# I-215/Barton Road Interchange Improvement Project

## Water Quality Technical Study

City of Grand Terrace and City of Colton
08-SBD-215 PM 0.58-1.66
EA 08-0J0700
(PN 0800000282)


Caltrans

*October 2013*

**This page intentionally left blank**

# Executive Summary

The San Bernardino Associated Governments (SANBAG), in cooperation with the California Department of Transportation (Caltrans), City of Grand Terrace, and City of Colton proposes to improve the Interstate 215 (I-215)/Barton Road interchange. The proposed project is located in the City of Grand Terrace and partially in the City of Colton in San Bernardino County, California. On Barton Road, the project limits extend from approximately 0.3 mile (mi) west of I-215 to 0.4 mi east of I-215. The project limits on I-215 extend from approximately 0.8 mi south of Barton Road to 0.4 mi north of Barton Road.

During construction activities, excavated soil would be exposed, and there would be an increased potential for soil erosion compared to existing conditions. In addition, chemicals, liquid products, petroleum products (such as paints, solvents, and fuels), and concrete-related waste may be spilled or leaked and have the potential to be transported via storm runoff into receiving waters. The total disturbed area during construction of Build Alternatives 3, 6, and Modified Alternative 7 would be approximately 40.4, 33.6, and 29.5 acres (ac), respectively.

Pollutants of concern during operation of a transportation facility include sediments, trash, petroleum products, metals, and chemicals. Build Alternative 3 would result in a permanent decrease in impervious surface area of 5.9 ac, which would result in a decrease in runoff and pollutant loading in the interchange area. Build Alternatives 6 and Modified Alternative 7 would result in a permanent increase of impervious surfaces and a permanent increase in runoff and pollutant loading. The total new pavement area would be approximately 3.2 and 1.2 ac under Alternatives 6 and Modified Alternative 7, respectively.

Caltrans is required to incorporate water quality controls into a project during the Project Study Report (PSR), Project Report (PR), and Plans, Specifications, and Estimates (PS&E) phases of project development. The Caltrans Storm Water Management Plan (SWMP, May 2003 [revised March 2011, March 2012, and July 2012], or subsequent issuance) provides the framework for management of storm water discharges and water quality controls. Storm water quality controls are either temporary (during construction) or permanent (after construction and part of project operation).

A Storm Water Pollution Prevention Plan (SWPPP) would be prepared and implemented during construction of Build Alternatives 3, 6, or Modified Alternative 7. The construction SWPPP would identify the specific Best Management Practices (BMPs) to be implemented during project construction so as not to cause or contribute to an exceedance of any applicable water quality standard contained in the Santa Ana Regional Water Quality Control Board (RWQCB) *Basin Plan*. These BMPs would be designed to meet the technology requirement as stipulated in the National Pollutant Discharge Elimination System (NPDES) Construction General Permit.

As part of the Caltrans Project Delivery Storm Water Management Program described in the SWMP, selected Design Pollution Prevention and Treatment BMPs would be incorporated into the design of Build Alternatives 3, 6, or Modified Alternative 7, where feasible, to address pollutants of concern. It is proposed that runoff from the project site be treated by biofiltration swales. These BMPs would be implemented to meet or exceed the requirements of the Caltrans Statewide NPDES Permit.

When the SWPPP and BMPs are implemented in accordance with NPDES Permit requirements as stipulated in Measures WQ-1 and WQ-2, Build Alternatives 3, 6, or Modified Alternative 7 would not result in adverse impacts to water quality.

# TABLE OF CONTENTS

**This page intentionally left blank**

# LIST OF FIGURES



# LIST OF TABLES

**This page intentionally left blank**

# List of Acronyms and Abbreviations

| | |
|---|---|
| °F | degrees Fahrenheit |
| µg/L | Micrograms per Liter |
| ac | acre/acres |
| ADT | average daily traffic |
| AGR | Agricultural Supply |
| amsl | above mean sea level |
| Basin Plan | Santa Ana RWQCB Water Quality Control Plan |
| BAT | Best Available Technology |
| BCT | Best Control Technology |
| bgs | below ground surface |
| BMPs | best management practices |
| BNSF | Burlington Northern Santa Fe |
| BSA | Biological Study Area |
| Caltrans | California Department of Transportation |
| CDFW | California Department of Fish and Wildlife |
| CEQA | California Environmental Quality Act |
| COLD | Cold Freshwater Habitat |
| CWA | Clean Water Act |
| DAMP | Drainage Area Management Plan |
| DSA | Disturbed Soil Area |
| EPA | United States Environmental Protection Agency |
| FEMA | Federal Emergency Management Service |
| FIRM | Flood Insurance Rate Map |
| ft | foot/feet |
| GWR | Groundwater Recharge |
| HOV | high-occupancy vehicle |
| I-215 | Interstate 215 |
| IND | Industrial |
| JTU | Jackson Turbidity Units |
| L | liters |
| LOS | level of service |
| MEP | maximum extent practicable |
| mg | milligram |
| mi | mile/miles |
| mL | milliliter/milliliters |
| MS4 | Municipal Separate Stormwater Sewer System |
| MSWMP | Municipal Storm Water Management Program |
| MUN | Municipal Supply |
| N | nitrogen |
| NEPA | National Environmental Policy Act |
| $NO_3$ | nitrate |
| NOI | Notice of Intent |
| NOT | Notice of Termination |
| NPDES | National Pollutant Discharge Elimination System |
| NTU | Nephelometric Turbidity Units |
| pCi/L | picocuries per liter |
| PDT | Project Development Team |
| pH | Percentage of Hydrogen |

| | |
|---|---|
| Porter-Cologne Act | Porter-Cologne Water Quality Control Act |
| PR | Project Report |
| PROC | Process Water Supply |
| PS&E | Plans, Specifications, and Estimates |
| PSR | Project Study Report |
| RCTC | Riverside County Transportation Commission |
| REC-1 | Contact Water Recreation |
| REC-2 | Noncontact Water Recreation |
| RWQCB | Regional Water Quality Control Board |
| SANBAG | San Bernardino Associated Governments |
| sf | square foot/feet |
| SFER | Summary Floodplain Encroachment Report |
| SPWN | Spawning Habitat |
| STAA | Surface Transportation Assistance Act |
| SWMP | Storm Water Management Plan (Caltrans) |
| SWPPP | Storm Water Pollution Prevention Plan |
| SWRCB | State Water Resources Control Board |
| TDS | Total Dissolved Solids |
| TMDL | Total Maximum Daily Load |
| UPRR | Union Pacific Railroad |
| USDOT | United States Department of Transportation |
| USACE | United States Army Corp of Engineers |
| USGS | United States Geological Survey |
| WARM | Warm Freshwater Habitat |
| WDR | Waste Discharge Requirements |
| WILD | Wildlife Habitat |
| WPCP | Water Pollution Control Plan |
| WQAR | Water Quality Assessment Report |
| WQMP | Water Quality Management Plan |
| WQO | Water Quality Objectives |

# Chapter 1 Introduction

This Water Quality Technical Study includes a discussion of the proposed project, the physical setting of the project area, and the regulatory framework with respect to water quality; it also provides data on surface water and groundwater resources within the project area and the water quality of these waters, describes water quality impairments and beneficial uses, and identifies potential water quality impacts/benefits associated with the proposed project, and recommends avoidance and/or minimization measures for potentially adverse impacts.

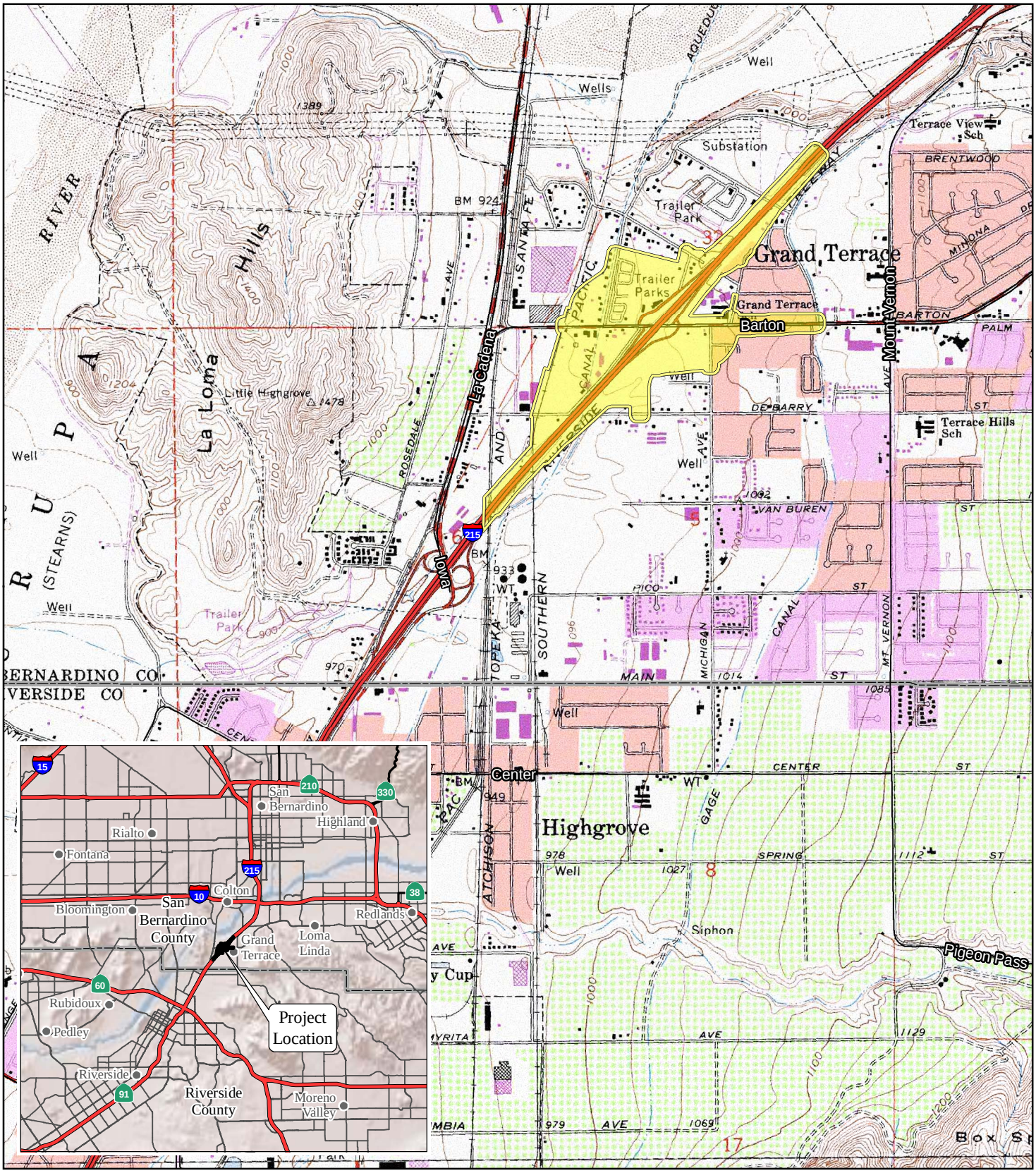
The San Bernardino Associated Governments (SANBAG), in cooperation with the California Department of Transportation (Caltrans), City of Grand Terrace, and City of Colton, proposes to improve the Interstate 215 (I-215)/Barton Road interchange. The proposed project is located in the City of Grand Terrace and partially in the City of Colton in San Bernardino County, California. On Barton Road, the project limits extend from approximately 0.3 mile (mi) west of I-215 to 0.4 mi east of I-215. The project limits on I-215 extend from approximately 0.8 mi south of Barton Road to 0.4 mi north of Barton Road. Figure 1 shows project location and vicinity maps.

I-215 is a major north-south freeway facility that begins at the southern junction of Interstate 15 (I-15) in the City of Murrieta in Riverside County and terminates at the northern junction with I-15, near Devore in San Bernardino County. It is an alternative route of I-15. The portion of I-215 within the project limits currently provides three through lanes in each direction and a paved median.

The existing I-215/Barton Road interchange is a compact diamond interchange with single-lane entrance and exit ramps. Both of the exit ramp approaches expand to two lanes to accommodate turning traffic. The existing northbound ramp intersection and southbound ramp intersection are spaced approximately 350 feet (ft) apart. The existing overcrossing is a single lane in each direction with back-to-back left-turn pockets for the entrance ramps.

Barton Road is an east-west primary arterial in the County of San Bernardino. It extends from La Cadena Drive in the City of Colton to east of San Mateo Street in the City of Redlands. Within the project limits, Barton Road is a two-lane roadway west of I-215. East of I-215, Barton Road is a four-lane facility with turn lanes at various intersections. Within the project limits, there are several intersections:

- Grand Terrace Road (unsignalized T-intersection)
- Southbound ramps and La Crosse Avenue intersection (signalized)
- Northbound ramps intersection (signalized)
- Michigan Avenue intersection (signalized T-intersection)
- Vivienda Avenue intersection (unsignalized T-intersection)




LEGEND

Project Area

FIGURE 1

N

0 1000 2000

FEET

SOURCE: USGS 7.5 min. quad. (San Bernardino South, 1980)

I:\SBA330\Barton_I-215\GIS\ProjectVicinity.mxd (1/30/2012)

*I-215/Barton Road Interchange Improvement Project*

Project Location

**This page intentionally left blank**

## 1.1. Project Purpose and Need

### Purpose

The purpose of the proposed project is to improve the operation, increase the capacity, and reduce the existing and future congestion at the I-215/Barton Road interchange, and improve access to facilities served by the interchange.

### Need

Based on traffic projections and the existing and planned land uses in the vicinity, the facility is forecast to degrade to level of service (LOS) F (breakdown condition) by 2040 without improvements.

### Capacity and Transportation Demand

The study area intersections currently operate at LOS B or C during the a.m. and p.m. peak hours. Without improvements, in 2016, the Barton Road/Grand Terrace Road intersection would operate at LOS F during the a.m. peak hour and LOS E during the p.m. peak hour. Because of the projected demand, without improvements, by 2040 all seven study area intersections would operate at LOS F during both the a.m. and p.m. peak hours, with the exception of Barton Road/La Cadena Drive during the a.m. peak hour, which would operate at LOS C.

The demand for interchange access is also represented in traffic volumes. Traffic projections for 2040 show that the average daily traffic (ADT) volumes on I-215 will increase by more than 200 percent. The 2009 Barton Road interchange ramp volumes are forecast to double by 2040. Additional capacity is needed to accommodate projected traffic volumes and improve LOS.

### Roadway Deficiencies

The existing I-215 southbound off-ramp at Barton Road is nonstandard per the Highway Design Manual (Sixth Edition) because it intersects with a local street (La Crosse Avenue) before reaching Barton Road. The southbound off-ramp at Barton Road is a five-legged intersection with a two-way frontage road adjacent to the southbound on-ramp. The existing interchange does not have adequate space for Surface Transportation Assistance Act (STAA) truck-turning movements, a sidewalk on the south side, or bicycle lanes. Therefore, the existing interchange restricts large truck movements and pedestrian and bicyclist access to local streets. Reconstruction of the interchange is needed to improve access to the freeway and local streets.

In the existing condition, the left-turn lane on westbound Barton Road at the I-215 southbound on-ramp does not have sufficient vehicle capacity during the a.m. and p.m. peak hours. This prevents left-turning and through traffic from moving through the interchange. Queue lengths are forecasted to increase substantially by 2040 without interchange improvements. Additional turn-pocket capacity is needed in order to reduce delays at the interchange.

### Social Demand and Economic Development

The I-215/Barton Road interchange is the primary regional access for the City of Grand Terrace. It also serves the southwestern portion of the City of Colton and provides direct access to the City of Loma Linda. The City of Colton is projected to experience substantial population growth through 2035 according to the Southern California Association of Governments (SCAG) 2012 Adopted Regional Transportation Plan (RTP) Growth Forecasts. The build out of the area in accordance with the City of Grand Terrace General Plan and the Barton Road Specific Plan will result in increased traffic congestion on the freeway and the local street networks leading to the interchange. Reconstruction of the interchange is needed to relieve additional congestion.

## 1.2. Project Description

The Project Description describes the proposed action and the design alternatives that were developed to meet the identified need through accomplishing the defined purposes while avoiding or minimizing environmental impacts. The alternatives are Alternative 1 (No Build), Alternative 3 (Cloverleaf Interchange), Alternative 6 (Modified Cloverleaf), and Modified Alternative 7 (Modified Cloverleaf/Diamond). The proposed project is located in the City of Grand Terrace and partially in the City of Colton in San Bernardino County, California. Within the limits of the proposed project, I-215 currently provides three lanes in each direction. Barton Road is a two-lane roadway west of I-215 and a four-lane facility with turn lanes at various intersections east of I-215. Barton Road provides four ramps that connect to I-215: southbound on- and off-ramps, and northbound on- and off-ramps.

