaheim	
Peralta Canyon Park	City of Anaheim	Parks/Open Space
Yorba Regional Park	City of Yorba Linda	
Featherly Regional Park	City of Anaheim	
Anaheim Police Station	City of Anaheim	Public/Government
U.S. Post Office	City of Anaheim	
Warehouses	City of Anaheim	Industrial
Vacant Land	City of Anaheim	Vacant/Undeveloped

Source: LSA Visual Site Observation.

Future Land Uses

Information provided by the Planning Departments for the Cities of Anaheim and Yorba Linda confirmed that the Mountain Park and Deer Canyon Estates developments are currently the only planned future developments adjacent to the project site. The remainder of the uses within the project study area reflect established residential and commercial developments. There are no other large parcels within the study area that would be available for development.

Mountain Park

The Mountain Park development has been approved within an approximate 3,001-acre (ac) site located in Gypsum Canyon on the south side of SR-91 and on both the east and west sides of SR-241. The proposed project allows for the development of up to 2,500 new low-medium hillside density and low-medium density residential homes, a fire station, and an elementary school with an adjacent public community park. The approved project would also include public and private recreational facilities, including riding and hiking trails and the preservation of approximately 2,163 ac of the site as open space.

Deer Canyon Estates

The Deer Canyon Estates development was approved in 2005 to construct 35 single-family residences on 18.9 ac of land located south of Santa Ana Canyon Road, west of Festival Drive, and east of South Eucalyptus Drive. The project would include residences, roads, landscaping, architectural elements, fuel modification zones, and designation of 13.4 ac of open space consisting of 6.65 ac of wildlife habitat to be permanently conserved by a conservation easement managed by the development. The remaining 6.85 ac of open space will be dedicated to and maintained by the City of Anaheim.

Parks, Schools, and Recreational Facilities

Two regional parks, two schools, and one community park were identified in the immediate vicinity of the proposed project: Yorba Regional Park, Featherly Regional Park, and Peralta Canyon Community Park (see Table 2.1.1-2). The Regional Parks are owned and operated by the County of Orange and Peralta Canyon Community Park is owned/operated by the City of Anaheim. According to the County of Orange General Plan, regional parks are generally 100 ac or larger in area and offer recreational or scenic attractions that are of countywide significance and not generally available in local and municipal parks. Riverdale Elementary School and Crescent Intermediate School are located adjacent to SR-91. Riverdale Elementary School currently has 345 students

Table 2.1.1-2 Park Facilities

Facility	Facility Location	Size
Yorba Regional Park	Between La Palma Avenue and the Santa Ana River.	166 ac
Featherly Regional Park	North of the Riverside (SR-91) Freeway and SR-241 separation.	150 ac
Peralta Canyon Park	South of SR-91 at the intersection of N. Pinney Dr. and Gerda Dr.	21.4 ac

Source: City of Anaheim General Plan 2000.

enrolled, and Crescent Intermediate School currently has 453 students enrolled. Both these schools have athletic fields available to the public.

Regional and Local Trails

SR-91 is an existing major highway and does not currently include a bicycle trail. However, two recreational trails have been identified as spanning the length of the SR-91 project limits. As listed in the County of Orange General Plan, the Santa Ana River Regional Trail is located along the Santa Ana River, north of SR-91. The City of Anaheim General Plan identifies a backbone trail on the south side of SR-91 along Santa Ana Canyon Road. Backbone trails are considered trails that serve as a major link for adjacent city trails. Several feeder trails that connect to the backbone trail on the south side of SR-91 were also observed in the City of Anaheim General Plan.

Consistency with State, Regional, and Local Plans and Programs

For this analysis, relevant land use, air quality, and circulation/transportation-related goals and policies in the City of Anaheim General Plan (May 25, 2004), City of Yorba Linda General Plan (December 6, 1993), and County of Orange General Plan (February 1, 2000) were evaluated for consistency with the proposed project and to understand the development trends, land use-related goals, and specific policies that could affect or be affected by the proposed project.

City of Anaheim General Plan (Adopted May 25, 2004)

The Hill and Canyon Area/Mountain Park Specific Plan

The City of Anaheim General Plan Land Use Element, Community Policy Areas section, identifies the areas north and south of SR-91 from the SR-91/SR-55 separation to the Weir Canyon Road Undercrossing, and areas south of SR-91 from the Weir Canyon Road Undercrossing to the SR-91/SR-241 separation, as the Hill and Canyon Area. This has been developed for residential use since the 1960s and is considered one of Orange County's most desirable communities to live in because of

the scenic views; well-planned residential development; and access to a variety of natural, scenic, and recreational resources, including the Santa Ana River, Deer Canyon Park Preserve, and Anaheim Hills Golf Course.

The Hill and Canyon Area is intended to encourage and maintain living areas that preserve the amenities of hillside living and retain the overall lower-density, semi-rural, uncongested character of the Santa Ana Canyon Area. Located within the Hill and Canyon Area is the Mountain Park Specific Plan, which proposes to develop Gypsum Canyon south of SR-91 for residential purposes. The Mountain Park Specific Plan has designated the development of mixed residential uses, one school site, one neighborhood park site, and approximately 2,100 ac of open space.

The Canyon Area

The Canyon Area is a 2,450-acre business center that is adjacent to the north side of SR-91 between Imperial Highway and SR-57. Areas surrounding the proposed project that are included within the Canyon area are located along the segment of the SR-91 between the SR-91/SR-55 separation and the Imperial Highway Undercrossing. The Canyon area is considered a key regional employment center and provides high visibility and accessibility to the Inland Empire and Los Angeles County.

General Plan Land Use Element

Goal 3.1 Pursue land uses along major corridors that enhance the City's image and stimulate appropriate development at strategic locations.

Policy 3 Ensure quality development along corridors through adherence to established development standards and Community Design Element goals, policies, and guidelines.

Policy 4 Continue to pursue additional open space, recreation, and landscaping amenities along major transportation routes.

The Hill and Canyon Area and Mountain Park Specific Plan Area Land Use Element

Goal 8.1 Preserve natural, scenic, and recreational resources; continue to ensure residential neighborhoods are safe, well-maintained places to live, and continue to provide necessary community services and facilities.

Policy 6 Continue to work with the Department and OCTA to protect residential neighborhood from bypass traffic impacts associated with congested conditions on the Riverside (SR-91) Freeway.

Air Quality Element

Goal 8.1 Reduce locally generated emissions through improved traffic flows and construction management practices.

Policy 2 Regulate construction practices, including grading, dust suppression, chemical management, and encourage pre-determined construction routes that minimize dust and particulate matter pollution.

Circulation Element

Goal 1.1 Provide a comprehensive multimodal transportation system that facilitates current and long-term circulation of people and goods in and through the City.

Goal 1.2 Support improvements to highways passing near and through the City.

Policy 1 Continue working with the Department and the Federal Highway Administration to address traffic flow along State highways that traverse the City.

Policy 2 Discourage Riverside (SR-91) Freeway bypass traffic through the Hill and Canyon Area by participating in related Major Investment Studies and working with the Department and OCTA to improve traffic flow on SR-91.

Policy 3 Work with the Department to identify needed improvements to its facilities in the City as necessary.

Policy 4 Work with the Department and adjacent jurisdictions to improve the operational performance of highways within the adjacent to the City.

Policy 5 Work with the Department in analyzing the performance of freeway interchanges located in the City and seek appropriate improvements.

Goal 2.3 Improve regional access for City residents and workers.

Policy 1 Continue to implement the State-mandated Congestion Management Program and Orange County's Growth Management Program.

Policy 2 Actively engage in inter-jurisdictional planning efforts as part of the Measure M program.

Policy 3 Engage in regionally based planning efforts to improve the jobs-housing balance and regional transit systems.

Policy 4 Participate in cooperative planning processes to promote effective regional transportation and sustainable development and ensure that citizens of Southern California can access jobs and housing in Anaheim.

Goal 4.1 Preserve and enhance uniquely scenic or special visual resources along highways and designated State Scenic routes for the enjoyment of all travelers.

Policy 1 Continue to work with the Department in its implementation of the State Scenic Highway Program. Ensure the preservation and enhancement of scenic routes through special highway design and building regulation.

City of Yorba Linda General Plan (December 6, 1993)

According to the City of Yorba Linda General Plan, the City of Yorba Linda is located in the northern portion of Orange County and is accessible to all parts of the Los Angeles Metropolitan Area by freeway. The City is bounded by unincorporated County land to the north, the City of Brea and the Counties of San Bernardino and Riverside to the east, the City of Anaheim and unincorporated County land to the south, and the City of Placentia to the west.

The northeastern limits of the city support commercial and industrial uses and includes the SAVI Ranch Commercial Center, which has been developed as an integrated research and development park that supports retail, wholesale, and commercial uses as well as an auto mall. SAVI Ranch serves as a major commercial-office node located off of Weir Canyon Road.

Air Quality Element

Goal 1B Contribute to improved air quality in the South Coast Air Basin in support of the South Coast Air Quality Management Plan.

Policy 1.1 Participate with the County and other cities in Orange County to coordinate air quality implementation on a countywide basis.

Circulation Element

Goal 1 Develop a circulation system that meets the needs of current and future residents of the City, has adequate capacity for projected future traffic demands at acceptable levels of service, and facilitates the safe and efficient movement of people and goods throughout the City.

Policy 1.1 Develop and maintain a road system based upon, and in balance with, the Land Use Element of the General Plan.

Goal 2 Support development of a network of regional roadway facilities that ensures the safe and efficient movement of people and goods from within the City to areas outside its boundaries, and that accommodates the regional travel demands of areas outside of the City.

Policy 2.1 Coordinate roadway improvements with applicable Regional, State and Federal Agencies.

Policy 2.3 Support the addition of capacity enhancement improvements such as high occupancy vehicle lanes, general-purpose lanes and auxiliary lanes to the Riverside Freeway (SR-91).

Policy 2.6 Enable regional traffic to flow through the City with minimum impact to local residents and businesses through clear delineation of major thoroughfares from the local community circulation network and supporting traffic control measures.

County of Orange General Plan (February 1, 2000)

Land Use Element Policies

Goal 4 To plan an integrated land use and transportation system that accommodates travel demand.

Transportation and Circulation Element

Goal 1 To provide a circulation plan that supports land use policies of the County.

Goal 2 To provide a circulation (arterial highway) plan that is integrated with that of adjacent jurisdictions.

Policy 2.1 Coordinate with the following transportation planning agencies: the Department (State), Orange County Transportation Authority (OCTA), the Transportation Corridor Agencies (County corridor planning and construction) and Orange County cities on various studies relating to freeway, tollway and transportation corridor planning, construction and improvement in order to facilitate the planning and implementation of an integrated circulation system.

Goal 3 Provide a circulation plan that facilitates the safe, convenient, and efficient movement of people and goods throughout unincorporated areas of the County.

Policy 3.1 Maintain acceptable levels of service on arterial highways pursuant to the Growth Management Element of the General Plan.

Policy 3.2 Ensure that all intersections within the unincorporated portion of Orange County maintain a peak hour level of service "D" according to the County Growth Management Plan Transportation Implementation Manual.

Transportation Plans

Several regional and subregional transportation plans and programs apply to the Cities of Anaheim and Yorba Linda. They include the Orange County Congestion Management Program (CMP), the SCAG Comprehensive Transportation Plan (SCAG/CTP), the RTIP, and the RTP. The project is included in the adopted 2006 STIP through amendment STIP 1B-P-060 and is listed as follows: "Widening – In Anaheim, from east of Route 55 separation to east of Weir Canyon Road, Add one lane in each direction."

Regional Transportation Plan

The 2008 RTP (adopted in May 2008) addresses transportation issues for the six-county region in Southern California, which includes Los Angeles, Orange, San Bernardino,

Riverside, Ventura, and Imperial Counties. The RTP emphasizes the need for balance between land use and current and future transportation systems. SCAG is required to develop, maintain, and update the RTP every three years. The RTP provides the basic policy and program framework for long-term investment in Southern California's vast regional transportation system in a coordinated, cooperative, and continuous manner. The proposed project is included in the RTP (RTP ID ORA030601). However, federal conformity will be obtained in mid to late 2008. The Environmental Impact Report (EIR) will be updated once the 2008 RTP has been approved.

Regional Transportation Improvement Program

Transportation projects planned within the SCAG Region that utilize State or federal transportation funds must be consistent with the RTP and must be included in the RTIP when the proposed project is ready to receive funding. The 2008 RTIP was adopted on July 17, 2008, and lists all transportation projects proposed over a six-year period within the SCAG. Projects listed in the RTIP include highway improvements; transit, rail, and bus facilities; HOV lanes; signal synchronization; intersection improvements; freeway ramps; etc., and require a large commitment of public funds. The proposed project is included within SCAG's 2008 Final RTIP with Amendments-1-10 State Highway Projects for Orange County (RTIP ID ORA030601) and is included in the Adopted 2008 RTIP. The 2008 RTIP is currently in draft format and is awaiting approval in late 2008. The EIR will be updated once the 2008 RTIP has been approved.

Southern California Association of Governments

SCAG is responsible for a portion of the regional planning in Southern California. SCAG has been responsible for producing long-range growth and development plans for the Southern California region since the early 1970s. SCAG establishes the framework for the coordination of local and regional decision making pertaining to future growth and development, and the preparation of growth forecast policies at three- to five-year intervals.

Growth forecast policies that are adopted become the basis for SCAG's functional plans (transportation, housing, air and water) for the region. Population totals and growth distribution information are utilized in planning the future capacity of highways and transit systems, the quantity and location of housing, water supply systems, and the siting and sizing of sewage treatment systems.

Air Quality Management Plan

The South Coast Air Quality Management District (SCAQMD) and SCAG are responsible for formulating and implementing the AQMP for the Basin. Every three years, the SCAQMD prepares a new Air Quality Management Plan (AQMP), updating the previous plan and having a 20-year horizon. The SCAQMD adopted the 2003 AQMP in August 2003 and forwarded it to the California Air Resources Board (ARB) for review and approval. ARB approved a modified version of the 2003 AQMP and forwarded it to the EPA in October 2003 for review and approval.

The 2003 AQMP updates the attainment demonstration for the federal standards for ozone (O_3) and particulate matter (PM_{10}); replaces the 1997 attainment demonstration for the federal CO standard and provides a basis for a maintenance plan for CO for the future; and updates the maintenance plan for the federal NO_2 standard that the Basin has met since 1992.

The 2003 AQMP proposes policies and measures to achieve federal and State standards for healthful air quality in the Basin.

This revision to the AQMP also addresses several State and 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. This AQMP is consistent with and builds upon the approaches taken in the 1997 AQMP and the 1999 Amendments to the O_3 State Implementation Plan (SIP) for the Basin for the attainment of the federal O_3 air quality standard. However, this revision points to the urgent need for additional emission reductions (beyond those incorporated in the 1997/1999 Plan) to offset increased emission estimates from mobile sources and meet all federal criteria pollutant standards within the time frames allowed under the federal Clean Air Act (CAA).

The SCAQMD is developing the 2007 AQMP, which is described as a regional and multiagency effort (SCAQMD Governing Board, ARB, SCAG, and the EPA). State and federal planning requirements will include developing control strategies, attainment demonstration, reasonable further progress, and maintenance plans. The 2007 AQMP also 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 includes a request to have the Basin's federal 8-hour O_3 attainment status changed from severe to extreme. This change would extend the attainment deadline from 2021 to 2023. The ARB approved the 2007 AQMP on

September 27, 2007, and adopted it as part of the 2007 SIP. The ARB has forwarded the 2007 SIP, which included the 2007 AQMP, to the EPA for its review and approval.

Orange County Transportation Authority Long Range Transportation Plan

The 2006 Long Range Transportation Plan (LRTP) provides the planning foundation for transportation improvements over the next 25 years within the County of Orange. The purpose of the LRTP is to maintain and improve service levels along the existing transportation network as the population continues to increase within the County. The LRTP, updated every four years, forms the basis of a transportation network considered by federal, state, and local transportation planning and funding agencies as well as local land use planning agencies such as the County of Orange and local cities. The 2006 LRTP includes improvements to transportation networks such as new and widened freeways, tollways, and roadways; new and enhanced transit facilities; new regional bikeway improvements; and new environmental programs. The LRTP reflects OCTA and local agency perceptions of which transportation improvements are needed to address existing and forecast traffic demand. The LRTP also includes those projects that are listed in the Transportation Investment Plan, which has been prepared to facilitate the renewal of Measure M. Currently, the proposed project is listed within the LRTP as a proposed freeway project.

Orange County Congestion Management Program

The CMP addresses State requirements for transportation planning and funding in Orange County. Available State funding from increased gas taxes is available only if specific actions outlined in the legislation are employed to reduce levels of congestion on State highways and "principal" arterial highways that are designated by the responsible local agency. The CMP Highway System includes SR-91 within the Cities of Anaheim and Yorba Linda. Cities are encouraged to comply with the required actions to qualify for participation in the CMP program and funding distributions.

Existing Travel Patterns

As discussed in detail earlier in Chapter 1, the proposed project is a major east-west regional transportation corridor serving travelers destined to areas in Los Angeles, Orange, Riverside, and San Bernardino Counties, including travelers destined to out-of-State locations.

2.1.1.2 Environmental Consequences

Temporary Impacts

No Build Alternative

Under the No Build Alternative, no temporary impacts resulting from construction activities would occur. Therefore, there are no temporary impacts related to land use under the No Build Alternative.

Build Alternative

Under the Build Alternative, no temporary impacts resulting from construction activities would occur related to land use because all of the proposed construction activity would occur primarily within existing ROW.

Permanent Impacts

No Build Alternative

The No Build Alternative is not consistent with the State, regional, and local plans discussed earlier. Further, the No Build Alternative would not be consistent with the CMP, SCAG/CTP, LRTP, RTIP, or RTP. Under the No Build Alternative, without capacity improvements, traffic congestion on SR-91 would be anticipated to worsen over time.

Build Alternative

As discussed in detail in Chapter 1, the Build Alternative would serve existing and forecast travel demand within the project limits on SR-91. The proposed project would not modify existing travel patterns because all connections within the project limits would remain the same, and the Build Alternative would improve the efficiency of traffic movements along SR-91.

Existing and Future Land Uses

The majority of the areas surrounding SR-91 have already been developed for residential and commercial uses. The proposed project would not require full or partial takes of existing adjacent properties and would not cause any change in current land use designations or patterns. Therefore, impacts to existing and future land uses are not anticipated as a result of the proposed project.

The ROW limits for the Build Alternative would not encroach on existing parks or recreational facilities. Therefore, impacts to parks and recreational facilities are not anticipated as a result of the proposed project.

Consistency with State, Regional, and Local Plans

Because the proposed project supports the goals of existing State, regional, and local plans, as discussed above, and is intended to meet the existing and forecasted demand based on adopted land use plans, no impacts would occur. As discussed previously in Section 2.1.1.1, Affected Environment, the proposed project is consistent with the goals and policies of the City of Anaheim and City of Yorba Linda General Plans. Additionally, the proposed project is consistent with the CMP, SCAG/CTP LRTP, RTIP, and RTP. Impacts to City General Plans or Transportation Plans are not anticipated as a result of the proposed project.

2.1.1.3 Avoidance, Minimization, and/or Mitigation Measures

The proposed project is consistent with State, regional, and local plans, as well as parks and recreation resources. Therefore, no avoidance, minimization or mitigation measures are required.

2.1.2 Growth

The analysis of the potential growth-inducing impacts of the proposed project is based on demographic information from 2000 Census data; the SCAG 2008 RTP growth forecasts for the Cities of Anaheim, Yorba Linda, Placentia, and County of Orange (www.scag.ca.gov/forecast/index.htm) (Personal communication with Minjares, Javier from SCAG); and Department of Finance projections for 2007 (www.dof.ca.gov). This analysis relies on the following assumptions regarding growth:

- Orange County's population will continue to grow through 2050 due to its strategic location on the Pacific Coast and access to growing Asian economies.
- Orange County will attract growth because of its likeliness to have growing commercial and retail business opportunities through 2035.
- SCAG's growth estimates for the County indicate a potential population growth increase approaching 15.2 percent by 2035 for the project area.

Direct growth-inducing impacts are generally associated with the provision of urban services and the extension of infrastructure to an undeveloped area. The extension of services and facilities to an individual site can reduce development constraints for other nearby areas and can serve to induce further development in the vicinity. Indirect or secondary growth-inducing impacts consist of growth in the area by additional demand for housing, employment, and goods and services associated with population increase caused by, or attached to, new development.

2.1.2.1 Regulatory Setting

CEQA requires the analysis of a project's potential to induce growth. CEQA guidelines, Section 15126.2(d), require that environmental documents "...discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment..."

2.1.2.2 Affected Environment

This section describes demographic characteristics of Orange County and the Cities of Anaheim, Yorba Linda, and Placentia. The project area lies within the Cities of Anaheim and Yorba Linda. However, the study area to analyze project's potential growth effects includes Orange County and the Cities of Anaheim, Yorba Linda, and Placentia and, as a result, extends beyond the immediate project limits to include areas in those cities and the County anticipated to be potentially directly and/or indirectly affected and/or benefited by the proposed project.

Orange County has been one of the fastest-growing areas in the State of California over the past 40 years. There are two parallel arterial roadway corridors within the project limits, La Palma Avenue and Santa Ana Canyon Road that are currently utilized by vehicles, in addition to SR-91. The cities within the study area are built out, and most additional population and employment growth is expected to take place through natural increase and redevelopment of existing land uses or infill development of vacant parcels. Land uses within the study area are already established with limited opportunity for a new unplanned large-scale development. The City of Anaheim has approved two major developments southeast of the SR-91/SR-241 separation. The Deer Canyon Estates provides for 35 single-family residences on 18.9 ac of land. The Mountain Park Specific Plan provides for 2,500 residential units and 3,000 square feet of commercial space. According to the City of Yorba Linda (personal conversation, Greg Rehmer, Associate Planner, City of Yorba Linda), the City does not have any planned developments.

The proposed project is premised on certain assumptions, as explained earlier, regarding growth in the project area. Orange County and Riverside County, as well as all of Southern California, has experienced dramatic growth for the last 30 years and this trend is expected to continue into the next century, less so for Orange County and more so for Riverside County. During the past several decades, the SCAG region, including Orange, Imperial, Riverside, San Bernardino, Los Angeles, and Ventura Counties, has been one of the fastest-growing regions in the nation. Between 1950 and 1970, the population doubled in size, growing at a rate of 5 percent per year. Between 1980 and 1990, the

region's population grew by over 25 percent to 14.6 million. Between 1990 and 2000, the region's population grew by nearly 15 percent to 16.5 million (SCAG 2001).

To portray the demographic characteristics within the study area, 2000 Census data, the Department of Finance's population projections for 2007, and SCAG's population projections for 2035 were evaluated. Table 2.1.2-1 shows the 2000 and 2007 populations, the projected 2035 populations, and the projected percent increase in population between 2007 and 2035 populations for Orange County and the Cities of Anaheim, Yorba Linda, and Placentia.

Table 2.1.2-1 Population Growth Estimates

City or County	2000 Population	2007 Population	2035 Population	Projected Growth
Orange County	2,846,289	3,098,121	3,653,988	17.9%
Anaheim	328,014	345,556	439,729	27.3%
Yorba Linda	58,918	67,904	76,902	13.3%
Placentia	46,488	51,597	62,262	20.7%

Source: 2000 Census Data; 2008 RTP and 2035 SCAG Growth Forecasts, www.scag.ca.gov/forecast/index.htm); 2007 Department of Finance, www.dof.ca.gov

According to these population estimates, the population in Orange County was 3,098,121 persons in 2007. SCAG projects that the population in Orange County will increase by 17.9 percent, to 3,653,988 persons, by 2035. The 2007 population in the City of Anaheim was 345,556, in Yorba Linda was 67,904, and in Placentia was 51,597 persons. SCAG projects that the population in Anaheim will increase by 27.3 percent, to 439,729 persons, by 2035. The population in the City of Yorba Linda is projected to increase by 13.3 percent, to 76,902 persons, by 2035. The population in the City of Placentia is projected to increase by 20.7 percent, to 62,262 persons, by 2035. The projected growth shown in the above table includes future projects such as the Mountain Park Development.

The SAVI Ranch and Festival Shopping Centers located at Weir Canyon Road and the Anaheim Canyon Area are two regional retail and commercial centers near the project area. The Anaheim Canyon Area is a major employment center. Due to the lack of private vacant land in the study/project area, there are limited opportunities for large-scale development to occur in the study/project area. Mountain Park and Deer Canyon Estates are future residential developments in the vicinity of the project area that have been accounted for in the local jurisdiction's growth projections.

2.1.2.3 Environmental Consequences

The environmental consequences of the proposed project for potential direct and indirect impacts to growth are analyzed both for the Build Alternative and for the No Build Alternative.

Temporary Impacts

No Build Alternative

The No Build Alternative does not require construction; therefore, there would be no temporary impacts on growth-inducing factors.

Build Alternative

The Build Alternative would not have any temporary impacts on growth-inducing factors since temporary construction does not induce growth.

Permanent Impacts

No Build Alternative

The No Build Alternative would not accommodate growth that has already occurred and growth that is forecast in the Cities and Orange County based on adopted land use plans and SCAG projections. While the No Build Alternative would not reduce traffic volumes, it also would not induce growth elsewhere in the Cities or the County. Existing congestion would remain within the project area and would continue in the future without implementation of the proposed project. The No Build Alternative would not change regional or subregional growth. Therefore, the No Build Alternative is not anticipated to influence the amount, location, and/or distribution of growth or housing and jobs in the Cities of Anaheim, Yorba Linda, and/or Placentia or the County of Orange. However, the growth would be slowed in the study area due to increased congestion on SR-91.

Build Alternative

The Build Alternative would reduce existing and forecast traffic congestion and improve operational deficiencies. The Build Alternative would specifically address existing congestion of this part of EB and WB SR-91.

Growth in all three cities and Orange County, as summarized in Table 2.1.2-1, is forecasted based on land use plans, economic conditions, and other factors. The proposed project would accommodate existing operational and capacity deficiencies as well as planned growth and would not foster growth in excess of what is projected due to the lack of vacant land in the study area. Many areas within the project limits would operate at LOS E and F in the peak hours sometime after the construction of the proposed project

(see Table 1.4 in Chapter 1). Thus, there will still be congestion in the future although the intensity of congestion would be reduced. The proposed project would not be expected to influence the amount, location, and/or distribution of growth in the project Cities and the County since no new exit or entrance ramps are proposed and the project area is built out. Due to the fact that very few open areas are available in the close vicinity of the project area, the project will not create new housing or opportunities for capital investment by the public or private sectors.

The Build Alternative would introduce widening of SR-91 within a job-rich region to assist in a more balanced ratio between transportation, population, housing, and jobs and will not result in growth-inducing impacts. It is not growth-inducing since the potential for unplanned development is limited, given the built-out nature of the study area and entitlement status of existing vacant land. The proposed project would not, in itself, result in direct or indirect changes in land use, economic vitality, and population density. Therefore, the proposed project is not considered growth-inducing.

2.1.2.4 Avoidance, Minimization, and/or Mitigation Measures

It has been determined that the proposed project is not growth-inducing, since the potential for unplanned development is limited, given the built-out nature of the study area and entitlement status of existing vacant land. Therefore, no avoidance, minimization, or mitigation measures are required.

2.1.3 Community Impacts

This section examines the potential for impacts to the communities within the SR-91 project limits resulting from the proposed project. Impacts to community relate to community character and cohesion

The following information is summarized from the United States Census Bureau (Census 2000) and the SCAG Growth Projections 2007. It describes the demographic characteristics of the project study area. The study area for this community impact section extends beyond the proposed disturbance limits to include those communities that could potentially be directly and/or indirectly impacted by the proposed project.

2.1.3.1 Community Character and Cohesion

The analysis in this section focuses on potential impacts related to community character and cohesion resulting from the proposed project. Impacts to community relate to changes in land use, neighborhoods, visual, economy, or community facilities and

services. In analyzing community cohesion, the following questions were used in assessing whether the proposed project would result in adverse or beneficial effects:

- What features, services and/or amenities in these cities contribute to the overall community character and the cohesiveness of the cities? What is the overall character of each city?
- Would the proposed project result in adverse effects that would result in degradation of the community character of the entire cities or parts of the cities?
- Would the proposed project result in adverse effects that would contribute to the degradation of the existing cohesiveness of the cities?
- Would the proposed project result in beneficial effects that might positively affect the overall community character and/or the cohesiveness of the cities?

2.1.3.2 Regulatory Setting

Under CEQA, an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Since this project would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's effects.

2.1.3.3 Affected Environment

In the project study area, the primary land uses are residential, recreational, commercial, light industrial, and institutional and can be described as urban. An area extending roughly 0.5 mi on either side of the SR-91 project study area was used for this community impacts analysis. The study area includes Census Tracts (CTs) 219.03, 219.05, 219.15, 219.21, 219.22, 218.07, and 218.27 in the Cities of Anaheim and Yorba Linda and the County of Orange (see Figure 2.1.3-1 – Community Impacts Study Area with Census Tracts). To assess the potential for the proposed project to adversely or beneficially affect community cohesion, demographic characteristics of these CTs were evaluated based on data from the 2000 United States Census.

Community cohesion is the degree to which residents have a sense of belonging to their neighborhood; their level of commitment to the community; or a strong attachment to neighbors, groups, and institutions, usually as a result of continued association over time (*Community Impact Assessment Handbook*, Department, June 1997). Data on

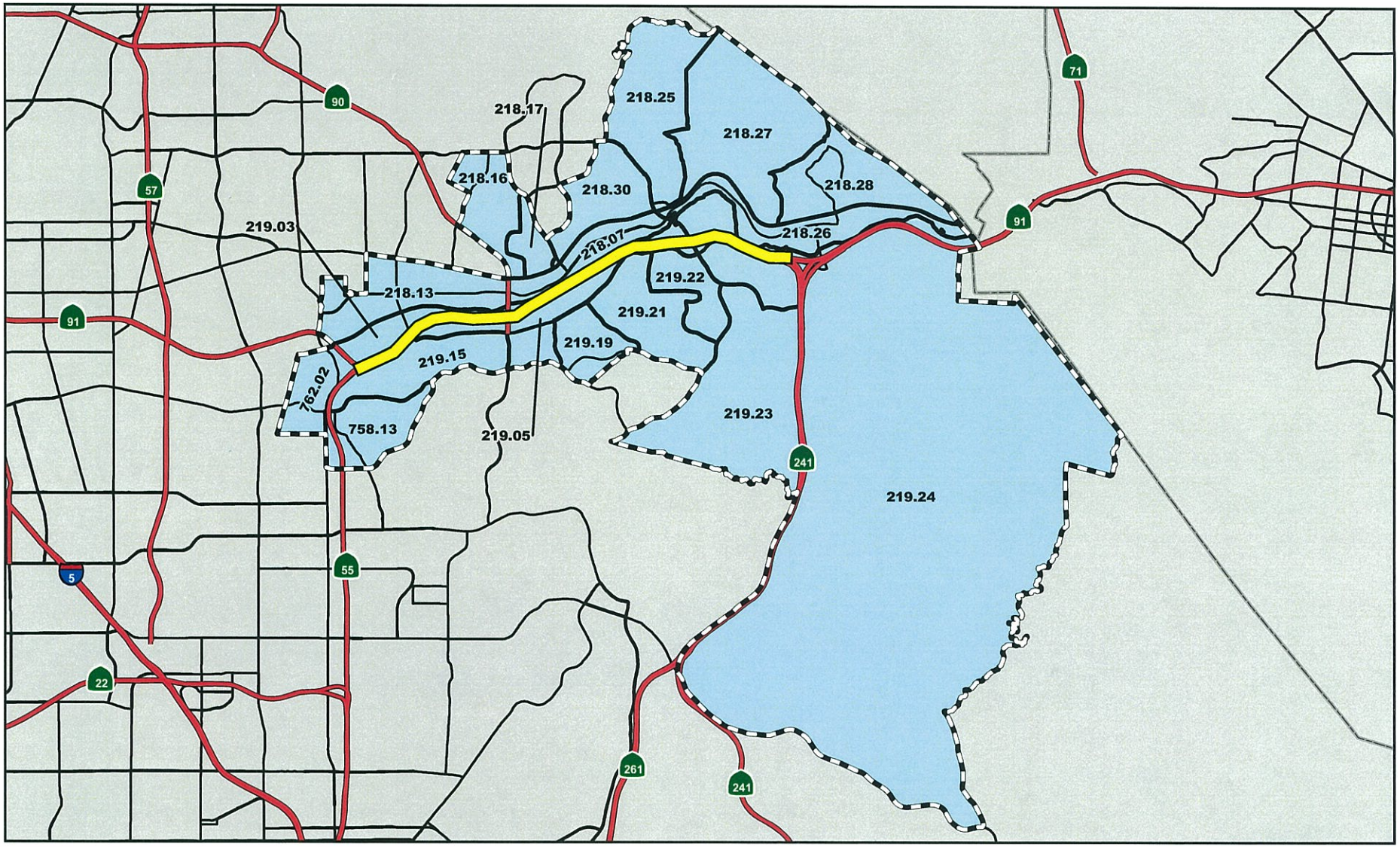

FIGURE 2.1.3-1

LEGEND

- Project Study Area
- Project Area Census Tracts
- Individual Census Tracts

N

0 1 2 Miles

SOURCE: U.S. CENSUS BUREAU, 2000.

I:\CDT0801A\GIS\census00.mxd (10/16/2008)

SR-91 Widening Project
SR-55 to SR-241

Study Area Census Tracts

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demographics, current and forecast population, ethnic distribution, and housing in the study area were obtained from the Cities of Anaheim and Yorba Linda web sites, the 2000 United States Census, and SCAG Projections.

Elements of community cohesion can be found in demographic data used to profile communities from the 2000 United States Census. Some specific indicators of community cohesion are listed below and are discussed in detail later in this chapter:

- **Age:** Elderly citizens and stay-at-home parents tend to be more active in their community as they have time to become involved. The transit-dependent population is composed of the population under age 18 and age 65 and older.
- **Ethnicity:** Ethnic homogeneity is associated with a higher degree of community cohesion.
- **Household Size:** Households of two or more people tend to correlate with a higher degree of community cohesion.
- **Housing Tenure:** Households that have been residents of a community for a longer period of time tend to correlate with a higher degree of community cohesion.
- **Transit-Dependent Population (under age 18 and age 65 and over):** Residents who tend to walk or use public transportation for travel tend to correlate with a higher degree of community cohesion.

All CTs within the project study area are in the County of Orange. CTs 219.03, 219.05, 219.15, 219.21, 219.22, and 218.07 include parts of the City of Anaheim and are generally bounded by the Santa Ana River to the north, Ranch Road and Weir Canyon Road to the south, SR-241 to the east, and SR-55 and Tustin Avenue to the west. CT 218.27 includes parts of the City of Yorba Linda and is bounded by Orangethorpe Avenue to the north, SR-91 on the south, Weir Canyon Road to the east, and Imperial Highway to the west.

Considering the County of Orange population in 1970 almost doubled in 2000 (United States Census Bureau), SCAG projects that this growth will continue for the next two decades. In the last decade, population growth in the City of Anaheim (23 percent) was more than the growth in the County of Orange (18 percent). Growth in the City of Yorba Linda (12 percent) was lower than the County of Orange. The population in each study area census tract in 2000 is shown in Table 2.1.3-1.

Table 2.1.3-1 Population Estimates

Area	1990	2000	2035	Percent Change per Year (1990–2000)	Projected Percent Change (2000–2035)	Projected Percent Change per Year (2000–2035)
Orange County	2,410,556	2,846,289	3,653,990	1.8	28.0	0.8
City of Anaheim	266,406	328,014	438,645	2.3	31.5	0.9
City of Yorba Linda	52,422	58,918	76,789	1.2	28.0	0.8
Study Area	NA	29,682	34,254	NA	14.0	0.4
Census Tract						
219.03	**	3,965	4,655	**	14.0	0.4
219.05	**	5,216	6,305	**	21.0	0.6
219.15	**	4,074	4,530	**	10.5	0.3
219.21	**	4,520	5,317	**	17.5	0.5
219.22	**	4,581	5,483	**	21.0	0.6
218.07	**	3,822	4,597	**	21.0	0.6
218.27	**	3,504	3,367	**	-3.5	-0.1

Source: 1990 & 2000 United States Census of Population and Housing; SCAG Forecasts for 2035
CT: Census Tract NA: Not Available
** The delineation and numbering of CTs changed from the 1990 to the 2000 Census. No comparable 1990 population numbers for CTs were available, and therefore percent change between 1990 and 2000 for the study area and CTs could not be calculated.

As shown in Table 2.1.3-1, between 1990 and 2000, the City of Anaheim shows a nearly 23 percent (roughly 2.3 percent per year) increase in population growth. Table 2.1.3-1 also shows that between 1990 and 2000, the City of Yorba Linda had a nearly 12 percent (roughly 1.2 percent per year) increase in population growth. SCAG population estimates (through 2035) for Orange County, the Cities of Anaheim and Yorba Linda, and the study area CTs show that projected populations are expected to progressively increase through 2035, except for CT 218.27, whose population is expected to decrease by about 3.5 percent between 2000 and 2035. Projected populations for the County and the City of Yorba Linda are expected to increase through 2035, although at approximately the same rate of 28 percent. For the City of Anaheim, projected population is expected to increase through 2035 at a higher rate (approximately 31.5 percent) than the County.

The forecast annual population increase for CTs within the project study area is lower than the County and City averages. For CTs 219.05, 219.22, and 218.07 within the project study area for population and housing, population is expected to increase by 21 percent between 2000 and 2035 (roughly 0.6 percent per year). Projected population for the study area is expected to increase through 2035 at approximately half the rate (14 percent) of the County. The 14 percent population growth rate for the study area is particularly skewed because of 218.27 CT (-3.5 percent). Otherwise, many of the CTs' expected growth rate is closer to 20 percent.

Table 2.1.3-2 shows the distribution of the population by age within the study area County, Cities, and CTs. As shown, the median age for the City of Anaheim (30.3 years) is approximately 10 percent lower than the County (at approximately 33 years). The City of Yorba Linda median age (37.4 years) is almost 13 percent higher than the County average (33 years). However, the percentages of population over the age of 64 in both cities (8 percent) are lower than the percentage in the County (10 percent). The study area median age (36.6 years) is almost 11 percent higher than the County average (33 years), 22 percent higher than the City of Anaheim average, but 1 percent lower than the City of Yorba Linda average. Overall, the median age within the study area is closer to the City of Yorba Linda and is higher than that in Orange County and the City of Anaheim.

Table 2.1.3-2 2000 Age Distribution in the Study Area

Jurisdiction	Median Age	% Population < 18 years old	% Population 18-64 years old	% Population > 65 years old
County of Orange	33.3	26.9	60.3	9.9
City of Anaheim	30.3	33.0	58.8	8.2
City of Yorba Linda	37.4	32.2	60.3	7.7
Study Area	**36.6**	**29.9**	**63.2**	**6.8**
Census Tract				
219.03	35.5	29.5	62.9	7.7
219.05	38.1	29.0	62.9	8.0
219.15	44.6	24.1	61.6	14.4
219.21	36.0	33.6	61.1	5.2
219.22	34.3	24.1	71.6	4.2
218.07	33.5	32.1	62.9	4.9
218.27	34.3	36.9	59.5	3.4

Source: United States Census Bureau, Census 2000.

In the City of Anaheim, the proportion of population over the age of 65 in the study area (6.8 percent) was lower than the County of Orange average (9.9 percent). In the City of Yorba Linda, the population over the age of 65 is lower (7.7 percent) than the County of Orange average (9.9 percent).

The percentage of population over the age of 65 in the study area (7 percent) is lower than the percentage in the County (9.9 percent) and in both study area cities (8.2 and 7.7 percent). The percentage of population over the age of 65 in the CT 219.15 (14.4 percent) is much higher than the percentage in the study area and in the County because of the presence of senior centers in this CT.

Table 2.1.3-3 shows the ethnic compositions of the study area, County, Cities, and CTs. The City of Anaheim has a percentage of non-White residents (25.7 percent) that is almost half of the County average (51.1 percent). In contrast, Yorba Linda has a predominantly White population (74.1 percent). For Orange County, almost 50 percent of the population is White, followed by Hispanic (30.8 percent), Asian (13.5 percent), and Black (1.4 percent). For the City of Anaheim, almost 47 percent of the population is Hispanic, followed by White (25.7), Asian (12 percent), and Black (2.3 percent). In the City of Yorba Linda, more than 74 percent of the population is White, followed by an almost equal percentage (10 percent) of Asians and Hispanics (10.4 percent), and then Blacks (1 percent). In the study area, 66 percent of the population is White, followed by Asian (15.2 percent), Hispanic (13.3 percent), Black (1.7 percent), American Indian (0.2 percent), Native Hawaiian/Other Pacific Islander (0.16 percent), and Non-Hispanic Other (0.1 percent). The residents in the study area do not represent an unusually high level of minority populations. The mix within the study area for most categories is closer to the mix in Orange County and Yorba Linda than in the City of Anaheim, except the Hispanic proportion for the Orange County population.

Table 2.1.3-3 2000 Race/Ethnic Distribution in the Study Area

Jurisdiction	% NH White	% NH Black	% NH American Indian	% NH Asian[1]	% NaH and OPI	% Hispanic	% NH Other
County of Orange	51.1	1.4	0.3	13.5	0.3	30.8	0.1
City of Anaheim	25.7	2.3	0.4	12.0	0.3	46.8	0.1
City of Yorba Linda	74.1	1.0	0.3	10.8	0.1	10.4	0.3
Study Area	**66.4**	**1.7**	**0.2**	**15.2**	**0.16**	**13.3**	**0.1**
Census Tract							
219.03	57.5	2.0	0.2	13.8	0.5	22.7	0.1
219.05	70.8	1.9	0.3	11.4	0.1	13.4	0.1
219.15	66.9	1.3	0.2	18.6	0.1	9.4	0.1
219.21	65.1	1.5	0.1	21.2	0.2	9.1	0.1
219.22	63.7	1.5	0.3	19.0	0.1	11.7	0.1
218.07	71.6	1.5	0.4	6.1	0.1	17.8	0.1
218.27	69.4	2.1	0.2	16.3	0.03	9.2	0.1

Source: United States Census Bureau, Census 2000.
[1] Percentages do not add to 100 percent because White, Black, American Indian, and Alaskan Native, Hawaiian, and Pacific Islander, and Other categories include persons identified with one ethnicity only. Percentages only overlap within the Hispanic category.
CT: Census Tract; NH: Non-Hispanic; NaH: Native Hawaiian; OPI: Other Pacific Islander

As indicated in Table 2.1.3-3, the City of Anaheim is ethnically diverse, while the City of Yorba Linda has a high percentage of White residents. However, the ethnic composition of the study area CTs indicates that the White population is the majority, composing nearly 66 percent of the population. In CT 219.03, in the City of Anaheim, the Hispanic

population composes nearly 23 percent of the total population. In CT 218.07, in the City of Anaheim, the White population composes nearly 72 percent of the total population.

Table 2.1.3-4 provides a summary of other demographic characteristics of the Cities of Anaheim and Yorba Linda, the study area, the County of Orange, and the State of California for 2000. Median household income in the City of Anaheim is comparable with the State average, but lower than the County of Orange average. The median household income is 47 percent higher in the City of Yorba Linda than the State average. For the study area, the median household income is higher than the State average and the City of Anaheim, but comparable to the City of Yorba Linda.

The proportion of persons living in poverty in the City of Anaheim (10.4 percent) was comparable to the statewide average (10.6 percent), but higher than the County of Orange average (7.0 percent). The proportion of persons living in poverty in the City of Yorba Linda (2.5 percent) was lower than the County and statewide averages. For the study area, the proportion of people living in poverty is much lower than statewide, the County, and the City of Anaheim, but only 1.5 percent lower than the City of Yorba Linda. Compared to the State and County averages, fewer residents in the City of Anaheim and more residents in the City of Yorba Linda hold high school and college diplomas. The residents in the study area do not represent an unusually high level of low-income populations.

The proportion of transit-dependent population in the City of Anaheim (4.6 percent) is much higher compared to the City of Yorba Linda average (0.5 percent), the County of Orange average (2.8 percent), and the State average (5.1 percent). The proportion of transit-dependent population in the study area (1.2 percent) is higher compared to the City of Yorba Linda average (0.5 percent), but lower compared to the City of Anaheim average (4.6 percent), County of Orange average (2.8 percent), and State average (5.1 percent). The proportion of transit-dependent population in the study area CTs 218.27 (0.5 percent) is same as the proportion in the City of Yorba Linda (0.5 percent).

The proportion of persons per household in the City of Anaheim (3.34 percent) and in the City of Yorba Linda (3.05) is higher compared to both the statewide average (2.87 percent) and the County of Orange average (3 percent). The proportion of persons per household in the study area (2.93 percent) is slightly higher compared to the statewide average (2.87 percent) but is lower than both the study area Cities and the County of Orange averages (3 to 3.34 percent). The proportion of persons per household in the study area CT 219.15 is the lowest (2.25). The proportion of persons per household

Table 2.1.3-4 2000 Local, Regional, and State Demographic Summaries

Characteristic	Cities		County	State	Study Area	Census Tracts						
	Anaheim	Yorba Linda	Orange County	California		219.03	2219.05	219.15	219.21	219.22	218.07	218.27
Population	328,014	58,918	2,846,289	12,214,549	**29,682**	3,965	5,216	4,074	4,520	4,581	3,822	3,504
Median Household Income (US$)	$47,122	$89,593	$58,820	$47,493	**$86,089**	75,912	88,295	85,397	111,765	69,845	60,676	110,735
Families Below Poverty[1]	10.40%	2.50%	7.00%	10.60%	**1.0%**	0.15%	1.0%	0.32%	0.0%	1.2%	1.7%	2.6%
High School Graduates	69.30%	93.40%	79.50%	77%	**22%**	33.4%	28.4%	26.4%	17.9%	16.3%	21.9%	9.7%
College Graduates	19.60%	41.50%	30.80%	27%	**29.6%**	23.4%	30%	42%	40.9%	36.7%	18.9%	15.1%
Transit-Dependent Population	4.6%	0.5%	2.8	5.1	**1.2%**	0.4%	1.2%	1.7%	0.8%	1.5%	2.4%	0.5%
Persons per Household	3.34	3.05	3	2.87	**2.93**	2.8	3.31	2.25	2.97	3.02	3.02	3.12

Source: United States Census Bureau, Census 2000.
[1] Poverty level is based on the size of a family and the number of children under 18.

in CTs 219.22 and 218.07 is the same (3.02) and is closer to the proportion of persons per household in the City of Yorba Linda (3.05 percent).

The year 2000 housing profiles for the study area Cities and County are shown in Table 2.1.3-5. Table 2.1.3-5 shows that in 2000, 28 percent of Orange County residents could afford the median-priced home based on the County's Housing Affordability Index (HAI), which is the lowest in Southern California. The median home price in the City of Anaheim ($213,800) was lower than in Orange County ($270,400). The median home price in Yorba Linda ($346,100) was higher than in Orange County. The percentage of owner-occupied housing units in the City of Anaheim (50 percent) is well below and in the City of Yorba Linda is much higher (84.7 percent) than the Orange County average (61.4 percent).

The homeownership rates in all of the study area CTs are substantially higher than both the County average and the City of Anaheim. The homeownership rates in almost half of the study area CTs (i.e., 218.07, 218.27, 219.05, and 219.22 [shown in Table 2.1.3-5]) are lower than the City of Yorba Linda. The homeownership rates in the remaining half of the study area CTs (i.e., 219.03, 219.15, and 219.21) are higher than the County average and lower than the City of Yorba Linda. In CT 219.21, the average homeownership rate is nearly 95 percent, compared with approximately 82 percent in the study area communities and 61 percent in the County of Orange.

Demographic data analysis consisting of age distribution, ethnic composition, other demographic characteristics, and housing profiles, as well as field studies, confirms the specific demographic characteristics within both study area Cities and reveals that business and residential patterns form defined and cohesive community boundaries. There is likely little community cohesion across SR-91, which, with the Santa Ana River, effectively serves as a physical barrier separating the Cities of Anaheim and Yorba Linda. Furthermore, along the project limits of SR-9l, no arterial roads provide access across SR-91. As a result, there is not a strong sense of community cohesion between the areas north and south of the project study area.

There is an average degree of community cohesion within the study area CTs and the Cities. While the percentages of persons per household in the study area CTs are lower than or similar to the City and County averages, and populations are ethnically homogeneous (some exceptions exist), with high degrees of owner-occupied housing, the median age of the population and low percentage of transit-dependent populations do not indicate a high level of community cohesion.

Table 2.1.3-5 2000 Housing Profiles in the Study Area

Characteristic	Study Area Cities		Regional	Study Areas	Study Area Census Tracts						
	Anaheim	Yorba Linda	Orange County		218.07	218.27	219.03	219.05	219.15	219.21	219.22
Total Housing Units	99,719	19,567	969,484	10,004	1263	1055	1168	1671	1451	1362	2034
Housing Units Occupied	97%	98.40%	96.50%	10,004	1263	1055	1168	1671	1451	1362	2034
Owner-Occupied Housing Units	50%	84.70%	61.40%	81.9%	74.7%	71.8%	86.5%	82.8%	90%	94.9%	72.8%
Renter-Occupied Housing Units	50%	13.30%	38.60%	18.1%	25.6%	28.2%	13.5%	17.2%	10%	5.1%	27.2%
Housing Affordability Index	*N/A*	*N/A*	28%	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Median Home Price	213,800	346,100	270,400	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*

Source: United States Census Bureau, Census 2000.
N/A = Not Applicable.

As described in Section 2.1.1, Land Use, and shown in Table 2.1.1-1, two regional parks, one community park, and two schools are located within the project area. Additionally, the Santa Ana River Trail borders the north side of SR-91 along the Santa Ana River. These community facilities contribute to the community character of the area. Yorba Regional Park is 166 ac and is located in the eastern portion of the City of Anaheim along the north side of the Santa Ana River. Featherly Regional Park is 150 ac and is located in the City of Yorba Linda on the north side of SR-91. Peralta Canyon Park is 21.4 ac and is located in the City of Anaheim. Both Riverdale Elementary School and Crescent Intermediate School are located in the City of Anaheim.

2.1.3.4 Environmental Consequences

Temporary Impacts

No Build Alternative

The No Build Alternative does not involve any construction. Therefore there are no temporary community character and cohesion impacts.

Build Alternative

Temporary impacts to community character are related to traffic, air quality, and noise during construction.

