3.16 Energy

3.16.1 Regulatory Setting

The California Environmental Quality Act (CEQA) Guidelines, Appendix F, Energy Conservation, state that EIRs are required to include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy.

The National Environmental Policy Act (NEPA) (42 USC Part 4332) requires the identification of all potentially significant impacts to the environment, including energy impacts.

3.16.2 Affected Environment

The potential impacts of the project related to energy resources are evaluated in detail in the *Final Energy Report* (March 2010). The findings of the *Final Energy Report* are summarized in this section.

California is the most populous state in the nation and its total energy demand is second only to Texas. Although California is a leader in the energy-intensive chemical, forest products, glass, and petroleum industries, the State has one of the lowest per capita energy consumption rates in the country. The California energy-efficiency programs have contributed to low per capita energy consumption.[1]

Driven by high demand from California's many motorists, major airports, and military bases, the transportation sector is the State's largest energy-consumer. Roughly half of the energy that Californians consume is for transportation. More motor vehicles are registered in California than in any other state, and worker commute times are among the longest in the country.[2] In 2007, Californians consumed an estimated 20 billion gallons of gasoline and diesel fuel on the State's roads, an increase of nearly 50 percent over the last 20 years. Nearly 26 million registered vehicles operating in California produce about 40 percent of the GHG emissions in the State.

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1 Energy Information Administration, State/Territory Energy Profiles website: http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=CA, accessed November 13, 2009.

2 California Energy Information Administration, http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=CA, accessed December 14, 2009.

The consumption of energy in the SCAG region is summarized in Table 3.16.1 for 1997 and 2000. The roads in the SCAG region and in the project study area are shown on Figure 3.16-1. The data in Table 3.16.1 are the most recent available and are considered representative of current conditions.

Table 3.16.1 Annual Transportation Energy Consumption in the SCAG Region

Category	Fuel Type	Year	Consumption[1]
Motor Vehicles	Gasoline/Diesel	1997	6.1
	Natural Gas	2000	33 million therms
On BTU Basis			
Motor Vehicles	Gasoline/Diesel	1997	852.8
	Natural Gas	2000	3.3

Sources: California Energy Commission (June 2000), California energy demand 2000–2010, Sacramento, CA; and Southern California Association of Governments (2001), *2001 Regional Transportation Plan* update.

[1] Gasoline/diesel consumption is expressed in billions of gallons per year and consumption on a BTU basis is expressed in trillions of BTUs.

BTU = British thermal units

SCAG = Southern California Association of Governments

The recession, which started in 2007, has had a substantial impact on the State's transportation sector. Consumer demand for gasoline and diesel fuels continues to decline. Job growth and industrial production (which are drivers of air travel) are also declining, causing the aviation sector to experience a drop in air traffic. In response to this and higher fuel prices, the aviation sector has reduced the number of planes in service and taken the least efficient aircraft out of service. In addition, the freight sector (rail and trucking) is experiencing a decrease in container movement at the State's three major marine ports: Los Angeles, Long Beach, and the Bay Area.[1]

Overall, California is experiencing a downward trend in sales for gasoline, diesel, and jet fuel. For example, California's average daily gasoline sales for the first 4 months in 2009 were 2.1 percent lower than the same period in 2008, continuing an ongoing reduction in demand since 2004. Daily diesel fuel sales for the first 3 months in 2009 were 7.7 percent lower than the same period in 2008, continuing a declining trend since 2007. Recent demand trends for jet fuel (8.9 percent decline in 2008) are similar to diesel fuel and reflect the impact of the economic downturn and higher fuel prices.[2]

[1] California Energy Commission, 2009 *Integrated Energy Policy Report*, Draft Committee Report, September 2009, CEC-100-2009-003-CTD.

[2] Ibid.

- SR-91 CIP Study Area
- SCAG Region Roadways

NO SCALE

FIGURE 3.16-1

SR-91 Corridor Improvement Project

SR-91 CIP Study Area and
SCAG Region Roadways

12-Ora-91-R14.43/R18.91
08-Riv-91-R.0.00/R13.04
08-Riv-15-35.64/45.14
EA# 0F5400

I:\PAZ0701\G\SCAG Roadways_11x17.cdr (10/9/09)

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Nonrenewable energy products derived from crude oil (e.g., gasoline, diesel, kerosene, and residual fuel) provide most of the energy consumed for transportation by automobiles, trucks, locomotives, aircraft, and ships. In addition, energy is consumed in connection with construction and maintenance of transportation infrastructure, such as streets, highways, freeways, locomotives, and airport runways. Trends in transportation-related technology indicate increased use of electricity and natural gas in transportation vehicles in the future.

The majority of transportation energy currently comes from a wide variety of petroleum products. Automobiles and trucks consume gasoline and diesel fuel. The transportation sector consumes relatively minor amounts of natural gas or electricity but, propelled mainly by air quality laws and regulations, technological innovations in transportation are expected to increasingly rely on compressed natural gas and electricity as energy sources. Biodiesel, which comes from plant sources such as vegetable oils, is a small but growing source of transportation fuel. Vehicles powered by fuels other than gasoline or diesel are referred to as alternative fuel vehicles.

Energy consumption by on-road motor vehicles reflects the types and numbers of vehicles, the extent of their use (typically described in terms of VMT), and their fuel economy (typically described in terms of miles per gallon [mpg]). Trends in energy consumption by on-road motor vehicles generally follow trends in population and per capita income as well as trends in land use development patterns. For example, diffuse land use development patterns can result in an imbalance between jobs and housing, which can lead to longer average commute trips and greater energy use for transportation purposes.

3.16.2.1 Existing Energy Demand

Economic conditions and population growth are the primary drivers of transportation energy demand. The California Department of Finance forecasts that California's population will grow over the next 15 years by an average annual rate of 1.15 percent, translating to 9.5 million more Californians by 2025. This is below the average annual rate of 1.76 percent for the last 20 years and reflects reduced immigration rates and lower overall birth rates with the aging of the large baby boomer generation. The California Energy Commission (CEC) forecasts that the average household size will increase so that total households grow at a slower rate than the population. The number of households is forecast to increase at an average rate of 1.01 percent per year. The CEC analysis assumes that real per-household income will grow over the

next 20 years at an average annual rate of about 1.25 percent, which is somewhat lower than the 1.55 percent annual growth rate for the previous 20 years.[1]

The VMT for light-duty vehicles (LDVs) is expected to increase from 295 to 436 billion miles over the next 20 years, for a growth rate of 1.80 percent per year. LDVs account for about 97 percent of the on-road vehicles and 95 percent of the total VMT of all on-road vehicles. The CEC forecasts the number of on-road vehicles in California at 35.6 million by 2025, up from 25.6 million in 2003. This reflects an average growth rate of 1.5 percent per year. Primarily because of the continued growth in cross utility vehicles, light trucks are projected to increase as a fraction of LDV stock in California from 42 percent in 2003 to over 52 percent by 2025. Despite this growth, the LDV fleet-average fuel economy is forecast to increase by about 11 percent from 20.4 mpg in 2003 to 22.6 mpg in 2025, as described in the CEC report.[2]

Diesel demand is projected to increase from 2.7 billion gallons in 2003 to 3.3 billion gallons in 2010 and 5 billion gallons by 2025, which is an average annual increase of about 2.8 percent. Consistent with the required zero emission vehicle (ZEV) mandates, electric hybrid vehicle sales are projected to increase over time from 12,000 vehicles in 2003 to 140,000 vehicles in 2010, and to 200,000 vehicles in 2015 and later years (about 9 percent of total sales). For diesel LDVs, sales are projected to reach 60,000 vehicles in 2010, 140,000 vehicles by 2015, and 330,000 vehicles by 2025 (about 12 percent of sales). By 2025, the fleet penetration of hybrids and diesel LDVs is forecast to reduce gasoline demand projections by about 1.9 billion gallons per year. Without hybrids and diesel LDVs, the projected growth rate for gasoline demand from 2003 through 2025 would average 1.31 percent per year.[3]

In the transportation sector, the annual demand for electricity, primarily for transit, is forecast to increase from 590 to 1,800 million kilowatt-hours (kWh) between 2002 and 2025. During the same period, the CEC forecasts that the demand for natural gas in vehicles will increase from 75 to 200 million therms per year. These projected

1 *Forecasts of California Transportation Energy Demand 2005-2025*, California Energy Commission, April 2005, CEC-600-2005-008.

2 Ibid.

3 Ibid.

2025 values are about 1 percent of current electricity and natural gas demand in the State.[1]

3.16.3 Environmental Consequences

3.16.3.1 Summary of Impacts

Alternatives 1 and 2 would result in permanent direct reductions of up to 3.0 percent in fuel consumption in 2015 and up to 4.15 percent by 2035 because of improved traffic flow (as discussed in Section 3.16.3.3 below).

Alternatives 1 and 2 would result in very minor increases in indirect energy consumption (up to 0.7 percent) for energy used for the manufacturing and maintenance of vehicles operating on roads in the project study area; however, there would be no increase in indirect energy consumption for vehicles in the SCAG region. Alternatives 1 and 2 would not result in a substantial change in the demand for electricity for road and sign lighting,[2] toll facilities, and ramp metering because, with the exception of adding the electronic toll collection feature under Alternative 2, these facilities will be substantially the same under existing conditions, Alternatives 1 and 2, and the No Build Alternatives.

Temporary energy consumption during the construction of Alternatives 1 and 2 would represent a very small percent of total regional consumption and would not result in a noticeable impact related to short-term energy demand.[3]

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1 *Forecasts of California Transportation Energy Demand 2005-2025*, California Energy Commission, April 2005, CEC-600-2005-008.

2 The project will incorporate the use of energy-efficient lighting, such as LED traffic signals, to the extent feasible. This analysis did not quantify any energy savings associated with the use of energy-efficient lighting.

3 The Greenroads Manual, a sustainability rating system for road construction, estimates that the construction one lane-km of road uses about the same amount of energy as 20-40 average U.S. households over a 1-year period. “Energy and Road Construction-What’s the Mileage of Roadway?” 21 February 2012. http://www.pavementinteractive.org <http://www.pavementinteractive.org/2012/02/21/energy-and-road-construction-whats-the-mileage-of-roadway/> 25 June 2012. Using 14 miles and three lanes, construction of the project would use 257 billion Btu. Table 3.16.1 shows SCAG Transportation energy use is 853,000 billion Btu annually. Thus, total project construction energy will be less than 0.05 percent of 1 year’s transportation energy.

Summary of Impacts for Alternative 2f

Alternative 2f has been identified as the Preferred Alternative. The Initial Phase of Alternative 2f would result in a permanent direct reduction in daily fuel consumption in the study area of up to 3 percent and no change in daily fuel consumption in the SCAG region, and would result in slightly lower total energy consumption, the same as described above for Alternative 2 in 2015.

The Alternative 2f Ultimate Project would result in permanent direct reduction in fuel consumption in the study area of up to 4.15 percent and a 2.4 percent decrease in daily fuel consumption in the SCAG region, the same as discussed above for Alternative 2 in 2035.

The Alternative 2f Initial Phase and Ultimate Project would result in very minor increases in indirect energy consumption for energy used for the manufacturing and maintenance of vehicles operating on roads in the project study area, the same as discussed for Alternative 2, and no increase in indirect energy consumption for vehicles in the SCAG region. The Alternative 2f Initial Phase and Ultimate Project would not result in a substantial change in the demand for electricity for road and sign lighting, toll facilities, and ramp metering because, with the exception of adding the electronic toll collection feature under Alternative 2, these facilities will be substantially the same under existing conditions, Alternative 2f, and the No Build Alternatives.

The temporary energy consumption during the construction of the Alternative 2f Initial Phase and Ultimate Project would represent a very small percentage of total regional consumption and would not result in a noticeable impact related to short-term energy demand.[1]

[1] The Greenroads Manual, a sustainability rating system for road construction, estimates that the construction one lane-km of road uses about the same amount of energy as 20-40 average U.S. households over a 1-year period. “Energy and Road Construction-What’s the Mileage of Roadway?” 21 February 2012. http://www.pavementinteractive.org <http://www.pavementinteractive.org/2012/02/21/energy-and-road-construction-whats-the-mileage-of-roadway/> 25 June 2012. Using 14 miles and three lanes, construction of the project would use 257 billion Btu. Table 3.16.1 shows SCAG Transportation energy use is 853,000 billion Btu annually. Thus, total project construction energy will be less than 0.05 percent of 1 year’s transportation energy.

3.16.3.2 Methodology

This energy analysis is based on the methodology described in detail in the Caltrans SER, Volume 1, Chapter 13 – Energy (updated November 12, 2008). The energy analysis addresses two elements: direct and indirect energy consumption. Direct energy refers to the fuel consumed by vehicles using a highway facility. Indirect energy refers to energy associated with the construction and operation of a highway facility.

Direct transportation energy consumption was estimated for the project using traffic data and the EMFAC2007 air quality model, which provides estimated gasoline and diesel fuel consumption rates. Estimated energy consumption in 2035 is expected to represent the most conservative (i.e., highest) energy consumption because population and employment are projected to be higher in that year than in any earlier year. In addition, the analysis does not reflect the impact of energy efficiency and conservation measures that are likely to be adopted by 2035 and which would result in lower energy consumption than projected in these estimates (i.e., new California Environmental Protection Agency [Cal/EPA]/EPA fuel economy standards, bus rapid transit, HOVs).

The analysis of the potential impacts of the project that are related to energy considered two areas of potential effects:

- The study area used in the project traffic analysis that focused on the project segments of SR-91 and I-15 and other streets in that area that could potentially experience changes in traffic conditions as a result of the project. This geographic area is referred to in this analysis as the project study area.
- A regional study area consisting of the major roads in the SCAG region, which includes Orange, Riverside, and Los Angeles Counties and the non-desert parts of Ventura and San Bernardino Counties. This geographic area is referred to in this report as the SCAG region. That area was shown on Figure 3.16-1.

Implementation of the project would affect the use of indirect energy resources in the project study area and the SCAG region. The analysis of these impacts at the regional level is by its nature an analysis of cumulative impacts. Three main areas of potential impacts are assessed: (1) energy demands for construction; (2) energy demands for operation of the regional transportation system in 2035; and (3) the cumulative impacts related to growing energy demand as a result of implementation of the project and other projects in the region.

3.16.3.3 Permanent Direct Impacts

Alternatives 1 and 2

Local energy demand for transportation projects is typically dominated by vehicle fuel usage. For projects similar to the project, it is assumed that the energy consumption by vehicles is much larger than the small change in electrical energy consumption for any additional lighting (i.e., road lighting), which is expected to be minimal for this project.

Construction of the Build Alternatives would alter the traffic flow in both the project study area and the SCAG region. Based on the traffic analysis, the project would increase the VMT in the project study area, but would improve the traffic flow by increasing the average vehicle speeds. The enhanced traffic flow conditions would minimize vehicle delay and improve vehicle fuel efficiency. Table 3.16.2 lists the daily fuel consumption and fuel costs in the project study area associated with the vehicle trips for the Baseline/Existing (2007) condition, the Build Alternatives, and the No Build Alternatives in 2015 and 2035.

Table 3.16.2 SR-91 CIP Study Area Daily Fuel Consumption Comparison

Alternative	VMT	VHT	Average Speed	Fuel Consumption (gallons)	Fuel Cost[1]	Percent Change in Daily Fuel Consumption from Existing	Percent Change in Daily Fuel Consumption from No Build
Baseline/ Existing (2007)	11,003,152	334,688	32.9	476,000	$1,720,000	N/A	N/A
2015 No Build	13,671,088	446,546	30.6	601,000	$2,180,000	26.26%	N/A
2015 Alternative 1	13,896,035	437,352	31.8	596,000	$2,160,000	25.21%	-0.83%
2015 Alternative 2	13,889,079	428,063	32.4	583,000	$2,120,000	22.48%	-3.00%
2015 Initial Phase of Alternative 2	13,662,654	433,152	31.5	582,000	$2,110,000	22.27%	-3.16%
2035 No Build	16,824,059	583,945	28.8	771,000	$2,800,000	61.97%	N/A
2035 Alternative 1	16,928,339	571,919	29.6	755,000	$2,740,000	58.61%	-2.08%
2035 Alternative 2	16,984,946	562,795	30.2	739,000	$2,690,000	55.25%	-4.15%

Source: *Final Energy Report* (March 2010) and *Traffic Study Report* (July 2010).

[1] Fuel cost was calculated using a gasoline cost of $3.558 per gallon and diesel cost of $3.925 per gallon (average for last 12 months for Los Angeles region) from the United States Energy Administration: http://tonto.eia.doe.gov/dnav/pet/pet_pri_gnd_a_epd2d_pte_cpgal_a.htm, accessed November 12, 2009.

N/A = not applicable
SR-91 CIP = State Route 91 Corridor Improvement Project
VHT = vehicle hours traveled
VMT = vehicle miles traveled

As shown in the tables in this section:

- Baseline/Existing (2007) represents the existing conditions.
- 2015 No Build represents conditions in 2015 if the SR-91 CIP is not constructed.
- 2015 Alternative 1, 2015 Alternative 2, and 2015 Initial Phase of Alternative 2 represent conditions in 2015 if those Alternatives are constructed.
- 2035 No Build represents conditions in 2035 if the SR-91 CIP is not constructed.
- 2035 Alternative 1 and 2035 Alternative 2 represent conditions in 2035 if those Alternatives are constructed.

Table 3.16.2 lists the daily fuel consumption and fuel costs associated with the vehicle trips for the Baseline/Existing (2007) condition, the Build Alternatives, and the No Build Alternatives for 2015 and 2035.

As shown in Table 3.16.2, changes in the SR-91 traffic from the Baseline/Existing (2007) to the 2015 No Build Alternative would result in a 26.26 percent increase in daily fuel consumption. The 2015 Build Alternative 1 would result in a 25.21 percent increase in daily fuel consumption compared to the Baseline/Existing (2007). The 2015 Build Alternative 2 would result in a 22.48 percent increase in daily fuel consumption compared to the Baseline/Existing (2007). The 2015 Initial Phase of Alternative 2 Build Alternative 2 would result in a 22.27 percent increase in daily fuel consumption compared to the Baseline/Existing (2007).

As shown in Table 3.16.3, in the SCAG region, changes in the SR-91 traffic from the Baseline/Existing (2007) to the 2035 No Build Alternative would result in a 48.54 percent increase in daily fuel consumption. The 2035 Build Alternative 1 would result in a 45.03 percent increase in daily fuel consumption compared to the Baseline/ Existing (2007). The 2035 Build Alternative 2 would result in a 45.03 percent increase in daily fuel consumption compared to the Baseline/Existing (2007).

As shown in Table 3.16.2, implementation of the Build Alternatives would result in a slight decrease in fuel consumption (i.e., up to a 3.0 percent reduction in 2015 and up to a 4.15 percent reduction in 2035) in the project study area. As shown in Table 3.16.3, in the SCAG region, the project's effect on fuel consumption would be negligible in 2015 and would result in a slight decrease (up to a 2.4 percent reduction) in 2035. Therefore, implementation of any of the Build Alternatives would not result in a substantial increase in fuel consumption. Alternative 2f would also result in a

Table 3.16.3 SCAG Region Daily Fuel Consumption Comparison

Alternative	VMT	VHT	Average Speed	Fuel Consumption (gallons)	Fuel Cost[1]	Percent Change in Daily Fuel Consumption from Existing	Percent Change in Daily Fuel Consumption from No Build
Baseline/ Existing (2007)	405,189,479	12,581,617	32.2	17,100,000	$61,500,000	N/A	N/A
2015 No Build	475,317,065	15,386,962	30.9	20,200,000	$72,900,000	18.13%	N/A
2015 Alternative 1	475,217,556	15,369,936	30.9	20,200,000	$72,900,000	18.13%	0.0%
2015 Alternative 2	475,098,337	15,340,716	31.0	19,800,000	$71,500,000	15.79%	-2.0%
2015 Initial Phase of Alternative 2	475,119,071	15,384,975	30.9	20,200,000	$72,800,000	18.13%	0.0%
2035 No Build	558,475,650	19,990,371	27.9	25,400,000	$91,800,000	48.54%	N/A
2035 Alternative 1	558,199,250	19,905,264	28.0	24,800,000	$89,700,000	45.03%	-2.4%
2035 Alternative 2	558,409,584	19,904,436	28.1	24,800,000	$89,700,000	45.03%	-2.4%

Source: *Final Energy Report* (March 2010) and *Traffic Study Report* (July 2010).

[1] Fuel cost was calculated using a gasoline cost of $3.558 per gallon and diesel cost of $3.925 per gallon (average for last 12 months for Los Angeles region) from the United States Energy Administration: http://tonto.eia.doe.gov/dnav/pet/pet_pri_gnd_a_epd2d_pte_cpgal_a.htm, accessed November 12, 2009.

N/A = not applicable
SCAG = Southern California Association of Governments
VMT = vehicle miles traveled
VHT = vehicle hours traveled

slight decrease on fuel consumption in the study area and in the SCAG region, the same as shown in Table 3.16.2 for Alternative 2. Using the same fuel costs, note that the fuel costs for the project study area increase by approximately 25 percent from Baseline/Existing (2007) conditions to any of the alternatives in 2015, with an increase of nearly 60 percent in 2035. Alternative 2f fuel costs would also increase the same as shown in Table 3.16.3 for Alternative 2 in 2015 and 2035.

While the average increase in speeds for both Build Alternatives versus the No Build Alternative is small, these average speeds are measured over the entire project study area, which includes hundreds of miles of roads as shown on Figure 3.16-1; therefore, the small increase is actually substantial for key roads.

The phasing plans for the Build Alternatives would result in the improvements in the Build Alternatives being constructed in phases, starting with the Initial Phase in 2015 and ending with completion of all the project components by 2035. As shown previously in Table 3.16.2, the phasing of the improvements under Alternatives 1 and 2 is anticipated to result in slightly lower total energy consumption compared to the

impacts of implementing Alternatives 1 and 2 without the phasing plans. However, even with this slight reduction, the implementation of either Build Alternative with phasing would not result in a substantial increase in energy consumption compared to the No Build Alternative. The phasing of the improvements under Alternative 2f is anticipated to result in slightly lower total energy consumption, the same as shown in Table 3.16.2 for Alternative 2.

No Build Alternative

Under the No Build Alternative, the following permanent effects on energy consumption discussed above for the Build Alternatives would not occur:

- Increases in VMT in the SR-91 CIP study area
- Reductions or no changes in fuel consumption in the SR-91 CIP study area
- Reductions in VMT in the SCAG region
- Reductions in fuel consumption in the SCAG region

However, there may be positive permanent energy consumption effects for other transportation improvement projects in the project study area and the SCAG region.

3.16.3.4 Permanent Indirect Impacts

Alternatives 1 and 2

Indirect manufacturing energy effects involve the one-time, nonrecoverable energy costs associated with the manufacture of vehicles. Indirect maintenance energy effects involve the ongoing, nonrecoverable energy costs associated with the maintenance of vehicles. This analysis was also conducted using the Input-Output Method. It was assumed that the energy requirements for manufacturing and maintaining vehicles have not changed since the Caltrans *Energy and Transportation Systems* handbook was published in July 1983. Thus, the per-vehicle indirect energy impacts for the Build Alternatives would be the same and would not change from the Baseline/Existing (2007) condition.

As shown in Table 3.16.4, changes in the indirect energy used from the existing scenario to the No Build scenario result in a 53.3 percent increase in indirect energy used. Build Alternative 1 would result in a 54.0 percent increase and Build Alternative 2 would result in a 54.0 percent increase in indirect energy used compared to the Existing scenario.

Using the estimated VMT and VHT data provided in Tables 3.16.2 and 3.16.3, Table 3.16.4 shows that the Build Alternatives would result in a slight increase in

Table 3.16.4 SR-91 CIP Study Area Indirect Energy Comparison

Description	Energy Used (Billion BTU/day)			
	Existing	No Build	Alternative 1	Alternative 2
Manufacturing				
Auto Manufacture	14.4	21.9	22.0	22.2
Truck Manufacture	1.12	1.8	1.8	1.7
Subtotal	15.5	23.7	23.8	23.9
Maintenance				
Auto Maintenance	11.6	17.6	17.8	17.9
Truck Maintenance	2.1	3.4	3.3	3.2
Subtotal	13.7	21.0	21.1	21.1
TOTAL	**29.2**	**44.7**	**44.9**	**45.0**
Percent Change from Existing	**N/A**	**53.3%**	**54.0%**	**54.0%**
Percent Change from No Build	**N/A**	**N/A**	**0.45%**	**0.67%**

Source: *Final Energy Report* (March 2010).
BTU = British thermal units
N/A = not applicable
SR-91 CIP = State Route 91 Corridor Improvement Project

indirect energy consumption (i.e., up to a 0.7 percent increase) in the project study area compared to the No Build Alternative. Alternative 2f would also result in a slight increase in indirect energy consumption, the same as shown in Table 3.16.4 for Alternative 2.

However, as shown in Table 3.16.5, in the SCAG region, changes in the indirect energy used from the Existing scenario to the No Build Alternative, Build Alternative 1, and Build Alternative 2 would all result in the same 38.7 percent increase in indirect energy used. As shown in Table 3.16.5, there would be no increase in total indirect energy consumption in the SCAG region as a result of the Build Alternatives. Alternative 2f would also result in no increase in the total indirect energy consumption in the SCAG region, the same as shown in Table 3.16.5 for Alternative 2. Therefore, the Build Alternatives would not result in a substantial increase in indirect energy consumption or local energy demand in the SCAG region compared to the No Build Alternative.

The existing road has electrical demands from the operation of the toll facilities, road and sign lighting, and interchange ramp metering. It is not expected that implementation of the Build Alternatives would substantially change these current energy demands.

Table 3.16.5 SCAG Region Indirect Energy Comparison

Description	Energy Used (Billion BTU/day)			
	Existing	No Build	Alternative 1	Alternative 2
Manufacturing				
Auto Manufacture	538	736	736	736
Truck Manufacture	30.7	48	48	48
Subtotal	569	784	784	784
Maintenance				
Auto Maintenance	434	594	594	594
Truck Maintenance	57.4	91	90	90
Subtotal	491	685	684	684
TOTAL	**1,060**	**1,470**	**1,470**	**1,470**
Percent Change from Existing	**N/A**	**38.7%**	**38.7%**	**38.7%**
Percent Change from No Build	**N/A**	**N/A**	**0.0%**	**0.0%**

Source: *Final Energy Report* (March 2010).
BTU = British thermal units
N/A = not applicable
SCAG = Southern California Association of Governments

3.16.3.5 Temporary Impacts

Alternatives 1 and 2

Indirect construction energy effects involve the one-time, nonrecoverable energy costs associated with construction of roads, structures, and vehicles. The indirect energy analysis for the project was conducted using the Input-Output Method. This method converts either VMT or construction costs into energy consumption based on existing data from other road improvement projects in the United States using conversions listed in the Caltrans *Energy and Transportation Systems* handbook (July 1983). It was assumed that the energy required to manufacture a vehicle has not changed since the handbook was published. However, an adjustment of the construction energy cost per British thermal unit[1] (BTU) of 27,500 BTU/1977 dollar was made by using a Highway Construction Price Index factor of 4.5 to adjust to current BTU/dollar.

Based on the estimated costs to construct the Build Alternatives (refer to the *Project Report* [September 2011]), it would take approximately 4.8 trillion BTUs to construct the Alternative 1 Ultimate Project, and 7.0 trillion BTUs to construct the Alternative 2 Ultimate Project. It would take approximately 4.9 trillion BTUs to construct the 2015 Initial Phase of Alternative 2f and an additional 1.9 trillion BTUs for a total of 6.8 trillion BTUs to construct the 2035 Ultimate Project of Alternative

[1] BTU is the quantity of energy necessary to raise the temperature of 1 pound of water 1°F at 1 atmosphere of pressure.

2f. As described in detail in Section 3.16.2.3, Permanent Direct Impacts, there are effectively no direct energy savings with either Build Alternative compared to the No Build Alternative, so the payback period for these construction costs is not quantifiable. However, similar to other recently completed major construction projects in southern California, because the increased energy demands of construction of the project are such a small fraction of the regional energy consumption, the construction of either Build Alternative is unlikely to create a noticeable impact related to short-term demand for energy during project construction. The construction of Alternative 2f is also unlikely to create a noticeable impact related to short-term demand for energy during project construction, the same as for the Build Alternatives.

No Build Alternative

Under the No Build Alternative, the temporary energy consumption discussed above for the Build Alternatives would not occur, but temporary energy consumption would occur for the other transportation improvement projects included in the No Build Alternative. Generally, construction energy can be compared to increased roadway maintenance energy if a project is not built. However, there is insufficient information to quantify this energy savings.

3.16.3.6 Energy Plan

The CEC, CPUC, and Consumer Power and Conservation Financing Authority (called the CPA, which is now defunct) approved the final State of California Energy Action Plan in 2003, which was proposed by a subcommittee of these three agencies. The Plan established shared goals and specific actions to ensure that adequate, reliable, and reasonably priced electrical power and natural gas supplies are achieved and provided through policies, strategies, and actions that are cost-effective and environmentally sound for California's consumers and taxpayers. In 2005, an updated Energy Action Plan was adopted by the CEC and CPUC to reflect policy changes and actions after 2003.

The State's energy policies have been substantially influenced by the passage of AB 32, the California Global Warming Solutions Act of 2006. The CEC's *2007 Integrated Energy Policy Report* (IEPR) advanced policies that would enable the State to meet its energy needs in a carbon-constrained world. That report also provides a comprehensive set of recommended actions to achieve these policies.

3.16.4 Avoidance, Minimization, and/or Mitigation Measures

The Build Alternatives would not result in adverse impacts related to energy consumption in the project study area or the SCAG region compared to the No Build Alternative. No avoidance, minimization, or mitigation measures are required.

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BIOLOGICAL ENVIRONMENT

3.17 Natural Communities

3.17.1 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. The emphasis of the section should be on the ecological function of the natural communities within the area. 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.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed below in the Threatened and Endangered Species Section 3.21. Wetlands and other waters are also discussed below in Section 3.18.

3.17.2 Affected Environment

The analysis of impacts of the project to natural communities is based on the NES (June 2010).

3.17.2.1 Biological Study Area

The BSA for the project, shown on Figure 3.17.1, was developed based on the maximum extent of potential direct effects, as determined from the preliminary project plans provided in Appendix L, Project Features. The limits of the BSA extend beyond the maximum extent of potential direct effects as appropriate to ensure identification of sensitive biological resources within and adjacent to the project limits. This provided for a survey area that was larger than the area of potential direct effect. The BSA includes a total of 5,370.7 ac, and extends approximately 1,000 ft on either side of the centerline of SR-91 and I-15.

In the BSA, approximately 3,511.8 ac are developed and 1,298.3 ac are a mixture of nonnative grasslands and mixed ruderal and ornamental landscape, for a total of approximately 4,800 ac of nonnative landscape. The remaining 570.6 ac in the BSA consist of native vegetation.

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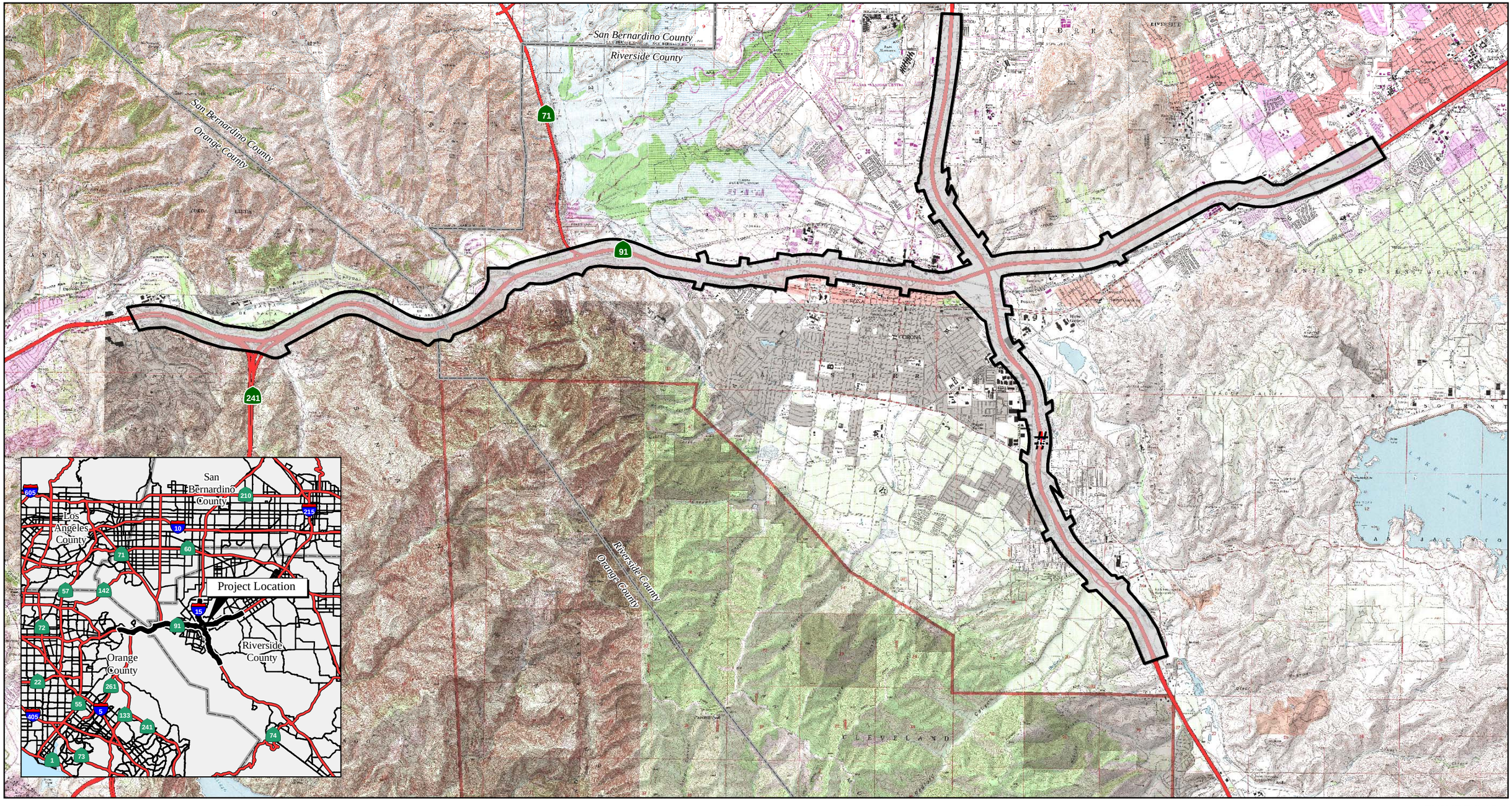

LEGEND

Biological Study Area

FIGURE 3.17-1

SR-91 Corridor Improvement Project

Biological Study Area

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

0 3300 6600
FEET

SOURCE: USGS 7.5' QUAD - BLACK STAR CANYON ('88), CORONA NORTH ('81), CORONA SOUTH ('88), PRADO DAM ('81), RIVERSIDE WEST ('81); CALIF.

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The BSA was used as the study limit boundary for all biological surveys conducted during 2008 and 2009, but those surveys were limited where access to individual properties was available. Where access was available, the BSA was surveyed on foot. Where access was not available (e.g., no permission granted by property owner, inaccessibly steep slopes, or locked gate), areas were surveyed from accessible areas with the aid of binoculars.

3.17.2.2 Natural Plant Communities

The plant communities in the BSA consist of a mix of several habitat types. Table 3.17.1 lists the acreage of each of the plant communities present in the BSA.