The purpose of the proposed project is to reconstruct and improve the interchange in order to improve operation, increase capacity, and reduce congestion at the I-215/ Barton Road interchange. The existing interchange has a nonstandard southbound off-ramp, and the existing interchange restricts large truck movements and pedestrian and bicyclist access. Without the interchange improvement, the operation of this facility will deteriorate over time to reach unacceptable LOS in the future.

The project area for the I-215/Barton Road Interchange Improvement Project overlaps the project area with the I-215 Bi-County High-Occupancy Vehicle (HOV) Lane Gap Closure Project at the Burlington Northern Santa Fe Railroad (BNSF) two-track underpass (bridge over the freeway) and the Union Pacific Railroad (UPRR) single-track underpass between the Iowa Avenue/La Cadena Drive interchange and the Barton Road interchange. Both projects would require the reconstruction of these two structures. For the I-215/Barton Road Interchange Improvement Project, the reconstruction is needed to accommodate an auxiliary lane that is proposed between the northbound La Cadena entrance ramp and the proposed Barton Road exit ramp. The underpass replacements are required for I-215/Barton Road interchange Alternatives 3, 6, and Modified Alternative 7. For the I-215 Bi-County HOV Lane Gap Closure Project, the reconstruction is necessary due to inadequate horizontal clearance between the existing structure supports and the proposed HOV lane addition. The reconstructed bridges would be raised to provide adequate vertical clearance with the freeway.

Because the I-215 Bi-County HOV Lane Gap Closure Project analyzed the environmental impacts of reconstruction of the two railroad structures as well as construction of temporary railroad bridges to be utilized during reconstruction of the existing structures (railroad shooflies), and this project is currently under construction, these impacts are not evaluated as part of this document.

## 1.3. Project Alternatives

Four alternatives are being analyzed in this document: the No Build Alternative (Alternative 1) and three Build Alternatives (Alternatives 3, 6, and Modified Alternative 7). No Build Alternative

### 1.3.1. Alternative 1 (No Build Alternative)

Under this alternative, no interchange reconstruction would occur. This alternative would not improve operations, increase highway capacity, or reduce highway congestion at the I-215/Barton Road interchange.

### 1.3.2. Proposed Build Alternatives

#### Alternative 3 (Cloverleaf Interchange)

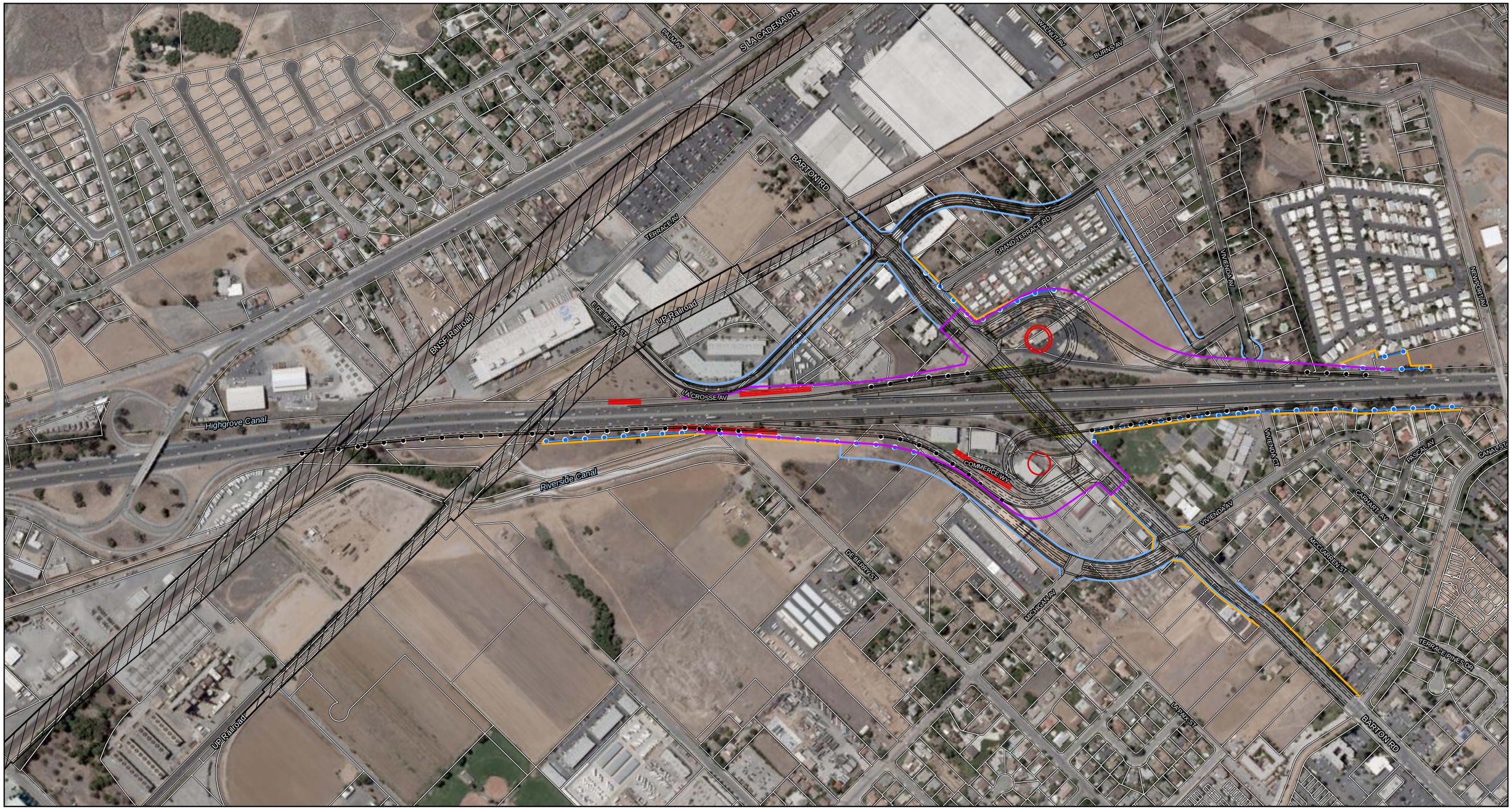
Alternative 3 would provide a conventional partial cloverleaf interchange with the northbound on- and off-ramps on the southern side of Barton Road and the southbound on and off-ramps on the northern side. This alternative would widen Barton Road from one through lane to two through lanes in each direction and add turning lanes onto the southbound and northbound loop on-ramps. The existing overcrossing would be replaced with a new structure with four through lanes and two turn lanes. This alternative also includes the improvements listed below.

- The existing ramps would be removed and a new southbound off-ramp, southbound loop on-ramp, northbound loop on-ramp, and northbound off-ramp would be constructed.
- The southbound off-ramp would make a new connection at Barton Road with one right-turn lane, one shared right-/left-turn lane, and one left-turn lane; La Crosse Avenue north of Barton Road would be removed.
- The southbound loop on-ramp would provide three lanes at Barton Road.
- The northbound off-ramp would accommodate three lanes (two right-turn lanes and one left-turn lane) at the Barton Road intersection.
- The northbound loop on-ramp would provide three lanes at Barton Road.

- A portion of the I-215 Bi-County HOV Gap Closure Project sound barrier in the northwest quadrant would be removed to accommodate the new southbound off-ramp.
- Commerce Way would be reconfigured to intersect with Barton Road at Vivienda Avenue.
- The intersection of Michigan Avenue at Barton Road would be eliminated; Michigan Avenue would form a T-intersection with Commerce Way.
- The segment of Vivienda Avenue west of I-215 would be converted into a cul-de-sac.
- A new two-lane road would be constructed between La Crosse Avenue and Grand Terrace Road adjacent to Vivienda Avenue.
- Grand Terrace Road and the Grand Terrace Road/Barton Road intersection would be realigned
- Grand Terrace Road would be extended southwest of Barton Road to tie into East De Berry Street.
- Grand Terrace Road at Barton Road would be converted into a cul-de-sac.
- Barton Road would be widened to four through lanes approximately between Grand Terrace Road and Vivienda Avenue.
- Standard sidewalks and a Class II bicycle lane would be provided on both sides of Barton Road within the project limits.
- Bioswales would be constructed in the northwest and southeast quadrants to treat storm water runoff
- New landscaping would be provided consistent with the I-215 Bi-County Aesthetic Concept
- Utilities would be relocated or protected in place during construction.
- Drainage facilities would be modified consistent with other project improvements.
- Traffic signal modifications would be made at Barton Road/Grand Terrace Road/ De Berry Street, I-215 northbound ramps/Barton Road, I-215southbound ramps/Barton Road, and Commerce Way/Vivienda Avenue/Barton Road.

The conceptual design for Alternative 3 is shown in Figure 2.

**This page intentionally left blank**




LEGEND

- Alternative 3
- Temporary Construction Easement
- Proposed Caltrans Right of Way
- Proposed City Right of Way
- Parcel Boundary
- Proposed Railroad Shoofly Area
- New/Modify Bridge Structure
- Proposed Retaining Wall
- Potential Sound Barrier
- Proposed Best Management Practices (BMPs)

0 250 500
FEET

SOURCE: Bing (2008); TBM (2008); County of San Bernardino (5/09); LAN Engineering (2008, 6/09)

I:\SBA330\Barton_I-215\GIS\ALT_3.mxd (7/15/2010)

FIGURE 2

*I-215/Barton Road Interchange Improvement Project*

Alternative 3

08-SBd-215-PM 0.58/1.95
EA# 0J070

**This page intentionally left blank**

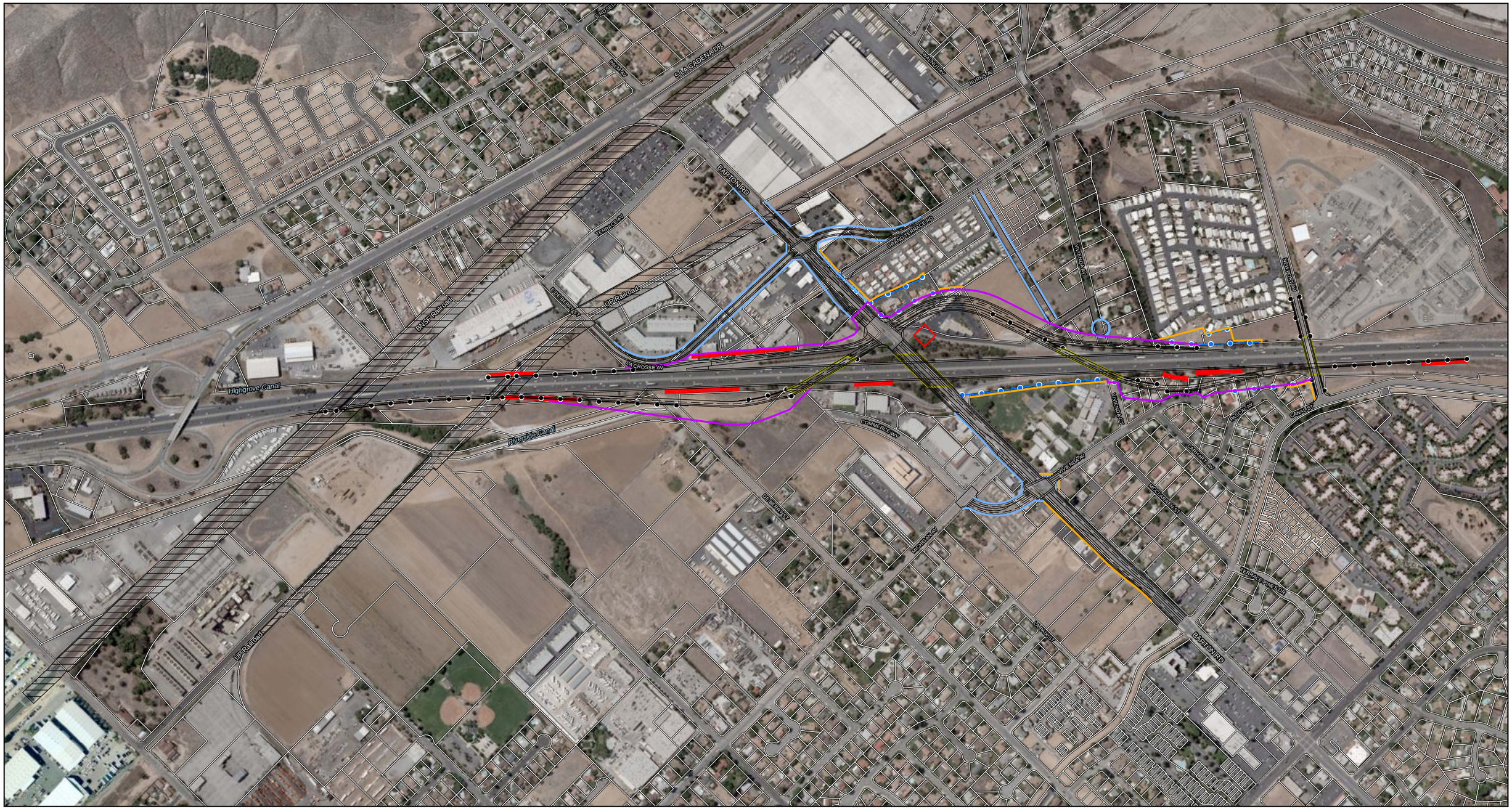
### Alternative 6 (Modified Cloverleaf)

Alternative 6 proposes a modified cloverleaf interchange with the southbound entrance and exit ramps directly connected to Barton Road; the northbound entrance and exit ramps would be constructed to an extension of Commerce Way, which would be realigned to connect to Barton Road at the location of the existing Vivienda Avenue intersection to the east. Barton Road would be widened to two through lanes in each direction plus one left-turn and one right-turn lane. The existing overcrossing would be replaced with a new structure with four through lanes and three turn lanes. This alternative also includes the improvements listed below.

- The existing ramps would be removed
- A new southbound loop on-ramp would provide two lanes at Barton Road.
- A new southbound off-ramp would make a new connection at Barton Road with one right-turn lane, one left-turn lane, and one shared right-/left-turn lane; La Crosse Avenue north of Barton Road would be removed; La Crosse south of Barton Road would be reconfigured to a right-in/right-out layout.
- A new northbound off-ramp would tie in to Commerce Way and provide for dual left-turn lanes and a single right-turn lane.
- A bridge would be constructed over the Riverside Canal on the northbound off-ramp to span the canal.
- A new northbound hook on-ramp would be provided in the southeast quadrant. The access to the ramp would be through the proposed extension of the Commerce Way.
- A portion of the I-215 Bi-County HOV Lane Gap Closure Project sound barrier in the northwest quadrant would be removed to accommodate the new southbound off-ramp.
- A new sound barrier is proposed adjacent to the Terrace Village RV Park and the Grand Terrace Mobile Home Park
- Commerce Way would be reconfigured to intersect with Barton Road at Vivienda Avenue.
- Commerce Way would be shifted to the east to accommodate the northbound off- and on-ramps.
- Commerce Way would be extended southeast of Barton Road to cross Michigan Avenue in the vicinity of De Berry Street.
- The northbound on-ramp and off-ramp would intersect with the proposed Commerce Way extension.

- The intersection of Michigan Avenue at Barton Road would be eliminated; Michigan Avenue would form a T-intersection with Commerce Way.
- A new two-lane road between La Crosse Avenue and Grand Terrace Road would be constructed adjacent to Vivienda Avenue.
- Barton Road would be widened to four through lanes approximately between Grand Terrace Road and Vivienda Avenue.
- Standard sidewalks and a Class II bicycle lane would be provided on both sides of Barton Road within the project limits.
- Bioswales would be constructed in the northwest and southeast quadrants to treat storm water runoff.
- New landscaping would be provided consistent with the I-215 Bi-County Aesthetic Concept.
- Utilities would be relocated or protected in place during construction.
- Drainage facilities would be modified consistent with other project improvements.
- Traffic signal modifications would be made at Barton Road/Grand Terrace Road, I-215 northbound ramps/Commerce Way, I-215 southbound ramps/Barton Road and Commerce Way/Vivienda Avenue/Barton Road.

The conceptual design for Alternative 6 is shown in Figure 3.