Construction of the proposed project would require temporary weekend and nighttime closures at existing interchanges where on- and off-ramps would be reconstructed. However, the improvements at these ramps would be phased and not be constructed at the same time. Development of a TMP, described in detail in Chapter 1, would be coordinated with local jurisdictions and would provide alternative access to SR-91 during the temporary closures. Therefore, the temporary ramp closures are not anticipated to adversely affect community cohesion.

Additionally, temporary impacts to pedestrian access as a result of the widening of the Imperial Highway Undercrossing and Weir Canyon Undercrossing would occur. These potential short-term impacts are discussed in Section 2.1.5, Traffic and Circulation.

Construction activities produce combustion emissions from various sources such as site grading activity, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and motor vehicles transporting the construction crew. This potential short-term impact is discussed in Section 2.2.6, Air Quality.

Temporary noise impacts would result from noise generated during construction activities. Excavation, grading, and road construction as well as worker commutes and equipment transport may contribute to potential short-term noise impacts. These impacts are discussed further in Section 2.2.7, Noise.

Permanent Impacts

No Build Alternative

The No Build Alternative does not propose any improvements and therefore would not result in any permanent community character and cohesion impacts.

Build Alternative

The project segment of SR-91 traverses two cities in Orange County; the Cities of Anaheim and Yorba Linda. The character and cohesion of these communities are defined by the land uses, services, facilities, and other features within these areas. The project proposes one additional lane on both sides of the existing SR-91 alignment. The Build Alternative would enhance mobility and improve connections for all residents, including the minority and low-income populations in the Cities of Anaheim and Yorba Linda and in the surrounding County of Orange.

The Build Alternative would not displace any residential or nonresidential uses, including schools and parks. Although the Santa Ana River and the Santa Ana River Trail border the north side of SR-91, there will be no permanent impacts to these resources. The proposed project would not acquire or adversely affect public services or facilities in these jurisdictions (see Section 2.5, Utilities and Emergency Services). The proposed project would not displace people or existing housing necessitating the construction of replacement housing elsewhere. Therefore, the construction and operation of the proposed project would not impact the character or cohesion of the local community in the Cities of Yorba Linda and Anaheim or the County of Orange.

No permanent visual impacts would occur from retaining walls or the noise barrier that is proposed as part of the project. The shapes, textures, and colors of the noise barrier and retaining walls would be harmonious with the existing natural formations along the project segment of SR-91 as required under Minimization Measures V-1, V-2, and V-3 (refer to Section 2.16, Visual/Aesthetics). The noise barrier proposed on EB SR-91 along the ROW from Imperial Highway to the Weigh Station would be designed to use such products to maintain current views from those residences (minimization measure V-7). Likewise, visual impacts related to landscaping disturbance would be minimized by implementing measures V-4 and V-5. The noise barrier will not divide an established community or affect its cohesion.

2.1.3.5 Avoidance, Minimization, and/or Mitigation Measures

Temporary noise, air quality, visual, and traffic impacts to community character and cohesion will be minimized by the measures outlined in Section 2.1.5, Traffic and Transportation; Section 2.2.6, Air Quality; Section 2.1.6, Visual/Aesthetics; and Section 2.2.7, Noise. There are no permanent impacts associated with community character and cohesion under the Build Alternative; therefore, no avoidance, minimization, or mitigation measures are required.

2.1.4 Utilities and Emergency Services

This section analyzes the potential impacts of the proposed project on utilities and emergency services. This section is based on a review of existing utility and service providers and facilities in and immediately adjacent to the project disturbance limits.

2.1.4.1 Affected Environment

Utilities

Public utilities in the vicinity of the SR-91 include sewer and water lines, electrical power, natural gas, telephone service, cable television services, and communication services. The City maintains the sewer lines and select water lines, while the Metropolitan Water District (MWD) owns and maintains the remaining water lines to the project area. Electricity is provided by SCE, and natural gas services are provided by the Southern California Gas Company. Cable lines and telephone services to the project area are provided by Pacific Bell and Level 3 Communication Company.

Emergency Services

Emergency service providers in the project area are as follows:

- Hospital service is provided by Kaiser Permanente Hospital and Placentia Linda Hospital.
- The City of Anaheim Police Department and the City of Yorba Linda Police Department provide law enforcement services within the project limits and to the area surrounding the project limits. The CHP provides law enforcement on SR-91.
- There are two City of Anaheim Fire Department facilities, Anaheim Hills Station No. 9 and Weir Canyon Station No.10, which provide fire protection services for the City within the proposed project limits. The City of Yorba Linda area within and adjacent to the project limits is under the jurisdiction of Division IV of the Orange County Fire Authority (OCFA) and is serviced by Fire Station 32, located in the City of Yorba Linda.

Landfills

The nearest permitted disposal facility is identified as Olinda Alpha Sanitary Landfill, located approximately 7 mi northeast of the project site, in the City of Brea. The Olinda Alpha Sanitary Landfill is permitted to accept agricultural, industrial, construction/demolition, mixed municipal, tires, and wood waste. The maximum capacity of the landfill is 74,900,000 cubic yards and will accept 8,000 tons of waste per day. The remaining capacity of the Olinda Alpha Sanitary Landfill is 38,578,383 cubic yards (as of October 1, 2005).

2.1.4.2 Environmental Consequences

Temporary Impacts

No Build Alternative

The No Build Alternative would not involve any new construction. Therefore, the No Build Alternative would not affect existing utilities or emergency services within the project area.

Build Alternative

Utilities

There are electrical, sewer, water, natural gas, and fiber optic cable lines located within and/or immediately adjacent to the project limits. Table 2.1.4-1 lists the utilities that may be impacted during construction of the proposed project, potentially resulting in service disruptions and/or utility relocation. This potential for interruption of services will be considered during the design phase and coordinated with the utility agencies.

Potential temporary impacts to utilities anticipated as a result of the proposed project are summarized in Table 2.1.4-1.

Emergency Services

There may be limited, short-term impacts to emergency services during construction of the proposed project. The reconfiguration of on- and off-ramps at Lakeview Avenue (EB), Imperial Highway, and Weir Canyon Road may require closure during the evening or overnight. However, these ramp closures would be considered short-term (less than 10 working days) during the construction period.

Table 2.1.4-1 Utility Impacts

Utility Provider	Type of Utility	Potential Impacts
Pacific Bell Company	Underground telephone and digital subscriber line (DSL) services	A 4-inch conduit in the area of the Weir Canyon Undercrossing may be impacted during construction activities. Relocation or protection in place may be required in areas where excavation will occur. Utilities within the area of the existing Undercrossing will be temporarily relocated or protected in place until construction is complete.
Level 3 Communications Company	Underground telephone and DSL services	Fiber optic cable lines may be impacted in four locations during construction activities. Two locations where impacts may occur are approximately 515 ft and 2,800 ft east of the Weir Canyon Road Undercrossing. The remaining two impact areas involve fiber optic lines that are located parallel to SR-91. Relocation or protection in place may be required in areas where excavation will occur. Utilities within or near the existing Weir Canyon Road Undercrossing will be temporarily relocated or protected in place until construction is complete.
Southern California Edison	Electrical lines	A 5-inch electrical line located in the area of the Weir Canyon Road Undercrossing may be impacted during construction activities. Relocation or protection in place may be required in areas where excavation may occur. Electrical lines within or near the existing Weir Canyon Road Undercrossing will be relocated or protected in place until construction is complete.
Southern California Gas Company	Natural gas lines	An 8-inch gas line located in the area of the Imperial Highway Undercrossing, three 12-inch gas lines located in the area of the Weir Canyon Road Undercrossing, a 6-inch gas line located 3,000 ft west of the Lakeview Avenue Overcrossing, and a 4-inch gas line located at the SR-91 EB on-ramp and Lakeview Avenue may be impacted during construction. Relocation or protection in place may be required in areas where excavation may occur. Gas lines within or near the existing Undercrossings will be relocated or protected in place until construction is complete.
City of Anaheim	Underground water lines	A 16-inch water line is located in the area of the Weir Canyon Road Undercrossing, a 10-inch water line located in the area of SR-91 EB on-ramp and Lakeview Avenue, an 8-inch water line located 2,700 ft east of the Lakeview Avenue Overcrossing, and a 12-inch water line located 4,000 ft east of the Lakeview Avenue Overcrossing. The water lines may be impacted during construction. Interruption of water services will be considered during the design phase and coordinated with the utility agencies.
City of Anaheim	Sewer lines	A 16-inch sewer line located in the area of the Weir Canyon Road Undercrossing, an 18-inch sewer line located 2,900 ft east of the Lakeview Avenue Overcrossing, and a 15-inch sewer line located 4,050 ft east of Lakeview Avenue Overcrossing may be impacted during construction activities. Interruption of these services will be considered during the design phase and coordinated with the utility agencies.
City of Anaheim	Overhead electric lines	Two power poles located at the Imperial Highway Undercrossing will be impacted during construction. Relocation of these poles will occur prior to construction.

During this time, local access will be rerouted. Temporary construction impacts are typical of any road improvement project and may cause temporary increases in traffic congestion during construction that could result in increased travel times for emergency vehicles. However, these impacts will be minimized by the TMP, as discussed under Section 1.3, Project Description.

Landfills

Construction of the proposed project would result in the generation of construction debris requiring disposal. This temporary impact is not expected to negatively affect the capacity of local landfills. The proposed project would comply with all applicable federal, State, and local statutes related to solid waste disposal.

Permanent Impacts

No Build Alternative

The No Build Alternative would not result in modifications or changes to the existing SR-91 facility and, therefore, would not result in long-term impacts related to utilities. However, continued and increasing congestion on SR-91 under the No Build Alternative would result in potential delays for emergency service vehicles traveling through the project area.

Build Alternative

The proposed project does not include the construction of new residential, commercial, or industrial land uses that would require additional police protection/ emergency services, utilities or land fill sites. Therefore, no permanent utility or emergency service impacts due to this project are expected. Implementation of the Build Alternative is anticipated to result in a positive impact to the provision of emergency services by improving LOS within the project limits and reducing emergency response times. In addition, the proposed project would not cause the expansion of water and wastewater facilities.

2.1.4.3 Avoidance, Minimization, and/or Mitigation Measures

Utilities

The following measures will be implemented to avoid or minimize impacts to utilities and emergency providers:

UT-1 Design, construction, and inspection of utilities that will need to be relocated for the project would be undertaken in accordance with

Department requirements. The Department will coordinate with the affected service provider in each instance to ensure that work is during times of low demand and in accordance with the appropriate requirements and criteria. Liabilities will be determined after the relocation plan requests are sent by the Department to the affected utility owners. The Department's right-of-way utilities department will work with the City of Anaheim to determine who has the prior rights in the area where the utilities are located and who is ultimately responsible for the relocation. Affected businesses and residents will be notified prior to disruption.

UT-2 Coordination with the utility providers will be initiated during the preliminary engineering phase of the project and would continue through final design and construction, consistent with Department requirements.

UT-3 Coordination efforts will include planning utility rerouting, identifying potential conflicts, ensuring that construction of the proposed project minimizes disruption to utility operations, and formulating strategies for any unanticipated problems that may arise during construction.

Emergency Services

UT-4 The Department will coordinate with emergency service providers to avoid emergency service delays by ensuring that all providers are aware well in advance of temporary road closures and detours. Please see Section 1.3, Project Description, for details on the TMP.

2.1.5 Traffic and Circulation

This section is based on the SR-91 Widening Traffic Report (Department, March 2008) and discusses the impacts of the proposed project on traffic and circulation, both during construction (temporary impacts) and after completion of the proposed project (long-term impacts) within the Cities of Anaheim and Yorba Linda, including the three intersections within the project limits.

Both Average Daily Traffic (ADT) and peak-hour volumes are based on the Department Vehicle Count Report supplied by the ongoing tube count system. The freeway segment Annual Average Daily Traffic (AADT) and peak-hour volumes are

directional volumes and are not included on the express/toll lanes for analysis purposes. The express/toll lanes are physically separated from general-purpose lanes by raised channelizers through the project area. Ramp ADT volumes were obtained from the Department Traffic Volumes on California State Highways while the ramp peak-hour volumes were obtained from the Freeway Performance Measurement System (PeMS). The freeway segment analysis was conducted using the Highway Capacity Manual (HCM) methodology using HCS2000 Software.

The project build-out year is 2014 and the project design year is 2035. Traffic volumes for both 2014 and 2035 were derived by applying a growth factor to the existing segment volumes. The growth rate is based on the Orange County Transportation Analysis Model 3.2 developed and maintained by the OCTA.

2.1.5.1 Regulatory Setting

The Department directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of highway projects. It further directs that the special needs of the elderly and disabled must be considered, including pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

The Department is committed to carrying out the 1990 Americans with Disabilities Act (ADA) by building transportation facilities that provide equal access for all persons. The same degree of convenience, accessibility, and safety available to the general public will be provided to persons with disabilities.

2.1.5.2 Affected Environment

Existing Roadway System

SR-91 is a major east-west corridor connecting Riverside County communities with Los Angeles and Orange Counties. There are currently five lanes in the WB direction and six lanes in the EB direction on SR-91 from SR-55 to Lakeview Avenue, including an auxiliary lane and five lanes in both directions of travel between Lakeview Avenue and Imperial Highway. From Imperial Highway to the Weigh Station, there are four lanes in both directions. From the Weigh Station to east of Weir Canyon Road, there are five lanes in both directions (see Figure 1-3 in Chapter 1).

The study area for the traffic analysis for the proposed project includes the freeway mainline as described above and the ramp separations on SR-91 between SR-55 and SR-241. The study area includes the following ramp junctions:

- SR-91 EB off-ramp and Santa Ana Canyon Road
- Lakeview Avenue and Santa Ana Canyon Road
- SR-91 WB off-ramp and Lakeview Avenue
- Lakeview Avenue and Riverdale Avenue
- Imperial Highway and Santa Ana Canyon Road
- SR-91 EB off-ramp and Imperial Highway
- SR-91 WB off-ramp and Imperial Highway
- Imperial Highway and La Palma Avenue
- SR-91 EB off-ramp and Weir Canyon Road
- SR-91 WB off-ramp and Weir Canyon Road

The existing roadway configuration and traffic conditions on SR-91 are described in detail in Section 1.2 of this IS and are summarized in this subsection.

There are no on-street parking spaces or bicycle facilities within the project limits on the mainline. No other modes of transportation exist or are proposed in the near future on the freeway mainline within the project limits.

Traffic volume is usually discussed in terms of ADT and/or intersection capacity utilization (ICU). The ability of a highway to accommodate traffic is typically measured in terms of LOS. LOS is based on the ratio of traffic volume to the design capacity of the facility. LOS is expressed as a range from LOS A (free traffic flow with low volumes and high speeds, resulting in low densities) to LOS F (traffic volumes exceed capacity and result in forced flow operations at low speeds, resulting in high densities). Pictorial representations of the six LOS for two-lane (existing and no build conditions) and multilane (proposed project) highways based on the 2000 Highway Capacity Manual are provided in Chapter 1 (see Table 1.1).

Traffic Conditions at Mainline and Interchanges

Within the project limits, the existing ADT and peak-hour volumes on SR-91 (both directions) range from 8,890 to 12,200 vehicles in the EB direction and 9,230 to 12,020 vehicles in the WB direction for the year 2007. Truck traffic is estimated to be

6.5 percent of the total traffic, based on the 2006 Annual Average Daily Truck Traffic on the California State Highway (Department 2006[1]).

As shown in Table 2.1.5-1 (Mainline LOS Summary), the project area during the a.m. peak hour has LOS E or F conditions on EB SR-91 between Imperial Highway and the Weigh Station and on WB SR-91 at most of the segments, with the exception of between Weir Canyon Road and SR-241. During the p.m. peak hour, LOS E or F conditions occur on EB and WB SR-91 at three study segments between SR-55 and the Weigh Station. The rest of the segments are experiencing LOS D in both the a.m. and p.m. peak hours, with the exception of the segment between SR-55 and Lakeview Avenue on EB SR-91, which is experiencing LOS C during the a.m. peak hour. The Department's LOS standard for freeway mainline segments is LOS E or better.

In 2014, with the No Build Alternative, traffic will be operating at LOS E or F during the a.m. and p.m. peak hours, except for EB SR-91 from SR-55 to Imperial Highway and EB SR-91 from the Weigh Station to SR-241, which are projected to operate at LOS D during the a.m. peak hour. In 2035, with the No Build Alternative, traffic will be operating at LOS F during the a.m. and p.m. peak hours, except one EB segment between SR-55 and Lakeview Avenue in the a.m. peak hour that is reaching its capacity and is projected to operate at LOS E. Traffic demand will exceed capacity and speeds will vary greatly, which will result in substantial delays.

The existing a.m. and p.m. peak-hour traffic volumes and LOS for the on- and off-ramps are summarized in Table 2.1.5-2. The Department LOS standard for all freeway ramp termini and study area intersections is LOS D or better. All on- and off-ramps that tie to the freeway mainline within the project limits were tested for their capacities against their existing volumes. All existing ramps based on their volumes are within their capacities.

[1] http://www.dot.ca.gov/hq/traffops/saferesv/trafdata/truck2006final.pdf

Table 2.1.5-1 Mainline LOS Summary

Location	Existing			2014 No Build			2014 Build			2035 No Build			2035 Build		
	No. of Lanes	Peak-Hour Volume	LOS	No. of Lanes	Peak-Hour Volume	LOS	No. of Lanes	Peak-Hour Volume	LOS	No. of Lanes	Peak-Hour Volume	LOS	No. of Lanes	Peak-Hour Volume	LOS
EASTBOUND															
SR-55 to Lakeview Avenue															
AM	6	9,970	C	6	10,870	D	7	10,870	C	6	13,260	E	7	13,260	D
PM	6	12,200	E	6	13,300	E	7	13,300	D	6	16,230	F	7	16,230	E
Lakeview Avenue to Imperial Highway															
AM	5	9,300	D	5	10,140	D	6	10,140	D	5	12,370	F	6	12,370	E
PM	5	11,260	E	5	12,270	F	6	12,270	E	5	14,980	F	6	14,980	F
Imperial Highway to Weigh Station															
AM	4	8,890	E	4	9,690	F	5	9,690	C	4	11,820	F	5	11,820	D
PM	4	9,930	F	4	10,820	F	5	10,820	D	4	13,210	F	5	13,210	E
Weigh Station to Weir Canyon Road															
AM	5	8,890	D	5	9,690	D	6	9,690	C	5	11,820	F	6	11,820	D
PM	5	9,930	D	5	10,820	E	6	10,820	D	5	13,210	F	6	13,210	E
Weir Canyon Road to SR-241															
AM	5	8,890	D	5	9,690	D	6	9,690	C	5	11,820	F	6	11,820	D
PM	5	9,900	D	5	10,790	E	6	10,790	D	5	13,170	F	6	13,170	E
WESTBOUND															
SR-55 to Lakeview Avenue															
AM	5	12,020	F	5	13,100	F	5	13,100	F	5	15,990	F	5	15,990	F
PM	5	11,310	E	5	12,330	F	5	12,330	F	5	15,040	F	5	15,040	F
Lakeview Avenue to Imperial Highway															
AM	5	11,360	E	5	12,380	F	5	12,380	F	5	15,110	F	5	15,110	F
PM	5	10,460	E	5	11,400	E	5	11,400	E	5	13,910	F	5	13,910	F
Imperial Highway to Weigh Station															
AM	4	10,150	F	4	11,060	F	5	11,060	D	4	13,500	F	5	13,500	E
PM	4	9,370	F	4	10,210	F	5	10,210	D	4	12,460	F	5	12,460	E
Weigh Station to Weir Canyon Road															
AM	5	10,150	E	5	11,060	E	6	11,060	D	5	13,500	F	6	13,500	E
PM	5	9,370	D	5	10,210	E	6	10,210	D	5	12,460	F	6	12,460	E
Weir Canyon Road to SR-241															
AM	5	9,990	D	5	10,890	E	6	10,890	D	5	13,290	F	6	13,290	E
PM	5	9,230	D	5	10,060	E	6	10,060	D	5	12,280	F	6	12,280	E

Source: State Route 91 Widening Traffic Report, March 2008

Table 2.1.5-2 Intersection LOS – Existing, Project Build-out (2014), and Design Year (2035)

Intersection	AM Peak Hour, LOS (Delay*)			PM Peak Hour, LOS (Delay*)		
	Existing	2014	2035	Existing	2014	2035
SR-91 EB off-ramp and Santa Ana Canyon Road	B(14)	B(15)	C(21)	B(15)	B(16)	C(23)
Lakeview Avenue and Santa Ana Canyon Road	D(39)	D(44)	E(62)	C(27)	C(28)	D(46)
SR-91 WB off-ramp and Lakeview Avenue	B(12)	B(15)	D(44)	A(7)	A(8)	B(14)
Lakeview Avenue and Riverdale Avenue	C(22)	C(24)	C(32)	C(34)	D(42)	E(69)
Imperial Highway and Santa Ana Canyon Road	C(22)	C(23)	C(29)	D(37)	D(41)	E(65)
SR-91 EB off-ramp and Imperial Highway	B(11)	B(12)	B(17)	B(13)	B(15)	C(26)
SR-91 WB off-ramp and Imperial Highway	A(9)	A(9)	B(11)	A(9)	B(10)	B(15)
Imperial Highway and La Palma Avenue	C(26)	C(24)	C(28)	D(43)	C(28)	D(35)
SR-91 EB off-ramp and Weir Canyon Road	B(15)	B(18)	D(40)	B(13)	B(16)	D(37)
SR-91 WB off-ramp and Weir Canyon Road	B(14)	B(16)	C(32)	B(16)	B(18)	D(49)

Source: State Route 91 Widening Traffic Report, March 2008
* Delay, seconds/vehicle

Ramp Capacity

Based on existing traffic conditions and the Department HDM, the average capacity of single-lane on- and off-ramps without an auxiliary lane is approximately 1,500 vehicles per hour. However, for a metered single-lane on-ramp, the average capacity is approximately 900 vehicles per hour. The estimated capacity of a metered lane with an HOV bypass lane is estimated to be 1,080 vehicles per hour. All on- and off-ramps that tie to the freeway mainline within the project limits were modeled for their capacities against their existing volumes. Existing EB SR-91 ramp volumes range from 30 to 1,466 vehicles per hour, and existing WB SR-91 ramp volumes range from 270 to 1,421 vehicles per hour.

2.1.5.3 Environmental Consequences

Temporary Impacts

No Build Alternative

The No Build Alternative does not include a construction component and would retain the existing roadway. The No Build Alternative would not result in temporary impacts to traffic volumes or circulation.

Build Alternative

Temporary construction impacts related to the Build Alternative would occur; however, all improvements would be accommodated within the existing ROW to the extent feasible. All existing traffic lanes would be maintained and express/toll lanes would be unaffected with provision of a temporary 3 ft buffer during construction. Reconfiguration of on- and off-ramps at Lakeview Avenue (EB), Imperial Highway, and Weir Canyon Road would require a substantial amount of construction, but access to and from SR-91 would be maintained during reconfiguration of these interchanges. The ramps may be closed during the evening or overnight, and there may be short-term closures (less than 10 working days) of the on- and off-ramps during the construction period. Local access would be rerouted during these periods.

The Build Alternative proposes the widening of two bridges, Imperial Highway and Weir Canyon Road, as described in Chapter 1, Proposed Project. All under- and overcrossings would be constructed in phases to allow continued access across SR-91 during the construction period (November 2011 to December 2014). There would be temporary impacts to pedestrian access as a result of the widening of the Imperial Highway and Weir Canyon Undercrossings. With implementation of a TMP (described in Section 1.3, Project Description), temporary impacts to traffic and pedestrians during construction would be minimal.

Permanent Impacts

No Build Alternative

Based on the information contained in the Traffic Report, and as shown in Table 2.1.4-1, the No Build Alternative would not meet the purpose and need to enhance mid-term capacity (2014). Table 2.1.5-1 (Mainline LOS Summary) shows that for the mainline, the peak-hour traffic volume increases from a range of 8,890 to 12,200 in 2007 to a projected range of 9,690 to 13,300 in 2014 and a projected range of 11,820 to 16,230 in 2035. The table also shows that the mainline would operate at LOS levels ranging from D to F in 2014 and E to F in 2035. Traffic demand will exceed capacity and speeds will vary greatly, which will result in substantial delays.

Build Alternative

Traffic congestion through the project limits is expected to decrease in 2014 and 2035 with the implementation of this project. As shown in Table 2.1.5-1 and in the Traffic Report, the Build Alternative would meet the purpose and need to enhance mid-term capacity (2014). Table 2.1.5-1 shows that for the mainline, the LOS would range from C to F in 2014 and from D to F in 2035. It is anticipated that traffic delays can be reduced. However, due to the substantial increase in forecast traffic demand, traffic congestion will be experienced within the project limits even with implementation of the proposed project. Traffic volume forecasts indicated that SR-91 within the project limits is expected to benefit from an approximately 20 percent decrease in demand-volume/capacity ratios in 2035 with the implementation of the Build Alternative compared to the No Build Alternative.

With implementation of the Build Alternative, in the EB a.m. peak period, four mainline segments within the project limits are expected to reach LOS E or F beyond 2035. However, the segment from Lakeview Avenue to Imperial Highway would experience LOS E by 2031 and LOS F beyond 2035. For the p.m. peak period in the EB direction, two segments (SR-55 to Lakeview Avenue and Lakeview Avenue to Imperial Highway) would reach LOS E by 2019 and 2014, respectively, and LOS E by 2035 and LOS F by 2022, respectively. The remaining segments would operate at LOS E between 2024 and 2025 and LOS F beyond 2035. In the WB a.m. peak period, the segments from SR-55 to Lakeview Avenue and Lakeview Avenue to Imperial Highway would reach LOS F by 2014. The remaining segments would reach LOS E between 2022 and 2024 and LOS F beyond 2035. Finally, in the WB p.m. peak period, the segments from SR-55 to Lakeview Avenue and Lakeview Avenue to Imperial Highway would reach LOS E by 2014 and LOS F by 2014 and 2016, respectively. The remaining segments would reach LOS E between 2031 and 2032 and LOS F beyond 2035.

The proposed project is compatible with the Circulation Element of the *City of Anaheim General Plan,* the *City of Yorba Linda General Plan*, and the Transportation Element of the *Orange County General Plan.*

The primary purpose of the proposed project is to enhance mid-term capacity for SR-91 from SR-55 to SR-241. Therefore, it has been determined that while the Build Alternative would improve the LOS on SR-91, the project by itself would not resolve the LOS deficiencies for all the mainline segments within the project limits.

Therefore, for the 2035 postproject condition, it is acceptable for some of the mainline segments to operate at LOS F.

The Traffic Report shows that for the Build Alternative, the projected LOS for the various intersections within the project limit ranges from LOS A to LOS D in 2014 and from LOS B to LOS E in 2035 (see Table 2.1.5-2). Traffic conditions on intersections within the project limits are expected to improve in 2014 and 2035 with the Build Alternative. The mainline intersections within the project limits are projected to operate at an acceptable LOS under the Build Alternative.

Additionally, the Traffic Report shows that all 2014 ramp volumes are anticipated to be within their capacities with the exception of two ramps, the EB off-ramp to Imperial Highway and the WB off-ramp to Weir Canyon Road. These two ramps currently have a one-lane exit and are anticipated to exceed their capacities by 2014. By 2035, ramp volumes are anticipated to be within their capacities, with the exception of five ramps: the EB off-ramp to Lakeview Avenue, EB off-ramp to Imperial Highway, EB off-ramp to Weir Canyon Road, WB on-ramp from southbound Imperial Highway, and WB off-ramp to Weir Canyon Road.

With implementation of the improvements to the freeway mainline outlined in Section 1.3, Project Description capacity of SR-91 will be enhanced and nonstandard features will be brought to the current Department standards.

- In the eastbound direction from SR-55 to the Lakeview Avenue off-ramp, the addition of one general-purpose lane will result in a total of six general-purpose lanes and one auxiliary lane.
- In the eastbound direction from Lakeview Avenue to Imperial Highway, the addition of one general-purpose lane will result in a total of six general-purpose lanes.
- In the eastbound direction from Imperial Highway to the Weigh Station, the addition of one general-purpose lane and one auxiliary lane will result in a total of five general-purpose lanes and one auxiliary lane.
- In the eastbound direction from Weir Canyon Road to SR-241, the addition of one general-purpose lane will result in a total of six lanes. Five general-purpose lanes will be available for eastbound SR-91 through traffic, and one auxiliary lane will become the separation to southbound SR-241.

- In the westbound direction from Imperial Highway to the Weigh Station, the addition of one general-purpose lane and one auxiliary lane will result in a total of five general-purpose lanes and one auxiliary lane.
- In the westbound direction from the Weigh Station to Weir Canyon Road, the addition of one general-purpose lane will result in a total of five general-purpose lanes and one auxiliary lane.
- In the westbound direction from Weir Canyon Road to SR-241, the addition of one general-purpose lane will result in a total of five general-purpose lanes and one auxiliary lane. The auxiliary lane is a continuation of the separation from northbound SR-241.

Comparative Analysis: No Build and Build Alternative

LOS was used to compare the No Build and Build conditions on the freeway mainline. The LOS information is summarized earlier in this section. A comparison between the 2014 No Build, 2014 Build, 2035 No Build, and 2035 Build Alternatives indicates an improvement in LOS, especially in the EB direction (see Table 2.1.5-1), with implementation of the Build Alternative.

In the 2014 No Build condition, all freeway segments are estimated to operate at LOS E or F, except several EB segments during the a.m. peak hour only. It was determined that in 2014, in the Build Alternative condition, all freeway segments on EB SR-91 are anticipated to operate at LOS D or better during the a.m. and p.m. peak hours, with the exception of two segments that would operate at LOS E between Lakeview Avenue and the Weigh Station during the p.m. peak hour only. No segments in the EB direction are anticipated to operate at LOS F in the Build Alternative condition. The proposed project is anticipated to improve LOS from E to D from the Weigh Station to SR-241 and from F to D from Imperial Highway to the Weigh Station.

In the 2035 No Build condition, both directions of SR-91 are estimated to experience severe congestion (LOS F) during the a.m. and p.m. peak hours, with the exception of one EB segment between SR-55 and Lakeview Avenue that is reaching its capacity. Under the 2035 Build Alternative condition, all segments on EB SR-91 within the project limits are anticipated to have an improvement in LOS to E or better, with the exception of one EB segment during the a.m. peak hour and two segments during the p.m. peak hour. Under the Build Alternative, WB segments are anticipated to improve LOS from F to E for two segments between the Weigh Station and SR-241.

2.1.5.4 Avoidance, Minimization, and/or Mitigation Measures

Due to temporary ramp closures at Imperial Highway, Weir Canyon Road, and Lakeview Avenue, pedestrian access may be limited during construction of the proposed project. However, as discussed in Section 1.3, Project Description, a TMP will include minimization and avoidance measures consisting of alternate routes and detours for pedestrians, bicyclists, and vehicles during construction activities.

2.1.6 Visual and Aesthetics

This section describes the aesthetic and visual resource conditions within the project limits. The section also discusses potential aesthetic impacts that could result from implementation of the proposed project. A program for minimization measures is also provided. This analysis is based on the Visual Impact Assessment dated November 2008.

2.1.6.1 Regulatory Setting

CEQA establishes that it is the policy of the state to take all action necessary to provide the people of the state "with...enjoyment of *aesthetic*, natural, scenic and historic environmental qualities." (CA Public Resources Code Section 21001[b])

2.1.6.2 Affected Environment

Visual Environment

SR-91 within the project limits is designated as a State Scenic Highway. This freeway runs along the banks of the Santa Ana River. Views include residential and commercial development with intermittent riparian and chaparral vegetation.

The elements of the visual environment form a landscape unit. Landscape units are specific areas with similar visual environment characteristics in the regional project Viewshed. They contain similar and distinctive visual elements that contribute to a similar visual character and environment. The landscape unit in the project area is the Suburban River Basin. The visual characteristics of this unit are the Santa Ana Mountains to the south and the Santa Ana River to the north and to the west. There is a moderate elevation transition from the river to the Chino Hills. The Chino Hills are the foothills at the base of the Santa Ana Mountains. There are existing visual intrusions from residential and commercial land use throughout this landscape unit in the Cities of Anaheim and Yorba Linda. Other land use in this landscape unit is open space.

Project Viewshed

The project Viewshed is the geography, the landscape and the development visible by the motorist and the public from and to the project area. The elements and composition of the Viewshed are the visual environment.

The visual environment of the project area is primarily the views of suburban development in the Cities of Anaheim and Yorba Linda; the Santa Ana Mountains, the Santa Ana riverbed, and the Santa Ana foothills. SR-91 within the project area is designated as a State Scenic Highway. The vegetation of the Santa Ana foothills is Coastal Sage Scrub (CSS) and Coast Live Oak Woodland vegetation. The vegetation in the suburban areas in the Cities of Anaheim and Yorba Linda are ornamental plant materials. The visual character of the vegetation creates a distinctive quality of the view that is consistent with the high level of visual quality of the Designated Scenic Highway.

The composition of the Viewshed is foreground, middle ground and background. The foreground is the scene in close range to the viewer. The middle ground is the portion of the Viewshed that is half way between the foreground and the background view. The background is scenery in the distance view that generally frames the view.

The foreground views generally contain views of the roadway and the associated highway planting. The middle ground views contain the vegetation associated with the Santa Ana River and streambed and the suburban development in the Cities of Anaheim and Yorba Linda. The Santa Ana Mountains and foothills are visible in the background views.

The following are the elements and composition of the landscape unit and Viewshed in the foreground, middle ground and background:

- **Background**
  - Foothills of the Santa Ana Mountains
  - Santa Ana Mountains
- **Middle Ground**
  - Santa Ana River vegetation and stream bed
  - Suburban development in the City of Anaheim and the City of Yorba Linda
- **Foreground**
  - SR-91 roadway
  - Highway planting

Sensitive Viewers

Viewers of the proposed project include motorists traveling on SR-91 and nearby local roads, surrounding residents, recreational users of the Santa Ana River Trail, and occupants of the commercial areas at Weir Canyon Road and Imperial Highway. These viewers are described in more detail below.

Traveling Public

There are approximately 127,000 vehicles per day that travel EB on this portion of SR-91. The combined EB and WB travelers reach a total volume of approximately 250,000 vehicles per day. The majority of travelers are commuters to their jobs from Riverside County that work in Los Angeles and Orange Counties.

Daily commuters have an awareness of the views from the roadway as they spend substantial time on the roadway daily. Travelers that experience traffic tend to focus on the roadway and their drive. Travelers without traffic tend to travel at normal roadway speeds and to focus their attention on long range views. Vehicle passengers tend to focus on long range, intermediate and short-range views.

Local Community/Arterial Streets

Local streets in the project area are Gypsum Canyon, Imperial Highway and Lakeview, which all cross under the freeway. The views from these roadways are generally east and west toward the roadway bridge structures and the landscape of the highway and the median plantings.

Community Residents

General Residents

The residents on the south side and east side of SR-91 generally have expansive views of the Santa Ana River Canyon landscape unit either from their private property or from the arterial and local streets in the community. The proposed project may impact the view of some of the surrounding residential development. The closer the residence is to the proposed project, the greater the visual impact since the construction activities and elements of the proposed project at close range comprise a large volume of the Viewshed.

Adjacent Residents

The residents of the region include the surrounding suburban development in the Santa Ana River Basin and the foothills of the surrounding community. The views of this group are generally distant views of the proposed project. As a result, the visual impact is very low.

Recreational Users

The Santa Ana River Trail runs parallel to SR-91 on the north side of the roadway. There is no view of the proposed project from this area.

Commercial Area Users

The commercial areas in the project area are off of Weir Canyon Road and Imperial Highway. There is limited exposure to the view of the transportation corridor and scenic highway since the focus of their visual attention is on the services and products associated with the commercial land use.

Key Views

A key view is a representative, typical, characteristic and clear perception of the project elements to the primary viewer groups. Key views also need to represent the landscape units and include all of the project elements. Additionally key views are the seen areas to and from the roadway. They are viewpoints that clearly display the visual effects of the proposed project and represent the primary viewer groups affected by the visual impacts of the project. Figure 2.1.6-1 shows the locations of the key views. The key views are described in more detail below.

Key View #1

Key view #1 is an EB view on SR-91 at the SR-55 separation. As shown in Figure 2.1.6-2, the foreground view has a noise barrier. There is a highway planting area between the roadway and the noise barrier. The planting is ornamental that has a consistent character with the surrounding natural environment. The middle ground view to the west has the geography of a river basin with suburban development. There is significant landscape associated with the development that softens the visual character and provides unity and consistency with the rural character of the foothills. The background view is of the Santa Ana Mountains and the associated foothills. The background view is spectacular when visible on a clear day.

The foreground view from the roadway in the project area is primarily a noise barrier with ornamental landscaping. The middle ground view is of noise barriers on the north and south of SR-91. The background view is of the Santa Ana Mountains. The Santa Ana Mountains have complete vegetative cover of Chaparral and CSS plant communities.

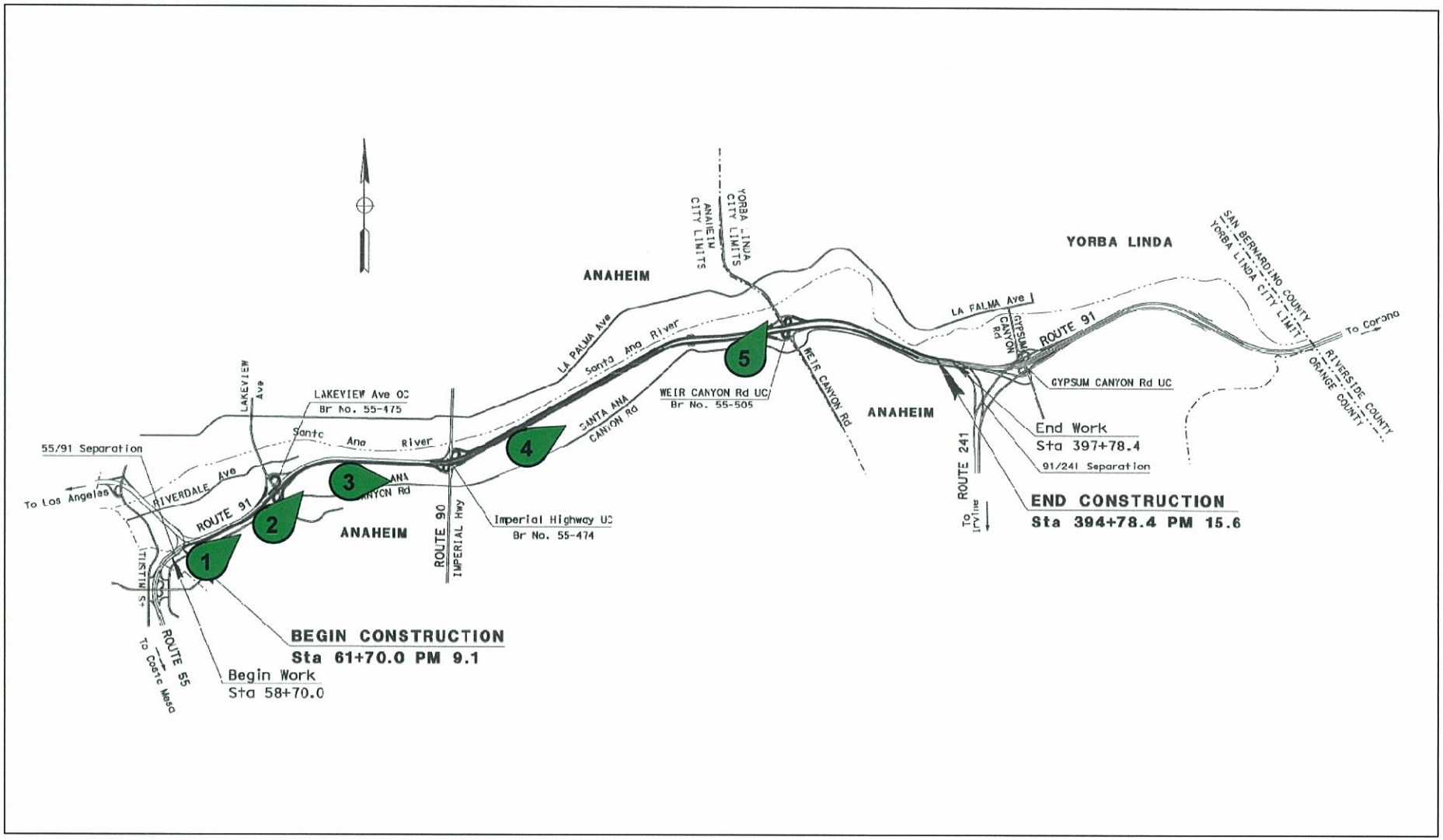

FIGURE 2.1.6-1

SR-91 Widening Project
SR-55 to SR-241
Key View Locations

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Existing View

View without Mitigation

View with Mitigation

FIGURE 2.1.6-2

SR-91 Widening Project
SR-55 to SR-241
Key View 1

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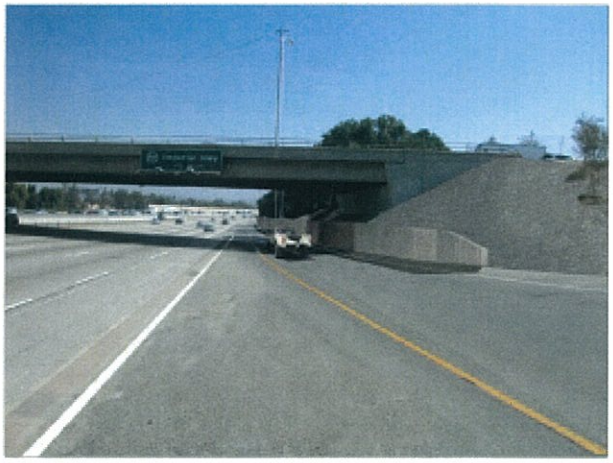
Existing View



View without Mitigation

View with Mitigation

FIGURE 2.1.6-3

SR-91 Widening Project
SR-55 to SR-241
Key View 2

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Existing View

View without Mitigation

View with Mitigation

FIGURE 2.1.6-4

SR-91 Widening Project
SR-55 to SR-241
Key View 3

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Existing View

View without Mitigation

View with Mitigation

FIGURE 2.1.6-5

SR-91 Widening Project
SR-55 to SR-241
Key View 4

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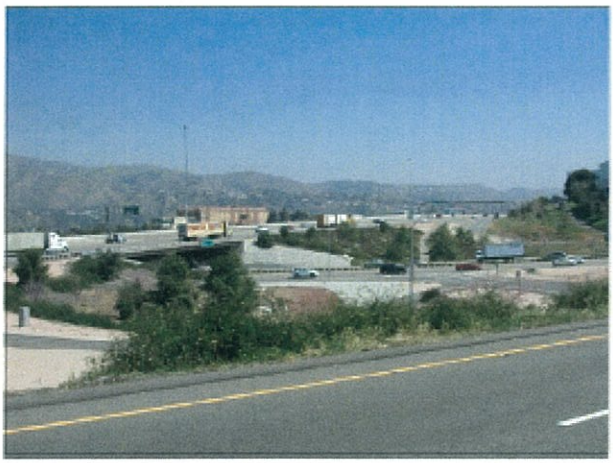
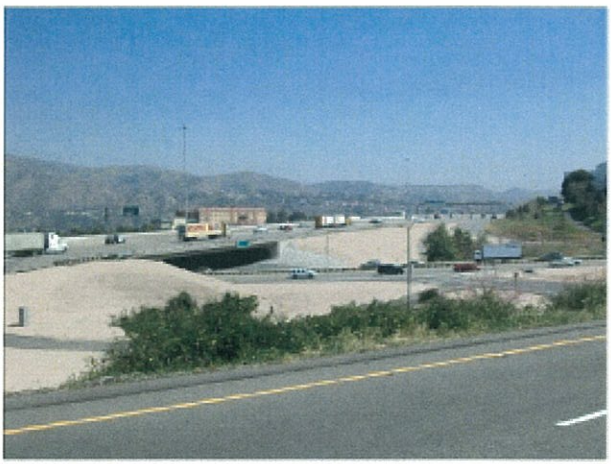
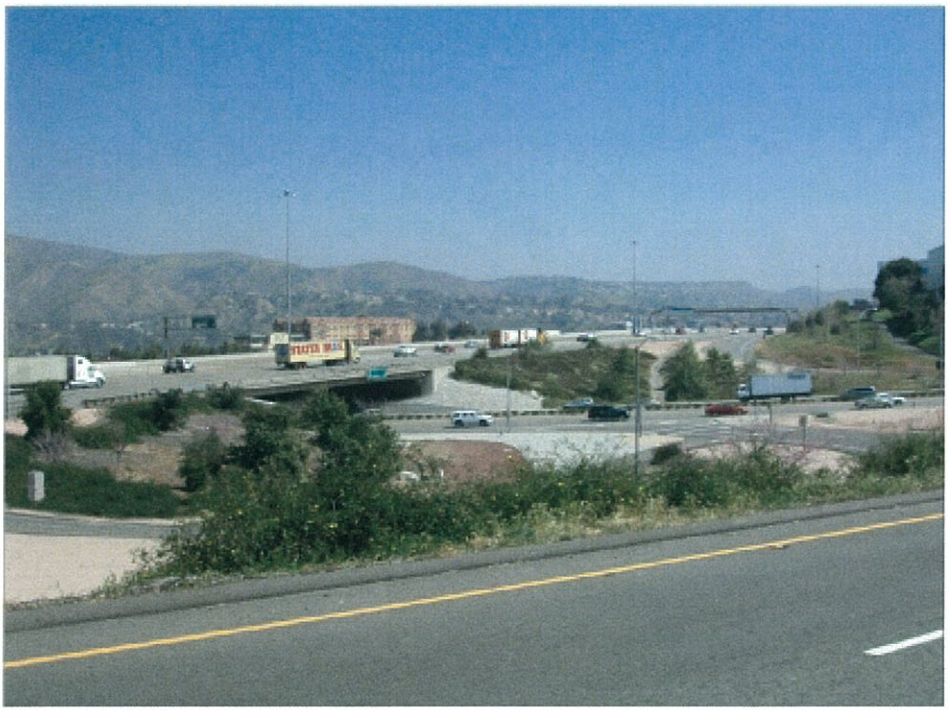


Existing View



View without Mitigation



View with Mitigation

FIGURE 2.1.6-6

SR-91 Widening Project
SR-55 to SR-241
Key View 5

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There is no direct view of the roadway from the immediate and adjacent community. There are distance views to the roadway from the surrounding hillside. Due to the proximity of the hills to the project area, there is little to no view of the proposed project elements from the eastside of the freeway. Any views to the project area from the west side are of the slopes adjacent to the freeway. The freeway is at a higher elevation than geography to the west of the project area. As a result there is no view of the project elements from the west side of the freeway. Any project elements are not discernable for any distant views to the freeway from the surrounding hillside due to the proximity of the freeway to the hills.

Key View #2

Key view #2 is oriented on EB SR-91 at the Lakeview Avenue onramp. As shown in Figure 2.1.6-3, the foreground view is of a bridge structure and highway planting. The planting is ornamental that has a consistent character with the surrounding natural environment. The middle ground view to the north is that of suburban development and noise barrier along the roadway. There is significant landscape associated with the development that softens the visual character and provides unity and consistency with the rural character of the foothills. The background view is of the Santa Ana Mountains and the associated foothills are visible during clear days. The bridge structure interrupts the background view that is significant on a clear day.

Key View #3

Key view #3 is an EB view from SR-91 between the arterial streets of Lakeview Avenue and Imperial Highway in the City of Anaheim. As shown in Figure 2.1.6-4, the foreground view contains a tree planting between the freeway and a noise barrier. The planting is ornamental that has a consistent character with the surrounding natural environment. The planting area blocks the view of the existing noise barrier and softens the view. The middle ground view is to the foothills of the Santa Ana Mountains. There is significant landscape associated with the development that softens the visual character and provides unity and consistency with the rural character of the foothills. The background view is of the Santa Ana Mountains and the associated foothills. The background view is spectacular when visible on a clear day.

Key View #4

Key view #4 is an east view from SR-91 at Imperial Highway. As shown in Figure 2.1.6-5, the foreground view has a noise barrier, concrete lined swale, and a native plant area. The middle ground view to the west has the geography of a river basin

with suburban development. There is significant landscape associated with the development that softens the visual character and provides unity and consistency with the rural character of the foothills. The background view is of the Santa Ana Mountains and the associated foothills. The background view is spectacular when visible on a clear day.

Key View #5

Key view #5 is to the north across the east and west travel lanes of SR-91 at the Weir Canyon Road off-ramp. As shown in Figure 2.1.6-6, the foreground view on the eastside is highway planting and rolling hills. Landscape associated with suburban development is to the northeast. The middle ground view is towards the east and is of suburban development and the associated landscaping. The background view is of the foothills of the Santa Ana Mountains.

Any views to the project area from the west are of the slopes adjacent to the freeway. The freeway is at a higher elevation than geography to the west of the project area. As a result there is no view of the project elements from the west side of the freeway. Any project elements are not discernable for any distant views to the freeway from the west from the surrounding hillside due to the proximity of the freeway to the hills.

Methodology

This section summarizes the methodology and terminology used to assess visual effects of the proposed project. More details on the methodology are available in the Visual Impact Assessment (Department, November 2008). The process for this Visual Impact Assessment follows the guidelines in the publication *Visual Impact Assessment for Highway Projects* (Federal Highway Administration [FHWA], March 1981). The following six principal steps were carried out to assess the visual effects of the proposed project:

1. Describe the project setting and Viewshed.
2. Identify the project key views.
3. Analyze the existing visual resources and the viewer response.
4. Depict the visual appearance of the project alternatives.
5. Assess the visual impacts of the project alternatives.
6. Identify methods to minimize adverse visual impacts.

The visual effects of the proposed project were determined by assessing the existing visual resources, the visual resource change due to the project, and predicting viewer

response to that change. The degree of visual quality in a view was evaluated using the following FHWA descriptive terms:

- **Vividness:** Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns (e.g., Niagara Falls is a highly vivid landscape component).
- **Intactness:** Intactness is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements. This factor can be present in well-kept urban and rural landscapes and natural settings (e.g., a two-lane road that meanders through the countryside).
- **Unity:** Unity is the visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the landscape (e.g., an English or Japanese garden).