Table 3.17.1 Vegetation Communities in the BSA

Vegetation Community	Acres in Orange County	Acres in Riverside County	Total Acres	Natural Community of Special Concern
Scrub and Chaparral Habitats				
Chaparral	69.4	57.3	126.7	No
Coastal sage scrub	111.5	167.4	278.9	Yes
Riparian and Woodland Habitats				
Riparian forest	69.8	31.4	101.2	Yes
Riparian scrub	3.0	3.3	6.3	Yes
Open water	14.1	4.5	18.6	Yes
Oak woodland	24.4	14.5	38.9	Yes
Disturbed Habitats				
Developed	341.1	3,170.7	3,511.8	No
Nonnative grassland	97.9	172.1	270.0	No
Mixed ruderal and ornamental	114.9	903.4	1,018.3	No
Total	**--**	**--**	**5,370.7**	**--**

Source: *Final Natural Environment Study* (June 2010).
BSA = biological study area

Although nine plant communities, or variations, were identified in the BSA, only three are plant communities of special concern: CSS, riparian/riverine (which includes the categories of riparian forest, riparian scrub, and open water), and oak woodland. Habitats are considered to be of special concern based on federal, State, or local laws regulating their development; limited distributions; and/or the habitat requirements of sensitive plants or animals occurring in those plant communities. Figure 3.17-2 shows the location of the natural plant communities of special concern in the BSA. The six habitat types that are not communities of special concern are discussed in detail in the NES but are not discussed further in this section.

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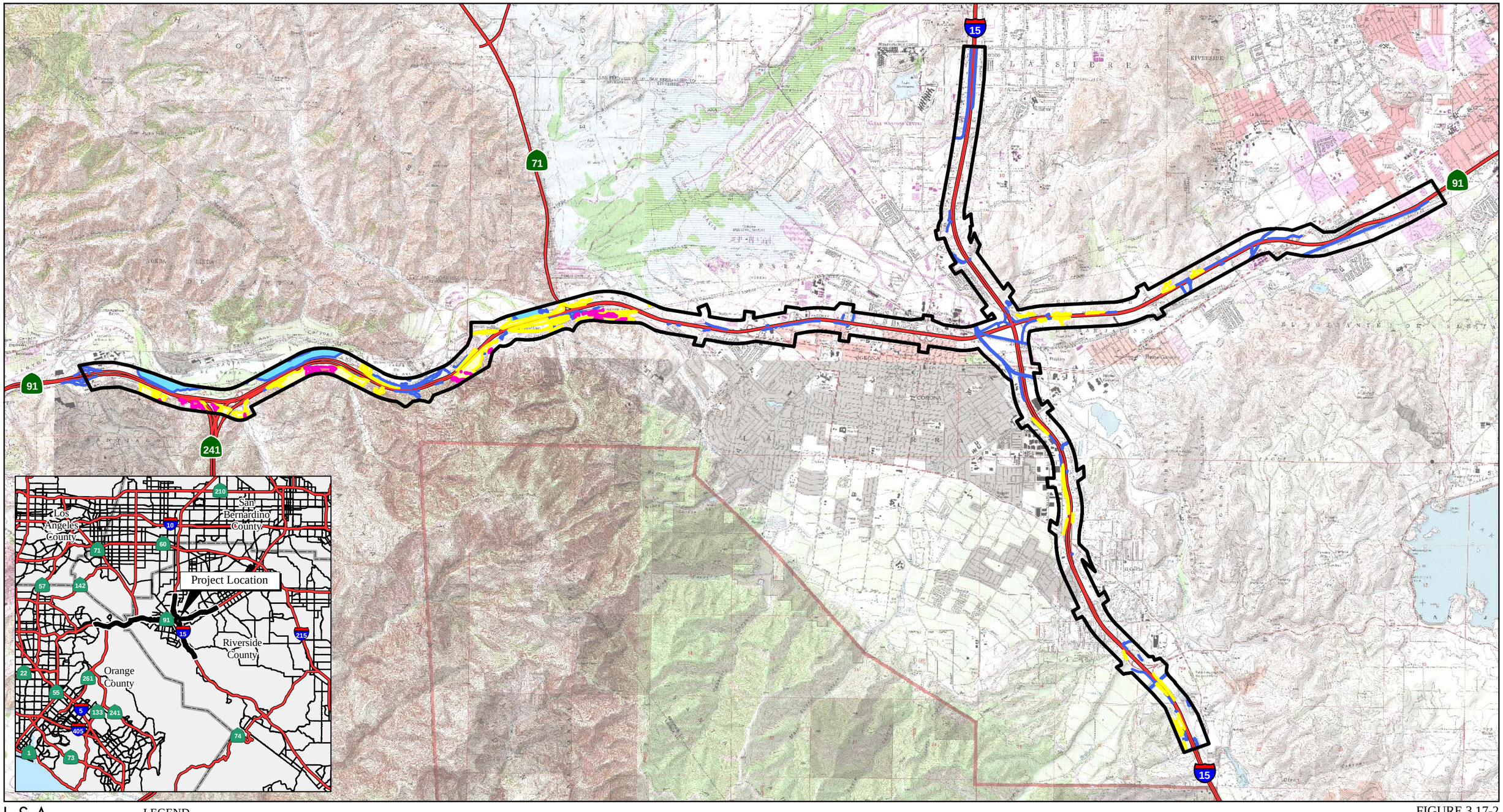

LSA

LEGEND

- Biological Study Area
- Coastal Sage Scrub Areas
- Oak Woodland
- Riparian/Riverine Areas

FIGURE 3.17-2

SR-91 Corridor Improvement Project

Locations of Natural Plant Communities of Special Concern

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

SOURCE: USGS 7.5' QUAD - BLACK STAR CANYON ('88), CORONA NORTH ('81), CORONA SOUTH ('88), PRADO DAM ('81), RIVERSIDE WEST ('81); CALIF.

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Coastal Sage Scrub

CSS is generally a patchy vegetation community found in diverse habitats and is dominated by a group of shrub species found in southern California. Shrub cover is dense and generally continuous, with low moisture content. Steep, xeric slopes and quickly draining soils characterize the CSS community. Annual herbs, including weedy grasses and forbs and native wildflowers, are common in openings and disturbed areas in CSS communities. Species in the CSS plant community include California sagebrush (*Artemisia californica*), coastal deerweed (*Lotus scoparius* var. *scoparius*), white sage (*Salvia apiana*), black sage (*Salvia mellifera*), California buckwheat (*Eriogonum fasciculatum*), our lord's candle (*Yucca whipplei*), California encelia (*Encelia californica*), brittlebush (*Encelia farinosa*), and California poppy (*Eschscholzia californica*).

CSS has become displaced by spreading urbanization. Many rare and endangered species occur in CSS and associated plant communities. Consequently, degradation and displacement of CSS has resulted in substantial habitat loss for a variety of animal species. Therefore, the CDFG and USFWS have special concerns for this habitat type.

Although CSS occurs throughout much of the BSA, much of that CSS is highly disturbed. Other areas are sparse due to rocky cut slopes preventing dense growth.

Riparian/Riverine

Riparian habitats were formerly abundant along the major rivers of coastal southern California but are now much reduced by urban expansion, flood control, and channel improvements (Holland 1986). The typical association of these riparian habitat types with drainages means they are protected under the California Fish and Game Code and, to a certain extent, by the federal CWA. These habitats are considered high-quality wildlife habitats because they provide protective cover, water, and food for a variety of species. Many animal species are riparian habitat obligates. Other animals, including large mammals, require access to water and use bands of riparian habitat as wildlife corridors. The CDFG regulates riparian areas to the extent that those areas are associated with the banks of a stream or lake shorelines.

There are three riparian natural communities of special concern in the BSA: riparian forest, riparian scrub, and deepwater aquatic.

The riparian forest habitat occurs in the BSA predominantly around Prado Dam, but there are some small patches throughout the BSA. This habitat type is dominated by

arroyo willow (*Salix lasiolepis*), black willow (*Salix gooddingii*), western cottonwood (*Populus fremontii* ssp. *fremontii*), and western sycamore (*Platanus racemosa*). Understory species include mulefat (*Baccharis salicifolia*), mugwort (*Artemisia douglasiana*), common cocklebur (*Xanthium strumarium*), white water-cress (*Rorippa nasturtium-aquaticum*), and tamarisk (*Tamarix ramosissima*).

Riparian scrub habitat also occurs in the BSA predominantly around Prado Dam. The dominant plant species in this habitat type is mulefat. There are few other associated species in this plant community because mulefat grows in dense thickets and precludes other plant species from colonizing. Although mulefat can establish in an upland setting, it is often associated with an established riparian community. Mulefat islands have habitat value because many wildlife species use the dense foliage for camouflage. Although there are some upland mulefat islands in the BSA, the majority of this habitat in the BSA is associated with other riparian communities.

The deepwater aquatic habitat occurs in the BSA only in the Santa Ana River. Deepwater aquatic habitats are permanently inundated areas that typically do not support rooted-emergent (above water) or woody plant species, but may support submergent (below water) plant species. Deepwater aquatic waters are recognized as having high habitat value due to their use as a fish and wildlife resource and limited distribution in the arid west.

Oak Woodland

This habitat type is considered important by the CDFG because the structural diversity and food production of this habitat type provide relatively high wildlife habitat values. In each type of oak habitat (e.g., woodland, riparian), there is a different set of co-occurring plant species that is often beneficial. Animals are affected by these differences in terms of food supply, nesting sites, and predator cover, and respond according to their own ecological requirements (Pavlik 1991). This plant community occurs predominantly in the west part of the BSA, generally west of the SR-91/SR-71 interchange and is dominated by coast live oak (*Quercus agrifolia*). Other plant species in this plant community include Southern California black walnut (*Juglans californica* var. *californica*), laurel sumac (*Malosma laurina*), lemonade berry (*Rhus integrifolia*), and poison oak (*Toxicodendron diversilobum*).

3.17.2.3 Conservation Plans

Orange County Natural Communities Conservation Plan

There are lands designated in the Orange County NCCP south of the project segment of SR-91 in Orange County. The nearest NCCP lands to the BSA are approximately 5,900 ft south of the BSA at Weir Canyon Road and approximately 2,000 ft south of the BSA near the County line.

Western Riverside County Multiple Species Habitat Conservation Plan

The Western Riverside County MSHCP serves as a comprehensive, multi-jurisdictional Western Riverside County MSHCP and NCCP, and focuses on the conservation of species and their associated habitats in western Riverside County. The Western Riverside County MSHCP allows its permittees to better control local land use decisions and maintain a strong economic climate in the region while adhering to the requirements of FESA and CESA. The Western Riverside County MSHCP is used to allow participating jurisdictions the "take" of plant and animal species identified in the Western Riverside County MSHCP and found within the boundaries of the Western Riverside County MSHCP Plan Area through an abbreviated authorization process with the wildlife resource agencies. Regulation of the "take" of threatened, endangered, and rare species is authorized by the wildlife agencies (USFWS and CDFG) under provisions of Section 7(a)(2) of FESA and the California Fish and Game Code Section 2050–2089, respectively. The wildlife agencies allow "Take Authorization" for otherwise lawful actions (e.g., public and private development) in exchange for the assembly and management of a coordinated Western Riverside County MSHCP Conservation Area.

The Western Riverside County MSHCP Plan Area encompasses approximately 1.26 million acres (1,966 sq mi) and includes all unincorporated Riverside County land west of the crest of the San Jacinto Mountains to the Orange County line, as well as the jurisdictional areas of the cities of Temecula, Murrieta, Lake Elsinore, Canyon Lake, Norco, Corona, Riverside, Moreno Valley, Banning, Beaumont, Calimesa, Perris, Hemet, and San Jacinto. The Western Riverside County MSHCP Plan Area covers multiple species and habitats within a diverse landscape, from urban centers to undeveloped foothills and montane forests, all under multiple jurisdictions. The Western Riverside County MSHCP Plan Area extends across many bioregions as well, including the Santa Ana Mountains, Riverside Lowlands, San Jacinto Foothills, San Jacinto Mountains, Agua Tibia Mountains, Desert Transition, and San Bernardino Mountains. The goal of the Western Riverside County MSHCP is to

provide a coordinated conservation area and implementation program to preserve biological diversity and maintain the region's quality of life.

The Conservation Area is assembled from parts of the Western Riverside County MSHCP Criteria Area, which consists of one-quarter-section (i.e., approximately 65-hectare [ha] or 160 ac) cells, each with specific criteria for conservation requirements. The Western Riverside County MSHCP includes both Core Areas and Linkages. The Conservation Area targeted under the Western Riverside County MSHCP, when complete, will total 200,000 ha (500,000 ac).

As a permittee under the Western Riverside County MSHCP, the Department is obligated to implement specific conditions, as described in Sections 13.7 and 13.8 of the Western Riverside County MSHCP Implementation Agreement, and to abide by the Section 10(a)(1) permit conditions. Those requirements include: (1) compliance with the policies for the Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools as set forth in Section 6.1.2 of the Western Riverside County MSHCP; (2) compliance with the policies for the Protection of Narrow Endemic Plant Species as set forth in Section 6.1.3 of the Western Riverside County MSHCP; (3) compliance with surveys to be conducted as set forth in Section 6.3.2 of the Western Riverside County MSHCP; (4) compliance with the Urban/Wildlands Interface Guidelines as set forth in Section 6.1.4 of the Western Riverside County MSHCP; and (5) compliance with the BMPs and the siting and design criteria as set forth in Section 7.0 and Appendix C of the Western Riverside County MSHCP.

As a permittee under the Western Riverside County MSHCP, RCTC received a consistency conclusion from Western Riverside County RCA on April 4, 2011, that the SR-91 CIP demonstrates consistency with the requirements for covered road projects and with other requirements of the Western Riverside County MSHCP. A copy of the Joint Project Review was submitted by the Western Riverside County RCA to the USFWS and CDFG on April 4, 2011. Per Section 6.6.2 of the Western Riverside County MSHCP, the USFWS and CDFG have 10 days from the receipt of the Joint Project Review to submit any comments in writing. No comments on the Joint Project Review were received from the USFWS or CDFG.

A Biological Opinion was received from the USFWS on November 30, 2011. As part of that Biological Opinion, the SR-91 CIP was determined to be consistent with the relevant Western Riverside County MSHCP policies and procedures.

3.17.2.4 Wildlife Corridors

Roads can fragment wildlife habitat and can greatly affect wildlife movement. The detrimental effects of SR-91 and I-15 on wildlife movement have existed since those freeways were constructed. A wildlife corridor assessment for the project was prepared and is included as Appendix H of the NES. The intent of that analysis was to determine what effect the Build Alternatives might have on wildlife movement between the Santa Ana Mountains and the Puente-Chino Hills and Prado Basin, and between the Santa Ana Mountains and Lake Mathews-Estelle Mountain Reserve. The Western Riverside County MSHCP was reviewed to determine how the project would impact Western Riverside County MSHCP-designated Cores and Linkages, which are areas identified in the Western Riverside County MSHCP to be conserved that provide appropriate habitat to support the conservation of covered species and/or provide for genetic flow for identified species.

Thirty-eight potential wildlife crossing structures have been identified in the BSA, mostly consisting of existing small RCBs, reinforced concrete pipe, or corrugated metal pipe culverts. Identified wildlife movement corridors that provide primary opportunities for medium- and large-sized wildlife to move across the project segments of SR-91 and I-15 are located at Gypsum Canyon Wash and Coal Canyon in Orange County, and B Canyon, the Green River Road underpass, Fresno Canyon Creek/Wardlow Wash, and Bedford Wash in Riverside County. These crossings are described in the following sections.

Gypsum Canyon Wash

Due to high levels of vehicular usage, the Gypsum Canyon Road underpass provides limited opportunities for wildlife movement between the Santa Ana Mountains and the Puente-Chino Hills. Animals attempting to use the undercrossing must cross approximately 1,300 linear feet of developed land, most of which is without cover. The 984 ft long box culvert just east of the Gypsum Canyon Road undercrossing is already very long and is planned to be lengthened by 1,700 ft by other projects, thereby making it less desirable for wildlife use. Furthermore, the approximately 3,000 ac Mountain Park Specific Plan on the south side of SR-91 will essentially eliminate Gypsum Canyon for consideration as a viable wildlife movement corridor.

Coal Canyon

Coal Canyon is the most important remaining wildlife connection between the Santa Ana Mountains and the Puente-Chino Hills. Coal Canyon is used by a wide variety of small-, medium-, and large-sized wildlife. It is important because it is one of the few

remaining wildlife crossings for large mammals such as mountain lions, mule deer, and bobcats. Animals can cross under SR-91 at Coal Canyon via the 70 x 25 ft modified bridge undercrossing. In the past, wildlife also used a 20 x 8 x 723 ft double-box culvert approximately 200 ft west of the bridge undercrossing. In the past, the double-box culvert was clogged by silt and debris. However, in 2009 and 2010, the double-box culvert was cleaned. Increased development in the region, a proposed trail system, addition of riprap along the Santa Ana River, and creation of additional railroad lines would contribute additional pressure to this vital wildlife corridor linkage.

B Canyon

Located near the east end of the Green River Golf Club property, the B Canyon box culvert provides high potential as a wildlife linkage across SR-91. Although this structure is not currently identified for conservation as a Western Riverside County MSHCP Core or Linkage, B Canyon is now considered an important wildlife corridor between the Santa Ana Mountains and the Puente-Chino Hills. It was once believed that large mammals would not use this culvert due to its small size. Based on recent wildlife movement studies, it is now clear this is not so. The USFWS and CDFG now consider the B Canyon culvert to be more valuable than Proposed Constrained Linkage 1, discussed below. The RCA in conjunction with the USFWS and CDFG has identified B Canyon as a suitable replacement location for Proposed Constrained Linkage 1. As a result, the RCA and the wildlife resource agencies would like to amend the Western Riverside County MSHCP to relocate Proposed Constrained Linkage 1 from its current location to B Canyon. For this to be a viable option, participation of the involved stakeholders is imperative.

Because B Canyon is not identified for conservation by the Western Riverside County MSHCP, mitigation for impacts of the SR-91 CIP to B Canyon is not warranted. However, as a public steward, RCTC has committed to developing a separate project in the future to improve B Canyon to accommodate more wildlife movement by widening that crossing under SR-91. That project is dependent on the RCA's ability to amend the Western Riverside County MSHCP and to obtain the necessary property rights to ensure the corridor will be successful in the long term.

West Prado Road Undercrossing (Western Riverside County MSHCP Proposed Constrained Linkage 1)

A Constrained Linkage is defined by the Western Riverside County MSHCP as "… a constricted connection expected to provide for movement of identified Planning

Species between Core Areas, where options for assembly of the connection are limited due to existing patterns of use." The Prado Basin/Santa Ana River area and the CNF are the two Core Areas that Proposed Constrained Linkage 1 is to serve. Proposed Constrained Linkage 1 intersects with SR-91 where West Prado Road passes below SR-91. Wildlife movement along Proposed Constrained Linkage 1 is very limited. Proposed Constrained Linkage 1 is identified as constrained by existing urban development to the north, but currently provides for movement of large mammals such as mountain lions and bobcats. However, continuing land development in the region, Green River Road, West Prado Road, existing fencing, and railroad lines are all obstacles to wildlife movement along this corridor. The continuing land development in the area is expected to further constrain this linkage, making it no longer accessible to large mammals. As a result, the RCA, USFWS, and CDFG are evaluating replacement locations for Proposed Constrained Linkage 1, such as B Canyon.

Fresno Canyon/Wardlow Wash (Western Riverside County MSHCP Proposed Constrained Linkage 2)

Fresno Canyon and Wardlow Wash are at the west edge of the City of Corona, just south of the SR-91/SR-71 interchange. They have been identified by the USFWS as wildlife corridors linking the Santa Ana Mountains and the Prado Basin and as Proposed Constrained Linkage 2 by the Western Riverside County MSHCP.

Fresno Canyon/Wardlow Wash connects to the Prado Basin via a bridged undercrossing and box culvert under SR-91. The double-box culvert at Fresno Canyon/Wardlow Wash, while less suitable for large mammal movement, is suitable for movement of small and possibly medium-sized wildlife. Although small, the high-quality riparian habitat makes the culvert more desirable to wildlife.

In addition to the Fresno Canyon/Wardlow Wash box culvert, Proposed Constrained Linkage 2 also contains a highway undercrossing that would be suitable for large-sized wildlife. However, there is a steep concrete slope on the north side of SR-91 that greatly limits wildlife usage of this as a movement corridor.

Bedford Wash

Bedford Wash is near the southern end of the project on I-15. While Bedford Wash is greatly restricted as a wildlife corridor due to a reduction of vegetated cover associated with agricultural operations and surrounding commercial and industrial development in the vicinity, much of the corridor remains undeveloped, thereby

potentially providing an opportunity to develop a wildlife movement corridor suitable for medium- and large-sized wildlife linking the CNF to the Lake Mathews-Estelle Mountain Reserve. Although this area is not identified for conservation as a Western Riverside County MSHCP Core or Linkage, Bedford Wash may function as a wildlife movement corridor connecting the CNF (Western Riverside County MSHCP Core Area B), the proposed extension of the Lake Mathews-Estelle Mountain Reserve (Core Area C), and Temescal Wash (Proposed Constrained Linkage 4).

3.17.3 Environmental Consequences

3.17.3.1 Summary of Impacts

The permanent and temporary effects of Alternatives 1 and 2 on natural communities are the same for all the design variations under the Build Alternatives.

The Initial Phases of Alternatives 1 and 2 would result in permanent impacts to 9.87 ac of CSS. The Alternative 1 Ultimate Project would result in permanent impacts to an additional 17.37 ac of CSS, 0.48 ac of riparian/riverine, and 0.01 ac of oak woodlands beyond the impacts in the Initial Phase. The Alternative 2 Ultimate Project would result in permanent impacts to 25.58 ac of CSS, 0.47 ac of riparian/riverine, and 0.02 ac of oak woodlands beyond the impacts in the Initial Phase.

The Initial Phases of Alternatives 1 and 2 would result in temporary impacts to 3.38 ac of CSS, 1.72 ac of riparian/riverine, and 0.04 ac of oak woodlands. The Alternative 1 Ultimate Project would result in temporary impacts to 7.59 ac of CSS, 1.60 ac of riparian/riverine, and 0.51 ac of oak woodlands beyond the impacts in the Initial Phase. The Alternative 2 Ultimate Project would result in temporary impacts to 8.04 ac of CSS, 1.29 ac of riparian/riverine, and 0.50 ac of oak woodlands beyond the impacts in the Initial Phase.

The Initial Phases and Ultimate Projects under Alternatives 1 and 2 would not impact NCCP lands in Orange County.

The Initial Phases and Ultimate Projects under Alternatives 1 and 2 would not result in substantive temporary impacts on wildlife crossings and would retain effective openness ratios at the crossings where the undercrossing would be permanently widened.

Summary of Impacts for Alternative 2f

Alternative 2f has been identified as the Preferred Alternative. The Initial Phase of Alternative 2f would result in permanent impacts to 9.87 ac of CSS and temporary

impacts to 3.38 ac of CSS, 1.72 ac of riparian/riverine, and 0.04 ac of oak woodlands, which are the same as discussed above for the Initial Phases of Alternatives 1 and 2.

The Alternative 2f Ultimate Project would result in permanent impacts to 25.58 ac of CSS, 0.47 ac of riparian/riverine, and 0.02 ac of oak woodlands, and temporary impacts to 8.04 ac of CSS, 1.29 ac of riparian/riverine, and 0.50 ac of oak woodlands, which are the same as discussed above for the Alternative 2 Ultimate Project.

The Initial Phase and Ultimate Project for Alternative 2f would not impact NCCP lands in Orange County.

The Initial Phase and Ultimate Project for Alternative 2f would not result in substantive temporary impacts on wildlife crossings and would retain effective openness ratios at the crossings where the undercrossing would be permanently widened under this Alternative.

3.17.3.2 Permanent Impacts

Alternatives 1 and 2

The Build Alternatives would result in direct permanent effects to natural communities of special concern through disturbance and/or removal of existing vegetation. Permanent effects may include complete removal and heavy encroachment that may have substantial detrimental effects to the long-term viability of a plant community. Table 3.17.2 provides the affected acreages for each of the natural communities of special concern for both Orange and Riverside Counties.

Table 3.17.2 shows the total permanent effects to natural communities of special concern for Alternatives 1 and 2 and the Initial Phases of Alternatives 1 and 2 in both Orange and Riverside Counties combined. The total acreages for Alternatives 1 and 2 shown in Table 3.17.2 include any impacts cited individually in the Initial Phases of those alternatives. For example, as shown in Table 3.17.2, the Initial Phase of Alternative 1 would result in 9.87 ac of permanent impacts to CSS; Alternative 1, in total, would result in 27.24 ac of permanent impacts to CSS. The 27.24 ac of permanent impacts under Alternative 1 includes the 9.87 ac impacted in the Initial Phase of Alternative 1.

Appendices M and N in the NES provide detailed maps showing the project impacts to natural communities under Alternatives 1 and 2, respectively.

Table 3.17.2 Permanent Effects on Natural Communities of Special Concern (acres)

County and Natural Community	Alternative 1 Permanent Effects[1]		Alternative 2 Permanent Effects	
	Initial Phase	Ultimate Project[2]	Initial Phase	Ultimate Project[2]
Effects in Orange County				
Coastal sage scrub	0.00	2.54	0.00	3.31
Riparian/riverine	0.00	0.18	0.00	0.17
Oak woodlands	0.00	0.00	0.00	0.00
Effects in Riverside County				
Coastal sage scrub	9.87	24.70	9.87	32.14
Riparian/riverine	0.00	0.30	0.00	0.30
Oak woodlands	0.00	0.01	0.00	0.02
Total Effects				
Coastal sage scrub	9.87	27.24	9.87	35.45
Riparian/riverine	0.00	0.48	0.00	0.47
Oak woodlands	0.00	0.01	0.00	0.02

Source: *Final Natural Environment Study* (June 2010).

[1] There is no detailed phasing plan for Alternative 1. However, it is expected that the Initial Phases of Alternatives 1 and 2 would be phased similarly. Therefore, the Initial Phase of Alternative 1 is anticipated to result in fewer effects than the Ultimate Project for Alternative 1, similar to the range of effects between the Initial Phase and Ultimate Project for Alternative 2.

[2] The effects of Alternatives 1 and 2 shown here are the total effects for each alternative; those effects include the effects of the Initial Phase and the additional effects that would occur beyond the Initial Phase to construct the Ultimate Project for each alternative.

This project would be constructed in phases. Construction of the Initial Phases of Alternatives 1 and 2 would take up to 4 years. The later phases would each take less than 2 years to construct. Project effects on natural communities in a specific area are considered permanent if that area would be disturbed for more than 4 years without replacement of the affected natural communities.

Coastal Sage Scrub

The Initial Phases of Alternatives 1 and 2 would result in a direct permanent effect to 9.87 ac of CSS habitat. Alternative 1 would result in a total direct permanent effect to 27.24 ac of CSS habitat. Alternative 2 would result in a total direct permanent effect to 35.45 ac of CSS habitat.

As shown on Figure 3.17.2, most of the large blocks of the CSS habitat are located along SR-91 in the Santa Ana Canyon, generally west of the SR-91/SR-71 interchange. Based on the project traffic study, the total daily traffic volumes in this segment will increase over existing volumes but will be the same in the design year with or without the project due to the expected build out of the area. While traffic volumes will increase over existing levels, the SR-91 CIP is expected to reduce congestion during peak hours, as compared to the No Build Alternative.

The primary impact of the traffic increase over existing volumes is an increase in noise levels. However, based on the noise study, project-related noise levels nearest to the large areas of CSS would be relatively the same with or without the SR-91 CIP, and approximately 1–2 decibels (dB) over existing levels as summarized in Table 3.15.13. An increase in noise levels of 1–2 dB is essentially imperceptible over time and would not be considered a substantial adverse effect on habitat when compared to the noise levels for the existing freeway. Therefore, the SR-91 CIP would not substantially increase indirect effects on CSS due to traffic-related noise. However, although noise levels will not increase appreciably as a result of the SR-91 CIP, noise impacts would extend into the surrounding natural habitat by approximately the same distance that SR-91 is being widened. In the Santa Ana Canyon, SR-91 will be widened approximately 24 ft maximum on each side.

Lighting associated with the project may result in light effects on adjacent CSS habitat. However, indirect light impacts associated with the project will be substantially mitigated based on Measure V-3, provided in Section 3.7, which requires the installation of non-glare shields.

Increases in litter will be limited to areas immediately adjacent to the freeway travel lanes. The Department has existing programs for litter collection and disposal. As a result, increases in litter as a result of the SR-91 CIP Build Alternatives would not adversely affect CSS habitat adjacent to the freeway.

In summary, operation of the Build Alternatives would not result in substantially increased permanent indirect effects to CSS habitat adjacent to the project segment of SR-91 in Santa Ana Canyon as a result of automobile traffic, litter, or noise in the area.

Riparian/Riverine

The Initial Phases of Alternatives 1 and 2 would result in no direct permanent effect to riparian/riverine habitat. Alternative 1 would result in a direct permanent effect to 0.48 ac of riparian/riverine habitat. Alternative 2 would result in a direct permanent impact to 0.47 ac of riparian/riverine habitat.

As shown on Figure 3.17.2, most of the large blocks of riparian/riverine habitat are along SR-91 in Santa Ana Canyon. Based on the project traffic study, the total daily traffic volumes in this segment will increase over existing volumes, but will be the same in the design year with or without the project due to the expected build out of the area. While traffic volumes will increase over existing levels, the SR-91 CIP is

expected to reduce congestion during peak hours, as compared to the No Build Alternative.

The primary impact of the traffic increase over existing volumes is an increase in noise levels. However, based on the noise study, project-related noise levels nearest to the large areas of riparian habitat would be relatively the same with or without the SR-91 CIP, and approximately 1–2 dB over existing levels as summarized in Table 3.15.13. An increase in noise levels of 1–2 dB would not be considered a substantial adverse effect on habitat when compared to the noise levels for the existing freeway. Therefore, the SR-91 CIP is not expected to increase indirect effects on riparian/ riverine habitat due to traffic-related noise. However, although noise levels will not increase appreciably as a result of the SR-91 CIP, noise impacts are expected to extend into the surrounding natural habitat by approximately the same distance that SR-91 is being widened.

Lighting associated with the project may result in light effects on adjacent riparian/ riverine habitat. However, indirect light impacts associated with the project will be substantially mitigated based on Measure V-3 provided in Section 3.7, which requires the installation of non-glare shields.

Increases in litter will be limited to areas immediately adjacent to the freeway travel lanes. The Department has existing programs for litter collection and disposal. As a result, increases in litter as a result of the SR-91 CIP Build Alternatives would not adversely affect riparian/riverine habitat adjacent to the freeway.

In summary, operation of the Build Alternatives would not result in increased permanent indirect effects to riparian/riverine habitat adjacent to the project segment of SR-91 in Santa Ana Canyon as a result of automobile traffic, litter, or noise in the area.

Oak Woodlands

Permanent effects to oak woodlands may include complete removal of trees or heavy encroachment/extensive branch removal that may have substantial detrimental effects to the long-term viability of the trees. Because the development of mature large trees requires 40–80 years, the direct removal of oak trees and oak habitat would result in substantial shorter-term loss of habitat. In addition, because replacement trees, required as compensatory mitigation as discussed later in Section 3.17.4.1, Compensatory Mitigation, would most likely be planted in protected open space areas (e.g., CHSP) and would add to existing oak woodland, the benefits would be long

term once the trees are established. The Initial Phases of Alternatives 1 and 2 would not result in direct permanent effects to oak woodlands. The Alternative 1 Ultimate Project would result in a direct permanent effect to 0.01 ac of oak woodland habitat. The Alternative 2 Ultimate Project would result in 0.02 ac of direct permanent effect to oak woodland habitat. Operation of the Build Alternatives would not increase permanent indirect effects to oak woodland habitat due to automobile traffic, litter, or noise in the area for the same reasons discussed above for CSS.

Orange County Natural Communities Conservation Plan

The nearest lands designated in the Orange County NCCP are approximately 2,000 ft south of the BSA near the County line. The operation of the Build Alternatives would not result in the use of any land designated in or adjacent to any land designated in the Orange County NCCP and would not result in indirect permanent effects to NCCP-designated lands due to automobile traffic, litter, or noise in the area. Therefore, Alternatives 1 and 2 would not result in direct or indirect impacts to any designated NCCP lands in Orange County.

Wildlife Corridors

In part because many wildlife corridor improvements have already been implemented at Coal Canyon, operation of the Build Alternatives is not expected to result in a substantial permanent effect on wildlife movement.

The permanent project changes at each wildlife crossing under Alternatives 1 and 2 are:

- **Gypsum Canyon Wash.** No widening is planned under the Build Alternatives at the Gypsum Canyon Road undercrossing. Therefore, there would be no permanent changes at this crossing and no impacts to wildlife movement. The primary impact of the traffic increase over existing volumes is an increase in noise levels. However, based on the noise study, project-related noise levels in this area would be relatively the same with or without the SR-91 CIP, and approximately 1–2 dB over existing levels as summarized in Table 3.15.13. An increase in noise levels of 1–2 dB would not be considered a substantial adverse effect and, therefore, would not be expected to result in an appreciably adverse impact on wildlife at this crossing.

  Lighting associated with the project may result in light effects in the vicinity of this wildlife crossing. However, indirect light impacts associated with the project

will be substantially mitigated based on Measure V-3, provided in Section 3.7, which requires the installation of non-glare shields.

Increases in litter will be limited to areas immediately adjacent to the freeway travel lanes. The Department has existing programs for litter collection and disposal. As a result, increases in litter as a result of the SR-91 CIP Build Alternatives would not adversely affect this wildlife crossing.

In summary, operation of the Build Alternatives would not result in increased permanent indirect effects at the Gypsum Canyon wildlife crossing.

- **Coal Canyon.** Although the Build Alternatives would widen the Coal Canyon undercrossing, the openess ratio remaining after widening would still be sufficient to allow large mammals to move between the regions. The openness ratio (area of the structure openings/structure length) of potential crossings is used to analyze the probability of wildlife movement through a given structure. Although Coal Canyon is in Orange County, the openness ratio with the proposed project (5.98) is well above the openness ratio (1.96, calculated in feet) recommended in the Western Riverside County MSHCP and applicable to the other wildlife crossings along the project segment of SR-91. As a result, Alternatives 1 and 2 will not result in an adverse effect related to the openness ratio at Coal Canyon.

  The only cause of indirect effects such as noise and lighting at Coal Canyon would be traffic. As described in Table 3.6.22, the total daily traffic volumes will be the same in 2035 with or without the project but will increase over current volumes. This increase could result in an indirect effect due to noise increases. However, noise levels will increase only a small amount (1–2 dB over the existing condition) as shown in Table 3.15-13. As a result, because traffic noise levels will remain relatively the same, indirect effects caused by traffic noise will remain relatively the same with or without the project.

  Noise data were not available for the Coal Canyon undercrossing. Noise data from other nearby similarly situated monitoring locations (refer to Receiver IDs 2M and 3M and 124M in Table 3.15.13) and future year with and without project traffic data were reviewed and compared to existing noise levels to identify the potential for increased noise from traffic volumes in this area. Receiver 124M is located the closest to the Coal Canyon Crossing, approximately 1,000 ft to the east. Traffic volumes will be the same at Receiver 124M as at Coal Canyon because there are no intervening ramps where traffic volumes could change. As such, noise volumes are expected to be the same at both of those locations as well.