LEGEND

- Alternative 5
- Temporary Construction Easement
- Proposed Caltrans Right of Way
- Proposed City Right of Way
- Parcel Boundary
- Proposed Railroad Shoofly Area
- New/Modify Bridge Structure
- Proposed Retaining Wall
- Potential Sound Barrier
- Proposed Best Management Practices (BMPs)

0 300 600
FEET

SOURCE: Bing (2008); TBM (2008); County of San Bernardino (5/09); LAN Engineering (2008, 6/09)

I:\SBA330\Barton_I-215\GIS\ALT_5.mxd (7/15/2010)

FIGURE 3

*I-215/Barton Road Interchange Improvement Project*

Alternative 5

08-SBd-215-PM 0.58/1.95
EA# 0J070

**This page intentionally left blank**

### Modified Alternative 7 (Modified Cloverleaf/Diamond) (Locally Preferred Alternative)

Modified Alternative 7 would provide a tight diamond configuration for the northbound ramps. The southbound ramps would have a modified cloverleaf configuration with a roundabout at the intersection of the southbound ramps, Barton Road, and La Crosse Avenue. Barton Road would be widened to two through lanes in each direction plus one left-turn and one right-turn lane east of the southbound ramps. The existing overcrossing would be replaced with a new structure with four through lanes and one turn lane. This alternative also includes the improvements listed below.

- The new southbound loop on-ramp would provide two lanes at Barton Road in a roundabout configuration.
- The new southbound off-ramp would make a connection at Barton Road and transition into a roundabout which would provide one right-turn lane, and one shared through/left-turn lane; La Crosse Avenue north of Barton Road would be removed.
- The new northbound off-ramp would terminate at Barton Road with one left-turn lane, one shared through/right-turn lane and one dedicated right-turn lane.
- The new northbound on-ramp would have two lanes at the Barton Road intersection.
- A portion of the I-215 Bi-County HOV Lane Gap Closure Project sound barrier in the northwest quadrant would be modified to accommodate the new southbound off-ramp.
- Commerce Way would be reconfigured to intersect with Barton Road at Vivienda Avenue.
- The intersection of Michigan Avenue at Barton Road would be eliminated; Michigan Avenue would form a T-intersection with Commerce Way.
- A new two-lane road between La Crosse Avenue and Grand Terrace Road would be constructed adjacent to Vivienda Avenue.
- Barton Road would be widened to four through lanes approximately between Grand Terrace Road and Vivienda Avenue.
- Standard sidewalks and a Class II bicycle lane would be provided on both sides of Barton Road within the project limits.
- Bioswales would be constructed in the northwest and southeast quadrants to treat storm water runoff.
- New landscaping would be provided consistent with the I-215 Bi-County Aesthetic Concept.

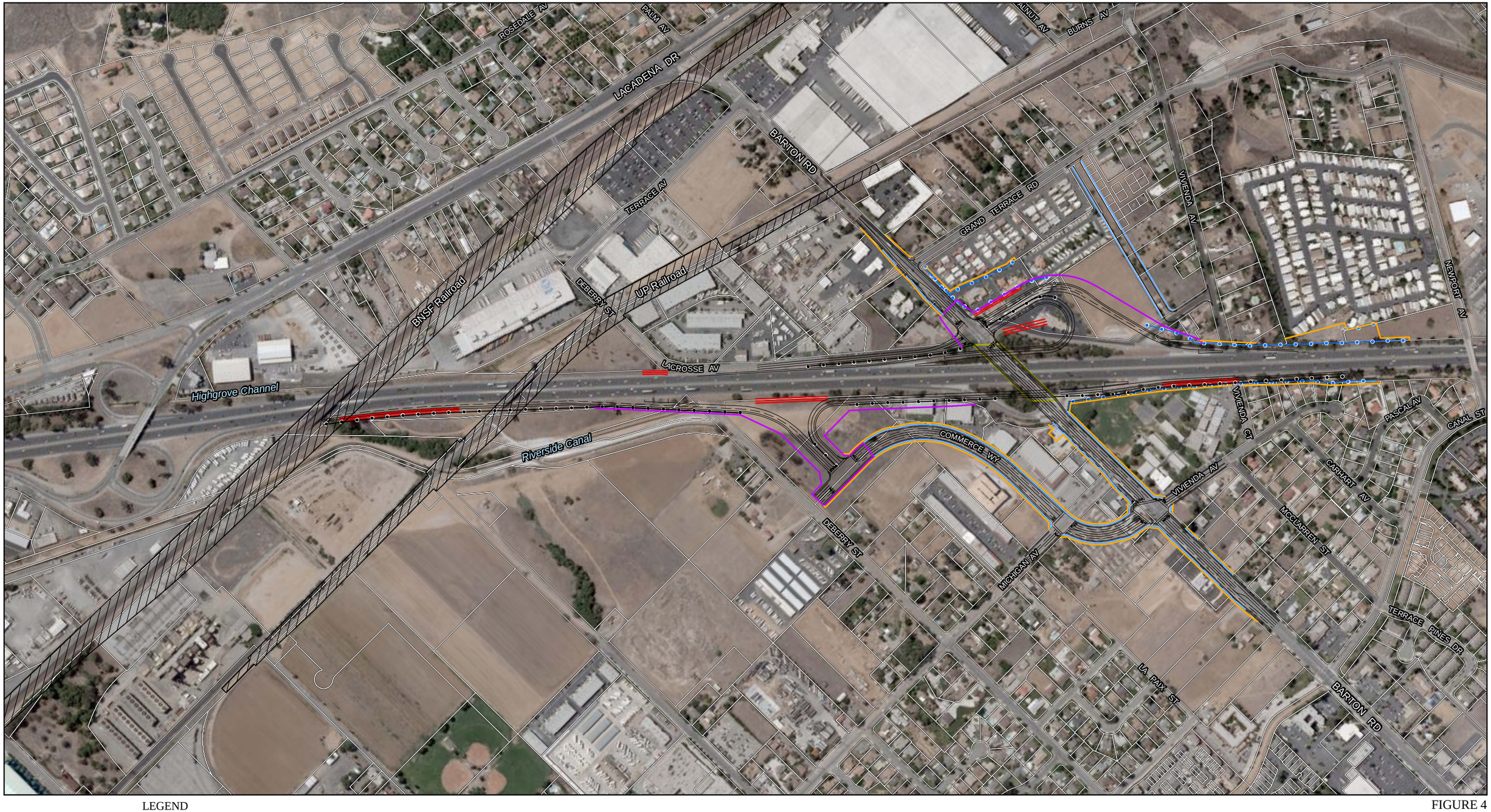
- Utilities would be relocated or protected in place during construction.
- Drainage facilities would be modified consistent with other project improvements.
- Traffic signal modifications would be made at Barton Road/Grand Terrace Road, I-215 northbound ramps/Barton Road, and Commerce Way/Vivienda Avenue/ Barton Road.

The conceptual design for Modified Alternative 7 is shown in Figure 4.

### 1.3.3. Alternatives Considered but Eliminated from Further Discussion

Alternatives 2 and 4 included a new northbound on-ramp that encroached into the playfields and portable buildings at Grand Terrace Elementary School in the northeast quadrant of the interchange. Meetings with the Colton Joint Unified School District Director of Facilities and Planning and a California Department of Education representative determined that the acquisition of school property under these alternatives would require the school to be relocated. This would require that the project cost include the cost of moving the school and environmental clearance of a new site. Further study determined that a suitable site within the school enrollment area was not available.

During reviews of the Build Alternatives that occurred between September 7, 2011, and October 27, 2011, it was discovered that the northbound on-ramp associated with Alternative 5 conflicts with the designed placement of the eastside bridge abutment for the Newport Avenue Overcrossing (OC) Bridge Replacement Project. The Newport OC Bridge project is in final design, and determining potential resolutions to the engineering conflict is expected to cause critical delays to this project by requiring substantial redesign, which in turn would be expected to result in an environmental reevaluation. In addition, Alternative 5 would result in greater environmental impacts than Alternatives 3, 6, and 7, and is the most expensive Build Alternative.




LEGEND

- Alternative 6
- Temporary Construction Easement
- Proposed Caltrans Right of Way
- Proposed City Right of Way
- Parcel Boundary
- Proposed Railroad Shoofly Area
- New/Modify Bridge Structure
- Proposed Retaining Wall
- Potential Sound Barrier
- Proposed Best Management Practices (BMPs)

0 250 500
FEET

SOURCE: Bing (2008); TBM (2008); County of San Bernardino (5/09); LAN Engineering (2008, 6/09)

I:\SBA330\Barton_I-215\GIS\ALT_6.mxd (7/15/2010)

FIGURE 4

*I-215/Barton Road Interchange Improvement Project*

Alternative 6

08-SBd-215-PM 0.58/1.95
EA# 0J070

**This page intentionally left blank**

During the development of Alternative 7, the design team and Caltrans worked to resolve issues associated with the intersection configuration, access control on La Crosse Avenue, and intersection control measures. The existing intersection at the I-215 southbound ramps and Barton Road contains a local street, La Crosse Avenue that forms two legs of the intersection. The existing connection of La Crosse Avenue north of Barton Road would be eliminated with Alternative 7, but the southern leg of La Crosse Avenue would remain active and provide access to the intersection. Because the connection of the southern leg of La Crosse Avenue at this intersection would occur directly opposite the proposed realigned southbound off-ramp, this connection would be nonstandard per the Caltrans Highway Design Manual (HDM) Index 504.8, Access Control.

In September 2011, Caltrans, SANBAG, and FHWA staff met to review the issue of access control at La Crosse Avenue. During this meeting it was concluded that right-in/right-out access to La Crosse Avenue would provide an adequate compromise to maintain access while minimizing the nonstandard access control. The decision was contingent upon verifying that traffic would operate at an acceptable LOS with the right-in/right-out access control. The traffic operations were verified, and the right-in/right-out control at La Crosse Avenue was incorporated into the various engineering and environmental studies needed for Project Approval/Environmental Document (PA/ED) approval as Alternative 7.

A few property owners along the southern leg of La Crosse Avenue were concerned about how Alternative 7 would impact the access for their delivery trucks and contacted the City of Colton with questions in early 2012. The City of Colton presented the concept of Alternative 7, and the property owners indicated that the loss of full access to the interchange from La Crosse Avenue would negatively affect their businesses.

In August 2012, Caltrans submitted a draft Modified Access Request (MAR), which evaluated the Locally Preferred Alternative (Alternative 7) to FHWA for review. FHWA staff visited the project site along with several Caltrans project staff members. The private property owners' concerns were discussed. During their visit, FHWA staff questioned whether a roundabout concept would improve conditions at the southbound ramp intersection, solve the access control issues, and eliminate the controversy regarding the right-in/right-out configuration. The group agreed that a roundabout would reduce the impacts of La Crosse Avenue on the intersection since wrong-way moves would be more difficult and all directions of the intersection's legs

would be served. FHWA informally rejected the MAR pending further study of a roundabout.

The design team prepared a traffic analysis for one and two roundabout scenarios. The analysis determined that a roundabout would be feasible at the I-215 southbound ramps/Barton Road /La Crosse Avenue intersection. A roundabout in this location would provide access control at La Crosse Avenue, maintain access to all four legs of the intersection, and solve the truck turning movement concerns of the surrounding property owners. The traffic analysis also concluded that a roundabout on Barton Road at the I-215 northbound ramps is not feasible due to operational issues and increased right of way (ROW) impacts. In February 2013, the Project Development Team (PDT) decided to proceed with a modification to Alternative 7 that includes a roundabout at the I-215 southbound ramps. This alternative was formally named Modified Alternative 7 and was selected as the Locally Preferred Alternative at the PDT meeting on March 5, 2013.

For the reasons described above, and because Alternatives 3, 6, and Modified Alternative 7 are feasible, the PDT made a decision to withdraw Alternatives 2 and 4 from further consideration on March 18, 2008, to withdraw Alternative 5 from further consideration on January 17, 2012, and to withdraw Alternative 7 from further consideration on March 5, 2013.

# Chapter 2 Regulatory Setting

Discharges into waters of the United States are subject to the regulatory authority of the United States Army Corps of Engineers (USACE) under Section 404 of the federal Clean Water Act (CWA); the State Water Resources Control Board (SWRCB) and the Santa Ana RWQCB Region 8, under Sections 303(d), 401, and 402 of the CWA and the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act); and by the California Department of Fish and Wildlife (CDFW) under Section 1602 of the California Fish and Game Code.

## 2.1 Federal Laws and Requirements

### 2.1.1 Clean Water Act

In 1972 Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source unlawful unless the discharge is in compliance with a NPDES permit. Known today as the Clean Water Act (CWA), Congress has amended it several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the NPDES permit scheme. Important CWA sections are:

- Sections 303 and 304 require states to promulgate water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity, which may result in a discharge to waters of the U.S., to obtain certification from the State that the discharge will comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request. (See below).
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (RWQCB) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and Municipal Separate Storm Sewer Systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

USACE issues two types of 404 permits: Standard and General permits. There are two types of General permits, Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to authorize a variety of minor project activities with no more than minimal effects.

There are also two types of Standard permits: Individual permits and Letters of Permission. 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. Environmental Protection Agency's (EPA) Section 404 (b)(1) Guidelines (U.S. EPA Code of Federal Regulation [CFR] 40 Part 230), and whether permit approval is in the public interest. The 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 least environmentally damaging practicable alternative (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. According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures have been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the U.S. In addition, every permit from the USACE, even if not subject to the 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4.

## 2.2 State Water Quality Regulations

### 2.2.1 Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This Act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the State. It predates the CWA and regulates discharges to waters of the State. Waters of the State include more than just waters of the U.S., like groundwater and surface waters not considered

waters of the U.S. Additionally, it prohibits discharges of "waste" as defined and this definition is broader than the CWA definition of "pollutant". Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA, and regulating discharges to ensure compliance with the water quality standards. Details regarding water quality standards in a project area are contained in the applicable RWQCB Basin Plan. In California, Regional Boards designate beneficial uses for all water body segments in their jurisdictions, and then set criteria necessary to protect these uses. Consequently, the water quality standards developed for particular water segments are based on the designated use and vary depending on such use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants, which are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-source point controls (NPDES permits or Waste Discharge Requirements), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

### 2.2.2 State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB adjudicates water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

- **National Pollution Discharge Elimination System (NPDES) Program. Municipal Separate Storm Sewer Systems (MS4)**

  Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of storm water dischargers, including MS4s. The U.S. EPA defines an MS4 as "any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and

storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that are designed or used for collecting or conveying storm water." The SWRCB has identified the Department as an owner/operator of an MS4 pursuant to federal regulations. The Department's MS4 permit covers all Department rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted.

The Department's MS4 Permit contains three basic requirements:

1. The Department must comply with the requirements of the CGP (see below);

2. The Department must implement a year-round program in all parts of the State to effectively control storm water and non-storm water discharges; and

3. The Department storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) Best Management Practices (BMPs) to the Maximum Extent Practicable, and other measures as the SWRCB determines to be necessary to meet the water quality standards.

   To comply with the permit, the Department developed the Statewide Storm Water Management Plan (SWMP) to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within the Department for implementing storm water management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices the Department uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of BMPs. The proposed project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address storm water runoff.

**Construction General Permit**

Construction General Permit (Order No. 2009-009-DWQ), adopted on September 2, 2009, became effective on July 1, 2010. The permit regulates

storm water discharges from construction sites which result in a Disturbed Soil Area (DSA) of 1 ac or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least 1 ac must comply with the provisions of the Construction General Permit. Construction activity that results in soil disturbances of less than 1 ac is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop storm water pollution prevention plans; to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The 2009 Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and pre- and post-construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP). In accordance with the Department's Standard Specifications, a Water Pollution Control Plan (WPCP) is necessary for projects with DSA less than 1 ac.

**Section 401 Permitting**

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the United States must obtain a 401 Certification, which certifies that the project will be in compliance with State water quality standards. The most common federal permit triggering 401 Certification is a CWA Section 404 permit, issued by USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before USACE issues a 404 permit.

In some cases the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of

requirements known as Waste Discharge Requirements (WDRs) under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

## 2.3 Regional and local Requirements

### 2.3.1 General Waste Discharge Requirements for De Minimus Discharges

On March 27, 2009, the Santa Ana RWQCB issued the General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant (De Minimus) Threat to Water Quality (Order No. R8-2009-0003, NPDES No. CAG998001). This NPDES Permit regulates De Minimus discharges, including groundwater and non–storm water construction dewatering waste, in the Santa Ana Region. For coverage under this permit, a discharger is required to submit a Notice of Intent to the Santa Ana RWQCB. Under this permit, discharges must comply with discharge specifications, receiving water limitations, and monitoring and reporting requirements detailed in the permit. Dewatering is not anticipated during project construction.

### 2.3.2 Municipal NPDES Permit

The Cities of Colton and Grand Terrace are co-permittees under the National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for the San Bernardino County Flood Control District, the County of San Bernardino, and the Incorporated Cities of San Bernardino County within the Santa Ana Region, Order No. R8-2010-0036 (NPDES No. CAS618036). The NPDES permit prohibits discharges, sets limits on pollutants being discharged into receiving waters, and requires implementation of technology-based standards.