The levels of visual impact are described as follows:

- **Very Low:** Minor adverse visual change to the existing visual resource. There is very little or no response to the change in the visual environment. Mitigation is not a project requirement.
- **Low:** Minor adverse change to the existing visual resource. There is a low viewer response to change in the visual environment. Mitigation may or may not be a project development requirement.
- **Moderately Low:** Moderate adverse visual resource change with low viewer response.
- **Moderate:** Moderate adverse change to the visual resource with moderate viewer response. The achievement of visual impact mitigation within five years with conventional practice is possible.
- **Moderately High:** Moderate adverse visual resource change with high viewer response or high adverse visual resource change with moderate viewer response.
- **High:** A high level of negative change to the visual resource or a high level of viewer response to visual change. Architectural design and landscape treatments cannot mitigate the visual impacts of the project. The viewer response level is high. An alternative project design may be necessary to avoid highly adverse impacts.
- **Very High:** There is a very high level of adverse change to the visual resource or a very high level of viewer response to visual change. Architectural design and landscape treatments cannot mitigate the visual impacts of the project. The viewer

response level is high. An alternative project design may be necessary to avoid highly adverse impacts.

These are the three criteria used in the objective rating system that have equal influence on the visual quality assessment of a landscape.

$$\textbf{Visual Quality} = \frac{\textbf{Vividness + Intactness + Unity}}{\textbf{3}}$$

The evaluations of vividness, intactness, and unity are independent. Each criteria has an assigned rating from 1 to 7. The following outlines the rating scale:

1 Very Low
2 Low
3 Moderately Low
4 Moderate
5 Moderately High
6 High
7 Very High

2.1.6.3 Environmental Consequences

Temporary Impacts

No Build Alternative

The No Build Alternative would not result in any construction activities. Therefore, there would be no temporary visual impacts associated with this alternative.

Build Alternative

Temporary visual impacts during construction such as construction activity, truck hauling, detour signage, and construction lighting are anticipated under the Build Alternative.

Permanent Impacts

No Build Alternative

The No Build Alternative would not result in the development of any of the improvements that are proposed under the Build Alternative. The visual resources along the project segment of SR-91 would remain unchanged under the No Build Alternative.

Build Alternative

Key View #1

The widening removes the highway planting to accommodate the additional lane. The viewer response to the visual change in this location is moderately high. There is a reduction of visual quality of 1.8 as a result of the proposed project elements in this location. Minimization measures reduce the moderately high impact to a less than significant visual impact.

Key View #2

The addition of another lane in both directions changes impacts to the foreground, middle ground, and background views. A standard new retaining wall in the foreground is a dominant feature in the Viewshed. The impact to the middle ground view is similar to the impact in the foreground view due to the dominance of the retaining wall structure and loss of landscape area in the State ROW. The affect is also cumulative with the addition of concrete structures and elements that continue to add contrast with the visual character of the natural environment.

The viewer response to the visual change in this location is low to moderate. There is a reduction of visual quality of 1.0 as a result of the proposed project elements in this location. Minimization measures will ensure a less than significant visual impact.

Key View #3

The addition of a travel lane affects the foreground, middle ground, and background views. A standard noise barrier in the foreground is a dominant feature in the Viewshed. With a decrease in landscape area between the noise barrier and travel lanes, the proposed project elements have a greater dominance in the Viewshed. The impact to the middle ground and background views is similar to the impact in the foreground view due to the dominance of a noise barrier structure. A noise barrier is proposed to be constructed on top of the existing retaining wall, with the two walls together totaling 16 ft. The elevation of the bottom of the noise barrier will match the elevation of the top of the existing retaining wall, which is located at the bottom of the slope along the right-of-way line. A final decision to construct the noise barrier will be made during the final project design process. The top of the new noise barrier will not be "substantially higher" than the top of the existing garden wall. The effect is also cumulative with the addition of structures and elements that continue to add elements that contrast with the visual character of the natural environment.

The viewer response to the visual change in this location is moderately high. There is a reduction of visual quality of 1.3 as a result of the project elements in this location. With implementation of the measures outlined in Section 2.1.6.4, the project elements will compliment the surrounding visual environment and permanent visual impacts will be considered less than significant.

Key View #4

The change to the visual character is from an additional travel lane and the decrease in plantable area and the noise barrier. This change affects the foreground and middleground views.

The viewer response to the change in visual quality from the project is moderate to high. There is a reduction of visual quality of 1.7 as a result of the proposed project elements in this location. With implementation of the measures outlined in Section 2.1.6.4, permanent visual impacts will be considered less than significant.

Key View #5

The change to the visual character is from an additional travel lane. The bridge needs modification to accommodate the new roadway width associated with the proposed project. The proposed project elements decrease the landscaped areas around the on- and off-ramps from the structural elements.

The viewer response to the visual change in this location is moderate. There is a reduction of visual quality of 1.0 as a result of the project elements in this location. Permanent impacts to Key View 5 are considered less than significant.

2.1.6.4 Avoidance, Minimization, and/or Mitigation Measures

The implementation of all design requirement measures requires concurrence and approval of the District Landscape Architect for conformance to any requirement to maintain the visual quality of the Designated Scenic Highway. Implementation of the following measures reduces and neutralizes the visual impact on the landscape units and the associated scenic highway.

V-1 Provide for a wall aesthetic treatment to complement the surrounding natural environment. Use natural materials and forms to compliment the surrounding natural environment. The design needs consideration to complement the appearance of the geological formations in the region. The District Landscape Architect needs to review and approve the wall texture, color and landscape. Antigraffiti treatment will be

applied to retaining walls and noise barriers. The document, Master Plan of Freeway and Transit Corridor Enhancements: Creating a Quality Environment Along Orange County's Transportation Network, is one the considerations of the review of the District Landscape Architect. Additionally aesthetic considerations identified in the City of Anaheim planning documents shall be reviewed and approved by District Landscape Architect and in coordination with the City of Anaheim. The Department will work with the designated City representative to ensure the character of the replacement planting reflects the corridor theme of SR-91.

V-2 The form of the retaining wall will reflect the character of the rolling hillside.

V-3 The use of color concrete for the retaining wall structure shall complement and blend with the natural environment.

V-4 Consideration to build a noise barrier with a landscape buffer is necessary. A landscape screen between the wall and the travel way will be implemented.

V-5 Design considerations identified in the *Master Plan of Freeway and Transit Corridor Enhancements: Creating a Quality Environment along Orange County's Transportation Network* are necessary to neutralize the visual intrusions from the noise barrier. These design considerations will be reviewed and approved by the District Landscape Architect in coordination with the City of Anaheim. In accordance with the Master Plan, vine planting and a landscape buffer between the roadway and the wall are necessary to buffer and screen the wall and support the landscaped freeway classification. A landscape freeway classification is imperative to maintain the visual environment. The installation of billboards is not appropriate on freeways classified as "Landscaped Freeways."

V-6 For locations of treatment devices, the Project Engineer shall work with the District Landscape Architect to determine the best location of these facilities to minimize the visual impacts. River rock treatment for filtration will be considered. The plants associated with any treatment devices will blend into the surrounding highway planting environment.

The plant materials planted in treatment devices shall be approved by the District Landscape Architect for plant culture and for visual compatibility with the visual quality of the surrounding region.

V-7 The Department shall work with the associated community and the Cities of Anaheim and Yorba Linda, with aesthetic treatments for bridges, noise barrier and retaining walls to ensure there are context-sensitive design solutions for the project.

V-8 At this time, there is no reclaimed water within the project limits supplied by the City of Corona. The Department will continue to coordinate with the City of Corona during the project Plans, Specifications, and Estimates (PS&E) phase regarding whether or not the reclaimed water distribution line will be extended into Orange County for use within the project site.

2.1.7 Cultural Resources

2.1.7.1 Regulatory Setting

"Cultural resources" as used in this document refers to all historical and archaeological resources, regardless of significance. Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act of 1966, as amended, (NHPA) sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places. Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the Advisory Council, FHWA, State Historic Preservation Officer (SHPO), and the Department went into effect for Department undertakings, both state and local, with FHWA involvement. The PA implements the Advisory Council's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA's responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 773) (July 1, 2007). While the PA that the

Department uses for Section 106 compliance was developed specifically for federal undertakings, Department policy is to use the instructions outlined in the PA attachments as guidance for CEQA projects.

Historical resources are considered under CEQA, as well as California Public Resources Code (PRC) Section 5024.1, which established the California Register of Historical Resources. PRC Section 5024 requires state agencies to identify and protect state-owned resources that meet National Register of Historic Places listing criteria. It further specifically requires the Department to inventory state-owned structures in its ROW. Section 5024(f) and 5024.5 require state agencies to provide notice to and consult with the SHPO before altering, transferring, relocating, or demolishing state-owned historical resources that are listed on or are eligible for inclusion in the National Register or are registered or eligible for registration as California Historical Landmarks. It is Department policy to apply both the National Register criteria and the California Register criteria simultaneously when conducting evaluations. The simultaneous use of National Register and California Register criteria is needed for compliance with PRC Section 5024 for state-owned resources.

2.1.7.2 Affected Environment

This section is based on the *Historical Resources Compliance Report* (HRCR) (Department, June 2008). Copies of this document are on file and available for review at the Department District 12 Office. Pedestrian and windshield surveys of the project area were conducted on June 8, 2007; September 13 and 26, 2007; December 13, 2007; and June 2, 2008. No previously recorded or newly discovered prehistoric or historic archaeological sites were identified within the limits of the project area.

The project area limits were established as the existing State ROW for the potential footprint (Direct Area of Impact) required for all construction-related activities, including: roadway and bridge widening, noise barrier and retaining wall construction, drainage and utility relocations, and staging and storage areas for equipment and materials. An Indirect Area of Impact was established for adjacent parcels that may be indirectly affected by the proposed project for the construction of a potential noise barrier on EB SR-91 from Imperial Highway to the Weigh Station. The proposed project lies primarily within existing State ROW with the exception of a temporary construction easement (TCE) needed for noise barrier construction.

A records search of all previously recorded historic and prehistoric archeological sites within a 1 mi radius of the project area was conducted on July 23, 2007. The records

search included examining the following: the National Register of Historic Places (National Register), the California Register of Historical Resources (California Register), the California Inventory of Historic Resources, California Historical Landmarks, California Points of Historical Interest, and the Directory of Properties in the Historic Resources Inventory. The records search identified a total of 91 documented surveys/reports, with 38 prehistoric and historic archaeological sites, isolates, or built resources being recorded. Five of the 91 surveys/reports were located within the limits of the project area.

The archaeological resources nearest to the proposed project limits are documented north of SR-91 and south of the Santa Ana River on both sides of Weir Canyon Road in the Horseshoe Bend vicinity. Four prehistoric sites lightly used as seasonal seed grinding and lithic reduction areas from approximately 6,000 B.C. to 4,000 B.C. were recorded by the Santa Ana Valley Irrigation (SAVI) Company during the late 1970s and early 1980s. These four resources are summarized in Table 2.1.7-1.

Table 2.1.7-1 Archaeological Sites Recorded in the Vicinity of the Project Area

State Trinomial or Other Designator	Initially Recorded	Site Type and Description
CA-ORA-818	SAVI Company, 1979	"Sparse artifact scatter in an orchard on a bluff overlooking the Santa Ana River north of 91 Freeway east of water company"
CA-ORA-819	SAVI Company, 1979	"Sparse artifact scatter in an orchard on a bluff overlooking the Santa Ana River north of 91 Freeway west of water company"
CA-ORA-820	SAVI Company, 1979	"Sparse artifact scatter in orchard on low terrace at bend in Santa Ana River just north of 91 Freeway"
CA-ORA-1067	SAVI Company, 1984	Artifacts found on the north side of SR-91, just east of Weir Canyon Road.

Source: *Archaeological Survey Report* (Department, June 2008) and *Historical Property Compliance Report* (Department, June 2008).

Surveys conducted at sites CA-ORA-818 and -819 indicated that the subsurfaces were entirely devoid of cultural materials and that the surfaces had been disturbed by agricultural activities, and site CA-ORA-820 had very sparse surface scatter with no subsurface component. However, surveys conducted at site CA-ORA-1067 unearthed four artifacts, including two waste flakes, one hammerstone, and one groundstone fragment.

Two structures identified during the records search that were listed in the National Register are located outside the project limits. These structures are identified as the Olive Civic Center (NR93001039) and Bixby Bryant Ranch House (NR96001537). Two California Historical Landmarks (CHL), including the Old Santa Ana (CHL No. 204) and Don Bernardo Yorba Ranchhouse (CHL No. 226), have also been identified within a 1 mi radius. No sites or properties listed were located within the project limits for the proposed project.

According to a letter from the Native American Heritage Commission (NAHC) dated September 18, 2007, a search of the Sacred Lands File had failed to identify cultural resources within the project area. The following tribes and individuals were consulted:

- Mr. Alfred Cruz, Cultural Resources Coordinator, Juaneño Band of Mission Indians
- Ms. Cindi Alvitre, Ti'At Society
- Mr. David Belardes, Chairperson and Joyce Perry, Tribal Manager, Juaneño Band of Mission Indians Acjachemen Nation
- Mr. Anthony Morales, Chairperson, Gabrielino/Tongva Tribal Council
- Mr. Sam Dunlap, Tribal Secretary, Gabrielino Tongva Council/Gabrielino Tongva Nation
- Mr. Anthony Rivera, Chairman, Juaneño Band of Mission Indians, Acjachemen Nation
- Mr. Adolph "Bud" Sepulveda, Chairperson, Juaneño Band of Mission Indians
- Ms. Sonia Johnston, Tribal Vice Chairperson, Juaneño Band of Mission Indians

No responses were received to the letters sent. Follow-up calls were placed to each listed contact on June 4, 2008. As a result, the following comments or responses were received. Mr. Dunlap inquired about monitoring and sites in the area. Mr. Dunlap was informed that no sites were identified within the project limits and a "halt work" condition would be in place during construction if cultural resources were observed. Mr. Dunlap was satisfied and had no additional comments. Mr. Sepulveda had no comments based on the project location and description. Mr. Morales inquired about cultural resources within the project area and had no other comments.

2.1.7.3 Environmental Consequences

Temporary Impacts

No Build Alternative

As the No Build Alternative would not involve any construction activities or improvements, there would be no temporary impacts to any historical or archaeological resources.

Build Alternative

Within the project area, no historic properties would be affected by the Build Alternative because there are no historic properties located within the project limits. The probability that potentially significant archaeological deposits might be encountered during construction activities seems unlikely given the substantial amount of previous disturbance within the ROW for freeway construction and improvement efforts that have taken place between the late 1960s and the late 1990s. Given the historic flooding events within this area of the Santa Ana River basin, the nearest prehistoric archaeological sites have been primarily recorded on bluffs or hilltops.

However, it is possible that previously undocumented and unknown cultural materials could be uncovered during site clearing, grading, and excavation for the proposed project. In the event such resources are uncovered, there may be a potential for the project to impact cultural resources.

Permanent Impacts

No Build Alternative

As the No Build Alternative would not involve any construction activities or improvements, there would be no permanent impacts to any historical or archaeological resources.

Build Alternative

Although artifacts were discovered in the area of site CA-ORA-1067, proposed construction activities within this vicinity would occur primarily between the inner SR-91/Weir Canyon Road on- and off-ramps and SR-241, which were previously disturbed during freeway construction activities. No known historically significant sites were listed within the project limits. Therefore, there would be no permanent impacts to any historical or archaeological resources as a result of the proposed project.

2.1.7.4 Avoidance, Minimization, and/or Mitigation Measures

The measures below would minimize impacts related to the discovery of previously unknown cultural materials and human remains during construction of the proposed project.

CR-1 If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.

CR-2 If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner will be contacted. Pursuant to Public Resources Code (PRC) Section 5097.98, if the remains are thought to be Native American, the Coroner will notify the Native American Heritage Commission (NAHC), which will then notify the Most Likely Descendant (MLD). At this time, the person who discovered the remains will notify the Resident Engineer and District 12 Environmental Branch Chief so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

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2.2 Physical Environment

2.2.1 Hydrology and Floodplain

The analysis of the potential impacts of the proposed project described in this section is based on the Drainage Study (January 2008), and the Water Quality Assessment Report (December 2008).

2.2.1.1 Regulatory Setting

Executive Order 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless they are the only practicable alternative.

In order to comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments
- Risks of the action
- Impacts on natural and beneficial floodplain values
- Support of incompatible floodplain development
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values impacted by the project.

The base floodplain is defined as "the area subject to flooding by the flood or tide having a 1 percent chance of being exceeded in any given year." An encroachment is defined as "an action within the limits of the base floodplain."

2.2.1.2 Affected Environment

Elevations in the project area range from 315 ft above mean sea level (amsl) to 456 ft amsl. The project area is located within the Santa Ana Narrows Subwatershed of the Lower Santa Ana River Watershed. The Santa Ana River Watershed is approximately 2,800 square miles. The Santa Ana River extends about 96 mi from its headwaters to where it drains into the Pacific Ocean. The headwaters and tributaries are in the San Gabriel and San Bernardino Mountains to the north and the San Gorgonio and San Jacinto Mountains to the east. These flows converge at the Prado Basin, which outlets into a narrow pass in the Santa Ana Mountains. The Santa Ana River Watershed is divided into upper and lower watersheds at the Prado Dam. The lower watershed also includes various tributaries from Prado Dam to the Pacific Ocean.

The existing general drainage pattern within the project limits is from south to north of SR-91 where the EB watershed is carried via Orange County Flood Control Box culverts and underground pipe drainage systems to the north side of the freeway. WB watershed sheet flows in a northerly direction into the Santa Ana River, Reach 2. Within the project limits, runoff from SR-91 discharges into drainage inlets, which discharge to the Santa Ana River, Reach 2, via various culverts. The Santa Ana River, Reach 2, is defined as being from 17th Street in Santa Ana to the Prado Dam.

Prado Dam, upstream of the project area, regulates flow between the upper and lower watersheds and reduces flooding by storing and releasing storm flows over a longer period. The dam is operated under a complex set of procedures agreed to by many agencies with the intent to minimize downstream flood damage, maximize the availability of surface water for groundwater recharging programs, and minimize adverse effects to endangered species in wetland areas above the dam. According to the California Regional Water Quality Control Board (RWQCB), Water Quality Control Plan (1995, Updated February 2008), the proposed project is not located within the Prado Dam inundation area.

Annual flows through Reach 2 vary greatly in any given year. Flows are at their peak during a limited winter/spring season, and the flood control operations of Prado Dam lower the flood peaks to below the 100-year flood levels. These flood flows are released over a period of days after the flood runoff.

The Federal Emergency Management Agency (FEMA) determines the presence or absence of the 100-year and 500-year flood zones within the project limits. According to FEMA Map Nos. 06059C0152H, 06059C0156H, 06059C0157H, and 06059C0180H (February 2004), the project limits are located in Zone X. As defined by FEMA, these areas within Zone X are protected from the 1 percent annual chance of flood by levees, dikes, or other structures subject to possible failure during larger floods.

2.2.1.3 Environmental Consequences

Temporary Impacts

No Build Alternative

No improvements other than routine roadway and bridge maintenance would be made under this alternative. Therefore, the No Build Alternative would not result in any short-term hydrology and floodplain impacts from construction-related activities.

Build Alternative

The erosion potential during construction is discussed in Section 2.2.2, Water Quality and Storm Water Runoff. The existing drainage pattern in the project area would be maintained during construction, although temporary drainage detours around facilities undergoing reconstruction would be required to convey any storm flows.

Permanent Impacts

No Build Alternative

The No Build Alternative does not involve any construction. In addition, there are no known existing drainage-related issues within the project limits. Therefore, the No Build Alternative would result in no changes in the existing volumes and quality of runoff generated in the project limits and would not result in direct or indirect impacts related to hydrology and floodplains.

Build Alternative

The Build Alternative would not change the existing drainage pattern of the area. However, all existing inlets along the existing edge of shoulder would be extended to the new edge of shoulder, and existing inlets would either be capped or removed. The Build Alternative proposes to place fill over the existing channel located adjacent to Caliber Motors. However, this existing channel will be made pervious by "punching" holes into it prior to burying. A new channel is proposed parallel to the southerly ROW line and the proposed noise barrier on EB SR-91 from Imperial Highway to the Weigh Station. The replacement channel in this location will be the same width as the existing.

Outflow would increase due to the construction of 40 ac of additional impervious surface area for the additional travel lanes. The proposed project would increase the impervious surface area from 402 to 442 ac. Calculations prepared by the Department (January 2008) show that the proposed project would increase runoff during a 25-year storm (peak storm discharge from a storm with a probability of occurring one every 25 years) from 1,940 cubic feet per second (cfs) to 2,134 cfs. The existing longitudinal drainage systems, which are located along the edge of shoulder, would be removed or abandoned. All Orange County Flood Control box culverts, pipes, and other facilities would remain unchanged. New longitudinal drainage systems will either be constructed along the freeway shoulders or along the ROW line, with additional inlets or concrete channel/ditch to carry the increase in drainage associated with the widening. This ensures that the flooded areas along the proposed shoulders would not encroach on the freeway. Given that all flows will be contained with

existing and proposed drainage facilities and that the system is adequate to convey flows, potential drainage impacts are considered less than significant.

The Build Alternative would not introduce any new risks or increased risk to life or property associated with flooding. The section of SR-91 within the project limits is not located within a 100-year or 500-year floodplain and is not subject to flooding due to a storm of the 100-year or 500-year frequency. This section is not within the Prado Dam inundation area.[1] Floodplain encroachment (longitudinal or transverse) is not anticipated, and there are no floodplain impacts associated with the Build Alternative.

2.2.1.4 Avoidance, Minimization, and/or Mitigation Measures

Since the Build Alternative would not substantially alter the hydrology of the project area and would not introduce new risk or increase risk associated with flooding, avoidance, minimization, and/or mitigation measures are not proposed.

However, conformance to the National Pollution Discharge Elimination System (NPDES) Storm Water Permit, and BMPs would ensure that the proposed project would not violate water quality standards or waste discharge requirements.

2.2.2 Water Quality and Storm Water Runoff

This section is based on the *Water Quality Assessment Report* (December 2008). The *Water Quality Assessment Report* is on file and available for review at the Department District 12 office.

2.2.2.1 Regulatory Setting

Section 401 of the Clean Water Act (CWA) requires water quality certification from the State Water Resources Control Board (SWRCB) or from a Regional Water Quality Control Board (RWQCB) when the project requires a CWA Section 404 permit. Section 404 of the CWA requires a permit from the United States Army Corps of Engineers (Corps) to discharge dredged or fill material into waters of the United States.

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[1] California Regional Water Quality Control Board, Santa Ana Region. Water Quality Control Plan, 1995, updated February 2008; and FEMA FIRM Panel No. 06065C06696, August 28, 2008.

Along with CWA Section 401, CWA Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) permit for the discharge of any pollutant into waters of the United States. The EPA has delegated administration of the NPDES program to the SWRCB and nine RWQCBs. The SWRCB and RWQCB also regulate other waste discharges to land within California through the issuance of waste discharge requirements under authority of the Porter-Cologne Water Quality Act.

The SWRCB has developed and issued a statewide NPDES permit to regulate storm water discharges from all Department activities on its highways and facilities. Department construction projects are regulated under the statewide permit, and projects performed by other entities on Department ROW (encroachments) are regulated by the SWRCB's statewide General Construction Permit. All construction projects over 1 ac require a Storm Water Pollution Prevention Plan (SWPPP) to be prepared and implemented during construction. Department activities of less than 1 ac require a Water Pollution Control Program.

2.2.2.2 Affected Environment

Surface Water

The project area is located within the Santa Ana Narrows Subwatershed of the Lower Santa Ana River Watershed. The Santa Ana River Watershed is approximately 2,800 square miles. The Santa Ana River extends approximately 96 mi from its headwaters to where it drains into the Pacific Ocean. The headwaters and tributaries are in the San Gabriel and San Bernardino Mountains to the north and the San Gorgonio and San Jacinto Mountains to the east. These flows converge at the Prado Basin, which outlets into a narrow pass in the Santa Ana Mountains. The Santa Ana River Watershed is divided into an upper and lower watershed at the Prado Dam. The lower watershed also includes various tributaries from Prado Dam to the Pacific Ocean.

Within the project limits, runoff from SR-91 discharges into drainage inlets, which discharge to the Santa Ana River, Reach 2, via various culverts. The Santa Ana River, Reach 2, is defined as running from 17th Street in Santa Ana to the Prado Dam.

Prado Dam, upstream of the project area, regulates flow between the upper and lower watersheds and reduces flooding by storing and releasing storm flows over a longer period. The dam is operated under a complex set of procedures agreed to by many agencies with the intent to minimize downstream flood damage, maximize the availability of surface water for groundwater recharging programs, and minimize adverse effects to endangered species in wetland areas above the dam.

Annual flows through Reach 2 vary greatly in any given year. Flows are at their peak during a limited winter/spring season, and the flood control operations of Prado Dam lower the flood peaks to below the 100-year flood levels. These flood flows are released over a period of days after the flood runoff.

The historical water quality of the Santa Ana River in the project vicinity has been monitored by the Orange County Water District (OCWD) at Imperial Highway. Table 2.2.2-1 presents data compiled from previous monitoring conducted in 2001 and 2006–2007.

Table 2.2.2-1 Characterization Data from Santa Ana River at Imperial Highway

Constituent	Concentration
TSS	698 mg/L
NO_3-N	4.4 mg/L
TKN	0.7 mg/L
Ortho-phosphate	0.79 mg/L
Dissolved Copper	2.7 ug/L
Dissolved Zinc	11.5 ug/L
Dissolved Lead	<1.0 ug/L

Source: Water Quality Assessment Report (December 2008).

The project site drains to Reach 2 of the Santa Ana River. Currently, this reach is not listed as impaired on the 2006 CWA Section 303(d) List of Water Quality Limited Segments.

Currently, there is no engineered water quality treatment provided along SR-91 within the project area. Roadway runoff is collected by the roadway drainage facilities, conveyed by concrete ditches and unlined swales to concrete pipes and culverts, and discharged into the Santa Ana River. Although storm water does generally drain in some areas to adjacent existing landscape areas that act as biofilter strips or biofilter swales, there are no preexisting water quality treatment facilities within the project area.

Surface water beneficial uses are identified in the *Santa Ana River Basin Water Quality Control Plan* (Basin Plan) for the Santa Ana River Reach 2. The beneficial uses include the following:

- GWR: Groundwater Recharge
- REC-1: Body-contact recreations (swimming/wading)
- REC-2: Non-body contact recreation (boating/fishing)
- WARM: Warm water habitat for fish amenable for reproduction in warm water
- WILD: Habitat for wild plants and animals
- RARE: Habitat for rare (threatened/endangered) plants and animals
- AGR: Agricultural use

Groundwater

The primary source of groundwater in the project vicinity is the Santa Ana River. Secondary sources of groundwater include springs, runoff from the hills, and developed areas south of SR-91. Additionally, a portion of the project area is adjacent to a section of the Santa Ana River that is used by the OCWD for recharging the groundwater basin. OCWD operates a system of diversion structures and recharge basins that capture water that would otherwise flow into the Pacific Ocean. OCWD has 1,500 ac of land for use in its recharge program. This section of the project area is considered a "high risk" area, defined as a location where spills from the State-owned ROW, activities, or facilities can discharge directly to municipal or domestic water supply reservoirs or groundwater recharge basins.

A Hazardous Waste Initial Site Assessment (ISA), dated January 2004, was prepared for this project. The ISA noted 10 known releases of hazardous substances within the project limits.

Per the Preliminary Geotechnical Report (December 2007), groundwater may be present at 3 to 6 ft below ground surface (bgs) (near Weir Canyon Road) to 20 ft bgs (near the western end of the project limits) based on historic records. The groundwater levels may vary since the site is adjacent to percolation basins maintained by OCWD for recharging the groundwater basin. Nearby California Department of Water Resources monitoring wells have recorded groundwater elevations varying from 15 ft to 20 ft bgs. The most recent measurement indicates that groundwater is less than 15 ft bgs. Many factors result in variations to the groundwater, including groundwater pumping, irrigation, seasonal rainfall, climatic variations, and the use of the recharge basins.

Groundwater beneficial uses are identified in the Basin Plan for the project area in the lower Santa Ana River. The beneficial uses include the following:

- MUN: Municipal and Domestic Supply
- AGR: Agricultural use
- IND: Industrial Service Supply
- PROC: Industrial Process Supply

2.2.2.3 Environmental Consequences

Temporary Impacts

No Build Alternative

Under the No Build Alternative, no improvements other than routine roadway and bridge maintenance would be made. Therefore, the No Build Alternative would not result in any short-term water quality impacts from construction-related activities.

Build Alternative

During construction, the total disturbed area from the Build Alternative is estimated to be approximately 80 ac. This is based on approximately 40 ac of new impervious areas and allowances for additional elements, included but not limited to:

- Noise Barrier
- Retaining walls
- Drainage structures
- Permanent water quality best management practices (BMPs)

Pollutants of concern during construction include:

- Sediment/turbidity (expected)
- Nutrients, including ammonia, nitrate as nitrogen, total Kjeldahl nitrogen, total phosphorus, dissolved ortho-phosphate (potential – if landscaping or open areas exist on the project site)
- Organic compounds, including total dissolved solids, total suspended solids, dissolved organic carbon, and total organic carbon (expected – specifically petroleum hydrocarbons)
- Trash and debris (expected)
- Oxygen-demanding substances (potential – if landscaping or open areas exist on the project site)

- Bacteria and viruses (potential – bacterial indicators are routinely detected in pavement runoff)
- Oil and grease (expected)
- Pesticides (potential – if landscaping or open areas exist on the project site)
- Metals, including arsenic, cadmium, chromium, copper, lead, nickel, and zinc (expected)

Each of these pollutants on its own or in combination with other pollutants can have a detrimental effect on water quality.

Under the General Construction activity NPDES Permit, the Build Alternative would be required to prepare a SWPPP and implement erosion and sediment control BMPs detailed in the SWPPP during construction activities. In addition, appropriate construction site BMPs for work within high-risk areas, such as immediately adjacent to the Santa Ana River, would be identified in the SWPPP.

Dewatering may be necessary to construct structure footings. However, it is not anticipated that the project will encounter the potentially contaminated groundwater because there will not be dewatering at locations noted in the ISA. In the event that potentially contaminated groundwater is encountered, discharges may require additional Water Discharge Requirements by the Santa Ana RWQCB. Groundwater and any other nonstorm water dewatering activities are also subject to the requirements of the De minimis Permit (Order No. R-8-2003-0061) or subsequent permit. Therefore, a 401 Permit is required to ensure the proposed project will comply with Santa Ana RWQCB Water Quality Standards. In addition, a 404 Permit is required to determine whether the adverse effects of the proposed project on Waters of the U.S. are minimal. This permit will also be used to determine whether a particular drainage is considered discharging to Waters of the U.S., and if it is subject to regulation under Section 404.

The potential for groundwater contamination of the nearby OCWD recharge basins along the Santa Ana River requires that the appropriate spill containment and spill prevention control measures be incorporated into the proposed project. Spill containment and prevention control measures will be implemented in accordance with the processes contained in the Department's Storm Water Management Plan (SWMP), including Section 3 for BMP identification and implementation and Section 4.4.1 for new construction projects.

Permanent Impacts

No Build Alternative

Under the No Build Alternative, there would not be an increase in impervious area or change in land use on SR-91. Therefore, the No Build Alternative would not result in an increase in long-term pollutant loading; however, existing roadway runoff would remain untreated.

Build Alternative

Because the proposed project consists of lane additions, it would result in a permanent increase in impervious surfaces and a permanent increase in runoff and pollutant loading. The proposed project would increase the impervious area by approximately 40 ac compared to the existing freeway facility. The existing channel to be filled is adjacent to Caliber Motors and will not contribute to the 40 ac of impervious area as it will remain pervious by "punching holes" in the concrete before filling. The existing channel will be replaced with the same dimension channel at another location adjacent to the proposed noise barrier from Imperial Highway to the Weigh Station.

Operation of the Build Alternative is subject to the requirements of the Department's NPDES Permit. Currently, storm water runoff from SR-91 within the project limits is untreated. As part of the Build Alternative, treatment BMPs must be implemented to target the constituents of concern in the storm water runoff from the project area. Design Pollution Prevention and Treatment Control BMPs will be incorporated to the project. Where feasible, the Treatment Control BMPs would be used in a series to maximize pollutant treatment. All Treatment Control BMPs would be located outside of the California Department of Fish and Game (CDFG) and Corps jurisdictional waters. East of Imperial Highway, two areas north and south of SR-91 have been identified as potential treatment BMP locations (i.e., bioswales).

2.2.2.4 *Avoidance, Minimization, and/or Mitigation Measures*

The Department's SWMP is the guidance for compliance with the NPDES Permit requirement for discharge. As part of the Department's Project Delivery Storm Water Management Program described in the SWMP, selected Construction Site, Design Pollution Prevention, and Treatment Control BMPs would be incorporated into the final design of the proposed project. Compliance with the standard requirements of the SWMP for potential short-term (during construction) and long-term (post construction/maintenance) impacts (listed below in Measures WQ-1, WQ-2, and WQ-3) is required.

WQ-1 Preparation and implementation of Construction site best management practices (BMPs) shall be in compliance with the provisions of the Department's Statewide NPDES Permit (Order No. 99-06-DWQ NPDES No. CAS000003) and any subsequent permit as they relate to construction activities for the project. This will include submission of a Notice of Construction (NOC) to the Santa Ana Regional Water Quality Control Board (RWQCB) at least 30 days before the start of construction, preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) and submission of a Notice of Construction Completion (NCC) to the Santa Ana RWQCB upon completion of construction and stabilization of the project site.

WQ-2 Consideration and incorporation of Design Pollution Prevention and Treatment Control best management practices (BMPs) for the proposed project shall be in accordance with the procedures outlined in the Storm Water Quality Handbooks, Project Planning and Design Guide (May 2007 or subsequent issuance). This will include coordination with the Santa Ana RWQCB with respect to feasibility, maintenance, and monitoring of Treatment Control BMPs as set forth in the Department's Statewide SWMP.

WQ-3 During dewatering activities (if necessary), the General Waste Discharge requirements for discharges to surface waters that pose an insignificant (De minimis) threat to water quality, Order No. R8-2003-0061 NPDES No. CAG998001, as they relate to construction activities for the proposed project shall be followed. This will include submission of a Notice of Intent (NOI) to the Santa Ana RWQCB at least 3 months before the start of dewatering, compliance with all applicable provisions in the De minimis Permit (including water sampling, analysis, and reporting of dewatering-related discharges), and any additional waste discharge requirements imposed by the Santa Ana RWQCB.

2.2.3 Geology, Soils, Seismicity, and Topography

This section is based on the Preliminary Geotechnical Report Memorandum prepared by the Department for the project in December 2007, and the General Plans for the

Cities of Anaheim and Yorba Linda. The Preliminary Geotechnical Report (PGR) is on file and available for review at the Department District 12 office.

2.2.3.1 Regulatory Setting

Topographic and geologic features are protected under the CEQA. This section addresses topographic and geologic features consistent with Appendix G of the CEQA guidelines. Geology, soils, and seismic concerns are discussed as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Specialists and personnel within the Department's Offices of Geotechnical Design are responsible for assessing the seismic hazard for Department projects. The current policy is to use the anticipated Maximum Credible Earthquake (MCE) for active faults in and near California. The MCE is defined as the largest earthquake that can be expected to occur on a fault over a particular period of time.

City of Anaheim General Plan

The City of Anaheim is located in a region that is considered seismically active and is subject to several types of geological hazards, such as seismic shaking, liquefaction, landslides, and earthquake-induced landslides. Impacts can be reduced by implementing appropriate land use planning, development engineering, and building construction practices. The City's General Plan has proposed the following applicable goals and policies to reduce the risk in the community from geological hazards:

Goal 1.1: Minimize the risk to public health and safety and disruptions to vital services, economic vitality, and social order resulting from seismic and geologic activities.

Policies: (1) Minimize the risk to life and property through the identification of potentially hazardous areas, adherence to proper construction design criteria, and provision of public information.

(2) Require geologic and geotechnical investigations in areas of potential seismic or geologic hazards as part of the environmental and/or development review process for all structures and enforce structural setbacks from faults that are identified through those investigations.

(3) Enforce the requirements of the California Seismic Hazards Mapping (CSHM) and Alquist-Priolo Earthquake Fault Zoning Acts when siting, evaluating, and constructing new projects within the City.

(4) Require that engineered slopes be designed to resist earthquake-induced failure.

(5) Require removal or rehabilitation of hazardous or substandard structures that may collapse in the event of an earthquake.

(6) Require that lifelines crossing a fault be designed to resist the occurrence of fault rupture.

(7) Require that new construction and significant alterations to structures located within potential landslide areas be evaluated for site stability, including the potential impact to other properties, during project design and review.

City of Yorba Linda General Plan

The City of Yorba Linda is located within a seismically active region. Specific faults of concern that may have the potential to cause landslides, liquefaction, and subsidence within the City limits include the Whittier-Elsinore Fault, El Modeno-Peralta Hills Fault, San Jacinto Fault, and Chino Hills Fault. The City's General Plan has proposed the following applicable goals and policies to reduce the risk in the community from geological hazards:

Safety Goal 1: Protect the community from hazards associated with geologic instability, seismic hazards.

Policy 1.1: Require review of soil and geologic conditions to determine stability and relate to development decisions, especially in regard to type of use, size of facility, and ease of evacuation of occupants.

Policy 1.2: Monitor known and potential geologic hazards in the City.

Policy 1.3: Provide standards and requirements for grading and construction to mitigate the potential for landslides and seismic hazards.

Policy 1.4: Adopt and maintain high standards for the seismic performance of structures through enforcement of the best available techniques for seismic design.

Policy 1.5: Promote the collection of relevant data on groundwater levels and soil types in regard to liquefaction susceptibility, landslide potential, and subsidence risks.

Policy 1.6: Prohibit the location of habitable facilities within an Alquist-Priolo Special Study Zone (APSSZ) or within 50 ft of either side of the centerline of an active or potentially active fault.

Policy 1.8: Assist the State Mining and Geology Board with the determination of Seismic Hazard Study Zones (SHSZ) within the City and actively implement the requirements.

Implementation Programs – Geologic Instability/Seismic Hazards

- Detailed site-specific studies for ground-shaking characteristics, liquefaction potential (in areas defined as being susceptible to liquefaction only), and fault rupture potential shall be required as background to the development approval process for sensitive facilities and designated risk areas.
- All construction excavation and trenches relative to human occupancy and public works infrastructure of 5 ft or deeper in mapped fault zones shall be inspected by the City for any evidence of faulting.
- A liquefaction report shall be required for proposed projects located in areas susceptible to liquefaction. Liquefaction reports will be submitted prior to issuance of construction permits.
- The highest and most current professional standards for seismic design shall be used in the design of facilities so that the seismic design of the facilities will not become substandard within a few years.
- A central repository shall be established by the City for the collection and compilation of geologic soils engineering information related to faults and fault zone studies, groundwater levels, soil characteristics, susceptibility to landslides and liquefaction, and other data as appropriate.

2.2.3.2 Affected Environment

Topography

Topography in the general vicinity generally slopes downward from south to north. However, surface elevation greatly increases immediately south of SR-91 between the Weir Canyon Road separation and the SR-91 and SR-241 separation, where surface elevations range from 500 to 700 ft amsl.

Topography in the project limits is generally constant from west to east along SR-91 and ranges from a minimum of 290 ft amsl at the western project limits to a maximum of 400 ft amsl in the area of the Weigh Station along SR-91. Areas east of the Weigh Station have an average surface elevation of approximately 300 ft amsl.

Regional Geology

The project site lies along the southern margin of the Santa Ana River Valley adjacent to the northern flank of the Santa Ana Mountains and south of the Chino/Puente Hills. The Santa Ana Mountains and the project site are part of the Peninsular Ranges Geomorphic Province. The Santa Ana Mountains contain Mesozoic and Cenozoic geologic units that overlay Mesozoic basement rocks forming the core of the mountains.

Subsurface Conditions

Tertiary and Quaternary sedimentary units are exposed as outcrops within the project area. Tertiary units include the Fernando Formation, Puente Formation, Topanga Formation, and Vaqueros and Sespe Formations, which generally range from Pliocene to Miocene/Oligocene in age. Tertiary units are generally composed of marine and some potentially nonmarine sandstone and siltstone beds. Landslide deposits are also present in the mountains and along the flanks above the stream valley. Quaternary Alluvium is present along the north and south sides of the SR-91 alignment. Younger Quaternary Alluvial terrace deposits are often composed of sand with gravel and pebbles and cobbles in clayey red sand and silt matrix. Alluvium is generally composed of interbedded sand, pebbly sand, gravel, silt, and clay.

Based on the review of the As-Built Logs of Test Borings (LOTBs) for bridges, generalized soil profiles are provided from the SR-55/SR-91 separation to the SR-91/SR-241 separation. These soil profiles are summarized within Table 2.2.3-1.

Soil Corrosivity

According to the United States Department of Agriculture (USDA) Soil Conservation Service, soil corrosion potential in the area of the project limits are considered generally high when exposed to uncoated steel, and low to moderate when exposed to concrete.[1]

[1] United States Department of Agriculture Soil Conservation Service, 1978, Soils in Orange and the Western Part of Riverside Counties, California.

Table 2.2.3-1 Soil Types Within the Project Area

Location	Soil Types
SR-55/SR-91 Junction	Upper alluvial soils are composed of interbedded loose to medium-dense (minor dense) sandy silt and silty fine sand. Underlying alluvial sediments are dense to very dense sand and gravel.
Lakeview Avenue Overcrossing	Upper alluvial soils composed of medium-dense to possibly loose sandy silt with scattered granules interbedded with silty fine sand and sandy silt. Underlying alluvial sediments are dense to very dense well-graded sand and pebble gravel.
SR-91/Imperial Highway separation	High artificial fill is present at one abutment that consists of medium-dense to dense sand, clay, and gravel. Remaining areas have upper alluvial soils that consist of stiff to minor hard and soft, sandy clayey silt and lean clay with sand. Underlying middle alluvial sediments consist of medium dense to loose/ stiff, silty to clayey sand and sandy silt. The underlying lowest alluvial unit consists of dense to very dense, sandy pebble gravel with scattered cobbles and gravelly sand with clay.
Weir Canyon Road Undercrossing	High artificial fill is present at the abutments and consists of loose to medium dense to dense, clayey sand with occasional gravel interlayered with silty sand with gravel and gravel with sand and silt. Remaining areas have upper alluvial soils consisting of medium dense to dense, gravelly sand with silt, sand with gravel interlayered with elastic silt sand; and silty sand with minor soft, silty clay with sand. The underlying alluvial unit consists of medium-dense to very dense, sand, gravelly sand with clay and cobbles, sandy gravel with cobbles, and clayey sand.
SR-91/SR-241 Junction	In the river valley area fill consists of loose to dense/firm to hard, silty sand, sandy silt, and silty clay with intermittent concentrations of cobbles and boulders. Upper alluvial soils are present and consist of interbedded loose to medium dense (minor very dense/stiff to very stiff) silty sand with intermittent scattered gravel, sandy silt, sand to gravelly sand, clayey silt, and silty clay. Sporadically distributed underlying lower alluvial sediments consist of dense to very dense (some medium-dense), sand, silty sand with sporadic gravel and cobbles, silt with sporadic gravel, sandy clay, and sandy gravel. The lower alluvial units sporadically present between topographic bedrock highs of the Topanga and Sespe/Vaqueros Formations composed of sandstones and siltstones.

Source: Preliminary Geotechnical Report, Department, December 2007.

Groundwater Conditions

According to the Preliminary Geotechnical Report, the historic shallowest groundwater level previously recorded near Weir Canyon Road is approximately 3 to

6 ft bgs to approximately 20 ft bgs near the western end of the project limits.[1] The groundwater levels may vary since the site is adjacent to percolation basins maintained by the OCWD for recharging the groundwater basin. The most recent measurement indicates that water is less than 15 ft bgs (OCWD 2002). These variations are caused by changes to groundwater pumping, irrigation, seasonal rainfall, climatic variations and use of the basins for recharge. Local variations in the groundwater level can also be affected by the varying bedrock topography below or adjacent to the SR-91 project area.

Regional Faulting and Seismicity

The SR-91 project alignment is located in a seismically active region of Southern California. There are two existing faults located in the vicinity of the proposed project area. These faults are identified as the El Modeno-Peralta Hills Fault and the Whittier-Elsinore Fault.

The El Modeno-Peralta Hills Fault is a reverse-type fault located approximately 0.93 mi south of the Lakeview Avenue Overcrossing. The El Modeno-Peralta Hills Fault is considered the nearest active seismic source, or controlling fault, for the western portion of the SR-91 project area. Based on CSHM, this fault is capable of generating an MCE of moment magnitude M_w6.5 and a median or design Peak Bedrock Acceleration (PBA) of 0.8g.[2]

The Whittier-Elsinore Fault is a strike-slip fault located approximately 1.3 mi northeast of the Weir Canyon Road Undercrossing. The Whittier-Elsinore Fault serves as the nearest seismic source, or controlling fault, for the eastern portion of the

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1 Sprotte, E.C., Fuller, D.R., and Greenwood, R.B., 1980, *Isobath Map of Near-Surface Water, Portion of Orange County, California*, in Sprotte, E.E., Fuller, D.R., Greenwood, R.B., Mumm, H.A., Real, C.R., and Sherburne, R.W. (editors), *Classification and Mapping of Quaternary Sedimentary Deposits for Purposes of Seismic Zonation, South Coastal Los Angeles Basin, Orange County, California*: California Dept. of Conservation, Division of Mines and Geology Open File Report 80-19LA, Plate No. 2, Map No.1, scale 1:48,000.

2 Sadigh, K., Chang, C.Y., Egan, J.A., Makdisi, F., Youngs, R.R., 1997, *Attenuation Relationships for Shallow Crustal Earthquakes Based on California Strong Motion Data*: Seismological Research Letters, Volume 68, No. 1, pp. 180-189.

SR-91 project area. Based on the CSHM, the Whittier-Elsinore Fault is capable of generating an MCE of moment magnitude M_w7.5 and a median or design PBA of 0.7g.[1]

Surface Fault Rupture

Surface fault rupture is defined as displacement that occurs at the surface along the trace of a fault. Potentially active faults that are in close proximity to the City of Anaheim include the El Modeno-Peralta Hills fault. However, the El Modeno-Peralta Hills fault has a low potential for ground rupture within the City. In addition, the California Department of Mines and Geology (CDMG) has determined that the El Modeno-Peralta Hills fault is not "sufficiently active" or "well defined" enough to be subject to the provisions of the Alquist-Priolo Earthquake Fault Zoning Act.

Since the project site is not located in an Alquist-Priolo Earthquake Fault Zone[2], no active faults cross the site or project toward the site, and the nearest known active faults are located at a distance of approximately 0.6 mi from the project site. Therefore, there is a very low likelihood of direct surface fault rupture at the project site.

Rockfall, Landslides, and Slope Instability

Landslides result from the downward movement of earth or rock materials that have been influenced by gravity. Landslides usually occur due to factors such as steep slope conditions, erosion, rainfall, groundwater, adverse geologic structure, and grading impacts. Landslide deposits usually consist of shallow surficial soil slumps, mudflows, and debris flows, which will result within the near-surface topsoils.

The State of California Seismic Hazard Zone map for the Orange and Black Star Quadrangles (April 15, 1998 and January 17, 2001, respectively) indicate that earthquake-induced landslides have a low potential to occur through the majority of the project limits, but there are limited areas adjacent to the southern side of SR-91 at

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1 Sadigh, K., Chang, C.Y., Egan, J.A., Makdisi, F., Youngs, R.R., 1997, *Attenuation Relationships for Shallow Crustal Earthquakes Based on California Strong Motion Data*: Seismological Research Letters, Volume 68, No. 1, pp. 180–189.

2 California Geological Survey Division of Mines and Geology, Earthquake Fault Zone Map 4E, May 1, 1999.

the eastern end of the project (see Figure 2.2.3-1). Earthquake-induced landslides within this area would generally consist of rock falls, landslides, and debris flows.

Liquefaction

Liquefaction occurs when granular materials that are saturated by water lose strength and transform from a solid to liquid state. Liquefaction often results from significant earthquake activity, and structures that are located on soils consisting of silt or sand may experience damage due to the instability of structural foundations and the moving earth.

The State of California Seismic Hazard Zone map for the Orange and Black Star Quadrangles (April 15, 1998 and January 17, 2001, respectively) indicates potential for liquefaction and associated secondary hazards along SR-91 and areas north of SR-91, within the project limits (see Figure 2.2.3-1). The Preliminary Geotechnical Report states that the potential for liquefaction within the project limits ranges from low to moderate/high.

Tsunami and Seiche Potential

The project site is approximately 15 mi northeast of the Orange County coastline. At an elevation ranging from 311 to 360 ft amsl, the potential for a tsunami is remote. According to the City of Anaheim's General Plan, a seiche is an earthquake-generated wave occurring in an enclosed body of water, such as a lake, reservoir, or harbor, and may result from earthquake-ground shaking. A seiche can result in waves and flooding to properties adjacent to the enclosed body of water. Potential for tsunami and seiche is remote as the proposed project site is 15 mi from the Orange County coast line and approximately 4 mi east of Prado Dam, the nearest enclosed body of water.

2.2.3.3 Environmental Consequences

Temporary Impacts

No Build Alternative

No improvements would be made under the No Build Alternative. Therefore, the No Build Alternative would result in no short-term/temporary impacts to geological, mineral, or soil resources.