As a result, the noise level at the Coal Canyon undercrossing is not expected to increase as a result of the proposed project. Although noise will not increase as a result of the SR-91 CIP, noise impacts are expected to extend into the surrounding natural habitat by approximately the same distance that SR-91 is being widened.

- **B Canyon.** The Build Alternatives propose to lengthen the B Canyon box culvert by approximately 50 ft on the north side. Although B Canyon is not within a Western Riverside County MSHCP Conservation Area or Criteria Area, it has value for wildlife movement, and RCTC is continuing to evaluate potential design features that would improve the functionality of B Canyon for wildlife movement. Similar to the above discussion for Coal Canyon, the future with project noise and light levels anticipated at this crossing will be approximately the same as the existing conditions.

- **West Prado Road Undercrossing (Western Riverside County MSHCP Proposed Constrained Linkage 1).** Although the Build Alternatives would widen the West Prado Road undercrossing, the openness ratio remaining after widening would still be sufficient to allow large mammals to move along this corridor. However, wildlife movement along Proposed Constrained Linkage 1 is very limited. Increased development in the region, Green River Road, West Prado Road, existing fencing, and railroad lines all provide obstacles to wildlife movement along this corridor. The Build Alternatives are not expected to further constrain this linkage. Similar to the above discussion for Coal Canyon, the future with project noise and light levels anticipated at this crossing will be approximately the same as the existing conditions.

- **Fresno Canyon/Wardlow Wash (Western Riverside County MSHCP Proposed Constrained Linkage 2).** No widening is planned by the Build Alternatives at the Fresno Canyon/Wardlow Wash box culvert. Therefore, there would be no permanent changes at this wildlife crossing and no impacts to wildlife movement would occur.

  In addition to the Fresno Canyon/Wardlow Wash box culvert, Proposed Constrained Linkage 2 also contains a highway undercrossing. Although the Build Alternatives would widen the Fresno Canyon/Wardlow Wash undercrossing, the openness ratio remaining after widening would still be sufficient to allow large mammals to move between the regions.

- **Bedford Canyon Wash.** The Build Alternatives would widen the existing I-15 crossing at Bedford Wash, but the openness ratio under I-15 would remain favorable for wildlife movement.

No Build Alternative

The No Build Alternative would not result in any construction along the project segments of SR-91 and I-15 and would not result in improvements to SR-91 and I-15 other than the routine maintenance of these freeways. Therefore, the No Build Alternative would not result in adverse permanent effects to natural communities of special concern.

3.17.3.3 Temporary Impacts

Alternatives 1 and 2

The Build Alternatives would result in direct temporary effects to natural communities of special concern through the disturbance and/or removal of existing vegetation. Areas of temporary effect would only be affected during construction to allow for construction and equipment staging and would be revegetated after construction. Temporary effects are limited to incidental encroachment while construction is taking place in each area. Otherwise, effects are considered permanent as discussed earlier. Because the project would be constructed in phases, project effects would be permanent if they would be disturbed longer than a single phase without replacement of habitat between phasing. The Initial Phases of Alternatives 1 and 2 would take 4 years to construct. The Ultimate Project would not take longer than 2 years to construct.

Table 3.17.3 shows the total temporary effects to natural communities of special concern for Alternatives 1 and 2 and the Initial Phases of Alternatives 1 and 2 in both Orange and Riverside Counties combined. The total acreages for Alternatives 1 and 2 shown in Table 3.17.3 include any impacts cited individually in the Initial Phases of those alternatives.

Coastal Sage Scrub

The Initial Phases of Alternatives 1 and 2 would result in a direct temporary effect to 3.38 ac of CSS habitat. Alternative 1 would result in a direct temporary effect to 7.59 ac of CSS habitat. Alternative 2 would result in a direct temporary effect to 8.04 ac of CSS habitat. The Build Alternatives would also result in indirect temporary effects to CSS habitat, including construction-related effects such as dust and potential fuel spills from construction equipment or disruption by personnel outside

Table 3.17.3 Temporary Effects on Natural Communities of Special Concern (acres)

County and Natural Community	Alternative 1 Temporary Effects[1]		Alternative 2 Temporary Effects	
	Initial Phase	Ultimate Project [2]	Initial Phase	Ultimate Project [2]
Effects in Orange County				
Coastal sage scrub	0.02	0.02	0.02	0.02
Riparian/riverine	1.11	1.27	1.11	0.57
Oak woodlands	0.00	0.00	0.00	0.00
Effects in Riverside County				
Coastal sage scrub	3.36	7.57	3.36	8.02
Riparian/riverine	0.61	0.33	0.61	0.72
Oak woodlands	0.04	0.51	0.04	0.50
Total Effects				
Coastal sage scrub	3.38	7.59	3.38	8.04
Riparian/riverine	1.72	1.60	1.72	1.29
Oak woodlands	0.04	0.51	0.04	0.50

Source: *Final Natural Environment Study* (June 2010).

[1] There is no detailed phasing plan for Alternative 1. However, it is expected that the Initial Phases of Alternatives 1 and 2 would be phased similarly. Therefore, the Initial Phase of Alternative 1 is anticipated to result in fewer effects than the Ultimate Project for Alternative 1, similar to the range of effects between the Initial Phase and Ultimate Project for Alternative 2.

[2] The effects of Alternatives 1 and 2 shown here are the total effects for each alternative; those effects include the effects of the Initial Phase and the additional effects that would occur beyond the Initial Phase to construct the Ultimate Project for each alternative.

designated construction areas. However, construction of the Build Alternatives is not expected to increase temporary indirect effects to CSS habitat due to automobile traffic, litter, or noise.

Riparian/Riverine

The Initial Phases of Alternatives 1 and 2 would result in a direct temporary effect to 1.72 ac of riparian/riverine habitat. Alternative 1 would result in a direct temporary effect to 1.60 ac of riparian/riverine habitat. Alternative 2 would result in a direct temporary impact to 1.29 ac of riparian/riverine habitat. The Build Alternatives would also result in indirect temporary effects to riparian/riverine habitat similar to those described above for CSS.

Oak Woodland

Temporary effects to oak trees would be limited to incidental encroachment, trimming, and pruning; otherwise, effects are considered permanent as described earlier. The Initial Phases of Alternatives 1 and 2 would result in a direct temporary effect to 0.04 ac of oak woodland habitat. Alternative 1 would result in a direct temporary effect to 0.51 ac of oak woodland habitat. Alternative 2 would result in a direct temporary impact to 0.50 ac of oak woodland habitat. The Build Alternatives

would also result in indirect temporary effects to oak woodland habitat similar to those described above for CSS.

Orange County Natural Communities Conservation Plan

Because the nearest lands designated in the Orange County NCCP are approximately 2,000 ft south of the BSA near the County line, construction of the Build Alternatives would not result in the temporary use of any land designated in or adjacent to any lands designated in the Orange County NCCP. Therefore, Alternatives 1 and 2 would not result in direct or indirect construction-related impacts to designated NCCP lands in Orange County.

Wildlife Corridors

In the project area, wildlife movement is primarily restricted to Santa Ana Canyon. In particular, Coal Canyon provides the greatest opportunity for wildlife movement across Santa Ana Canyon between the Santa Ana Mountains and the Puente-Chino Hills. Undercrossings, including B Canyon, Fresno Canyon/Wardlow Wash, Bedford Wash, and several smaller culverts, may provide additional crossing opportunities for small- to medium-sized animals. The Build Alternatives would result in temporary effects to wildlife corridors during construction largely as a result of construction noise and disturbance, which could discourage wildlife movement in those corridors. However, because wildlife movement occurs primarily at night and construction of the Build Alternatives in established wildlife corridors would be limited to the daylight hours to the extent feasible, as discussed later in Measure NC-12, those temporary impacts would not be substantial. Because many wildlife corridor improvements have already been implemented at Coal Canyon, the Build Alternatives would not result in substantial temporary adverse effects on wildlife movement during construction.

No Build Alternative

The No Build Alternative would not result in any construction on the project segments of SR-91 and I-15 and would not result in improvements to SR-91 and I-15 other than the routine maintenance of these freeways. Therefore, the No Build Alternative would not result in adverse temporary effects to natural communities of special concern.

3.17.4 Avoidance, Minimization, and/or Mitigation Measures

As a permittee under the Western Riverside County MSHCP, RCTC received a consistency conclusion from Western Riverside County RCA on April 4, 2011, that

the SR-91 CIP demonstrates consistency with the requirements for covered road projects and with other requirements of the Western Riverside County MSHCP. Mitigation for impacts to sensitive species under the MSHCP is achieved through the payment of funds by MSHCP permittees as stipulated under the MSHCP Implementation Agreement. These funds are used by the RCA to purchase lands that become part of the MSHCP Reserve. Section 13.7.B of the MSHCP Implementation Agreement specifies RCTC's MSHCP funding obligation as follows: "Contribute mitigation in the amount of $153 million from Measure "A" funds for mitigation of its Covered Activities as described in Section 8.5.1 of the MSHCP. Such contribution shall occur proportionately prior to impacts to Covered Species or their habitats." RCTC has accelerated its payment of MSHCP funds well in advance of project impacts to covered species and their habitats. As of June 30, 2012, RCTC has paid $128.6 million in Measure "A" funds to the RCA, which represents 84 percent of RCTC's total MSHCP funding obligation for its covered activities, including the SR-91 CIP.

3.17.4.1 Compensatory Mitigation

Compensatory mitigation for the effects to CSS vegetation within Riverside County will be achieved through project consistency with the Western Riverside County MSHCP. Permanent effects to CSS vegetation in Orange County occupied by CAGN or within CAGN-designated critical habitat will be mitigated as described in the Biological Opinion received from the USFWS on November 30, 2011. Specifically, 16.03 ac of habitat (e.g., CSS) suitable for California gnatcatcher (CAGN) breeding, dispersal, and foraging will be restored in CHSP (or another off-site area approved by the USFWS) during construction of the Initial Phases under Alternatives 1 and 2. This will increase the amount of conserved habitat available for CAGN in the area.

Temporarily impacted CSS and other vegetation communities used by CAGN for dispersal and foraging will be restored with in-kind or better vegetation during and after construction as the construction in each disturbed area is completed (e.g., after each phase of construction).

Additional details regarding the conditions in the Biological Opinion are provided in Section 3.21.3.4, Biological Opinion. A copy of the Biological Opinion is provided in Appendix N, Biological Opinion.

The plant palette used for restored areas in the project limits and CHSP (or other areas approved by the USFWS) will be approved by the District Biologist at each

location. The District Biologist may consult with local responsible agencies (e.g., local fire agencies) regarding the plant palettes if the District Biologist determines that such consultation would be appropriate.

Compensatory mitigation for riparian communities in both counties will be required for Corps Section 404 and CDFG Section 1600 permitting. Typically, riparian habitat subject to Corps and CDFG jurisdiction is mitigated at a minimum mitigation-to-effect ratio of 2:1 for permanent effects and 1:1 for temporary effects, which is consistent with Corps and CDFG policies for no net loss of riparian/riverine habitat (e.g., wetlands). Mitigation for permanent effects of both the Initial Phase and Ultimate Project will be conducted in advance during the Initial Phase in the form of habitat restoration and/or enhancement in on- or off-site areas where similar riparian habitat exists. Temporary effects to riparian communities will be mitigated at a minimum mitigation ratio of 1:1 to be replaced on site in kind after the temporary impact has occurred. Final details for compensatory mitigation will be coordinated among RCTC, the Department, the resource agencies, and third-party landowners (where needed for off-site mitigation).

Prior to beginning construction, a Habitat Mitigation and Monitoring Plan (HMMP) will be developed in coordination with the Corps, CDFG, and USFWS that ensures no net loss of riparian habitat value or acreage. Final details for compensatory mitigation will be evaluated through coordination among the Department, RCTC, and the resource agencies. The HMMP will be developed in the design phase based on the performance criterion of no net loss of habitat value or acreage, thus ensuring that adequate mitigation will be provided for the project impacts.

The HMMP will comply with all terms and conditions set forth in the permits and opinions issued by the resource agencies for the proposed project and will include, at a minimum, the following provisions:

- Permanent impacts to riparian/riverine areas will be replaced on or off site at a minimum ratio of 3:1 with in-kind habitat.
- Permanent effects to native habitat will be replaced on or off site at a minimum 2:1 ratio with in-kind habitat. Temporary effects to native vegetation will be replaced at a minimum 1:1 ratio with in-kind habitat restored in place within the project area. If off-site restoration is conducted, it will be done within the same watershed as the proposed project.

- The HMMP will identify a success criterion of at least 80 percent cover of native riparian vegetation or composition structure similar to existing adjacent high-quality riparian vegetation.
- Further criteria specified in the HMMP will include an establishment period for the replacement habitat, regular trash removal, and regular maintenance and monitoring activities to ensure the success of the mitigation plan. After construction, annual summary reports of biological monitoring will be provided to the Corps, CDFG, and USFWS documenting the monitoring effort. The duration of the monitoring and reporting will be established by resource agency permit conditions.
- Compensatory mitigation for effects to oak trees (excluding California scrub oaks) with trunk sizes above 8 inches in diameter at breast height (dbh) will involve replacement at a mitigation-to-effect ratio of 3:1, if feasible. Heritage oaks (oaks with a greater than 36-incg dbh) will be replaced at a mitigation-to-effect ratio of 10:1, if feasible. If the replacement trees cannot be planted in the immediate vicinity of where the previous trees were located, they may be planted elsewhere in the project area, subject to approval by the Department Landscape Architect and the affected local jurisdiction, if any.
- RCTC will provide appropriate funds, to be maintained in a non-wasting endowment, to CHSP to provide for the long-term maintenance and management of the restored areas within the park to support gnatcatcher habitat in perpetuity.

All compensatory mitigation for the entire project, both the Initial Phases and Ultimate Projects, will be provided in the Initial Phase of the SR-91 CIP Build Alternatives.

3.17.4.2 Other Measures

The following measures would be required for the Initial Phases and Ultimate Projects under the SR-91 CIP Build Alternatives and will be incorporated to avoid, minimize, and/or mitigate impacts of the Build Alternatives to natural plant communities of special concern:

NC-1 During final design, RCTC's Project Engineer will coordinate with the Designated Qualified Biologist to delineate all ESAs within the project footprint and the immediately surrounding areas in the project specifications. ESAs include CSS, chaparral, and riparian/riverine vegetation; the protected zone of any oak tree (5 ft outside the dripline or 15 ft from the trunk of the tree, whichever is greater) or oak habitat;

and designated critical habitat (with constituent elements). In addition, all restoration and mitigation areas at Coal Canyon adjacent to the project footprint will be designated ESAs on the project plans.

Prior to clearing or construction, RCTC's Resident Engineer will require the design/build contractor to install highly visible barriers (such as orange construction fencing) around all designated ESAs. No grading or fill activity of any type will be permitted within the ESAs. In addition, no construction activities, materials, or equipment will be allowed within the ESAs. All construction equipment will be operated in a manner so as to prevent accidental damage to nearby preserved areas. No structure of any kind, or incidental storage of equipment or supplies, will be allowed within the ESAs. Silt fence barriers will be installed at the ESA boundaries to prevent accidental deposition of fill material in areas where vegetation is adjacent to planned grading activities.

NC-2 RCTC's Resident Engineer will require the design/build contractor to have a Designated Qualified Biologist under contract. The Designated Qualified Biologist will monitor construction in the vicinity of the ESAs for the duration of construction to flush any wildlife species present prior to construction and to ensure that all vegetation removal, BMPs, ESAs, and all avoidance and minimization measures are properly implemented.

NC-3 To avoid effects to nesting birds, RCTC's Resident Engineer will require the design/build contractor to conduct any native or exotic vegetation removal or tree trimming activities outside of the nesting bird season (i.e., February 15–September 15). In the event that vegetation clearing is necessary during the nesting season, RCTC's Resident Engineer will require the design/build contractor to have the Designated Qualified Biologist conduct a preconstruction survey within 300 ft of construction areas, no more than 7 days prior to construction, to identify the locations of nests. Should nesting birds be found, an exclusionary buffer of 300 ft will be established by the Designated Biologist around each nest site. This buffer will be clearly marked in the field by construction personnel under guidance of the design/build contractor's Designated Qualified Biologist, and

construction or clearing will not be conducted within this zone until the Designated Qualified Biologist determines that the young have fledged or the nest is no longer active.

In the event that construction must occur within the 300 ft buffer, the Designated Biologist will take steps to ensure that construction activities do not disturb or disrupt nesting activities. If the Designated Biologist determines that construction activities are disturbing or disrupting nesting activities, the Designated Biologist will notify the Resident Engineer, who has the authority to halt construction to reduce the noise and/or disturbance to the nests. Responses may include, but are not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nest and the construction activities, and/or working in other areas until the young have fledged.

NC-4 When work is conducted during the fire season (as identified by the OCFA, RCFD, City of Norco Fire Department, and/or the City of Corona Fire Department) adjacent to any vegetated open space, RCTC's Resident Engineer will require the design/build contractor to ensure that appropriate firefighting equipment (e.g., extinguishers, shovels, water tankers) is available on site during all phases of project construction to help minimize the potential for human-caused wildfires. Shields, protective mats, and/or other fire-preventive methods will be used during grinding, welding, and other spark-inducing activities. Personnel trained in fire hazards, preventive actions, and responses to fires will advise contractors regarding fire risk from all construction-related activities.

If a responsible fire agency (OCFA, RCFD, City of Norco Fire Department or City of Corona Fire Department) requires the RCTC to clear defensible spaces during construction, the RCTC's Resident Engineer, the design/build contractor, and the design/build contractor's Designated Qualified Biologist will coordinate with the USFWS prior to this clearing effort. In the event there are resources in the areas identified for defensible clearing, RCTC's Resident Engineer and the Designated Qualified Biologist will coordinate with any applicable

permitting agencies regarding possible effects to those resources prior to approving the defensible clearing of any areas by the contractor.

During all Red Flag Warning periods as issued by the National Weather Service, the design/build contractor will not be allowed to operate mechanized equipment or equipment that could throw off sparks or potentially start fires in any areas of natural open space in CHSP or other areas.

NC-5 During final design, the Project Engineer will coordinate with the Designated Qualified Biologist to identify developed or nonsensitive upland habitat areas appropriate for use during construction for equipment maintenance, staging, dispensing of fuel and oil, or any other such activities and will delineate and identify those areas on the project specifications. The Designated Qualified Biologist will specifically identify developed or nonsensitive upland habitat areas to prevent any spill runoff on those sites from entering waters of the United States.

During construction, RCTC's Resident Engineer will require the design/build contractor to ensure that all equipment maintenance, staging, dispensing of fuel and oil, or any other such activities occur in developed or designated nonsensitive upland habitat areas designated in the project specifications for those uses.

NC-6 During final design, RCTC's Project Engineer will coordinate with the Designated Qualified Biologist to identify the locations of all existing wildlife fencing and will delineate and identify those areas on the project specifications.

Prior to and during construction, RCTC's Resident Engineer will require the design/build contractor to install new fencing prior to the removal of any existing wildlife fencing to protect against wildlife-vehicle incidents. The new fencing must be the same or greater height than the previous wildlife fence. The RCTC Resident Engineer will require the design/build contractor to ensure that the fencing is maintained and functional throughout the project construction.

The Department will ensure that the fencing is maintained and functional throughout the life of the project to prevent wildlife-vehicle incidents.

NC-7 During final design, RCTC's Project Engineer will coordinate with the Designated Qualified Biologist to identify the habitat adjacent to Coal Canyon, B Canyon, Fresno Canyon/Wardlow Wash, and Bedford Wash that is anticipated to be disturbed by construction activities and will delineate those areas on the project specifications.

As detailed in the project specifications, RCTC's Resident Engineer will require the design/build contractor to restore habitat adjacent to Coal Canyon, B Canyon, Fresno Canyon/Wardlow Wash, and Bedford Wash that was disturbed during construction as construction in the affected areas is completed. That restoration will be provided on a 1:1 ratio using native vegetation as determined by RCTC and the Department in coordination with the resource agencies.

NC-8 During final design, RCTC's Project Engineer will coordinate with the Designated Qualified Biologist to delineate all wildlife corridors within the project footprint and the immediately surrounding areas as ESAs in the project specifications.

Prior to and during construction, RCTC's Resident Engineer will require the design/build contractor to ensure that equipment maintenance, lighting, and staging are limited to designated areas away from wildlife corridor entrances.

NC-9 During final design, RCTC's Project Engineer will develop design and construction management measures to direct temporary construction noise and nighttime construction lighting and permanent facility lighting away from the wildlife corridors, bridges (structures potentially occupied by bats), biologically sensitive areas, Western Riverside County MSHCP Conservation Areas, vegetated drainages, CSS in CAGN-designated critical habitat with long-term conservation value for covered species. Those design measures will be approved by the Department's District 8 and District 12 Biology/Environmental for areas within Riverside and Orange Counties, respectively, prior to the completion of final design.

If construction work must be done at night, RCTC's Resident Engineer will require the design/build contractor to properly implement the measures developed during final design to direct noise and direct lighting away from the wildlife corridors, bridges, and biologically sensitive areas during those nighttime construction activities.

NC-10 Prior to and during construction, RCTC's Resident Engineer will require the design/build contractor to keep the wildlife corridors clear of all equipment or structures that could potentially serve as barriers to wildlife passage.

NC-11 During final design, RCTC's Project Engineer will ensure that the existing overcrossings and culvert structures that will be extended or modified by the project are designed so they provide openness ratios suitable for large mammals (1.96) and medium-sized mammals (0.81), as appropriate, at each crossing. The design and openness ratio for each crossing will be reviewed with the Department District Biologist during final design. The specific required openness ratios and designs will be provided in the project specifications for each such crossing.

The RCTC Resident Engineer will require the design/build contractor to construct the overcrossings and culvert structures consistent with the project specifications to ensure the appropriate openness ratios are provided at each crossing.

NC-12 Within Coal Canyon, B Canyon, Fresno Canyon/Wardlow Wash, and Bedford Wash, RCTC's Resident Engineer will require the design/build contractor to limit the hours of construction within 1,000 ft of the centerline of each of these crossings to daylight hours (7:00 a.m. to 7:00 p.m.) to ensure continued use of these wildlife corridors during construction, with the exception of limited periods when evening or night work is required for operational reasons. Operational reasons may include the desire to conduct certain construction activities, such as closing multiple ramps or travel lanes, during evening and night hours to minimize delays to the traveling public. Any night construction must be approved in writing by the RCTC Resident Engineer and coordinated with the District 8 and 12 biologists, the USFWS, and the CDFG.

NC-13 During final design, RCTC's Project Engineer will ensure that the design and construction process for all structures required for bridge and/or culvert work within Coal Canyon, B Canyon, Fresno Canyon/Wardlow Wash, and Bedford Wash, will not block the main underpass at these locations during construction. RCTC's Project Engineer will ensure that the design of the scaffolding and false work is restricted to the sides of the underpass and limits of the existing exclusionary chain-link fence to maintain the existing width of the wildlife corridor during construction activities.

During construction within Coal Canyon, B Canyon, Fresno Canyon/Wardlow Wash, and Bedford Wash, RCTC's Resident Engineer will require the design/build contractor to ensure that all structures required for bridgework are installed and constructed consistent with the final design specifically to avoid blocking the main underpass during construction and to restrict all scaffolding and false work to the sides of the underpass and limits of the existing exclusionary chain-link fence to maintain the existing width of the wildlife corridor during construction activities.

NC-14 Minimal equipment staging area is available at the eastbound Coal Canyon off-ramp along the sides of the paved road and will be used for the staging of equipment for Coal Canyon work only. During final design, RCTC's Project Engineer will ensure that the available area for construction staging at the eastbound Coal Canyon off-ramp is delineated on the project specifications.

RCTC's Resident Engineer will require the design/build contractor to minimize the use of this area during construction and, where possible, to avoid the area from February 15 to September 1. RCTC's Resident Engineer will require the design/build contractor to ensure that vehicles staged in this area are equipped with security lights.

NC-15 During construction within Coal Canyon, RCTC's Resident Engineer will require the design/build contractor to keep the Coal Canyon on- and off-ramps open at all times for emergency and police personnel. RCTC's Resident Engineer will require the design/build contractor to ensure that use of the emergency access road as a turnaround or

shortcut for any construction or non-emergency traffic is prohibited. That road will only be used during bridge construction and general road construction at Coal Canyon. RCTC's Resident Engineer will also require the design/build contractor to ensure that, in general, no hauling is allowed at night through underpasses and freeway off-ramps.

NC-16 During construction in Coal Canyon, RCTC's Resident Engineer will require the design/build contractor to close the gates at Coal Canyon at the end of each construction day. The locations of those gates will be shown on the project specifications.

NC-17 During final design, RCTC's Project Engineer will coordinate with the Designated Qualified Biologist to identify existing and proposed conservation areas within the project footprint or in the immediately surrounding areas and will designate those areas on the project specifications. To reduce impacts where the project interfaces with existing or proposed conservation areas prior to and during construction, RCTC's Project Manager will ensure that the project complies with the Urban/Wildlands Interface Guidelines in Section 6.1.4 of the Western Riverside County MSHCP. The project specifications will include applicable guidelines from the Western Riverside County MSHCP.

Prior to and during construction, RCTC's Resident Engineer will require the design/build contractor to comply with guidelines from the Western Riverside County MSHCP included in the project specifications.

NC-18 During final design, RCTC's Project Engineer will coordinate with the Designated Qualified Biologist to identify existing Criteria Areas within the project footprint or in the immediately surrounding areas and will designate those areas on the project specifications.

To reduce impacts where the project is located within the Criteria Area, RCTC's Project Manager will ensure that the project complies with the applicable siting and design criteria and the Construction Guidelines in Section 7.5.2 of the Western Riverside County MSHCP.

The project specifications will include applicable guidelines from the Western Riverside County MSHCP.

NC-19 The SR-91 CIP is a covered activity under the Western Riverside County MSHCP. Therefore, RCTC's Resident Engineer will require the design/build contractor to comply with all Western Riverside County MSHCP Construction Guidelines and Standard BMPs prior to and during construction.

The following additional measures would also reduce impacts to natural communities of special concern:

- Measure PS-1 in Section 3.19, Plant Species
- Measure WQ-1 in Section 3.10, Water Quality
- Measure IS-1 in Section 3.22, Invasive Species

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3.18 Wetlands and Other Waters

3.18.1 Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the Clean Water Act [CWA (33 USC 1344)], is the primary law regulating wetlands and surface waters. The CWA regulates the discharge of dredged or fill material into waters of the United States (U.S.), including wetlands. Waters of the U.S. 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 CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill material cannot 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 U.S. Army Corps of Engineers (USACE) with oversight by the U.S. Environmental Protection Agency (U.S. EPA).

USACE issues two types of 404 permits: Standard and General permits. Nationwide permits, a type of General permit, are issued to authorize a variety of minor project activities with no more than minimal effects. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of USACE's Standard permits. For Standard permits, the USACE decision to approve is based on compliance with U.S. EPA's Section 404(b)(1) Guidelines (U.S. EPA 40 CFR Part 230), and whether permit approval is in the public interest. The Section 404 (b)(1) Guidelines were developed by the U.S. EPA in conjunction with USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a LEDPA to the proposed discharge that would have less effects on waters of the U.S., and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (E.O. 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this executive order states that a federal agency, such as FHWA and/or the Department, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

At the state level, wetlands and waters are regulated primarily by the California Department of Fish and Game (CDFG), the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCB). In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission or the Tahoe Regional Planning Agency) 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 USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFG.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB also issues water quality certifications for impacts to wetlands and waters in compliance with Section 401 of the CWA. Please see Section 3.10, Water Quality for additional details.

3.18.2 Affected Environment

The information in this section is based on the *Jurisdictional Delineation Report* (November 2009) and the NES (June 2010).

The fieldwork for the *Jurisdictional Delineation Report* was conducted on July 29 and 31, August 5, September 19, 20, 25, and 30, October 1, 2, 3, and 7, and December 10 and 11, 2008. Based on that field work, it was determined that there are jurisdictional features, including wetland areas, in the BSA for the project that are subject to the jurisdiction of the Corps, CDFG, and RWQCB. The potential Corps and CDFG jurisdictional areas in the BSA are shown in detail on Figure 3.18-1 and on the

Jurisdictional Map figure (sheets 1–42) in the *Jurisdictional Delineation Report.* (Figure 3.18-1 is provided at the end of the text in this section.) The aerial photographs used as the base for Figure 3.18-1 show conditions in April 2008 and were the most recent aerial photographs for the project area at the time the analysis for the project was conducted. As a result, these aerial photographs may not accurately represent conditions in this area as of 2011.

Because conditions have changed since the field work for the project was conducted, additional field work was conducted on September 28 and November 1, 2011, and revisions were made to the delineations of the Santa Ana River and Drainage #28. Those revisions are incorporated in this section.

As discussed in Section 5.2, Consultation and Coordination with Agencies, the Department has conducted ongoing coordination with the Corps, CDFG, and RWQCB for the project. Correspondence between the Department and these agencies is described in Chapter 5. The *Jurisdictional Delineation Report* was submitted to the Corps for concurrence on November 15, 2010, as an Approved Jurisdictional Determination as defined in the Corps' *Regulatory Guidance Letter 08-02*. Corps concurrence with the Approved Jurisdictional Determination was issued on November 22, 2011. In addition, the Corps also issued a Preliminary Jurisdictional Determination for other drainages in the BSA that were not included in the Approved Jurisdictional Determination.

3.18.2.1 Corps Jurisdiction

As described in the *Jurisdictional Delineation Report*, there are several drainages in the BSA that connect directly or indirectly to the Santa Ana River. The segment of the Santa Ana River from upstream of Van Buren Boulevard downstream to Imperial Highway has a permanent flow during the year that eventually flows into the Pacific Ocean, a traditional navigable water. In addition to the Santa Ana River, several tributaries to the Santa Ana River are believed to have a continuous flow at least seasonally, including Temescal Wash, Arlington Valley Channel, and Riverside Canal. Therefore, these drainages are also considered relatively permanent waters. All relatively permanent waters are considered jurisdictional. These drainages are shown in Appendix B in the *Jurisdictional Delineation Report.*

Other drainages that appear natural or appear to function in a capacity of more than just a storm drain are potentially jurisdictional. However, because these drainages do not carry a relatively permanent flow, the Corps reviewed the delineation data and

made determinations as to whether they were jurisdictional. These drainages are shown in Appendix B in the *Jurisdictional Delineation Report*.

Drainages that do not carry a relatively permanent flow, are excavated wholly in uplands, and capture only upland sheetflow are typically not regulated by the Corps. However, the Corps reserves the right to regulate these waters on a case-by-case basis. These drainages are shown in Appendix B of the *Jurisdictional Delineation Report*.

The results of the *Jurisdictional Delineation Report* were submitted to the Corps on November 15, 2010, for an Approved Jurisdictional Determination. During this process, the project proponents and the Corps conceded that several but not all the drainage features "may be" jurisdictional by the Corps, and a Preliminary Jurisdictional Determination was issued by the Corps on November 22, 2011. The Approved Jurisdictional Determination was also issued by the Corps on November 22, 2011.

Table 3.18.1 summarizes the acreages of the Corps jurisdictional and nonjurisdictional areas in the BSA. The total acreage of potential Corps nonwetland waters of the United States in the BSA is 41.66 ac, of which 11.49 ac are deepwater aquatic waters. The total acreage of potential Corps wetland waters in the BSA is 69.74 ac. Therefore, there is a total of 122.89 ac of wetland and nonwetland waters potentially subject to Corps jurisdiction in the BSA.

Table 3.18.1 Corps Jurisdictional and Nonjurisdictional Areas (acres)

Corps Areas	Nonwetland Waters of the United States	Deepwater Aquatic Nonwetland Waters of the United States	Wetland Waters of the United States	Totals
Total Corps Jurisdictional Areas[1]	41.66	11.49	69.74	122.89
Total Nonjurisdictional Drainages	1.21	0.0	0.01	1.22

Source: *Final Natural Environment Study* (June 2010).
[1] Includes areas conceded that "may be" jurisdictional.
ac = acres
Corps = United States Army Corps of Engineers

A qualitative assessment of the functions and values attributable to the identified wetlands and other potential jurisdictional waters in the BSA is included in Appendix C of the *Jurisdictional Delineation Report*. The functions were evaluated at low, moderate, or high value levels. Functions evaluated include hydrologic regime, flood storage and flood flow modification, sediment retention, nutrient retention and

transformation, toxicant trapping, social significance, wildlife habitat, and aquatic habitat. The majority of the wetlands and other potential jurisdictional waters located in the BSA were determined to have a low or low-to-moderate value. However, the Santa Ana River was determined to have a high value for all of these functions.

3.18.2.2 CDFG Jurisdiction

All 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. These areas failed to meet the Corps wetland criteria. Drainages believed not to be jurisdictional by the Corps and that lack riparian vegetation are concrete lined; show an absence of any aquatic or terrestrial wildlife; do not function as a river, lake, or stream; and are also not likely to be considered jurisdictional by the CDFG. However, drainages believed not to be jurisdictional by the Corps and that have an earthen bottom and some vegetation are believed to have some minimal value to wildlife and are likely subject to the jurisdiction of the CDFG. The total acreage of CDFG jurisdiction in the BSA is 211.8 ac, which exceeds the total area delineated as Corps jurisdiction (i.e., 122.89 ac) by 88.9 ac.

3.18.2.3 RWQCB Jurisdiction

Because there is no public guidance on the methodology used to determine RWQCB jurisdictional areas, jurisdiction was evaluated based on the federal definition of wetlands (i.e., three parameters) and other waters of the United States (i.e., ordinary high water mark [OHWM]) as recommended by the September 2004 Workplan. Similar to the Corps, the RWQCB asserts jurisdiction over roadside drainage ditches on a case-by-case basis. The total area of potential RWQCB jurisdiction in the BSA is 122.89 ac.

3.18.2.4 Western Riverside County Multiple Species Habitat Conservation Plan Jurisdiction

As defined by the Western Riverside County MSHCP, riparian/riverine areas are areas dominated by trees, shrubs, and persistent emergents or emergent mosses and lichens dependent on fresh water during all or part of the year. Vernal pools are seasonal wetlands that lack wetland indicators during the dry season and support specific species associated with the hydrologic conditions of the pools, such as fairy shrimp (*Anostraca* order). Wetland plants are dominant during the wet part of the

growing season, and upland annual plants are dominant during the dry season. Unvegetated drainages (ephemeral streams) may be included in the assessment if alterations to that drainage have the potential to affect covered species and conservation areas. Wetlands created for the purpose of providing wetland habitat or that result from human actions to create open water (from alteration of natural stream courses), as well as any areas demonstrating artificially created characteristics, are exempt from conditions in Section 6.1.2 of the Western Riverside County MSHCP.

3.18.3 Environmental Consequences

3.18.3.1 Summary of Impacts

Figure 3.18-2 shows the permanent impacts of Alternative 1 on protected waters. (Figure 3.18-2 is provided at the end of this section.)

Depending on the design variation, Alternative 1 would result in permanent impacts to protected waters as follows:

- Corps Jurisdictional Waters: 1.80 to 2.31 ac
- CDFG Jurisdictional Areas: 2.84 to 3.54 ac
- RWQCB Jurisdictional Areas: 1.80 to 2.31 ac

Figure 3.18-3 shows the permanent impacts of Alternative 2 on protected waters. (Figure 3.18-3 is provided at the end of this section.)

Depending on the design variation, Alternative 2 would result in permanent impacts to protected waters as follows:

- Corps Jurisdictional Waters: 0.42 to 2.49 ac
- CDFG Jurisdictional Areas: 1,31 to 4.41 ac
- RWQCB Jurisdictional Areas: 0.42 to 2.49 ac

Figure 3.18-2 shows the temporary impacts of Alternative 1 on protected waters.