Under the NPDES permit, the Cities as co-permittees are responsible for the management of storm drain systems within their jurisdictions. The Cities are required to implement management programs, monitoring programs, implementation plans, and all BMPs outlined in the Municipal Storm Water Management Program (MSWMP) (previously identified as the Drainage Area Management Plan [DAMP] in the County's two prior NPDES permits) and to take any other actions as may be necessary to protect water quality to the Maximum Extent Practicable (MEP). In

addition, each city is required to implement a MSWMP and develop a long-term assessment strategy for effectiveness of the MSWMP.

Category Projects within the Cities are required to develop and implement Water Quality Management Plans (WQMPs) to reduce pollutants and maintain and reduce downstream erosion and stream habitat from all new development and significant redevelopment projects that fall into one of the categories of priority projects. The co-permittees must ensure that a Category Project meets WQMP requirements. Category Projects include significant redevelopment projects that create 5,000 square feet (sf) or more of impervious surface, home subdivisions of 10 units or more, industrial/ commercial developments of 100,000 sf or more, automotive repair shops, restaurants of 5,000 sf or more, hillside developments of 10,000 sf or more, developments of 2,500 sf of impervious surface or more adjacent to or discharging directly into environmentally sensitive areas, or parking lots of 5,000 sf or more. In addition, Non-Category Projects that have a precise plan of development (e.g., all commercial or industrial projects, residential projects <10 dwelling units, and all other land development projects with potential for significant adverse water quality impacts) or subdivision of land must prepare and implement a WQMP. San Bernardino County has prepared a Model Water Quality Management Plan Guidance document for preparation of project-specific WQMPs. The Model Water Quality Management Plan Guidance document was approved by the Santa Ana RWQCB on April 30, 2004, and updated on June 9, 2005.

The Storm Water Data Report prepared for the proposed project per Caltrans requirements is consistent with the requirements of the Cities' municipal NPDES permit and serves as the WQMP for the project.

**This page intentionally left blank**

# Chapter 3 Affected Environment

## 3.1 General Setting

### 3.1.1 Population and Land Use

The proposed project is mostly within the City of Grand Terrace, and partially within the City of Colton, in San Bernardino County. Land uses in the project area consist of a mixture of public, commercial, and industrial uses.

According to the United States Census Bureau, in 2010 the population of San Bernardino County was 2,035,210 persons, making it the fifth most-populated county in California. The 2010 population of the Cities of Grand Terrace and Colton were 12,040 and 52,154 persons, respectively.[1]

### 3.1.2 Topography

The topography is relatively flat throughout the project area. The elevation ranges from approximately 940 ft above mean sea level (amsl) in the southern project limits to 1,020 ft amsl in the northern project limits.[2]

### 3.1.3 Precipitation and Climate

The climate is classified as Mediterranean. It is generally dry in the summer with mild, wet winters. Annual average precipitation is approximately 10 inches. Most of the precipitation occurs from October to May. This precipitation comes from storms moving south over the ocean before heading inland over Southern California. These storms can last 4 or more days, causing local flooding. Intense local thunderstorms can also result in local flooding; however, these typically last only 2 or 3 hours.

### 3.1.4 Geology

The proposed project is located within the Peninsular Ranges Geomorphic Province. The Peninsular Ranges contain extensive Cretaceous plutonic rocks intruded into older metamorphic rocks and deep alluvial-filled valleys. Regional geologic maps for the area indicate that the site is underlain by Pleistocene older alluvial fan deposits derived from

---

1 United States Census Bureau. 2010 Population Estimates. http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml. Site accessed January 23, 2012.

2 TerraServer USA. http://terraserver-usa.com. Site accessed March 19, 2009.

the surrounding mountains. Depth to bedrock beneath the site is unknown but is likely deeper than 50 ft below ground surface (bgs).[1]

### 3.1.5 Soils

Soils in the project area consist of Greenfield sandy loam, Hanford coarse sandy loam, and Monserate sandy loam. These soils are typically present on alluvium and have nearly level slopes.[2]

### 3.1.6 Erosion Potential

Hanford coarse sandy loam and Greenfield sandy loam are classified as Hydrologic Soil Group B, and Monserate sandy loam is classified as Hydrologic Soil Group C. Group B soils are moderately well or well drained and have a moderate infiltration rate when thoroughly wet. Group C soils consist of a layer that impedes downward movement of water and have a slow infiltration rate when thoroughly wet. Greenfield sandy loam, Hanford coarse sandy loam, and Monserate sandy loam have moderate erosion potential and are susceptible to sheet and rill erosion.[3]

### 3.1.7 Soil Contamination

As discussed in detail in the *Initial Site Assessment*s prepared for Alternatives 3, 5, and 6 (February 2010) and Alternative 7 (January 2012) and the *Aerially Deposited Lead Investigation Report* (ADL Investigation Report) (May 2010), aerially deposited lead is present in soil in unpaved areas in the project area. Based on the historical agricultural use of the study area, persistent pesticides may remain in soils in the study area. In addition, persistent pesticides and hydrocarbons may remain in soil along and adjacent to the railroad tracks. Soil impacted by petroleum hydrocarbons, halogenated compounds, or other hazardous materials could also be encountered at eight properties identified in the *Initial Site Assessments* as potential sites of concern.

### 3.1.8 Fish Passage

There are no streams or rivers in the project area used for fish passage.

---

1 Kleinfelder. *Revised Preliminary* Geotechnical/Structures Design Report. Interstate 215/Barton Road Interchange Improvement Project. March 2009.

2 United States Department of Agriculture, Natural Resources Conservation Service. Web Soil Survey. http://websoilsurvey.nrcs.usda.gov. Accessed February 20, 2009.

3 Ibid.

## 3.2 Surface Water Resources

### 3.2.1 Regional Hydrology

As shown in Figure 5, the project area is within the Riverside subwatershed (hydrologic sub-area) of the Middle Santa Ana River Watershed (hydrologic area).[1] The Santa Ana River Watershed covers approximately 2,800 square miles, with more than 50 contributing tributaries.[2] The Santa Ana River extends approximately 96 mi from its headwaters to where it drains into the Pacific Ocean. The headwaters for the Santa Ana River and its tributaries are in the San Gabriel and San Bernardino Mountains to the north and the San Gorgonio and San Jacinto Mountains to the east. From the San Bernardino and San Gabriel Mountains, the Santa Ana River flows through the Santa Ana Valley, then through the Prado Basin and a narrow pass in the Santa Ana Mountains. From the Santa Ana Mountains, the Santa Ana River flows southwest to the Pacific Ocean.[3]

## 3.3 Local Hydrology

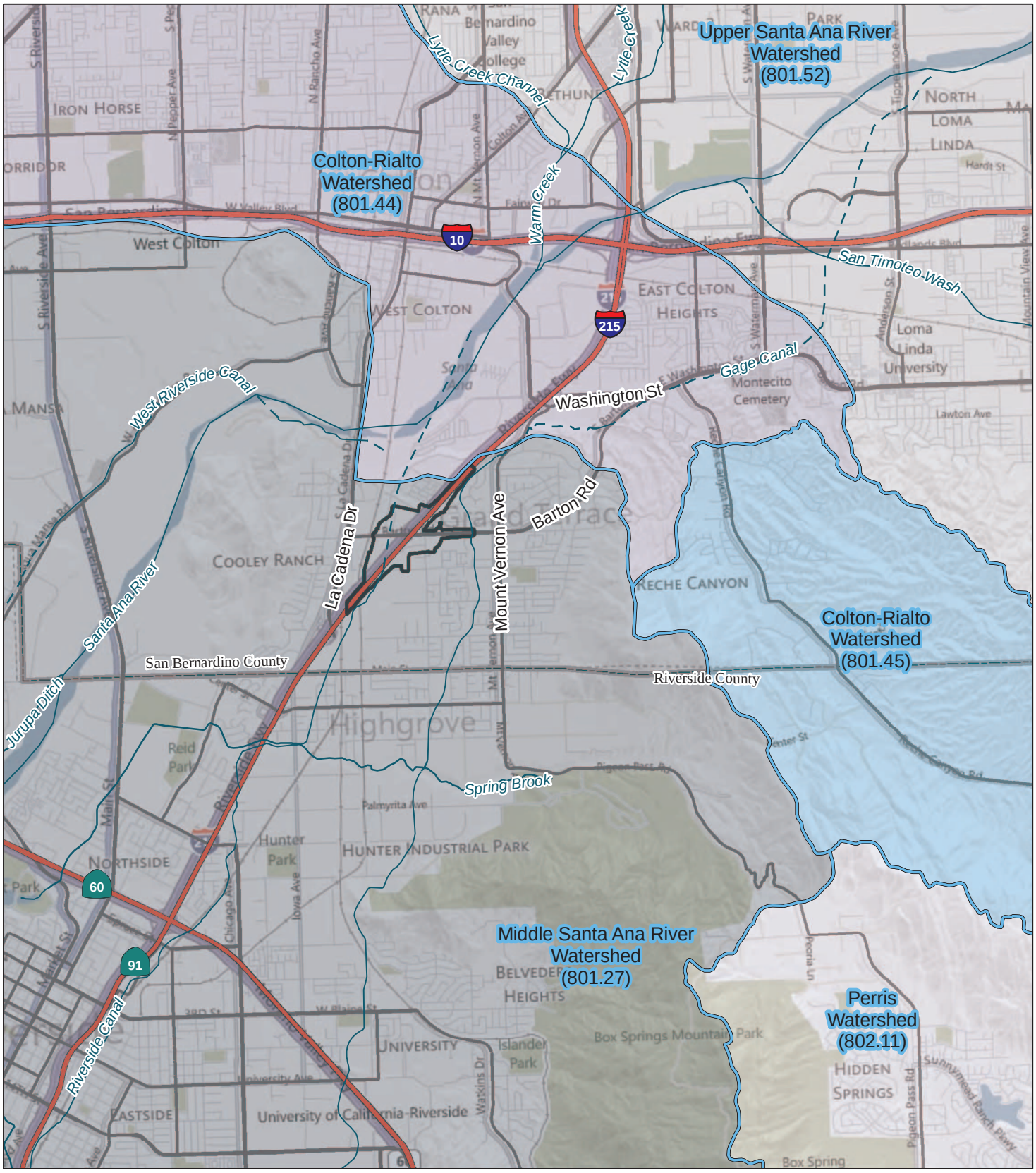
The Santa Ana River, Reach 4 (from Mission Boulevard in Riverside to the San Jacinto Fault in San Bernardino), runs almost parallel to I-215 to the west and northwest. As shown in Figure 6, the project site is approximately 0.75 mi south of the Santa Ana River. The Riverside Canal is in the project area, and crosses Barton Road at Grand Terrace Road. The Gage Channel is east of the project area, and crosses Barton Road halfway between Michigan Avenue and Mount Vernon Avenue. The Highgrove Channel is almost parallel to the Riverside Canal in the southern part of the project area. In addition, there are three small unnamed concrete-lined channels and one earthen unnamed channel in the northern part of the project area.

1 California Watershed Portal. http://cwp.resources.ca.gov/. Accessed May 19, 2008.

2 Santa Ana Watershed Project Authority, http://www.sawpa.org/about/watershed.htm. Accessed March 19, 2009.

3 Southern California Wetlands Recovery Project Information System, http://www.wrpinfo.scc.ca.gov/watersheds/sa/sa_profile.html. Accessed September 27, 2008.

**This page intentionally left blank**




LEGEND

Project Area

Watershed Boundary (with Santa Ana Regional Water Quality Control Board ID)

FIGURE 5

*I-215/Barton Road Interchange Improvement Project*

Watersheds

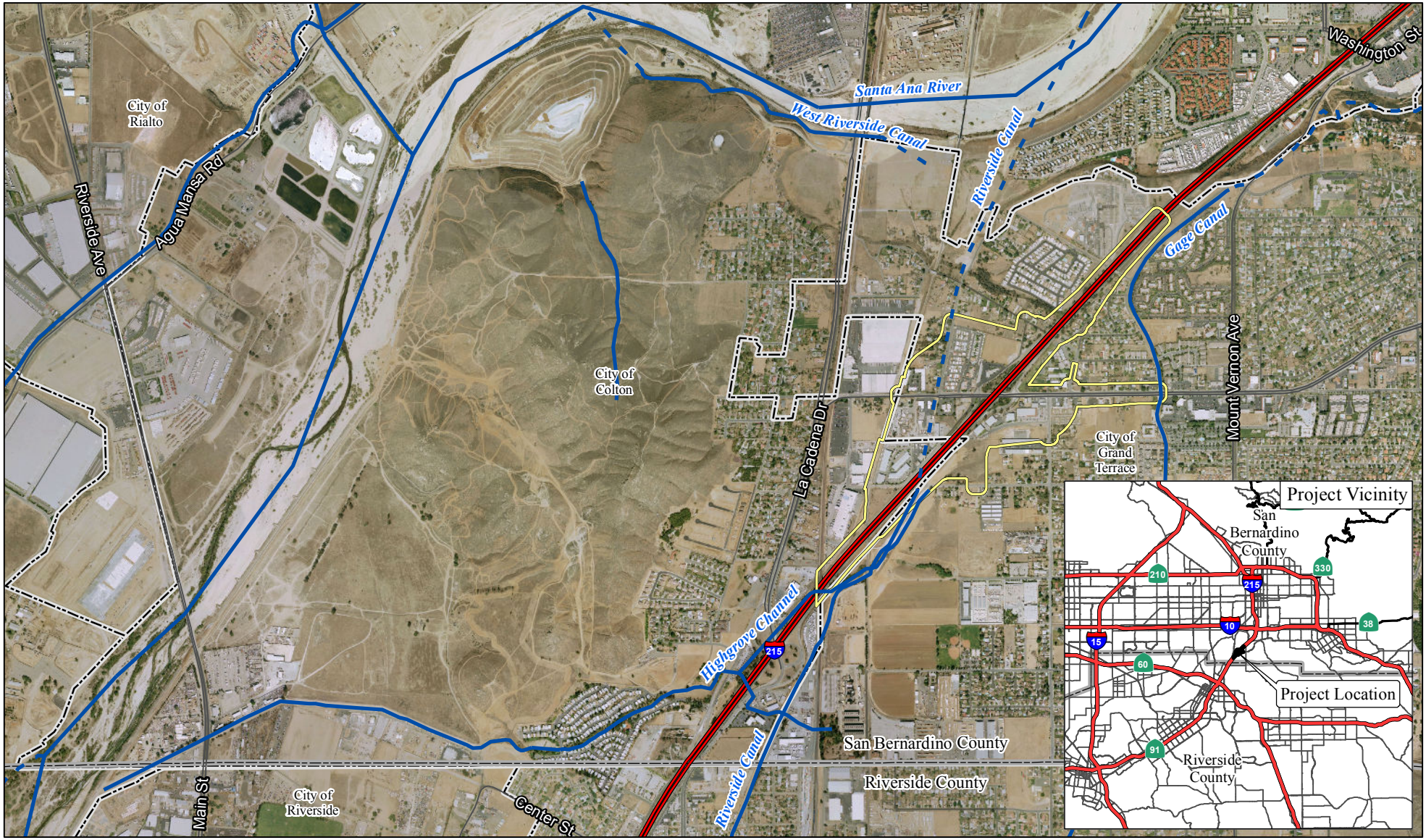
0 0.5 1

MILES

SOURCE: Bing Maps (c. 2008); Thomas Bros (2010); USDA/NRCS (2009); CalWater (v. 2.2.1)

i:\sba330\Barton_I-215\gis\Watersheds.mxd (2/7/2012)

**This page intentionally left blank**




LEGEND

- Project Area
- Surface Waters
- Sub-surface Waters

FIGURE 6

*I-215 Barton Road Interchange Improvement Project*

Surface Waters

N

0 1000 2000

FEET

SOURCE: ESRI (2008); NHD (05/08); AirPhotoUSA (06/07)

I:\SBA330\Barton_I-215\GIS\SurfaceWaters.mxd (6/4/2012)

**This page intentionally left blank**

### 3.3.1 Floodplains

According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Nos. 06071C8687H and 06071C8689H (August 28, 2008), the proposed project is not within a 100-year floodplain. The project area is designated Zone X—areas determined to be outside the 0.2 percent annual chance floodplain. Floodplains in the project vicinity are depicted in Figure 7.

## 3.4 Groundwater Resources

As designated by the Santa Ana Regional Water Quality Control Board (RWQCB) (Region 8), the project area is within the Riverside-F Groundwater Management Zone.[1] Groundwater basins were redesignated as Groundwater Management Zones by the Santa Ana RWQCB in the Water Quality Control Plan (Basin Plan).