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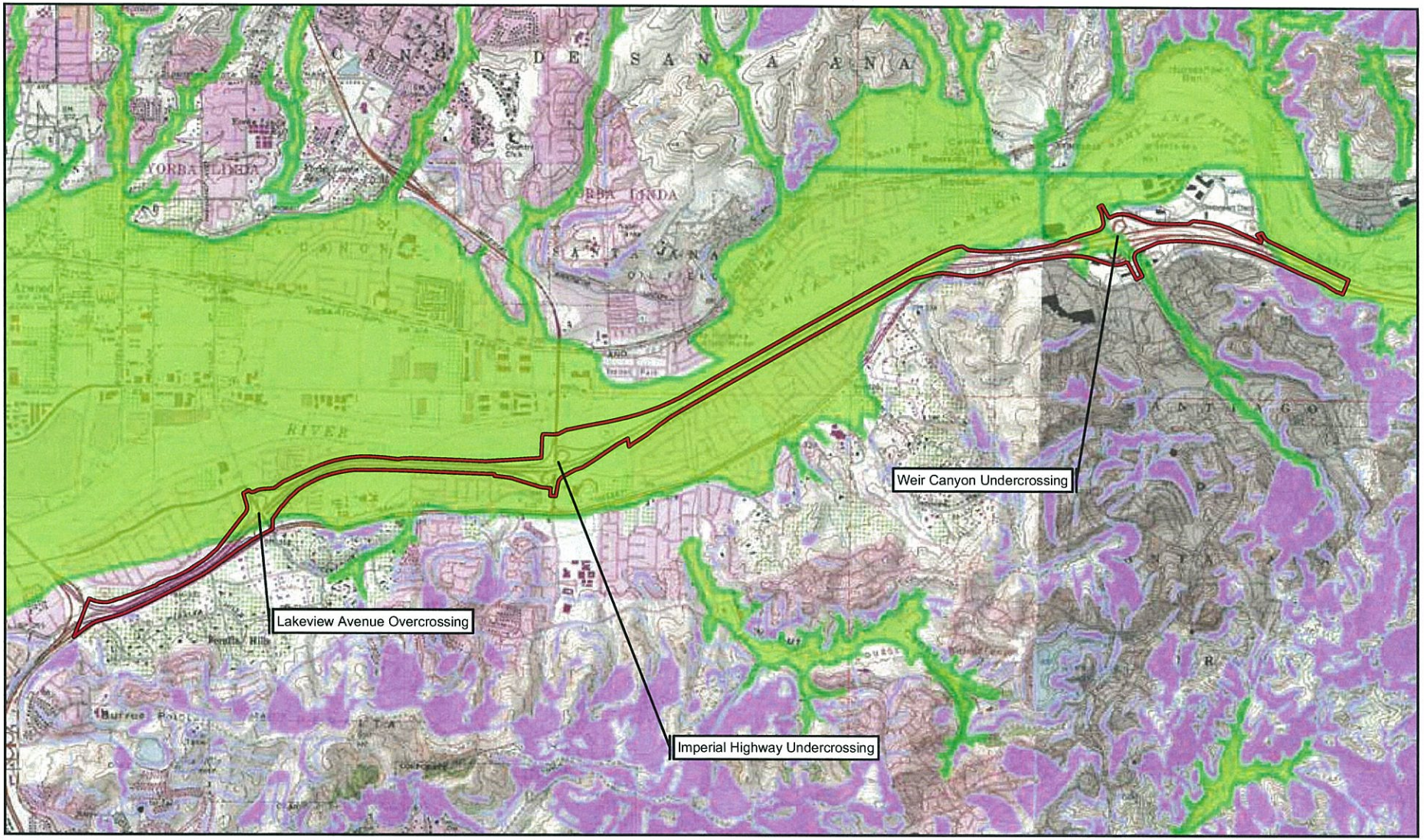

LSA

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FEET

LEGEND
- Project Area
- Earthquake-Induced Landslides
- Liquefaction

Areas where previous occurence of liquefaction, landslide movement, or local topographic, geologcial, geotechnical and subsurface water conditions indicate a potential permanent ground displacements such that mitigation as defined in Public Resource Section 2693(c) would be required.

FIGURE 2.2.3-1

SR-91 Widening Project
SR-55 to SR-241
Seismic and Geologic Hazards
12-ORA-91 PM 9.1/15.1
EA# 0G330

SOURCE: California Geological Survey, Seismic Hazard Mapping Program (2002).

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Build Alternative

Groundwater may be encountered within pile borings at proposed widenings of the SR-91/SR-90 separation and Weir Canyon Road Undercrossing. A temporary increase in erosion may occur during construction. As discussed in Section 2.2.2, Water Quality and Stormwater Runoff, with implementation of erosion control BMPs in the SWPPP, potential short-term/temporary water quality impacts are minimized.

Permanent Impacts

No Build Alternative

The No Build Alternative does not involve any construction activities and would not alter existing geologic or soil conditions; therefore, it would not result in any adverse impacts to geological, mineral, or soil resources.

Build Alternative

The proposed project is expected to have minimal impact on geologic and topographic conditions with incorporation of the final design recommendations of the Final Geotechnical Design Report (GDR). The primary geologic and geotechnical constraints affecting the design and construction of any of the Build Alternatives include:

- Seismic Hazards
- Liquefaction and slope instability
- Corrosion

Seismic Hazards

The Build Alternative would not increase exposure to geologic hazards such as tsunami or seiche due to the distance from an enclosed body of water or the coastline. The proposed project is not located within an Alquist-Priolo Earthquake Fault Zoning Act (APEFZA) area. No known fault crosses or extends toward the project site. The nearest known faults are located approximately 0.6 mi from the site. According to the City of Anaheim's General Plan, the nearest contributing fault is considered to have a low potential for surface rupture. Hence, potential for surface fault rupture hazard at the site due to primary movement along a known fault is considered low. However, the Department considers the possibility of seismic activity and includes standard design features to minimize and avoid potential adverse impacts from seismic events.

Liquefaction and Slope Instability

The project is located in an area that may be subject to liquefaction. During the final design phase, a GDR will be prepared providing detailed analyses for the various design features, including but not limited to retaining walls and a noise barrier. The GDR will also provide soil sampling test results and geotechnical analysis regarding liquefaction, lateral spreading susceptibility, and final slope stability analyses. Based on the results, the project design will include deepening the foundation and/or increasing the depth of piles or other suitable remedies. In addition, fill slopes will be stabilized by utilizing the 1 vertical (V):2 horizontal (H) slope, assuming no liquefaction and lateral spreading.

There is also a potential for landslide in limited areas adjacent to the southern side of SR-241 at the eastern end of the project.

Corrosion

Although the corrosion potential to concrete for soils located within the project limits have been classified by the USDA Soil Conservation Service as low to medium, the corrosion potential of soils within the project area for uncoated steel is classified as high. Corrosion potential will be verified by field sampling and laboratory testing and will be provided in the Final GDR.

2.2.3.4 *Avoidance, Minimization, and/or Mitigation Measures*

During final design, the Department shall prepare a Final GDR and Foundation Reports for the project. The Final GDR will be written after detailed site sampling and testing and will include design recommendations and hazard mitigation recommendations. The recommendations of the Final GDR shall be incorporated into the final design for the project.

The following measures would be incorporated into the Final GDR to minimize potential impacts to the project related to soils, seismic hazards, liquefaction and slope instability:

GS-1 Subgrade preparation will consist of the following:

- Removal of existing pavements, structures, vegetation, debris, and any unsuitable materials in conformance with Section 15 of the Department Standard Specifications.
- Excavate materials a minimum of 2 ft prior to placement of new fill materials.

- Proof-roll the exposed surface with loaded heavy equipment.
- Loose soils on the exposed surface will be overexcavated and recompacted. Any such loose soils that cannot be recompacted will be removed and disposed of off site.
- Scarify and compact the exposed surface to the specified density before placement of new fill.
- Achieve a minimum relative compaction of 95 percent for all subgrade soils to a minimum depth of 8 inches below the grading plane for the width between the outer edges of shoulders for both infill and inexcavation.
- Achieve a minimum relative compaction of 95 percent for all subgrade materials to a depth of eight in. below the finished grade the width of the traveled way plus a distance of 3 ft horizontally beyond the traveled way, whether in embankment or excavation.

Large-diameter vertical piles may be needed at bridge supports to resist lateral stresses if there is a potential for liquefaction.

GS-2 Install piezometers for updating groundwater measurements should be included in the exploratory drilling program, and investigating when and where groundwater recharge or flood releases are scheduled and how they affect the groundwater regime at the bridge sites should be pursued.

GS-3 Normal auger drilling techniques shall be required at the project site if substantial ground water is not encountered. In areas where groundwater is encountered within pile-boring areas, the wet method (such as slurry) will be used.

GS-4 Project design will address the corrosion resistant design for buried metal and nonmetal drainage and utilities. The Final GDR will determine the type of metal or type of concrete mix that will be resistant to corrosion.

2.2.4 Paleontology

2.2.4.1 Regulatory Setting

Paleontology is the study of life in past geologic time based on fossil plants and animals. Under California law, paleontological resources are protected by the CEQA; the California Code of Regulations (formally known as the California Administrative Code), Title 14, Division 3, Chapter 1, Sections 4307 and 4309; and PRC Section 5097.5.

2.2.4.2 Affected Environment

A *Paleontology Identification and Evaluation Report* for the proposed project was prepared in July 2008. This report includes a Paleontological Identification Report/Paleontological Evaluation Report (PIR/PER) prepared to meet the Department's current Paleontological Guidelines as outlined in Volume 1, Chapter 8, of the Standard Environmental Reference (SER). A summary of this report is provided below.

Recommendations from the CEQA Guidelines, and guidelines from the Department and the County of Orange, are consistent with recommendations of the Society of Vertebrate Paleontology (SVP) and indicate that impacts to nonrenewable paleontological resources must be considered during project design and construction within sensitive sediments.

The Area of Direct Impact (ADI) covers all areas to be disturbed by construction of the proposed project, including areas for staging and access, and temporary construction signage. To ensure that research was comprehensive, the paleontological resources "study area" was expanded to a 328 ft radius beyond the project ADI.

Prior to the field survey, research was conducted to locate fossil localities both within the study area and in an area much larger than the study area. Research focused on locating sediments and formations conducive to the preservation of paleontological resources, including review of available geological and paleontological literature concerning or related to the formations that are likely to be encountered during excavation for this project and requests for paleontological locality data from Southern California museums in the vicinity of the project.

The study area contains 11 types of sediments. Because of their young age, artificial fill, very young alluvial stream deposits, very young alluvial fan deposits, young

alluvium, young alluvial fan deposits, and young landslides are not sensitive for paleontological resources. However, the five remaining sediments (older alluvial fan deposits; the Lower Member of the Fernando Formation; the Sycamore Canyon Member of the Puente Formation; the Yorba Member of the Puente Formation; and the Topanga Formation) do have the potential to contain significant nonrenewable paleontological resources.

The older alluvial fan deposits have contained fossils that have been collected in similar deposits from excavations for roads, housing developments, retention basins, and quarries in the Los Angeles Basin and vicinity. Remains of animals, including elephant, horse, bison, camel, saber tooth cat, deer, and sloth are known from these localities. The potential exists to encounter similar fossils in all Pleistocene alluvium.

The Lower Member of the Fernando Formation has produced invertebrates and occasional vertebrates, mainly in the Western Coyote Hills. It also contains abundant microfossils and contains oil, mainly from the West Coyote Oil Field, approximately 10 mi to the northwest.

The Sycamore Canyon Member of the Puente Formation contains abundant foraminifera in the siltstone and limestone beds. In fact, the majority of the finds are of microfossils; however, Reynolds, et al., (1985) and Reynolds (1999) also found invertebrates, plants, and vertebrates, including sea mammal, bird, and fish. These strata have produced marine invertebrates, vertebrates, and terrestrial plant remains.

The Yorba Member of the Puente Formation, according to Eisentraut and Cooper (2002), locally includes abundant diatomite (sediment rich in microscopic diatom skeletons). Several invertebrate localities containing bivalves, gastropods and barnacles have been recorded in the Yorba Member in the Peralta Hills to the south of the project; however, they mapped it as the Fernando Formation, but the location is the same.

The Topanga Formation ranges in thickness and is erosion resistant and well-cemented. Within this formation, marine mollusks, including large pectnids (scallops) and oysters, are common.

2.2.4.3 Environmental Consequences

Temporary Impacts

No Build Alternative

Since the No Build Alternative does not involve any construction and there would be no excavation activities, there is no potential for encountering paleontological resources.

Build Alternative

There are no temporary impacts to paleontological resources. Any impacts to such resources during construction are considered permanent impacts and are discussed under the Permanent Impacts heading.

Permanent Impacts

No Build Alternative

Since the No Build Alternative does not involve construction and there would be no excavation activities, there is no potential for encountering paleontological resources, and there will be no permanent impacts.

Build Alternative

The results of the research and a field survey conducted for this project show that fossiliferous sediments deposited during the last 18 million years may be encountered during excavation in undisturbed soils. Sediments from the formations described in Section 2.2.4.2, dating from the Miocene to the Pleistocene Period within the study area, have the potential to contain significant nonrenewable paleontological resources. Thus, there is the potential to encounter resources during the project excavation phase within these sediments. Most of these sensitive sediments are located in the area from the Weigh Station extending to the eastern end of the project. Some sensitive sediments may also be encountered at the far western end of the project for a short distance just east of the SR-91/SR-55 separation, and excavations in other areas of the project will probably only encounter fill or recently deposited alluvial sediments.

The Topanga Formation may contain abundant fossils of bivalves, gastropods, barnacles, echinoderms, and marine and terrestrial plants. Marine mammals such as seals, sea lions, walruses, desmostylans, whales, dolphins, and sea cows are also well-documented from this Formation, as are sharks, rays, bony fish, rodents, and birds. During grading for SR-241, a rodent, several species of marine mammals, fish, sharks, rays, crabs, and mollusks were recovered from this Formation.

All vertebrate fossils are paleontologically significant, and there is a potential to excavate into several geologic units and formations that contain these paleontologically significant remains. As the proposed project involves excavating into these units and formations, there is no way to avoid excavation into potentially sensitive sediments.

2.2.4.4 Avoidance, Minimization, and/or Mitigation Measures

The Paleontological Mitigation Plan (PMP) must be completed prior to the beginning of construction. Since there is potential to find significant resources within the project limits, the PIR and PER recommended that a PMP needs to be prepared by a qualified Principal Paleontologist. A full list of sections of the PMP is included in the Department's SER Environmental Handbook, Volume 1, Chapter 8.

The following minimization measures would be implemented.

PAL-1 Attendance at the pregrade meeting by a qualified paleontologist or his/her representative. At this meeting the paleontologist will explain the likelihood for encountering paleontological resources, what resources may be discovered, and the methods that will be employed if anything is discovered (see below).

PAL-2 All employees, subcontractors, and Contractor's representatives on the project site involved in subsurface disturbing activities must receive a one-hour paleontological resource awareness training program provided by the Paleontological Salvage Team prior to performing on-site work.

PAL-3 During construction excavation, a qualified vertebrate paleontologic monitor shall initially be present on a full-time basis whenever excavation will occur within the sediments that have a high sensitivity rating and on a spot-check basis in sediments that have a low sensitivity rating. Monitoring may be reduced to a part-time basis if no resources are being discovered in sediments with a high sensitivity rating (monitoring reductions and when they occur will be determined by the qualified Principal Paleontologist). The monitor shall inspect fresh cuts and/or spoils piles to recover paleontological resources. The monitor shall be empowered to temporarily divert construction equipment away from the immediate area of the discovery. The monitor shall be equipped to rapidly stabilize and remove fossils to avoid prolonged

delays to construction schedules. If large mammal fossils or large concentrations of fossils are encountered, the Department shall consider using heavy equipment on site to assist in the removal and collection of large materials.

PAL-4 Localized concentrations of small (or micro-) vertebrates may be found in all native sediments. Therefore, it is recommended that these native sediments occasionally be spot-screened through one-eighth to one-twentieth-inch mesh screens to determine whether microfossils are present. If microfossils are encountered, additional sediment samples (up to 3 cubic yards or 6,000 pounds) shall be collected and processed through one-twentieth-inch mesh screens to recover additional fossils.

PAL-5 Any recovered specimens shall be prepared to the point of identification and permanent preservation. This includes the picking of any washed mass samples to recover small invertebrate and vertebrate fossils, the removal of surplus sediment from around larger specimens to reduce the volume of storage for the repository and the storage cost, and the addition of approved chemical hardeners/stabilizers to fragile specimens.

PAL-6 Specimens shall be identified to the lowest taxonomic level possible and curated into an institutional repository with retrievable storage. The repository institutions usually charge a one-time fee based on volume, so removing surplus sediment is important. The repository institution may be a local museum or university that has a curator who can retrieve the specimens on request. The Department requires that a draft curation agreement be in place with an approved curation facility prior to the initiation of any paleontological monitoring or mitigation activities.

PAL-7 A report of findings shall be prepared with an appended, itemized inventory of specimens. When submitted to the Lead Agency, the report and inventory would signify completion of the program to mitigate impacts to paleontological resources. The report should also be submitted to the museum repository along with the fossil specimens.

The above-listed measures are standard minimization measures for projects that have the potential to encounter sensitive sediments. During the development of the PMP, additional measures may be added; this list is only meant to provide a summary of what may be involved, as additional documentation is often needed on projects that involve the Department.

2.2.5 Hazardous Wastes and Materials

This section is based on the findings/results of the Hazardous Waste Initial Site Assessment (ISA) report dated January 2004. The ISA report is on file and available for review at the Department District 12-Environmental Engineering Branch.

2.2.5.1 Regulatory Setting

Hazardous materials and hazardous wastes are regulated by many state and federal laws. These include not only specific statutes governing hazardous waste, but also a variety of laws that are regulating air and water quality, human health, and land use.

The primary federal laws regulating hazardous waste/materials are the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). The purpose of CERCLA, often referred to as Superfund, is to clean up contaminated sites so that public health and welfare are not compromised. RCRA provides for "cradle to grave" regulation of hazardous wastes. Other federal laws include:

- Community Environmental Response Facilitation Act (CERFA) of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

In addition to the acts listed above, Executive Order 12088, Federal Compliance with Pollution Control, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

Hazardous waste in California is regulated primarily under the authority of the federal Resource Conservation and Recovery Act of 1976 and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

2.2.5.2 Affected Environment

The ISA was conducted to determine whether the proposed project area could be impacted by hazardous waste. The ISA included a search of government records to obtain a listing of properties or known incidents from state or federal databases for hazardous waste sites and site reconnaissance to identify any potential for existence of contamination within the project area.

The search of federal, State, and local regulatory agencies' published databases provided in the ISA identified 22 known hazardous releases within 0.5 mi of the project site, including nine leaking underground storage tanks (LUST), eight spills (ERNS), and five state sites (State) with reported hazardous releases. These sites are shown in Figure 2.2.5-1. Since preparation of the ISA, the project limits have been refined and shortened. As a result, there are 11 known hazardous releases within 0.5 mi of the project site, including two leaking underground storage tanks (LUST), eight spills (ERNS), and one state site (State) with reported hazardous releases.

The ISA identified the following recognized environmental conditions involving hazardous waste on or immediately adjacent to the project site:

- **Groundwater Impacts:** The record search indicates that groundwater in the vicinity of the project area has been impacted by past leaks/spills. As discussed in detail in the ISA, impacted groundwater may be encountered during construction of the proposed project as a result of past leaking underground storage tanks and other hazardous materials releases to soils and/or groundwater.
- **Aerially Deposited Lead (ADL):** ADL is a byproduct of internal combustion engines burning lead-containing fuels. Deposited ADL on sides of roads and highways from past use of leaded vehicle fuels is a concern in unpaved areas and adjacent to roadways by passing cars.

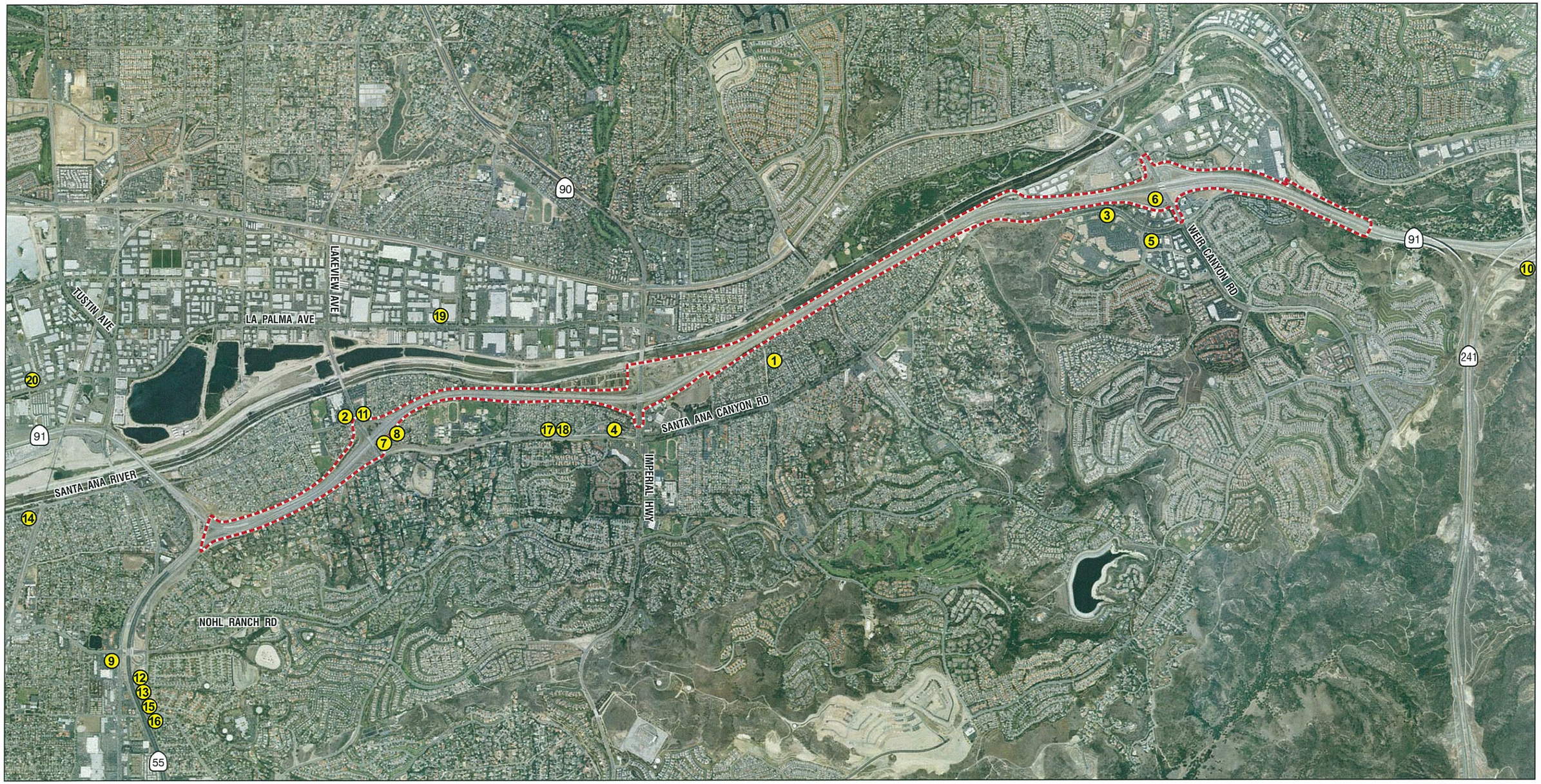

FIGURE 2.2.5-1

LEGEND Project Limits

1 Unknown	6 Metropolitan Water	11 Mobil #18-833	16 Texaco Service Station	21 Orange County Steel Salvage
2 Unknown	7 Mobil Oil	12 Exxon #3071	17 U.S. Postal Service	22 Former Industrial Asphalt Plant
3 Unknown	8 Unknown	13 Former Nohl Ranch Auto Spa	18 Canyon Cleaners	
4 Unknown	9 Tosco 76 Station	14 Anaheim Fire Station	19 AMP Inc.	
5 Unknown	10 Former Industrial Asphalt Plant	15 Texaco Service Station	20 General Electric Apparatus	

Sites: 9, 10, 12, 13, 14, 15, 16, 19, 20, 21 and 22 are located more than 0.5 from the project site
Sites: 21, and 22 are outside of the map boundaries

N

0 1000 2000 FEET
0 304.8 609.6 METERS

SOURCE: EAGLE AERIAL

I:\CDT0801A\G\Haz ReleasesR2.cdr (6/24/08)

SR-91 Widening Project
SR-55 to SR-241
Hazardous Releases
12-ORA-91 PM 9.1/15.1
EA# 1A8300

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- **Power Pole-mounted Transformers:** Transformers may contain polychlorinated biphenyls (PCBs).
- **Yellow Paint and Tape Used for Pavement Marking:** Yellow paint traffic stripes used prior to 1997 may exceed the hazardous waste criteria under Title 22, California Code of Regulations (CCR) and require the disposal in a Class I disposal facility authorized to accept this type of wastes.
- **Rails, Bearing Pads, Support Piers, Expansion Joint Material in Bridges, Asphalt, Concrete, and Other Building Materials May Contain Asbestos.** These materials should be surveyed, sampled, and assessed in accordance with 40 CFR 763 (Asbestos Hazard Emergency Response Act).

2.2.5.3 Environmental Consequences

Temporary Impacts

No Build Alternative

The No Build Alternative would not result in any construction and, therefore, would result in no adverse temporary impacts related to hazardous waste/materials.

Build Alternative

The record search conducted for the ISA indicates that groundwater in the vicinity of the project area has been impacted by past leaks/spills of hazardous substances. In addition, historical data indicate that groundwater in the project area may be encountered very close to the ground surface. According to the Preliminary Geotechnical Report Memorandum prepared by the Department (December 2007), dewatering will likely occur as a result of the proposed project. All dewatering, if required, will require compliance with the General Permit for de minimus water discharges or an individual permit from the Santa Ana RWQCB, consistent with NPDES requirements. The Santa Ana RWQCB will then review the NOI and decide which permit is applicable and whether sampling is required.

ADL from past use of leaded vehicle fuels is a concern in unpaved areas adjacent to roadways. ADL sampling was conducted for the Department's project along SR-91 between the Orange/Riverside County line and State Route 71 (SR-71) (EA 456610). Results from the ADL survey found hazardous concentrations of lead in soil, as defined in Title 22 CCR (Type "Y" soils), in the area near Green River Road. Therefore, there is a potential for ADL to be present in the roadways within the project limits.

Power pole-mounted electrical transformers were observed within the project limits during the visual site survey and may contain PCBs if manufactured between 1929 and 1977.[1] According to SCE, most of its transformers use non-PCB-containing oils, but the specific contents of these transformers are unknown and are considered a potential for environmental concern.

Yellow traffic stripe and pavement marking materials (paint, thermoplastic, permanent tape, and temporary tape) were observed within the project limits during the visual site survey conducted for the ISA. Yellow paint traffic stripes used prior to 1997 may exceed hazardous waste criteria under Title 22, CCR, and require disposal in a Class I disposal site.

Asbestos-containing materials (ACM) were banned by the EPA in 1989. Revisions to regulations issued by Occupational Safety and Health Administration (OSHA) (June 30, 1995) require that all thermal system insulation, surfacing materials, and resilient flooring materials installed prior to 1981 be considered presumed asbestos-containing materials (PAC) and treated accordingly. ACM have also been documented in the rail shim sheet packing, bearing pads, support piers, and expansion joint material of bridges as well as asphalt and concrete. As part of the proposed project, it is anticipated that asphalt and concrete that are part of the Lakeview Avenue Overcrossing will be disturbed.

Based on these conclusions and in addition to any coordination with regulatory agencies for approvals, permits, or site closures, additional investigation or monitoring efforts will be required. While there is the potential for unknown hazardous contamination to be revealed during project construction, the procedures for hazardous materials investigation for the project are presented below and are not anticipated to have a substantive temporary hazardous waste impact. Testing for hazardous materials, if any, will be completed during Project Plans, Specifications, and Estimates (PS&E).

Permanent Impacts

No Build Alternative

The No Build Alternative would not result in any construction and; therefore, would result in no permanent impacts related to hazardous materials and wastes.

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[1] EPA Web site www.epa.gov.

Build Alternative

Operation and maintenance of the facilities proposed as part of the Build Alternative would not introduce new sources of hazardous materials/waste but rather would continue existing exposure to transport of hazardous materials/waste associated with vehicles currently utilizing SR-91. No new permanent hazardous materials/waste impacts (direct or indirect) related to hazardous materials are anticipated beyond existing conditions.

2.2.5.4 Avoidance, Minimization, and/or Mitigation Measures

The following measures would minimize impacts related to hazardous materials and hazardous wastes encountered during construction of the proposed project.

HW-1 Soil sampling for ADL contamination shall be conducted in unpaved locations where excavation will occur along roadways if not previously sampled during prior investigations. All sampling activities shall occur during the design phase. If lead contamination is detected, the results/conclusions will be included in the Standard Special Provisions (SSP) and the Resident Engineer's file. The SSP will be incorporated in the PS&E. The analytical results of the soil sampling will determine the appropriate handling of the soil and disposal of surplus materials.

HW-2 Determine whether yellow thermoplastic and yellow paint traffic stripes exceed hazardous waste concentrations. If elevated concentrations of lead chromate or other hazardous materials are detected, the results/conclusions will be included in the SSP and the Resident Engineer's file. The SSP will be incorporated into the PS&E. The handling and disposal of the yellow thermoplastic and yellow paint traffic stripes will be based on its hazardous waste criteria.

HW-3 Any dewatering will comply with the General Permit for de minimus water discharges or an individual permit from the Santa Ana RWQCB, consistent with NPDES requirements. Once the Santa Ana RWQCB receives and reviews the NOI, the RWQCB will then decide which permit is applicable and whether sampling is required.

HW-4 During the design phase, presumed asbestos-containing (PAC) materials, including rails, bearing pads, support piers, expansion joint material of bridges, asphalt, and concrete will be surveyed and

accessed in compliance with 40 Code of Federal Regulations (CFR) 763.

HW-5 Any demolition or renovation of a structure requires notification and submittal of fees to the South Coast Air Quality Management District (SCAQMD) at least 10 days prior to proceeding with the demolition work (refer to SCAQMD Rule 1403). Notification would fall under Section 7-1.01F, Air Pollution Control, and Section 7-1.04, Permits and Licenses of the Standard Specifications. Contractors will adhere to the requirements of SCAQMD Rule 1403 during renovation/ demolition activities.

HW-6 Prior to construction, utility pole-mounted transformers, if any, within the project area will be inspected for leaks. Leaking transformers are considered a potential PCB hazard unless tested and should be handled accordingly. If any transformers are proposed to be disturbed or removed during construction activities, testing for potential PCB hazards shall be conducted during the design phase.

HW-7 Prior to the start of construction, a site-specific Health and Safety Plan that addresses contact, handling, and disposal of potentially contaminated soil and groundwater shall be prepared for the proposed project consistent with Department requirements. At a minimum, the Plan shall include:

- Identification of key personnel
- Summary of risk assessment for workers, the community, and the environment
- Air Monitoring Plan
- Emergency Response Plan

HW-8 The potential exists for unknown hazardous contamination to be revealed during project construction. During construction, the Department will ensure that for any unknown hazardous waste/ material encountered during construction, the procedures outlined in the Department Unknown Hazards are followed.

2.2.6 Air Quality

An *Air Quality Assessment Report* was prepared by the Department in June 2008 to identify the ambient air quality within the study area and to evaluate potential short-term and long-term air quality impacts resulting from implementation of the proposed SR-91 project.

2.2.6.1 Regulatory Setting

The CAA, as amended in 1990, is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act (CCAA) of 1988. These laws set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns. The criteria pollutants are: carbon monoxide (CO), NO_2, O_3, particulate matter (PM), lead, and sulfur dioxide (SO_2).

Under the 1990 CAA Amendments, the United States Department of Transportation cannot fund, authorize, or approve federal actions to support programs or projects that are not first found to conform to the State Implementation Plan for achieving the goals of the Clean Air Act requirements. Conformity with the Clean Air Act takes place on two levels—first, at the regional level, and second, at the project level. The proposed project must conform at both levels to be approved.

Regional level conformity in California is concerned with how well the region is meeting the standards set for CO, NO_2, O_3, and PM. California is in attainment for the other criteria pollutants. At the regional level, RTPs are developed that include all the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the RTP, an air quality model is run to determine whether the implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If the conformity analysis is successful, the regional planning organization (such as the SCAG for Orange County) and the appropriate federal agencies (such as the Federal Highway Administration) make the determination that the RTP is in conformity with the SIP for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the RTP, then the

proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Regulations and Standards

Pursuant to the federal CAA of 1970, the EPA established NAAQS for several major pollutants, termed "criteria" pollutants. The six criteria pollutants are: O_3, CO, PM, NO_2, SO_2, and lead. PM includes particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and particulate matter less than 10 microns in diameter (PM_{10}). These pollutants are referred to as criteria pollutants because numerical criteria have been established for each pollutant, which define acceptable levels of exposure. Table 2.2.6-1 identifies the federal and State standards for these pollutants.

The ARB administers the air quality policy in California. The California Ambient Air Quality Standards (CAAQS) were established in 1969 pursuant to the Mulford-Carrell Act. These standards, included with the NAAQS in Table 2.2.6-1, are generally more stringent and apply to more pollutants than the NAAQS. In addition to the criteria pollutants, CAAQS have been established for visibility-reducing particulates, hydrogen sulfide, and sulfates. The CCAA, which was approved in 1988, requires that each local air district prepare and maintain an air quality management plan (AQMP) to achieve compliance with CAAQS. These AQMPs also serve as the basis for preparation of the SIP for the State of California.

2.2.6.2 Affected Environment

Climate

The South Coast Air Basin (SCAB) climate is determined by its terrain and geographical location. The SCAB is a coastal plain with connecting broad valleys and low hills. The Pacific Ocean forms the southwestern boundary, and high mountains surround the rest of the SCAB. The region lies in the semipermanent high-pressure zone of the eastern Pacific. The resulting climate is mild and tempered by cool ocean breezes. This climatological pattern is rarely interrupted. However, periods of extremely hot weather, winter storms, and Santa Ana wind conditions do occur.

The annual average temperature varies little throughout the SCAB, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and

Table 2.2.6-1 National and California Air Quality Standards

Pollutant	Averaging Time	State Standard	Federal Standard	Health and Atmospheric Effects	Typical Sources
Ozone (O_3)[a]	1 hour 8 hours	0.09 ppm 0.070 ppm	N/A 0.075 ppm	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include a number of known toxic air contaminants.	Low-altitude ozone is almost entirely formed from reactive organic gases (ROG) and nitrogen oxides (NO_x) in the presence of sunlight and heat. Major sources include motor vehicles and other mobile sources, solvent evaporation, and industrial and other combustion processes. Biologically produced ROG may also contribute.
Carbon Monoxide (CO)	1 hour 8 hours	20 ppm 9.0 ppm[b]	35 ppm 9 ppm	Asphyxiant. CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scales.
Respirable Particulate Matter (PM_{10})[c]	24 hours Annual	50 µg/m^3 20 µg/m^3	150 µg/m^3 N/A	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many aerosol and solid compounds are part of PM_{10}.	Dust- and fume-producing industrial and agricultural operations; combustion smoke; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources (wind-blown dust, ocean spray).
Fine Particulate Matter ($PM_{2.5}$)[c]	24 hours Annual	N/A 12 µg/m^3	35 µg/m^3 15 µg/m^3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust PM – considered a toxic air contaminant – is in the $PM_{2.5}$ size range. Many aerosol and solid compounds are part of $PM_{2.5}$.	Combustion including motor vehicles, other mobile sources, and industrial activities, and residential and agricultural burning; also formed through atmospheric chemical (including photochemical) reactions involving other pollutants, including NO_x, sulfur oxides (SO_x), ammonia, and ROG.
Nitrogen Dioxide (NO_2)	1 hour Annual	0.18 ppm N/A	N/A 0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain.	Motor vehicles and other mobile sources; refineries; industrial operations.
Sulfur Dioxide (SO_2)	1 hour 3 hours 24 hours Annual	0.25 ppm N/A 0.04 ppm N/A	N/A N/A 0.14 ppm 0.030 ppm	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing.
Lead[d]	Monthly Quarterly	1.5 µg/m^3 N/A	N/A 1.5 µg/m^3	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also considered a toxic air contaminant.	Primary: lead-based industrial process like batter production and smelters. Past: lead paint, leaded gasoline. Moderate to high levels of aerially deposited lead from gasoline may still be present in soils along major roads, and can be a problem if large amounts of soil are disturbed.

Sources: California Air Resources Board Ambient Air Quality Standards chart, 05/17/2006 (http://www.arb.ca.gov/aqs/aaqs2.pdf)
Sonoma-Marin Area Rail Transit Draft Air Pollutant Standards and Effects table, November 2005, pages 3–52.
U.S. EPA and California Air Resources Board air toxics Web sites, 05/17/2006.

Notes: ppm = parts per million; µg/m^3 = micrograms per cubic meter

[a] Federal court decision of December 22, 2006, may affect applicability of Federal 1-hour O_3 standard. Prior to 6/2005, the 1-hour standard was 0.12 ppm. Case is still in litigation.

[b] Rounding to an integer value is not allowed for the State 8-hour CO standard. A violation occurs at or above 9.05 ppm.

[c] Annual PM_{10} NAAQS revoked October 2006; was 50 µg/m^3. 24-hour $PM_{2.5}$ NAAQS tightened October 2006; was 65 µg/m^3.

[d] The ARB has identified lead, vinyl chloride, and the particulate matter fraction of diesel exhaust as toxic air contaminants. Diesel exhaust particulate matter is part of PM_{10} and, in larger proportion, $PM_{2.5}$. Both the ARB and USEPA have identified various organic compounds that are precursors to O_3 and $PM_{2.5}$ as toxic air contaminants. There is no threshold level of exposure for adverse health effects determined for toxic air contaminants, and control measures may apply at ambient concentrations below any criteria levels specified for these pollutants or the general categories of pollutants to which they belong.

maximum temperatures than inland areas. The climatological station closest to the site monitoring temperature is the Anaheim Station.[1] The annual average maximum temperature recorded at this station is 77.2°F, and the annual average minimum is 55.3°F. December is typically the coldest month in this area of the SCAB.

The majority of annual rainfall in the SCAB occurs between November and April. Summer rainfall is minimal and generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern portion of the SCAB along the coastal side of the mountains. The climatological station closest to the site that monitors precipitation is the Anaheim Station. Average rainfall measured at this station varied from 3.80 inches (in) in February to 0.34 in or less between May and September, with an average annual total of 13.08 in. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

The SCAB experiences a persistent temperature inversion (increasing temperature with increasing altitude) as a result of the Pacific high. This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (upper) layer until the inversion layer finally breaks, allowing vertical mixing with the lower layer. This phenomenon is observed from midafternoon to late afternoon on hot summer days, when the smog appears to clear up suddenly. Winter inversions frequently break by midmorning.

Inversion layers are significant in determining O_3 formation. O_3 and its precursors will mix and react to produce higher concentrations under an inversion. The inversion will also simultaneously trap and hold directly emitted pollutants such as CO. PM_{10} is both directly emitted and created indirectly in the atmosphere as a result of chemical reactions. Concentration levels are directly related to inversion layers due to the limitation of mixing space.

Surface or radiation inversions are formed when the ground surface becomes cooler than the air above it during the night. The earth's surface goes through a radiative process on clear nights, when heat energy is transferred from the ground to a cooler night sky. As the earth's surface cools during the evening hours, the air directly above it also cools, while air higher up remains relatively warm. The inversion is destroyed

[1] Western Regional Climatic Center. 2008. http://www. wrcc.dri.edu (accessed May 13, 2008).

when heat from the sun warms the ground, which in turn heats the lower layers of air; this heating stimulates the ground-level air to float up through the inversion layer.

The combination of stagnant wind conditions and low inversions produces the greatest concentration of pollutants. On days of no inversion or high wind speeds, ambient air pollutant concentrations are the lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly onshore into Riverside and San Bernardino Counties. In the winter, the greatest pollution problems are CO and NO_x because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and NO_x to form photochemical smog.

Regional Air Quality

The proposed project is located within the SCAB. The SCAB is characterized as having a "Mediterranean" climate (a semi-arid environment with mild winters, warm summers, and moderate rainfall). The SCAB is a 6,600-square-mile area bound by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The SCAB includes all of Orange County and the nondesert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area of Riverside County. Its terrain and geographical location determine the distinctive climate of the SCAB, as the SCAB is a coastal plain with connecting broad valleys and low hills.

The general region lies in the semipermanent, 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 SCAB is a function of the area's natural physical characteristics (weather and topography), as well as man-made influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of pollutants throughout the SCAB.

Local Air Quality

The following air quality information briefly describes the various types of pollutants monitored within the vicinity of the project study area at the Anaheim Station. See Table 2.2.6-2 for local air quality levels.

Table 2.2.6-2 Local Air Quality Levels (Anaheim Monitoring Station)

Pollutant	Primary Standard		Year	Maximum Concentration[a]		Number of Days State/Federal Standard Exceeded
	California	Federal				
Carbon Monoxide (CO)	9.0 ppm for 8 hours	9 ppm for 8 hours	2005	3.3	ppm	0/0
			2006	2.9	ppm	0/0
			2007	2.9	ppm	0/0
Ozone (O_3) (1-Hour)	0.09 ppm for 1 hour	N/A	2005	0.095	ppm	1/NA
			2006	0.113	ppm	6/NA
			2007	0.127	ppm	2/NA
Ozone (O_3) (8-Hour)	0.07 ppm for 8 hour	0.08 ppm for 8 hour	2005	0.077	ppm	NA/0
			2006	0.088	ppm	NA/1
			2007	0.099	ppm	NA/1
Nitrogen Dioxide (NO_x)	0.25 ppm for 1 hour	N/A	2005	0.089	ppm	0/NA
			2006	0.114	ppm	0/NA
			2007	0.086	ppm	0/NA
Sulfur Dioxide[b] (SO_x)	0.25 ppm for 1 hour	0.14 ppm for 24 hours or 0.03 ppm annual arithmetic mean	2005	0.008	ppm	0/0
			2006	0.005	ppm	0/0
			2007	0.004	ppm	0/0
Particulate Matter (PM_{10})[c]	50 $\mu g/m^3$ for 24 hours	150 $\mu g/m^3$ for 24 hours	2005	65	ug/m^3	3/0
			2006	104	ug/m^3	7/0
			2007	489	ug/m^3	3/1
Fine Particulate Matter ($PM_{2.5}$)	65 $\mu g/m^3$ for 24 hours	65 $\mu g/m^3$ for 24 hours	2005	54.7	ug/m^3	NA/0[d]
			2006	56.2	ug/m^3	NA/0
			2007	79.4	ug/m^3	NA/1

Source: California Air Resources Board, ADAM Air Quality Data Statistics, www.arb.ca.gov/adam/welcome.htm

[a] Maximum concentration is measured over the same period as the California Standard.

[B] Measurement taken at the Costa Mesa Monitoring Station.

[c] PM_{10} and $PM_{2.5}$ exceedances are derived from the number of samples exceeded, not days.

[D] $PM_{2.5}$ exceedances are based on the old 65 $\mu g/m^3$ standard. In 2006, the EPA revised the standard to 35 $\mu g/m^3$.

ppm = Parts per million

$\mu g/m^3$ = Micrograms per cubic meter

PM_{10} = Particulate matter 10 microns in diameter or less

$PM_{2.5}$ = Particulate matter 2.5 microns in diameter or less

NA = Not applicable

Carbon Monoxide

CO is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. The entire SCAB is in attainment/ maintenance for the federal CO standard and attainment for the State CO attainment standard. State and federal standards were not exceeded between 2005 and 2007.

Ozone

O_3, a colorless gas with a sharp odor, is one of a number of substances called photochemical oxidants (highly reactive secondary pollutants). These oxidants are formed when hydrocarbons, NO_X and related compounds, interact in the presence of ultraviolet sunlight. The State standard for O_3 is 0.09 parts per million (ppm), averaged over one hour, and 0.07 ppm, averaged over eight hours. Both federal and State standards designate the SCAB as a nonattainment area. The federal standard for

O_3 was revoked as of June 5, 2005, and therefore no longer applies. The State one-hour O_3 standard was exceeded one to six times per year in the last three years. The federal eight-hour O_3 standard was exceeded zero to one times per year in the last three years.

Nitrogen Dioxide

NO_2 is a reddish-brown gas with an odor similar to bleach and is the byproduct of fuel combustion, which results from mobile and stationary sources. It has complex diurnal concentrations that are typically higher at night. The SCAB has relatively low NO_2 concentrations, as very few monitoring stations have exceeded the State standard of 0.25 ppm (one hour) since 1988. NO_2 is itself a regulated pollutant, but it also reacts with hydrocarbons in the presence of sunlight to form O_3 and other compounds that make up photochemical smog. NO_2 decreases lung function and may reduce resistance to infection. The entire SCAB has not exceeded either federal or State standards for NO_2 in the past five years with published monitoring data. It is designated as a maintenance area under the federal standards and an attainment area under the State standards.

Sulfur Dioxide

SO_2 is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine PM, and reduces visibility and the level of sunlight. The entire SCAB is in attainment with both federal and State SO_2 standards.

Coarse Particulate Matter

PM_{10} refers to suspended PM, which is smaller than 10 microns or ten one millionths of a meter. PM_{10} arises from sources such as road dust, diesel soot, combustion products, construction operations, and dust storms. PM_{10} scatters light and significantly reduces visibility. In addition, these particulates penetrate into lungs and can potentially damage the respiratory tract. On June 19, 2003, the ARB adopted amendments to the statewide 24-hour PM standards based upon requirements set forth in the Children's Environmental Health Protection Act (Senate Bill 25). The federal 24-hour standard of 150 $\mu g/m^3$ was retained. The State 24-hour PM_{10} standard was exceeded three to seven times per year in the last 3 years. The federal 24-hour PM_{10} standard was exceeded once in 2007 in last 3 years.

Tiny airborne particles or aerosols that are less than 10 microns are collectively referred to as total suspended particulate matter (TSP). These particles constantly enter the atmosphere from many naturally sources, including soil, bacteria, viruses, fungi, molds, yeast, and pollen. Manmade sources of TSP also include combustion products from space heating, industrial processes, power generation, and motor vehicle use.

Over 99 percent of inhaled PM is either exhaled or trapped in the upper areas of the respiratory system and expelled. The balance enters the windpipe and lungs, where some particulates cling to protective mucous and are removed. Other mechanisms, such as coughing, also filter out or remove particles. Collectively, these "pulmonary clearance" mechanisms protect the lungs from the majority of inhalable particles.

Irritating odors are often associated with particulates. Some examples of sources are gasoline and diesel engine exhausts, large-scale coffee roasting, paint spraying, street paving and trash burning.

The USEPA replaced TSP as the indicator for both the annual and 24-hour primary (i.e., health-related) standards in 1987. The indicator includes only those particles with an aerodynamic diameter smaller than or equal to a nominal 10 microns (PM_{10}).

Fine Particulate Matter

Due to recent increased concerns over health impacts related to fine particulate matter ($PM_{2.5}$), both State and federal $PM_{2.5}$ standards have been created. PM impacts primarily affect infants, children, the elderly, and those with preexisting cardiopulmonary disease. In 1997, the USEPA announced new $PM_{2.5}$ standards. Industry groups challenged the new standard in court, and the implementation of the standard was blocked. However, upon appeal by the EPA, the United States Supreme Court reversed this decision and upheld the EPA's new standards.

On January 5, 2005, the EPA published a Final Rule in the Federal Register that designates the Orange County portion of the SCAB as a nonattainment area for federal $PM_{2.5}$ standards. On June 20, 2002, ARB adopted amendments for statewide annual ambient PM air quality standards. These standards were revised/established due to increasing concerns by ARB that previous standards were inadequate, as almost everyone in California is exposed to levels at or above the current State standards during some parts of the year, and the statewide potential for significant health impacts associated with PM exposure was determined to be large and wide-ranging. The federal standard was exceeded in 2007.

Lead

Lead is found in old paints and coatings, plumbing, and a variety of other materials. Once in the bloodstream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The entire SCAB is in attainment for federal and State lead standards.

2.2.6.3 Environmental Consequences

Temporary Impacts

No Build Alternative

There would be no temporary impacts on air quality under the No Build Alternative since there would be no construction activities related to this alternative.

Build Alternative

Construction activities produce combustion emissions from various sources such as site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and motor vehicles transporting the construction crew. Exhaust emissions during the construction envisioned on site will vary daily as construction activity levels change. The use of construction equipment on site will result in localized exhaust emissions. The Department Standard Specifications for construction (Sections 10 and 18 for dust control and Section 39-3.06 for asphalt concrete plants) will be adhered to in order to reduce emissions as a result of construction equipment.

Additionally, the SCAQMD has established Rule 403 for reducing fugitive dust emissions (PM_{10}). The Best Available Control Measures (BACM), as specified in SCAQMD Rule 403, shall be incorporated into the project commitments. With the implementation of standard construction measures (providing 50 percent effectiveness) such as frequent watering (e.g., minimum twice per day), fugitive dust emissions from construction activities are not considered cumulative.

The project is located in Orange County, which is not among the counties listed as containing serpentine and ultramafic rock. Therefore, the impact associated with grading during construction from Naturally Occurring Asbestos (NOA) during project construction would be minimal to none.

Permanent Impacts

No Build Alternative

Traffic congestion would continue to increase, LOS operations of nearby roadways and intersections would deteriorate, and traffic congestion would worsen. Long-term mobile emissions generated by vehicle trips would be greater under the No Build Alternative due to reduced traffic flow in the project area. Additionally, the No Build Alternative would not facilitate the air quality attainment goals of the AQMP and RMP, as it does not implement planned roadway improvements that would reduce congestion and improve air quality emissions. Since the No Build Alternative would not improve air quality through a reduction in congestion, its air quality impacts are considered potentially significant.

Build Alternative

Long-term Vehicle Emissions Impact

The purpose of the Build Alternative is to alleviate existing and future traffic congestion along SR-91 during peak hours. The Build Alternative would not generate new vehicular traffic trips since it would not construct new homes or businesses. However, there is a possibility that some traffic currently utilizing other routes would be attracted to use the improved facility, thus resulting in slight increases in vehicle miles traveled (VMT). Therefore, the potential impact of the proposed roadway widening project on regional vehicle emissions was calculated using traffic data for the SCAG region and emission rates from the EMFAC2007 emission model.

Supplemental traffic data developed by OCTA (October 2008) estimated the impact that the proposed project would have on regional VMT and regional vehicle hours traveled (VHT). The VMT and VHT data listed in Table 2.2.6-3, along with the EMFAC2007 emission rates, were used to calculate the CO, ROG, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ emissions for the 2035 regional conditions. The results of the modeling are listed in Table 2.2.6-4. As shown in Table 2.2.6-4, the Build Alternative would decrease overall emissions within the region. Therefore, the proposed project would not contribute significantly to regional vehicle emissions.

Table 2.2.6-3 Change in Regional VMT and VHT

Year	Regional VMT	Regional VHT
2035 Increase	76,202	-8,146
2035 Regional No Build	86,776,708	2,686,497
2035 Regional Build	86,852,910	2,678,351

Source: OCTA, October 2008.
VMT = vehicle miles traveled
VHT = vehicle hours traveled

Table 2.2.6-4 Change in Regional Vehicle Emissions (lbs/day)

Pollutant	2035 Baseline Emissions	2035 With Project Emissions	Project Related Increase	SCAQMD Threshold (lbs/day)
CO	159,211	159,079	-132	550
ROG	7,786	7,769	-17	55
NO_X	37,190	37,174	-16	55
SO_X	868	864	-4	150
PM_{10}	8,153	8,146	-7	150
$PM_{2.5}$	5,092	5,082	-10	55

Source: LSA Associates, Inc., December 2008.
CO = carbon monoxide
lbs = pounds
NO_x = nitrogen oxide
O_3 = ozone
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
PM_{10} = particulate matter less than 10 microns, but greater than 2.5 microns in diameter
ROG = reactive organic gases
SCAQMD = Southern California Air Quality Management District
SO_x = sulfur oxide

As shown in Table 2.2.6-4, the Build Alternative would result in an increase in VMT and a decrease in VHT in 2035.