Depending on the design variation, Alternative 1 would result in temporary impacts to protected waters as follows:

- Corps Jurisdictional Waters: 1.66 ac
- CDFG Jurisdictional Areas: 2.43 to 2.45 ac
- RWQCB Jurisdictional Areas: 1.66 ac

Figure 3.18-3 shows the temporary impacts of Alternative 2 on protected waters.

Depending on the design variation, Alternative 2 would result in temporary impacts to protected waters as follows:

- Corps Jurisdictional Waters: 1.72 to 1.98 ac
- CDFG Jurisdictional Areas: 2.01 to 3.85 ac
- RWQCB Jurisdictional Areas: 1.72 to 1.98 ac

As shown later in Tables 3.18.2 and 3.18.3, most permanent and temporary impacts to protected waters would occur under the Initial Phases of Alternatives 1 and 2, with a very limited amount of additional impact occurring under the Ultimate Projects for Alternatives 1 and 2.

Summary of Impacts of Alternative 2f

On September 20, 2011, the PDT identified Alternative 2f as the Preferred Alternative. Since that time, design refinements to Alternative 2f have substantially reduced project impacts to wetlands and other waters. Previously, the project impacts were determined based on the entire project footprint showing full disturbance at many drainage features. The more detailed engineering now shows that full disturbance at many drainage features is no longer warranted (e.g., a drainage will be bridged instead of disturbed).

Alternative 2f would result in permanent impacts to protected waters as follows:

- Corps Jurisdictional Waters: 0.42 ac
- CDFG Jurisdictional Areas: 1.31 ac
- RWQCB Jurisdictional Areas: 0.42 ac

Alternative 2f would result in temporary impacts to protected waters as follows:

- Corps Jurisdictional Waters: 1.98 ac
- CDFG Jurisdictional Areas: 2.01 ac
- RWQCB Jurisdictional Areas: 1.98 ac

A detailed discussion regarding the consultation and coordination conducted with the Corps, CDFG, and RWQCB is provided later in Chapter 5, Comments and Coordination.

Table 3.18.2 Permanent Impacts of Alternatives 1 and 2 to Jurisdictional Areas (acres)

Alternative (with Design Variation)	Initial Phase of Alternative 1[1]	Alternative 1[2]				Initial Phase of Alternative 2[1]	Alternative 2[2]							
		1a	1b	1c	1d		2a	2b	2c	2d	2e	2f[3]	2g	2h
Corps Jurisdiction														
Wetland Waters	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Deepwater Aquatic Nonwetland Waters	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nonwetland Waters	1.74	2.25	2.24	2.25	1.74	2.09	2.38	2.37	2.43	2.43	2.38	0.36	2.43	2.43
Total Corps Jurisdiction	**1.80**	**2.31**	**2.30**	**2.31**	**1.80**	**2.15**	**2.44**	**2.43**	**2.49**	**2.49**	**2.44**	**0.42**	**2.49**	**2.49**
Nonjurisdictional Wetland Waters	0.02	0.02	0.02	0.02	0.02	0.16	0.21	0.21	0.21	0.21	0.23	0.23	0.21	0.21
Nonjurisdictional Nonwetland Waters	0.19	0.20	0.24	0.19	0.23	0.30	0.45	0.45	0.56	0.57	0.44	0.45	0.56	0.57
CDFG Jurisdictional Areas	2.84	3.44	3.54	3.44	2.84	3.86	4.01	4.12	4.31	4.41	4.07	1.31	4.31	4.41
RWQCB Jurisdictional Areas	1.80	2.31	2.30	2.31	1.80	2.15	2.44	2.43	2.49	2.49	2.44	0.42	2.49	2.49

Source: *Final Natural Environment Study* (June 2010).

[1] There is no detailed phasing plan for Alternative 1. However, it is expected that the Initial Phases of Alternatives 1 and 2 would be phased similarly. Therefore, the Initial Phase of Alternative 1 Project is anticipated to result in fewer impacts than Alternative 1, similar to the range of impacts between the Initial Phase of Alternative 2 and Alternative 2.

[2] The impacts of Alternatives 1 and 2 shown here are the total impacts for each Alternative; those impacts include the impacts of the Initial Phases and the additional impacts that would occur under the Ultimate Projects for each Alternative.

[3] The Alternative 2f impacts are based on design refinements made after the identification of Alternative 2f as the Preferred Alternative.

Corps = United States Army Corps of Engineers
CDFG = California Department of Fish and Game
RWQCB = Regional Water Quality Control Board

Table 3.18.3 Temporary Impacts of Alternative 1 and 2 Projects to Jurisdictional Areas (acres)

Alternative (with Design Variation)	Initial Phase of Alternative 1[1]	Alternative 1[2]				Initial Phase of Alternative 2[1]	Alternative 2[2]							
		1a	1b	1c	1d		2a	2b	2c	2d	2e	2f[3]	2g	2h
Corps Jurisdiction														
Wetland Waters	0.00	0.12	0.12	0.12	0.12	0.00	0.12	0.12	0.12	0.12	0.12	0.06	0.12	0.12
Deepwater Aquatic Nonwetland Waters	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nonwetland Waters	0.21	1.54	1.54	1.54	1.54	0.21	1.60	1.62	1.64	1.66	1.67	1.92	1.71	1.73
Total Corps Jurisdiction	**0.21**	**1.66**	**1.66**	**1.66**	**1.66**	**0.21**	**1.72**	**1.74**	**1.76**	**1.78**	**1.79**	**1.98**	**1.83**	**1.85**
Nonjurisdictional Wetland Waters	0.00	0.24	0.24	0.24	0.24	0.00	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Nonjurisdictional Nonwetland Waters	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CDFG Jurisdictional Areas	0.28	2.44	2.43	2.45	2.43	0.28	2.92	3.05	3.19	3.32	3.45	2.01	3.72	3.85
RWQCB Jurisdictional Areas	0.21	1.66	1.66	1.66	1.66	0.21	1.72	1.74	1.76	1.78	1.79	1.98	1.83	1.85

Source: *Final Natural Environment Study* (June 2010).

[1] There is no detailed phasing plan for Alternative 1. However, it is expected that the Initial Phases of Alternatives 1 and 2 would be phased similarly. Therefore, the Initial Phase of Alternative 1 is anticipated to result in fewer impacts than Alternative 1, similar to the range of impacts between the Initial Phase of Alternative 2 and Alternative 2.

[2] The impacts of Alternatives 1 and 2 shown here are the total impacts for each Alternative; those impacts include the impacts of the Initial Phases and the additional impacts that would occur under the Ultimate Projects for each Alternative.

[3] The Alternative 2f impacts are based on design refinements made after the identification of Alternative 2f as the Preferred Alternative.

Corps = United States Army Corps of Engineers
CDFG = California Department of Fish and Game
RWQCB = Regional Water Quality Control Board

3.18.3.2 Permanent Impacts

The potential impacts of the project related to wetlands and other waters are discussed below for Alternatives 1 and 2. In addition, the Corps is currently realigning sections of the Santa Ana River and armoring the banks with concrete (the Reach 9 Phase 2B project), and the Department has added eastbound lanes on SR-91 between SR-241 and SR-71. Information for these projects was provided by the Corps and the Department. Because these projects were initiated after the April 2008 aerial photographs were used as the base for Figure 3.18-1, those aerials do not show the effects of these projects in the project area. However, the effects of the Build Alternatives related to wetlands and waters of the United States took the effects of the river realignment and SR-91 eastbound lane addition project on those resources into consideration and were reduced accordingly. Because conditions have changed since the field work for the project was conducted, additional field work was conducted on September 28 and November 1, 2011, and revisions were made to the delineations of the Santa Ana River and Drainage #28. Those revisions are incorporated in the analysis of SR-91 CIP impacts.

Alternatives 1 and 2

The Build Alternatives would affect waters of the United States as a result of widening, modifying, or otherwise improving drainages and culverts to accommodate the widening of and improvements to SR-91 and I-15. Permanent impacts include physical impacts from road widening and new structures. Table 3.18.2 shows the total permanent effects to jurisdictional areas for Alternatives 1 and 2 and the Initial Phases of Alternatives 1 and 2 in Orange and Riverside Counties. The total acreages for Alternatives 1 and 2 shown in Table 3.18.2 include any impacts cited and individually noted in the Initial Phases of those alternatives. For example, as shown in Table 3.18.2, the Initial Phase of Alternative 1 would result in 0.44 ac of impacts to Corps jurisdictional wetlands; Alternative 1, in total, would result in 0.44 ac of impacts to Corps jurisdictional wetlands. Therefore, there would be no additional effects to Corps jurisdictional wetlands after implementation of the Initial Phase of Alternative 1. However, as also shown in Table 3.18.2, there would be additional impacts after the Initial Phase for Alternative 1 with some design variations on nonwetland waters and nonjurisdictional wetland waters. Figures 3.18-2 and 3.18-3 show the permanent impacts of Alternatives 1 and 2, respectively, on protected waters. Figure 3.18-4 shows the permanent impacts after the design refinements to Alternative 2f.

As shown in Table 3.18.2, Alternative 1 would result in permanent impacts to potential jurisdictional waters of the United States (i.e., Corps jurisdiction) on between 2.18 and 2.69 ac, depending on the design variation. Alternative 2 would result in permanent impacts to potential jurisdictional waters of the United States on between 0.42 and 1.98 ac, depending on the design variation. Alternative 2f would result in permanent impacts to 0.42 ac of jurisdictional waters of the United States.

As shown in Table 3.18.2, Alternative 1 would result in permanent impacts to CDFG jurisdictional areas on between 2.84 and 3.54 ac, depending on the design variation. Alternative 2 would result in permanent impacts to CDFG jurisdictional areas on between 1.31 and 4.41 ac, depending on the design variation. Alternative 2f would result in permanent impacts to1.31 ac of CDFG jurisdictional areas.

As shown in Table 3.18.2, Alternative 1 would result in 1.68 ac of permanent impacts to RWQCB jurisdictional areas for all the design variations. Alternative 2 would result in permanent impacts to RWQCB jurisdictional areas on between 0.42 and 2.69 ac, depending on the design variation. Alternative 2f would result in permanent impacts to 0.42 ac of RWQCB jurisdictional areas.

The Build Alternatives are not expected to increase permanent indirect effects (such as increased impervious surfaces, water quality, human-related disturbances, vegetative changes, or decrease in biodiversity or ecosystem stability) to protected waters due to the implementation of BMPs and other project features (e.g., revegetation of temporarily disturbed areas with plant species not on the Cal-IPC list). Although permanent indirect impacts are not expected to increase as a result of the SR-91 CIP, permanent impacts are expected to extend into the surrounding natural habitat by approximately the same distance that SR-91 is being widened.

Impacts to wetlands and waters cannot be avoided entirely, as these resources cross and/or are in very close proximity to the SR-91 facility. The project design includes many design features to avoid or minimize impacts to protected waters to the greatest extent feasible. Preliminary coordination that has occurred with the Corps on the jurisdictional delineation, discussion of impacts, and mitigation measures is documented in Chapter 5.0.

No Build Alternative

The No Build Alternative would not result in the construction of any improvements to SR-91 and I-15 and, therefore, would not result in permanent adverse impacts to wetlands and other waters in the BSA.

3.18.3.3 Temporary Impacts

Alternatives 1 and 2

Temporary impacts include physical impacts from construction activities that would cease once construction of that phase is complete. Project effects are considered permanent if the areas would be disturbed longer than a single phase without replacement. The potential temporary impacts of Alternatives 1 and 2 to Corps jurisdictional and nonjurisdictional waters, CDFG jurisdictional areas, and RWQCB jurisdictional areas are summarized in Table 3.18.3. Table 3.18.3 shows the total temporary effects to jurisdictional areas for Alternatives 1 and 2 and the Initial Phases of Alternatives 1 and 2 in Orange and Riverside Counties. The total acreages for Alternatives 1 and 2 shown in Table 3.18.3 include any impacts cited and individually noted in the Initial Phases of those alternatives, as described earlier in Section 3.18.3.2, Permanent Impacts. Figures 3.18-2 and 3.18-3 show the temporary impacts of Alternatives 1 and 2, respectively, on protected waters. Figure 3.18-4 shows the temporary impacts after the design refinements to Alternative 2f.

As shown in Table 3.18.3, Alternative 1 would result in 1.66 ac of temporary impacts to potential jurisdictional waters of the United States (i.e., Corps jurisdiction) for all of the design variations. Alternative 2 would result in temporary impacts to potential jurisdictional waters of the United States on between 1.72 and 1.98 ac, depending on the design variation. Alternative 2f would result in temporary impacts to 1.98 ac of jurisdictional waters of the United States.

As shown in Table 3.18.3, Alternative 1 would result in temporary impacts to CDFG jurisdictional areas on between 2.43 and 2.45 ac, depending on the design variation. Alternative 2 would result in temporary impacts to CDFG jurisdictional areas on between 2.01 and 3.85 ac, depending on the design variation. Alternative 2f would result in temporary impacts to 2.01 ac of CDFG jurisdictional areas.

As shown in Table 3.18.3, Alternative 1 would result in temporary impacts of 1.66 ac to RWQCB jurisdictional areas for all the design variations. Alternative 2 would result in temporary impacts to RWQCB jurisdictional areas on between 1.72 and 1.98 ac, depending on the design variation. Alternative 2f would result in temporary impacts to 1.98 ac of RWQCB jurisdictional areas.

The Build Alternatives may result in temporary indirect effects to protected waters including construction-related effects such as dust and potential fuel spills from

construction equipment or disruption by personnel outside designated construction areas.

No Build Alternative

The No Build Alternative would not result in the construction of any of the improvements to SR-91 and I-15 and, therefore, would not result in adverse temporary impacts to wetlands and other waters in the BSA.

3.18.3.4 Only Practicable Finding

Section 404(b)(1) of the federal CWA requires projects involving federal action to demonstrate that measures have been taken to avoid and minimize impacts to waters of the United States, including wetlands. Furthermore, EO 11990 (Protection of Wetlands) directs federal agencies to "…avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands…"

Section 2.3.5.3, Major Investment Study Build Alternatives, of this EIR/EIS describes how OCTA, RCTC, and TCA prepared the *Riverside County-Orange County Major Investment Study Final Draft Screening Report* (November 2005). The MIS considered a wide range of transportation options to address the need for improved mobility between Orange and Riverside Counties. The MIS Policy Committee identified (and approved) four separate east-west corridors between Riverside and Orange Counties that were needed to address demand. SR-91 is one of those corridors.

After the MIS identified SR-91 as a needed corridor to improve, preliminary engineering was conducted to explore various alternatives in that corridor. A no-fill alternative was not considered feasible because SR-91 is an existing freeway, and any build alternatives in that corridor would be within and immediately adjacent to that existing transportation corridor. Alternatives 1 and 2, evaluated in this EIR/EIS, have been determined to be practicable as they relate to cost, existing technology, logistics, and purpose and need.

Additional practicable measures have been included to avoid and minimize harm to wetlands and other waters of the United States as a result of the construction and operation of Alternative 2f. These measures are:

- All permanent water quality treatment BMPs were moved outside of jurisdictional areas.

- The project engineers reviewed and refined impact areas away from wetlands and other waters of the United States, to the best extent possible, with the exception of areas required to construct road and bridge facilities.
- To the best extent possible, culvert extensions will use soft-bottom transition structures.
- Identified projects completed by other agencies (the SR-91 Eastbound Lane Addition and the Corps' Santa Ana River Reach 9 Phases 2A and 2B) that have already been widened to their ultimate configurations and removed duplicate impacts from these projects.
- Bridge piers were incorporated over drainages whenever possible instead of fill at connectors.
- Revised design speeds, curve radii, and retaining walls were incorporated to eliminate fill slopes near drainages whenever possible.

In addition to these avoidance and minimization measures, compensatory mitigation is also included in Alternatives 1 and 2, as described earlier in Section 3.17.4.1, Compensatory Mitigation. Measures WET-1 through WET-3 also address project effects on waters.

Based on the above considerations, it was determined there is no practicable alternative to the proposed construction in wetlands under Alternatives 1 and 2, and the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use.

3.18.4 Avoidance, Minimization, and Mitigation Measures

3.18.4.1 Compensatory Mitigation

The compensatory mitigation for project impacts to wetlands and other waters is the same as described in Section 3.17.4.1, Compensatory Mitigation, for natural communities. Compensatory mitigation would be required for project impacts to wetlands and other waters in both Orange and Riverside Counties.

3.18.4.2 Other Measures

The following measures will avoid and/or minimize temporary and permanent impacts of Alternatives 1 and 2 to wetlands and other waters. The following measures will be required for the Initial Phases and Ultimate Projects under the SR-91 CIP Build Alternatives.

WET-1 RCTC's Project Manager will ensure that prior to any clearing or construction, a Section 404 Nationwide Permit is obtained through the Corps pursuant to the CWA.

RCTC's Resident Engineer will retain a copy of the Corps permit at the construction site and will ensure that the conditions in that permit are properly implemented prior to and during construction.

WET-2 RCTC's Project Manager will ensure that prior to any clearing or construction, a Streambed Alteration Agreement with the CDFG is obtained.

RCTC's Resident Engineer will retain a copy of the CDFG agreement at the construction site and will ensure that the conditions in that agreement are properly implemented prior to and during construction.

WET-3 RCTC's Project Manager will ensure that prior to any clearing or construction, a Section 401 Water Quality Certification from the RWQCB is obtained.

RCTC's Resident Engineer will retain a copy of the Section 401 certification at the construction site and will ensure that the conditions in that certification are properly implemented prior to and during construction.

The following measures described elsewhere in Chapter 3 would also provide protection and mitigation benefits to wetlands and other waters:

- Measures NC-1, NC-2, NC-5, and NC-6 are provided in Section 3.17, Natural Communities.
- Measures WQ-1 through WQ-3 are provided in Section 3.10, Water Quality and Storm Water Runoff. Any biological monitoring requirements described in the permits required in Measures WQ-1 through WQ-3 would be implemented as applicable.

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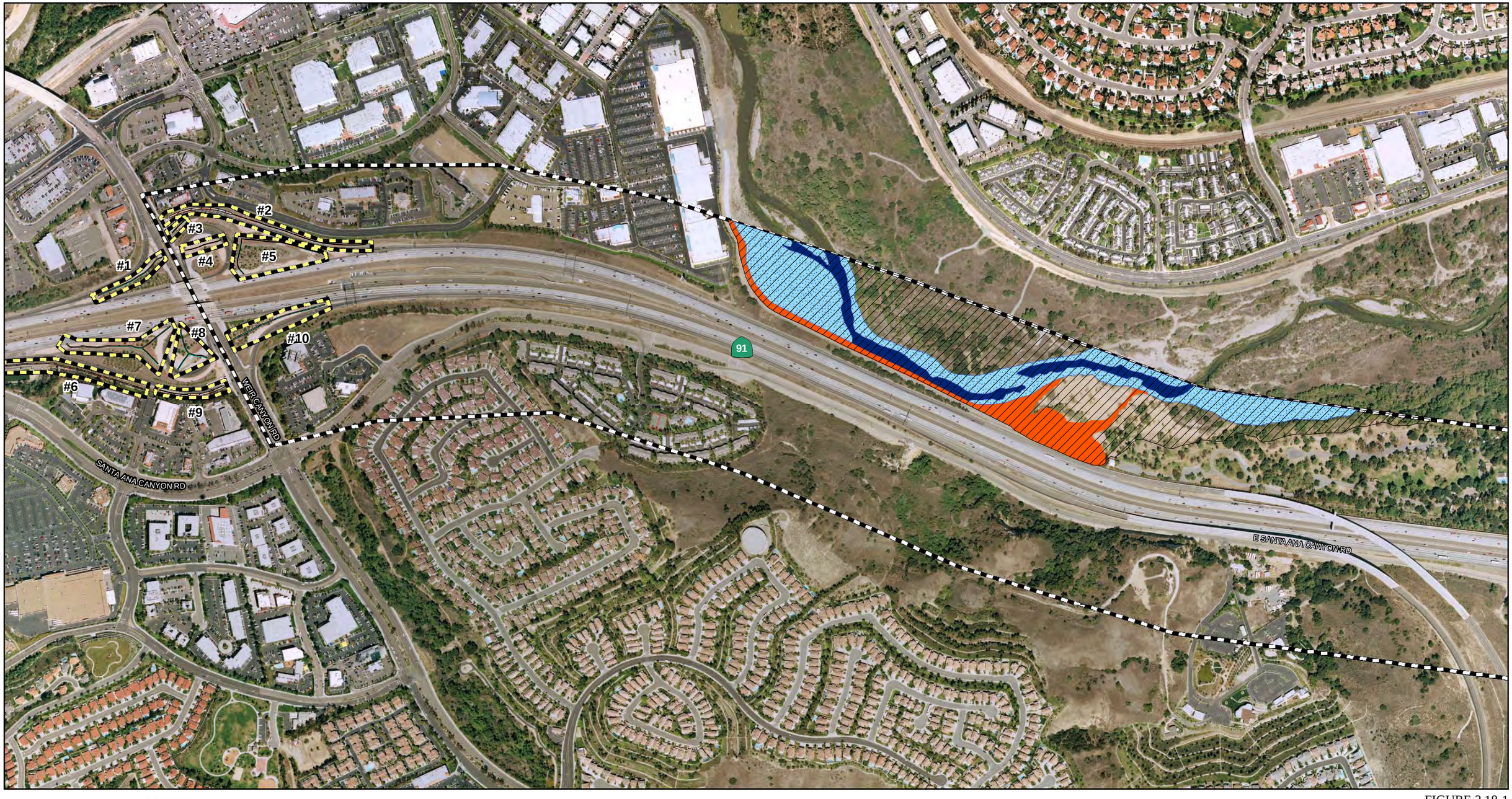

LEGEND

- Biological Study Area
- Drainage Box (with ID#)
- Soil Pit (with ID#)
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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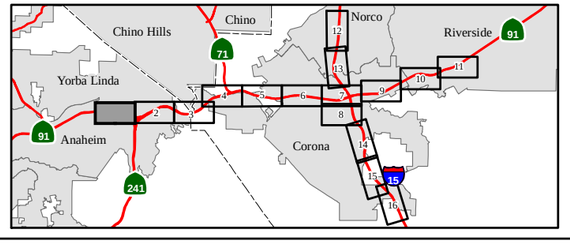
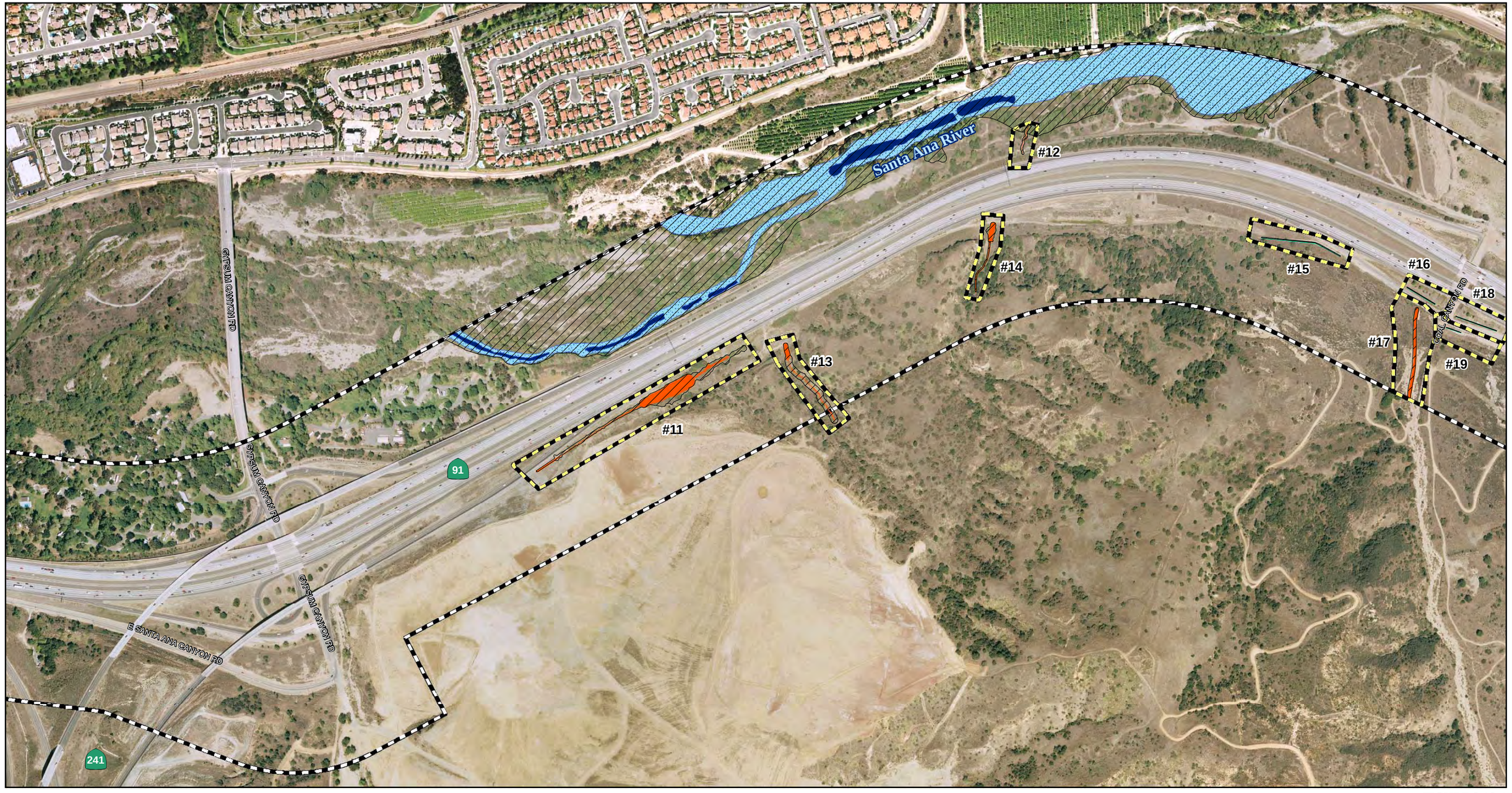


FIGURE 3.18-1
Sheet 1 of 16

SR-91 Corridor Improvement Project

Jurisdictional Map

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540



LEGEND

- Biological Study Area
- Drainage Box (with ID#)
- Soil Pit (with ID#)
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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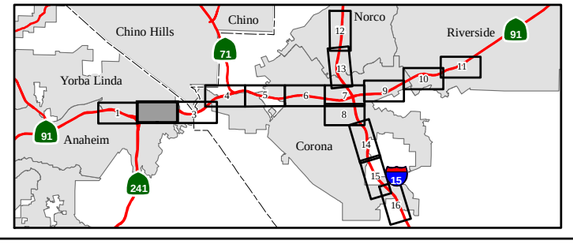

FIGURE 3.18-1
Sheet 2 of 16

SR-91 Corridor Improvement Project

Jurisdictional Map

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

- Biological Study Area
- Drainage Box (with ID#)
- Soil Pit (with ID#)
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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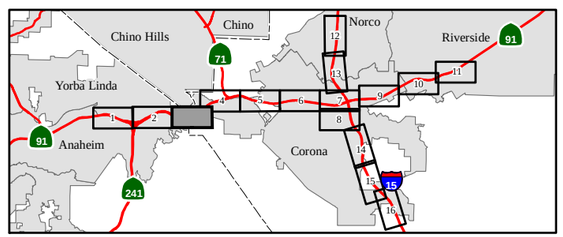

FIGURE 3.18-1
Sheet 3 of 16

SR-91 Corridor Improvement Project

Jurisdictional Map

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
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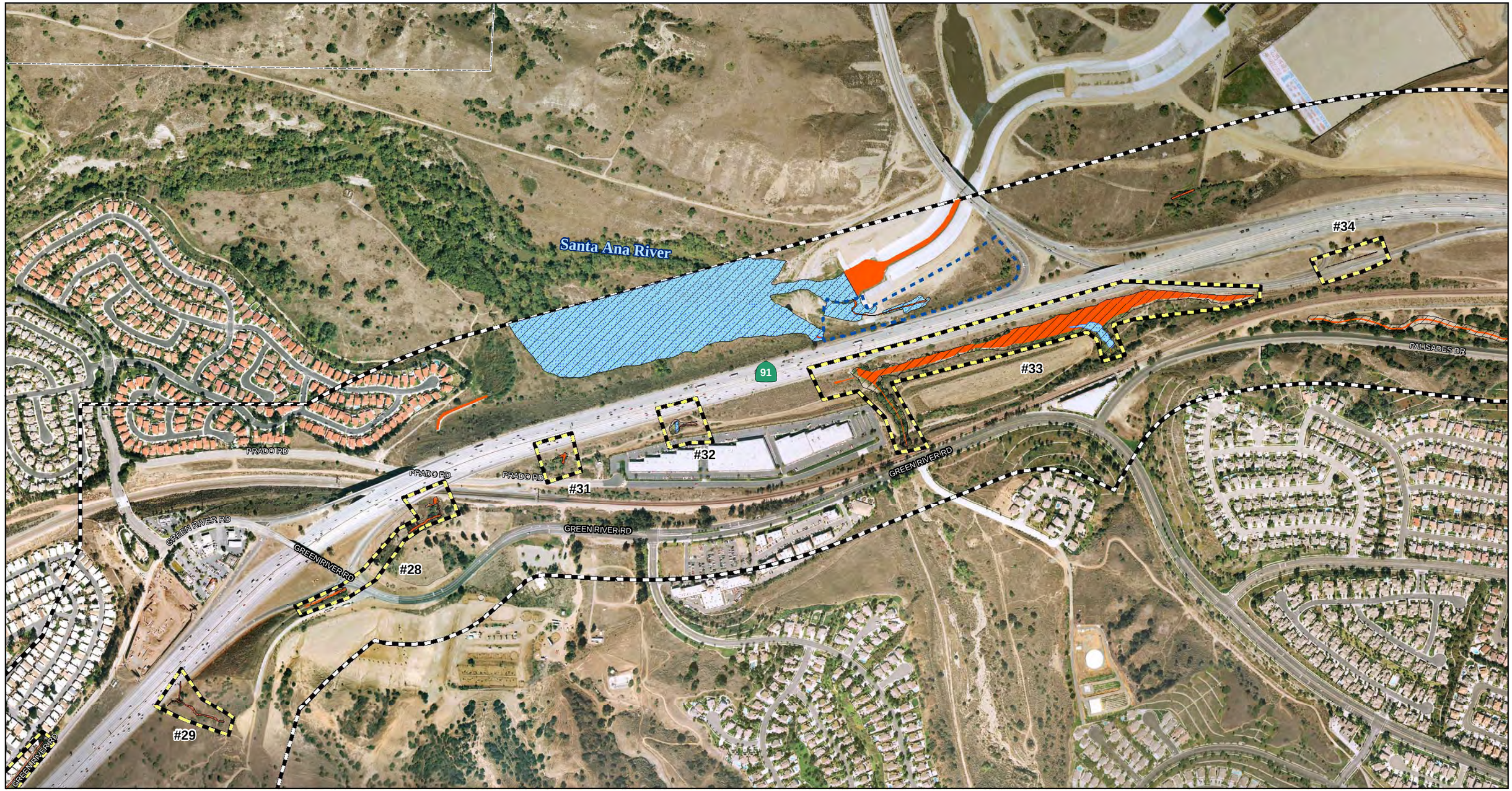

LEGEND

- Biological Study Area
- Drainage Box (with ID#)
- Soil Pit (with ID#)
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

- Supplemental Wetland Jurisdictional Delineation Survey Boundary (Parsons 2011)

N

0 300 600
FEET

SOURCE: AirPhotoUSA (04/2007), PB (2008), Parsons (10/2011)

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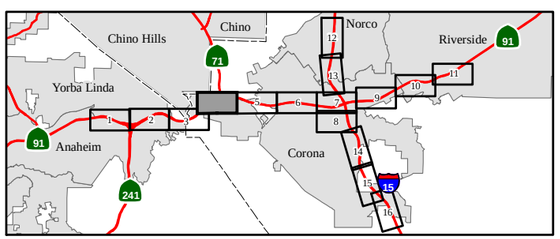

FIGURE 3.18-1
Sheet 4 of 16

SR-91 Corridor Improvement Project

Jurisdictional Map

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

- Biological Study Area
- Drainage Box (with ID#)
- Soil Pit (with ID#)
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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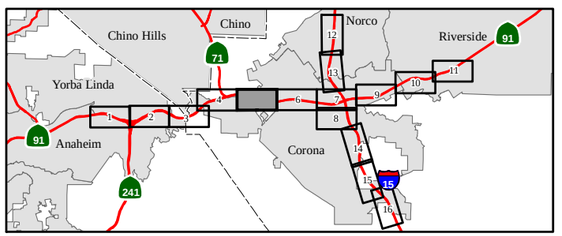

FIGURE 3.18-1
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SR-91 Corridor Improvement Project

Jurisdictional Map

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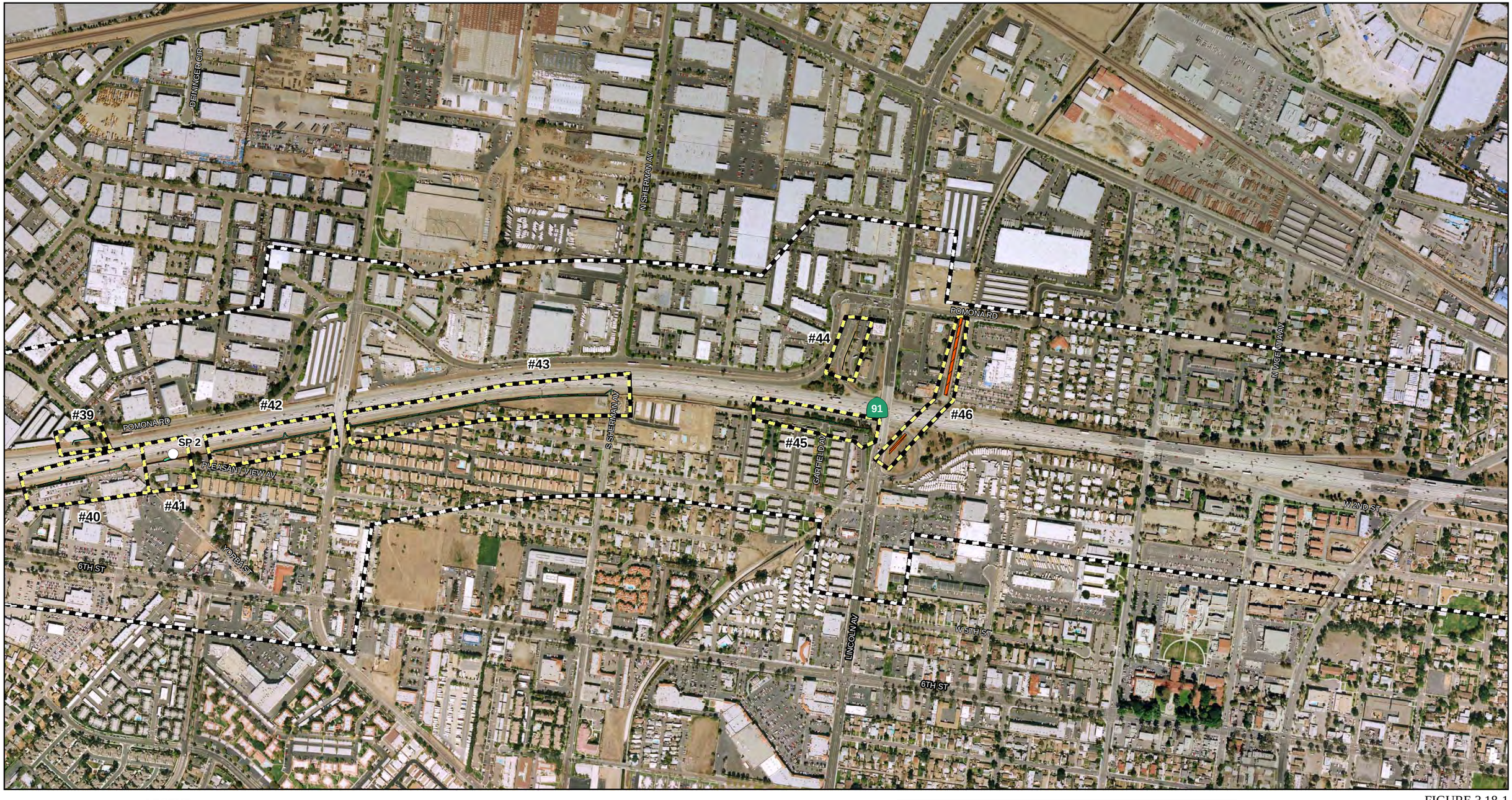
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540