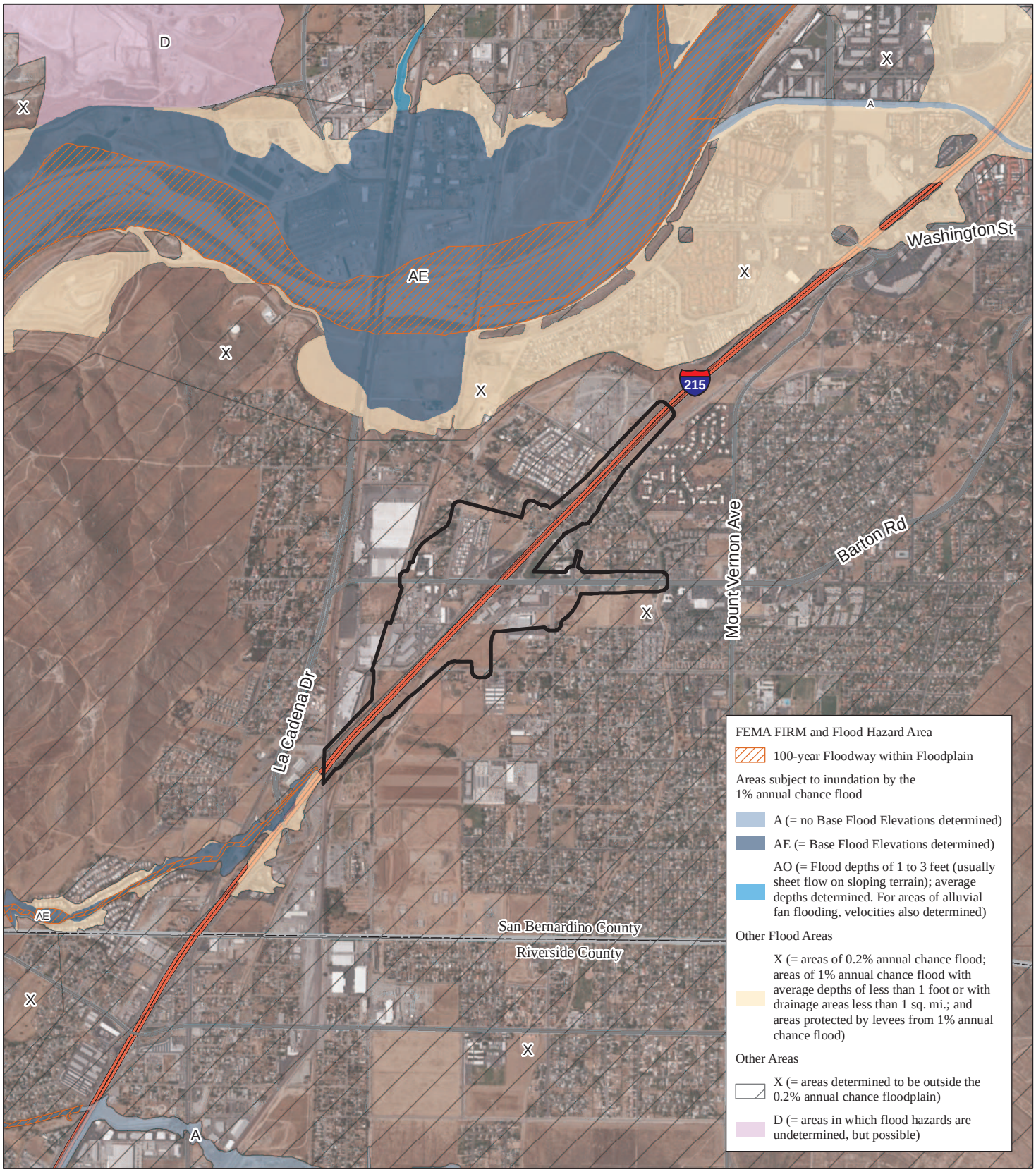
Groundwater in the Riverside-F Groundwater Management Zone is found primarily in alluvial deposits and is replenished by infiltration from Santa Ana River flow, underflow past the Rialto-Colton Fault, intermittent underflow from the Chino Subbasin, return irrigation flow, and deep percolation of precipitation.[2]

---

1 Santa Ana Regional Water Quality Control Board. *Water Quality Control Plan, Santa Ana Region,* 1995 (updated February 2008 and June 2011).

2 California Department of Water Resources. 2004. *California's Groundwater*, *Bulletin 118 Update*.

**This page intentionally left blank**




LEGEND

Project Area

FIGURE 7

N

0 1000 2000

FEET

*I-215/Barton Road*
*Interchange Improvement Project*

Floodplains

SOURCE: Bing Maps (c. 2008); Thomas Bros (2010); FEMA/FIRM (2011)

I:\SBA330\Barton_I-215\GIS\FloodPlains.mxd (1/31/2012)

**This page intentionally left blank**

Depth to groundwater in the project area is anticipated to be greater than 30 ft bgs.[1]

There are no sole source aquifers in the project area.[2] In addition, the proposed project is not located in a "high-risk" area, defined as a location where spills from the State-owned rights-of-way, activities, or facilities can discharge directly to municipal or domestic water supply reservoirs or groundwater percolation facilities.[3]

## 3.5 Beneficial Uses

Beneficial uses of water are defined in the Santa Ana RWQCB's *Basin Plan* as those necessary for the survival or well-being of humans, plants, and wildlife. Examples of beneficial uses include drinking water supplies, swimming, industrial and agricultural water supply, and the support of freshwater and marine habitats and their organisms.

### 3.5.1 Beneficial Uses for Surface Waters

The following beneficial uses are identified in the *Basin Plan* for Reach 4 of the Santa Ana River:

- **GWR:** Groundwater Recharge
- **REC-1:** Body-contact recreation (swimming/wading)
- **REC-2:** Non-body contact recreation (boating/fishing)
- **WARM:** Warm water habitat for fish amenable for reproduction in warm water
- **WILD:** Habitat for wild plants and animals
- **SPWN:** Spawning, reproduction and development habitat for fish and wildlife

### 3.5.2 Beneficial Uses for Groundwater

The following beneficial uses are identified in the *Basin Plan* for the Riverside-F Groundwater Management Zone:

---

1 Kleinfelder. Revised Preliminary Geotechnical/Structures Design Report. Interstate 215/Barton Road Interchange Improvement Project. March 2009.

2 United States Environmental Protection Agency (EPA), Region 9: Water Program, http://www.epa.gov/region09/water/groundwater/ssa.html. Accessed March 19, 2009.

3 Caltrans, Storm Water Management Program, *District 8 Work Plan, Fiscal Year 2010–-2011,* April 1, 2010.

- **GWR:** Groundwater Recharge
- **AGR:** Agricultural Supply
- **IND:** Industrial Service Supply
- **PROC:** Industrial Process Supply

## 3.6 Water Quality Objectives

As required by the Porter-Cologne Act, the Santa Ana RWQCB has developed Water Quality Objectives (WQOs) for waters within its jurisdiction to protect the beneficial uses of those waters and has published them in the *Basin Plan*. The *Basin Plan* also establishes implementation programs to achieve these WQOs and requires monitoring to evaluate the effectiveness of these programs. WQOs must comply with the state antidegradation policy (State Board Resolution No. 68-16), which is designed to maintain high-quality waters while allowing some flexibility if beneficial uses are not unreasonably affected.

### 3.6.1 Surface Water Quality Objectives

Surface WQOs for all inland waters in the region, including Reach 4 of the Santa Ana River, as documented in the *Basin Plan* are listed in Table A.

**Table A Surface Water Quality Objectives for Inland Surface Waters**

| Constituent | Concentration | Receiving Waters |
|---|---|---|
| Algae | Waste discharges shall not contribute to excessive algal growth in inland surface receiving waters. | All inland surface waters |
| Ammonia | Varies based on pH and temperature. Ranges from 0.004 to 0.0224 mg/L un-ionized ammonia and 0.05 to 1.49 mg/L total ammonia. | COLD beneficial use designation |
| | Varies based on pH and temperature. Ranges from 0.0006 to 0.0530 mg/L unionized ammonia and 0.119 to 2.27 mg/L total ammonia. | WARM beneficial use designation |
| Boron | Shall not exceed 0.75 mg/L as a result of controllable water quality factors. | All inland surface waters |
| Chlorine (residual) | Chlorine residual in wastewater discharged to inland surface waters shall not exceed 0.1 mg/L. | All inland surface waters |
| Coliform (fecal) | Logarithm means less than 200 organisms per 100 mL based on five or more samples per 30-day period and not more than 10 percent of the samples exceed 400 organisms per 100 mL for any 30-day period. | REC-1 beneficial use designation |
| | Logarithm means less than 2,000 organisms per 100 mL based on five or more samples per 30-day period and not more than 10 percent of the samples exceed 4,000 organisms per 100 mL for any 30-day period. | REC-2 beneficial use designation |
| Coliform (total) | Not to exceed 100 organisms per 100 mL. | MUN beneficial use designation |

## Table A Surface Water Quality Objectives for Inland Surface Waters

| Constituent | Concentration | Receiving Waters |
|---|---|---|
| Color | Waste discharges shall not result in coloration of the receiving waters that causes a nuisance or adversely affects beneficial uses. The natural color of fish, shellfish or other inland surface water resources used for human consumption shall not be impaired. | All inland surface waters |
| Floatables | Waste discharges shall not contain floating materials, including solids, liquids, foam, or scum, that cause a nuisance or adversely affect beneficial uses. | All inland surface waters |
| Fluoride | Shall not exceed 0.7–1.2 mg/L as a result of controllable water quality factors depending on air temperature (refer to *Basin Plan*). | MUN beneficial use designation |
| Metals | Varies based on hardness. | All inland surface waters |
| Methylene blue-activated substances | Shall not exceed 0.05 mg/L as a result of controllable water quality factors. | MUN beneficial use designation |
| Nitrate | Shall not exceed 45 mg/L as $NO_3$ or 10 mg/L as N. | MUN beneficial use designation |
| Oil and grease | Waste discharges shall not result in deposition of oil, grease, wax, or other materials in concentrations that result in a visible film or in coating objects in the water or that cause a nuisance or adversely affect beneficial uses. | All inland surface waters |
| Oxygen (dissolved) | Shall not be depressed below 5 mg/L a result of controllable water quality factors. | WARM beneficial use designation |
| | Shall not be depressed below 6 mg/L a result of controllable water quality factors. | COLD beneficial use designation |
| | Waste discharges shall not cause the median dissolved oxygen concentration to fall below 85 percent of saturation or the 95th percentile concentration or fall below 75 percent of saturation within a 30-day period. | All inland surface waters |
| pH | Shall not be raised above 8.5 or depressed below 6.5 as a result of controllable water quality factors. | All inland surface waters |
| Radioactivity | Shall not exceed the California Code of Regulations, Title 22, standards of 5 pCi/L for combined radium-226 and radium-228, 15 pCi/L for gross alpha, 20,000 pCi/L for tritium, 8 pCi/L for strontium-90, 50 pCi/L for gross beta, and 20 pCi/L for uranium. | MUN beneficial use designation |
| Solids (suspended and settleable) | Shall not cause nuisance or adversely affect beneficial uses. | All inland surface waters |
| Sulfides | Shall not be increased as a result of controllable water quality factors. | All inland surface waters |
| Surfactants | Waste discharges shall not contain concentrations of surfactants that result in foam in the course of flow or use of the receiving water or that adversely affect aquatic life. | All inland surface waters |
| Taste and odor | Shall not contain taste- or odor-producing substances at concentrations that cause a nuisance or adversely affect beneficial uses. | All inland surface waters |

**Table A Surface Water Quality Objectives for Inland Surface Waters**

| Constituent | Concentration | Receiving Waters |
|---|---|---|
| Temperature | Shall not be raised above 90°F June through October or above 78°F during the rest of the year as a result of controllable water quality factors. | WARM beneficial use designation |
| | Shall not be increased by more than 5°F as a result of controllable water quality factors. | COLD beneficial use designation |
| Toxic substances | Shall not be discharged at levels that will bioaccumulate in aquatic resources to levels that are harmful to human health. Concentrations of toxic pollutants in the water column, sediments, or biota shall not adversely affect beneficial uses. | All inland surface waters |
| Turbidity | Where natural turbidity is between 0 and 50 NTU, increases shall not exceed 20 percent. Where natural turbidity is between 50 and 100 JTU, increases shall not exceed 10 NTU. Where natural turbidity is greater than 100 NTU, increases shall not exceed 10 percent. | All inland surface waters |

Source: *Water Quality Control Plan*, Santa Ana Region, 1995 (updated February 2008 and June 2011).

°F = degrees Fahrenheit
Basin Plan = *Santa Ana Regional Water Quality Control Board Water Quality Control Plan*
COLD = Cold Freshwater Habitat
JTU = Jackson Turbidity Units
mg/L = milligrams per liter
mL = milliliters
MUN = Municipal Supply
N = nitrogen
$NO_3$ = nitrate
NTU = Nephelometric Turbidity Units
pCi/L = picocuries per liter
pH = percentage of hydrogen
REC-1 = Contact Water Recreation
REC-2 = Noncontact Water Recreation
WARM = Warm Freshwater Habitat

The Santa Ana River, Reach 4, has the following site-specific numeric WQOs:

- Chemical oxygen demand: 30 milligrams per liter (mg/L)
- Cadmium: 1.7 micrograms per liter (µg/L)
- Copper: 18.2 µg/L
- Lead: 4.2 µg/L
- Total dissolved solids (TDS): 550 mg/L
- Total inorganic nitrogen: 10 mg/L
- Un-ionized ammonia: 0.098 mg/L

### 3.6.2 Groundwater Quality Objectives

The groundwater quality objectives for Santa Ana Region as designated in the Basin Plan are provided in Table B. The site-specific groundwater quality objectives for the Riverside-F Groundwater Management Zone are:

- TDS: 660 mg/L
- Nitrate as nitrogen: 9.5 mg/L

## 3.7 Water Quality Impairments

### 3.7.1 Existing Water Quality

#### 3.7.1.1 Regional Water Quality

In general, the quality of surface water and groundwater in the Santa Ana River Basin becomes progressively poorer as water moves along hydraulic flow paths. The highest quality water is typically associated with tributaries flowing from the surrounding mountains and groundwater recharged by these streams. Water quality is altered by a number of factors, including consumptive use, importation of water high in dissolved solids, runoff from urban and agricultural areas, and the recycling of water within the Santa Ana River Basin.[1]

#### 3.7.1.2 Surface Water Quality

The most serious regional issue in the Santa Ana River Watershed is degradation of water quality by nitrogen and TDS. Historically, the Santa Ana River and its major tributaries flowed year-round; however, diversion for irrigation has resulted in decreased flow and groundwater recharge. Primary water quality concerns in the Middle Santa Ana River Basin include TDS, total inorganic nitrogen levels, contaminant plumes in groundwater, bacterial quality of surface waters, and impacts from confined animal feeding operations.[2]

---

1 USGS National Water Quality Assessment Program - Santa Ana Basin, http://ca.water.usgs.gov/sana_nawqa/index.html. Accessed March 19, 2009.