Regional Analysis

An AQMP describes air pollution control strategies to be taken by counties or regions classified as nonattainment areas. The purpose of the AQMP is to identify actions that will bring the area into compliance with the requirements of federal and State air quality standards. The AQMP uses the assumptions and projections by local planning agencies to determine control strategies for regional compliance status. Therefore, any projects causing a significant impact on air quality would impede the progress of the AQMP. As shown in Table 2.2.6-4, the Build Alternative decreases regional vehicle emissions and would not exceed the SCAQMD's significance thresholds. Therefore, the proposed project will not significantly contribute to or cause deterioration of existing air quality. In addition, the project is included in the 2008 RTP and in the 2006 RTIP (Project ID: ORA030601). The RTP Program EIR states that all emissions are anticipated

to be consistent with applicable AQMPs and SIPs and on-road emissions within regional conformity emission budgets. Therefore, the Build Alternative is consistent with the SIP and the AQMP. Mitigation measures are not required for the long-term operation of the project. Hence, the proposed project is considered to be consistent with the City of Anaheim and City of Yorba Linda General Plans and the SCAG forecast and is therefore consistent with the AQMP.

CO Hot-Spot Analysis

CO is the pollutant of major concern along roadways. For this reason, CO concentrations are used as an indicator of project impacts on local air quality and are usually indicative of the local air quality generated by a roadway network. The Department document, *Transportation Project-Level Carbon Monoxide Protocol* (1997) (Protocol) was used to determine if a CO hot-spot analysis would be required. The Protocol provides two conformity requirement decision flowcharts that are designed to assist the project sponsor(s) in evaluating the requirements that apply to specific projects. The area affected by the project is expected to experience a much lower CO concentration than the worst-case intersection in the 2003 AQMP. Results of the CO qualitative analysis in the *Air Quality Assessment Report* concluded that the project would not result in any CO hot spots and no further analysis is necessary.

2.2.6.4 Avoidance, Minimization, and/or Mitigation Measures

The following measure has been identified to minimize potential emissions of pollutants during construction activities:

AQ-1 In order to minimize construction-related emissions, all construction vehicles and construction equipment shall be required to be equipped with the State-mandated emission control devices pursuant to State emission regulations and standard construction practices. All disturbed areas, including storage piles that are not being actively used for construction purposes, shall be effectively stabilized for dust emissions using water, chemical stabilizers/suppressants, or vegetative ground cover, as appropriate. Short-term construction particulate matter less than 10 microns in diameter (PM_{10}) emissions shall be further reduced with the implementation of required dust suppression measures outlined within SCAQMD Rule 403. Note that Department Standard Specifications for construction [Section 10 and 18 (Dust Control) and

Section 39-3.06 (Asphalt Concrete (AC) Plants)] shall also be adhered to.

2.2.7 Noise

This section discusses the results of the Final Noise Study Report (August 2008). The analysis is based on the Final Noise Study Report for the proposed project (Department, August 2008). The Noise Study Report is on file and available for review at the Department District 12 office.

2.2.7.1 Regulatory Setting

CEQA provides the broad basis for analyzing and abating highway traffic noise effects. The intent of this law is to promote the general welfare and foster a healthy environment. CEQA requires a strictly baseline versus build analysis to assess whether a project will have a noise impact. If a project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. In accordance with CEQA, a noise impact occurs when future levels are substantially higher than existing levels. If it is determined that the project will have noise impacts, mitigation measures must be considered.

Table 2.2.7-1 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise levels discussed in this section with common activities.

2.2.7.2 Affected Environment

A field investigation was conducted to identify noise-sensitive land uses that could be subject to traffic and construction noise impacts from the proposed project. These noise-sensitive land uses identified in the project area include single-family residences, multi-family residences, several school athletic fields, several parks, and a campground/RV park. Commercial uses and several hotels were also identified in the project area.

Land uses in the project area were grouped into eight lettered analysis areas (A through H); their locations are described below. The area locations are also depicted in Figures 5-1a through 5-1g of the Final Noise Study Report (August 2008).

Table 2.2.7-1 Noise Level of Common Activities

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet Fly-over at 300m (1000 ft)		
	100	
Gas Lawn Mower at 1 m (3 ft)		
	90	
Diesel Truck at 15 m (50 ft), at 80 km (50 mph)		Food Blender at 1 m (3 ft)
	80	Garbage Disposal at 1 m (3 ft)
Noisy Urban Area, Daytime		
Gas Lawn Mower, 30 m (100 ft)	70	Vacuum Cleaner at 3 m (10 ft)
Commercial Area		Normal Speech at 1 m (3 ft)
Heavy Traffic at 90 m (300 ft)	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime		
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (Background)
	20	Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: Standard Environmental Reference (Department, May 2008)

- **Area A:** A residential neighborhood located on the north side of SR-91 west of Lakeview Avenue. The ground generally slopes down from the freeway in this area. Rear yards and side yards face the highway. A 14 ft noise barrier is located between SR-91 and this area.
- **Area B:** A residential area located on the south side of SR-91 west of Lakeview Avenue. This area is generally elevated relative to the freeway. Rear yards and side yards face the freeway. A 16 ft noise barrier is located along most of the frontage between SR-91 and this neighborhood. Additionally, a 10 ft, supplemental noise barrier is located just west of Lakeview Avenue and east of the EB SR-91 off-ramp.
- **Area C:** Residential land use located on the north side of SR-91 east of Lakeview Avenue. The ground generally slopes away slightly from the freeway in this area, which means the developed areas are lower than the highway. Rear yards and side yards face the freeway. Two noise barriers, one along the WB SR-91 off-ramp (10 ft) and one along the main freeway lanes (14 ft), are located between the freeway and the residences. In addition, a private school is located approximately 1 mi east of Lakeview Avenue, on the north side of the Santa Ana River.
- **Area D:** This area is located on the south side of SR-91 east of Lakeview Avenue and west of Imperial Highway. Land uses in this area include residential, school athletic fields and an adjacent park, and commercial uses. At the western end, the residences are slightly elevated with respect to the freeway; the remaining area is generally at-grade with the freeway. Rear yards face the freeway. A 14 ft noise barrier is located between the freeway and the noise-sensitive land uses.
- **Area E:** This area is located on the north side of SR-91 east of Imperial Highway and contains residential and recreational land uses. The area is generally several feet higher than SR-91. Although these land uses are located over 750 ft north of SR-91, noise measurements were conducted at several locations in this area in order to document existing traffic noise levels.
- **Area F:** A commercial area located on the south side of SR-91 east of Imperial Highway and west of Weir Canyon Road. A hotel and car dealership are located in this area and were analyzed. The majority of the SR-91 frontage in Area F consists of residential land use. Rear yards face the freeway. Along the western portion of the residential area, a noise barrier with a nominal height of 14 ft is located between the freeway and the residences at the residential property line. The remaining residences located to the east have residential walls with a nominal height of 6 ft atop a berm that varies in height from approximately 1 ft on the west side to approximately 6 ft on the east side. At the western end of Area F (near the

hotel and car dealership), the local ground is lower than the freeway; along the remaining portion of Area F, the local ground is approximately at-grade.

- **Area G:** A commercial area located on the north side of SR-91 east of Weir Canyon Road and west of the SR-91/SR-241 separation. A hotel and RV campground are sensitive outdoor uses located within this area and a 12 ft noise barrier is located between the freeway and the campground facility. At the western end of Area G (near the hotel), the local ground is lower than the freeway; along the remaining portion of Area G, the local ground is approximately at-grade.
- **Area H:** This area is located on the south side of SR-91 east of Weir Canyon Road and west of the SR-91/SR-241 separation and contains commercial, single- and multi-family residential and undeveloped land uses. At the western end of Area H, the local ground is elevated above the freeway; along the remaining portion of Area G, the local ground is approximately at-grade.

Although developed land uses are evaluated in this analysis, noise attenuation is only considered for areas of frequent human use that would benefit from a lowered noise level. Accordingly, the impact analysis focused on locations with defined outdoor activity areas, such as residential backyards and common use areas at multi-family residences. The two nearest hotels also were addressed.

2.2.7.3 Environmental Consequences

Short-term Measurements

Short-term measurement locations were selected to represent the various noise-sensitive land use types and areas within the project area. Short-term and long-term measurement locations were selected to serve as representative modeling locations.

Long-term 24-Hour Noise Measurements

Long-term monitoring was conducted at nine locations (LT-1 through LT-9, shown in Figures 7-1 through 7-11 in the Final Noise Study Report). The purpose of the long-term noise measurements was to determine the changes in noise levels within the project area throughout a typical day. Using the difference, or offset, in the simultaneous noise levels between the short-term and long-term data, the long-term measurements were used to estimate existing peak-noise hour levels at the representative short-term receivers. The long-term sound level data was collected over a period beginning Wednesday, February 27, 2008, and ending Thursday, March 13, 2008. Long-term monitoring locations are shown in Figures 5-1a through 5-1g provided in the Final Noise Study Report.

The long-term noise monitoring locations were as follows:

- LT-1 was located at the multi-family residences at 8604 East Whitewater Avenue on the south side of SR-91 east of Weir Canyon Road, approximately 280 ft from the SR-91 edge-of-pavement.
- LT-2 was located at the Canyon RV Park at 24001 East Santa Ana Canyon Road, on the north side of SR-91 adjacent to the SR-91/SR-241 interchange, approximately 110 ft from the SR-91 edge-of-pavement.
- LT-3 was located at 7645 Camino Tampico, in the rear yard of a single-family residence on the south side of SR-91 west of Weir Canyon Road, approximately 115 ft from the SR-91 edge-of-pavement.
- LT-4 was located at 253 Mary Lane, adjacent to a single-family residence at the Friendly Valley Mobile Home Park, north of SR-91 and East La Palma Avenue, approximately 750 ft from the SR-91 edge-of-pavement.
- LT-5 was located at 5901 Camino Manzano, in the rear yard of a single-family residence on the south side of SR-91 between Weir Canyon Road and Imperial Highway, approximately 240 ft from the SR-91 edge-of-pavement.
- LT-6 was located at 4864 East McKinnon Drive, in the rear yard of a single-family residence on the north side of SR-91 east of Lakeview Avenue, approximately 40 ft from the SR-91 edge-of-pavement.
- LT-7 was located at Peralta Canyon Park (115 North Pinney Drive), just west of a row of residences on the south side of SR-91 east of Lakeview Avenue, approximately 50 ft from the SR-91 edge-of-pavement.
- LT-8 was located at a residence at 131 Deerfield Street, on the north side of SR-91 west of Lakeview Avenue, approximately 300 ft from the SR-91 edge-of-pavement.
- LT-9 was located at a residence at 300 Lakedale Drive, on the north side of SR-91 west of Lakeview Avenue, approximately 120 ft from the SR-91 edge-of-pavement.

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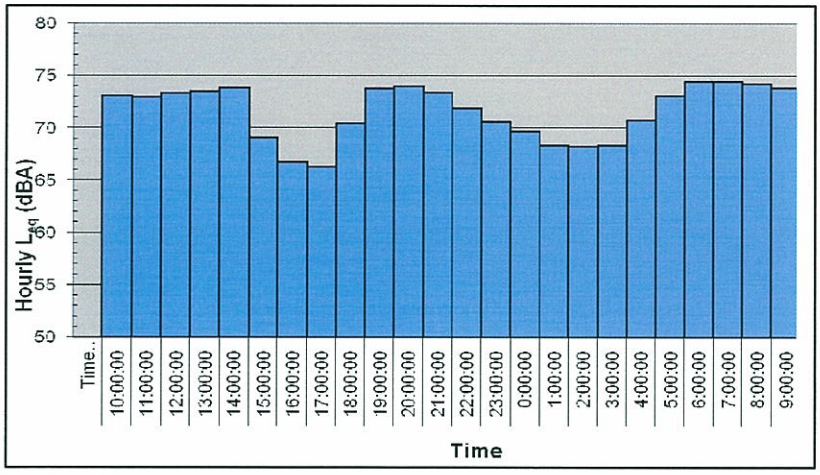
Table 2.2.7-2 and Figure 2.2.7-1 summarize the results of the LT-1 data. The loudest-hour noise level measured was 74 dBA $L_{eq}(h)$ during the 2:00 p.m., 7:00 p.m., 8:00 p.m., and 6:00 a.m. through 9:00 a.m. hours.

Table 2.2.7-2 Summary of Long-Term Monitoring at Location LT-1

Date	Time (Hour Beginning)	1-Hour L_{eq} (dBA)	Difference from Loudest Hour (dB)
27-Feb-08	10:00:00	73	-1
	11:00:00	73	-1
	12:00:00	73	-1
	13:00:00	73	-1
	14:00:00	**74**	**0**
	15:00:00	69	-5
	16:00:00	67	-7
	17:00:00	66	-8
	18:00:00	70	-4
	19:00:00	**74**	**0**
	20:00:00	**74**	**0**
	21:00:00	73	-1
	22:00:00	72	-2
	23:00:00	71	-3
28-Feb-08	0:00:00	70	-4
	1:00:00	68	-6
	2:00:00	68	-6
	3:00:00	68	-6
	4:00:00	71	-3
	5:00:00	73	-1
	6:00:00	**74**	**0**
	7:00:00	**74**	**0**
	8:00:00	**74**	**0**
	9:00:00	**74**	**0**
	max	**74**	
	min	66	

Source: Department, *Final Noise Study Report,* August 2008.
Note: Worst-case noise hours are bolded.

Figure 2.2.7-1 Long-Term Monitoring at Location LT-1, February 27–28, 2008



Source: Department, *Final Noise Study Report,* August 2008.

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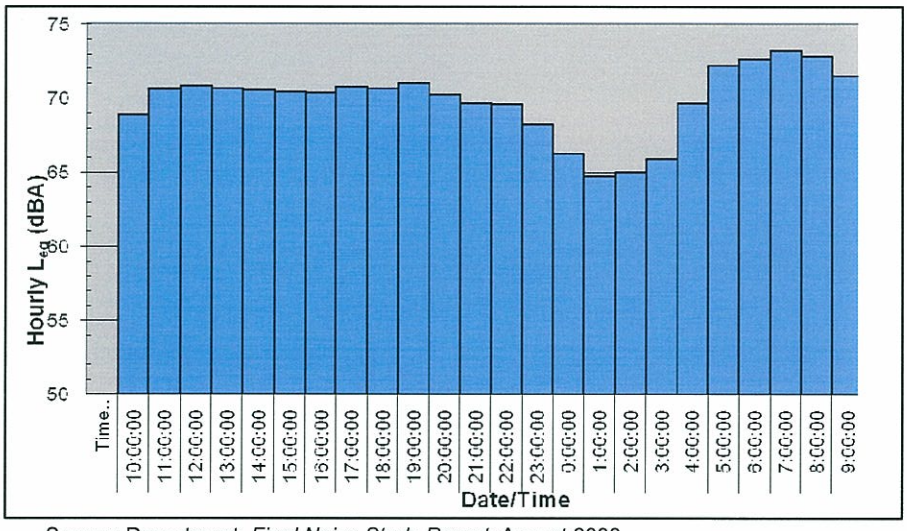
Table 2.2.7-3 and Figure 2.2.7-2 summarize the results of the LT-2 data. The loudest-hour noise level measured was 73 dBA $L_{eq}(h)$ during the 6:00 a.m. through 8:00 a.m. hours.

Table 2.2.7-3 Summary of Long-Term Monitoring at Location LT-2

Date	Time (Hour Beginning)	1-Hour L_{eq} (dBA)	Difference from Loudest Hour (dB)
12-Mar-08	10:00:00	69	-4
	11:00:00	71	-2
	12:00:00	71	-2
	13:00:00	71	-2
	14:00:00	71	-2
	15:00:00	70	-3
	16:00:00	70	-3
	17:00:00	71	-2
	18:00:00	71	-2
	19:00:00	71	-2
	20:00:00	70	-3
	21:00:00	70	-3
	22:00:00	70	-3
	23:00:00	68	-5
13-Mar-08	0:00:00	66	-7
	1:00:00	65	-8
	2:00:00	65	-8
	3:00:00	66	-7
	4:00:00	70	-3
	5:00:00	72	-1
	6:00:00	**73**	**0**
	7:00:00	**73**	**0**
	8:00:00	**73**	**0**
	9:00:00	72	-1
	max	**73**	
	min	65	

Source: Department, *Final Noise Study Report,* August 2008.
Note: Worst-case noise hours are bolded.

Figure 2.2.7-2 Long-Term Monitoring at Location LT-2, March 12–13, 2008



Source: Department, *Final Noise Study Report,* August 2008.

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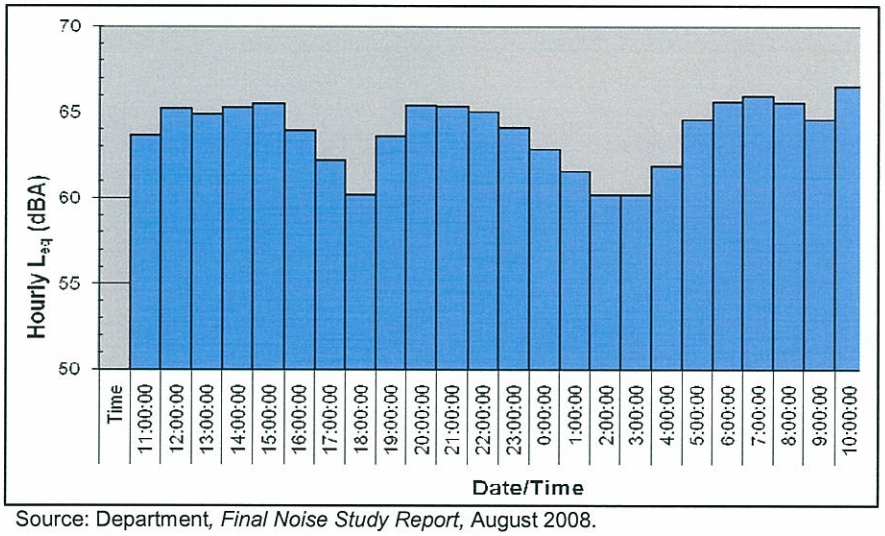
Table 2.2.7-4 and Figure 2.2.7-3 summarize the results of the LT-3 data. The loudest-hour noise level measured was 66 dBA $L_{eq}(h)$ during the 3:00 p.m. and 6:00 a.m. through 8:00 a.m. hours.

Table 2.2.7-4 Summary of Long-Term Monitoring at Location LT-3

Date	Time (Hour Beginning)	1-Hour L_{eq} (dBA)	Difference from Loudest Hour (dB)
28-Feb-08	11:00:00	64	-2
	12:00:00	65	-1
	13:00:00	65	-1
	14:00:00	65	-1
	15:00:00	**66**	**0**
	16:00:00	64	-2
	17:00:00	62	-4
	18:00:00	60	-6
	19:00:00	64	-2
	20:00:00	65	-1
	21:00:00	65	-1
	22:00:00	65	-1
	23:00:00	64	-2
29-Feb-08	0:00:00	63	-3
	1:00:00	62	-4
	2:00:00	60	-6
	3:00:00	60	-6
	4:00:00	62	-4
	5:00:00	65	-1
	6:00:00	**66**	**0**
	7:00:00	**66**	**0**
	8:00:00	**66**	**0**
	9:00:00	65	-1
	10:00:00	67	1
	max	**66**	
	min	60	

Source: Department, *Final Noise Study Report,* August 2008.
Note: Worst-case noise hours are bolded.

Figure 2.2.7-3 Long-Term Monitoring at Location LT-3, February 28–29, 2008



Source: Department, *Final Noise Study Report,* August 2008.

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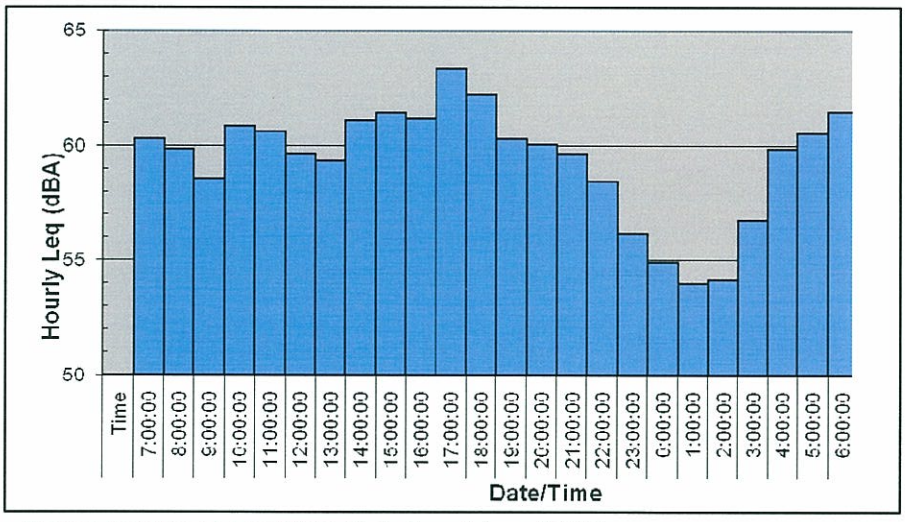
Table 2.2.7-5 and Figure 2.2.7-4 summarize the results of the LT-4 data. The loudest-hour noise level measured was 63 dBA $L_{eq}(h)$ during the 5:00 p.m. hour.

Table 2.2.7-5 Summary of Long-Term Monitoring at Location LT-4

Date	Time (Hour Beginning)	1-Hour L_{eq} (dBA)	Difference from Loudest Hour (dB)
4-Mar-08	7:00:00	60	-3
	8:00:00	60	-3
	9:00:00	59	-4
	10:00:00	61	-2
	11:00:00	61	-2
	12:00:00	60	-3
	13:00:00	59	-4
	14:00:00	61	-2
	15:00:00	61	-2
	16:00:00	61	-2
	17:00:00	**63**	**0**
	18:00:00	62	-1
	19:00:00	60	-3
5-Mar-08	20:00:00	60	-3
	21:00:00	60	-3
	22:00:00	58	-5
	23:00:00	56	-7
	0:00:00	55	-8
	1:00:00	54	-9
	2:00:00	54	-9
	3:00:00	57	-6
	4:00:00	60	-3
	5:00:00	61	-2
	6:00:00	61	-2
	max	**63**	
	min	54	

Source: Department, *Final Noise Study Report,* August 2008.
Note: Worst-case noise hours are bolded.

Figure 2.2.7-4 Long-Term Monitoring at Location LT-4, March 4–5, 2008



Source: Department, *Final Noise Study Report,* August 2008.

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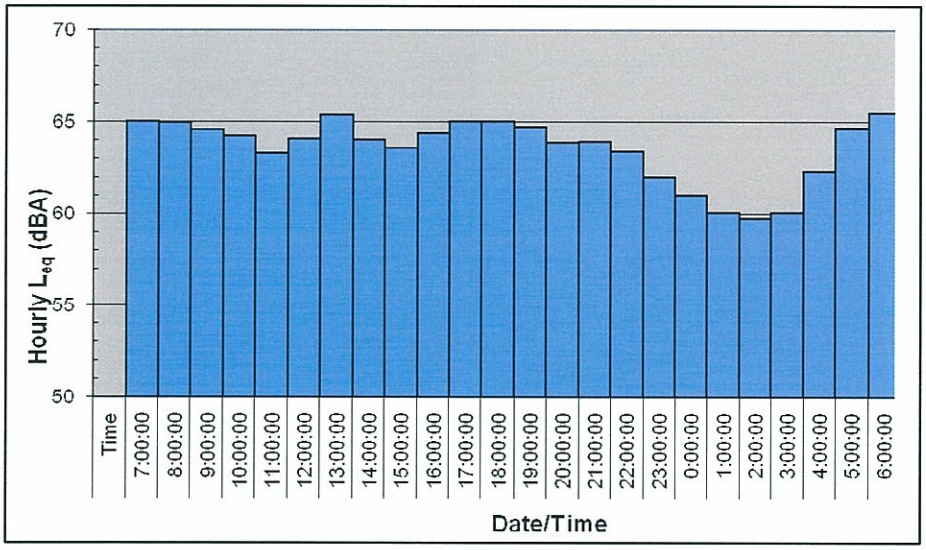
Table 2.2.7-6 and Figure 2.2.7-5 summarize the results of the LT-5 data. The loudest-hour noise level measured was 65 dBA $L_{eq}(h)$ during the 7:00 a.m. to 9:00 a.m., 1:00 p.m., 5:00 p.m. to 7:00 p.m., and 5:00 a.m. to 6:00 a.m. hours.

Table 2.2.7-6 Summary of Long-Term Monitoring at Location LT-5

Date	Time (Hour Beginning)	1-Hour L_{eq} (dBA)	Difference from Loudest Hour (dB)
4-Mar-08	**7:00:00**	**65**	**0**
	8:00:00	**65**	**0**
	9:00:00	**65**	**0**
	10:00:00	64	-1
	11:00:00	63	-2
	12:00:00	64	-1
	13:00:00	**65**	**0**
	14:00:00	64	-1
	15:00:00	64	-1
	16:00:00	64	-1
	17:00:00	**65**	**0**
	18:00:00	**65**	**0**
	19:00:00	**65**	**0**
	20:00:00	64	-1
	21:00:00	64	-1
	22:00:00	63	-2
	23:00:00	62	-3
5-Mar-08	0:00:00	61	-4
	1:00:00	60	-5
	2:00:00	60	-5
	3:00:00	60	-5
	4:00:00	62	-3
	5:00:00	**65**	**0**
	6:00:00	**65**	**0**
	max	**65**	
	min	60	

Source: Department, *Final Noise Study Report*, August 2008.
Note: Worst-case noise hours are bolded.

Figure 2.2.7-5 Long-Term Monitoring at Location LT-5, March 4–5, 2008



Source: Department, *Final Noise Study Report*, August 2008.

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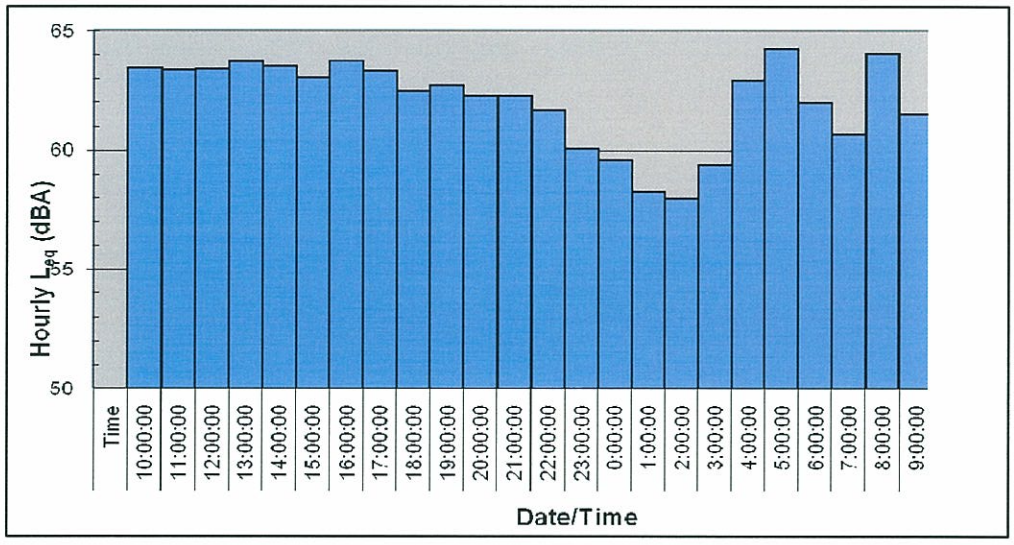
Table 2.2.7-7 and Figure 2.2.7-6 summarize the results of the LT-6 data. The loudest-hour noise level measured was 64 dBA $L_{eq}(h)$ during the 1:00 p.m., 2:00 p.m., 4:00 p.m., 5:00 a.m., and 8:00 a.m. hours.

Table 2.2.7-7 Summary of Long-Term Monitoring at Location LT-6

Date	Time (Hour Beginning)	1-Hour L_{eq} (dBA)	Difference from Loudest Hour (dB)
5-Mar-08	10:00:00	63	-1
	11:00:00	63	-1
	12:00:00	63	-1
	13:00:00	**64**	**0**
	14:00:00	**64**	**0**
	15:00:00	63	-1
	16:00:00	**64**	**0**
	17:00:00	63	-1
	18:00:00	63	-1
	19:00:00	63	-1
	20:00:00	62	-2
	21:00:00	62	-2
	22:00:00	62	-2
	23:00:00	60	-4
6-Mar-08	0:00:00	60	-4
	1:00:00	58	-6
	2:00:00	58	-6
	3:00:00	59	-5
	4:00:00	63	-1
	5:00:00	**64**	**0**
	6:00:00	62	-2
	7:00:00	61	-3
	8:00:00	**64**	**0**
	9:00:00	62	-2
	max	**64**	
	min	58	

Source: Department, *Final Noise Study Report,* August 2008.
Note: Worst-case noise hours are bolded.

Figure 2.2.7-6 Long-Term Monitoring at Location LT-6, March 5–6, 2008



Source: Department, *Final Noise Study Report,* August 2008.

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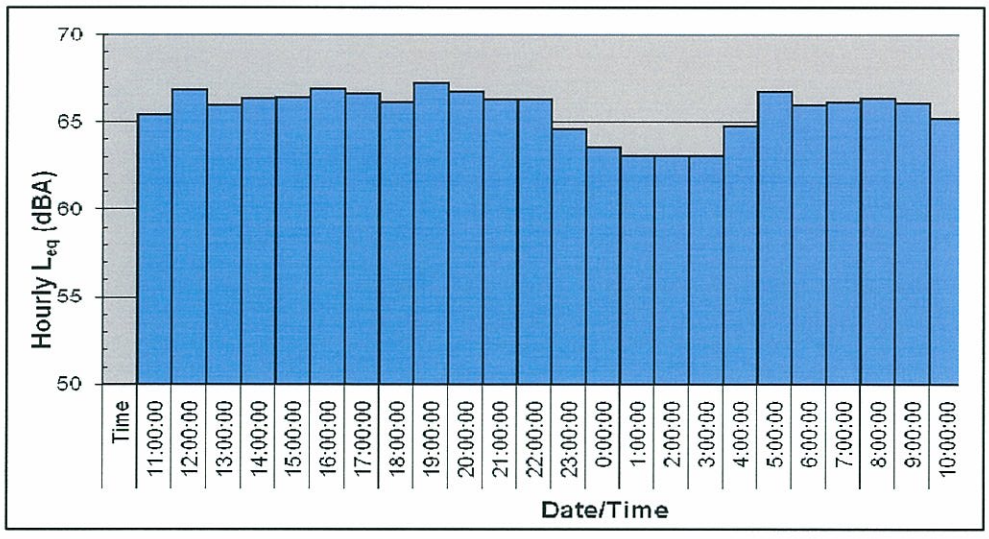
Table 2.2.7-8 and Figure 2.2.7-7 summarize the results of the LT-7 data. The loudest-hour noise level measured was 67 dBA $L_{eq}(h)$ during the 12:00 p.m., 4:00 p.m. to 5:00 p.m., 7:00 p.m., 8:00 p.m., and 5:00 a.m. hours.

Table 2.2.7-8 Summary of Long-Term Monitoring at Location LT-7

Date	Time (Hour Beginning)	1-Hour L_{eq} (dBA)	Difference from Loudest Hour (dB)
5-Mar-08	11:00:00	65	-2
	12:00:00	**67**	**0**
	13:00:00	66	-1
	14:00:00	66	-1
	15:00:00	66	-1
	16:00:00	**67**	**0**
	17:00:00	**67**	**0**
	18:00:00	66	-1
	19:00:00	**67**	**0**
	20:00:00	**67**	**0**
	21:00:00	66	-1
	22:00:00	66	-1
	23:00:00	65	-2
6-Mar-08	0:00:00	64	-3
	1:00:00	63	-4
	2:00:00	63	-4
	3:00:00	63	-4
	4:00:00	65	-2
	5:00:00	**67**	**0**
	6:00:00	66	-1
	7:00:00	66	-1
	8:00:00	66	-1
	9:00:00	66	-1
	10:00:00	65	-2
	max	**67**	
	min	63	

Source: Department, *Final Noise Study Report,* August 2008.
Note: Worst-case noise hours are bolded.

Figure 2.2.7-7 Long-Term Monitoring at Location LT-7, March 5–6, 2008



Source: Department, *Final Noise Study Report,* August 2008.

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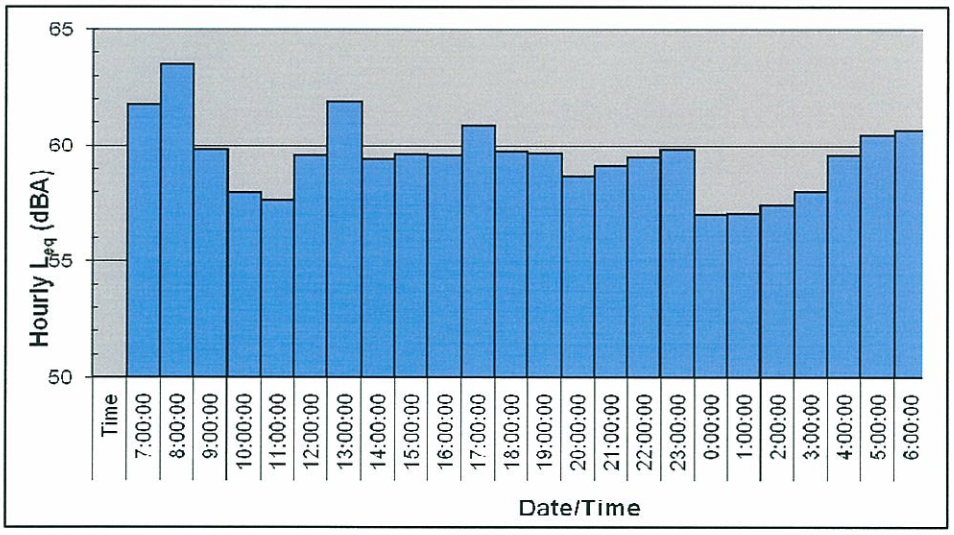
Table 2.2.7-9 and Figure 2.2.7-8 summarize the results of the LT-8 data. The loudest-hour noise level measured was 64 dBA $L_{eq}(h)$ during the 8:00 a.m. hour.

Table 2.2.7-9 Summary of Long-Term Monitoring at Location LT-8

Date	Time (Hour Beginning)	1-Hour L_{eq} (dBA)	Difference from Loudest Hour (dB)
11-Mar-08	7:00:00	62	-2
	8:00:00	**64**	**0**
	9:00:00	60	-4
	10:00:00	58	-6
	11:00:00	58	-6
	12:00:00	60	-4
	13:00:00	62	-2
	14:00:00	59	-5
	15:00:00	60	-4
	16:00:00	60	-4
	17:00:00	61	-3
	18:00:00	60	-4
	19:00:00	60	-4
	20:00:00	59	-5
	21:00:00	59	-5
	22:00:00	59	-5
	23:00:00	60	-4
12-Mar-08	0:00:00	57	-7
	1:00:00	57	-7
	2:00:00	57	-7
	3:00:00	58	-6
	4:00:00	60	-4
	5:00:00	60	-4
	6:00:00	61	-3
	max	**64**	
	min	57	

Source: Department, *Final Noise Study Report*, August 2008.
Note: Worst-case noise hours are bolded.

Figure 2.2.7-8 Long-Term Monitoring at Location LT-8, March 11–12, 2008



Source: Department, *Final Noise Study Report*, August 2008.

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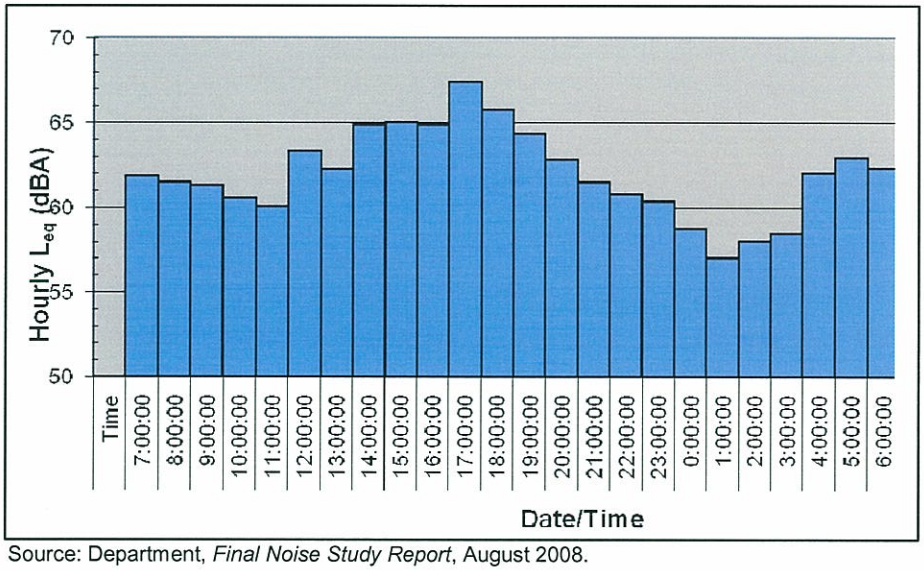
Table 2.2.7-10 and Figure 2.2.7-9 summarize the results of the LT-9 data. The loudest-hour noise level measured was 67 dBA $L_{eq}(h)$ during the 5:00 p.m. hour.

Table 2.2.7-10 Summary of Long-Term Monitoring at Location LT-9

Date	Time (Hour Beginning)	1-Hour L_{eq} (dBA)	Difference from Loudest Hour (dB)
11-Mar-08	7:00:00	62	-5
	8:00:00	62	-5
	9:00:00	61	-6
	10:00:00	61	-6
	11:00:00	60	-7
	12:00:00	63	-4
	13:00:00	62	-5
	14:00:00	65	-2
	15:00:00	65	-2
	16:00:00	65	-2
	17:00:00	**67**	**0**
	18:00:00	66	-1
	19:00:00	64	-3
	20:00:00	63	-4
	21:00:00	62	-5
	22:00:00	61	-6
	23:00:00	60	-7
12-Mar-08	0:00:00	59	-8
	1:00:00	57	-10
	2:00:00	58	-9
	3:00:00	58	-9
	4:00:00	62	-5
	5:00:00	63	-4
	6:00:00	62	-5
	max	**67**	
	min	60	

Source: Department, *Final Noise Study Report*, August 2008.
Note: Worst-case noise hours are bolded.

Figure 2.2.7-9 Long-Term Monitoring at Location LT-9, March 11–12, 2008



Source: Department, *Final Noise Study Report*, August 2008.

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Existing Modeled Noise Levels

Traffic noise levels were predicted using the FHWA Traffic Noise Model Version 2.5 (TNM 2.5). Noise measurements were collected at the short- and long-term monitoring locations and used to model existing and future noise levels at all receptor locations. Modeled existing noise levels are shown in Table 2.2.7-11. Refer to Figures 5-1a through 5-1g of the Final Noise Study Report for the monitoring locations and modeling points.

Table 2.2.7-11 Existing, 2035 Noise Levels (No Build and Build Alternative)

Receiver I.D.	Area	Land Use	Existing and 2035 Without Project Noise Level $L_{eq}(h)$, dBA	2035 With Project Noise Level $L_{eq}(h)$, dBA	Change in Noise Level
ST-26	Area A: WB side of SR-91 west of Lakeview Avenue	Residential	58	58	0
M-54			59	59	0
M-56			65	65	0
M-55			67	66	-1
M-53			66	66	0
M-52			64	64	0
M-50			64	64	0
LT-8			62	62	0
M-51			58	58	0
M-48			64	64	0
M-47			60	60	0
LT-9			62	63	1
M-46			66	66	0
M-67			63	63	0
M-68			60	61	1
M-69			59	60	1
M-70			60	61	1
M-71			59	60	1
M-72			59	59	0
ST-27			63	63	0
M-65			64	65	1
M-66			62	63	1
ST-29	Area B: EB side of SR-91 west of Lakeview Avenue	Residential	62	61	-1
ST-28			61	61	0
M-49			62	62	0
M-42	Area C: WB side of SR-91 east of Lakeview Avenue	Residential	57	57	0
M-41			61	61	0
ST-22			60	60	0
LT-6			66	66	0
ST-24			58	58	0
M-35			58	58	0
M-40			58	59	1
M-39			59	59	0
M-38			60	60	0
ST-23			59	59	0
M-36			59	59	0

Table 2.2.7-11 Existing, 2035 Noise Levels (No Build and Build Alternative)

Receiver I.D.	Area	Land Use	Existing and 2035 Without Project Noise Level $L_{eq}(h)$, dBA	2035 With Project Noise Level $L_{eq}(h)$, dBA	Change in Noise Level
M-34			61	61	1
M-61			65	65	0
ST-25		School Rec	55	55	0
M-62	Area D: EB side of SR-91 from Lakeview Ave to Imp. Hwy	Residential	63	63	0
M-63			68	69	1
M-64			62	62	0
M-45			65	66	1
ST-20			66	67	1
ST-19			60	60	0
M-44			64	64	0
M-43			60	60	0
ST-21			65	66	1
M-37			61	62	1
ST-18		School Rec	67	67	0
M-33		Rec	67	68	1
LT-7		Residential	67	68	1
M-32			70	71	1
M-31			66	66	0
M-30			68	69	1
M-29			64	65	1
M-28			63	64	1
M-27			67	68	1
ST-17			63	64	1
ST-16			60	60	0
M-59			62	62	0
M-60			62	63	1
M-26			60	61	1
LT-4	Area E: WB side of SR-91 Imp. Hwy - Weir Cyn Rd.	Residential	61	63	2
M-16			55	58	3
ST-5		Rec	60	61	1
ST-7	Area F: EB side of SR-91 from Imp. Hwy to Weir Cyn Rd. Area F: EB side of SR-91 from Imp. Hwy to Weir Cyn Rd.	Hotel	73	74	1
ST-8		Comm'l	68	70	2
M-24		Residential	61	62	1
ST-9			60	61	1
M-25			58	59	1
ST-10			64	65	1
M-23			60	61	1
LT-5			65	66	1
M-22			61	63	2
M-21			67	68	1
ST-12			68	70	2
M-20			73	74	1
M-19			68	70	2
M-18			70	72	2
ST-11			67	68	1
M-17			68	70	2
M-15			70	72	2
ST-14			69	72	3

Table 2.2.7-11 Existing, 2035 Noise Levels (No Build and Build Alternative)

Receiver I.D.	Area	Land Use	Existing and 2035 Without Project Noise Level $L_{eq}(h)$, dBA	2035 With Project Noise Level $L_{eq}(h)$, dBA	Change in Noise Level
ST-15			58	59	1
M-14			68	70	2
M-13			65	67	2
LT-3			66	67	1
ST-6			65	68	3
M-12			67	71	4
ST-3	Area G: WB side of SR-91 from Weir Cyn Rd to SR-24	Hotel	69	69	0
LT-2		Rec	70	70	0
M-2			66	66	0
ST-1			68	68	0
M-1			69	69	0
M-11	Area H: EB side of SR-91 from Weir Cyn Rd to SR-241	Residential	62	62	0
M-10			61	61	0
M-9			59	59	0
M-8			65	65	0
ST-4			64	64	0
M-58			74	74	0
M-7			74	74	0
M-6			68	68	0
M-5			75	75	0
M-4			62	62	0
LT-1			75	75	0
M-3			63	63	0
M-57			73	73	0
ST-2			74	74	0

Source: Final Noise Report, (Department, August 2008)
dBA = A-weighted sound level
Leq(h) = equivalent sound level for the loudest-hour noise level

The existing noise levels for each area are discussed in more detail below.

- **Area A:** As shown in Table 2.2.7-11, existing peak-noise-hour traffic noise levels within Area A range from 58 to 67 dBA $L_{eq}(h)$.
- **Area B:** Existing peak-noise-hour traffic noise levels within Area B range from 61 to 62 dBA $L_{eq}(h)$.
- **Area C:** Existing peak-noise-hour traffic noise levels within Area C vary from 55 to 66 dBA $L_{eq}(h)$.
- **Area D:** Existing peak-noise-hour traffic noise levels within Area D vary from 60 to 70 dBA $L_{eq}(h)$.
- **Area E:** Existing peak-noise-hour traffic noise levels within Area E vary from 55 to 61 dBA $L_{eq}(h)$.

- **Area F:** Existing peak-noise-hour traffic noise levels within Area F vary from 58 to 73 dBA $L_{eq}(h)$.
- **Area G:** Existing peak-noise-hour traffic noise levels within Area G vary from 66 to 70 dBA $L_{eq}(h)$.
- **Area H:** Existing peak-noise-hour traffic noise levels within Area H vary from 59 to 75 dBA $L_{eq}(h)$.

Temporary Impacts

No Build Alternative

The No Build Alternative would not result in construction in the project area and, therefore, would result in no short-term noise impacts during construction.

Build Alternative

Construction Noise Impacts

Two types of short-term noise impacts would occur during construction of the project. The first type would be from construction crew commutes and the transport of construction equipment and materials to the project site, which would incrementally raise noise levels on access roads leading to the site. The pieces of heavy equipment for grading and construction activities will remain on site for the duration of the construction phase, will be present during construction work hours, and will be removed during nonwork hours. A high single-event noise exposure potential at a maximum level of 87 dBA L_{max} from trucks passing at 50 ft will exist. However, the projected 2035 construction traffic will be minimal when compared to existing traffic volumes on SR-91, and its associated long-term noise level change will not be perceptible.

The second type of short-term noise impact is related to noise generated during excavation, grading, and roadway construction. Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated and, therefore, the noise levels along the project alignment as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table 2.2.7-12 lists typical construction equipment noise levels (L_{max}) recommended for noise impact assessments, based on a distance of 50 ft between the equipment and a noise receptor.

Table 2.2.7-12 Typical Construction Equipment Noise Levels

Type of Equipment	Range of Maximum Sound Levels Measured (dBA at 50 ft)	Suggested Maximum Sound Levels for Analysis (dBA at 50 ft)
Pile Drivers, 12,000 to 18,000 ft-lb/blow	81–96	93
Rock Drills	83–99	96
Jackhammers	75–85	82
Pneumatic Tools	78–88	85
Pumps	74–84	80
Dozers	77–90	85
Scrapers	83–91	87
Haul Trucks	83–94	88
Cranes	79–86	82
Portable Generators	71–87	80
Rollers	75–82	80
Tractors	77–82	80
Front-End Loaders	77–90	86
Hydraulic Backhoe	81–90	86
Hydraulic Excavators	81–90	86
Graders	79–89	86
Air Compressors	76–89	86
Trucks	81–87	86

Source: Noise Control for Buildings and Manufacturing Plants, Bolt, Beranek & Newman, 1987.

Typical noise levels at 50 ft from an active construction area range up to 91 dBA L_{max} during the noisiest construction phases. The site preparation phase, which includes grading and paving, tends to generate the highest noise levels because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery such as backfillers, bulldozers, and front loaders. Earthmoving and compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve one or two minutes of full-power operation followed by three or four minutes at lower power settings.

Construction of the Build Alternative is expected to require the use of earthmovers, bulldozers, water trucks, and pickup trucks. Noise associated with the use of construction equipment is estimated between 79 and 89 dBA L_{max} at a distance of 50 ft from the active construction area for the grading phase. As seen in Table 2.2.7-12, the maximum noise level generated by each scraper is assumed to be approximately 87 dBA L_{max} at 50 ft from the scraper in operation. Each bulldozer would also generate approximately 85 dBA L_{max} at 50 ft. The maximum noise level generated by water trucks and pickup trucks is approximately 86 dBA

L_{max} at 50 ft from these vehicles. Each doubling of the sound source with equal strength increases the noise level by 3 dBA. Each piece of construction equipment operates as an individual point source.

The worst-case composite noise level at the nearest noise-sensitive receptor during this phase of construction would be 91 dBA L_{max} (at a distance of 50 ft from an active construction area).

The closest sensitive receptor locations are located 50 ft from the project construction boundary. Therefore, these receptor locations may be subject to short-term noise reaching 91 dBA L_{max} generated by construction activities along the project alignment. To minimize the construction noise impact for sensitive land adjacent to the project site, construction noise is regulated by the Department's Standard Specifications in Section 7-1.01I, "Sound Control Requirements," and also by Standard Special Provisions 55-300. These provisions follow:

> "Sound control shall conform to the provisions in Section 7-1.01I, Sound Control Requirements, of the Standard Specifications and these special provisions. The noise level from the Contractor's operations, between the hours of 9:00 p.m. and 6:00 a.m., shall not exceed 86 dBA at a distance of 50 ft. This requirement in no way relieves the contractor from responsibility for complying with local ordinances regulating noise level. The noise level requirement shall apply to the equipment on the job or related to the job, including but not limited to trucks, transit mixer or transient equipment that may or may not be owned by the contractor. The use of loud signals shall be avoided in favor of light warnings except those required by safety laws for the protection of personnel. Full compensation for conforming to the requirements of this section shall be considered as included in the prices paid for the various contract items of work involved and no additional will be allowed therefore."

With implementation of the standard Department noise specification, potential temporary noise impacts of the Build Alternative are considered less than significant.

Permanent Impacts

No Build Alternative

The No Build Alternative would not include any improvements to the project and would maintain its existing conditions for the mainline and intersections. SR-91 would continue to operate at LOS E and F during peak hours, resulting in substantial delays. This alternative does not address the capacity and operational needs of SR-91, and it is expected that between now and 2035, traffic congestion would continue to worsen if no freeway operational improvements are implemented within and downstream of the project area.

Build Alternative

Traffic Noise

Predicted design-year traffic noise levels associated with the Build Alternative are compared to existing conditions and to design-year No Build conditions in Table 2.2.7-11. The comparison to No Build conditions is included in the analysis to identify traffic noise impacts. The comparison to No Build conditions indicates the direct effect of the project.