LEGEND

- Biological Study Area
- Drainage Box (with ID#)
- Soil Pit (with ID#)
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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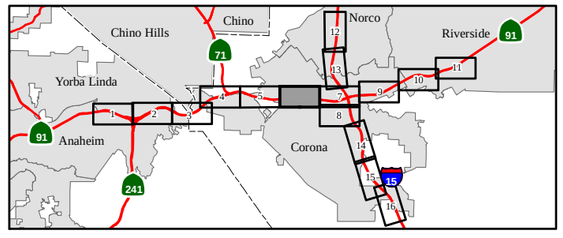
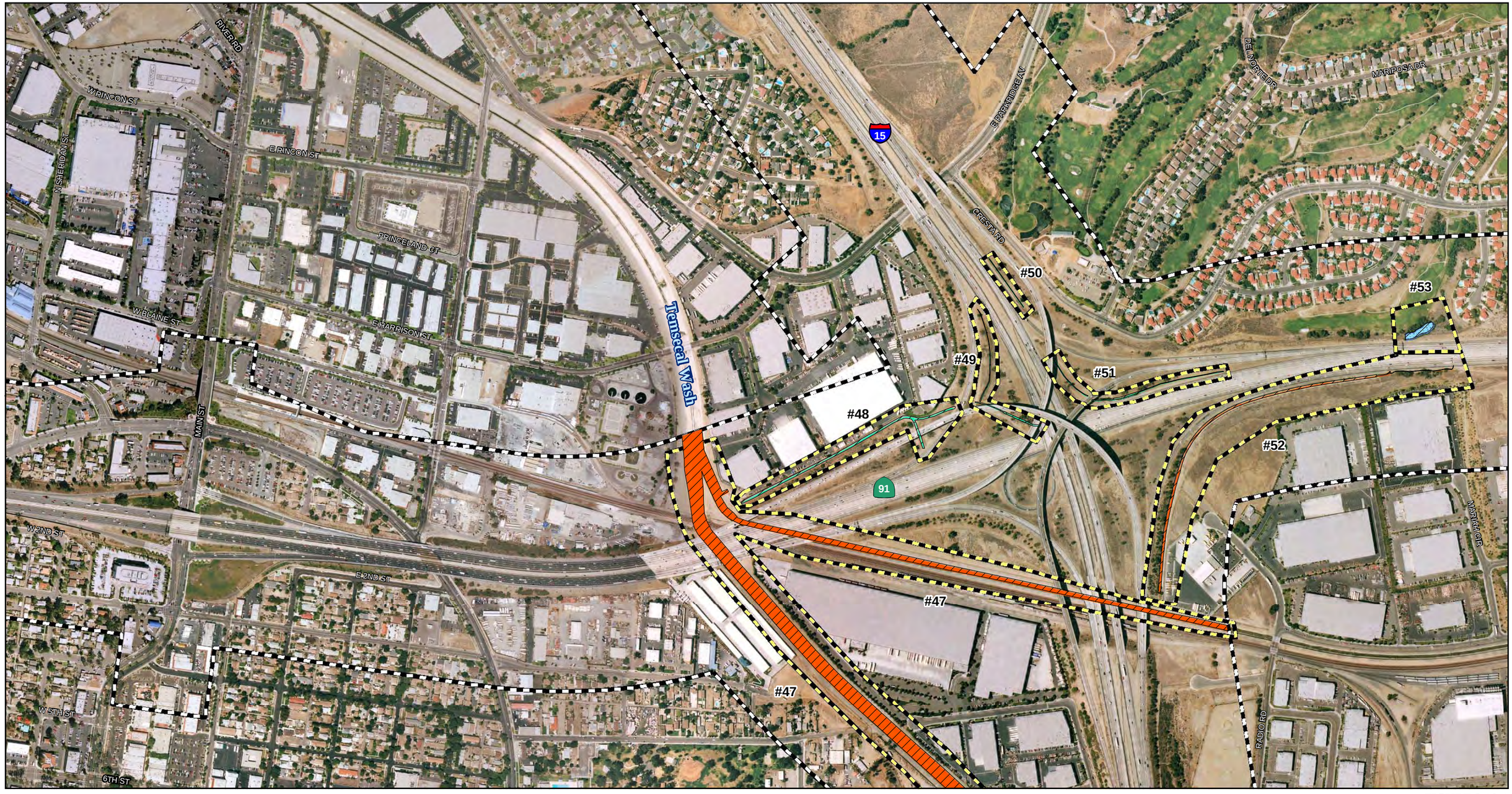


FIGURE 3.18-1
Sheet 6 of 16

SR-91 Corridor Improvement Project

Jurisdictional Map

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540



LEGEND

- Biological Study Area
- Drainage Box (with ID#)
- Soil Pit (with ID#)
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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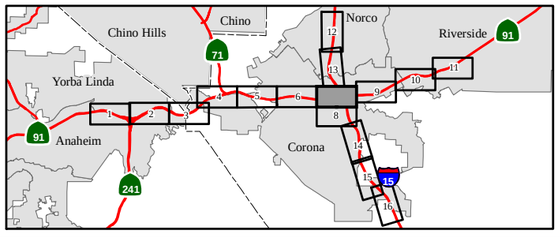

FIGURE 3.18-1
Sheet 7 of 16

SR-91 Corridor Improvement Project

Jurisdictional Map

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

W 5TH ST
6TH ST
BELLE AV
CIRCLE CITY DR
FORD ST
E FRANCIS ST
BEVERLY RD
DAVIS ST
RADIO RD
COMPTON AV
MAGNOLIA AV
#71
SP 8
EL SOBRANTE
#70
SP 9
#72

LEGEND

- Biological Study Area
- Drainage Box (with ID#)
- Soil Pit (with ID#)
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

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SOURCE: Digital Globe (04/2008); PB (2008)

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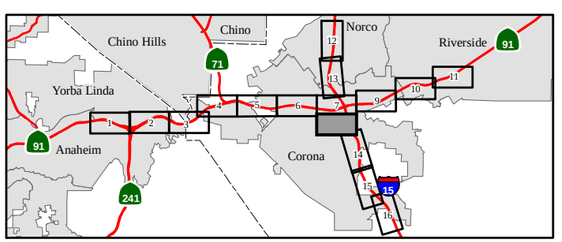

FIGURE 3.18-1
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SR-91 Corridor Improvement Project

Jurisdictional Map

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
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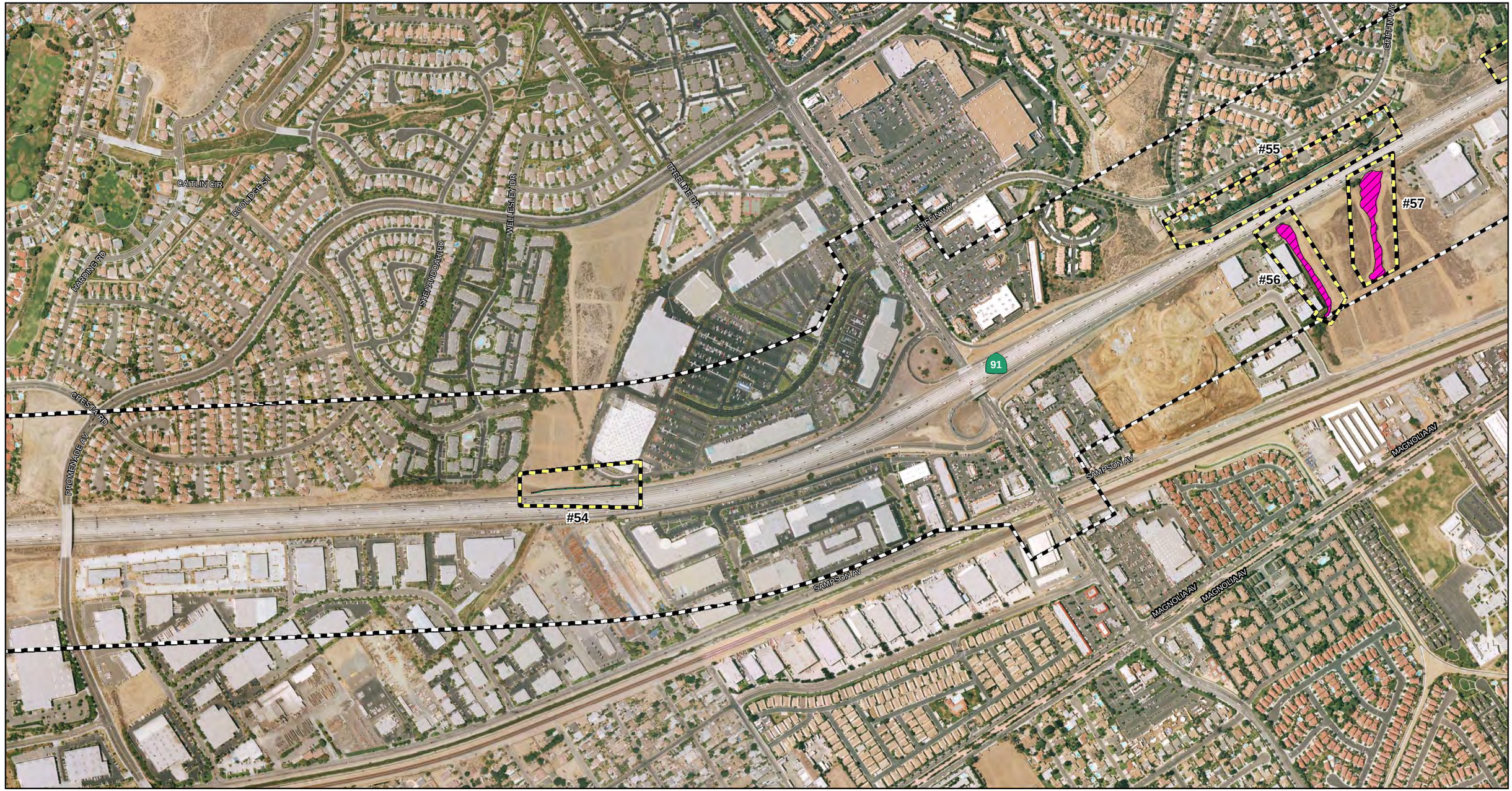

LEGEND

- Biological Study Area
- Drainage Box (with ID#)
- Soil Pit (with ID#)
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

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FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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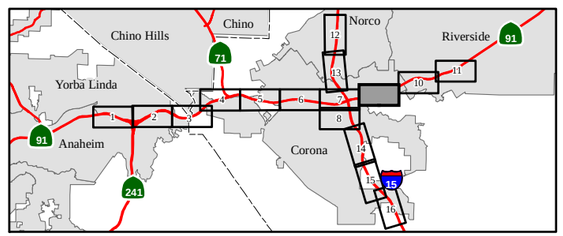

FIGURE 3.18-1
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SR-91 Corridor Improvement Project

Jurisdictional Map

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

- Biological Study Area
- Drainage Box (with ID#)
- Soil Pit (with ID#)
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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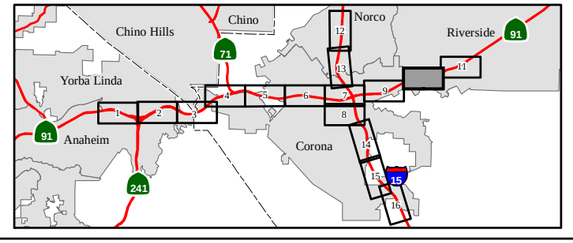

FIGURE 3.18-1
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SR-91 Corridor Improvement Project

Jurisdictional Map

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

- Biological Study Area
- Drainage Box (with ID#)
- Soil Pit (with ID#)
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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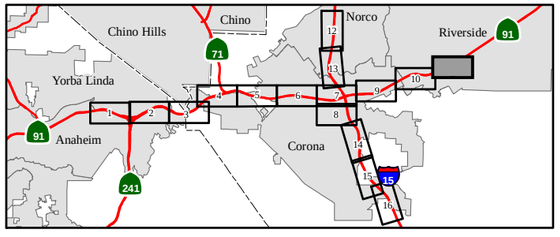

FIGURE 3.18-1
Sheet 11 of 16

SR-91 Corridor Improvement Project

Jurisdictional Map

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

- Biological Study Area
- Drainage Box (with ID#)
- Soil Pit (with ID#)
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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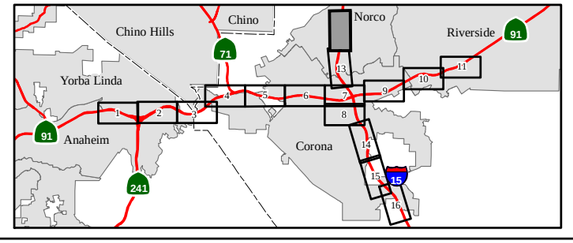

FIGURE 3.18-1
Sheet 12 of 16

SR-91 Corridor Improvement Project

Jurisdictional Map

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

- Biological Study Area
- Drainage Box (with ID#)
- Soil Pit (with ID#)
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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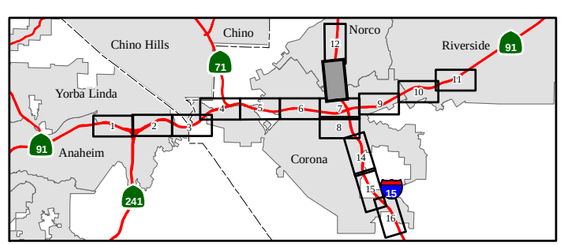

FIGURE 3.18-1
Sheet 13 of 16

SR-91 Corridor Improvement Project

Jurisdictional Map

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

- Biological Study Area
- Drainage Box (with ID#)
- Soil Pit (with ID#)
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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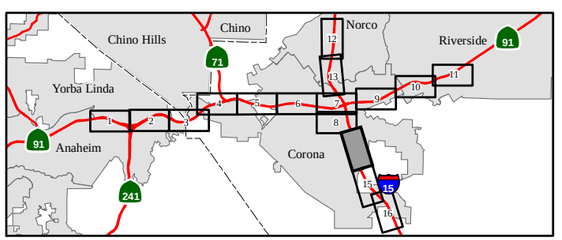

FIGURE 3.18-1
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SR-91 Corridor Improvement Project

Jurisdictional Map

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

- Biological Study Area
- Drainage Box (with ID#)
- Soil Pit (with ID#)
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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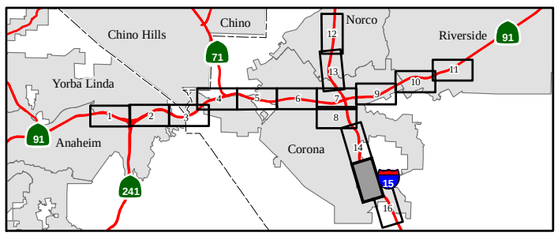

FIGURE 3.18-1
Sheet 15 of 16

SR-91 Corridor Improvement Project

Jurisdictional Map

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

- Biological Study Area
- Drainage Box (with ID#)
- Soil Pit (with ID#)
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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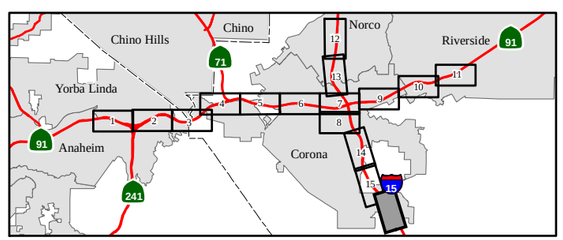

FIGURE 3.18-1
Sheet 16 of 16

SR-91 Corridor Improvement Project

Jurisdictional Map

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08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
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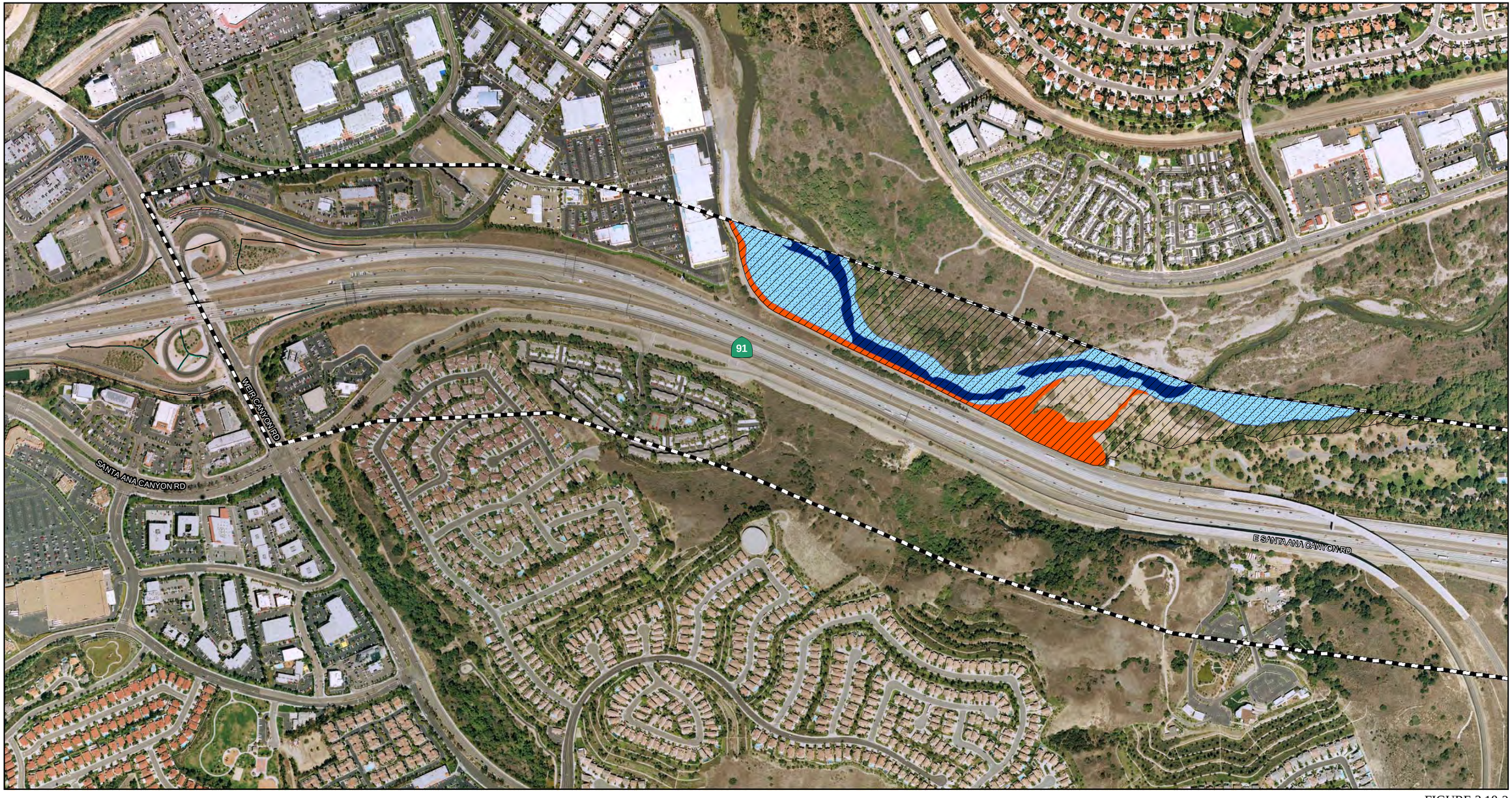

LEGEND

Biological Study Area

Alternative 1 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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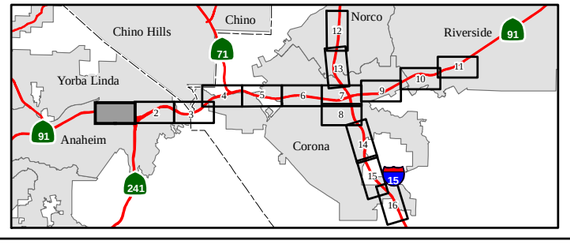

FIGURE 3.18-2
Sheet 1 of 16

SR-91 Corridor Improvement Project

Alternative 1

Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

GYPSUM CANYON RD

GYPSUM CANYON RD

E SANTA ANA CANYON RD

GOAL CANYON RD

91

241

LEGEND

Biological Study Area

Alternative 1 Impacts

Permanent Impact Areas

Temporary Impact Areas

CDFG Jurisdiction

Corps Jurisdiction

Wetland Waters

Nonwetland Waters

Deepwater Aquatic Nonwetland Waters

Nonjurisdictional Nonwetland Waters

Nonjurisdictional Wetland Waters

N

0 300 600

FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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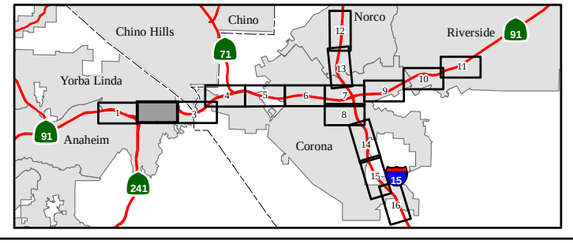


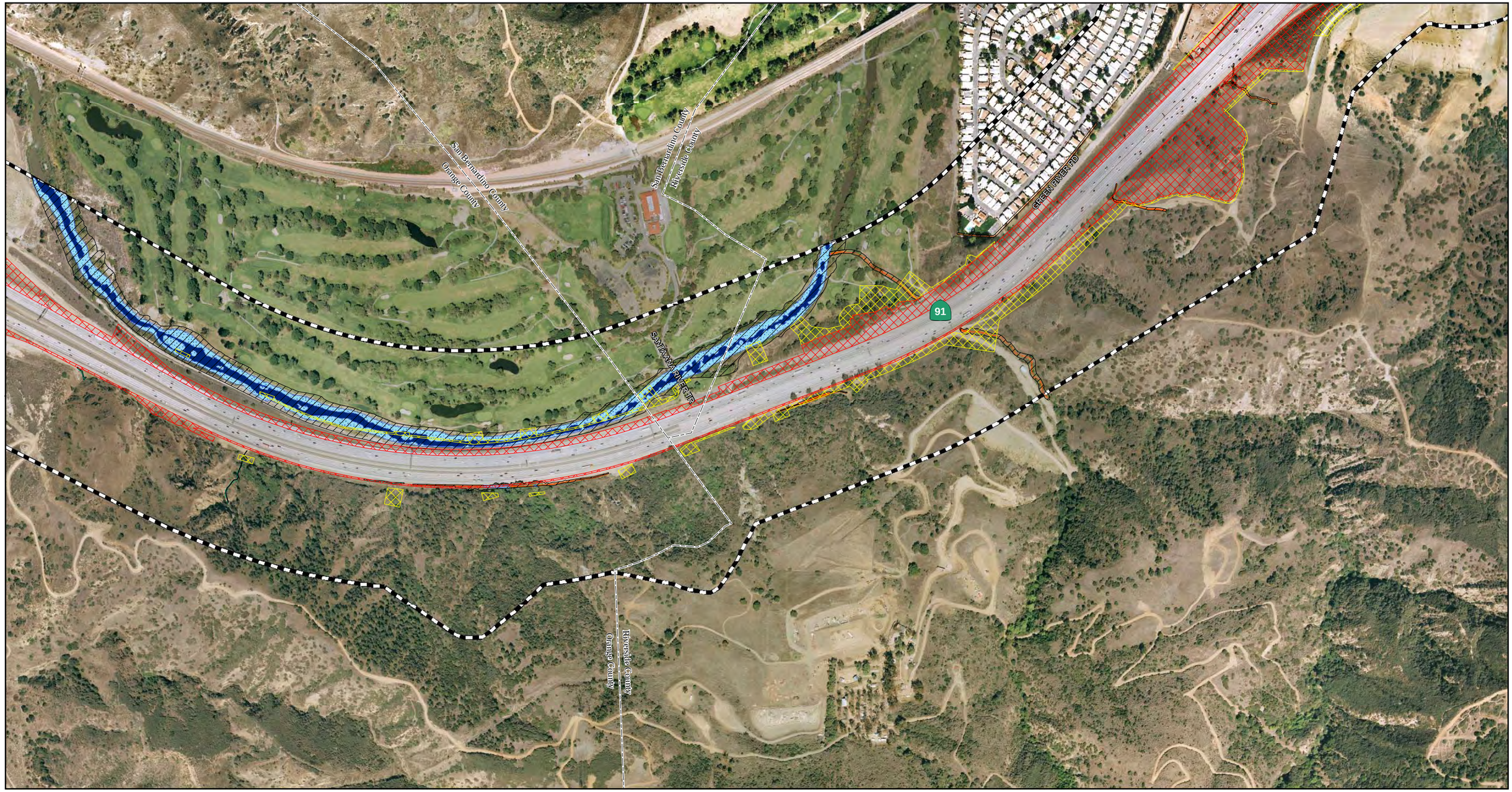
FIGURE 3.18-2
Sheet 2 of 16

SR-91 Corridor Improvement Project

Alternative 1

Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540



LEGEND

Biological Study Area

Alternative 1 Impacts

Permanent Impact Areas

Temporary Impact Areas

CDFG Jurisdiction

Corps Jurisdiction

Wetland Waters

Nonwetland Waters

Deepwater Aquatic Nonwetland Waters

Nonjurisdictional Nonwetland Waters

Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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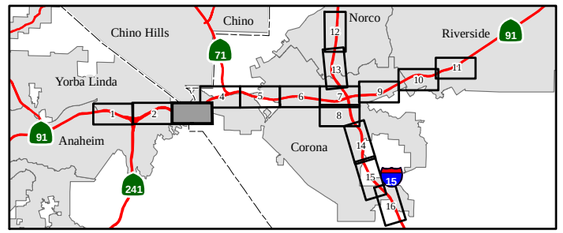

FIGURE 3.18-2
Sheet 3 of 16

SR-91 Corridor Improvement Project

Alternative 1
Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

- Biological Study Area
- Alternative 1 Impacts
  - Permanent Impact Areas
  - Temporary Impact Areas
  - CDFG Jurisdiction
- Corps Jurisdiction
  - Wetland Waters
  - Nonwetland Waters
  - Deepwater Aquatic Nonwetland Waters
  - Nonjurisdictional Nonwetland Waters
  - Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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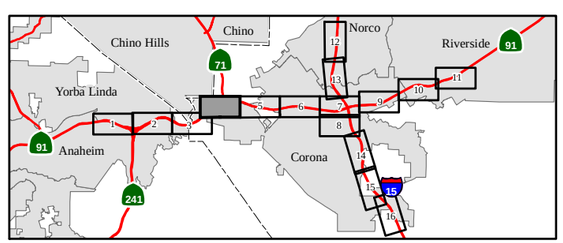

FIGURE 3.18-2
Sheet 4 of 16

SR-91 Corridor Improvement Project

Alternative 1
Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

- Biological Study Area

Alternative 1 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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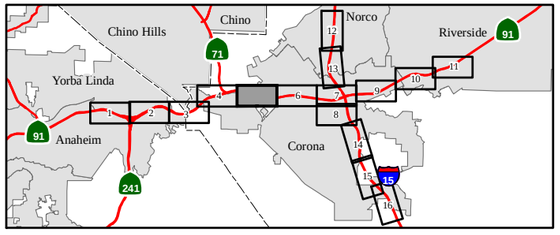


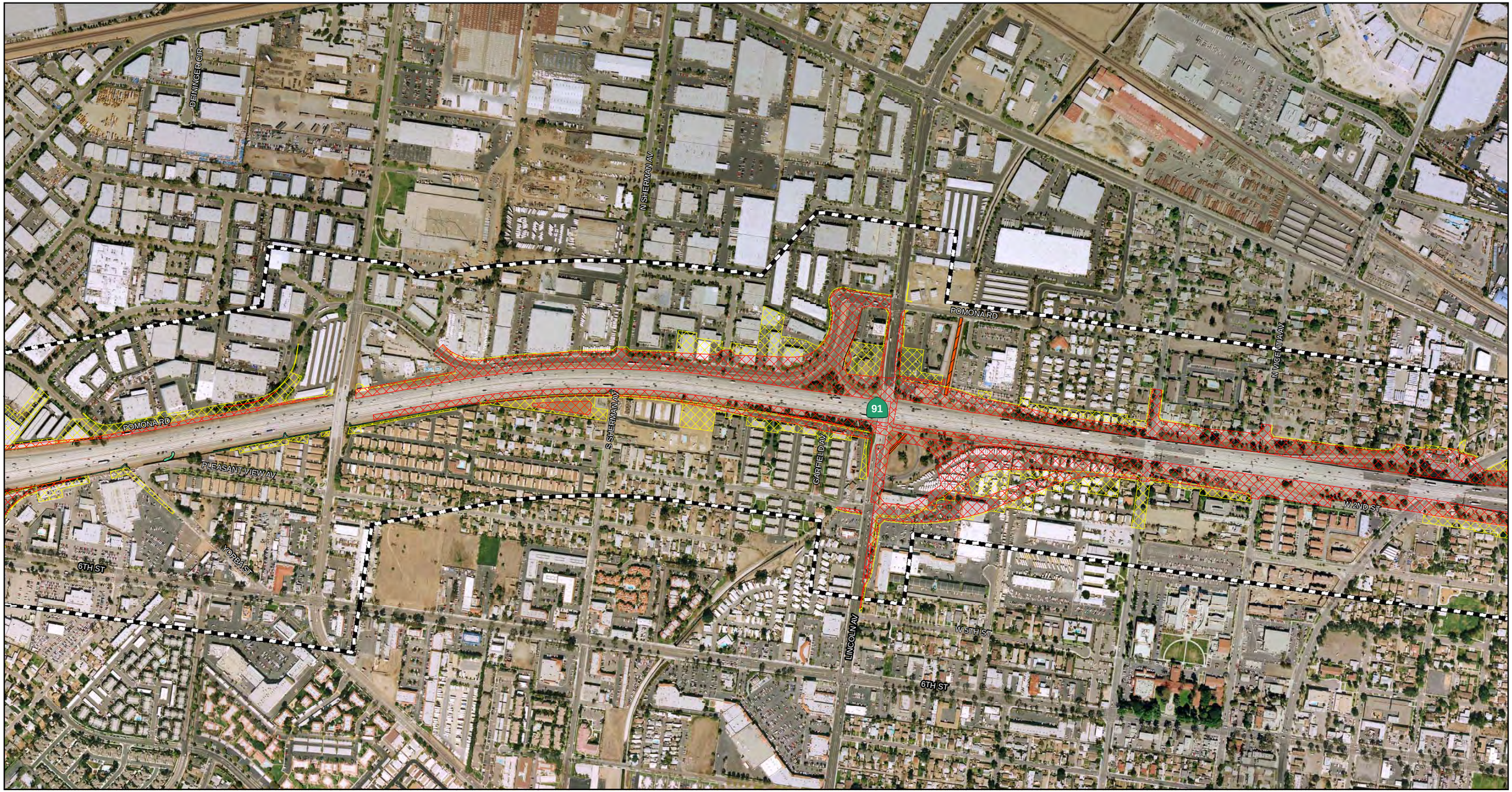
FIGURE 3.18-2
Sheet 5 of 16

SR-91 Corridor Improvement Project

Alternative 1

Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540



LEGEND

- Biological Study Area

Alternative 1 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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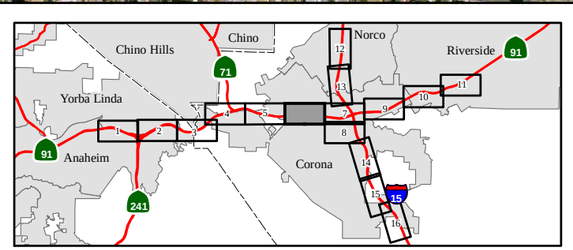
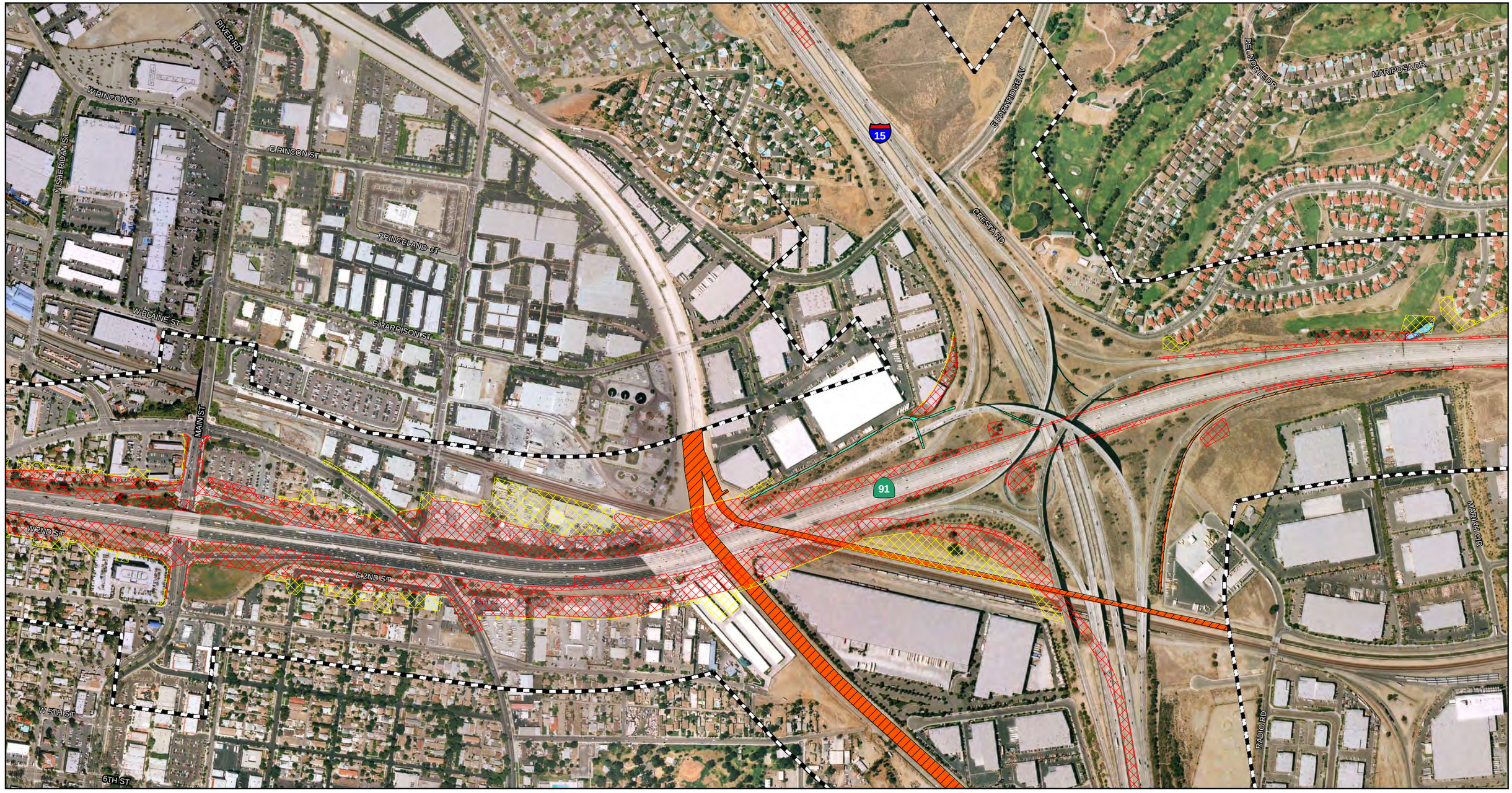