2 Santa Ana Regional Water Quality Control Board. *Watershed Management Initiative Chapter*. November 2004.

## Table B: Groundwater Quality Objectives for Groundwater Basins

| Constituent | Concentration | Area |
|---|---|---|
| Arsenic | Shall not exceed 0.05 mg/L as a result of controllable water quality factors. | MUN beneficial use designation |
| Boron | Shall not exceed 0.75 mg/L as a result of controllable water quality factors. | Santa Ana Region |
| Chloride | Shall not exceed 500 mg/L as a result of controllable factors. | MUN beneficial use designation |
| Coliform (total) | Shall not exceed 2.2 organisms/100 mL median over any 7-day period as a result of controllable water quality factors. | MUN beneficial use designation |
| Color | Waste discharges shall not result in coloration of the receiving waters that causes a nuisance or adversely affects beneficial uses. | Santa Ana Region |
| Cyanide | Shall not exceed 0.2 mg/L as a result of controllable water quality factors. | MUN beneficial use designation |
| Fluoride | Shall not exceed 1.0 mg/L as a result of controllable water quality factors. | MUN beneficial use designation |
| Hardness | Shall not be increased as a result of waste discharges to levels that adversely affect beneficial uses. | MUN beneficial use designation |
| Oil and grease | Waste discharges shall not result in deposition of oil, grease, wax, or other materials in concentrations that cause a nuisance or adversely affect beneficial uses. | Santa Ana Region |
| Barium | Shall not exceed 1.0 mg/L as a result of controllable water quality factors. | MUN beneficial use designation |
| Cadmium | Shall not exceed 0.01 mg/L as a result of controllable water quality factors. | MUN beneficial use designation |
| Chromium | Shall not exceed 0.05 mg/L as a result of controllable water quality factors. | MUN beneficial use designation |
| Cobalt | Shall not exceed 0.2 mg/L as a result of controllable water quality factors. | MUN beneficial use designation |
| Copper | Shall not exceed 1.0 mg/L as a result of controllable water quality factors. | MUN beneficial use designation |
| Iron | Shall not exceed 0.3 mg/L as a result of controllable water quality factors. | MUN beneficial use designation |
| Lead | Shall not exceed 0.05 mg/L as a result of controllable water quality factors. | MUN beneficial use designation |
| Manganese | Shall not exceed 0.05 mg/L as a result of controllable water quality factors. | MUN beneficial use designation |
| Mercury | Shall not exceed 0.002 mg/L as a result of controllable water quality factors. | MUN beneficial use designation |
| Selenium | Shall not exceed 0.01 mg/L as a result of controllable water quality factors. | MUN beneficial use designation |
| Silver | Shall not exceed 0.05 mg/L as a result of controllable water quality factors. | MUN beneficial use designation |
| Methylene blue-activated substances | Shall not exceed 0.05 mg/L as a result of controllable water quality factors. | MUN beneficial use designation |
| pH | Shall not be raised above 9 or depressed below 6 as a result of controllable water quality factors. | Santa Ana Region |

**Table B: Groundwater Quality Objectives for Groundwater Basins**

| Constituent | Concentration | Area |
|---|---|---|
| Radioactivity | Shall not exceed the California Code of Regulations, Title 22, standards of 5 pCi/L for combined radium-226 and radium-228, 15 pCi/L for gross alpha, 20,000 pCi/L for tritium, 8 pCi/L for strontium-90, 50 pCi/L for gross beta, and 20 pCi/L for uranium. | MUN beneficial use designation |
| Sodium | Shall not exceed a sodium absorption rate of 9. | AGR beneficial use designation |
| Sulfate | Shall not exceed 500 mg/L as a result of controllable water quality factors. | MUN beneficial use designation |
| Taste and odor | Shall not contain taste- or odor-producing substances in concentrations that adversely affect beneficial uses. | Santa Ana Region |
| Toxic substances | All waters shall be maintained free of substances in concentrations that are toxic or that produce detrimental physiological responses in human, plant, animal, or aquatic life. | Santa Ana Region |

Source: Water Quality Control Plan, Santa Ana Region, 1995 (updated February 2008 and June 2008).
AGR = Agricultural supply
mg/L = milligrams per liter
mL = milliliter
MUN = Municipal supply
pCi/L = picocuries per liter
pH = percentage of hydrogen

The United States Geological Survey (USGS) maintains several gaging stations in the Santa Ana River. However, most of the data collected is associated only with discharge measurements. Water quality measurements for selected constituents for the Santa Ana River are summarized in Table C. These water quality measurements were collected by the USGS at gage 11074000 in the Santa Ana River below Prado Dam, which is the nearest water quality monitoring station to the project area. The data is summarized as averages by water year, which is defined by the USGS as October through September.

#### 3.7.1.3 Ground Water Quality

Groundwater in the basin is predominantly calcium-sodium bicarbonate based. TDS range from 320 to 756 mg/L.[1] According to the *Basin Plan*, the current ambient nitrate level in the Riverside-F Groundwater Management Zone is 9.5 mg/L, which is the same as the WQOs.

[1] California Department of Water Resources. 2004. *California's Groundwater*, *Bulletin 118 Update*.

## Table C Average Santa Ana River Water Quality by Water Year

| Constituent | Units | 1998–1999 | 1999–2000 | 2000–2001 | 2001–2002 | 2002–2003 | 2003–2004 | 2004–2005 | 2005–2006 | 2006–2007 | 2007–2008 | 2008–2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity | mg/L | 187.2 | 177.6 | 191.5 | 202.8 | 177.1 | 186.3 | 193.5 | 199.8 | 205.0 | 180.0 | 200.0 |
| Ammonia | mg/L as N | 0.3 | 0.2 | 0.3 | 0.06 | 0.1 | 0.07 | 0.14 | 0.11 | 0.06 | 0.061 | 0.49 |
| Calcium | mg/L | 71.0 | 65.2 | 70.0 | -- | -- | -- | -- | -- | -- | -- | -- |
| Chloride | mg/L | 91.0 | 93.5 | 100.6 | 107.9 | -- | 97.8 | 95.7 | 108.3 | 117.9 | 106.0 | 119.0 |
| Dissolved Organic Carbon | mg/L | 5.9 | 5.8 | 4.8 | -- | -- | -- | -- | -- | -- | -- | -- |
| Dissolved Oxygen | mg/L | 9.4 | 8.7 | 8.7 | 9.0 | 8.7 | 8.9 | 9.5 | 9.8 | 9.9 | 10.3 | 9.9 |
| Fluoride | mg/L | 0.4 | 0.4 | 0.4 | -- | -- | -- | -- | -- | -- | -- | -- |
| Hardness | mg/L as $CaCO_3$ | 244.7 | 229.3 | 244.5 | -- | -- | -- | -- | -- | -- | -- | -- |
| Iron | µg/L | 15.1 | 16.4 | 15.6 | -- | -- | -- | -- | -- | -- | -- | -- |
| Magnesium | mg/L | 16.6 | 16.1 | 16.9 | -- | -- | -- | -- | -- | -- | -- | -- |
| Manganese | µg/L | 96.7 | 73.0 | 76.2 | -- | -- | -- | -- | -- | -- | -- | -- |
| Nitrate+Nitrite | mg/L as N | 6.5 | 5.0 | 5.0 | 5.3 | 3.6 | 4.3 | 3.9 | 5.1 | 5.4 | 4.4 | 3.9 |
| Nitrite | mg/L as N | 0.09 | 0.08 | 0.11 | 0.07 | 0.09 | 0.13 | 0.07 | 0.06 | 0.05 | 0.05 | 0.06 |
| Ortho-Phosphate | mg/L as P | 0.8 | 0.7 | 0.8 | 0.78 | 0.6 | 0.52 | 0.58 | 0.68 | 0.92 | 1.02 | 0.97 |
| pH | pH units | 8.1 | 8.1 | 8.0 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 | 8.2 | 8.0 | 8.1 |
| Phosphorus | mg/L as P | 1.3 | 1.2 | 1.0 | 0.89 | 0.9 | 0.74 | 0.69 | 0.91 | 1.2 | 1.2 | 1.0 |
| Potassium | mg/L | 10.2 | 9.5 | 10.6 | -- | -- | -- | -- | -- | -- | -- | -- |
| Silica | mg/L | 20.0 | 18.4 | 19.5 | -- | -- | -- | -- | -- | -- | -- | -- |
| Sodium | mg/L | 79.1 | 80.0 | 86.9 | -- | -- | -- | -- | -- | -- | -- | -- |
| Specific Conductance | µs/cm | 932.8 | 896.9 | 911.1 | 943.4 | 817.4 | 884.3 | 855.4 | 921.8 | 1,019.0 | 919.0 | 1,000.0 |
| Sulfate | mg/L | 96.7 | 92.1 | 96.9 | 100.6 | 81.7 | 88.0 | 92.4 | 104.5 | 109.0 | 93.7 | 101.4 |
| Temperature | °C | 17.8 | 18.8 | 18.5 | 18.2 | 18.5 | 18.8 | 18.5 | 18.5 | 19.0 | 18.4 | 19.1 |
| Total Dissolved Solids | mg/L | 541.4 | 506.6 | 541.7 | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Suspended Organic Carbon | mg/L | 2.1 | 1.9 | 3.0 | -- | -- | -- | -- | -- | -- | -- | -- |
| Zinc | µg/L | 20.8 | 41.3 | 16.7 | -- | -- | -- | -- | -- | -- | -- | -- |

Source: USGS. *Water Data Reports*. 1999–2009
$CaCO_3$ = calcium carbonate °C = degrees Celsius µg/L = micrograms per liter mg/L = milligrams per liter N = nitrogen P = phosphorus
pH = percentage of hydrogen Water year = October through September

### 3.7.2 Section 303(d) Listed Waters

The SWRCB approved the 2010 Integrated Report (Clean Water Act Section 303(d) List/305(b) Report on August 4, 2010. On November 12, 2010, the EPA approved the 2010 California 303(d) List of Water Quality Limited Segments. Reach 4 of the Santa Ana River is listed as impaired for pathogens on the 2010 California 303(d) List of Water Quality Limited Segments. The potential source of the pathogen impairment is listed as nonpoint sources. The proposed TMDL completion date is January 1, 2019. However, there are currently no adopted TMDLs for Reach 4 of the Santa Ana River.

A Targeted Design Constituent is a pollutant that has been identified during Caltrans runoff characterization studies to be discharging with a load or concentration that commonly exceeds allowable standards and that is considered treatable by currently available Caltrans-approved Treatment BMPs. Highway facilities do not appear to be a substantial source of pathogens in urban drainage[1] and pathogens are not among the Caltrans' Target Design Constituents.

[1] California Department of Transportation. Management of Pathogens Associated with Storm Drain Discharge, Results of Investigations of the Presence of Human Pathogens in Urban Storm Drains. May 2002.

**This page intentionally left blank**

# Chapter 4 Environmental Consequences

This chapter discusses the potential effects of construction and operation of the proposed project related to water quality, as well as the procedures and practices that will be applied to reduce those effects.

## 4.1 Caltrans Standard Procedures and Practices

While carrying out its mission to plan, develop, maintain, and manage interregional transportation in California, it is Caltrans policy to protect and enhance the environment and quality of life in accordance with the environmental, economic, and social goals of the State. With its statewide Storm Water Management Plan (SWMP), implemented via the Caltrans Storm Water Management Program, Caltrans intends to prevent the adverse effects of storm water runoff from State roads and facilities.

### 4.1.1 Project Planning and Design

Caltrans is required to evaluate and incorporate water quality controls into a project, if feasible, during the PSR, PR, and PS&E phases of project development. Caltrans SWMP provides the framework for management of storm water discharges and water quality controls. Storm water quality controls are either temporary (during construction) or permanent (after construction and part of operation of the project).

The BMPs that must be considered during the planning and design phase include Design Pollution Prevention, Treatment, and Construction Site BMPs. Design Pollution Prevention and Construction Site BMPs must be considered for every project. Treatment BMPs must be considered for all projects that are not considered exempt.[1]

Table D shows examples of the BMP categories and the responsible Caltrans divisions.

Design Pollution Prevention BMPs, which are permanent BMPs to reduce erosion, manage storm water discharges, etc., are listed in Table E. These BMPs are required to be incorporated, as appropriate, into the design of new facilities and reconstruction or expansion of existing facilities.

[1] Caltrans, *Storm Water Quality Handbooks, Project Planning and Design Guide*, July 2010.

Pollutants of concern for highway projects and applicable Caltrans-approved Treatment BMPs (permanent BMPs that physically remove pollutants) are provided in Table F.

## Table D BMP Categories and Responsible Divisions

| BMP | Description | Responsible Division for BMP Implementation |
|---|---|---|
| Design Pollution Prevention | Permanent soil stabilization and concentrated flow controls and slope protection systems. | Division of Design |
| Treatment | Permanent treatment devices and facilities | Divisions of Design, Construction, and Maintenance |
| Construction Site | Temporary soil stabilization and sediment control, nonstorm water management, and waste management | Divisions of Design and Construction |
| Maintenance | Litter pickup, toxics control, street sweeping, etc. | Division of Maintenance |

Source: Caltrans, *Storm Water Quality Handbooks, Project Planning and Design Guide*, July 2010.
BMP = best management practice

## Table E Design Pollution Prevention BMPs

| |
|---|
| **Consideration of Downstream Effects Related to Potentially Increased Flow** |
| Peak flow attenuation basins |
| Reduction of paved surface (i.e., increase pervious area) |
| Soil modification |
| Energy dissipation devices |
| **Preservation of Existing Vegetation**[1] |
| ***Concentrated Flow Conveyance Systems*** |
| Ditches, berms, dikes, and swales |
| Overside drains, downdrains, paved spillways |
| Channel linings |
| Flared culvert end sections |
| Outlet protection/velocity dissipation devices |
| ***Slope/Surface Protection Systems*** |
| Vegetated surfaces |
| Benching/terracing, slope rounding, reduce gradients |
| Hard surfaces |

Source: Caltrans, *Storm Water Quality Handbooks, Project Planning and Design Guide*, July 2010.
BMP = best management practice
[1] For all Caltrans projects, Caltrans will maximize vegetation-covered soil areas of a project.

## Table F Pollutants of Concern and Applicable Treatment BMPs

| | Biofiltration Systems | Infiltration Basin | Detention Devices | Dry Weather Flow Diversions[1] | Gross Solids Removal Devices | Multi-Chambered Treatment Train | Media Filters | Wet Basins | Traction Sand Traps |
|---|---|---|---|---|---|---|---|---|---|
| Total suspended solids | √ | √ | √ | √ | | √ | √ | √ | √ |
| Total dissolved solids | | | | √ | | | | | |
| Nutrients | √[4] | √ | √[4] | √ | | | √[2] | √[3] | |
| Pesticides | | √ | | √ | | | | | |
| Particulate metals | √ | √ | √ | √ | | √ | √ | √ | |
| Dissolved metals | √ | √ | | √ | | √ | √ | | |
| Pathogens | | √ | | √ | | | | √ | |
| Litter | | √ | √ | √ | √ | √ | √ | √ | |
| Biochemical oxygen demand | | √ | | √ | | | | √ | |
| Turbidity | √ | √ | √ | √ | | √ | √ | √ | √ |

Source: Caltrans, *Storm Water Quality Handbooks, Project Planning and Design Guide,* July 2010.

[1] Dry-weather flow diversions address nonstormwater flows only.

[2] Phosphorus and nitrogen for the Austin sand filter; phosphorus only for the Delaware sand filter.

[3] Reductions observed for dry weather flow only.

[4] Soil needs to have adequate infiltration capacity.

BMPs = best management practices

Caltrans lists several Construction Site BMPs, which are temporary pollution prevention activities to be implemented during construction. These BMPs are selected for their applicability to a specific project and are incorporated into the SWPPP. All the Caltrans-approved Construction Site BMPs are provided in Appendix C of the *Storm Water Quality Handbooks, Project Planning and Design Guide* (Caltrans 2010).

### 4.1.2 Project Construction

The Caltrans *Storm Water Quality Handbooks* provide the working details for critical, temporary Construction Site BMPs. The handbooks provide guidelines for the proper design, implementation, and maintenance of construction BMPs. The SWPPP for the proposed project will identify the specific BMPs to be implemented during project construction so as not to cause or contribute to an exceedance of any applicable water quality standard contained in a Statewide Water Quality Control Plan and/or the applicable RWQCB *Basin Plan*. These BMPs will meet the Best Available Technology/Best Control Technology (BAT/BCT) requirement as stipulated in the Caltrans NPDES Permit.

### 4.1.3 Project Operation and Maintenance

The Caltrans NPDES Permit also governs the operation and maintenance of projects once they are completed. The discharges from a facility shall not create a condition of nuisance or adversely affect the beneficial uses of waters of the State. As part of the Caltrans SWMP, BMPs will be implemented to minimize potential storm water pollution from accidental spills, illicit connections, and illegal discharges and dumping during project operation and maintenance. As appropriate, illegal discharges and dumping are reported to local enforcement agencies when discovered.

## 4.2 Impact Assessment Methodology

This WQAR analyzes the differences between the existing condition and the project build condition with respect to water quality impacts. The WQAR takes the following into consideration:

- Pollutant sources (changes in land uses)
- Changes in the amount of impervious areas and the relation to the amount of runoff (increase or decrease)
- Application of BMPs (number of BMPs, new technologies, effectiveness)
- Discharges into impaired waters (listed pursuant to Section 303[d] of the CWA)

## 4.3 Potential Impacts to Water Quality

### 4.3.1 Short-Term Impacts during Construction

#### 4.3.1.1 Alternative 1 (No Build)

Under Alternative 1, no improvements to I-215 and Barton Road, other than routine maintenance, would be made. Therefore, Alternative 1 would result in no short-term water quality impacts from construction-related activities.

#### 4.3.1.2 Alternatives 3, 6, and Modified Alternative 7 (Build Alternatives)

Pollutants of concern during construction of the Build Alternatives include sediments, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals. Each of these pollutants on its own or in combination with other pollutants can have a detrimental effect on surface water or groundwater quality.