Based upon the modeling results presented in Table 2.2.7-11, the modeled receptors would experience a change in noise levels ranging from -1 to 4 dBA from existing conditions. Therefore, for existing and 2035 No Build traffic noise levels, traffic volumes and vehicle speeds were assumed to be maximum capacity at highway design speeds for both scenarios. In addition, no roadway modifications would occur under the existing and 2035 No Build conditions. These increases over existing levels are not considered significant and will not result in substantial impacts.

2.2.7.4 Avoidance, Minimization, and/or Mitigation Measures

The following measures would minimize the temporary noise impacts from construction activities associated with the Build Alternative.

N-1 All equipment will have sound-control devices that are no less effective than those provided on the original equipment. No equipment will have an unmuffled exhaust.

N-2 As directed by the Department, the contractor will implement appropriate additional noise minimization measures, including changing the location of stationary construction equipment, turning off

idling equipment, rescheduling construction activity, notifying adjacent residents in advance of construction work, and installing an acoustic barrier around stationary construction noise sources.

2.3 Biological Environment

The analysis of potential impacts of the proposed project on biological resources is based on the Natural Environment Study (NES) (EA 12-0G330) (July 2008).

The analysis of the potential impacts of the proposed project on biological resources considered the following categories of resources:

- Natural Communities (Section 2.3.1)
- Wetlands and Other Waters (Section 2.3.2)
- Plant Species (Section 2.3.3)
- Animal Species (Section 2.3.4)
- Threatened and Endangered Species (Section 2.3.5)
- Invasive Species (Section 2.3.6)

The following sections describe applicable regulatory settings, existing environments, impacts, and avoidance, minimization, and mitigation measures for these categories of biological resources.

The Biological Study Area (BSA) is approximately 6.5 mi along the SR-91 corridor, reaching from approximately the SR-91/SR-55 separation to the SR-91/SR-241 separation. The BSA extends beyond the maximum area of potential direct effect where necessary to identify sensitive biological resources within and immediately adjacent to the project area, but it is limited to within the Department ROW due to lack of access permission. In general, this provided for a survey area that was larger than the area of potential direct effect.

The BSA includes the existing SR-91 (Department ROW), which is surrounded by transportation, residential, commercial, industrial, infrastructure, recreational, undeveloped, and water-related land uses. Featherly Regional Park, the Santa Ana River, and the Santa Ana River Trail border the north side of SR-91. To the south, the area is predominantly bordered by residential and commercial properties and portions of undeveloped areas that are within the Southern Orange County Subregion NCCP planning area. However, the proposed project is not located within the NCCP Reserve.

2.3.1 Natural Communities

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act (FESA) are discussed later in this document in Section 2.3.5, Threatened and Endangered Species. Wetlands and other waters are discussed in Section 2.3.2. Specific plant species and animal species are discussed in Sections 2.3.3 and 2.3.4, respectively.

2.3.1.1 Regulatory Setting

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

2.3.1.2 Affected Environment

Ten vegetation communities were identified within the BSA and are shown on the biological resources figure in Appendix J of the NES. Several of the areas are a mixture of these vegetation communities. Table 2.3.1-1 lists the acreage of each of the vegetation communities present within the BSA boundary.

Table 2.3.1-1 Vegetation Communities Occurring within the BSA

Vegetation Community	Total Acres
Scrub and Chaparral Habitats	
Coastal Sage Scrub	2.16
Chaparral	0.01
Riparian and Woodland Habitats	
Mulefat Scrub	0.41
Southern Cottonwood-Willow Riparian Forest	0.99
Coast Live Oak Woodland	1.52
Disturbed Habitats	
Ornamental Vegetation/Developed Areas	248.64
Ruderal Vegetation	68.01
Mixed Chaparral/Ruderal Vegetation	0.79
Mixed Chaparral/Ornamental Vegetation	1.58
Mixed Ruderal/Ornamental Vegetation	24.83
Total	**348.94**

Source: NES (July 2008)

Three general natural community groups of special concern were identified within the BSA: oak woodland, riparian habitats, and coastal sage scrub (CSS). To the south, the area is predominantly bordered by residential and commercial properties and portions of undeveloped areas that are within the Southern Orange County Subregion Natural Community Conservation Plan (NCCP) planning area. However, the proposed project is not located within the NCCP Reserve.

2.3.1.3 Environmental Consequences

Temporary Impacts

No Build Alternative

The No Build Alternative does not propose any construction or other disturbance in the project area. Therefore, the No Build Alternative would result in no adverse impacts related to natural communities.

Build Alternative

The Build Alternative would temporarily impact approximately 1.32 ac of Oak Woodland, 272 ac of riparian habitats, and 2.06 ac of CSS. Temporary impacts to wetlands are discussed in Section 2.3.2 (Wetlands and Other Waters), and temporary impacts to mature trees are discussed in Section 2.3.3 (Plant Species). Following construction activities, disturbed construction areas would be replanted with appropriate noninvasive species suitable for roadside landscaping per the minimization measures outlined in Section 2.3.1.4. Therefore, a portion of impacts to vegetation would be temporary. The implementation of landscaping could occur either concurrently with construction of the Build Alternative or could be through a separate contract.

There are no existing wildlife corridors within the project limits. However, the presence of day-roosting bats within the project area was confirmed by direct observation at several culverts throughout the study area. Potential night roosts were also observed in culverts and bridges throughout the study area and were identified by the presence of guano and staining in structurally suitable portions of these structures. However, the widening and modification of bridge, culvert, and overhead structures will more likely increase future potential roosting habitat. Because of this, the project is not expected to substantially affect the bats' long-term use of the structures.

Permanent Impacts

No Build Alternative

The No Build Alternative proposes no construction or other disturbance in the project area. Therefore, the No Build Alternative would result in no adverse impacts related to natural communities.

Build Alternative

The Build Alternative would permanently impact approximately 0.10 ac of CSS habitat and 0.2 ac of Oak Woodland. Permanent impacts to Oak Woodland may include complete removal, heavy encroachment, or extensive branch removal that may have significant detrimental impacts to the long-term viability of the trees. Compensation for this impact to Oak Woodland is discussed in Section 2.3.1.4, Measure BIO-2. Based on the small size of the CSS area to be permanently affected, the level of disturbance, and the relatively few special-status species occurring in this habitat in the BSA, the proposed project is not expected to result in any impacts to special-status species, and no compensatory mitigation is required for the CSS habitat. The proposed project is not expected to permanently impact any riparian habitats.

Although the Santa Ana River and the Santa Ana River Trail border the north side of SR-91, there will be no permanent impacts to these resources.

Table 2.3.1-2 summarizes the amount of each Natural Community that is impacted by the proposed project. Appendix K of the NES illustrates where the proposed project will impact each Natural Community.

Table 2.3.1-2 Impacts to Vegetation Communities Occurring within the BSA

Vegetation Community	Permanent Impacts (ac)	Temporary Impacts (ac)
Scrub and Chaparral Habitats		
Coastal Sage Scrub	0.10	2.06
Chaparral	0.00	0.01
Subtotal	**0.10**	**2.07**
Riparian and Woodland Habitats		
Mulefat Scrub	0.00	0.41
Southern Cottonwood-Willow Riparian Forest	0.00	0.99
Coast Live Oak Woodland	0.20	1.32
Subtotal	**0.20**	**2.72**
Disturbed Habitats		
Ornamental Vegetation/Developed Areas	27.66	22.98
Ruderal Vegetation	8.81	59.20
Mixed Chaparral/Ruderal Vegetation	0.00	0.79
Mixed Chaparral/Ornamental Vegetation	0.07	1.51
Mixed Ruderal/Ornamental Vegetation	2.62	22.21
Subtotal	**39.16**	**106.69**
Total acres	**39.46**	**111.48**

Source: NES (July 2008).
ac: acres

2.3.1.4 Avoidance, Minimization, and/or Mitigation Measures

The following measures will minimize and avoid potential temporary and permanent project impacts to Natural Communities. Refer to Section 2.3.2 (Wetlands and Other Waters) for a discussion of impacts to disturbed wetlands, and to Section 2.3.4 (Animal Species) for a discussion of impacts to nesting birds and native and exotic vegetation resulting from the removal of trees and shrubs.

BIO-1 Prior to clearing or construction, highly visible barriers (such as orange construction fencing) will be installed around CSS, riparian/riverine vegetation, and the protected zone of any oak tree or oak habitat, and designated as environmentally sensitive areas (ESAs) to be preserved. The protected zone will extend 5 ft outside of the dripline or 15 ft from the trunk of the tree, whichever is greater. No grading or fill activity of any type will be permitted within the ESA. In addition, heavy equipment, including motor vehicles, will not be allowed to operate within the ESAs. All construction equipment shall be operated in a manner so as to prevent accidental damage to nearby oaks and preserved areas. No structure of any kind, or incidental storage of equipment or supplies, shall be allowed within the ESA. Silt fence barriers will be installed at the ESA boundary to

prevent accidental deposition of fill material in areas where trees and vegetation are immediately adjacent to planned grading activities.

BIO-2 Per California Department of Transportation (Department) policy (Senate Concurrent Resolution No. 17), impacts to any oak trees (excluding California scrub oaks) with trunk sizes above 8-inch (in) diameter at breast height (dbh) will be replaced at a ratio of 3:1, if feasible. Heritage oaks (oaks with dbh greater than 36 in) will be replaced at a ratio of 10:1, if feasible.

In addition, for impacts to oak trees outside of existing Department ROW, the City of Anaheim requires the replacement at a ratio of 2:1 for trees with trunk sizes below 12 in dbh; 3:1 for trees with trunk sizes 12 to 20 in dbh; and 4:1 for trees with trunk sizes above 20 in dbh.

BIO-3 The majority of the existing riparian communities fall under the regulatory jurisdiction of the United States Army Corps of Engineers (Corps) pursuant to Section 404 of the Clean Water Act (CWA) and California Department of Fish and Game (CDFG) pursuant to Section 1600 of the California Fish and Game Code. Compensation for riparian communities will be required for Corps Section 404 and CDFG Section 1600 permitting. Riparian habitats subject to Corps and CDFG jurisdiction will be compensated at a minimum ratio of 2:1 for permanent impacts and 1:1 for temporary impacts. Compensation may be in the form of habitat restoration and/or enhancement in on- or off-site areas where similar riparian habitat exists. Final details for compensation will be evaluated through coordination between the Department and the resource agencies.

BIO-4 Prior to clearing or construction (including any ground disturbing activities), a Habitat Mitigation and Monitoring Plan (HMMP) will be required in coordination with the Corps, CDFG, and United States Fish and Wildlife Service (USFWS) that ensures no net loss of riparian habitat value or acreage.

2.3.2 Wetlands and Other Waters

This section of the document discusses wetlands and other waters and summarizes the Jurisdictional Delineation and Report (May 2008).

2.3.2.1 Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Clean Water Act (33 U.S.C. 1344) is the primary law regulating wetlands and waters. The Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the Clean Water Act, a three-parameter approach is used that includes the presence of hydrophytic (water loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the Clean Water Act.

Section 404 of the CWA establishes a regulatory program that provides that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the Corps with oversight by the EPA.

At the state level, wetlands and waters are regulated primarily by the CDFG and the RWQCB. In certain circumstances, the California Coastal Commission (or Bay Conservation and Development Commission) may also be involved. Sections 1600–1607 of the California Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFG before beginning construction. If CDFG determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFG jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the Corps may or may not be included in the area covered by a Lake or Streambed Alteration Agreement obtained from the CDFG.

The Regional Water Quality Control Boards were established under Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB also issues water quality certifications in compliance with Section 401 of the Clean Water Act. Please see the Water Quality section for additional details.

2.3.2.2 Affected Environment

A wetland delineation field survey was conducted in March 2008. Areas of potential jurisdiction were evaluated according to Corps, CDFG, and RWQCB criteria.

The drainages on site connect to the Santa Ana River, either directly or through the storm drain system. The Santa Ana River flows directly into the Pacific Ocean. However, many of these drainages are believed to be man-made drainage ditches constructed on dry land for the sole purpose of collecting sheet flow from SR-91 and upland areas. Man-made drainages, where topography supports the possibility that some form of "natural" drainage would be present if SR-91 and the existing drainages were not constructed, are believed to be potentially jurisdictional. However, because these drainages are not relatively permanent water and/or are part of the storm drain system, a significant nexus determination by the Corps will be required.

There are some additional man-made drainages that appear to be roadside drainage ditches that function solely to convey storm water sheet flow into the storm drain system. The Corps typically does not assert jurisdiction over these man-made roadside drainage ditches. However, the Corps does reserve the right to regulate these waters on a case-by-case basis.

Table 2.3.2-1 shows the total potential Corps jurisdictional and nonjurisdictional areas within the project area.

Table 2.3.2-1 Potential Corps Jurisdictional and Nonjurisdictional Areas

	Nonwetland Waters of the U.S. (ac)	Wetland Waters of the U.S. (ac)
Corps Jurisdictional Areas	2.90	0.00
Potential Corps Jurisdictional Areas (Significant Nexus Determination Required)	4.70	0.01
Total Potential Corps Jurisdictional Areas	7.60	0.01
Roadside Drainage Ditches	0.96	n/a

Source: NES (July 2008)
ac = acres

All of the areas satisfying the Corps jurisdictional criteria for waters of the United States and adjacent wetlands, as described above, are also subject to CDFG jurisdiction pursuant to Section 1602 of the California Fish and Game Code. In addition, streambed banks and adjacent riparian areas extending beyond the limits of the Corps jurisdiction are considered subject to CDFG jurisdiction.

The total acreage of CDFG jurisdiction within the BSA is 7.90 ac, which exceeds the total area delineated as Corps jurisdiction (i.e., 7.60 ac) by 0.30 ac.

The project is within the jurisdiction of the Santa Ana (Region 8) RWQCB, which is responsible for the administration of Section 401 of the CWA. Typically, the areas subject to RWQCB jurisdiction coincide with those of the Corps (i.e., waters of the U.S., including any wetlands). RWQCB also asserts authority over waters of the State under waste discharge requirements pursuant to the Porter-Cologne Act.

2.3.2.3 Environmental Consequences

Temporary Impacts

No Build Alternative

The No Build Alternative does not propose any construction or other disturbance in the project area. Therefore, the No Build Alternative will result in no adverse impacts related to wetlands or other waters of the United States

Build Alternative

The Build Alternative may temporarily impact approximately 4.01 ac of nonwetland waters of the United States, of which 2.57 ac would require a significant nexus determination from the Corps (see Table 2.3.2-2). In addition, the Build Alternative may temporarily impact approximately 0.01 ac of wetlands all of which would require a significant nexus determination from the Corps.

Similarly, the Build Alternative is expected to temporarily impact approximately 7.03 ac of areas potentially subject to CDFG jurisdiction.

A Section 401 Permit will be required. Please refer to Section 2.2.2, Water Quality, for detailed information regarding this permit.

Table 2.3.2-2 Project Impacts to Corps Jurisdictional And Nonjurisdictional Areas

Potential Jurisdictional Areas	Nonwetland Waters of the U.S. (ac)		Wetland Waters of the U.S. (ac)	
	Permanent Impacts	Temporary Impacts	Permanent Impacts	Temporary Impacts
Corps Jurisdictional Areas				
Corps Jurisdictional Areas	0.00	1.44	0.00	0.00
Potential Corps Jurisdictional Areas (Significant Nexus Determination Required)	0.03	2.57	0.00	0.01
Total Potential Corps Jurisdictional Areas	0.03	4.01	0.00	0.01
Potential nonjurisdictional areas				
Roadside drainage ditches	0.04	0.50	N/A	N/A

Source: NES (July 2008)
ac = acres

Permanent Impacts

No Build Alternative

The No Build Alternative proposes no construction or other disturbance in the project area. Therefore, the No Build Alternative will result in no adverse impacts related to wetlands or other waters of the United States.

Build Alternative

Based on the site plan for the Build Alternative, the proposed project is expected to permanently impact 0.03 ac of nonwetland waters of the United States, all of which will require a significant nexus determination from the Corps. No wetland waters of the United States would be permanently impacted by the Build Alternative. The discharge of dredged or fill material (temporarily or permanently) into waters of the United States (including wetlands) requires prior authorization from the Corps pursuant to Section 404 of the CWA. Upon a jurisdictional decision (concurrence) from the Corps, it is expected that a Nationwide Section 404 permit will be required for the project. Additionally, a Section 401 Permit would be required to comply with Santa Ana RWQCB water quality standards.

In addition, the Build Alternative would permanently impact 0.08 ac of areas potentially subject to CDFG jurisdiction. It is anticipated that the CDFG would authorize the alteration of these features for project construction under a Section 1602 Lake or Streambed Alteration Agreement.

Table 2.3.2-2 summarizes the proposed project impacts to potential Corps jurisdictional and nonjurisdictional areas within the project area.

2.3.2.4 Avoidance, Minimization, and/or Mitigation Measures

The Minimization Measures WQ-1, WQ-2, and WQ-3 in Section 2.2.2, Water Quality, require the following: adherence to the applicable National Pollutant Discharge Elimination System (NPDES) Permits, and to the Best Management Practices (BMPs) specified in the Department's *Storm Water Management Plan* (SWMP); preparation of a SWPPP; filing a Notice of Construction with the RWQCB; conformance with the Construction Site BMPs (Category II) requirements specified in the latest edition of the Department SWMP; prohibitions on work conducted during the rainy season; and obtaining a Waste Discharge Requirement if dewatering is necessary.

The project is required by law to comply with all environmental permit conditions, such as those that will likely be issued by the CDFG, RWQCB, and the Corps. The permit conditions will likely require measures that would offset project impacts. However, because the environmental permit conditions are not known at this time, for purposes of providing suitable compensation in compliance with CEQA, specific compensation measures are proposed below. These measures are intended to be complementary to the anticipated environmental permit conditions and to provide minimum requirements to ensure adequate compensation in accordance with the requirements of CEQA.

In addition to the measures identified above, Measure BIO-3 (in Section 2.3.1 Natural Communities), and the following measure will minimize, avoid, and compensate for potential project impacts.

BIO-5 Prior to clearing or construction (including any ground disturbing activities), a Lake or Streambed Alteration Agreement with the CDFG and a Section 404 permit from the Corps will be obtained.

2.3.3 Plant Species

Surveys of the BSA for the proposed project and the immediately surrounding areas were conducted by qualified biologists on March 20, 2008. The results of the surveys are detailed in the NES (July 2008) and are summarized in this section.

2.3.3.1 Regulatory Setting

The USFWS and CDFG share regulatory responsibility for the protection of special-status plant species. "Special-status" species are selected for protection because they

are rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of regulatory protection. The highest level of protection is given to Threatened and Endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the FESA and/or California Endangered Species Act (CESA). Please see the Threatened and Endangered Species Section 2.3.5 in this document for detailed information regarding these species.

This section of the document discusses all the other special-status plant species, including CDFG fully protected species and species of special concern, USFWS candidate species, and nonlisted California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at USC 16, Section 1531, et seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et seq. Department projects are also subject to the Native Plant Protection Act, found at Fish and Game Code, Section 1900–1913, and the CEQA, Public Resources Code, Sections 2100–21177.

2.3.3.2 Affected Environment

The existing conditions of biological resources within the Biological Study Area (BSA) include areas of undeveloped land within Department ROW that are dominated by ruderal and ornamental vegetation.

The BSA encompasses approximately 349 ac. The following sections summarize the principal characteristics, general locations, and total acreages of the vegetation communities resources within the BSA.

2.3.3.3 Sensitive Plant Species

The BSA supports suitable habitat for a variety of special-status plant species. The project area contains important biological resources with an urban environment. After a thorough literature review, it was determined that a total of 19 special-status plant species have the potential to occur on or within the vicinity of the BSA. Three of the 19 special-status plant species are federal- and/or State-listed endangered, threatened, or candidate species and are discussed further in Section 2.3.5 Threatened and Endangered Species. Further information on these species, including status, habitat requirements, and potential for occurrence, is summarized in Table 2.3.3-1.

Southern California Black Walnut

Southern California black walnut (California walnut) is not federal- and/or State listed and has no official status. However, the California walnut merits consideration under CEQA because of the relatively limited distribution of walnut woodland. California walnut is only found in Southern California. Recent construction has removed this habitat in many areas, and its future is uncertain. California walnut prefers very loose, moist soil on steep hillsides with northern and eastern exposures at elevations below 900 ft. However, California walnut is by no means confined to these preferences. California walnut occurs within many other plant communities and is often a component of grassland, CSS, chaparral, riparian woodland, oak woodland, and mixed canyon woodland. Although some suitable habitat exists for this species within the BSA, it was not observed during 2008 botanical surveys. If present, this species would have been observed. Therefore, this species is considered absent from the BSA.

Other Special-Status Coastal Sage Scrub and Chaparral Plant Species

Other special-status species with the potential to occur in CSS and chaparral habitats within the BSA include Coulter's saltbush (CNPS List 1B), Plummer's mariposa lily (CNPS List 1B), intermediate mariposa lily (CNPS List 1B), long-spined spineflower (CNPS List 1B), many-stemmed dudleya (CNPS List 1B), Coulter's matilija poppy (CNPS List 4), and salt spring checkerbloom (CNPS List 2). Some suitable habitat exists on site that could support these species; however, much of the habitat on site is disturbed, developed, or degraded by infestations of nonnative species. In addition, none of these species were found during botanical surveys conducted in 2008 during the appropriate blooming period. Therefore, all of these species are considered absent from the BSA.

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Table 2.3.3-1 Listed, Proposed, and Special-status Plant Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status	General Habitat Description	Flowering Period	Habitat Present/ Absent	Rationale
Chaparral sand-verbena	*Abronia villosa* var. *aurita*	CNPS List 1B	Annual herb. Occurs in coastal scrub and chaparral in sandy soils. From 260 to 5,250 ft in elevation.	January–August	A	Although there is CSS on site, soils in these areas are not sandy. Historical records exist over 5 mi from the BSA in Santa Ana Canyon. Not observed during 2008 botanical survey.
Coulter's saltbush	*Atriplex coulteri*	CNPS List 1B	Perennial herb. Occurs in coastal bluff scrub, coastal dunes, coastal scrub, and valley and foothill grassland, usually in alkaline or clay soils. From 10 to 1,510 ft in elevation.	March–October	HP	Suitable habitat for this species is present on site, but marginal. No known occurrences are reported within the vicinity of the site. Not observed during 2008 botanical survey.
Davidson's saltscale	*Atriplex serenana* var. *davidsonii*	CNPS List 1B	Annual herb. Occurs in coastal bluff scrub and coastal scrub, usually in alkaline soil. From 35 to 660 ft in elevation.	April–October	A	Suitable habitat for this species is not present on site. Not observed during 2008 botanical survey.
Plummer's mariposa lily	*Calochortus plummerae*	CNPS List 1B	Bulbiferous perennial herb. Occurs in coastal scrub, chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland on alluvial or granitic, rocky or sandy soils. From 295 to 5,580 ft in elevation.	May–July	HP	Suitable habitat for this species is present on site, but marginal. No known occurrences are reported within the vicinity of the site. Not observed during 2008 botanical survey.

Table 2.3.3-1 Listed, Proposed, and Special-status Plant Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status	General Habitat Description	Flowering Period	Habitat Present/ Absent	Rationale
Intermediate mariposa lily	*Calochortus weedii* var. *intermedius*	CNPS List 1B	Perennial bulbiferous herb. Occurs in chaparral, coastal scrub, and valley and foothill grassland. Often in dry, rocky soils. From 395 to 2,805 ft in elevation.	May–July	HP	Suitable habitat for this species is present on site, but marginal. No known occurrences are reported within the vicinity of the site. Not observed during 2008 botanical survey.
Southern tarplant	*Centromadia parryi* ssp. *australis*	CNPS List 1B	Annual herb. Occurs in vernal pools, margins of marshes and swamps, and vernally mesic valley and foothill grasslands, sometimes with saltgrass on alkaline soils. Up to 1,400 ft in elevation.	May–November	HP	Disturbed habitat for this species is present on site. No known occurrences are reported within the vicinity of the site. Not observed during 2008 botanical survey.
Smooth tarplant	***Centromadia pungens* ssp. *laevis***	CNPS List 1B	Annual herb. Occurs in chenopod scrub, meadows and seeps, playas, riparian woodland, and valley and foothill grassland on alkaline soils. Up to 1,575 ft in elevation.	April–September	HP	Disturbed habitat for this species is present on site. No known occurrences are reported within the vicinity of the site. Not observed during 2008 botanical survey.
Long-spined spineflower	*Chorizanthe polygonoides* var. *longispina*	CNPS List 1B	Annual herb of clay soils in chaparral, coastal scrub, meadows and seeps, valley and foothill grassland at 30 to 1,450 meters (100 to 4,800 ft) elevation. Occurs in Orange, Riverside, and San Diego counties.	April–July	HP	Suitable habitat for this species is present on site, but marginal. No known occurrences are reported within the vicinity of the site. Not observed during 2008 botanical survey.
Many-stemmed dudleya	*Dudleya multicaulis*	CSP, CNPS List 1B	Often on clay soils also around granitic outcrops in chaparral, CSS, and	April–July	HP	Suitable habitat for this species is present on site, but marginal. Historic records exist outside of the BSA

Table 2.3.3-1 Listed, Proposed, and Special-status Plant Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status	General Habitat Description	Flowering Period	Habitat Present/ Absent	Rationale
			grassland, below 790 meters (2,600 ft) in elevation. Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties.			approximately 1 mi south of Santa Ana Canyon Road at Imperial Highway. Not observed during 2008 botanical survey.
Vernal barley	*Hordeum intercedens*	CNPS List 3	Annual herb found in coastal dunes, CSS, valley and foothill grassland (saline flats and depressions), and vernal pools in Los Angeles, Orange, Riverside, Santa Barbara, San Diego, and Ventura Counties. Found at elevations of 5 to 1,000 meters (20 to 3,300 ft).	March–June	A	Suitable habitat for this species is not present on site. Not observed during 2008 botanical survey.
Southern California black walnut	*Juglans californica*	CSP, CNPS List 4	Perennial deciduous tree usually with several trunks. Locally common below 4,500 ft elevation on slopes and in canyons. Known from Orange and western cismontane San Bernardino County to Ventura County.	March–August	HP	Suitable habitat for this species is present on site. Not observed during 2008 botanical survey.
Chaparral nolina	*Nolina cismontana*	CNPS List 1B	Perennial evergreen shrub. Occurs in chaparral and coastal scrub usually in sandstone or gabbro soils. From 460 to 4,185 ft in elevation.	May–July	A	Suitable habitat for this species is not present on site. Not observed during 2008 botanical survey.

Table 2.3.3-1 Listed, Proposed, and Special-status Plant Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status	General Habitat Description	Flowering Period	Habitat Present/ Absent	Rationale
White rabbit-tobacco	*Pseudognaphalium leucocephalum*	CNPS List 2	Perennial herb that occurs in riparian and cismontane woodland, coastal scrub, and chaparral, usually in sandy, gravelly soils. From 0 to 6,900 ft in elevation.	July–December	A	Suitable habitat for this species is not present on site. Not observed during 2008 botanical survey.
Coulter's matilija poppy	*Romneya coulteri*	CNPS List 4	Occurs in alluvial fan sagescrub, sycamore woodland, CSS, and chaparral away from the immediate coast. Dry washes and canyons below 1,220 meters (4,000 ft) elevation. Santa Ana Mountains to San Diego County.	May–July	HP	Suitable habitat for this species is present on site. Nearest known occurrences are approximately 2 mi east of the BSA along SR-91. Not observed during 2008 botanical survey.
Salt spring checkerbloom	*Sidalcea neomexicana*	CNPS List 2	Perennial herb. Occurs in coastal scrub, chaparral, lower montane coniferous forest, brackish marshes, Mohavean desert scrub, and playas on alkaline, mesic soils. From 30 to 5,020 ft in elevation.	March–June	A	Suitable habitat for this species is not present on site. Not observed during 2008 botanical survey.

Table 2.3.3-1 Listed, Proposed, and Special-status Plant Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status	General Habitat Description	Flowering Period	Habitat Present/ Absent	Rationale
San Bernardino aster	*Symphyotrichum defoliatum (Aster defoliatus)*	CSP, CNPS List 1B	Vernally wet sites (such as ditches, streams, and springs) in many plant communities below 2,040 meters (6,700 ft) in elevation. In California, known from Ventura, Kern, San Bernardino, Los Angeles, Orange, Riverside, and San Diego Counties. In the western Riverside County area, this species is scarce and documented only from Temescal and San Timoteo Canyons (The Vascular Plants of Western Riverside County, California. F. M. Roberts et al., 2004).	July–November	A	Suitable habitat for this species is not present on site. Not observed during 2008 botanical survey.

Source: NES (July 2008)
Status: Federal Endangered (FE); Federal Threatened (FT); Federal Proposed (FP, FPE, FPT); Federal Candidate (FC); California Endangered (CE); California Threatened (CT); California Fully Protected Species (CFP); California Species of Special Concern (CSC); California Special Plant (CSP), California Special Animal (CSA), California Native Plant Society (CNPS); etc.
Habitat Present/Absent: Absent (A) – No habitat present and no further work needed; OR Habitat is absent or species was absent within the BSA at the time of focused survey; Habitat present (HP) – Habitat is or may be present; Species present (O) – The species was observed within the BSA at the time of the survey; Critical Habitat (CH) – Project footprint is located within a designated critical habitat unit, but does not necessarily mean that appropriate habitat is present.

California Native Plant Society (CNPS) designations:
List 1A: Plants presumed extinct in California
List 1B: Plants rare and endangered in California and throughout their range
List 2: Plants rare, threatened or endangered in California but more common elsewhere in their range.
List 3: Plants needing more information (a review list).
List 4: Plants of limited distribution (a watch list).

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Special-Status Grassland and Open Habitat Plant Species

Special-status species with the potential to occur in grassland and open habitats within the BSA include southern tarplant (CNPS List 1B) and smooth tarplant (CNPS List 1B). Some suitable habitat exists on site, which could support these species; however, much of the habitat on site is disturbed, developed, or degraded by infestations of nonnative species. In addition, none of these species were found during botanical surveys conducted in 2008 during the appropriate blooming period. Therefore, all of these species are considered absent from the BSA.

2.3.3.4 Environmental Consequences

Temporary Impacts

No Build Alternative

The No Build Alternative would not result in any disturbances to biological resources and therefore would not result in any adverse impacts to special-status plant species.

Build Alternative

Since special-status plant species that would potentially occur within the BSA are considered absent, the Build Alternative would not result in any temporary adverse impacts to special-status plant species.

Permanent Impacts

No Build Alternative

The No Build Alternative would not result in any disturbances to biological resources and therefore would not result in any adverse impacts to special-status plant species.

Build Alternative

Since special-status plant species that would potentially occur within the BSA are considered absent, the Build Alternative would not result in any permanent adverse impacts to special-status plant species.

2.3.3.5 Avoidance, Minimization, and/or Mitigation Measures

Because special-status plant species are considered absent from the BSA, no avoidance, minimization, and/or mitigation measures are warranted.

2.3.4 Animal Species

This section of the document discusses animal species with the potential to occur within the Bio Study Area (BSA) and summarizes the results of research and fieldwork conducted to date and the Natural Environment Study (July 2008).

2.3.4.1 Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The USFWS, the NOAA Fisheries and the CDFG are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with wildlife not listed or proposed for listing under the state or federal Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.3.5 below. All other special-status animal species are discussed here, including CDFG fully protected species and species of special concern, and USFWS or NOAA Fisheries candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act
- State laws and regulations pertaining to wildlife include the following:
- CEQA
- Sections 1600 – 1603 of the Fish and Game Code
- Section 4150 and 4152 of the Fish and Game Code

In addition to state and federal laws regulating impacts to wildlife, there are often local regulations such as the Southern Orange County Subregional NCCP that need to be considered when developing projects. If work is being done in areas governed under the NCCP plan, then that agency's regulations, policies, and Habitat Conservation Plans are followed. Refer to section 2.3.1 Natural Communities for a discussion of the NCCP plan.

2.3.4.2 Affected Environment

There are a variety of vegetation communities located within the study area, including CSS, chaparral, coast live oak *(Quercus agrifolia* var. *agrifolia),* woodland, ruderal vegetation, and ornamental vegetation. The riparian communities include cottonwood forest, mulefat scrub *(Baccharis salicifolia)*, and southern arroyo willow-cottonwood

forest. These habitats support the animal and special-status animal species that are discussed in further detail below.

Special status animal species are endangered or rare as defined by CEQA and its Guidelines, or are of current local, regional, or state concern. Animal species are deemed to be of special status based on (1) federal, State, or local laws regulating their survival, (2) limited distribution, and/or (3) habitat requirements.

The BSA supports suitable habitat for a variety of special-status wildlife species. After a thorough literature review, it was determined that 53 special-status wildlife species have the potential to occur within the BSA. A total of 6 of these species are listed as federal- and/or State-listed endangered or threatened, or proposed endangered or threatened, and are discussed further in Section 2.3.5 in this document. In addition, one of these species is considered a Fully Protected species by the State of California. Further information on these species, including status, habitat requirements, and potential for occurrence, is summarized in Table 2.3.4-1.

2.3.4.3 Special-Status Animal Species Occurrences

A total of 6 of the 53 special-status animal species with the potential of occurring within the BSA are federal- and/or State-listed as endangered, threatened, or candidate species: Santa Ana sucker, arroyo toad, western yellow-billed cuckoo, southwestern willow flycatcher (SWWF), coastal California gnatcatcher (CAGN), and least Bell's vireo (LBV). Further detailed discussion of these species is provided in Section 2.3.5, Threatened and Endangered Species. In addition, the white-tailed kite is considered a fully protected species by the State of California.

Suitable habitat for 12 of the special-status species is not present within the BSA, and these species are therefore not discussed further. In addition, other special-status wildlife species with potential of occurring within the BSA are discussed below.

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Table 2.3.4-1 Listed, Proposed, and Special-status Wildlife Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status Listing	Habitat and Comments	Habitat Present/ Absent	Rationale
FISH					
Santa Ana sucker	*Catostomus santaanae*	Fed: FT CA: CSC	Endemic to the Los Angeles Basin south coastal streams. It is usually found in fresh water with sand-rubble or boulder bottoms.	A	Although suitable habitat is absent from the BSA, there is a known population within the Santa Ana River, immediately adjacent to the BSA.
AMPHIBIANS					
Coast range newt	*Taricha torosa torosa*	Fed: None CA: CSC	Occurs in the coast ranges from central Mendocino County south to northern San Diego County. Found primarily in valley-foothill hardwood, coastal scrub and mixed chaparral. Breeds in ponds, reservoirs, or slow-moving streams.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA.
Western spadefoot toad	*Scaphiopus hammondii*	Fed: None CA: CSC	Occurs in grassland habitats, but can be found in valley-foothill hardwood woodlands. Found in elevations ranging from sea level to 4,500 ft. Requires vernal pools for breeding.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA.
Arroyo Southwestern toad	*Bufo microscaphus californicus*	Fed: FE CA: CSC	Found in semi-arid regions near washes or intermittent streams. Often near streams with sandy banks, gravel washes, and riparian vegetation.	A	Suitable habitat for this species is located within the Santa Ana River watershed that is below the grade of the BSA.
REPTILES					
Southwestern pond turtle	*Clemmys marmorata pallida*	Fed: None CA: CSC	Occurs in a variety of habitats, including woodland, grassland, and open forest. They are thoroughly aquatic, existing in good-quality ponds, marshes, rivers, streams, and irrigation ditches that have rocky or	A	Suitable habitat is absent from the BSA.

Table 2.3.4-1 Listed, Proposed, and Special-status Wildlife Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status Listing	Habitat and Comments	Habitat Present/ Absent	Rationale
			muddy bottoms. They require basking sites such as partially submerged logs, vegetation mats, or open mud banks.		
San Diego horned lizard	*Phrynosoma coronatum blainvillei*	Fed: None CA: CSC	Occurs in CSS, open chaparral, riparian woodland, and annual grassland habitats that support adequate prey species.	HP	Suitable habitat within the BSA is marginal. Historical records exist outside of the BSA, east of Gypsum Canyon.
Belding's Orange-throated whiptail	*Aspidoscelis hyperythra beldingi*	Fed: None CA: CSC	Inhabits low-elevation coastal scrub, chaparral, and valley hardwood habitats. Prefers washes and other sandy areas with patches of brush and rocks. Perennial plants necessary for its major food, termites.	HP	Suitable habitat within the BSA is marginal. Records show several observations within 2 mi of the BSA. Nearest observation is approximately 0.75 mi south of SR-91, 0.5 mi west of Gypsum Canyon.
Silvery legless lizard	*Anniella pulchra pulchra*	Fed: None CA: CSC	Inhabits loose soil and humus from central California to northern Baja California.	A	Suitable habitat is absent from the BSA.
Rosy boa	*Charina trivirgata*	Fed: None CA: CSC	Inhabits rock outcrops and rocky shrublands from southwestern California to northern Baja California.	A	Suitable habitat is absent from the BSA.
Two-striped garter snake	*Thamnophis hammondii*	Fed: None CA: CSC	Highly aquatic. Found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.	A	Suitable habitat is absent from the BSA.
Coast patch-nosed snake	*Salvadora hexalepis virgultea*	Fed: None CA: CSC	Occupies desert scrub, coastal chaparral, washes, sandy flats, and rocky areas.	A	Suitable habitat is absent from the BSA.
Northern red-diamond rattlesnake	*Crotalus ruber ruber*	Fed: None CA: CSC	Associated with chaparral, woodland, grassland and desert communities from coastal San Diego County to the eastern slopes of the mountains.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA.

Table 2.3.4-1 Listed, Proposed, and Special-status Wildlife Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status Listing	Habitat and Comments	Habitat Present/ Absent	Rationale
			Prefers rocky areas with dense vegetation. Needs rodent burrows, cracks in rocks, or surface cover objects for shelter.		
BIRDS					
White-tailed kite	*Elanus leucurus*	Fed: None CA: CFP	Breeds in riparian trees such as oaks, willows, and cottonwoods in lower-elevation areas, particularly the coastal valleys and plains of Orange and San Diego Counties. General nonbreeding visitor in the interior Southern California range from San Luis Obispo County to San Diego County.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA.
Cooper's hawk (nesting)	*Accipiter cooperii*	Fed: None CA: CSC	Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks, chiefly of open, interrupted, or marginal type.	HP, O	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA.
Northern harrier (nesting)	*Circus cyaneus*	Fed: None CA: CSC	Frequents freshwater and saltwater emergent wetlands, grasslands, and meadows.	A	Suitable habitat is absent from the BSA.
Golden eagle (nesting)	*Aquila chrysaetos*	Fed: None CA: CSC	Uncommon, permanent resident and migrant throughout most of California. Occurs typically in rolling foothills, mountain areas, sage-juniper flats, and desert habitats.	A	Suitable habitat is absent from the BSA.
Merlin	*Falco columbarius*	Fed: None CA: CSC	Frequents several habitats, including CSS and annual grassland. Forages along the coast and in montane valleys and open deserts with	A	Suitable habitat is absent from the BSA.

Table 2.3.4-1 Listed, Proposed, and Special-status Wildlife Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status Listing	Habitat and Comments	Habitat Present/ Absent	Rationale
			scattered clumps of trees. Rare fall migrant and winter visitor to Southern California.		
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	Fed: FC CA: SE	Nests in riparian forests, along the broad, lower flood-bottoms of large river systems. Nests are found in jungles of willow often mixed with cottonwoods with understory of blackberry, nettles, or wild grape.	A	Suitable habitat is absent from the BSA.
Costa's hummingbird	*Calypte costae*	Fed: None CA: CSA	Found primarily in deserts, arid brushy foothills, and chaparral in Southern California. Wanders widely.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA.
Allen's hummingbird	*Selasphorus sasin*	Fed: None CA: CSA	Found in chaparral, open oak woodland, riparian woodland, and residential areas on the breeding grounds from southwestern Oregon to southwestern California. Wintering grounds are primarily in montane woodland in central Mexico.	HP, O	Suitable habitat for this species is present on site, but is marginal. Observed during surveys conducted in 2008.
Nuttall's woodpecker	*Picoides nuttallii*	Fed: None CA: CSA (nesting)	Oak, pine-oak, and riparian woodland in California and northwestern Baja California.	HP, O	Suitable habitat for this species is present on site, but marginal. Observed during the 2008 surveys.
Long-eared owl (nesting)	*Asio otus*	Fed: None CA: CSC	Nests in riparian areas with tall willows and cottonwoods as well as belts of live oak woodlands occurring adjacent to streams. Requires adjacent open land for foraging and utilizes old nests of crows, hawks, or magpies for breeding.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA. Historical records exist outside of the BSA about 2 mi north of Irvine Park at Weir Canyon Road.

Table 2.3.4-1 Listed, Proposed, and Special-status Wildlife Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status Listing	Habitat and Comments	Habitat Present/ Absent	Rationale
Burrowing owl (burrow sites)	*Athene cunicularia*	Fed: None CA: CSC	Burrows in open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably the California ground squirrel.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA. Not observed during 2008 surveys.
Southwestern willow flycatcher (nesting)	*Empidonax traillii extimus*	Fed: FE CA:SE	Nests in riparian woodlands in Southern California.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA. Not observed during 2008 focused surveys.
Loggerhead shrike	*Lanius ludovicianus*	Fed: None CA: CSC	Found in open fields with scattered trees, open woodland, and scrub. Declining throughout Southern California.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA.
Coastal California gnatcatcher	*Polioptila californica californica*	Fed: FT CA: CSC	Obligate, permanent resident of CSS below 2,500 ft in Southern California.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA. Not observed during 2008 focused surveys.
Least Bell's vireo (nesting)	*Vireo bellii pusillus*	Fed: FE CA: SE	Occurs in moist thickets and riparian areas that are predominantly composed of willow and mulefat.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA. Not observed during 2008 focused surveys.
California horned lark	*Eremophila alpestris actia*	Fed: None CA: CSC	Occurs in open grasslands, farmlands, prairies, tundras, airports, beaches, golf courses, cemeteries, and parks.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA.

Table 2.3.4-1 Listed, Proposed, and Special-status Wildlife Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status Listing	Habitat and Comments	Habitat Present/ Absent	Rationale
Oak titmouse	*Baeolophus inoratus*	Fed: None CA: CSA	Common resident of much of California, primarily in oak woodland. Also inhabits oak-conifer and riparian woodland and pinyon-juniper associations.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA.
San Diego cactus wren	*Campylorhynchus brunneicapillus sandiegensis*	Fed: None CA: CSC	Occurs in Southern California CSS habitats. Requires tall opuntia cactus for nesting and roosting.	A	Suitable habitat is absent from the BSA.
California thrasher	*Toxostoma redivivum*	Fed: None CA: CSA	Resident primarily in chaparral and riparian woodland in most of California west of the deserts.	A	Suitable habitat is absent from the BSA.
Yellow-breasted chat (nesting)	*Icteria virens*	Fed: None CA: CSC	Summer resident of California. Inhabits riparian thickets of willow and other brushy tangles near water. Nests in low, dense vegetation consisting of willow, blackberry, and wild grape.	HP, O	Suitable habitat for this species is present on site, but is marginal. Observed during surveys conducted in 2008.
Yellow warbler (nesting)	*Dendroica petechia brewsteri*	Fed: None CA: CSC	Associated with riparian habitats. Prefers willows, cottonwoods, aspens, sycamores, and alders for nesting and foraging.	HP, O	Suitable habitat for this species is present on site, but is marginal. Observed during surveys conducted in 2008.
Tricolored blackbird (nesting colony)	*Agelaius tricolor*	Fed: None CA: CSC	Highly colonial. Most numerous in the central valley, largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the colony.	A	Suitable habitat is absent from the BSA.
Black-chinned sparrow	*Spizella atrogularis*	Fed: None CA: CSA	Breeds in chaparral, sagebrush, and arid scrub in the southwestern U.S. and northwestern Mexico. Winters primarily in Mexico.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA.

Table 2.3.4-1 Listed, Proposed, and Special-status Wildlife Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status Listing	Habitat and Comments	Habitat Present/ Absent	Rationale
Lark sparrow	*Chondestes grammacus*	Fed: None CA: CSA	Found in open habitats with scattered bushes or trees. Breeds throughout much of western North America and winters from the southern U.S. to southern Mexico.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA.
Bell's sage sparrow	*Amphispiza belli belli*	Fed: None CA: CSC	Frequents low, fairly dense stands of shrubs within CSS or chaparral habitat.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA.
Southern California rufous-crowned sparrow	*Aimophila ruficeps canescens*	Fed: None CA: CSC	Resident in Southern California CSS and sparse mixed chaparral. Frequents relatively steep, often rocky hillsides with grass and forb patches.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA.
Lawrence's goldfinch	*Carduelis lawrencei*	Fed: None CA: CSA	Found in oak woodland, chaparral, riparian woodland, and other habitats in arid regions, but usually near water. Occurs from Northern California to northern Baja California, but periodically wanders throughout much of western North America.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA.
MAMMALS					
Pallid bat	*Antrozous pallidus*	Fed: None CA: CSC	Occurs in grassland, shrublands, woodlands, and forests; requires rocky outcrops, cliffs, and crevices with access to open habitats for foraging.	HP	There is a limited amount of suitable habitat present within the BSA.
Mexican long-tongued bat	*Choeronycteris mexicana*	Fed: None CA: CSC	Occasionally found in San Diego County. Feeds on nectar and pollen of night-blooming succulents. Roosts in relatively well-lit caves as well as in and around buildings.	HP	Although limited suitable habitat is present on site, the BSA is outside of the known range of this species. This species is not expected to occur within the BSA.

Table 2.3.4-1 Listed, Proposed, and Special-status Wildlife Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status Listing	Habitat and Comments	Habitat Present/ Absent	Rationale
Long-eared myotis	*Myotis evotis*	Fed: None CA: CSA	Found in coniferous forest and woodland. Typically forages near water. Occurs throughout most of California.	HP	There is a limited amount of suitable habitat present within the BSA.
Yuma Myotis	*Myotis yumanensis*	Fed: None CA: CSC	Common and widespread in California. Found in a wide variety of habitats ranging from sea level to 3,300 meters (11,000 ft). Optimal habitats are open forests and woodlands with sources of water over which to feed.	HP, O	This species was observed during the 2008 Bat Habitat Suitability Assessment.
Western small-footed myotis	*Myotis ciliolabrum*	Fed: None CA: CSA	Occupies a wide variety of habitats, primarily relatively arid wooded and brushy uplands near water. Found from sea level to at least 2,700 meters (8,900 ft) in elevation. Occurs from Contra Costa County south to the Mexican border, west and east sides of the Sierra Nevada and in the deserts from Modoc to Kern and San Bernardino Counties.	HP	There is a limited amount of suitable habitat present within the BSA.
Western red bat	*Lasiurus blossevillii*	Fed: None CA: CSA	Forages over a wide range of habitats, but generally roosts in woodlands and forests. Ranges throughout most of California west of the deserts.	HP	There is a limited amount of suitable habitat present within the BSA.
Hoary bat	*Lasiurus cinereus*	Fed: None CA: CSA	Forages over a wide range of habitats, but prefers open habitats with access to trees for roosting, and water. Ranges throughout most of California.	HP	Suitable habitat for this species is present within the BSA.

Table 2.3.4-1 Listed, Proposed, and Special-status Wildlife Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status Listing	Habitat and Comments	Habitat Present/ Absent	Rationale
Southwestern yellow bat	*Lasiurus xanthinus*	Fed: None CA: CSA	Occurs in Southern California in palm oases and in residential areas with untrimmed palm trees. Roosts primarily in trees, especially the dead fronds of palm trees. Forages over water and among trees.	HP	Suitable habitat for this species is present within the BSA.
Western mastiff bat	*Eumops perotis californicus*	Fed: None CA: CSC	Inhabits many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands and chaparral communities. Roosts in crevices in cliff faces, high buildings, trees, and tunnels.	HP	There is a limited amount of suitable habitat present within the BSA.
Pocketed free-tailed bat	*Nyctinomops femorosaccus*	Fed: None CA: CSC	Varied habitats but usually associated with high cliffs or rocky areas; southwestern North America.	HP	There is a limited amount of suitable habitat present within the BSA.
Big free-tailed bat	*Nyctinomops macrotis*	Fed: None CA: CSC	Mainly an inhabitant of rugged, rocky habitats in arid landscapes of southwestern North America.	HP	There is a limited amount of suitable habitat present within the BSA.
San Diego pocket mouse	*Chaetodipus fallax fallax*	Fed: None CA: CSC	Occurs in coastal scrub, chaparral, grasslands, sagebrush, and in western San Diego County. Requires sandy, herbaceous areas, usually in association with rocks or coarse gravel.	A	Suitable habitat is absent from the BSA.
San Diego desert woodrat	*Neotoma lepida intermedia*	Fed: None CA: CSC	Occurs in CSS and chaparral, most commonly associated with rock outcrops and rocky cliffs and slopes. Found in coastal Southern California from San Diego County to San Luis Obispo County.	HP	There is a limited amount of suitable habitat present within the BSA.

Table 2.3.4-1 Listed, Proposed, and Special-status Wildlife Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status Listing	Habitat and Comments	Habitat Present/ Absent	Rationale
Black-tailed jackrabbit	*Lepus californicus bennettii*	Fed: None CA: CSC	Found in a variety of habitats, including herbaceous and desert scrub areas, early stages of open forest, and chaparral. Most common in relatively open habitats. Restricted to the cismontane areas of Southern California, extending from the coast to the Santa Monica, San Gabriel, San Bernardino, and Santa Rosa Mountain ranges.	HP	There is a limited amount of suitable habitat present within the BSA.

Source: NES (July 2008)

Absent [A] – No habitat present and no further work needed. Habitat Present [HP] – Habitat is, or may be present.

Species present [P] – Based on the literature review the has been observed within the area of the BSA

Critical Habitat [CH] – Project footprint is located within a designated critical habitat unit, but does not necessarily mean that appropriate habitat is present.

Status: Federal Endangered (FE); Federal Threatened (FT); Federal Proposed (FP, FPE, FPT); Federal Candidate (FC), Federal Species of Concern (FSC); State Endangered (SE); State Threatened (ST); Fully Protected (FP); State Rare (SR); California Fully Protected Species (CFP); California Species of Special Concern (CSC); California Special Animal (CSA); California Native Plant Society (CNPS), etc.

Cooper's Hawk

Cooper's hawk is a medium-sized hawk that prefers forests but is becoming more common in urban areas. Cooper's hawks declined in the late 1940s and 1950s as a result of dichloro-diphenyl-trichloroethane (DDT) and pesticide contamination. In the 1960s, populations started to rise, but Cooper's hawks are still of special concern to many states. Cooper's hawk was observed within the BSA during bird surveys conducted in 2008. Subsequent to these surveys, Cooper's hawk was removed from the California Species of Special Concern list (California Bird Species of Special Concern, February 2008).