FIGURE 3.18-2
Sheet 6 of 16

SR-91 Corridor Improvement Project

Alternative 1
Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540



LEGEND

- Biological Study Area

Alternative 1 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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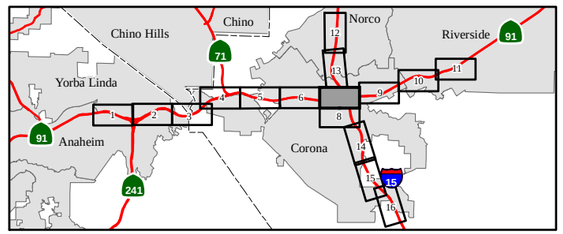

FIGURE 3.18-2
Sheet 7 of 16

SR-91 Corridor Improvement Project

Alternative 1

Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

Biological Study Area

Alternative 1 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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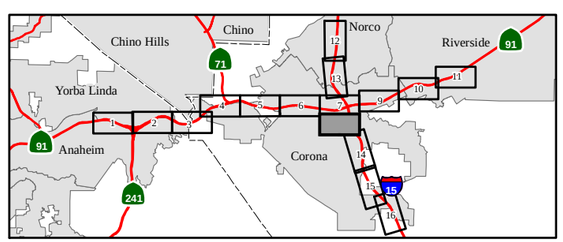
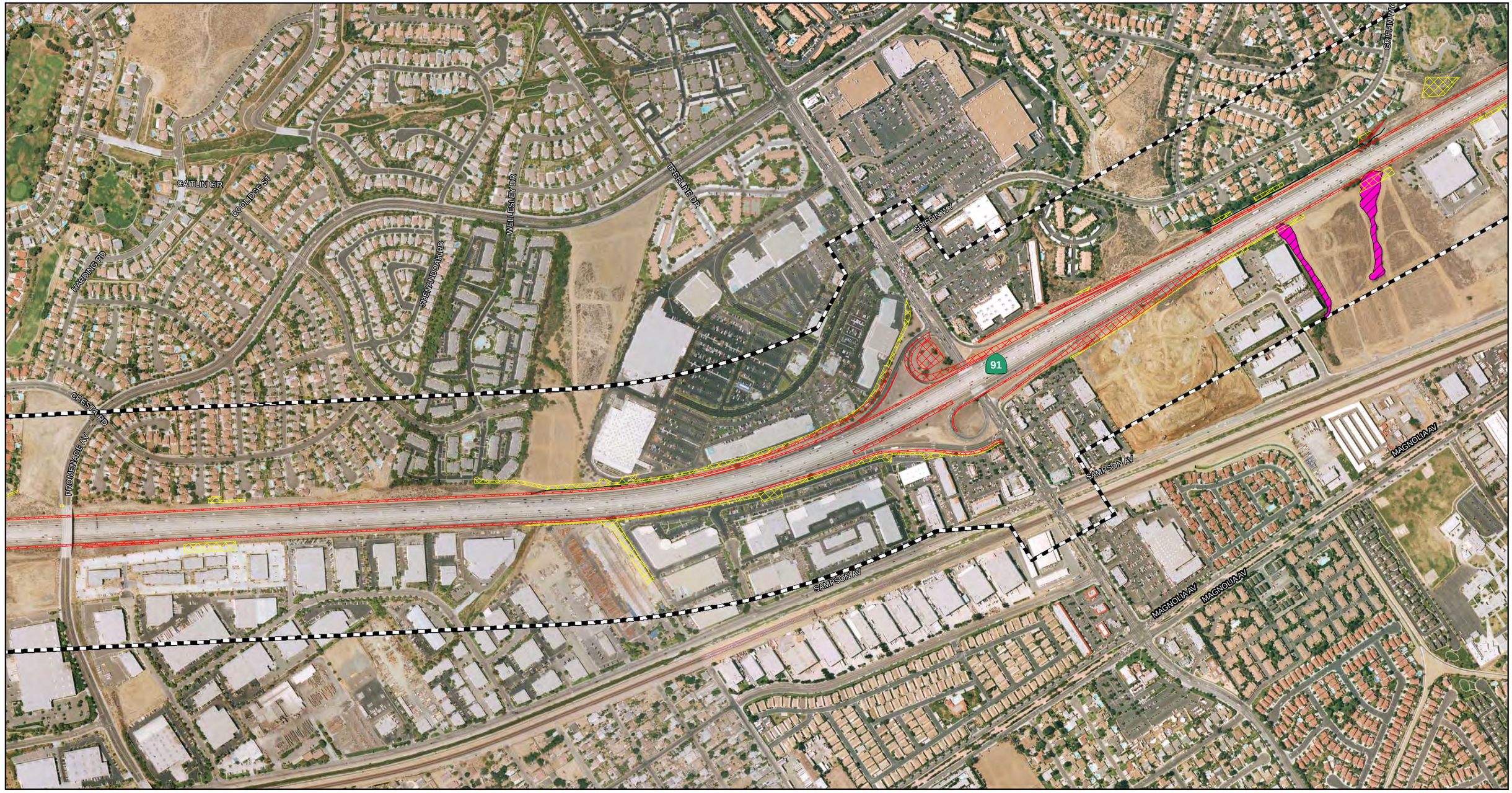


FIGURE 3.18-2
Sheet 8 of 16

SR-91 Corridor Improvement Project

Alternative 1
Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540



LEGEND

Biological Study Area

Alternative 1 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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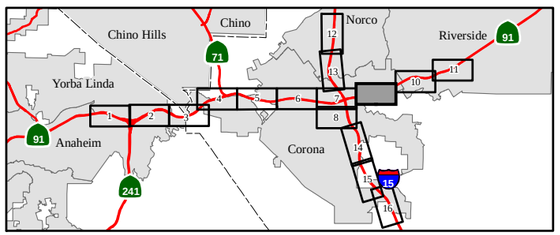

FIGURE 3.18-2
Sheet 9 of 16

SR-91 Corridor Improvement Project

Alternative 1

Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

- Biological Study Area

Alternative 1 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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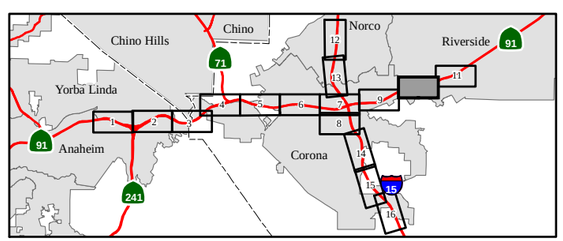

FIGURE 3.18-2
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SR-91 Corridor Improvement Project

Alternative 1

Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

Biological Study Area

Alternative 1 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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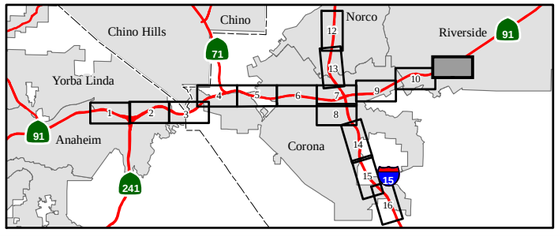

FIGURE 3.18-2
Sheet 11 of 16

SR-91 Corridor Improvement Project

Alternative 1
Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

- Biological Study Area

Alternative 1 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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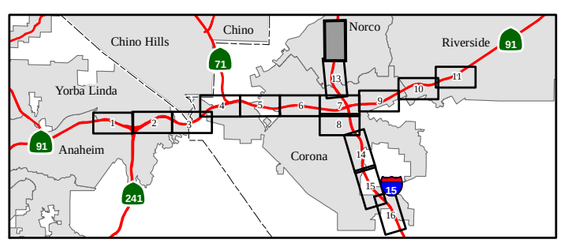

FIGURE 3.18-2
Sheet 12 of 16

SR-91 Corridor Improvement Project

Alternative 1
Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

Biological Study Area

Alternative 1 Impacts

Permanent Impact Areas

Temporary Impact Areas

CDFG Jurisdiction

Corps Jurisdiction

Wetland Waters

Nonwetland Waters

Deepwater Aquatic Nonwetland Waters

Nonjurisdictional Nonwetland Waters

Nonjurisdictional Wetland Waters

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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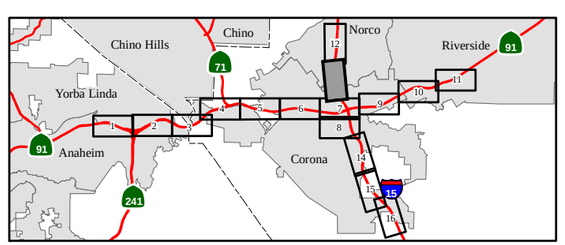


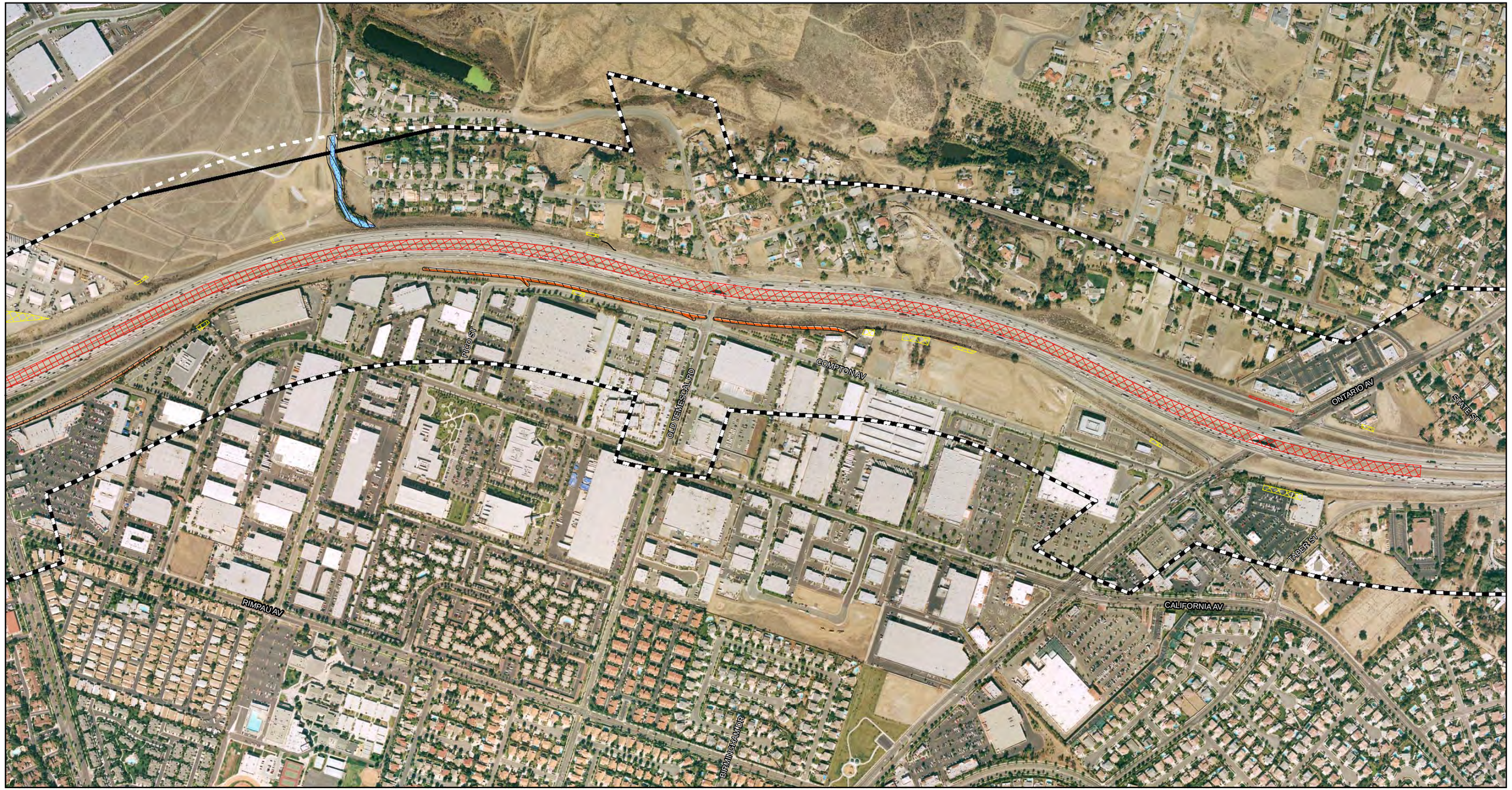
FIGURE 3.18-2
Sheet 13 of 16

SR-91 Corridor Improvement Project

Alternative 1

Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540



LEGEND

Biological Study Area

Alternative 1 Impacts

Permanent Impact Areas

Temporary Impact Areas

CDFG Jurisdiction

Corps Jurisdiction

Wetland Waters

Nonwetland Waters

Deepwater Aquatic Nonwetland Waters

Nonjurisdictional Nonwetland Waters

Nonjurisdictional Wetland Waters

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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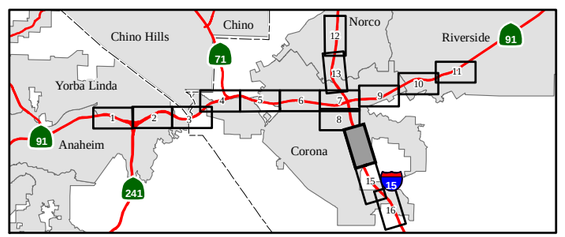

FIGURE 3.18-2
Sheet 14 of 16

SR-91 Corridor Improvement Project

Alternative 1

Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

Biological Study Area

Alternative 1 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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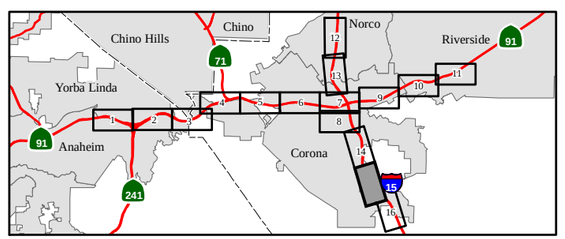

FIGURE 3.18-2
Sheet 15 of 16

SR-91 Corridor Improvement Project

Alternative 1

Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

Biological Study Area

Alternative 1 Impacts

Permanent Impact Areas

Temporary Impact Areas

CDFG Jurisdiction

Corps Jurisdiction

Wetland Waters

Nonwetland Waters

Deepwater Aquatic Nonwetland Waters

Nonjurisdictional Nonwetland Waters

Nonjurisdictional Wetland Waters

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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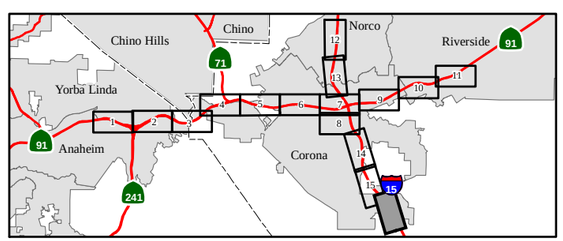


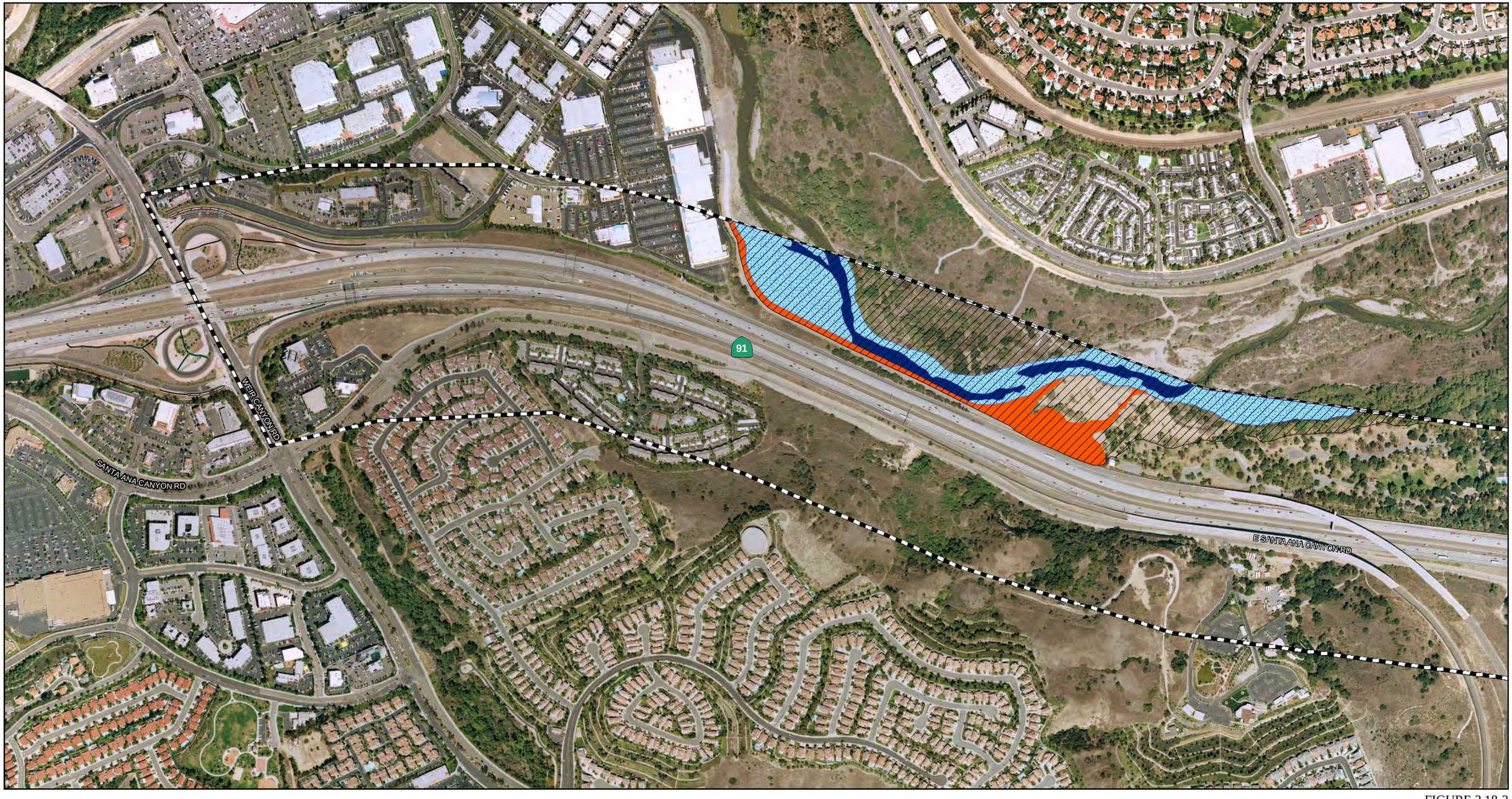
FIGURE 3.18-2
Sheet 16 of 16

SR-91 Corridor Improvement Project

Alternative 1

Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540



LEGEND

Biological Study Area

Alternative 2 Impacts

Permanent Impact Areas

Temporary Impact Areas

CDFG Jurisdiction

Corps Jurisdiction

Wetland Waters

Nonwetland Waters

Deepwater Aquatic Nonwetland Waters

Nonjurisdictional Nonwetland Waters

Nonjurisdictional Wetland Waters

N

0 300 600

FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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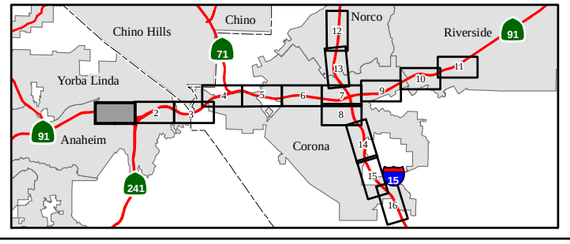

FIGURE 3.18-3
Sheet 1 of 16

SR-91 Corridor Improvement Project

Alternative 2

Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

GYPSUM CANYON RD
GYPSUM CANYON RD
GYPSUM CANYON RD
E SANTA ANA CANYON RD
91
241
GOAL CANYON RD

LEGEND

Biological Study Area

Alternative 2 Impacts

Permanent Impact Areas

Temporary Impact Areas

CDFG Jurisdiction

Corps Jurisdiction

Wetland Waters

Nonwetland Waters

Deepwater Aquatic Nonwetland Waters

Nonjurisdictional Nonwetland Waters

Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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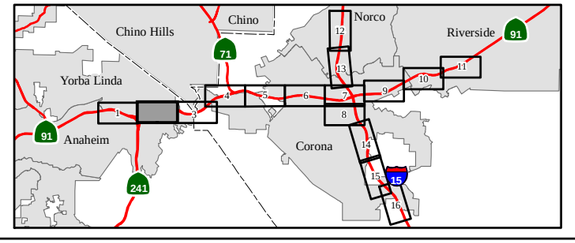
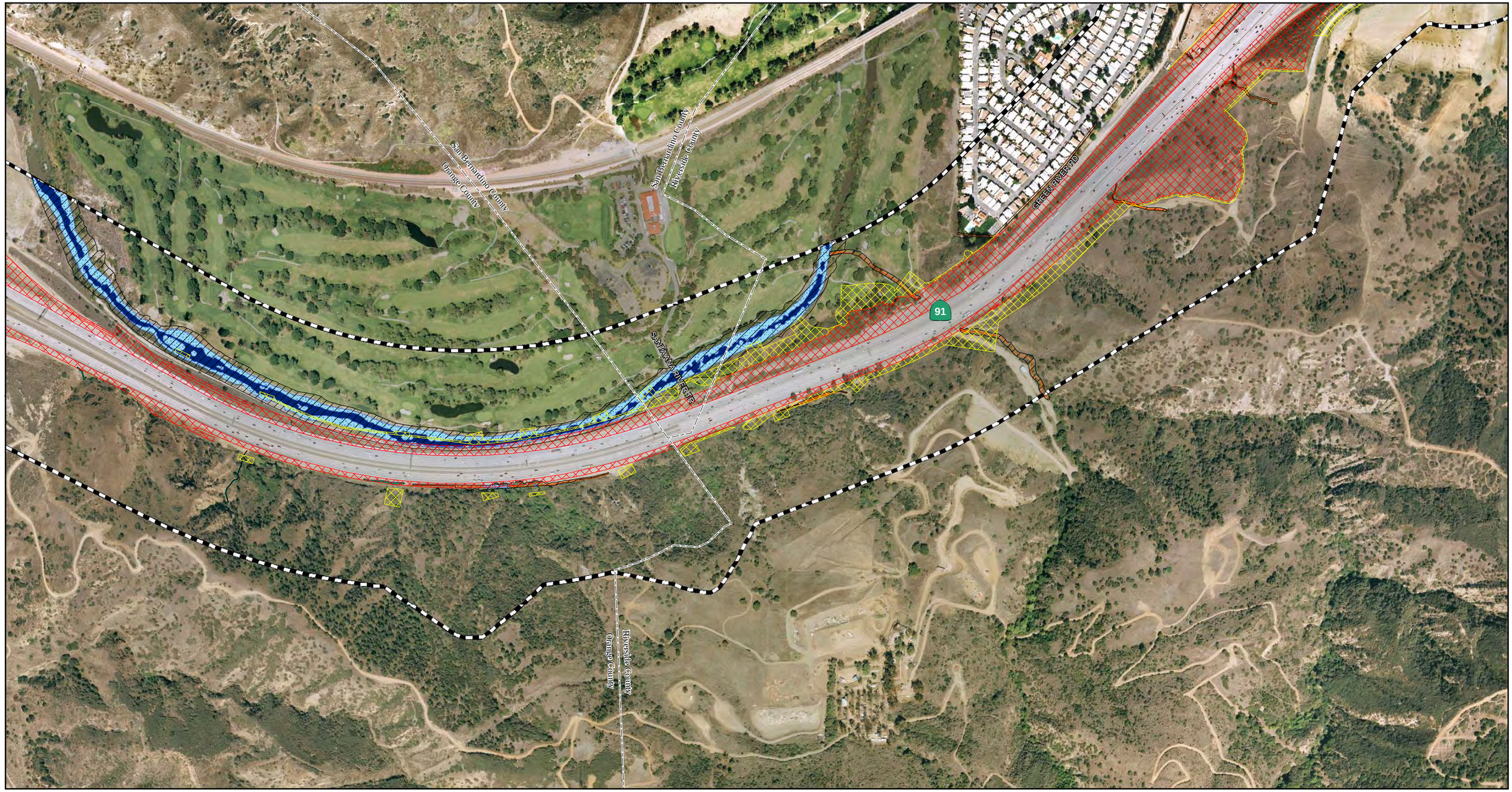


FIGURE 3.18-3
Sheet 2 of 16

SR-91 Corridor Improvement Project

Alternative 2
Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540



LEGEND

Biological Study Area

Alternative 2 Impacts

Permanent Impact Areas

Temporary Impact Areas

CDFG Jurisdiction

Corps Jurisdiction

Wetland Waters

Nonwetland Waters

Deepwater Aquatic Nonwetland Waters

Nonjurisdictional Nonwetland Waters

Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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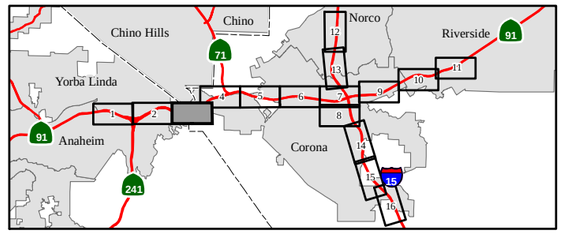
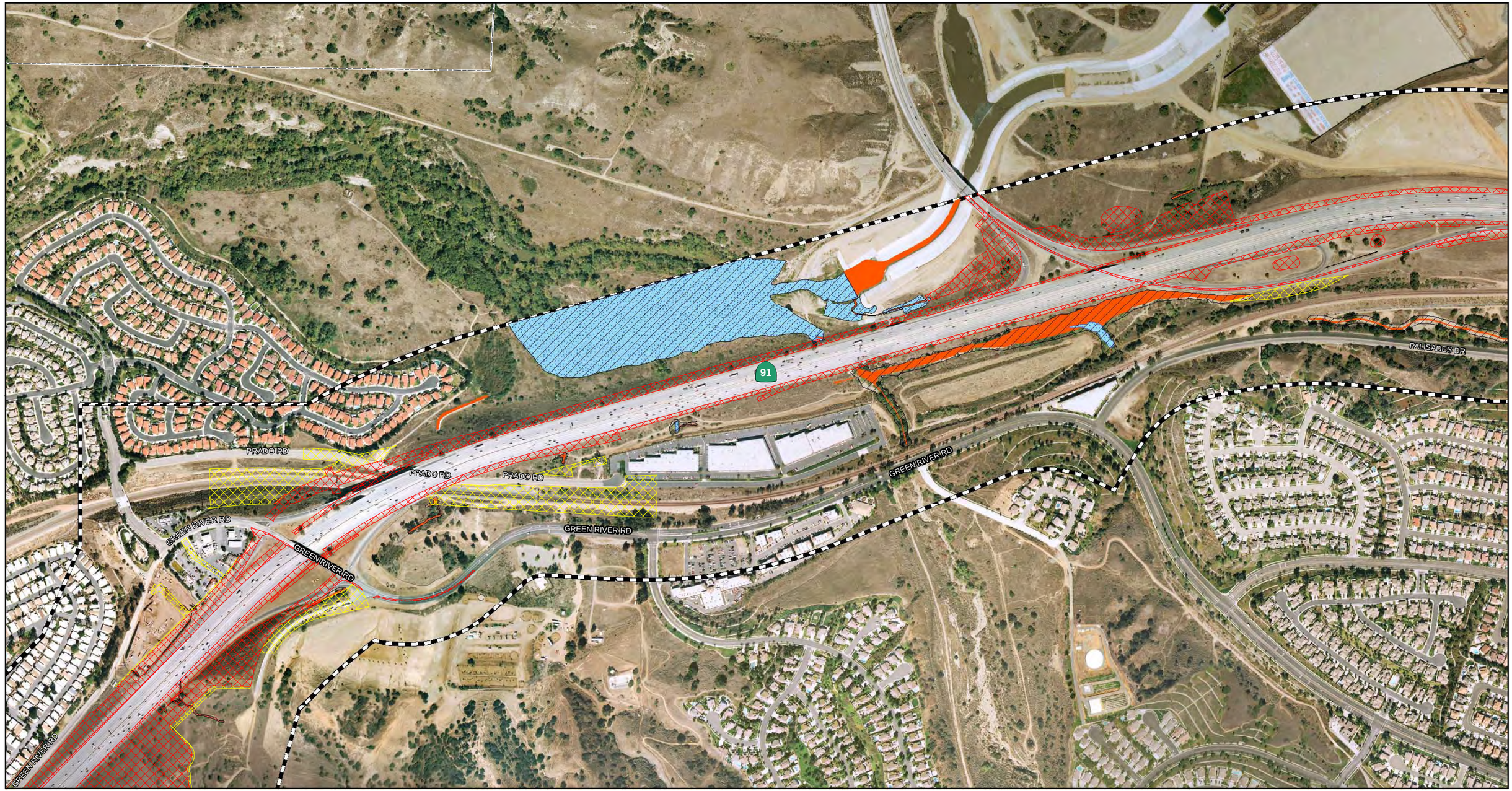


FIGURE 3.18-3
Sheet 3 of 16

SR-91 Corridor Improvement Project

Alternative 2
Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540



LEGEND

- Biological Study Area
- Alternative 2 Impacts
  - Permanent Impact Areas
  - Temporary Impact Areas
  - CDFG Jurisdiction
- Corps Jurisdiction
  - Wetland Waters
  - Nonwetland Waters
  - Deepwater Aquatic Nonwetland Waters
  - Nonjurisdictional Nonwetland Waters
  - Nonjurisdictional Wetland Waters

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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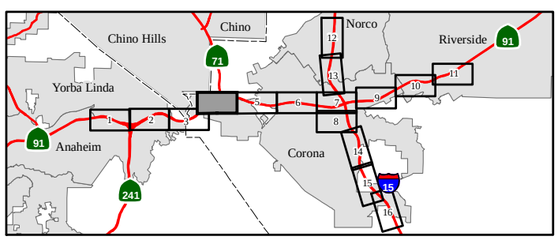

FIGURE 3.18-3
Sheet 4 of 16

SR-91 Corridor Improvement Project

Alternative 2
Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

- Biological Study Area

Alternative 2 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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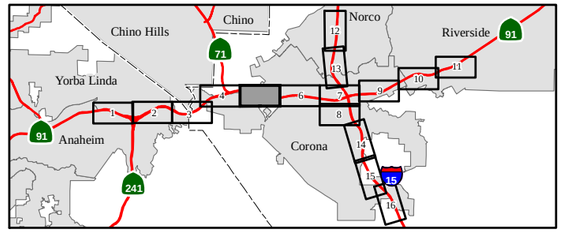


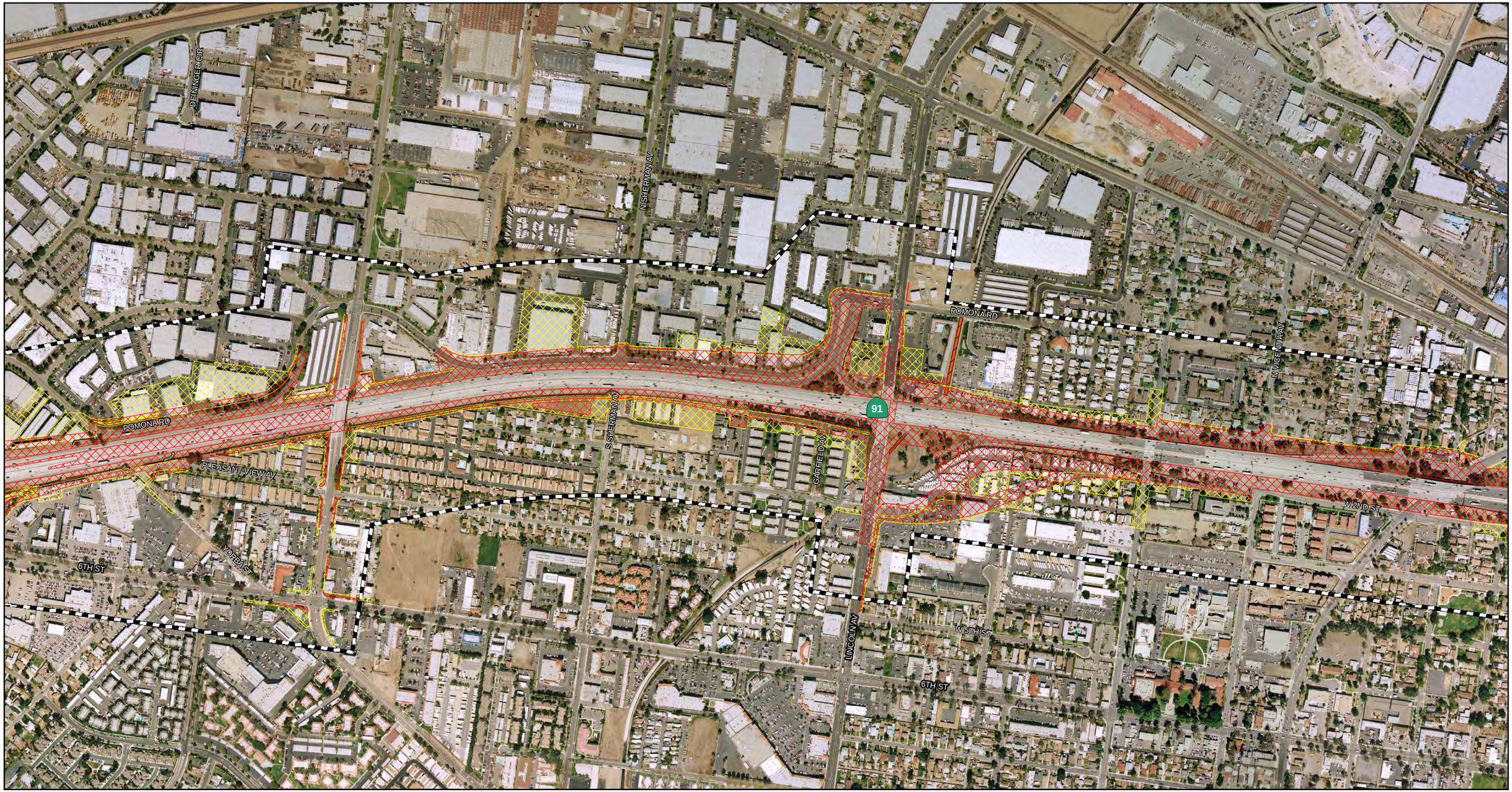
FIGURE 3.18-3
Sheet 5 of 16

SR-91 Corridor Improvement Project

Alternative 2

Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540



LEGEND

- Biological Study Area

Alternative 2 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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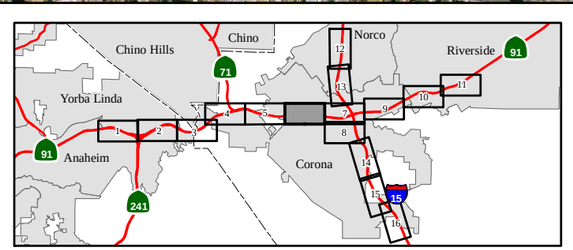
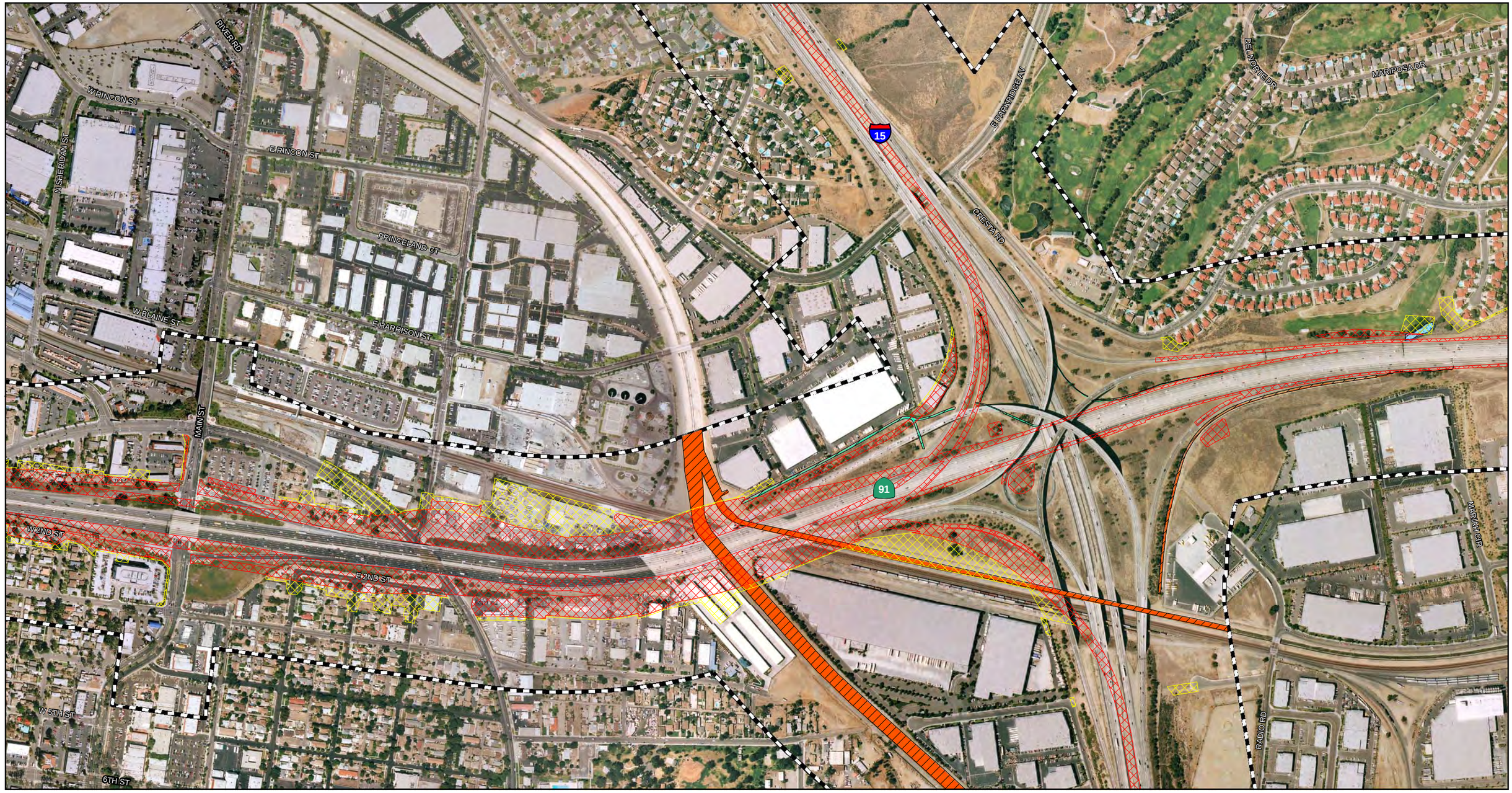