During construction activities, excavated soil would be exposed, and there would be an increased potential for soil erosion compared to existing conditions. During construction, the total disturbed area under Build Alternatives 3, 6, and Modified Alternative 7 would be approximately 40.4 ac, 33.6 ac, and 29.5 ac, respectively. Clearing and grubbing activities needed for the Build Alternatives have not been determined. The required clearing and grubbing activities will be determined after the Preferred Alternative has been selected. Build Alternatives 3, 6, and Modified Alternative 7 would require approximately 208,000 cubic yards (cy) 157,000 cy, and 175,000 cy of net soil export, respectively. Construction of the Build Alternatives would not require disturbance of 2:1 slopes or new slopes greater than 2:1.

In addition, chemicals, liquid products, petroleum products (such as paints, solvents, and fuels), and concrete-related waste may be spilled or leaked during construction of the Build Alternatives with the potential to be transported via storm runoff into receiving waters.

Based on the *Aerially Deposited Lead Investigation Report* prepared for the project, soil may be managed as nonhazardous or reused on site without restrictions. Therefore, the potential for aerially deposited lead in soils reused on site to impact storm water during construction is low.

It is not anticipated that groundwater would be encountered during construction. As a result, groundwater dewatering is not anticipated during construction of the Build Alternatives; therefore, groundwater levels and quality are not anticipated to be

affected by the project. In addition, construction activities in water courses would not occur; therefore, water diversion would not be required.

Under Build Alternatives 3, 6, or Modified Alternative 7 facility improvements would occur in the vicinity of the drainages within the project limits. In addition, drainage improvements would be constructed under all Build Alternatives. During construction of these improvements, chemical, liquid products, petroleum products, and concrete-related waste spills would have a higher potential to impact water quality due to the proximity of these surface waters to project construction activities. However, storage and stockpiling of earthwork or construction materials would not occur in the vicinity of drainages or Environmentally Sensitive Areas. In addition, sand blasting operations would not occur over drainages.

It is anticipated that construction vehicles would primarily use paved roads during construction. Therefore, any use of unpaved roads during construction would be minimal.

Under the Construction General Permit, the project would be required to prepare a SWPPP and implement construction BMPs detailed in the SWPPP during construction activities. Construction BMPs would be designed to minimize erosion and prevent spills. The SWPPP would be developed and construction BMPs selected and implemented to target pollutants of concern during construction such that storm water discharges and authorized non-storm water discharges would not cause or contribute to any violations of applicable water quality standards or objectives or adversely impact human health or the environment. In addition, because Construction BMPs would remove pollutants of concern from storm water, runoff during construction would not contain pollutants in quantities that would create a condition of nuisance or adversely affect beneficial uses of waters of the State.

As previously discussed, Reach 4 of the Santa Ana River is listed as impaired for pathogens on the 2010 California 303(d) List of Water Quality Limited Segments. Pathogens are not a pollutant of concern during construction; therefore, construction of the project would not contribute to the existing pathogen impairment. Pollutants of concern during construction include sediment, turbidity, and temperature; however, the downstream receiving waters are not impaired for sediment, turbidity, or temperature. As a result, the construction of the project would not contribute to any existing impairments.

When construction BMPs are properly designed, implemented, and maintained to address pollutants of concern, as described in Measure WQ-1, no adverse water quality impacts would occur during construction of Build Alternatives 3, 6, or Modified Alternative 7.

### 4.3.2 Long-Term Impacts during Operation

#### 4.3.2.1 Alternative 1 (No Build)

Under Alternative 1, there would not be an increase in impervious area or change in land use in the I-215/Barton Road Interchange area. Therefore, Alternative 1 would not result in an increase in long-term pollutant loading. In addition, existing roadway runoff in this area would remain unchanged and untreated.

#### 4.3.2.2 Alternatives 3, 6, and Modified Alternative 7 (Build Alternatives)

Pollutants of concern during operation of a transportation facility include sediments, trash, petroleum products, metals, and chemicals. Build Alternative 3 would result in a permanent decrease in impervious surface area of 5.9 ac, which would result in a decrease in runoff and pollutant loading in the interchange area. The reason for the decrease in impervious area is because Alternative 3 would fully acquire many developed properties, the remainder of which would be converted to undeveloped/ landscaped land. Build Alternatives 6 and 7 would result in a permanent increase of impervious surfaces and a permanent increase in runoff and pollutant loading in the interchange area. Build Alternatives 6 and Modified Alternative 7 would increase the impervious surface area by approximately 3.2 ac and 1.2 ac, respectively, compared to the existing freeway facility. An increase in impervious area would increase the volume of runoff during a storm, which would more effectively transport pollutants to receiving waters. Compared to existing conditions, runoff under Build Alternatives 6 and Modified Alternative 7 would be expected to contain higher concentrations of sediments, trash, petroleum products, metals, and chemicals, which are pollutants associated with road runoff.

Operation of the project is subject to the requirements of the Caltrans NPDES Permit. Caltrans must (1) comply with the requirements of the 1999 Caltrans Statewide NPDES Permit and any subsequent permit, (2) consider approved BMPs to treat the runoff from the project site, and (3) install these BMPs where feasible for Build Alternatives 3, 6, or Modified Alternative 7.

The SWMP allows replacement of a BMP with an alternative practice if it is found through the monitoring program that the BMP is not performing as designed or expected. The Program Evaluation and Reporting sections of the SWMP outline the processes for monitoring, evaluating, selecting, and reporting on BMP effectiveness. Caltrans recognizes the importance of maintenance and monitoring after construction is complete.

Currently, runoff from I-215/Barton Road in the project limits is untreated. Projects that result in a net increase of greater than 1 ac of impervious surface area must implement Treatment BMPs. As described above, Build Alternatives 6 or Modified Alternative 7 would result in a net increase in impervious surface area that exceeds the treatment criteria threshold of 1 ac. Therefore, as part of the proposed project, operational BMPs must be implemented to target constituents of concern in runoff from the project area.

Proposed Treatment BMPs include biofiltration swales (bioswales). Bioswales are vegetated channels that convey storm water and remove pollutants by filtration through grass, sedimentation, adsorption to soil particles, and infiltration through soil. Bioswales are effective at removing debris and solid particles, and some removal of dissolved constituents is also achieved. Potential locations for these facilities include areas adjacent to ramps and the I-215 mainline (refer to Figures 2, 3, and 4). The Treatment BMP design would be finalized during the PS&E stage for the selected Build Alternative.

The Treatment BMPs would target constituents of concern from transportation facilities (sediments, trash, petroleum products, metals, and chemicals). Reach 4 of the Santa Ana River is listed as impaired for pathogens on the 2006 Clean Water Act Section 303(d) List of Water Quality Limited Segments. Highway facilities do not appear to be a substantial source of pathogens in urban drainage, and pathogens are not among the Caltrans' Target Design Constituents. Although the biofiltration swales proposed for Alternatives 3, 6, and Modified Alternative 7 do not specifically target pathogens, they would reduce pathogen levels by collecting pathogens adsorbed onto sediments. Therefore, the proposed project would not be a substantial source of pathogens or contribute to the existing impairment.

Because treatment BMPs would treat pollutants of concern from runoff from the project area, the proposed project would not impact a downstream hydrologic sub-area (the Riverside subwatershed) or cause or contribute to a violation of water

quality standards or objectives. In addition, because the proposed BMPs would remove pollutants of concern from storm water, runoff from the proposed project would not contain pollutants in quantities that would create a condition of nuisance or adversely affect beneficial uses of waters of the State.

As stated previously, the proposed project is not located in a "high-risk" area. Therefore, runoff from the project site would not impact a domestic or municipal drinking water resource, water resource facility, or other "high-risk" area.

Because the design of the Build Alternatives does not include depressed sections that would collect storm or groundwater, operation of the project would not require pumping to drain collected water. As a result, dry weather flows during operation of the proposed project are not anticipated.

Based on the *Aerially Deposited Lead Investigation Report* prepared for the project, soil may be managed as nonhazardous or reused on site without restrictions. Therefore, the potential for aerially deposited lead in soils reused on site to impact storm water is low.

Although on-site soils are moderately erosive, the project area is relatively flat, and the Build Alternatives would not require greater than 2:1 slopes. Therefore, the proposed project is not anticipated to increase water quality impacts related to erosion.

As discussed below in Section 4.3.3, the project would result in impacts to storm water channels and ditches that are considered jurisdictional to CDFW and USACE. As discussed in the Natural Environment Study (Minimal Impacts) (NES[MI]) for the project, there are no wetlands, special aquatic sites, endangered aquatic or wetland dependent species, or other Environmental Sensitive Areas in the project area that would be impacted by the project. In addition, the proposed project would not permanently alter the alignment of a stream or the configuration of a water body.

Multiple existing storm water inlets will be relocated, and additional inlets will be placed where appropriate. Some of the existing drainage structures would be modified to drain to the proposed bioswales prior to discharging to the storm drain system. Drainage design will be refined during final design.

As stated above, the Treatment BMPs would target constituents of concern from transportation facilities (sediments, trash, petroleum products, metals, and chemicals).

Therefore, when BMPs are implemented in accordance with NPDES Permit requirements as stipulated in Measure WQ-2, none of the Build Alternatives would result in adverse impacts to water quality.

### 4.3.3 Impacts to Jurisdictional Waters

Impacts to drainages are detailed in the NES(MI) and JD for the project and summarized below.

As shown in Figure 8, there are two earthen channels and five artificially constructed concrete-lined channels within the study area for jurisdictional impacts. Two concrete-lined channels (Drainages A and B) are located at the southeast part of the Biological Study Area (BSA). Drainage A (Riverside Canal Aqueduct) conveys water for irrigation purposes, and Drainage B (Highgrove Channel) conveys flows from the storm drain system.

Drainage C is a concrete trapezoidal ditch, located east of the northbound exit ramp. Drainage C receives flows from under Barton Road, apparently from the storm drain system, and a small amount of runoff from Barton Road. Drainage C is approximately 250 ft long and conveys flows into another underground storm drain system, which conveys flows into the Santa Ana River.

Two concrete ditches (Drainages D and E) on either side of I-215 convey flows into the earthen channel (Drainage F) described below. The concrete trapezoidal ditch along the northbound I-215 (Drainage E) conveys intermittent flows for approximately 1,700 ft and then directs flows through a culvert under I-215 on a concrete slurry pad within the earthen drainage. The concrete v-ditch along southbound I-215 (Drainage D) conveys ephemeral flows along the top of the slope adjacent to I-215 for approximately 1,300 ft and outlets on the same concrete pad of the earthen drainage.

Drainage F is an earthen channel west of I-215 and originates approximately 1,000 ft south of Newport Avenue and 400 ft north of Vivienda Avenue. The drainage is highly disturbed, with nonnative species. Water from Drainage F is conveyed through the disturbed stand of riparian habitat and down the west side of the mesa land form. Although a connection to the Santa Ana River is not evident from the flow pattern, flows from the project area would eventually reach the Santa Ana River.


LEGEND

- Jurisdictional Study Area
- ACOE/CDFW Jurisdictional Drainages
  - Earthen / Vegetated Channel (Wetland Waters)
  - Earthen / Vegetated Channel (Non-Wetland Waters)
  - Lined Channel (Non-Wetland Waters)
  - Lined Channel (Non-Jurisdictional Waters)
- Sample Plot (with ID)
- ACOE/CDFW Jurisdictional Width
- Riparian habitat (CDFW Jurisdiction)

0 150 300
FEET

SOURCE: Bing Maps (c. 2008)

NOTE: ACOE jurisdictional width is based on Ordinary High Water Mark; CDFW jurisdictional width is based on bank to bank of streambed and includes any associated riparian habitat.

I:\SBA330\Barton_I-215\GIS\JuriDel.mxd (5/23/2013)


FIGURE 8
Sheet 1 of 3

*I-215/Barton Road Interchange Improvement Project*

Potential ACOE/CDFW Jurisdictional Areas

**This page intentionally left blank**


LEGEND

- Jurisdictional Study Area

ACOE/CDFW Jurisdictional Drainages

- Earthen / Vegetated Channel (Wetland Waters)
- Earthen / Vegetated Channel (Non-Wetland Waters)
- Lined Channel (Non-Wetland Waters)
- Lined Channel (Non-Jurisdictional Waters)

- Sample Plot (with ID)
- ACOE/CDFW Jurisdictional Width
- Riparian habitat (CDFW Jurisdiction)

0 150 300
FEET

SOURCE: Bing Maps (c. 2008)

NOTE: ACOE jurisdictional width is based on Ordinary High Water Mark; CDFW jurisdictional width is based on bank to bank of streambed and includes any associated riparian habitat.

I:\SBA330\Barton_I-215\GIS\JuriDel.mxd (5/23/2013)

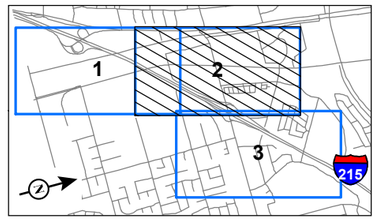
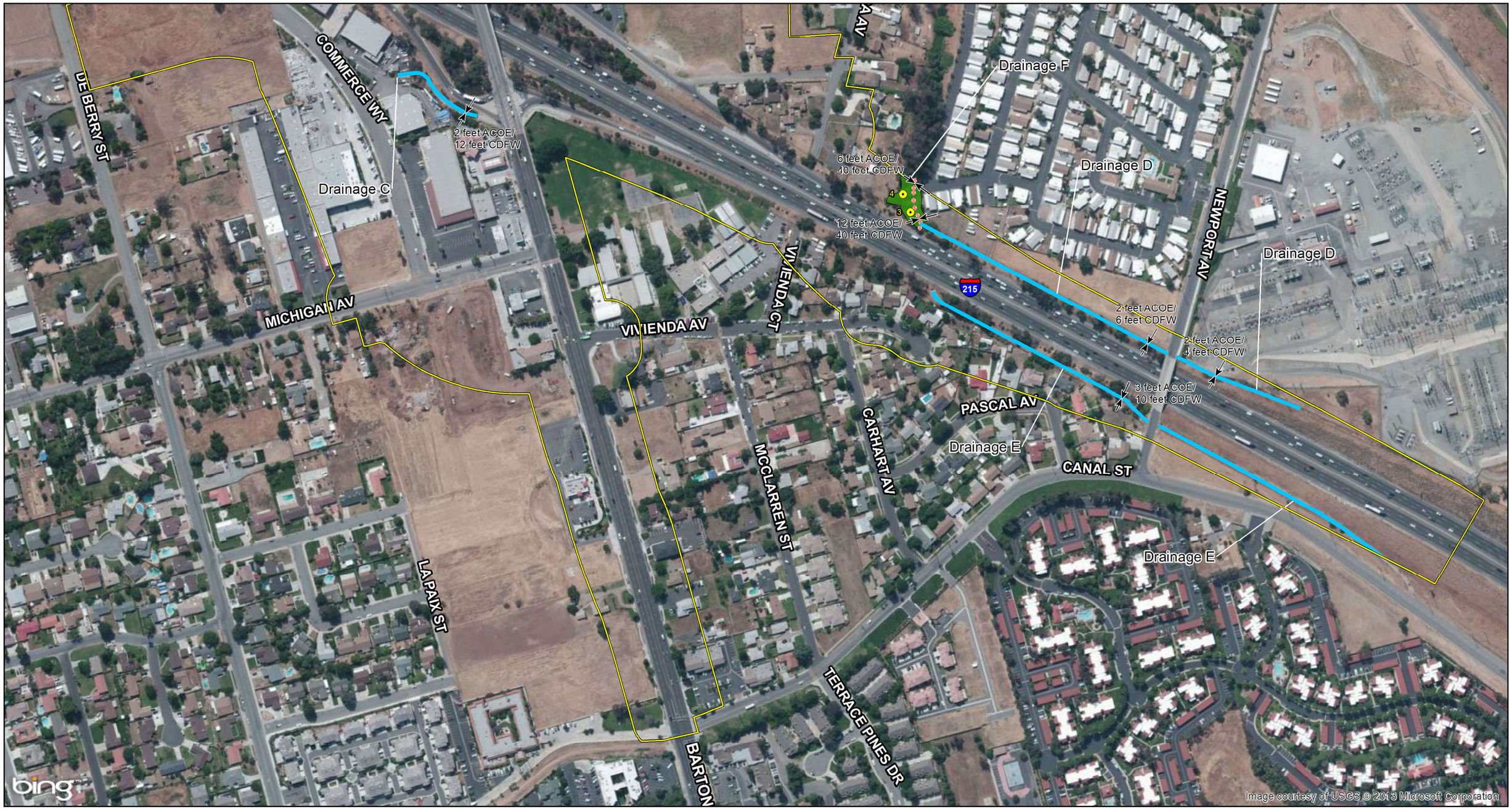



FIGURE 8
Sheet 2 of 3

*I-215/Barton Road Interchange Improvement Project*

Potential ACOE/CDFW Jurisdictional Areas

**This page intentionally left blank**




LEGEND

Jurisdictional Study Area

ACOE/CDFW Jurisdictional Drainages

- Earthen / Vegetated Channel (Wetland Waters)
- Earthen / Vegetated Channel (Non-Wetland Waters)
- Lined Channel (Non-Wetland Waters)
- Lined Channel (Non-Jurisdictional Waters)

- Sample Plot (with ID)
- ACOE/CDFW Jurisdictional Width
- Riparian habitat (CDFW Jurisdiction)

0 150 300
FEET

SOURCE: Bing Maps (c. 2008)

NOTE: ACOE jurisdictional width is based on Ordinary High Water Mark; CDFW jurisdictional width is based on bank to bank of streambed and includes any associated riparian habitat.