Allen's Hummingbird

Allen's hummingbird is a small, compact hummingbird. Allen's hummingbirds breed along a narrow coastal strip from Southern California to southwestern Oregon. There are two subspecies. *Selasphorus sasin sasin* breeds across this range and migrates to central Mexico. *Selasphorus sasin sedentarius* resides year-round on six of the Channel Islands and in mainland Los Angeles County. Allen's hummingbirds may be declining due to potential threats such as declining habitat, pesticides, and invasive species.

Allen's hummingbirds occur in CSS and woodland areas. Woodland areas include riparian woodland, mixed evergreen, oak woodland, as well as eucalyptus and cypress groves. Allen's hummingbirds were observed within the BSA during bird surveys conducted in 2008.

Nuttall's Woodpecker

Nuttall's woodpecker is a small nonmigratory woodpecker that occurs predominantly in oak woodlands and riparian forests. Nuttall's woodpeckers have a black-and-white barred back with a white throat, breast, and belly. Males have red coloring on the rear crown and upper nape area. Nuttall's woodpeckers were observed within the BSA during bird surveys conducted in 2008.

Yellow-Breasted Chat

The yellow-breasted chat is a large songbird that breeds in riparian thickets. Although the ranges of the yellow-breasted chat appear to be stable, breeding appears to be rare or absent in much of California's central valley and parts of the southern coast. It is estimated to be reduced from its historic extent by about 35 percent (Shuford 2008). Although the destruction of suitable riparian woodland was first thought to contribute to the decline of yellow-breasted chat, the absence of the species from apparently

suitable habitat indicates additional reasons yellow-breasted chats are frequently host to nest parasitism by the brown-headed cowbird *(Molothrus ater)*. Yellow-breasted chats were observed within the BSA during bird surveys conducted in 2008.

Yellow Warbler

The yellow warbler is a small migratory songbird. It prefers wetlands and mature riparian woodlands dominated by cottonwoods, willows, and alders. Once a locally abundant summer resident in California, populations have fluctuated and are declining in some areas and increasing in others. Despite the decline, yellow warblers still occupy much of their former breeding range, with the exception of the Central Valley. Overall, populations have been reduced due to the loss and degradation of habitat and cowbird parasitism. Habitat restoration and cowbird trapping to aid LBV have benefited yellow warblers as well, where they have increased greatly on the coastal slope since the late 1980s (Shuford 2008). The yellow warbler was observed within the BSA during bird surveys conducted in 2008.

Yuma Myotis

Yuma myotis is a small bat that is gray or brown to pale tan in color and occurs in a variety of habitats, including riparian, forests, and arid scrublands and deserts. It is usually associated with rivers and streams, feeding primarily on aquatic insects. Yuma myotis roosts in bridges, buildings, cliff crevices, caves, mines, and trees.

A Bat Habitat Suitability Assessment was conducted in June 2008. This assessment was conducted to ascertain the potential for bat foraging and roosting activity within the study area. Potential foraging habitat was assessed throughout the project area on the basis of vegetation composition, existence of adjacent habitat, and accessibility, while potential roosting sites were identified through the examination of bridges, culvert structures, and rocky outcrops for suitable crevices and roosting habitat. Large trees suitable for foliage-roosting species were noted, but roosting activity at these locations cannot be confirmed due to the nature of this roosting behavior (these species tend to roost singly and beneath leaves, and may roost in a different location each night).

The presence of day-roosting bats within the project area was confirmed by direct observation at several culverts throughout the study area. Potential night roosts were also observed in culverts and bridges throughout the study area and were identified by the presence of guano and staining in structurally suitable portions of these structures.

Although the majority of the vegetation within the project area comprises ruderal, nonnative species, riparian habitat consisting of mature western cottonwoods, willows, and mulefat is present adjacent to many of the culverts. These riparian areas and their associated insect fauna may provide foraging habitat for many bat species.

Identification of the roosting bat species was difficult due to the height, curvature, and depth of many of the crevices; therefore, additional species may be present within these structures that were not adequately visible at the time of the assessment.

Yuma myotis were observed roosting within the man-made culverts during the survey.

Other Special-Status Coastal Sage Scrub and Chaparral Animal Species

Special-status CSS and chaparral species with the potential to occur in the BSA include coast range newt, San Diego horned lizard, Belding's orange-throated whiptail, northern red-diamond rattlesnake, Costa's hummingbird, black chinned sparrow, Bell's sage sparrow, Southern California rufous-crowned sparrow, Lawrence's goldfinch, San Diego desert woodrat, and black-tailed jackrabbit. Although none of these species were observed within the BSA during the surveys conducted in 2008, it is possible for them to move onto the site prior to construction. While much of the habitat on site is disturbed, developed, or degraded by infestations of nonnative species, some suitable habitat exists within the BSA.

Other Special-Status Grassland and Open Habitat Animal Species

Special-status grassland and open habitat species with the potential to occur in the BSA include western spadefoot toad, burrowing owl, loggerhead shrike, and California horned lark. Although none of these species were observed within the BSA during the surveys conducted in 2008, it is possible for them to move onto the site prior to construction. While much of the habitat on site is disturbed, developed, or degraded by infestations of nonnative species, some suitable habitat exists within the BSA.

Other Special-Status Riparian and Aquatic Animal Species

Special-status riparian and aquatic animal species with the potential to occur in the BSA include long-eared owl and oak titmouse. Although none of these species were observed within the BSA during the surveys conducted in 2008, it is possible for them to move onto the site prior to construction. While much of the habitat on site is disturbed, developed, or degraded by infestations of nonnative species, some suitable habitat exists within the BSA.

Other Special-Status Bridge and Crevice Dwelling Animal Species

Special-status bridge and crevice dwelling animal species (i.e. bats) with the potential to occur in the BSA include pallid bat, Mexican long-tongued bat, small-footed myotis, long-eared myotis, western red bat, hoary bat, southwestern yellow bat, pocketed free-tailed bat, and big free-tailed bat. With the exception of the Yuma myotis discussed above, no other special-status bat species was directly observed during the Bat Habitat Suitability Assessment. However, it was determined at that time that suitable roosting and foraging habitat exists within the BSA for all of the special-status bat species.

2.3.4.4 Environmental Consequences

Temporary Impacts

No Build Alternative

The No Build Alternative proposes no construction or other disturbance in the project area. Therefore, the No Build Alternative would not result in temporary adverse impacts related to special status animal species.

Build Alternative

With the exception of nesting/burrowing birds and bats, the special-status animal species are expected to move out of the area during construction. Therefore, the proposed project is not expected to result in any temporary impacts to special-status animal species.

Temporary impacts to Yuma myotis bat and other bridge- and crevice-dwelling species would include temporary indirect disturbance (such as noise, dust, night lighting, and human encroachment) from construction. Construction could also temporarily impede access to roost sites (existing and future) in the crevices of bridges, culverts, and overhead structures.

Raptors and other birds protected by the MBTA may nest in existing trees and shrubs within and adjacent to the BSA. Impacts to these species can occur as a result of direct removal of nests (e.g., during vegetation clearing) or causing nest failure by excessive disturbance of the nesting birds (e.g., from excessive noise and disruption from increased human activities). Temporary impacts to birds nesting within or adjacent to the BSA may occur if construction, particularly vegetation clearing, occurs during the nesting season.

Permanent Impacts

No Build Alternative

The No Build Alternative proposes no construction or other disturbance in the project area. Therefore, the No Build Alternative will not result in permanent adverse impacts related to special status animal species.

Build Alternative

The Build Alternative is expected to potentially result in indirect permanent impacts to special-status animal species through the removal of potential habitat. However, because these species are expected to move out of the area during construction, no direct permanent impacts are expected. Therefore, project impacts for these species are the same as those described for the Natural Communities in Section 2.3.1.

2.3.4.5 Avoidance, Minimization, and/or Mitigation Measures

In addition to the measures previously discussed, Measures BIO-1 through BIO-4 (in Section 2.3.1, Natural Communities), and Measure BIO-5 (in Section 2.3.2, Wetlands and Other Waters), the following minimization measures will be incorporated to avoid and minimize impacts to special-status animal species:

BIO-6 In order to avoid impacts to nesting birds, any native or exotic vegetation removal or tree-trimming activities will occur outside of the nesting bird season (February 15–August 31). In the event that vegetation clearing is necessary during the nesting season, a qualified biologist will conduct a preconstruction survey to identify the locations of nests. Should nesting birds be found, an exclusionary buffer will be established by the biologist. This buffer shall be clearly marked in the field by construction personnel under guidance of the biologist, and construction or clearing will not be conducted within this zone until the biologist, in coordination with the Resident Engineer, determines that the young have fledged or the nest is no longer active.

BIO-7 In order to ensure that any burrowing owls that may occupy the site in the future are not affected by construction activities, preconstruction burrowing owl surveys will be required prior to any ground-disturbing activity associated with construction. These preconstruction surveys are also required in order to comply with the Migratory Bird Treaty Act (MBTA) and the California Fish and Game Code. If any of the

preconstruction surveys determine that burrowing owls are present, mitigation measures may be required. The specifics of the required measures shall be coordinated between the District Biologist and the resource agencies.

BIO-8 A qualified bat biologist will survey the project area in the month of June, prior to clearing or construction (including any ground-disturbing activities) to assess the potential for its use as a maternity roost, since maternity roosts are generally formed in late spring. The qualified bat biologist shall also perform preconstruction surveys, since bat roosts can change seasonally. The surveys shall include a combination of structure inspection, sampling, exit counts, and acoustic surveys.

BIO-9 In order to prevent impacts to bridge and crevice-nesting bats, all bridgework shall be scheduled between September 1 and November 30 to avoid hibernating bats and the maternity season. If this is not feasible, bat exclusion devices will need to be installed under the supervision of a qualified biologist. Such exclusion efforts must be continued to keep the structures free of bats until the completion of construction. All bat exclusion techniques shall be coordinated between the District Biologist and the resource agencies.

2.3.5 Threatened and Endangered Species

This section of the document discusses threatened and endangered species as well as designated critical habitat with the potential to occur within the Biological Study Area (BSA), and it summarizes agency consultation conducted to date.

2.3.5.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is the FESA (USC, Section 1531, et seq. and 50 Code of CFR Part 402). FESA and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems on which they depend. Under Section 7 of the FESA, federal agencies, such as the FHWA, are required to consult with the USFWS and the NOAA Fisheries to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered (T/E) species. The outcome of consultation under Section 7 is a Biological Opinion or an incidental take permit. Section 3 of FESA defines take as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

California has enacted a similar law at the state level, the CESA; California Fish and Game Code, Section 2050, et seq. California Endangered Species Act emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species, and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The CDFG is the agency responsible for implementing CESA. Section 2081 of the Fish and Game Code prohibits take of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFG. For projects requiring a Biological Opinion under Section 7 of FESA, CDFG also may authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code.

2.3.5.2 Affected Environment

For the NES (July 2008), databases containing records of reported occurrences of federal- or State-listed endangered, threatened, proposed endangered, or threatened species; California Species of Special Concern (CSC); or otherwise special-status species or habitat that may occur within or in the immediate vicinity of the BSA were obtained. In addition, a letter requesting a list of proposed, threatened, or endangered species potentially occurring within the BSA was sent to the USFWS on February 15, 2008. A response to the request was received on August 27, 2008 (see Appendix C). Additionally, a reconnaissance-level survey and habitat mapping was conducted on March 20, 2008.

Threatened and Endangered Plant Species

The project area contains important biological resources with an urban environment. After a thorough literature review, it was determined that a total of three special-status plant species are federal- and/or State-listed endangered, threatened, or candidate species are likely present within the BSA.

San Fernando Valley Spineflower and Santa Ana River Woollystar

Suitable habitat for San Fernando Valley spineflower and Santa Ana River woollystar is not present within the BSA and these species are therefore not discussed further.

Braunton's Milk Vetch

Braunton's milk-vetch is federally listed as endangered. Braunton's milk-vetch is a perennial herb that occurs in Coastal Sage Scrub (CSS), chaparral, closed-cone coniferous forest, and valley and foothill grassland. It is usually found on granite, limestone, or gravelly clay soils in disturbed areas that range from 4 to 640 m (13 to 2,100 ft) in elevation.

Suitable habitat exists for this species in the CSS vegetation located north of SR-91 near the truck weigh station. However, because this area consists of a filled slope, there is a low probability this plant would occur within the BSA. In addition, botanical surveys conducted in 2008 during the appropriate blooming period for Braunton's milk vetch were negative. Therefore, this species is considered absent from the site.

Further information on these species, including status, habitat requirements, and potential for occurrence, is summarized in Table 2.3.5-1 below.

Table 2.3.5-1 Listed and Proposed Plant Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status	General Habitat Description	Flowering Period	Habitat Present/ Absent	Rationale
Braunton's milk-vetch	*Astragalus brauntonii*	FE, CNPS List 1B	Perennial herb. Occurs in coastal scrub, closed-cone coniferous forest, and valley and foothill grassland. Usually on granite, limestone, or gravelly clay soils in disturbed areas. From 13 to 2,100 ft in elevation.	February–July	HP	Suitable habitat for this species is present on site. Historical records exist outside of the BSA east of Gypsum Canyon. Not observed during 2008 botanical survey.
San Fernando Valley spineflower	*Chorizanthe parryi* var. *fernandina*	FC, CE CNPS List 1B	Annual herb. Occurs in coastal scrub on sandy soils. From 490 to 4,000 ft in elevation.	April–June	A	Suitable habitat for this species is not present on site. Not observed during 2008 botanical survey.
Santa Ana River woollystar	***Eriastrum densifoliium* ssp. *sanctorum***	FE, CE CNPS List 1B	Perennial herb. Occurs in coastal scrub and chaparral on sandy soils. Usually on river floodplains or terraced fluvial deposits. From 490 to 2,000 ft in elevation.	June–September	A	Historical records from 1969 exist within the BSA, possibly at Weir Canyon Road and SR-91. However, suitable habitat for this species is no longer present on site. Not observed during 2008 botanical survey.

Source: NES (July 2008)
Status: Federal Endangered (FE); Federal Threatened (FT); Federal Proposed (FP, FPE, FPT); Federal Candidate (FC); California Endangered (CE); California Threatened (CT); California Fully Protected Species (CFP); California Species of Special Concern (CSC); California Special Plant (CSP), California Special Animal (CSA), California Native Plant Society (CNPS); etc.
Habitat Present/Absent: Absent (A) – No habitat present and no further work needed; OR Habitat is absent or species was absent within the BSA at the time of focused survey; Habitat present (HP) – Habitat is or may be present; Species present (O) – The species was observed within the BSA at the time of the survey; Critical Habitat (CH) – Project footprint is located within a designated critical habitat unit, but does not necessarily mean that appropriate habitat is present.
California Native Plant Society (CNPS) designations:
List 1A: Plants presumed extinct in California
List 1B: Plants rare and endangered in California and throughout their range
List 2: Plants rare, threatened or endangered in California but more common elsewhere in their range.
List 3: Plants needing more information (a review list).
List 4: Plants of limited distribution (a watch list).

Threatened and Endangered Wildlife Species

The BSA supports suitable habitat for a variety of special-status wildlife species. After a thorough literature review, it was determined that 6 wildlife species are listed as federal- and/or State-listed endangered or threatened, or proposed endangered or threatened within the BSA. In addition, one of these species is considered a Fully Protected species by the State of California.

Santa Ana Sucker, Arroyo Toad and Western Yellow-Billed Cuckoo

Suitable habitat for Santa Ana sucker, arroyo toad, and western yellow-billed cuckoo is not present within the BSA, and these species are therefore not discussed further.

Southwestern Willow Flycatcher

The Southwestern willow flycatcher (SWWF) is a subspecies of willow flycatcher and was federally listed as endangered by USFWS in 1995 and State-listed as an endangered species by the CDFG in 1992. The SWWF is a migratory songbird, occurring in this region only during the breeding season (late May to early August), and is the only subspecies of willow flycatcher that nests in Southern California. This species breeds in riparian habitat along rivers, streams, and other wetlands in floodplains and broader canyons, and prefers dense riparian thickets near surface water, often with adjacent open areas for foraging. Vegetation structure, composition, and extent vary widely, but generally include extensive areas dominated by dense stands of willows, mulefat, or other tree species, including cottonwood overstory.

There are 18 critical habitat units totaling approximately 599 mi of streams and rivers designated as critical habitat for the SWWF by the USFWS. There is no critical habitat for SWWF designated in Orange County.

No SWWF were observed during the focused surveys within the BSA. Some suitable riparian habitat exists on site that could support this species. However, it is unlikely that a breeding territory will develop in the BSA due to the small size of any potential territories available and the more readily available higher-quality habitat nearby.

Coastal California Gnatcatcher

The CAGN was listed as threatened by the USFWS in March 1993. The coastal CAGN is a nonmigratory songbird that typically nests and forages in moderately dense stands of CSS below 2,500 ft in Southern California. Gnatcatchers usually defend breeding territories ranging in size from 2 to 14 ac and occupy home ranges that vary in size from 13 to 39 ac. The breeding season of the coastal CAGN

generally extends from February 15 through August 30. After the chicks have fledged, juveniles remain closely associated with their parents for up to several months and may disperse up to 9 mi from their natal territory.

Focused surveys were conducted to determine the presence of the CAGN within the BSA. No CAGN were observed during the surveys. Some suitable CSS habitat exists on site that could support this species. However, it is unlikely that a breeding territory will develop in the BSA due to the small size of any potential territories available.

Least Bell's Vireo

The Least Bell's vireo was listed as an endangered species by State and federal agencies in 1980 and 1986, respectively, and critical habitat was designated in 1994. The LBV is a small migratory songbird that nests in Southern California. This species is a summer resident of Southern California and breeds in willow thickets and other dense, low riparian growths in lowlands and lower portions of canyons.

Focused surveys were conducted to determine the presence of LBV within the BSA. No LBV were observed during the surveys. Some suitable riparian habitat exists on site that could support this species. However, it is unlikely that a breeding territory will develop in the BSA due to the small size of any potential territories available and the more readily available higher-quality habitat nearby.

White-Tailed Kite

The white-tailed kite is considered a fully protected species by the State of California. The white-tailed kite is a medium-sized hawk with long, narrow, pointed wings, a gray back and wings, and a white face and underside. Kites prefer open grasslands and savannahs where they hover while hunting small mammals. White-tailed kites nest in trees, typically near marshes.

No white-tailed kites were observed during 2008 surveys.

Additional information on these species, including status, habitat requirements, and potential for occurrence, is summarized in Table 2.3.5-2.

Table 2.3.5-2 Listed and Proposed Wildlife Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status Listing	Habitat and Comments	Habitat Present/ Absent	Rationale
FISH					
Santa Ana sucker	*Catostomus santaanae*	FT, CSC	Endemic to the Los Angeles Basin south coastal streams. It is usually found in fresh water with sand-rubble or boulder bottoms.	A	Although suitable habitat is absent from the BSA, there is a known population within the Santa Ana River, immediately adjacent to the BSA.
AMPHIBIANS					
Arroyo Southwestern toad	*Bufo microscaphus californicus*	FE, CSC	Found in semi-arid regions near washes or intermittent streams. Often near streams with sandy banks, gravel washes, and riparian vegetation.	A	Suitable habitat for this species is located within the Santa Ana River watershed that is below the grade of the BSA.
BIRDS					
White-tailed kite	*Elanus leucurus*	CFP	Breeds in riparian trees such as oaks, willows, and cottonwoods in lower-elevation areas, particularly the coastal valleys and plains of Orange and San Diego Counties. General nonbreeding visitor in the interior Southern California range from San Luis Obispo County to San Diego County.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA.
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FC, SE	Nests in riparian forests, along the broad, lower flood-bottoms of large river systems. Nests are found in jungles of willow often mixed with cottonwoods with understory of blackberry, nettles, or wild grape.	A	Suitable habitat is absent from the BSA.

Table 2.3.5-2 Listed and Proposed Wildlife Species Potentially Occurring or Known to Occur in the Project Area

Common Name	Scientific Name	Status Listing	Habitat and Comments	Habitat Present/ Absent	Rationale
Southwestern willow flycatcher (nesting)	*Empidonax traillii extimus*	FE, SE	Nests in riparian woodlands in Southern California.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA. Not observed during 2008 focused surveys.
Coastal California gnatcatcher	*Polioptila californica californica*	FT, CSC	Obligate, permanent resident of CSS below 2,500 ft in Southern California.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA. Not observed during 2008 focused surveys.
Least Bell's vireo (nesting)	*Vireo bellii pusillus*	FE, SE	Occurs in moist thickets and riparian areas that are predominantly composed of willow and mulefat.	HP	Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA. Not observed during 2008 focused surveys.

Source: NES (July 2008)

Absent [A] – No habitat present and no further work needed. Habitat Present [HP] – Habitat is, or may be present.

Species present [P] – Based on the literature review the has been observed within the area of the BSA

Critical Habitat [CH] – Project footprint is located within a designated critical habitat unit, but does not necessarily mean that appropriate habitat is present.

Status: Federal Endangered (FE); Federal Threatened (FT); Federal Proposed (FP, FPE, FPT); Federal Candidate (FC), Federal Species of Concern (FSC); State Endangered (SE); State Threatened (ST); Fully Protected (FP); State Rare (SR); California Fully Protected Species (CFP); California Species of Special Concern (CSC); California Special Animal (CSA); California Native Plant Society (CNPS), etc.

2.3.5.3 Environmental Consequences

Temporary Impacts

No Build Alternative

The No Build Alternative proposes no construction or other disturbance in the project area. Therefore, the No Build Alternative would not result in adverse impacts related to Threatened or Endangered species.

Build Alternative

As stated earlier, suitable habitat for San Fernando Valley spineflower and Santa Ana River woollystar is not present within the BSA and surveys indicated Braunton's milk vetch is absent from the site. Therefore, the Build Alternative would not result in temporary adverse impacts related to Threatened and Endangered plant species.

Although not observed during focused surveys, the proposed project is expected to have temporary impacts to the southwestern willow flycatcher, Least Bell's vireo and the white-tailed kite, through the temporary loss of 1.4 ac of riparian/riverine habitat. Therefore, project impacts for these species are the same as those described for the riparian habitats in Section 2.3.1, Natural Communities.

The Build Alternative is expected to have temporary impacts to California gnatcatcher through loss of 2.06 ac of CSS, which is potential foraging habitat. Therefore, project impacts for this species are the same as those described for the CSS natural community in Section 2.3.1, Natural Communities.

Permanent Impacts

No Build Alternative

The No Build Alternative does not propose any construction or other disturbance in the project area. Therefore, the No Build Alternative would not result in adverse impacts related to Threatened and Endangered species.

Build Alternative

As stated earlier, suitable habitat for San Fernando Valley spineflower and Santa Ana River woollystar is not present within the BSA and surveys indicated Braunton's milk vetch is absent from the site. Therefore, the Build Alternative would not have a permanent impact to these threatened and endangered plant species.

The Build Alternative is not expected to directly impact SWWF or LBV since it is unlikely that breeding territories would develop in the BSA due to the small size of

any potential territories available and the more readily available higher-quality habitats nearby.

The proposed project will not impact any areas designated as critical habitat for the CAGN. Although the proposed project will permanently impact 0.10 ac of CSS, (potential foraging habitat for the CAGN), the proposed project is not expected to directly impact CAGN as a result of the low probability of CAGN to occur within the BSA. Based on the small size of the CSS area to be permanently affected, the proposed project is not expected to result in any impacts to threatened and endangered species, and no compensatory mitigation is required for the CSS habitat.

No white-tailed kites were observed during 2008 surveys, and riparian/riverine habitat will not be permanently impacted. Therefore, the proposed project is not expected to have a permanent impact to this species.

2.3.5.4 Avoidance, Minimization, and/or Mitigation Measures

The measures previously discussed, Measures BIO-1 and BIO-3 (in Section 2.3.1, Natural Communities), Measure BIO-5 (in Section 2.3.2 Wetlands and Other Waters) and Measure BIO-6 (in Section 2.3.4, Animal Species), are to be implemented during construction to lessen temporary impacts to threatened and endangered species.

2.3.6 Invasive Species

This section of the document discusses invasive species with the potential to occur within the Biological Study Area (BSA) and summarizes the results of fieldwork conducted to date and the Natural Environment Study (NES, July 2008).

2.3.6.1 Regulatory Setting

On February 3, 1999, President Clinton signed EO 13112, requiring federal agencies to combat the introduction or spread of invasive species in the United States. This EO defines invasive species as ". . . any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health."

Section 6006, Environmental Restoration and Pollution Abatement; Control of Noxious Weeds and Aquatic Noxious Weeds and Establishment of Native Species, was added to Title 23, USC Section 329, on August 10, 2005, when the Safe,

Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was signed into law by the President. Section 6006 makes certain activities related to the control of noxious weeds and the establishment of native species eligible for federal aid funds.

2.3.6.2 Affected Environment

Highway corridors provide opportunities for the movement of invasive species through the landscape. Invasive species can move on vehicles and in the loads they carry. Invasive plants can be moved from site to site during spraying and mowing operations. Weed seed can be inadvertently introduced into the corridor on equipment during construction, and through the use of mulch, imported soil or gravel, and sod. In erosion control, landscape, or wildflower projects, some invasive plant species might be planted deliberately. Highway rights-of-way provide ample opportunity for weeds in adjacent land to spread along corridors that span, on a national scale, millions of miles of highway.

The California Department of Food and Agriculture (CDFA), Division of Plant Health and Pest Prevention Services has assigned the California Ratings (A, B, C, or Q) for noxious weed seed. These ratings reflect CDFA's view of the statewide importance of the invasive species, the likelihood that eradication or control efforts would be successful, and the present distribution of the pest within the state. The ratings are policy guidelines that indicate the most appropriate action to take against a pest under general circumstances. Pests designated Level A are those subject to state (or County Agricultural Commissioner [CAC]) enforced action involving eradication, containment, rejection, or other holding action. Pests designated Level B are the ones the CAC has the discretion to eradicate, contain, control, or perform other holding actions, or are subject to state-endorsed holding action and eradication only when found in a nursery. Pests designated Level C are those not subject to state-enforced action outside of nurseries except to retard the spread (at the discretion of the CAC) or to provide for pest cleanliness in nurseries. Pests designated Level Q are those at the state or county level pending determination of a permanent rating.

The California Invasive Plant Council (Cal-IPC) 2006 Invasive Plant Inventory is based on information submitted by members, land managers, botanists, and researchers throughout the State as well as published sources. The inventory highlights nonnative plants that are serious problems in wildlands (natural areas that support native ecosystems, including national, State, and local parks; ecological reserves; wildlife areas; national forests; Bureau of Land Management lands; etc.).

The inventory categorizes plants as High, Moderate, or Limited based on the species' negative ecological impact in California. Plants categorized as "High" have severe ecological impacts. Plants categorized as "Moderate" have substantial and apparent, but not severe, ecological impacts. Plants categorized as "Limited" are invasive, but their ecological impacts are minor on a statewide level. According to the NES, exotic plant species exist within the nonnative plant communities throughout the BSA, within patches of native plant communities, and in areas that have been disturbed by human uses. Exotic species are typically more numerous adjacent to roads and developed areas and frequently border the ornamental landscape. In the past, these areas likely supported grasslands, oak woodland, CSS, and riparian habitats. Consequently, scattered plant species associated with these plant communities are often found in these areas.

A total of 38 exotic plants occurring on Cal-IPC's California Invasive Plant Inventory were identified. Of these species, there are 5 with an overall high rating, 18 with a moderate rating, and 15 with a limited rating. Invasive species that have severe ecological impacts are given a high rating. Species with a high rating identified within the BSA are: Sahara mustard *(Brassica tournefortii),* broad-leaved peppergrass *(Lepidium latifolium),* Mediterranean tamarisk *(Tamarix ramosissima),* giant reed *(Arundo donax),* and foxtail chess *(Bromus madritensis* ssp. *madritensis).* These observations should not be considered all-inclusive.

2.3.6.3 Environmental Consequences

Temporary Impacts

No Build Alternative

The No Build Alternative proposes no construction or other disturbance in the project area. Therefore, the No Build Alternative would result in no adverse impacts related to invasive species.

Build Alternative

The implementation of the Build Alternative has the potential to spread invasive species by the entering and exiting of construction equipment contaminated by invasives, the inclusion of invasive species in seed mixtures and mulch, and the improper removal and disposal of invasive species so that seed is spread along the highway.

Permanent Impacts

No Build Alternative

The No Build Alternative proposes no construction or other disturbance in the project area. Therefore, the No Build Alternative would result in no adverse impacts related to invasive species.

Build Alternative

The implementation of the Build Alternative has the potential to spread invasive species by the entering and exiting of construction equipment contaminated by invasives, the inclusion of invasive species in seed mixtures and mulch, and the improper removal and disposal of invasive species so that seed is spread along the highway. The plant palette used for revegetation would not include invasive species. The proposed project would not have a substantial effect on invasive species.

2.3.6.4 Avoidance, Minimization, and/or Mitigation Measures

In compliance with EO 13112, invasive species would be removed from the project work area and controlled during construction. The following minimization measure will be implemented to avoid and minimize the potential spread of invasive species from spreading from or into the project area:

BIO-10 Inspection and cleaning of construction equipment will be performed to minimize the importation of nonnative plant material, and eradication strategies (i.e., weed abatement programs) will be employed should an invasion occur during construction.

BIO-11 Graded areas would not be revegetated with plant species listed in Cal-IPC's California Invasive Plant Inventory with a High or Moderate rating. In areas adjacent to native vegetation, the use of plant species native to the vicinity is highly recommended.

2.4 Cumulative Impacts

2.4.1 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive types of agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

CEQA Guidelines, Section 15130, describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts, under CEQA, can be found in Section 15355 of the CEQA Guidelines.

Construction and operation of the Build Alternative would result in direct and indirect impacts that could contribute to cumulative effects to the built and natural environment when combined with other related past, present and reasonably foreseeable future actions.

2.4.2 Methodology

Cumulative impacts were identified by comparing the impacts of the proposed project and other past, current, or proposed actions in the area to establish whether, in the aggregate, they could result in cumulative environmental impacts. Both direct and indirect impacts are assessed. The cumulative effects analysis focuses on those issues

and resources that would be affected by the aggregation of stress factors on the environment and does not address in detail those topics that would not have additional environmental effects from the cumulative condition. The analysis provided in this section considered the effects of the other projects and the Build Alternative in assessing whether a particular environmental parameter would experience cumulative adverse impacts. Specific geographic boundaries for cumulative effects are determined for each environmental topic analyzed and may vary accordingly.

Future actions anticipated to occur include further growth within the City of Anaheim, the City of Yorba Linda, and the County of Orange. The growth would require continued expansion of supporting infrastructure such as roadways, commercial uses, public services, and utilities. The anticipated growth is reflected in the regionally adopted growth projections and is planned for in the two City General Plans and the County General Plan.

The following eight steps serve as guidelines for identifying and assessing cumulative impacts and are based on the *Caltrans Standard Environmental Reference – Cumulative Impacts* (Department, April 2008).[1]

- Identify the resources to consider in the cumulative impact analysis by gathering input from knowledgeable individuals and reliable information sources. This process is initiated during project scoping and continues throughout the CEQA analysis.
- Define the geographic boundary or Resource Study Area (RSA) for each resource to be addressed in the cumulative impact analysis.
- Describe the current health and historical context of each resource.
- Identify the direct and indirect impacts of the proposed project that might contribute to a cumulative impact on the identified resources.
- Identify a set of other current and reasonably foreseeable future actions or projects and their associated environmental impacts to include in the cumulative impact analysis.
- Assess cumulative impacts.
- Report the results of the cumulative impact analysis.
- Assess the need for mitigation and/or recommendations for actions by other agencies to address a cumulative impact.

[1] http://www.dot.ca.gov/ser/forms.htm; accessed in June, 2008.

2.4.3 Affected Environment

For the consideration of impacts, the City of Anaheim General Plan (May 25, 2004), City of Yorba Linda General Plan (December 6, 1993), and County of Orange General Plan (February 1, 2000) were used for land development analysis, and the OCTA LRTP and the RTP were used for transportation analysis.

Not all projects would contribute to cumulative impacts for each topical area. For example, not all projects would have impacts on biological resources. Not all impacts associated with each cumulative project would contribute to a cumulative impact. Some of the impacts are very site-specific and would not compound the impacts associated with the proposed project. In other cases, short-term impacts would not contribute to cumulative impacts because the construction of the cumulative project and the road widening would not occur in the same time period or be proximate to each other.

It is important to note that a quantification of cumulative impacts is not feasible for some impact topics and would be speculative. In some cases no environmental document has been prepared and impacts are unknown. In other instances, the impacts have not been quantified. Therefore, much of the cumulative evaluation is a qualitative judgment regarding the combined effects of the relationship among the projects included in the RSA for each resource. In some cases, application of the identified project mitigation program may reduce the cumulative impacts as well as the project impact.

The cumulative analysis is limited to the resources that require avoidance, minimization, and/or mitigation measures to analyze whether the impact contribution to the resources, when considered with the proposed project and other cumulative projects, could be cumulatively considerable. In addition, temporary construction impacts of the proposed project are not considered contributory to cumulative impacts, given the limited duration, localization, and the small scale of these impacts as well as the avoidance and minimization measures applied to them. Therefore, the cumulative analysis only considers potential cumulative long-term impacts of the proposed project and the other cumulative projects.

2.4.3.1 City of Anaheim General Plan

The City of Anaheim General Plan Land Use Element, Community Policy Areas section, identifies the areas north and south of SR-91 from the SR-91/SR-55

separation to the Weir Canyon Road Undercrossing, and areas south of the SR-91 from the Weir Canyon Road Undercrossing to the SR-91/SR-241 separation, as the Hill and Canyon Area. This area has been developed for residential use since the 1960s. It is essentially built out with the exception of the Mountain Park and Deer Canyon Estates residential developments.

The Canyon Area is a 2,450 ac business center that is adjacent to the north side of SR-91 between Imperial Highway and SR-57. This area is built out; however, a redevelopment plan within the Canyon Area is planned to economically revitalize this light industrial portion of the study area.

2.4.3.2 City of Yorba Linda General Plan

The northeastern limits of the City are adjacent to the project site and support commercial and industrial uses including the SAVI Ranch Commercial Center. This center has been developed as an integrated research and development park that supports retail, wholesale, and commercial uses as well as an auto mall. SAVI Ranch serves as a major commercial-office node located off of Weir Canyon Road. This area is built out.

2.4.3.3 County of Orange General Plan

There are two small residential areas in the project vicinity that are within unincorporated Orange County. These areas are east of Imperial Highway, west of Fairmont Drive, and north of the BNSF railroad. This area is built out consistent with the General Plan.

2.4.3.4 Orange County Transportation Authority Long Range Regional Transportation Plan

The 2006 LRTP provides the planning foundation for transportation improvements over the next 25 years within the County of Orange. The purpose of the LRTP is to maintain and improve service levels along the existing transportation network as the population continues to increase within the County. The proposed project is listed within the LTRP as a proposed freeway project. Also included in the LRTP is the SR-91 Widening project from SR-241 to SR-71, improvements on the portion of SR-55 between SR-91 and SR-22, and improvements on SR-91 between SR-57 and SR-55.

2.4.3.5 Regional Transportation Plan

The RTP emphasizes the need for balance between land use and current and future transportation systems. The proposed project is included in the RTP (RTP ID ORA030601). The 2008 RTP was adopted by SCAG in May 2008. Also included in the 2008 RTP is the modification of the WB on-ramps from Lakeview Avenue to Imperial Highway, construction of a barrier-separated on-ramp from southbound Lakeview Avenue to WB SR-91, addition of one mixed-flow lane EB between the SR-91/SR-55 separation and east of the Weir Canyon Road Undercrossing, and the addition of a NB lane on Weir Canyon Road from SR-91 to La Palma.

2.4.4 Cumulative Land Development Projects

The proposed project traverses through the Cities of Anaheim and Yorba Linda. The identification of cumulative impacts was based upon a search of projects within the project segment of the SR-91 corridor, which includes portions of the cities and unincorporated areas that adjoin this area, essentially south of the Santa Ana River and north of Santa Ana Canyon Road. This geographic area is considered appropriate because it would capture the key land development projects that have the potential of causing related impacts on resources affected by the proposed project. The project's purpose is to improve mainline and ramp operations along a segment of SR-91 and impacts are limited to this area. A listing of past, present, and reasonably foreseeable future development projects is provided in Table 2.4.4-1. Table 2.4.4-2 identifies roadway projects.

Those resources for which cumulative impacts are not anticipated or for which the impacts were already analyzed in a cumulative context are briefly discussed below.

- **Community:** The communities within and adjacent to the project area are well established and, with the exception of Mountain Park, Deer Canyon Estates, and the Kaiser Permanente Medical Campus, there is no available vacant land for development. Community impacts of the project include temporary construction impacts involving detours, noise, and air quality. Therefore, project-related community impacts are not considered cumulatively considerable.

Table 2.4.4-1 Cumulative Development Projects

Project Title	Project Description	Lead Agency	Project Status
Mountain Park	Approximate 3,001 ac site located in Gypsum Canyon on the south side of SR-91 and on both the east and west sides of SR-241. The proposed project allows for the development of up to 2,500 new low-medium hillside density and low-medium density residential homes, a fire station, and an elementary school with an adjacent public community park. The project would also include public and private recreational facilities, including riding and hiking trails and the preservation of approximately 2,163 ac of the site as open space.	City of Anaheim	Approved
Deer Canyon Estates	35 single family residences on 18.9 ac of land located south of Santa Ana Canyon Road, west of Festival Drive, and east of South Eucalyptus Drive. The project would include 35 residences, roads, landscaping, architectural elements, fuel modification zones, and designation of 13.4 ac of open space consisting of 6.65 ac of wildlife habitat.	City of Anaheim	Approved
Kaiser Permanente Medical Campus	262 hospital bed medical facility located in the Canyon Business Center at 3400 E. La Palma Avenue.	City of Anaheim	Approved

Source: Department (May 2008)

Table 2.4.4-2 Cumulative Road Projects

Caltrans EA Number	Route	Post Mile	Location	Description	Lead Agency	Project Status
	SR-91/ SR-241	N/A	SR-91 express/toll lanes to the SR-241 toll road	Addition of direct separations	Department	Feasibility Study 10-plus years from construction
0G0400/ 0E8000	SR-91	15.9/19.9 OC 0.0/2.9 RC	EB from SR-241 to SR-71	Addition of General-Purpose Lane	Department	In final design; construction is anticipated to be completed in 2012
0E05U4	SR-91	10.3/19.0	Lakeview Avenue Overcrossing to the Orange/San Bernardino/ Riverside County Line	Pavement rehabilitation	Department	Completed in 2007
0C560	SR-91	7.9/9.3	NB SR-55 to Tustin Avenue off-ramp	Addition of Auxiliary lane	Department	Construction is anticipated to be completed in 2016
0F5400]	SR-91	0.0 / 10.8	From SR-241 to Pierce Street	Construct one mixed-flow lane and auxiliary lane in each direction	Department	PSR and Preliminary Environmental Analysis, 10 to 15 years from construction

Source: Department (May 2008)
EA = Expenditure Authorization
N/A = not applicable
OC = Orange County
RC = Riverside County

- **Growth:** Growth in the two cities is forecasted based on land use plans, economic conditions, and other factors. Existing traffic congestion in the project area is considerable and would continue to worsen in the future without the proposed project. The proposed project would improve existing operational and capacity deficiencies as well as planned traffic growth and would not foster growth in excess of what is projected due to the lack of vacant land in the study area. Therefore, the proposed project is not considered growth-inducing and would not result in cumulative growth impacts.
- **Land Use:** It is anticipated that future development would be implemented in a manner consistent with adopted land use, transportation, and resource plans. The evaluation of plan consistency is considered a project-related evaluation and is discussed in Section 2.1.1 of this IS. The state, regional, and local plans reviewed for this evaluation provide a broader planning context for the proposed project. The proposed project would not result in cumulative land use impacts.
- **Cultural Resources:** As discussed in Section 2.1.7 of this IS, the project area is within the ethnographic territory of the Tongva (Gabrielino). Since this time, the project area has been developed with the agricultural and ranchland properties, and subsequently with the SR-91 freeway and adjacent residential and commercial uses. Due to past development/excavation, no previously recorded or newly discovered prehistoric or historic archaeological sites were identified within the project limits. The effects of other cumulative projects on cultural resources would be evaluated as part of the environmental review process for those projects. The avoidance measure with respect to unknown subsurface archaeological resources is applicable to all projects that involve excavation in potentially sensitive areas. Therefore, the proposed project's impacts to cultural resources are not cumulatively considerable, and no cumulative impacts to cultural resources would occur.
- **Utilities/Emergency Services:** As discussed in Section 2.1.4 of this IS, the proposed project would not result in adverse effects to utilities and emergency services, except for short-term effects during construction. The effects of other transportation and public infrastructure projects on utilities and emergency services would be assessed as part of the environmental review of those projects. However, given that these projects generally improve the circulation in their respective project areas, emergency services would benefit from improved access and circulation. Therefore, the proposed project and the other development and

transportation and public infrastructure projects would not contribute to a cumulative impact on utilities or emergency services.

- **Hydrology and Floodplains:** As discussed in Section 2.2.1 of this IS, the proposed project would not encroach on the 100-year floodplain and would not modify the existing drainage system because new inlets and longitudinal drains to convey drainage flows from the surface of the widened roadway will be installed. Therefore, hydrology in the project area would improve, and the proposed project would not contribute to a cumulative impact to hydrology or floodplains.
- **Traffic and Circulation:** As discussed in Section 2.1.5 of this IS, the proposed project would not result in adverse effects to traffic circulation in the study area, except for short-term effects during construction. The proposed project would have a beneficial effect by improving regional and local mobility. The analysis of future traffic conditions is a cumulative analysis because it considers traffic generated by future planned land uses and the effect of future planned transportation improvements. Therefore, the traffic congestion in the project area would improve, and the proposed project would not contribute to a cumulative impact on traffic and circulation.
- **Geology/Soils/Seismicity/Topography:** As discussed in Section 2.2.3 of this IS, any adverse effects of the proposed project to geology, soils, seismicity, and topography are localized and limited to the grading limits of the project. While other projects would impact the geology at their project sites, the impacts would be localized and not impact regional geology; therefore, the proposed project does not contribute to cumulative impacts to geology, soil, seismicity, or topography.
- **Hazardous Waste and Materials:** As discussed in Section 2.2.5 of this IS, implementation of the proposed project would not result in a substantial permanent adverse impact related to hazardous waste and materials. Future land use and transportation projects would comply with applicable City and County Hazardous Waste Management Plans, ordinances, and state regulations related to hazardous materials, which would ensure that there would be no adverse hazardous material impacts resulting from future development in the Cities and the County. Therefore, the proposed project would not contribute to cumulative hazardous waste and materials impacts.
- **Air Quality and Climate Change:** The air quality analysis provided in Section 2.2.6 of this IS is a cumulative analysis because it considers the emissions of traffic generated by future planned land uses and the effects of other future planned transportation improvements. This analysis determined that the proposed

project would not contribute to an adverse cumulative impact to air quality or global climate change in the project area.

- **Noise:** As discussed in Section 2.2.7, the proposed project would not generate long-term noise impacts and therefore would not substantially contribute to cumulative noise.
- **Energy:** When balancing energy used during construction and operation against energy saved by relieving congestion and other transportation inefficiencies, the project would not have substantial energy impacts. This would be the case for other projects considered in this cumulative impacts analysis. Therefore, the proposed project would not contribute to a cumulative energy impact.

As discussed in Chapter 2 of this IS, the proposed project would cause direct or indirect impacts to a number of resources in the human, physical, and natural environment. The applicable topics analyzed for cumulative impacts are listed below and are analyzed in Section 2.4.5.

- Visual/Aesthetics—changes in views
- Paleontology— discovery of unknown resources during construction
- Water Quality—discharge of motor vehicle related pollutants
- Biological Resources—removal of habitat and wetlands, impact to sensitive animal species

2.4.5 Environmental Consequences

2.4.5.1 Visual/Aesthetics

The RSA for visual and aesthetics is the project segment of SR-91 and the surrounding properties since these areas have views to and from the project site. Historically, visual resources in the cumulative study area have been characterized by the conversion of agricultural and ranchland to residential and commercial uses from the 1960s to the present. The SR-91 alignment contains several sound walls/noise barriers, and backyard walls that restrict foreground views. Currently, the health of this resource continues to be a suburban setting among foothills and adjacent to the Santa Ana River and parkland. Low-density residential uses are predominant with supporting commercial developments. The vegetation of the Santa Ana foothills is predominantly CSS and Coast Live Oak Woodland. The vegetation in the suburban areas in the Cities of Anaheim and Yorba Linda are ornamental plant materials. The foreground views generally contain views of the roadway and the associated highway

planting. The middleground views contain the vegetation and parkland adjacent to the Santa Ana River and streambed and the suburban development in the Cities of Anaheim and Yorba Linda. The Santa Ana Mountains and foothills are visible in the background views. SR-91 within the project limits is designated as a State Scenic Highway. The current and reasonably foreseeable future actions or projects that may affect this resource are the projects identified above as well as continued development and open space preservation in accordance with adopted City and County General Plans.

No Build Alternative

The No Build Alternative would not change the visual setting and would not create visual impacts in the RSA. The projects within this RSA, without the proposed project, would have similar visual impacts as the proposed project because they would include structural barriers associated with proposed transportation projects such as retaining walls in slope areas. They would also include noise barriers adjacent to sensitive uses (such as residential properties) where no noise barriers are currently present. Measures for these impacts would include landscaping, wall treatments, and placing utilities underground, where possible.

Build Alternative

The Build Alternative would have an effect on visual/aesthetics for travelers and as it would add retaining walls, a noise barrier, and other roadway-related structures to the existing Viewshed. The Build Alternative would result in a moderate reduction in visual quality to foreground and middle ground views. Views of the Santa Ana River and parkland would be minimally affected because noise barriers are not proposed in these areas. To address visual impacts, the Build Alternative has incorporated minimization measures to address potential project-related aesthetic impacts. Visual/aesthetic impacts are not considered adverse with implementation of the minimization measures identified in Section 2.1.6.

The proposed project's contribution to visual impacts is not considered cumulatively considerable because its moderate impacts would be minimized through application of screening landscaping and aesthetic treatments that would also be applicable to the cumulative projects. In addition, the foreground and middleground views are already partially obstructed by existing retaining walls, noise barriers, and backyard walls, and additional walls would be consistent with the freeway corridor landscape. Therefore, the project's contribution to visual/aesthetic impacts is not cumulatively considerable.

2.4.5.2 Paleontological Resources

The RSA for cumulative impacts to paleontological resources includes the project area and immediately adjacent areas because paleontological conditions and finds are localized. The RSA contains the following geologic units that have the potential to contain significant nonrenewable paleontological resources: older alluvial fan deposits; the Lower Member of the Fernando Formation, the Sycamore Canyon Member of the Puente Formation; the Yorba Member of the Puente Formation; and the Topanga Formation.

No Build Alternative

Based on the sensitivity of sediments that would be impacted, the other development and transportation projects within the RSA, without the proposed project, would affect paleontological resources within their footprint of disturbance. Standard conditions of approval and mitigation measures required for each of the cumulative projects would minimize impacts to paleontological resources.

Build Alternative

Implementation of the Build Alternative has the potential to encounter paleontological resources during excavation activities due to the high sensitivity of the subsurface formations in the project area and vicinity. The Build Alternative includes avoidance and minimization measures to address the potential for encountering, monitoring, and proper handling of paleontological resources. These are standard measures employed by the Department. With implementation of these measures, potential impacts to paleontological resources are not cumulatively considerable.

Combined with the proposed project, anticipated potential cumulative impacts include the continued destruction and recovery of paleontological resources as a result of excavation associated with construction of other land development and infrastructure projects.

As a result, the proposed project's contribution to cumulative impacts to paleontological resources is not considerable with implementation of the standard Department avoidance and minimization measures.

2.4.5.3 Water Quality

The RSA for water quality is Reach 2 of the Santa Ana River because each reach of the Santa Ana River is generally a hydrologic and water quality unit. Portions of or

the entire limits of the projects listed in Tables 2.4.-1 and 2.4.-2 are within this RSA. The Santa Ana River, Reach 2, is defined as running from 17th Street in Santa Ana to the Prado Dam. Within the project limits, runoff from SR-91 discharges into drainage inlets, which flow into the Santa Ana River via various culverts. Within the project area, the Santa Ana River is unlined, but is channelized. Currently, Reach 2 is not listed as impaired on the 2006 CWA Section 303(d) List of Water Quality Limited Segments.

The primary source of groundwater in the project vicinity is the Santa Ana River. Secondary sources of groundwater include springs, runoff from the hills, and developed areas south of SR-91. Additionally, a portion of the project is adjacent to a section of the Santa Ana River that is used by the OCWD for recharging the groundwater basin. OCWD operates a system of diversion structures and recharge basins that capture water that would otherwise flow into the Pacific Ocean. This section of the project area is considered a "high risk" area, defined as a location where spills from the State-owned ROW, activities, or facilities can discharge directly to municipal or domestic water supply reservoirs or groundwater recharge basins.

No Build Alternative

Each of the cumulative projects would be required to incorporate post-construction maintenance BMPs that would reduce their cumulative operational impact to water quality under existing local and State water quality management plans. Therefore, even if projects are being implemented simultaneously, sufficient measures would be in place to minimize operation-related erosion and siltation.

Build Alternative

The proposed project has the potential to result in a contribution to cumulative impacts to hydrologic function, water quality, and erosion/sedimentation downstream of the project area within Reach 2 of the Santa Ana River. Indirect impacts could affect wetlands and riparian habitat through changes in velocity, flow, or water quality. The project includes drainage features to control velocity and storm flows so that scour and erosion do not occur. BMPs are included in the design of the proposed project to protect beneficial uses of the Santa Ana River. With proper drainage design and application and maintenance of BMPs required under local and State water quality management plans, the proposed project's contribution to cumulative water quality impacts is not considerable.

2.4.5.4 Biological Resources

Natural Communities

The RSA for natural communities is the Santa Ana Canyon. Natural communities of special concern in the RSA include: coast live oak woodland, riparian habitats, and CSS. The vast majority of the vegetation in the developed portion of the canyon, which includes the project area, is a mixture of natural communities of special concern and ruderal or ornamental habitats.

There are a few wildlife corridors within the RSA, but none are within the project area. The presence of day-roosting bats within the RSA has been confirmed by direct observation at several culverts throughout the RSA. Potential night roosts were also observed in culverts and bridges throughout the RSA and were identified by the presence of guano and staining in suitable portions of these structures. A discussion of impacts to bats is included in the Animal Species section, below.