FIGURE 3.18-3
Sheet 6 of 16

SR-91 Corridor Improvement Project

Alternative 2
Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540



LEGEND

- Biological Study Area

Alternative 2 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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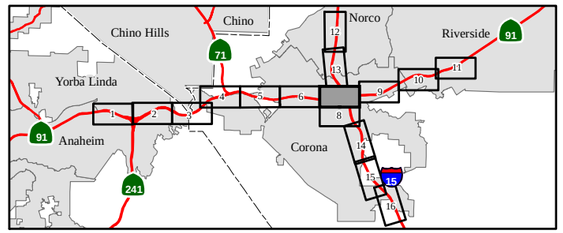

FIGURE 3.18-3
Sheet 7 of 16

SR-91 Corridor Improvement Project

Alternative 2
Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

Biological Study Area

Alternative 2 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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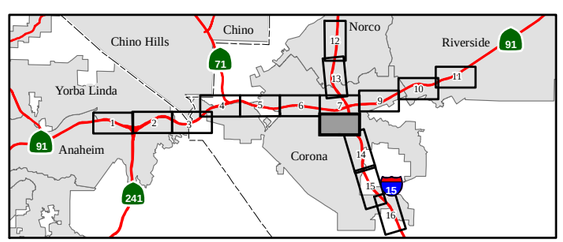


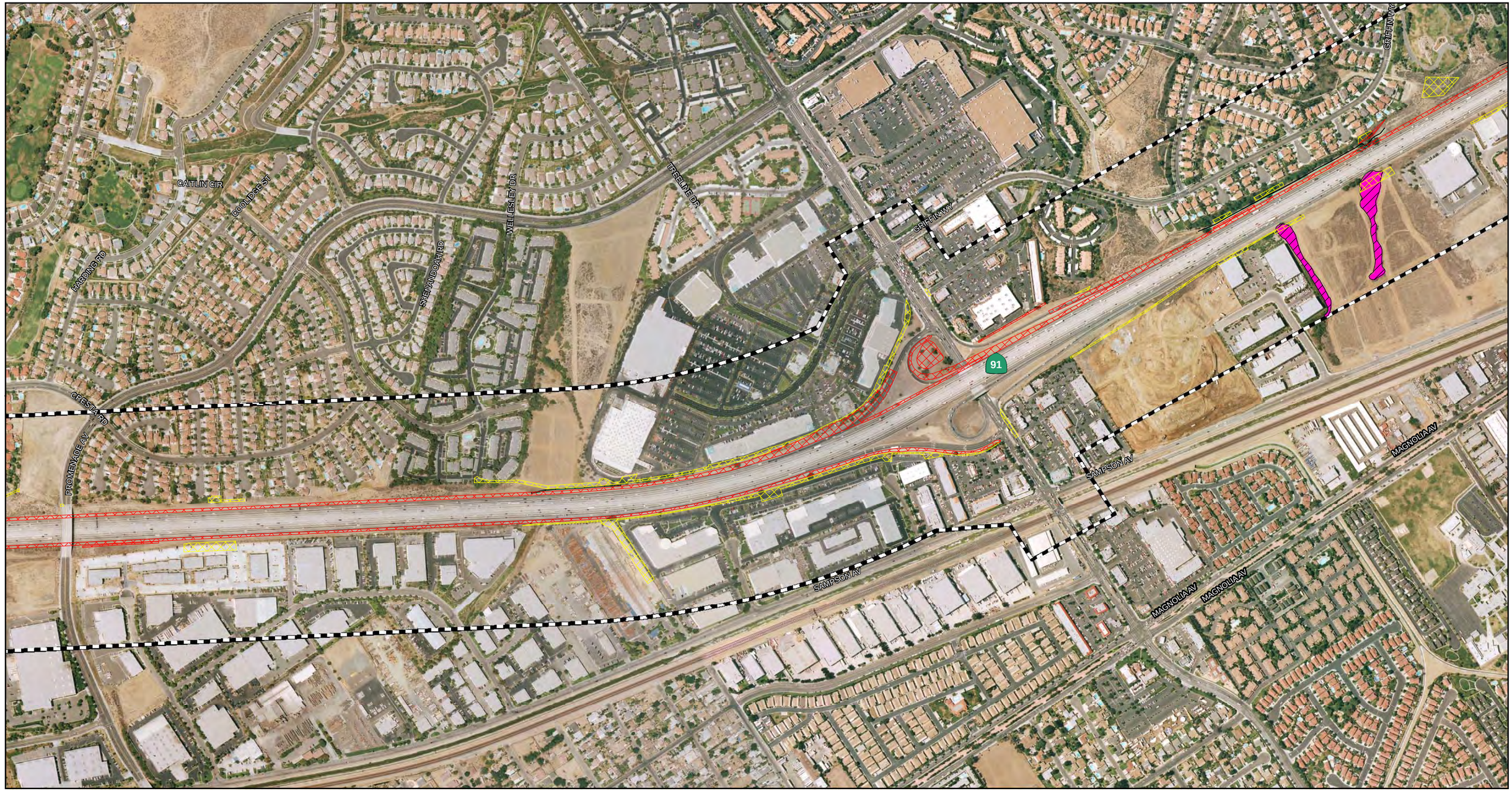
FIGURE 3.18-3
Sheet 8 of 16

SR-91 Corridor Improvement Project

Alternative 2

Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540



LEGEND

Biological Study Area

Alternative 2 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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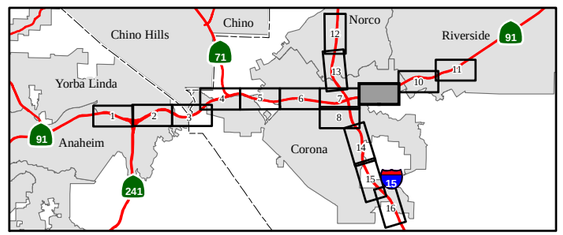

FIGURE 3.18-3
Sheet 9 of 16

SR-91 Corridor Improvement Project

Alternative 2

Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

Biological Study Area

Alternative 2 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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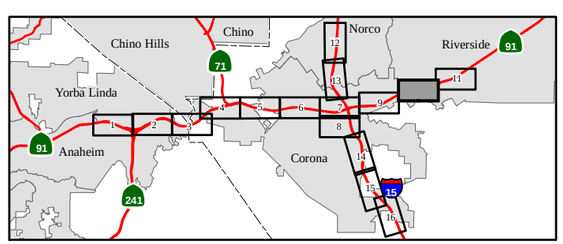

FIGURE 3.18-3
Sheet 10 of 16

SR-91 Corridor Improvement Project

Alternative 2

Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

Biological Study Area

Alternative 2 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

N

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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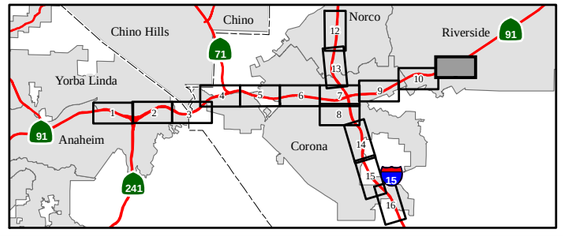

FIGURE 3.18-3
Sheet 11 of 16

SR-91 Corridor Improvement Project

Alternative 2
Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

- Biological Study Area

Alternative 2 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

I:\PAZ0701\GIS\JD\JD_Impacts_Alt2.mxd (7/20/2011)

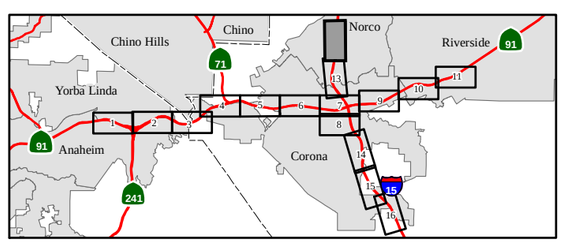

FIGURE 3.18-3
Sheet 12 of 16

SR-91 Corridor Improvement Project

Alternative 2
Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

Biological Study Area

Alternative 2 Impacts

Permanent Impact Areas

Temporary Impact Areas

CDFG Jurisdiction

Corps Jurisdiction

Wetland Waters

Nonwetland Waters

Deepwater Aquatic Nonwetland Waters

Nonjurisdictional Nonwetland Waters

Nonjurisdictional Wetland Waters

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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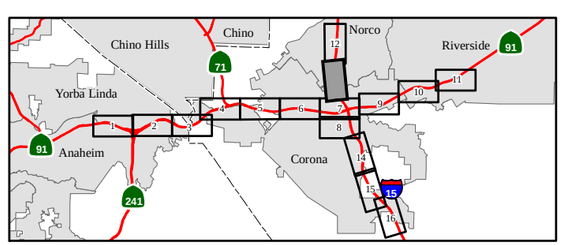

FIGURE 3.18-3
Sheet 13 of 16

SR-91 Corridor Improvement Project

Alternative 2

Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

- Biological Study Area
- Alternative 2 Impacts
  - Permanent Impact Areas
  - Temporary Impact Areas
  - CDFG Jurisdiction
- Corps Jurisdiction
  - Wetland Waters
  - Nonwetland Waters
  - Deepwater Aquatic Nonwetland Waters
  - Nonjurisdictional Nonwetland Waters
  - Nonjurisdictional Wetland Waters

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

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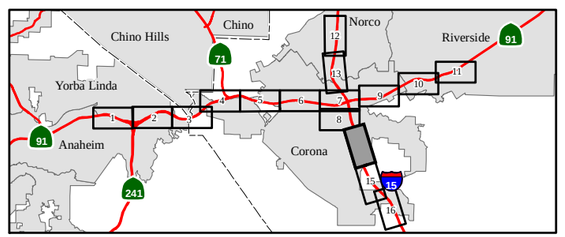


FIGURE 3.18-3
Sheet 14 of 16

SR-91 Corridor Improvement Project

Alternative 2
Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

Biological Study Area

Alternative 2 Impacts

- Permanent Impact Areas
- Temporary Impact Areas
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters
- Nonwetland Waters
- Deepwater Aquatic Nonwetland Waters
- Nonjurisdictional Nonwetland Waters
- Nonjurisdictional Wetland Waters

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

I:\PAZ0701\GIS\JD\JD_Impacts_Alt2.mxd (7/20/2011)

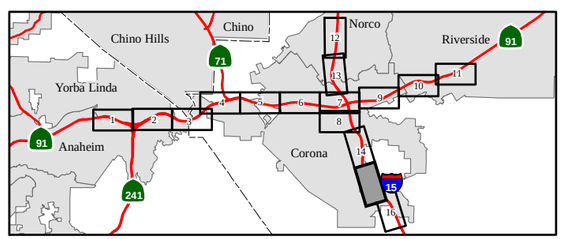


FIGURE 3.18-3
Sheet 15 of 16

SR-91 Corridor Improvement Project

Alternative 2
Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

LEGEND

Biological Study Area

Alternative 2 Impacts

Permanent Impact Areas

Temporary Impact Areas

CDFG Jurisdiction

Corps Jurisdiction

Wetland Waters

Nonwetland Waters

Deepwater Aquatic Nonwetland Waters

Nonjurisdictional Nonwetland Waters

Nonjurisdictional Wetland Waters

0 300 600
FEET

SOURCE: Digital Globe (04/2008); PB (2008)

I:\PAZ0701\GIS\JD\JD_Impacts_Alt2.mxd (7/20/2011)

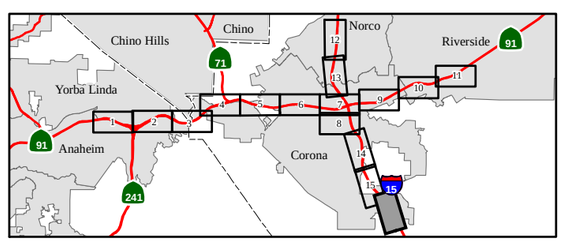
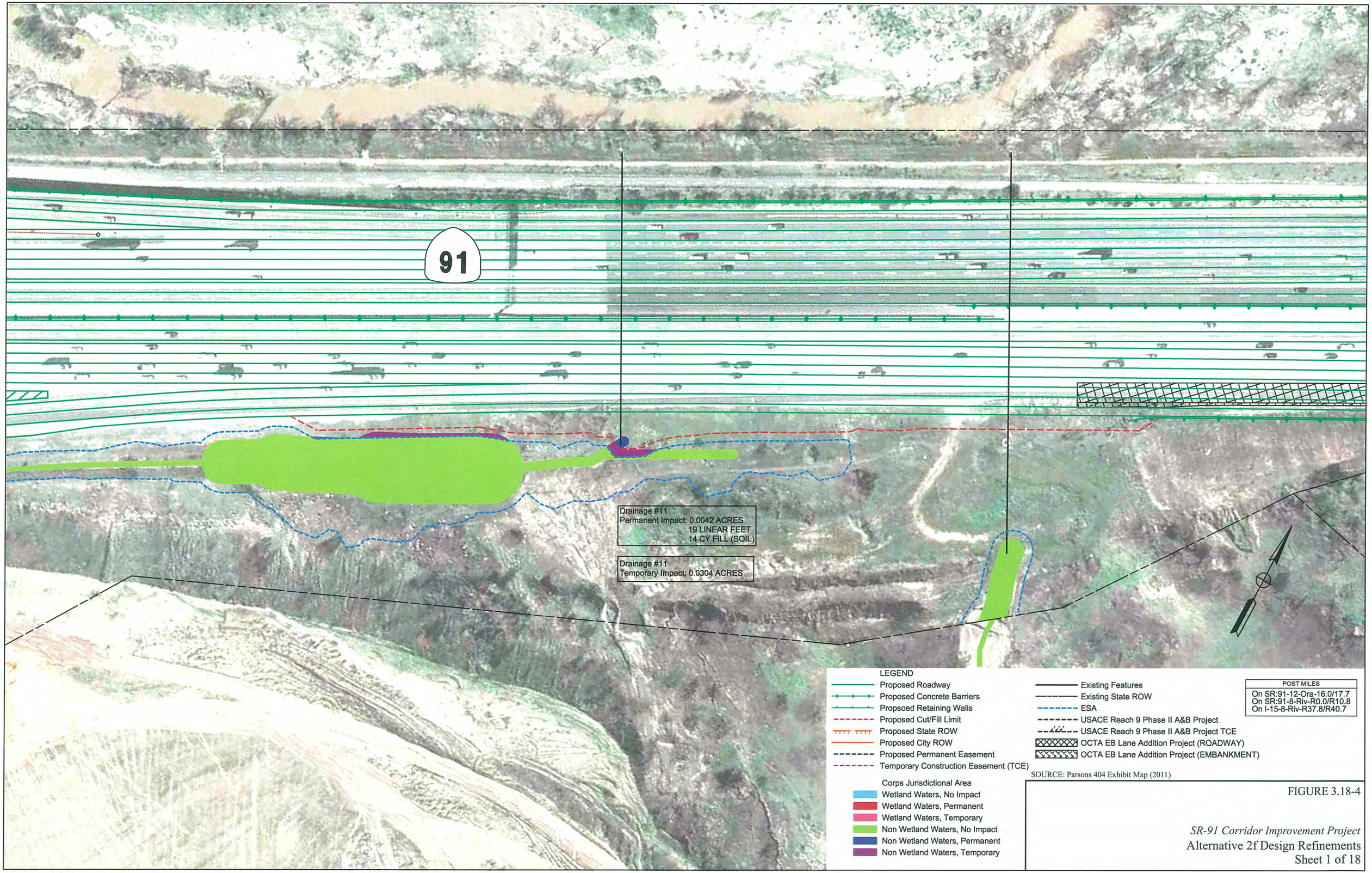


FIGURE 3.18-3
Sheet 16 of 16

SR-91 Corridor Improvement Project

Alternative 2
Impacts to Jurisdictional Features

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

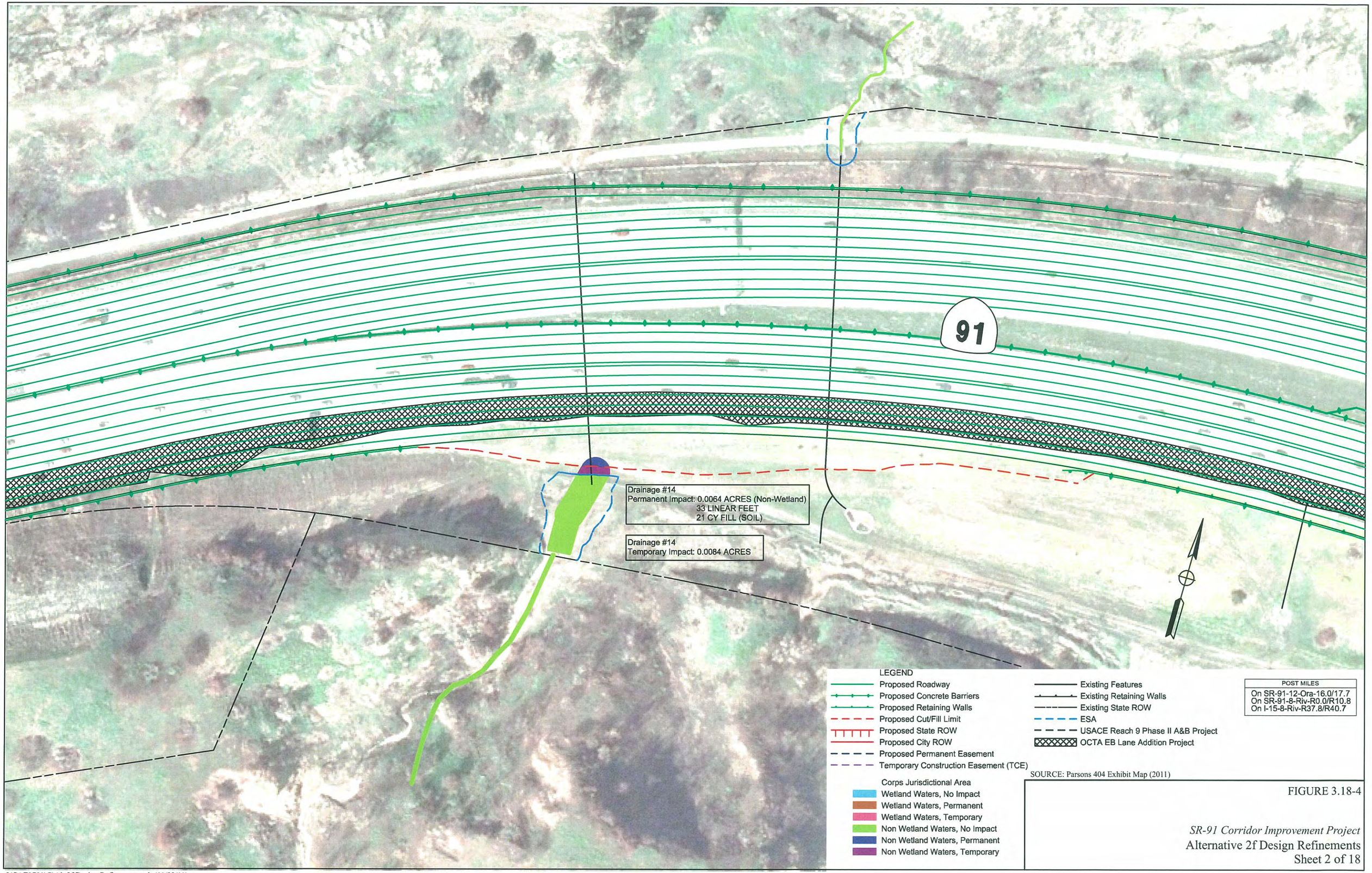


SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
Sheet 1 of 18

I:\PAZ0701\G\Alt 2f Design Refinements.cdr (11/22/11)

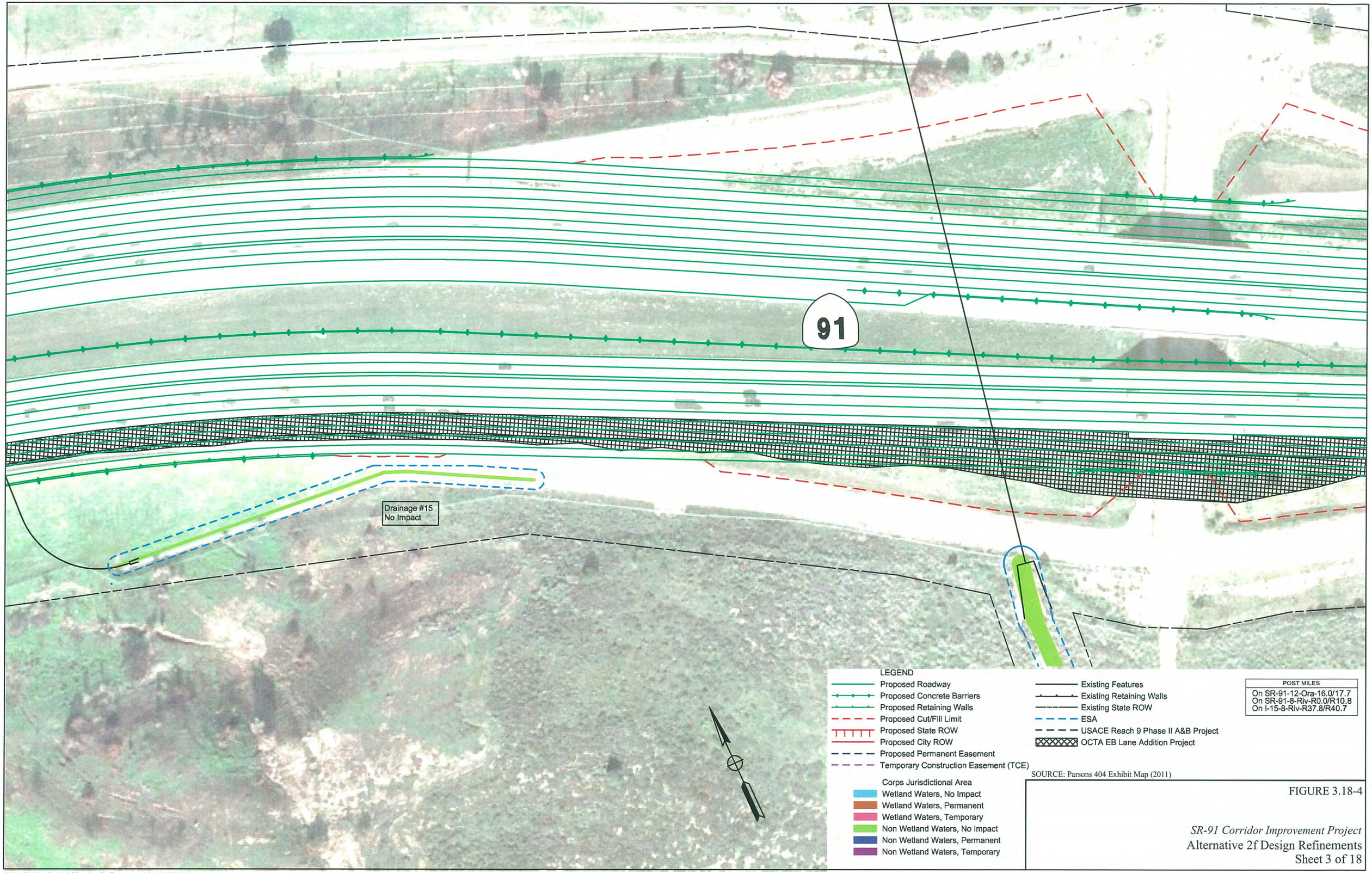


SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
Sheet 2 of 18

I:\PAZ0701\G\Alt 2f Design Refinements.cdr (11/22/11)

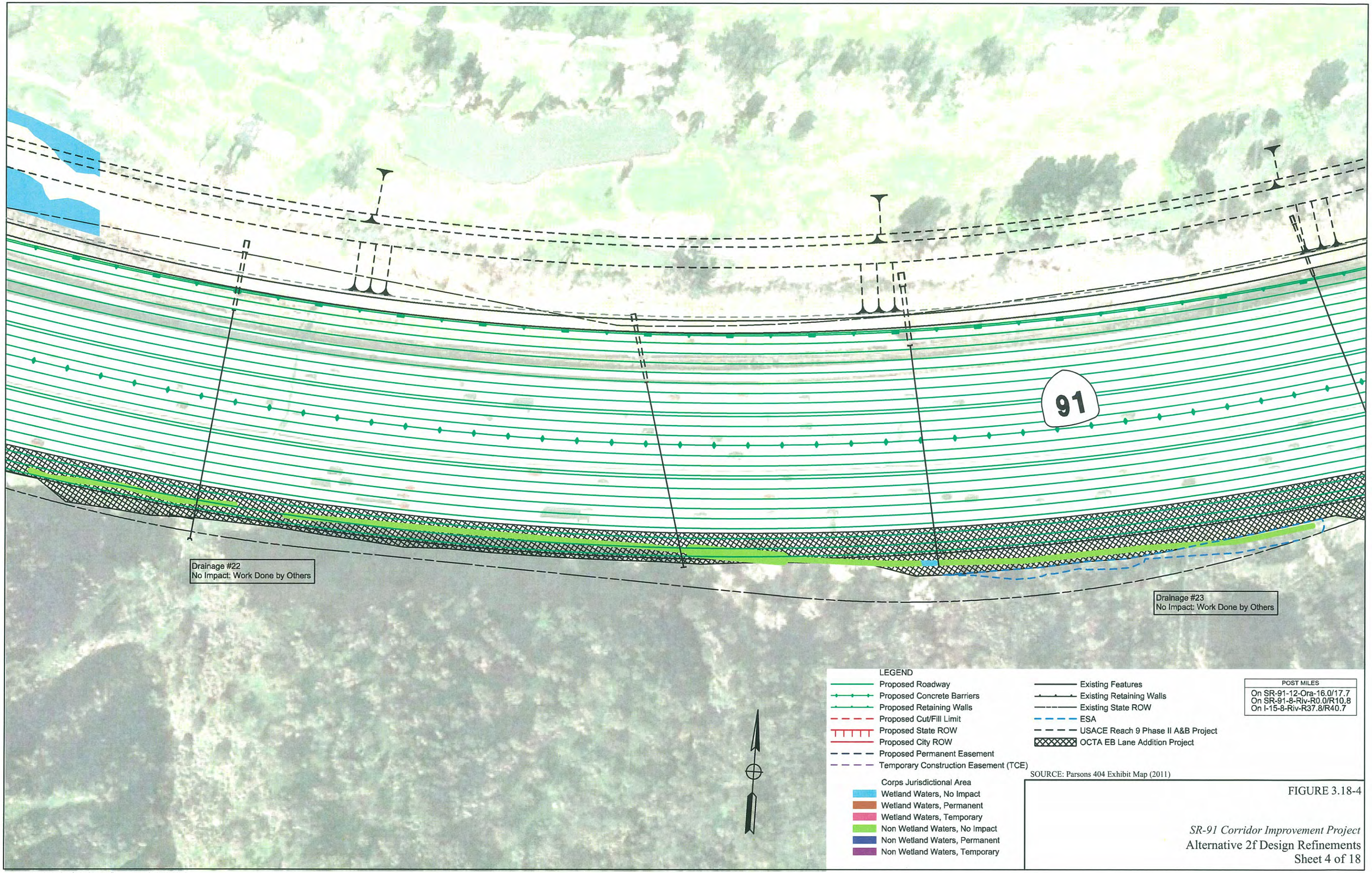


SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
Sheet 3 of 18

I:\PAZ0701\G\Alt 2f Design Refinements.cdr (11/22/11)

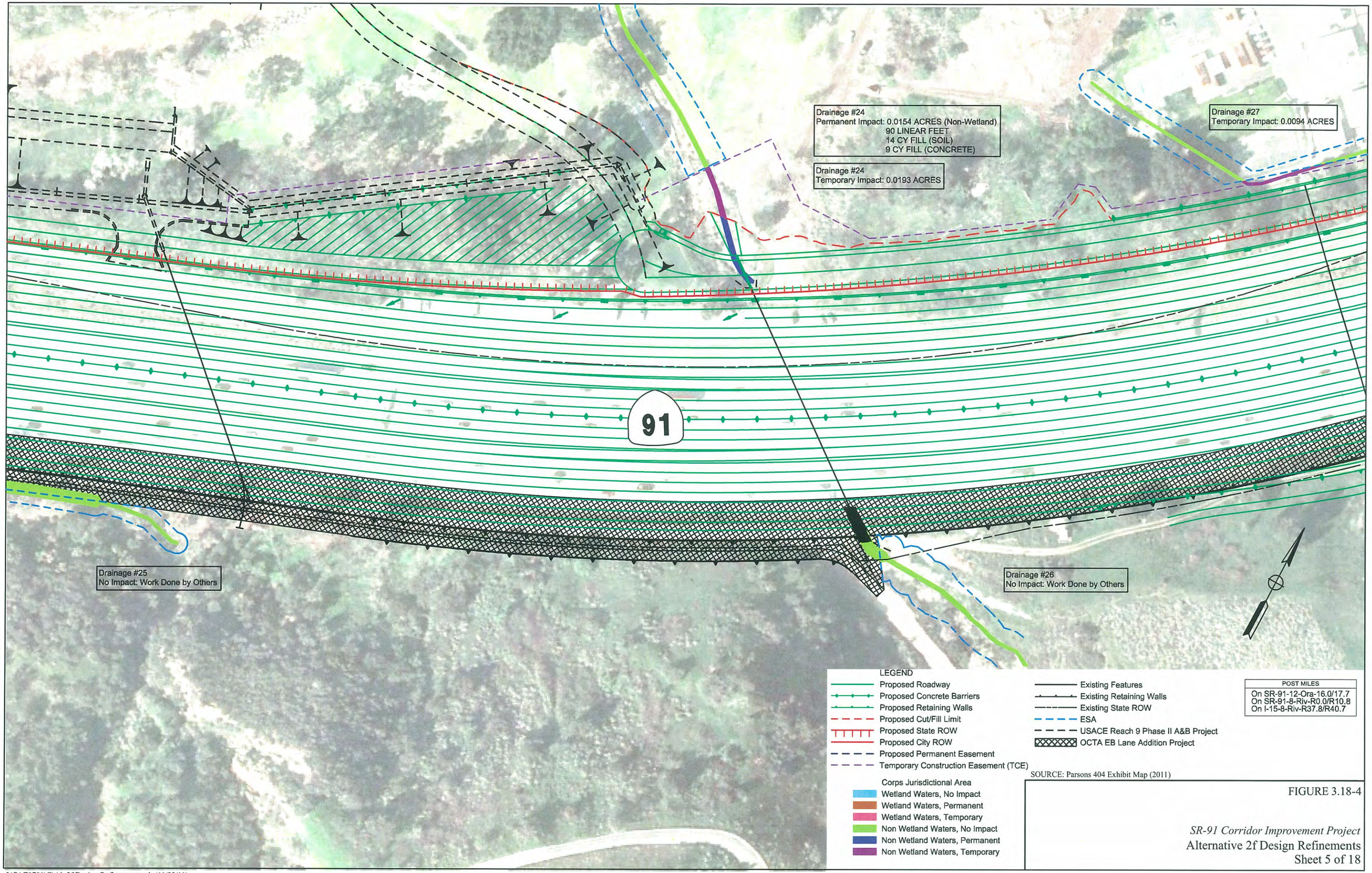


SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
Sheet 4 of 18

I:\PAZ0701\G\Alt 2f Design Refinements.cdr (11/22/11)