I:\SBA330\Barton_I-215\GIS\JuriDel.mxd (5/23/2013)

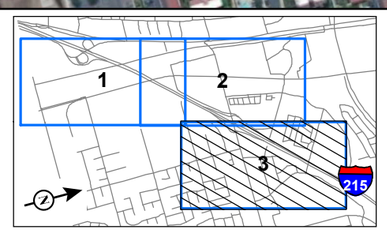



FIGURE 8
Sheet 3 of 3

*I-215/Barton Road Interchange Improvement Project*

Potential ACOE/CDFW Jurisdictional Areas

**This page intentionally left blank**

#### 4.3.3.1 Temporary Impacts

Alternatives 3 and 6 would not result in temporary impacts to potential USACE jurisdiction. Modified 7 would result in <0.01 ac of temporary impacts to potential USACE jurisdiction within Drainage E.

#### 4.3.3.2 Permanents Impacts

Tables G and H summarize permanent impacts to potential USACE and CDFW jurisdiction within the project impact area based on project alternatives. Impacts to potential RWQCB jurisdiction would be the same as impacts to potential USACE jurisdiction. It is anticipated that impacts to jurisdictional waters would require coverage under a USACE Nationwide Permit pursuant to Section 404 of the CWA, a Water Quality Certification or waiver from the Santa Ana RWQCB, and a Streambed Alteration Agreement from CDFW.

**Table G Permanent Impacts to Potential USACE Jurisdictional Areas**

| | Alternative 3 (ac) | Alternative 6 (ac) | Modified Alternative 7 (ac) |
|---|---|---|---|
| **Jurisdictional Wetland Areas** | | | |
| Drainage B (Highgrove Channel) | 0 | 0 | 0 |
| **Jurisdictional Nonwetland Areas** | | | |
| Drainage B | 0 | 0 | 0 |
| Drainage C | 0.01 | 0 | 0.01 |
| Drainage D | 0 | 0 | 0 |
| Drainage E | 0 | 0 | <0.01 |
| Drainage F | 0 | 0 | 0 |
| **Total Impacts to Potential USACE Jurisdiction** | 0.01 | 0 | 0.01 |

Note: Drainage A is nonjurisdictional.
ac = acres
USACE = United States Army Corps of Engineers

**Table H Permanent Impacts to Potential CDFW Jurisdictional Areas**

| | Alternative 3 (ac) | Alternative 6 (ac) | Modified Alternative 7 (ac) |
|---|---|---|---|
| **Jurisdictional Areas** | | | |
| Drainage B | 0 | 0 | 0 |
| Drainage C | 0.08 | 0 | 0.08 |
| Drainage D | 0 | 0 | 0 |
| Drainage E | 0 | 0 | <0.01 |
| Drainage F | 0 | 0 | 0 |
| **Total Impacts to Potential CDFW Jurisdiction** | 0.08 | 0 | 0.08 |

Note: Drainage A is nonjurisdictional.
ac = acres
CDFW = California Department of Fish and Wildlife

### 4.3.4 Cumulative Impacts

The cumulative study area for water quality and storm water runoff is the Riverside subwatershed of the Middle Santa Ana River Watershed because the project site is tributary to this watershed.

The existing trend of urbanization in the Santa Ana River Watershed is projected to continue. Conversion of undeveloped land to transportation, commercial/industrial, retail, and residential uses results in hydromodification and increased loading of pollutants into surface waters and indirectly into groundwater. It also introduces new sources of pollutants associated with the new land uses.

To counteract the impacts associated with increased development, each project proposed in this watershed must undergo review by the applicable Lead Agency for compliance with NPDES permits for construction activities, groundwater dewatering, and project operations, as well as compliance with local urban runoff ordinances. For projects within Caltrans jurisdiction, this includes compliance with the SWMP and any local requirements of the Santa Ana RWQCB. For development projects, this includes compliance with the San Bernardino County Water Quality Management Plan (WQMP), as specified in local ordinances. BMPs must be employed in site design to reduce sources of pollutants as well as to treat storm water runoff.

The purpose of the NPDES permit program and, by extension, the TMDL program, is to restore the beneficial uses of receiving waters. NPDES permits are updated every

5 years by the Santa Ana RWQCB based on the conditions of the watershed. Compliance with the NPDES program is considered sufficient to mitigate impacts to water quality. Because the Build Alternatives involve improvements to an existing freeway facility and include treatment measures that currently do not exist, the project would reduce existing adverse effects on water quality at the interchange and therefore would not contribute to cumulative water quality impacts.

The I-215 Bi-County HOV Lane Gap Closure Project will widen I-215 from south of the I-215/SR-60/SR-91 interchange to north of the I-215/I-10 interchange in order to construct an HOV lane in each direction on I-215. Because the I-215 Bi-County HOV Lane Gap Closure Project overlaps with the I-215/Barton Interchange Improvement Project, design of the two projects are being coordinated. The I-215 Bi-County HOV Lane Gap Closure Project will be completed prior to the I-215/Barton Interchange Improvement Project; however, the construction periods may overlap. The I-215 Bi-County HOV Lane Gap Closure Project will implement construction BMPs as required under the Construction General Permit; and cumulative water quality impacts during construction are not considered substantial.

Similar to the I-215/Barton Interchange Improvement Project, the I-215 Bi-County HOV Lane Gap Closure Project will increase impervious surface area and increase pollutants of concern from transportation facilities in storm water runoff. However, biofiltration swales are also included in the design of the I-215 Bi-County HOV Lane Gap Closure Project to target pollutants of concern from transportation facilities. Therefore, operation of the two projects would not contribute to a cumulative water quality impact.

**This page intentionally left blank**

# Chapter 5 Avoidance, Minimization, and/or Mitigation Measures

The Caltrans SWMP is the guidance for compliance with the NPDES Permit requirements for discharge. As part of the Caltrans Project Delivery Storm Water Management Program described in the SWMP, selected Construction, Design Pollution Prevention, and Treatment BMPs would be incorporated into the final design of the proposed I-215/Barton Road Interchange Project. Compliance with the standard requirements of the SWMP and NPDES permits to address pollutants of concern, listed in Measures WQ-1 and WQ-2, would minimize the potential project-related short- and long-term impacts to water quality.

**WQ-1** The San Bernardino Associated Governments (SANBAG) will comply with the provisions of the *National Pollutant Discharge Elimination System* (NPDES) *General Permit for Storm Water Construction and Land Disturbance Activities* (Order No. 2009-0009-DWQ, NPDES No. CAS000002) and any subsequent permit as they relate to construction activities for the project. This will include submission of the Permit Registration Documents, including a Notice of Intent (NOI), risk assessment, site map, Storm Water Pollution Prevention Plan (SWPPP), annual fee, and signed certification statement to the State Water Resources Control Board (SWRCB) at least 14 days prior to the start of construction. The SWPPP will meet the requirements of the Construction General Permit and will identify potential pollutant sources associated with construction activities; identify non-storm water discharges; develop a water quality monitoring and sampling plan; and identify, implement, and maintain Best Management Practices (BMPs) to reduce or eliminate pollutants associated with the construction site. The BMPs identified in the SWPPP will be implemented during project construction. A Notice of Termination (NOT) will be submitted to the SWRCB upon completion of construction and stabilization of the site.

**WQ-2** The San Bernardino Associated Governments (SANBAG) will comply with the California Department of Transportation (Caltrans) Storm Water Management Plan (SWMP) and Caltrans and City NPDES permit requirements for implementation of Design Pollution

Prevention and Treatment Best Management Practices (BMPs) for the project that address pollutants of concern. This will include coordination with the Santa Ana Regional Water Quality Control Board (RWQCB) with respect to feasibility, maintenance, and monitoring of Treatment BMPs as set forth in Caltrans *Statewide Storm Water Management Plan* (SWMP, May 2003 [revised March 2011, March 2012, and July 2012] or subsequent issuance).

# Chapter 6 References


California Department of Transportation. *Statewide Storm Water Management Plan*. May 2003, revised March 2011, March 2012, and July 2012.

———. *Storm Water Quality Handbooks, Project Planning and Design Guide*. July 2010.

———. Storm Water Management Program. *District 8 Work Plan, Fiscal Year 2010–2011.* April 1, 2010.

———. Management of Pathogens Associated with Storm Drain Discharge, Results of Investigations of the Presence of Human Pathogens in Urban Storm Drains. May 2002.

California Department of Water Resources. 2004. *California's Groundwater*, *Bulletin 118 Update*.

California Regional Water Quality Control Board, Santa Ana Region. *Water Quality Control Plan, Santa Ana River Basin.* 1995. Updated February 2008 and June 2011.

California Watershed Portal. http://cwp.resources.ca.gov/. Accessed May 19, 2008.

Federal Emergency Management Agency. Flood Insurance Rate Map No. 06071C8687H. August 28, 2008.

———. Flood Insurance Rate Map No. 06071C8689H. August 28, 2008.

Kleinfelder. *Initial Site Assessment*. Interstate 215/Barton Road Interchange Improvement Project. February 2010.

Kleinfelder. *Initial Site Assessment (Alternative 7).* Interstate 215/Barton Road Interchange Improvement Project. January 2012.

Kleinfelder. *Revised Preliminary Geotechnical/Structures Design Report*. Interstate 215/Barton Road Interchange Improvement Project. March 2009.

Santa Ana Regional Water Quality Control Board. *Watershed Management Initiative Chapter*. 2004.

———. *General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant (De Minimus) Threat to Water Quality* (Order No. R8-2009-0003, NPDES No. CAG998001). March 2009.

———. *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for the San Bernardino County Flood Control District, the County of San Bernardino, and the Incorporated Cities of San Bernardino County within the Santa Ana Region*, Order No. R8-2010-0036 (NPDES No. CAS618036). January 2010.

Santa Ana Watershed Protection Authority. http://www.sawpa.org/about/watershed.htm. Accessed March 19, 2009.

Southern California Wetlands Recovery Project Information System. Santa Ana River Watershed Profile, http://www.wrpinfo.scc.ca.gov/watersheds/sa/sa_profile.html. Accessed September 27, 2008.

Southern California Association of Governments. 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy Growth Forecast. http://rtpscs.scag.ca.gov/Documents/2012/final/SR/2012fRTP_GrowthForecast.pdf

Stantec. *Aerially Deposited Lead Investigation Report*. Barton Road Interchange with the I-215 Freeway. May 2010.

State Water Resources Control Board. *National Pollutant Discharge Elimination System (NPDES) Permit, Statewide Storm Water Permit and Waste Discharge Requirements (WDRs) for the State of California, Department of Transportation (Caltrans) Properties, Facilities, and Activities* (Order No. 99-06-DWQ, NPDES No. CAS000003). July 1999.

———. *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Order No. 2009-0009-DWQ, NPDES No. CAS000002). September 2, 2009.

———. 2006 Clean Water Act Section 303(d) List of Water Quality Limited Segments.

TerraServer USA. http://terraserver-usa.com. United States Geological Survey Grand Terrace Quad topographic map, July 1, 1980. Site accessed March 17, 2009.

United States Census Bureau. 2010 Population Estimates. http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml. Site accessed January 23, 2012.

United States Department of Agriculture, Natural Resources Conservation Service. Web Soil Survey. http://websoilsurvey.nrcs.usda.gov. Accessed February 20, 2009.

United States Environmental Protection Agency. Region 9: Water Program. http://www.epa.gov/region09/water/groundwater/ssa.html. Accessed March 19, 2009.

United States Geological Survey. *Water Data Reports 1998–2009.*

———. National Water Quality Assessment Program–Santa Ana Basin. http://ca.water.usgs.gov/sana_nawqa/index.html. Accessed March 19, 2009.

**This page intentionally left blank**

# Chapter 7 List of Preparers and Qualifications

**NICOLE J. WEST, CPSWQ, QSP/QSD**

SENIOR ENVIRONMENTAL SPECIALIST

**EXPERTISE**

Surface Water Quality
Storm Water Quality
CEQA/NEPA
Floodplains

**EDUCATION**

University of California, Berkeley, M.S., Civil and Environmental Engineering, December 2003.

University of California, Davis, B.S., with Honors, Evolution and Ecology, June 1998.

**PROFESSIONAL CERTIFICATIONS AND TRAINING**

Certified Professional in Storm Water Quality (CPSWQ)

Engineer-in-Training

40-hour Hazardous Waste Operations and Emergency Response

Hazard Communications 29CFR 1910.1200(h)

**PRINCIPAL PROFESSIONAL RESPONSIBILITIES**

Ms. West assists in the preparation of environmental assessments, with a focus on water quality and floodplains. Ms. West has 11 years' experience in water quality, fisheries, and aquatic weed control. Her water quality experience includes researching related regulations, preparing water quality assessments, watershed sanitary surveys, surface water sampling, quality control/quality assurance plans for sampling projects, and environmental impact assessments, reviewing technical reports, and project management. Ms. West has experience in the preparation of Water Quality Assessment Reports (WQARs) for Caltrans, cities, counties, and private developers, preparation of Environmental Assessments/Environmental Impact Reports (with a focus on water quality, floodplains, hazardous waste, and biological resources),

preparation of Summary of Floodplain Encroachment Reports, and water quality modeling in support of Water Quality Assessment Reports.

**RELEVANT EXPERIENCE**

**Interstate 215 Bi-County High-Occupancy Vehicle (HOV) Lane Gap Closure Project, Riverside and San Bernardino Counties, CA.** Ms. West prepared the Water Quality Assessment Report (WQAR) and Summary Floodplain Encroachment Report (SFER) for the I-215 Bi-County HOV Gap Closure Project. This project proposes to construct an HOV lane in each direction on I-215, beginning south of the I-215/State Route 60 (SR-60)/State Route 91 (SR-91) interchange and ending at the Orange Show Road interchange just north of the I-215/Interstate 10 (I-10) interchange.

**Interstate 10 (I-10)/Tippecanoe Avenue Interchange Improvement Project, San Bernardino County, CA.** Ms. West prepared the WQAR and SFER for this project which proposes reconstructing the I-10/Tippecanoe Avenue interchange in the Cities of San Bernardino and Loma Linda.

**SR-91 Corridor Improvement Project, Orange County and Riverside County, CA.** Ms. West prepared the WQAR and SFER for the SR-91 Corridor Improvement Project (CIP). The SR-91 CIP involves preparation of an EIR/EIS and supporting technical studies for improvement of existing SR-91 (between the SR-91/SR-241 Interchange and Pierce Street) and I-15 (between the I-15/Cajalco Road Interchange and the I-15/Hidden Valley Parkway Interchange).

**State Route 91 (SR-91) Lane Addition Project, State Route 241 (SR-241) to State Route 71 (SR-71), Orange County and Riverside County, CA.** Ms. West prepared the WQAR and SFER for this highway lane addition in two counties.

**Mid County Parkway, Riverside County, CA.** Ms. West is preparing the WQAR and SFER for the new east-west transportation corridor. Issues addressed in the WQAR included potential adverse impacts to local surface and groundwater. As part of the water quality analysis, Ms. West modeled existing and post-project water quality.

**I-15/Base Line, Rancho Cucamonga and Fontana, CA.** Ms. West prepared a WQAR for the Interstate 15/Base Line Road interchange modification project.

**State Route 91 HOV Lanes, Riverside County, CA.** Ms. West prepared the Summary of Floodplain Encroachment for construction of this HOV lane project.

**Caltrans District 12 On-Call, Orange County, CA.** Ms. West is responsible for peer review of the WQARs for all projects pursuant to the on-call contract. She also assists with preparation of the environmental documents, including water quality and floodplain sections.

**PROFESSIONAL AFFILIATIONS**

International Erosion Control Association, 2008–present

Soil Water Conservation Society, 2008–present

California Stormwater Quality Association, 2009–present

**This page intentionally left blank**

P:\SBA330\I-215-Barton\Water Quality\WQAR.Doc