No Build Alternative

The development and transportation projects in the RSA each have their own impacts to natural communities. Minimization measures required for the proposed project to minimize natural community impacts would be applicable to each of the cumulative projects. Temporary and permanent impacts would be compensated through habitat restoration/replacement. Because of the number of years required for oak trees to mature, temporary impacts to oak woodland (removal of mature trees) should be analyzed as a permanent impact. At this time, it is anticipated that cumulative impacts to oak trees under the No Build Alternative would not be adverse.

Build Alternative

The Build Alternative would result in permanent impacts to 0.10 ac of CSS and 0.20 ac of coast live oak woodland. Since the proposed project's impacts to natural communities are relatively small, they would be able to be minimized through the restoration/replacement required in the avoidance, minimization, and/or compensation measures specified in Section 2.3.1 and are not considered adverse. Given that the project's impacts are limited and would be addressed through the measures identified, the project's contribution to cumulative impacts to natural communities, when considered in light of the other cumulative projects, would not be considerable.

Wetlands

The RSA for wetlands is Reach 2 of the Santa Ana River. From a biological perspective, this geographic area is considered appropriate because: (1) effects to water quality downstream may be compounded within this Reach; (2) riparian vegetation is present within the BSA; and (3) CDFG and Corps jurisdictional areas are present within the BSA. The cumulative projects in Tables 2.4.4-1 and 2.4.4-2 are within the RSA.

Historically, the RSA was an undeveloped river plain with a meandering river and wide floodplain with associated riparian habitat. A wide floodplain serves to reduce storm flows and water velocity, which limits erosion and allows vegetation to flourish. Currently, Reach 2 of the Santa Ana River is highly developed and many tributaries are engineered. Most of the drainages serve the purpose of flood control (i.e., they convey storm water away from roads and buildings).

No Build Alternative

The development and transportation projects in the RSA would each have their own impacts to wetlands. Based on the developed nature of the RSA, the cumulative impacts to wetlands can be avoided, minimized, or compensated such that no net loss occurs. Compensation would include restoration/replacement of suitable riparian habitats and implementation of a Habitat Mitigation and Monitoring Plan (HMMP) as appropriate.

Build Alternative

The Build Alternative may temporarily impact approximately 4.01 ac of nonwetland waters of the United States, of which 2.57 ac would require a significant nexus determination from the Corps.

The proposed project is expected to permanently impact 0.03 ac of nonwetland waters of the United States, all of which would require a significant nexus determination from the Corps. No wetland waters of the United States would be permanently impacted by the proposed project.

The Build Alternative would permanently impact 0.08 ac of areas potentially subject to CDFG jurisdiction.

With implementation of the avoidance, minimization, and/or compensation measures for impacts to wetlands identified in Section 2.3.2, Wetlands, the Build Alternative would result in no net loss to existing wetlands. Given that the proposed project's

impacts are limited and would be addressed through the measures identified, the project's contribution to cumulative impacts to wetlands, when considered in light of the other cumulative projects, would not be considerable.

Plant Species

The RSA for plant species is the Santa Ana Canyon. Historically, the RSA supported coast live oaks, plants associated with riparian habitats (e.g., southern and smooth tarplants), and plants associated with CSS (e.g., Braunton's milk-vetch, Coulter's saltbush, Plummer's mariposa lily, Intermediate mariposa lily, and long-spined spineflower). The presence of these plant species has declined with the development within the RSA.

A total of 3 of the 19 special-status plant species with potential of occurring within the BSA are federal- and/or State-listed as endangered, threatened, or candidate species: Braunton's milk-vetch, San Fernando Valley spineflower, and Santa Ana River woollystar. As noted in Section 2.3.3, Plant Species, suitable habitat for San Fernando Valley spineflower and Santa Ana River woollystar is not present within the BSA.

No Build Alternative

The development and transportation projects in the RSA each have their own impacts to plant species. Measures required for the proposed project to avoid, minimize, and/or compensate impacts to plant species would be applicable to each of the cumulative projects. Permanent impacts would be avoided, minimized, or compensated through monitoring and time restrictions as well as through habitat restoration/replacement.

Build Alternative

The proposed project is not expected to result in indirect or direct permanent impacts to the Braunton's milk-vetch since there is a low probability that this species would occur in the BSA and surveys conducted during the blooming period were negative. Therefore, the proposed project's contribution to cumulative impacts to plant species, when considered with the other cumulative projects, would not be cumulatively considerable.

Animal Species

Because the presence of animal species is a function of available habitat, the RSA for animal species is the Santa Ana Canyon. Historically, the RSA supported a wide variety of animal species in coast live oak woodland, riparian habitats, and CSS

habitats. The acreage of these habitats as well as the animal species has declined with the development of the RSA.

Fifty-three (53) special-status wildlife species have the potential to occur within the Biological Study Area (BSA) for the project. A total of 6 of these species are listed as federal- and/or State-listed as endangered or threatened, or proposed as endangered or threatened, and are discussed further in the following section. In addition, 1 of these species is considered a Fully Protected species by the State of California.

No Build Alternative

The development and transportation projects in the RSA each have their own impacts to animal species. Measures required for the proposed project to avoid or minimize impacts to animal species would be applicable to each of the cumulative projects. Permanent impacts would be avoided, minimized, or compensated through monitoring and time restrictions as well as through habitat restoration/replacement.

Build Alternative

The proposed project is expected to potentially result in indirect permanent impacts to special-status animal species through the removal of existing habitat. Since these species are expected to move out of the area during construction, no direct permanent impacts are expected. Therefore, project impacts for these species are the same as those described for the natural communities. Avoidance measures are required to be implemented with respect to migratory birds, burrowing owls, and bats. Given that the proposed project's impacts to animal species are relatively minor and would be addressed through the measures identified in Section 2.3.4, Animal Species, the proposed project's contribution to cumulative impacts to animal species, when considered in light of the other cumulative projects, would not be cumulatively considerable.

Threatened and Endangered Species

Because the presence of plant and animal species is associated with overall habitat, the RSA for threatened and endangered species is the Santa Ana Canyon. Historically, the RSA supported a wide variety of plant and animal species in coast live oak woodland, riparian habitats, and CSS habitats. The acreage of these habitats as well as the plant and animal species has declined with the development of the RSA.

No Build Alternative

The development and transportation projects in the RSA each have their own impacts to endangered, threatened, or candidate species. Measures required for the proposed project to avoid, minimize, or compensate impacts to endangered, threatened, or candidate species would be applicable to each of the cumulative projects. Permanent impacts would be avoided, minimized, or compensated through monitoring and time restrictions for construction as well as through habitat restoration/replacement.

Build Alternative

Three special-status plant species that are federal- and/or State-listed as endangered, threatened, or candidate species are likely present within the BSA.

Permanent impacts to endangered, threatened, or candidate species are not expected due to the minimal or low quality habitat available. Because the proposed project's permanent impacts to habitat for endangered, threatened, or candidate species is relatively small, they would be addressed through restoration of appropriate habitat. In addition, the endangered, threatened, or candidate species habitat within the BSA is minimal and of low quality. None of the potentially present endangered, threatened, or candidate species were observed during the focused surveys. Given that there are no permanent project impacts to threatened and endangered species, the proposed project would not contribute to cumulative impacts to threatened and endangered species.

Invasive Species

The RSA for Invasive Species includes the projects listed in Tables 2.4.4-1 and 2.4.4-2 located along SR-91. Projects included within the RSA are Mountain Park, Deer Canyon Estates, SR-91 express/toll lanes to SR-241, EB SR-91 from SR-241 to SR-71, and SR-91 from SR-241 to Pierce Street.

No Build Alternative

In the RSA, the above mentioned projects would not result in impacts from invasive exotic species since these projects will individually implement avoidance and minimization measures to ensure no spread or introduction of invasive species. Therefore, the projects within the RSA would not have a cumulative impact on Invasive Species.

Build Alternative

The Build Alternative provides the benefit of removal of existing Invasive Species within the study area to the extent practicable. The introduction of invasive plant

species may degrade sensitive habitat. With implementation of the avoidance and/or minimization measures for invasive species discussed in Section 2.3, the proposed project's contribution to cumulative Invasive Species impacts, in consideration of the projects with the projects in the RSA, would be a minimal contribution to the regional (or cumulative) risk of the introduction and spread of invasive plant material and has been reduced to less than significant. No invasive species would be planted in the BSA upon completion of project work, in accordance with EO 13112, "Invasive Species."

2.4.6 Avoidance, Minimization, and/or Mitigation Measures

The Build Alternative has the potential to result in cumulative impacts. No additional measures beyond those identified throughout Chapter 2 are required to address cumulative impacts of the proposed project.

2.5 Climate Change

2.5.1 Regulatory Setting

While climate change has been a concern since at least 1988, as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC), the efforts devoted to greenhouse gas (GHG) emissions reduction and climate change research and policy have increased dramatically in recent years. These efforts are primarily concerned with the emissions of GHGs related to human activity that include carbon dioxide (CO_2), methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, hydroflourocarbon (HFC)-23 (fluoroform), HFC-134a (s, s, s, 2-tetrafluoroethane), and HFC-152a (difluoroethane).

In 2002, with the passage of Assembly Bill 1493 (AB 1493), California launched an innovative and proactive approach to dealing with GHG emissions and climate change at the state level. AB 1493 requires the ARB to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009 model year; however, in order to enact the standards, California needed a waiver from the EPA. The waiver was denied by the EPA in December 2007, and efforts to overturn the decision have been unsuccessful. See *California v. Environmental Protection Agency*, 9th Cir. Jul. 25, 2008, No. 08-70011.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: (1) 2000 levels by 2010, (2) 1990 levels by 2020, and (3) 80 percent below 1990 levels by 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (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 that includes market mechanisms and implement rules to achieve "real, quantifiable, cost-effective reductions of GHGs." 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.

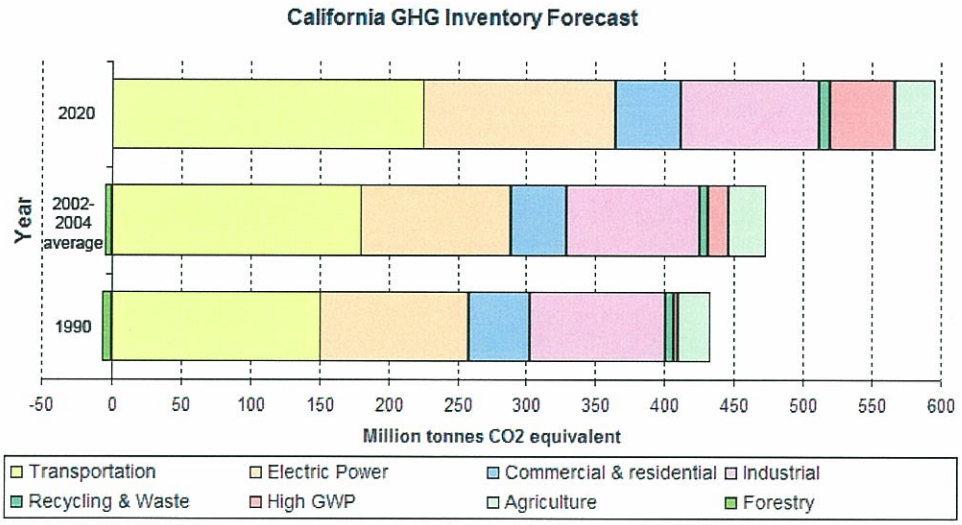
With EO S-01-07, Governor Schwarzenegger set forth the low-carbon fuel standard for California. Under this Executive Order, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Climate change and GHG reduction is also a concern at the federal level; however, at this time, no legislation or regulations have been enacted specifically addressing GHG emissions reductions and climate change. California, in conjunction with several environmental organizations and several other states, sued to force the EPA to regulate GHGs as a pollutant under the CAA (*Massachusetts vs. Environmental Protection Agency et al.,* 549 U.S. 497 (2007). The court ruled that GHGs do fit within the CAA's definition of a pollutant, and that the EPA does have the authority to regulate GHGs. Despite the Supreme Court ruling, there are no promulgated federal regulations to date limiting GHG emissions.

According to *Recommendations by the Association of Environmental Professional on How to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), an individual project does not generate sufficient GHG emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may participate in a potential impact through its incremental contribution combined with the contributions of all other sources of GHGs. In assessing cumulative impacts, it must be determined whether a project's incremental effect is "cumulatively considerable." See CEQA Guidelines Sections 15064(i)(1) and 15130. To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. As discussed in the "Limitations and Uncertainties with Modeling" and the "Limitations and Uncertainties with Impact Assessment" sections below, to gather sufficient information on a global scale of all past, current, and future projects in order to make this determination is a difficult and not impossible task.

As part of its supporting documentation for the Draft Scoping Plan, the ARB recently released an updated version of the GHG inventory for California (June 26, 2008). Shown below is a graph from the update that shows the total GHG emissions for California for 1990, 2002-2004 average, and 2020 projected if nonaction is taken.

The Department and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California's GHG emissions is from the



Source: ARB, 2008

burning of fossil fuels and 40 percent of all humanmade GHG emissions are from transportation, the Department has created and is implementing the Climate Action Program at Caltrans (December 2006)[1].

One of the main strategies in the Department's Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient.

Transportation's contribution to GHG emissions is dependent on three factors: the types of vehicles on the road, the type of fuel the vehicles use, and the time/distance the vehicles travel. The highest levels of CO_2 from mobile sources, such as automobiles, occur at stop-and-go speeds (0–25 mph). Optimum speeds are between 45 and 55 mph (see GHG Inventory Forecast graph above). Looking at the state transportation system as a whole, enhancing operations, and improving travel times in high congestion travel corridors will lead to an overall reduction in GHG emissions.

2.5.2 Environmental Consequences

Long-Term Global Warming Impact

The purpose of the proposed project is to alleviate existing and future traffic congestion along SR-91 during peak hours. The proposed project will not generate new vehicular traffic trips since it will not construct new homes or businesses.

[1] http://www.dot.ca.gov/docs/ClimateReport.pdf

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However, there is a possibility that some traffic currently utilizing other routes would be attracted to use the improved facility, thus resulting in slight increases in VMT. The impact of GHG emissions is a global rather than a local issue. Therefore, the impact of the Build Alternative on GHG emissions was calculated using traffic data for the SCAG region.

Supplemental traffic data developed by the OCTA (October 23, 2008) estimated the impact that the proposed project would have on regional VMT and regional vehicle hours traveled (VHT). As shown in Table 2.5.2-1, the proposed project would result in an increase in VMT in 2035. However, due to improved traffic flow, the regional VHT would decrease in 2035.

Table 2.5.2-1 Change in Regional VMT and VHT

Year	Regional VMT	Regional VHT
2035 Regional No Build	86,776,708	2,686,497
2035 Regional Build	86,852,910	2,678,351

Source: OCTA, October 2008.

The VMT and VHT data listed in Table 2.5.2-1, along with EMFAC2007 emission rates, were used to calculate the CO_2 and methane (CH_4) emissions for the 2035 regional conditions. The Build Alternative would not substantially change the regional VMT. The results of the modeling were used to calculate the CO_2 equivalent (CO_{2eq}) emissions listed in Table 2.5.2-2. Emissions of CO_2 and CH_4 are combined to develop the CO_{2eq} emissions within the region. As shown in Table 2.5.2-2, the proposed project would result in reduced CO_{2eq} emissions within the region. Therefore, the proposed project would not contribute significantly to global warming.

Table 2.5.2-2 Change in CO_{2eq} Emissions

Alternative	Daily CO_{2eq} Emissions (lbs/day)	Increase from No Build (lbs/day)	Percent Increase from No Build
2035 No Build	339,303,325	-	-
2035 Build	339,318,068	14,743	0.004

Source: LSA Associates, Inc., October 2008.
CO_{2eq} = carbon dioxide equivalent
lbs/day = pounds per day

Based on the SR-91 Widening Traffic Report (California Department of Transportation [Department], March 2008), the Build Alternatives would reduce congestion and improve LOS. Relieving congestion by enhancing operations and

improving travel times in high-congestion travel corridors would lead, in general, to an overall reduction in GHG emissions; the modeling output in Table 2.5.2-2 focuses on VMT, but does not include the beneficial effect of improving traffic flow and speed.

Limitations and Uncertainties with Modeling

EMFAC

Although EMFAC can calculate CO_2 emissions from mobile sources, the model does have limitations when it comes to accurately reflecting CO_2 emissions. According to the National Cooperative Highway Research Program report, *Development of a Comprehensive Modal Emission Model* (April 2008), studies have revealed that brief but rapid accelerations can contribute significantly to a vehicle's CO and hydrocarbon emissions during a typical urban trip. Current emission-factor models are insensitive to the distribution of such modal events (i.e., cruise, acceleration, deceleration, and idle) in the operation of a vehicle and instead estimate emissions by average trip speed. This limitation creates an uncertainty in the model's results when compared to the estimated emissions of the various alternatives with baseline in an attempt to determine impacts. Although work by EPA and the ARB is underway on modal-emission models, neither agency has yet approved a modal emissions model that can be used to conduct this more accurate modeling. In addition, EMFAC does not include speed corrections for most vehicle classes for CO_2; for most vehicle classes, emission factors are held constant, which means that EMFAC is not sensitive to the decreased emissions associated with improved traffic flows for most vehicle classes. Therefore, unless a project involves a large number of heavy-duty vehicles, the difference in modeled CO_2 emissions due to speed change will be slight.

It is interesting to note that ARB is currently not using EMFAC to create its inventory of GHG emissions, and is unclear why the ARB has made this decision. Its Web site only states:

> "REVISION: Both the EMFAC and OFFROAD Models develop CO_2 and CH_4 [methane] emission estimates; however, they are not currently used as the basis for [ARB's] official [GHG] inventory which is based on fuel usage information. However, ARB is working towards reconciling the emission estimates from the fuel usage approach and the models."

Other Variables

With the current science, project-level analysis of GHG emissions is limited. Although a GHG analysis is included for this project, there are numerous key GHG variables that are likely to change dramatically during the design life of the proposed project and would thus dramatically change the projected CO_2 emissions.

First, vehicle fuel economy is increasing. The EPA's annual report, "Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2008 (http://www.epa.gov/oms/fetrends.htm)," which provides data on the fuel economy and technology characteristics of new light-duty vehicles, including cars, minivans, sports utility vehicles, and pickup trucks, confirms that average fuel economy has improved each year beginning in 2005 and is now the highest since 1993. Most of the increase since 2004 is due to higher fuel economy for light trucks, following a long-term trend of slightly declining overall fuel economy that peaked in 1987. These vehicles also have a slightly lower market share, peaking at 52 percent in 2004, with projections at 48 percent in 2008. Table 2.5.2-3 shows the alternatives for vehicle fuel economy increases currently being studied by the National Highway Traffic Safety Administration in its Draft EIS for New Corporate Average Fuel Economy (CAFE) Standards (June 2008).

Table 2.5.2-3 Model Year 2015 Required Miles Per Gallon (mpg) by Alternative

No Action		25% Below Optimized	Optimized (Preferred)	25% Above Optimized	50% Above Optimized	Total Costs Equal Total Benefits	Technology Exhaustion
Cars	27.5	33.9	35.7	37.5	39.5	43.3	52.6
Trucks	23.5	27.5	28.6	29.8	30.9	33.1	34.7

Source: National Highway Traffic Administration, 2008.

Second, near-zero carbon vehicles will come into the market during the design life of this project. According to a March 2008 report released by the University of California Davis (UC Davis), Institute of Transportation Studies:

> "Large advancements have occurred in fuel cell vehicle and hydrogen infrastructure technology over the past 15 years. Fuel cell technology has progressed substantially resulting in power density, efficiency, range, cost, and durability all improving each year. In another sign of progress, automotive developers are now demonstrating over 100 fuel cell vehicles (FCVs) in California – several in the hands of the general

> public – with configurations designed to be attractive to buyers. Cold-weather operation and vehicle range challenges are close to being solved, although vehicle cost and durability improvements are required before a commercial vehicle can be successful without incentives. The pace of development is on track to approach pre-commercialization within the next decade.
>
> "A number of the DOE 2010 milestones for FCV development and commercialization are expected to be met by 2010. Accounting for a five to six year production development cycle, the scenarios developed by the DOE suggest that 10,000s of vehicles per year from 2015 to 2017 would be possible in a federal demonstration program, assuming large cost share grants by the government and industry are available to reduce the cost of production vehicles."[1]

Third, and as previously stated, California has recently adopted a low-carbon transportation fuel standard. The ARB is scheduled to present draft regulations for low-carbon fuels in late 2008, with implementation of the standard to begin in 2010.

Fourth, driver behavior has been changing as the U.S. economy and oil prices have changed. In its January 2008 report, "Effects of Gasoline Prices on Driving Behavior and Vehicle Market,"[2] the Congressional Budget Office found the following results based on data collected from California: (1) freeway motorists have adjusted to higher gas prices by making fewer trips and driving more slowly; (2) the market share of sports utility vehicles is declining; and (3) the average prices for larger, less-fuel-efficient models have declined over the past five years as average prices for the most-fuel-efficient automobiles have risen, showing an increase in demand for the more fuel efficient vehicles.

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1 Cunningham, Joshua, Sig Cronich, Michael A. Nicholas. March 2008. Why Hydrogen and Fuel Cells are Needed to Support California Climate Policy, UC Davis, Institute of Transportation Studies, pp. 9–10.

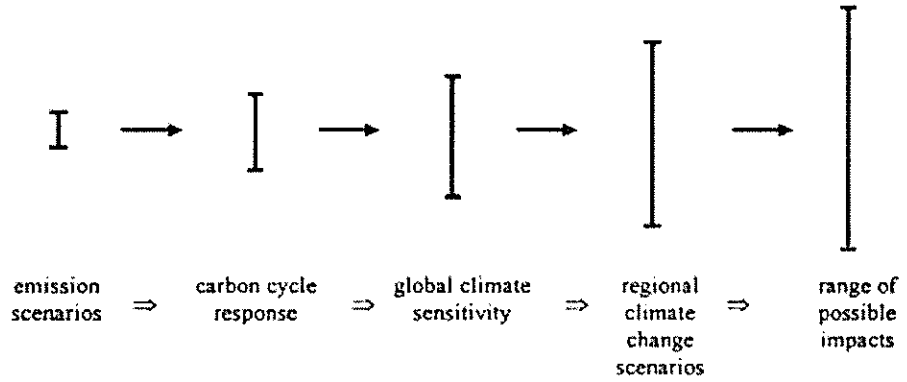
2 http://www.cbo.gov/ftpdocs/88xx/doc8893/01-14-GasolinePrices.pdf.

Limitations and Uncertainties with Impact Assessment

The Cascade of Uncertainties graph below[1] illustrates how the range of uncertainties in assessing GHG impacts grows with each step of the analysis:

> "Cascade of uncertainties typical in impact assessments showing the 'uncertainty explosion' as these ranges are multiplied to encompass a comprehensive range of future consequences, including physical, economic, social, and political impacts and policy responses."

Cascade of Uncertainties



Source: National Highway Traffic Safety Administration, 2008.

Much of the uncertainty in assessing an individual project's impact on climate change surrounds the global nature of the climate change. Even assuming that the target of meeting the 1990 levels of emissions is met, there is no regulatory or other framework in place that would allow for a ready assessment of what the modeled 11.4–20.9-ton increase in CO_2 emissions would mean for climate change given the overall California GHG emissions inventory of approximately 430 million tons of CO_2 equivalent. This uncertainty only increases when viewed globally. The IPCC has created multiple scenarios to project potential future global GHG emissions as well as to evaluate potential changes in global temperature, other climate changes, and their effect on human and natural systems. These scenarios vary in terms of the type of economic development, the amount of overall growth, and the steps taken to reduce GHG emissions. Nonmitigation IPCC scenarios project an increase in global GHG

[1] National Highway Traffic Safety Administration Draft EIS for New CAFE Standards (June 2008, pp. 3-48 and 3-49.)

emissions by 9.7 up to 36.7 billion metric tons of CO_2 from 2000 to 2030, which represents an increase of between 25 and 90 percent.[1]

The assessment is further complicated by the fact that changes in GHG emissions can be difficult to attribute to a particular project because the projects often cause shifts in the locale for some types of GHG emissions, rather than causing "new" GHG emissions. The extent to which the modeled 11.4 to 20.9-ton increase in CO_2 emissions represents a net global increase, reduction, or no change, is uncertain, and there are no models approved by regulatory agencies that operate at the global or even statewide scale.

The complexities and uncertainties associated with project level impact analysis are further borne out in the recently released Draft EIS completed by the National Highway Traffic Safety Administration CAFE standards (June 2008). As the text quoted below shows, even when dealing with GHG emission scenarios on a national scale for the entire passenger car and light truck fleet, the numerical differences among alternatives is very small and well within the error of sensitivity of the model.

> "In analyzing across the CAFE 30 alternatives, the mean change in the global mean surface temperature, as a ratio of the increase in warming between the B1 (low) to A1B (medium) scenarios, ranges from 0.5 percent to 1.1 percent. The resulting change in sea level rise (compared to the No Action Alternative) ranges, across the alternatives, from 0.04 centimeter to 0.07 centimeter. In summary, the impacts of the Model Year 2011-2015 CAFE alternatives on global mean surface temperature, sea level rise, and precipitation are relatively small in the context of the expected changes associated with the emission trajectories. This is due primarily to the global and multi-sectoral nature of the climate problem. Emissions of CO_2, the primary gas driving the climate effects, from the United States automobile and light truck fleet represented about 2.5 percent of total global emissions of all GHGs in the year 2000 (EPA, 2008; CAIT, 2008). While a significant source, this is a still small percentage of global emissions, and the relative contribution of CO_2 emissions from the United States

[1] Intergovernmental Panel on Climate Change (IPCC). February 2007. Climate Change 2007: The Physical Science Basis: Summary for Policy Makers. http://www.ipcc.ch/SPM2feb07.pdf.

light vehicle fleet is expected to decline in the future, due primarily to rapid growth of emissions from developing economies (which are due in part to growth in global transportation sector emissions). "[1]

Conclusion

Based on the above, it is the Department's determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a determination regarding the project's direct impact and its contribution on the cumulative scale to climate change. However, the Department is firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the following section.

2.5.3 Assembly Bill 32 Compliance

The Department continues to be actively involved on the Governor's Climate Action Team as ARB works to implement the Governor's Executive Orders and help achieve the targets set forth in AB 32. Many of the strategies the Department is using to help meet the targets in AB 32 come from the California Strategic Growth Plan, which is updated each year. Governor Arnold Schwarzenegger's Strategic Growth Plan calls for a $222 billion infrastructure improvement program to fortify the state's transportation system, education, housing, and waterways, including $107 billion in transportation funding during the next decade. As shown on the illustration below, the Strategic Growth Plan targets a significant decrease in traffic congestion below current levels and a corresponding reduction in GHG emissions. The Strategic Growth Plan proposes to do this while accommodating growth in population and the economy. A suite of investment options has been created that, combined, yield the promised reduction in congestion. The Strategic Growth Plan relies on a complete systems approach of a variety of strategies: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements.

[1] NHTSA Draft EIS for New CAFE Standards, June 2008, pp. 3-77 to 3-78.

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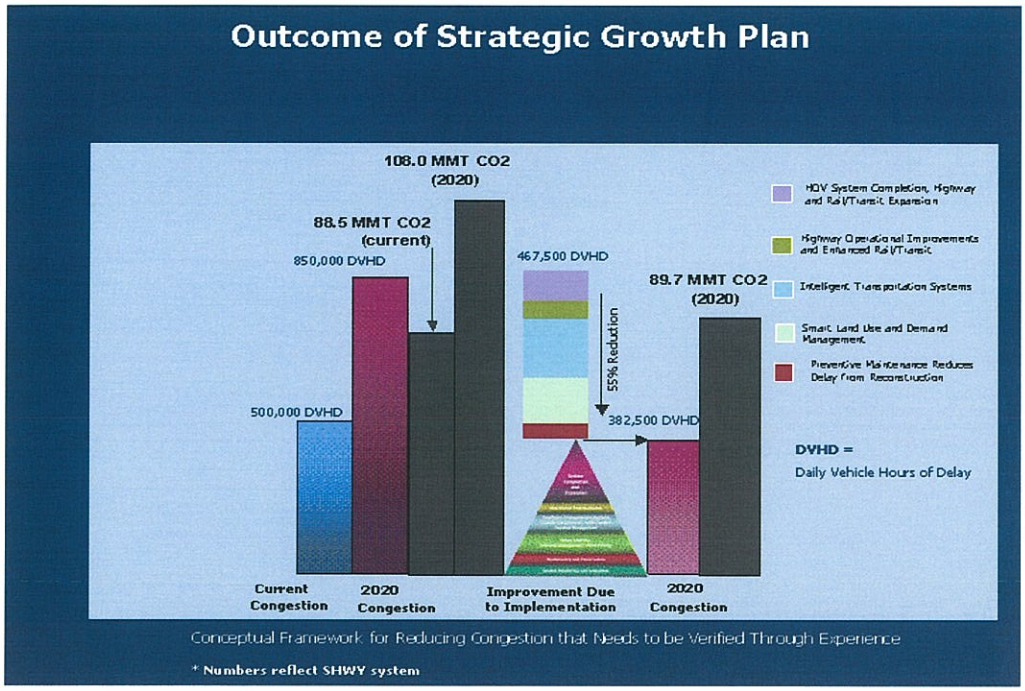

Source: Office of the Governor, 2006.

As part of the Climate Action Program at the Department,[1] the Department is supporting efforts to reduce VMT by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high-density housing along transit corridors. The Department is working closely with local jurisdictions on planning activities; however, the Department does not have local land use planning authority. The Department is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars and light- and heavy-duty trucks; the Department is doing this by (1) supporting on-going research efforts at universities, (2) supporting legislative efforts to increase fuel economy, and (3) its participation on the Climate Action Team. It is important to note, however, that control of the fuel economy standards is held by the EPA and ARB.

Lastly, the use of alternative fuels is also being considered; the Department is participating in funding for alternative fuel research at the University of California, Davis.

1 http://www.dot.ca.gov/docs/ClimateReport.pdf, December 2006.

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2.5.4 Avoidance, Minimization and/or Mitigation Measures

Table 2.5.4-1 summarizes the Department and statewide efforts that the Department is implementing in order to reduce GHG emissions. For more detailed information about each strategy, please see the Climate Action Program at the Department.[1]

To the extent that it is applicable or feasible for the project and through coordination with the PDT, the following measures will also be included in the project to reduce the GHG emissions and potential climate change impacts from the project:

- At this time, there is no reclaimed water within the project limits supplied by the City of Corona. The Department will continue to coordinate with the City of Corona during the project PS&E phase regarding whether or not the reclaimed water distribution line will be extended into Orange County for use within the project site.
- The use of lighter color surfaces such as Portland cement helps to reduce the energy absorption effect and cool the surface; in addition, the Department has been a leader in the effort to add fly ash to Portland cement mixes. Adding fly ash reduces the GHG emissions associated with cement production. Use of this would be in accordance with the Department's specifications and design standards and could be used in areas such as curb/gutter, retaining walls, driveways, and sidewalks.
- According to the Department Standard Specification Provisions, idling time for lane closure during construction is restricted to ten minutes in each direction; in addition, the contractor must comply with Air Quality Management District's rules, ordinances, and regulations in regards to air quality restrictions.
- The Department and the CHP are working with regional agencies to implement ITS to help manage the efficiency of the existing highway system. ITS is commonly referred to as electronics, communications, or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system.

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1 http://www.dot.ca.gov/docs/ClimateReport.pdf, December 2006.

Table 2.5.4-1 Climate Change Strategies

Strategy	Program	Partnership		Method/Process	Estimated CO2 Savings (MMT)	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review (IGR)	Caltrans	Local Governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Caltrans	Local and regional agencies & other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional Agencies	Caltrans	Regional plans and application process	0.975	7.8
Operational Improvements & Intelligent Trans. System (ITS) Deployment	Strategic Growth Plan	Caltrans	Regions	State ITS; Congestion Management Plan	.007	2.17
Mainstream Energy & Greenhouse Gas into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational & Information Program	Office of Policy Analysis & Research	Interdepartmental, CalEPA, ARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening & Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement B20 B100	0.0045	0.0065 0.45 .0225
Nonvehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	0.117	.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5 % limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 .36	3.6
Goods Movement	Office of Goods Movement	Cal EPA, ARB, BT&H, MPOs		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					2.72	18.67

Chapter 3 Comments and Coordination

Early and continuing coordination with the general public and appropriate public agencies involved in the proposed project has an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts, and avoidance, minimization, and/or mitigation measures and related environmental requirements. Agency consultation for this project has been accomplished through a variety of formal and informal methods, including: monthly PDT meetings, interagency coordination meetings, and consultation with Native Americans. This chapter, as well as Table 3.1, summarizes the results of the Department efforts to fully identify, address, and resolve project-related issues through early and continuing coordination. Copies of agency correspondence regarding the proposed project are provided in Appendix C.

Table 3.1 Summary of Consultation and Coordination Activities

Timing	Activity
Starting July, 2007	Monthly Project Development Team meetings are held to coordinate preparation of the Environmental Impact Report (EIR) for the proposed project.
OCTA 2007	Scoping Document
September 11, 2007	The Department staff consulted with the NAHC and requested a search of the sacred lands file and a list of individuals/organizations that may have knowledge of cultural resources in the area.
September 13, 2007	The Department staff consulted with the Cities of Anaheim and Yorba Linda Historical Societies.
September 18, 2007	The NAHC response identified no Native American cultural resources or sacred sites within the project area and provided a list of individuals with tribal associations. The Department contacted these individuals, and some requested to be kept informed about the project.
September 24, 2007	The Department staff consulted with the Orange Community Historical Society.
September 24, 2007	The Department mailed letters to each contact on list from NAHC.
September 30, October 1, 2, 7, and 8, 2007	Value Analysis workshops were conducted.
February 15, 2008	A letter was sent to USFWS requesting a proposed, threatened and endangered species list for the project area.
June 2008	The Department consulted with the Corps regarding project drainage features.
June 4, 2008	Follow-up phone calls were made to each NAHC contact.
July 8, 2008	The Department staff consulted with USFWS regarding the submittal of wildlife (bird) surveys.
August 27, 2008	A list for proposed, threatened, and endangered species potentially occurring in the vicinity of the SR-91 Widening Project was received from USFWS.
December 30, 2008	State agencies were notified via the State Clearinghouse regarding the public review period. The transmittal letter from the State Clearinghouse is provided at the end of Appendix I. Refer to Section 3.1.4 for a discussion of the public review process.

Table 3.1 Summary of Consultation and Coordination Activities

Timing	Activity
January 7, 2009	The Department distributed sound wall survey letters to the affected property owners.

Source: Department (March 2008)
NAHC = Native American Heritage Commission
USFWS =United States Fish and Wildlife Service

3.1 Consultation and Coordination with Agencies

3.1.1 Project Team Coordination

3.1.1.1 Project Development Team Meetings

PDT meetings have been scheduled on a monthly basis from inception of this project (July 1, 2007). The purpose of these meetings was to discuss project-specific issues and work together to ensure that the proposed project met the purpose and need and that these issues did not conflict with any plans, policies, or regulations.

3.1.1.2 Value Analysis Workshops

Value Analysis (VA) Workshops were conducted on September 30, October 1, 2, 7, and 8, 2007. The purpose of the workshops was to focus on alternatives that would improve operations and safety, minimize impacts, reduce costs if possible, and satisfy the local stakeholders. Participants included City of Anaheim and Department staff from Design, Environmental Planning, Construction, Traffic Operations, Maintenance, Geotechnical Services, and other functional units. The VA Workshops provided guidance and recommendations for project management and decision-making.

3.1.1.3 Native American Consultation

On September 11, 2007, Department staff consulted with the NAHC and requested a search of the sacred lands file and a list of individuals/organizations that may have knowledge of cultural resources in the area. In its September 18, 2007 correspondence, the NAHC listed no Native American cultural resources or sacred sites within the project area. The NAHC identified the following individuals and tribal associations:

- Cindi Alvitre – Ti'At Society

- David Belardes – Chairperson for the Juaneño Band of Mission Indians, Acjachemen Nation
- Sonia Johnston – Chairperson for the Juaneño Band of Indians
- Anthony Morales – Chairperson for the Gabrieleno/Tongva Tribal Council
- Alfred Cruz – Cultural Resources Coordinator for the Juaneño Band of Mission Indians
- Sam Dunlap – Tribal Secretary for the Gabrieleno/Tongva Council/Nation
- Anthony Rivera – Chairperson for the Juaneño Band of Mission Indians, Acjachemen Nation
- Adolph "Bud" Sepulveda – Chairperson for the Juaneño Band of Mission Indians
- Joyce Perry – Tribal Manager and Cultural Resources Coordinator for the Juaneño Band of Mission Indians, Acjachemen Nation

On September 24, 2007, the Department mailed letters to each contact on this list with the proposed project information and a request for the identification of potential effects to any cultural resources, sacred lands, or other heritage sites within the proposed project area. No response was received, so follow-up phones calls were made on June 4, 2008. As a result, no concerns were expressed for the proposed project.

3.1.2 Historical Resources Consultation

On September 13, 2007, Department staff consulted with the Anaheim and Yorba Linda Historical Societies regarding historical resources within the project limits. No responses were received.

Additionally, a letter was mailed to the Orange Community Historical Society on September 24, 2007 requesting information pertaining to historical resources within the project area. No response was received.

3.1.3 Public Agency Consultation and Coordination

3.1.3.1 Scoping Document

The SR-91 Implementation Plan served as a scoping document for this project. All agencies met to discuss operational improvement along SR-91. The SR-91 Implementation Plan, approved by OCTA in 2007, is updated annually and intends to improve operational efficiency along the SR-91. To prepare this plan, OCTA worked

together with staff from the Department, the Riverside County Transportation Commission (RCTC), and from cities along the SR-91 corridor. This project is one of the recommended measures.

3.1.3.2 Consultation with Resource Agencies

Department staff consulted with ACOE regarding project drainage features in June 2008. Additionally, Department staff consulted with USFWS regarding the submittal of wildlife (bird) surveys in July 2008.

Department staff notified USFWS of the proposed project in February 2008. A list for proposed, threatened, and endangered species potentially occurring in the vicinity of the SR-91 Widening project between SR-55 and SR-241 in Orange County, California, was received from USFWS on August 27, 2008. Due to the urbanized nature of the project area, federally and/or State-listed Threatened or Endangered species are not anticipated within the BSA. In addition, the CDFG Natural Diversity Database was referenced for the *Orange, Yorba Linda, Black Star Canyon,* and *Prado Dam, California* United States Geological Survey [USGS] 7.5-minute quadrangles.

The permits, reviews, and approvals listed in Table 3.2 will be required prior to the construction of the proposed project.

Table 3.2 Required Permits, Reviews, and Approvals

Agency	Permit/Approval	Status
United States Army Corps of Engineers (Corps)	Section 404 Permit for filling dredging waters of the United States	The Department is to obtain Permit
California Department of Fish and Game (CDFG)	1602 Lake or Streambed Alteration Agreement	The Department is to obtain Agreement
Santa Ana Regional Water Quality Control Board (SARWQCB)	Section 401 Water Quality Certification	The Department is to obtain Certification
State Water Resources Control Board (SWRCB)	Section 402 NPDES (Construction Activity)/ Department NPDES Permit CAS000003 & CAS000002 (General Permit)	The Department is to obtain permits
Orange County Flood Control District (OCFCD)[1]	Encroachment Permit	The Department is to obtain permit

Source: Department (March 2008)
[1] The OCFCD is not a resource agency; however, the encroachment permit is required prior to construction of the proposed project.

3.1.4 Public Participation

3.1.4.1 Sound Wall Survey

A sound wall survey for the proposed sound wall was conducted by distributing survey letters to the affected property owners on January 7, 2009. The majority of the affected property owners were in favor of the proposed 16 ft sound wall. A final decision to construct noise abatement will be made during the final project design process.

3.1.4.2 Public Circulation of the Draft Initial Study/Negative Declaration

Public circulation of the Draft IS/ND began on December 30, 2008, for a 30-day review period.

As required by CEQA Guidelines Sections 15072, an NOI to Adopt an ND and Availability of IS, Notice of Public Meeting for the Proposed Widening of SR-91 was filed with the Orange County Clerk and the State Clearinghouse on December 30, 2008. A 30-day public review period was specified (from December 30, 2008, to January 30, 2009). The NOI was also mailed to all of the agencies and persons that requested notification.

Printed copies and compact disks of the Draft IS/ND were mailed to Responsible Agencies and other agencies and were made available for public review at the following locations:

Department District 12
3337 Michelson Drive, Suite 100
Irvine, California 92612
http://www.dot.ca.gov/dist12/pdf_previews/91_widening_project.pdf

City of Anaheim
Planning Department
200 South Anaheim Boulevard
Anaheim, California 92805
(714) 765-5009

City of Anaheim Regional Library
500 West Broadway
Anaheim, California 92805
(at the corner of Harbor Boulevard and Broadway)
(714) 765-1880

A Notice of Public Hearing was distributed on December 30, 2008, to notify the public about the January 21, 2009, public hearing and availability of the draft Environmental Document for the 30-day public comment period. The public hearing was held at El Rancho Charter School, 181 South Del Giorgio Road, Anaheim, CA 92808 from 6:00 to 8:00 pm and attended by 23 members of the public. Eight comments were recorded by the court reporter; all other comments were submitted via comment card. Issues raised by the public included traffic, noise barriers, pollution, and proximity of the project to homes. Representatives from the Department District 12, the environmental consultant team (LSA Associates, Inc.), the public outreach consultant (Arellano and Associates), and the City of Anaheim also attended the hearing.

A total of 10 comment letters were received by the Department District 12. Comments were received from public agencies and organizations. Comments that addressed environmental issues were thoroughly responded to in this document.

3.1.4.3 Format of Responses to Comments

See Appendix I for the response to public comments. Individual issues within each comment letter are numbered along the right-hand margin of each letter. The responses to each comment letter immediately follow each letter and are referenced by the index numbers in the margin.

The format of the responses below is based on a unique letter and number code for each comment. The number at the end of each code refers to a specific comment within the individual letter. Therefore, each comment has a unique code assignment. For example, S-1-1 is the first comment in the letter S-1. "S" represents a State agency, "1" refers to the first State agency letter, and the other "1" refers to the first comment. "L" is for local agencies and "P" is for public comments.

3.1.4.4 Index of Comments Received

Table 3.3 provides an index list of the agencies and persons that commented on the Draft IS/ND prior to the close of the public comment period or immediately thereafter. Each comment letter received is indexed with the number below.

Table 3.3 Comment Letters Received During Public Comment Period

Letter	Name	Date
S-1	Native American Heritage Commission	January 22, 2009
S-2	Governor's Office of Planning and Research	February 2, 2009
L-1	City of Anaheim Department of Public Works	January 23, 2009
P-1	Eugene Mathis	January 21, 2009
P-2	Gumdhorn "Kent" Dulyanai	January 21, 2009
P-3	Harriet Megariotis	January 21, 2009
P-4	Ken Glaser	January 21, 2009
P-5	Melanie Mathis	January 21, 2009
P-6	Peggy Kelce	January 21, 2009
P-7	Unknown	February 26, 2009

3.1.4.5 Summary of the Revisions to the IS/ND Based on Comment Letters and Other Supplementary Information

Revisions to the IS/ND in response to comments raised during the public review period have been made to the following areas:

- Clarification of elements of the TMP
- Clarification of aesthetic treatments to the noise barrier and retaining walls, including landscaping, the height of the noise barrier, replacement planting, and antigraffiti treatment
- Clarification of aesthetic treatments to storm water treatment areas
- Clarification of utility relocation procedures
- Clarification of reclaimed water
- Climate change

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Chapter 4 List of Preparers

This document has been prepared by the Department as the lead agency under CEQA with the assistance from LSA Associates, Inc. The following staff prepared this IS:

Andrew Oshrin, Senior Transportation Engineer. B.S. Civil Engineering, California State University, Long Beach; MBA University of Southern California. 11 years experience.

Contribution: Lead design team in preparation of project report, plans, specifications and estimates.

Ann Truong, Transportation Engineer, Civil. B.S. Civil Engineering, California State Polytechnic University, Pomona. 11 years experience.

Contribution: Project Engineer

Arianne Priete, Associate Environmental Planner (Natural Sciences). B.S. Biological Sciences, California State University, Fullerton; M.S. Environmental Studies, California State University, Fullerton. 7 years experience.

Contribution: Preparation and Review of NES and Environmental document (Biological Resources section).

Arman Behtash, Environmental Engineer, B.S. Civil and Environmental Engineering, University of Wisconsin, Madison. 17 years experience.

Contribution: Preparation and review of Air Quality Report.

Bassem Barsoum, Area Traffic Engineer (Lead), M.S. Civil Engineering, California State University Long Beach, 1997, PM cert 2005, 17 years experience in Design, Construction, Project Management, and Traffic Operations.

Contribution: Conduct LOS Traffic Analysis, weaving, delay, performance measures & cost-benefit analysis calculations.

Charles Baker, Senior Environmental Planner. M.A. History, California State University, Fullerton. 8 years experience in Environmental Planning.

Contribution: Senior review of environmental document for cultural, paleontological, and biological resources.

Cheryl Sinopoli, Associate Environmental Planner (Archaeology). B.A. Anthropology, California State University, Bakersfield. 11 years experience.

Contribution: Preparation of the HRCR

Chris Flynn, Senior Environmental Planner, M.S. Environmental Science, San Jose State University, 2001, PMP 2004. 26 years experience in environmental project management and construction.

Contribution: Senior review of environmental document, technical reports, and technical editing.

Eric Dickson, Licensed Landscape Architect. B.S. Landscape Architecture, California State Polytechnic University Pomona. 15 years of experience in Visual Assessments and Aesthetic Master Plans.

Contribution: Preparation of Visual Impact Assessment Report.

Essy Mohammadi, P.E., Transportation Engineer. B.S. Civil Engineering, Florida International University, Miami, FL. 1985; M.S. Civil Engineering, California State University Fullerton, Fullerton, CA. 1992; 23 years of experience in Traffic Operations and Highway Design.

Contribution: TMP and Traffic Analysis

Gabriela Jauregui, Environmental Planner. B.A. Environmental Economics, University of California Riverside. 1 year experience in Environmental Planning.

Contribution: Preparation of environmental document.

Grace Pina-Garrett, Senior Transportation Engineer- NPDES Unit. B.S. Civil Engineering, California State University, Long Beach. 17 years experience in engineering and water quality.

Contribution: Senior review of Water Quality Report.

ICF Jones & Stokes Consulting

Contribution: Preparation of Noise Quality Report.

Iffat Qamar, Associate Environmental Planner. Ph.D. Environmental Planning and Management, Macquarie University, Sydney, Australia. 14 years experience in Planning & Environmental management.

Contribution: Management, preparation and review of environmental document and technical reports.

Isaac Alonso-Rice, Senior Traffic Engineer. B.S Civil Engineering, University of Arizona. 20 years of experience in Traffic Operations and Highway Design.

Contribution: Senior review for Traffic Analysis.

Jeffrey Hsu, Transportation Engineer. B.S Civil Engineering, University of California Irvine. 9 years of experience.

Contribution: Hydraulics Engineer Support

Joe Pratt, Engineering Geologist, B.A. Geology, California State University Fresno, California. 19 years of experience in Structure Foundations/Geotechnical Design.

Contribution: Preparation of Preliminary Geotechnical Report

John Roberts, Landscape Architect. B.S. Landscape Architecture, California State Polytechnic University Pomona. 20 years experience in Visual Assessment.

Contribution: Preparation of Visual Impact Assessment Report

Jonelle Malloy, Landscape Architect. B.S. Landscape Architecture, University of California Berkley. 10 years experience.

Contribution: NPDES Storm Water Quality Report

Kevin Lai, Transportation Engineer. B.S. University of California Los Angeles. 10 years experience in Civil Engineering and Geotechnical Design.

Contribution: Project Engineer

Leo Chen, Project Manager. Ph.D. Engineering Science, Clarkson University, Potsdam, NY. 19 years experience in highway design and project management.

Contribution: Project Management

LSA Associates, Inc.

Contribution: Preparation of environmental document.

Mitch Khalilifar, Registered Professional Engineer (P.E.), M.S. Civil Engineering, South Dakota State University. 22 years experience in transportation engineering.

Contribution: Review of the Initial Site Assessment.

Paul Cochran, Associate Environmental Planner. B.S. Biochemistry with Biology Emphasis, University of California Riverside. 6 years experience in Environmental Planning.

Contribution: Review of Water Quality Assessment Report.

RBF Consulting

Contribution: Water Quality Assessment Report

Reza Aurasteh, Senior Environmental Engineer. Ph.D. Engineering, Utah State University. 26 years experience in consulting engineering, academic, transportation engineering, and environmental engineering.

Contribution: Senior review of environmental documents and technical editing.

Roger Kao, Senior Transportation Engineer. M.S. Civil Engineering, California State University, Los Angeles. 27 years experience in civil engineering, transportation engineering, hydraulics engineering, and structural engineering.

Contribution: Senior review of Hydrology/Hydraulics study and analysis.

Sandy Ankhasirisan, Senior Landscape. B.S. Landscape Architecture, California State Polytechnic University Pomona. 30 years experience in Visual Assessment.

Contribution: Senior review for preparation of Visual Impact Assessment Report

Shiva Karimi, Senior Transportation Engineer. Ph.D. University of Southern California, 20 years experience in Geotechnical Design.

Contribution: Preparation of Geotechnical Report.

Smita Deshpande, Senior Environmental Planner. B.A. Geography, University of Pune, India; M.S., Regional Planning, Indiana University of Pennsylvania, Indiana, PA (Aug 1991). 17 years experience in Environmental Planning.

Contribution: Senior review of environmental document and technical editing.

Sylvia Vega, Office Chief of Environmental Planning; B.S., California Polytechnic State University, San Luis Obispo, CA. 25 years of experience in transportation and environmental planning.

Contribution: Supervisory review of the environmental document.

Tina Gallegos, Associate Biologist, M.S. Biology, University of Texas-Pan American, Edinberg TX. 8 years experience in biological studies and research.

Contribution: Preparation and review of NES and environmental document (Biological Resources section).

Wayne Chiou, Transportation Engineer, PE. M.S. Environmental Engineering, Utah State University, Logan, UT. 20 years of experience in environmental engineering including air quality, water quality, site assessment, soil/groundwater remediation, and noise impact studies.

Contribution: Preparation and review of Noise Quality Report.

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