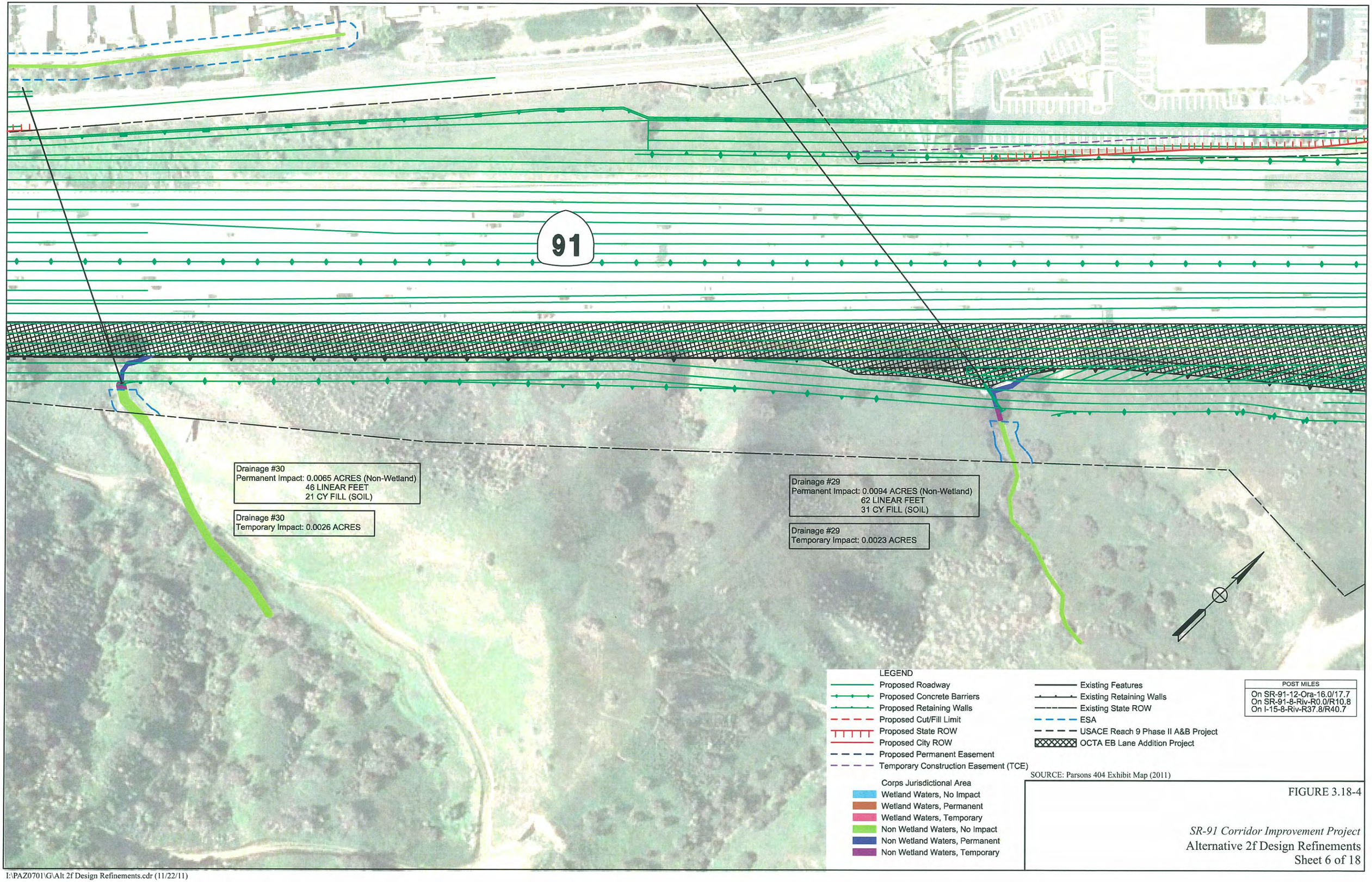


SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
Sheet 5 of 18

I:\PAZ0701\G\Alt 2f Design Refinements.cdr (11/22/11)

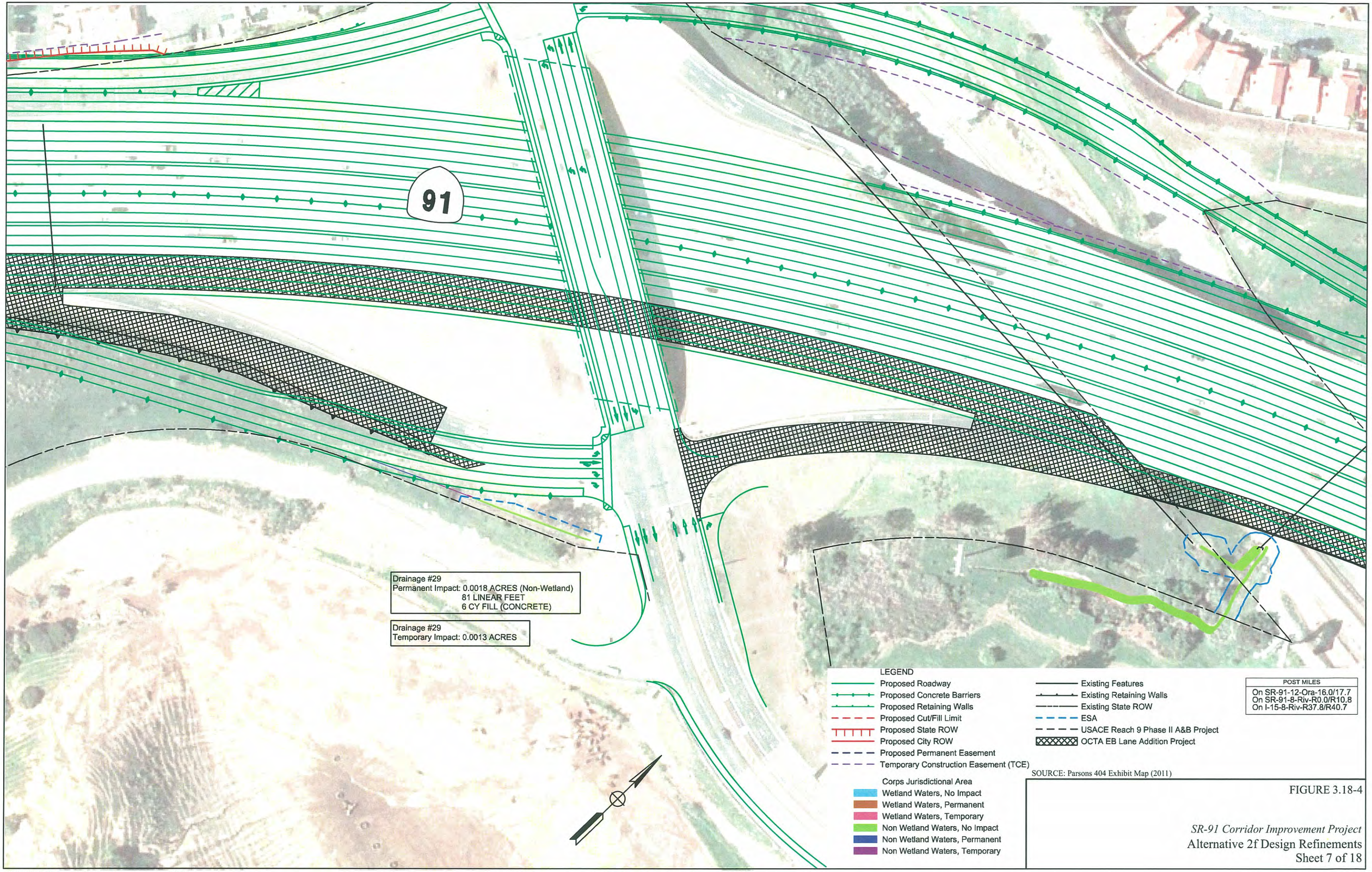


SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
Sheet 6 of 18

I:\PAZ0701\G\Alt 2f Design Refinements.cdr (11/22/11)



SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
Sheet 7 of 18

I:\PAZ0701\G\Alt 2f Design Refinements.cdr (11/22/11)

91

Drainage #31
Permanent Impact: 0.0003 ACRES (Non-Wetland)
10 LINEAR FEET
1 CY FILL (CONCRETE)

Drainage #31
Temporary Impact: 0.0056 ACRES

LEGEND

- Proposed Roadway
- Proposed Concrete Barriers
- Proposed Retaining Walls
- Proposed Cut/Fill Limit
- Proposed State ROW
- Proposed City ROW
- Proposed Permanent Easement
- Temporary Construction Easement (TCE)
- Existing Features
- Existing Retaining Walls
- Existing State ROW
- ESA
- USACE Reach 9 Phase II A&B Project
- OCTA EB Lane Addition Project

Corps Jurisdictional Area

- Wetland Waters, No Impact
- Wetland Waters, Permanent
- Wetland Waters, Temporary
- Non Wetland Waters, No Impact
- Non Wetland Waters, Permanent
- Non Wetland Waters, Temporary

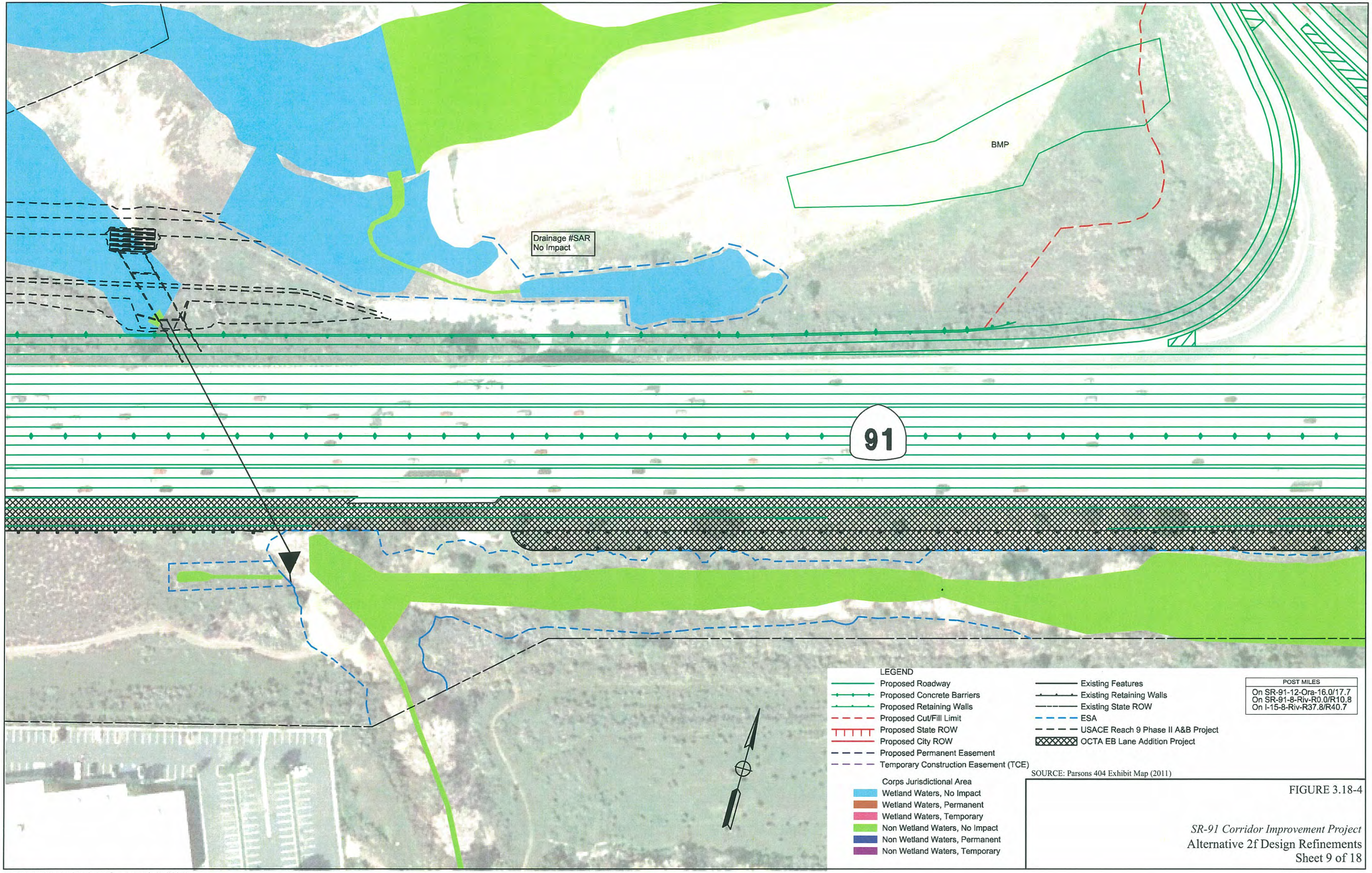
POST MILES
On SR-91-12-Ora-16.0/17.7
On SR-91-8-Riv-R0.0/R10.8
On I-15-8-Riv-R37.8/R40.7

SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
Sheet 8 of 18

I:\PAZ0701\G\Alt 2f Design Refinements.cdr (11/22/11)



SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
Sheet 9 of 18

I:\PAZ0701\G\Alt 2f Design Refinements.cdr (11/22/11)

BMP

91

Drainage #33
Temporary Impact: 0.0564 ACRES

BMP

LEGEND

- Proposed Roadway
- Proposed Concrete Barriers
- Proposed Retaining Walls
- Proposed Cut/Fill Limit
- Proposed State ROW
- Proposed City ROW
- Proposed Permanent Easement
- Temporary Construction Easement (TCE)

- Existing Features
- Existing Retaining Walls
- Existing State ROW
- ESA
- USACE Reach 9 Phase II A&B Project
- OCTA EB Lane Addition Project

Corps Jurisdictional Area

- Wetland Waters, No Impact
- Wetland Waters, Permanent
- Wetland Waters, Temporary
- Non Wetland Waters, No Impact
- Non Wetland Waters, Permanent
- Non Wetland Waters, Temporary

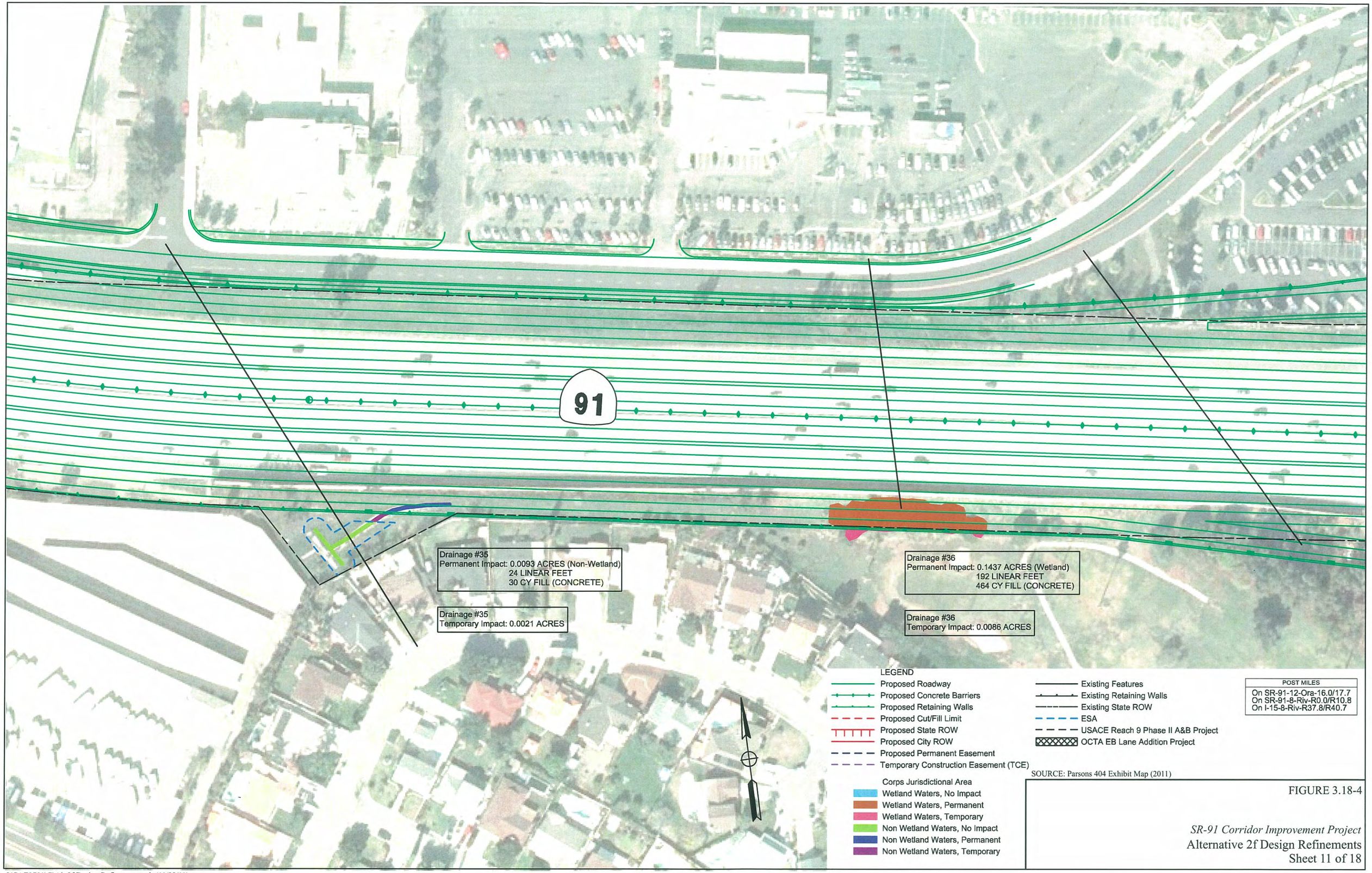
POST MILES
On SR-91-12-Ora-16.0/17.7
On SR-91-8-Riv-R0.0/R10.8
On I-15-8-Riv-R37.8/R40.7

SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
Sheet 10 of 18

I:\PAZ0701\G\Alt 2f Design Refinements.cdr (11/22/11)



SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
Sheet 11 of 18

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Drainage #46
Permanent Impact: 0 ACRES

Drainage #46
Temporary Impact: 0.0574 ACRES

Oak Street Channel
Turnaround

91

Drainage #46
Permanent Impact: 0 ACRES

Drainage #46
Temporary Impact: 0.0612 ACRES

LEGEND

- Proposed Roadway
- Proposed Concrete Barriers
- Proposed Retaining Walls
- Proposed Cut/Fill Limit
- Proposed State ROW
- Proposed City ROW
- Proposed Permanent Easement
- Temporary Construction Easement (TCE)
- Existing Features
- Existing Retaining Walls
- Existing State ROW
- ESA
- USACE Reach 9 Phase II A&B Project
- OCTA EB Lane Addition Project

Corps Jurisdictional Area

- Wetland Waters, No Impact
- Wetland Waters, Permanent
- Wetland Waters, Temporary
- Non Wetland Waters, No Impact
- Non Wetland Waters, Permanent
- Non Wetland Waters, Temporary

POST MILES
On SR-91-12-Ora-16.0/17.7
On SR-91-8-Riv-R0.0/R10.8
On I-15-8-Riv-R37.8/R40.7

SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
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Drainage #47
Permanent Impact: 0.0263 ACRES (Non-Wetland)
450 CY FILL (CONCRETE)

Drainage #47
Temporary Impact: 1.6363 ACRES

91

LEGEND

- Proposed Roadway
- Proposed Concrete Barriers
- Proposed Retaining Walls
- Proposed Cut/Fill Limit
- Proposed State ROW
- Proposed City ROW
- Proposed Permanent Easement
- Temporary Construction Easement (TCE)
- Existing Features
- Existing Retaining Walls
- Existing State ROW
- ESA
- USACE Reach 9 Phase II A&B Project
- OCTA EB Lane Addition Project

Corps Jurisdictional Area

- Wetland Waters, No Impact
- Wetland Waters, Permanent
- Wetland Waters, Temporary
- Non Wetland Waters, No Impact
- Non Wetland Waters, Permanent
- Non Wetland Waters, Temporary

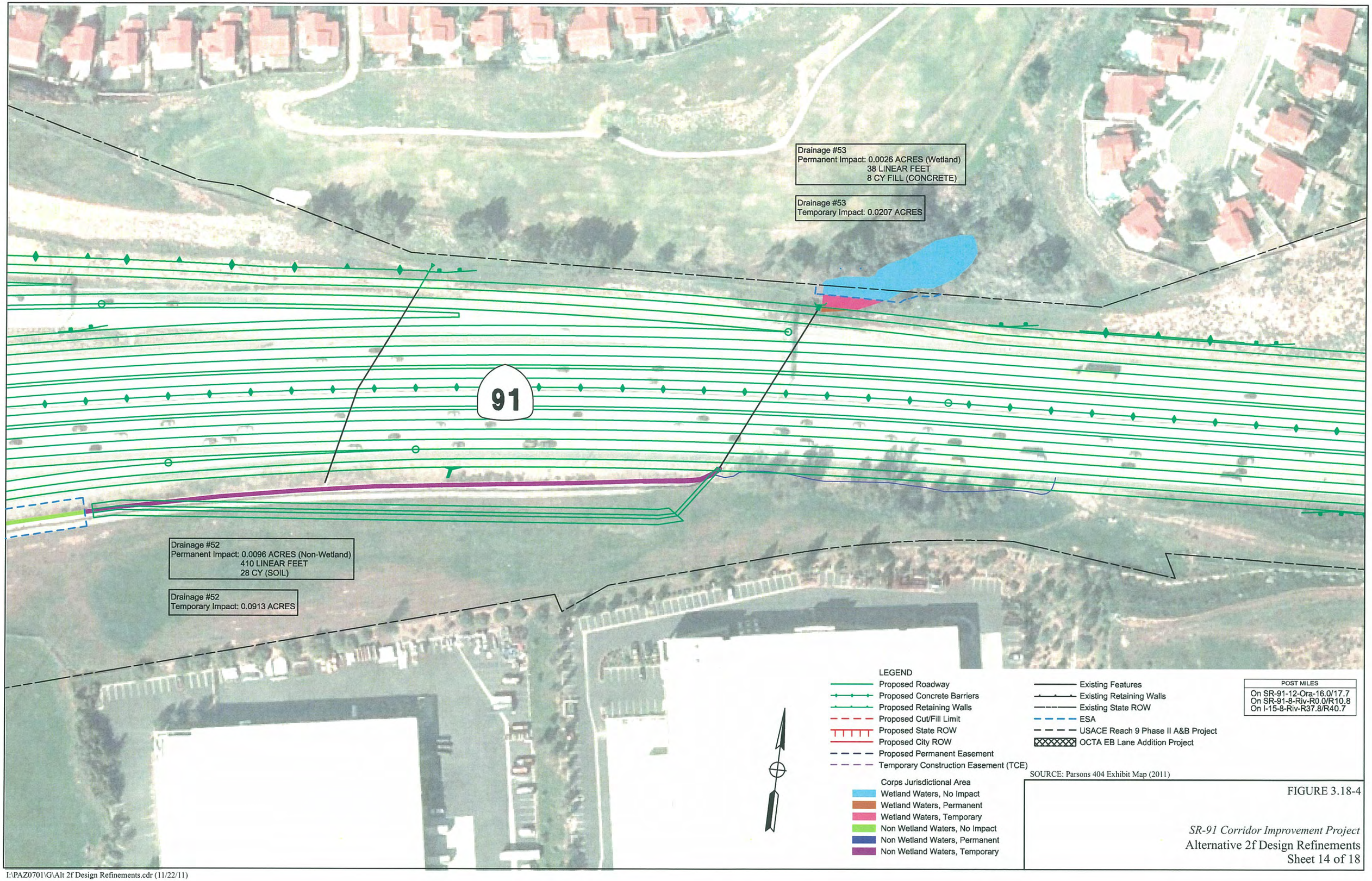
POST MILES
On SR-91-12-Ora-16.0/17.7
On SR-91-8-Riv-R0.0/R10.8
On I-15-8-Riv-R37.8/R40.7

SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
Sheet 13 of 18

I:\PAZ0701\G\Alt 2f Design Refinements.cdr (11/22/11)



SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
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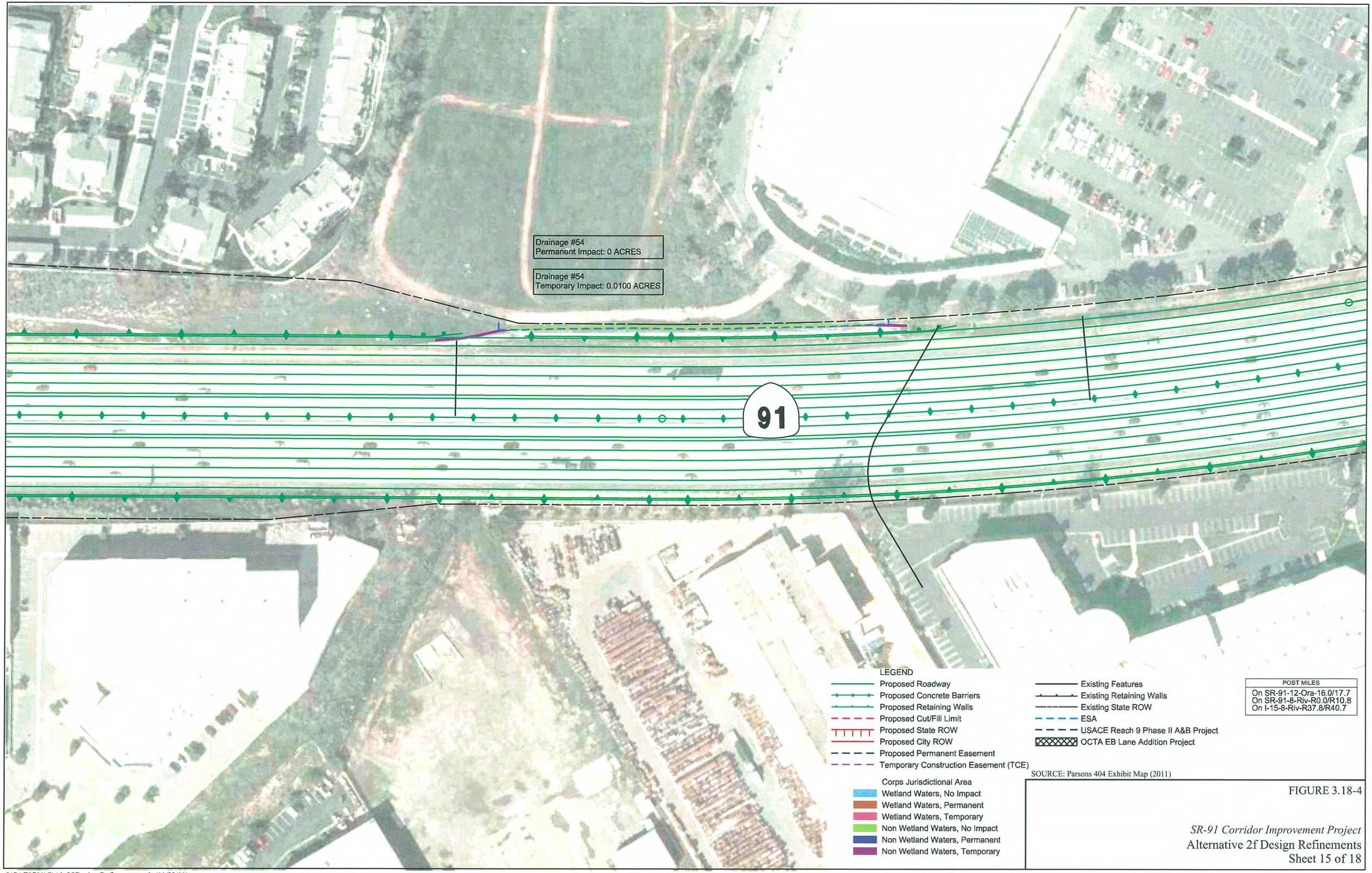
I:\PAZ0701\G\Alt 2f Design Refinements.cdr (11/22/11)

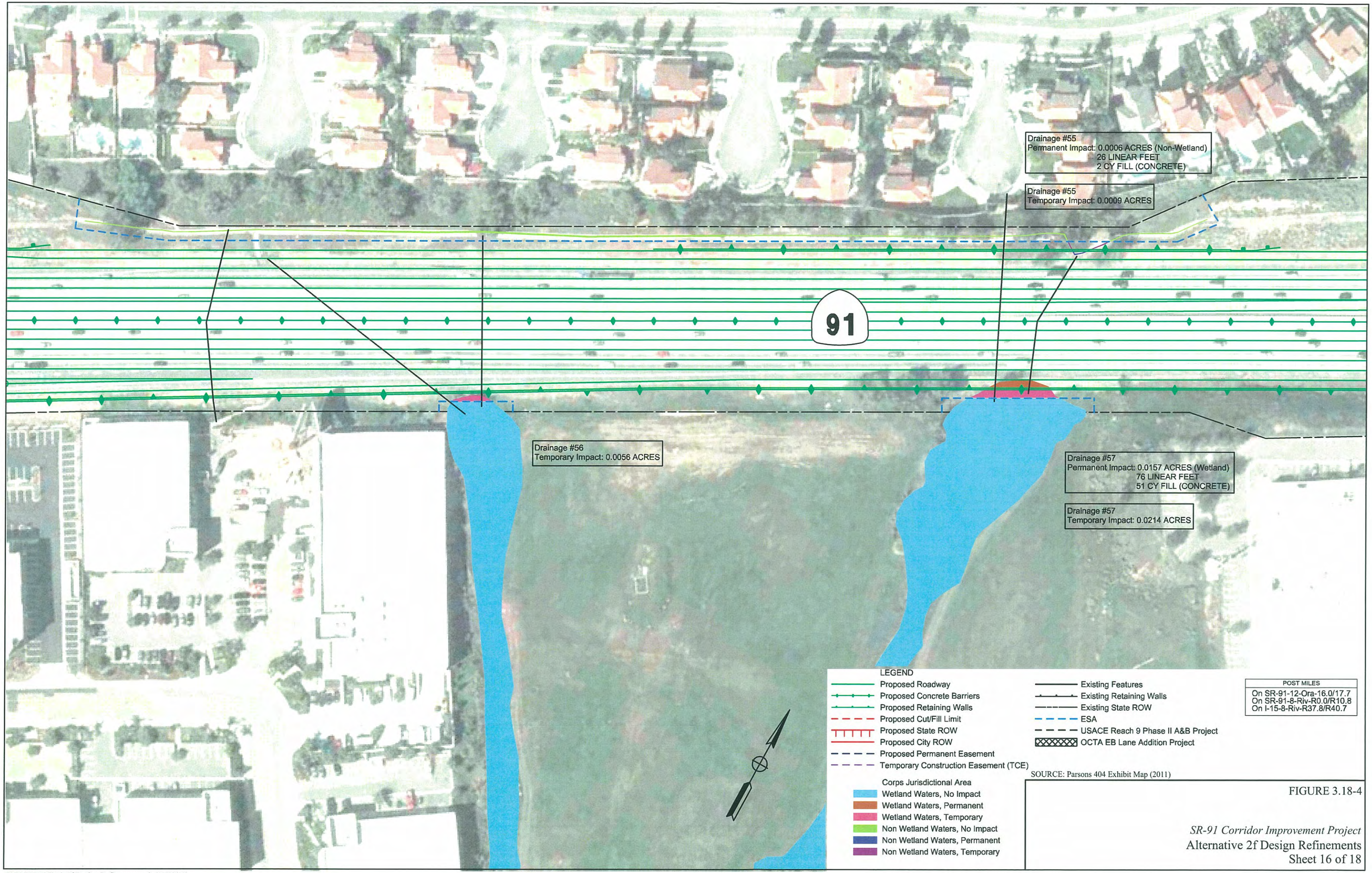


SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
Sheet 15 of 18

I:\PAZ0701\G\Alt 2f Design Refinements.cdr (11/22/11)



SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
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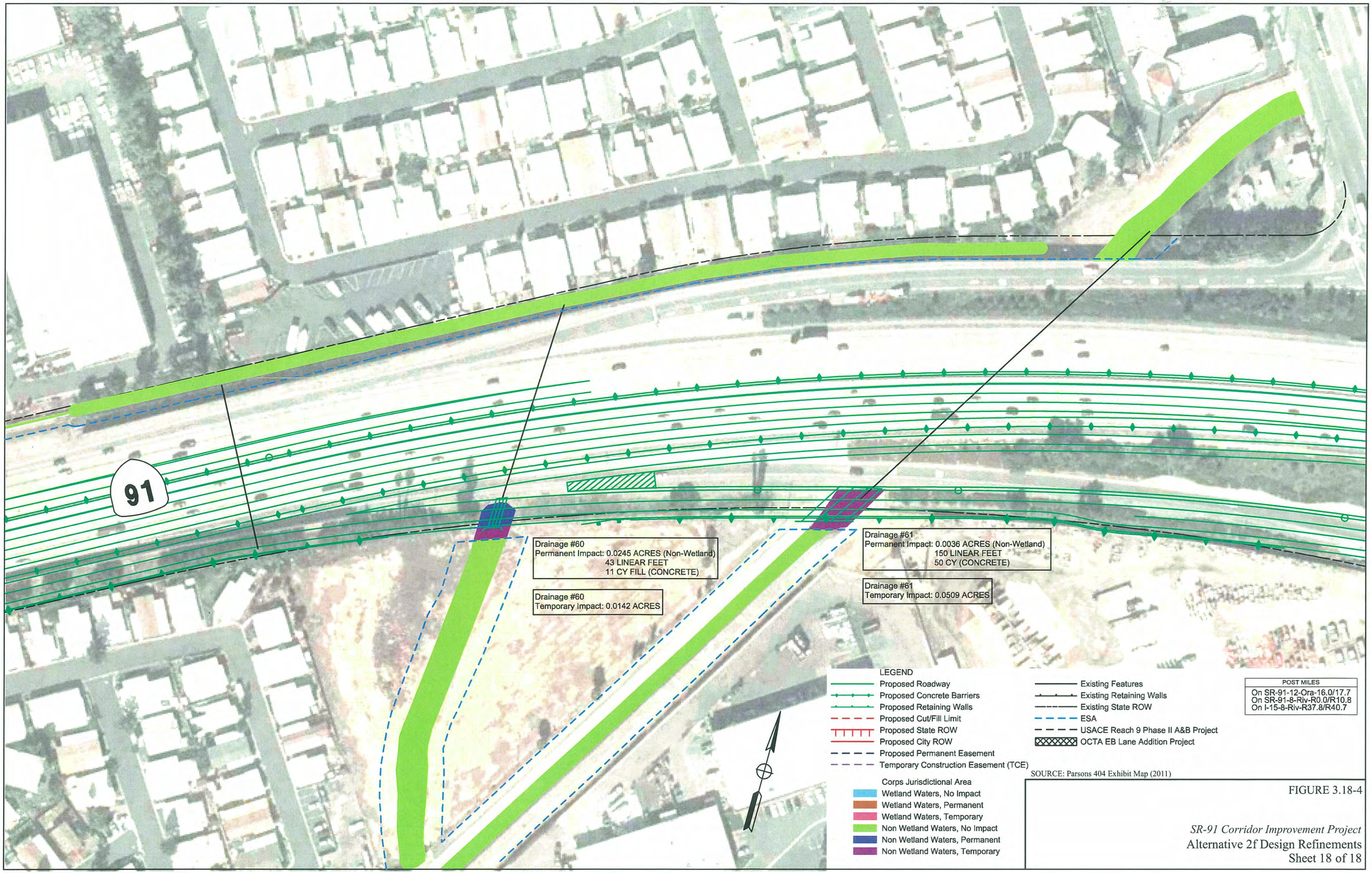
SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
Sheet 17 of 18

I:\PAZ0701\G\Alt 2f Design Refinements.cdr (11/22/11)



SOURCE: Parsons 404 Exhibit Map (2011)

FIGURE 3.18-4

SR-91 Corridor Improvement Project
Alternative 2f Design Refinements
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