Interstate 10 Corridor Project

SAN BERNARDINO AND LOS ANGELES COUNTIES, CALIFORNIA
DISTRICT 7 – LA – 10 (PM 44.9/48.3)
DISTRICT 8 – SBD – 10 (PM 0.0/R37.0)
EA 0C2500 / PN 0800000040
SCH# 2012101082

Final Environmental Impact Report/ Environmental Impact Statement

Prepared by the
State of California Department of Transportation (Lead Agency)
and San Bernardino County Transportation Authority

The environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

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FINAL ENVIRONMENTAL IMPACT REPORT/ ENVIRONMENTAL IMPACT STATEMENT

Submitted Pursuant to: (State) Division 13, Public Resources Code
(Federal) 42 U.S.C. 4332(2)(C) and 49 U.S.C. 303

THE STATE OF CALIFORNIA
Department of Transportation

COOPERATING AGENCIES
U.S. Army Corps of Engineers
U.S. Environmental Protection Agency

RESPONSIBLE AGENCIES
San Bernardino County Transportation Authority
California Department of Fish and Wildlife
California Regional Water Quality Control Board
California Transportation Commission

5/15/17
Date of Approval

John Bulinski
Director, District 8
California Department of Transportation
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Abstract: The Interstate 10 (I-10) Corridor Project proposes to widen the corridor by extending the existing high-occupancy vehicle (HOV) lane in each direction of I-10 from the current HOV terminus near Haven Avenue in the city of Ontario to Ford Street in the city of Redlands; or providing two Express Lanes in each direction of I-10 from the Los Angeles/San Bernardino (LA/SB) county line to California Street (near State Route [SR] 210) in Redlands and one Express Lane in each direction from California Street to Ford Street in Redlands. The Express Lanes would be priced managed lanes in which vehicles not meeting the minimum occupancy requirement would pay a toll. West of Haven Avenue, a single new lane would be constructed and combined with the existing HOV lane to provide two Express Lanes in each direction; east of Haven Avenue, all Express Lanes would be constructed by the project. Potential benefits include maintaining or improving future traffic operations in the I-10 corridor and improving the efficient movement of people and goods. Effects from the proposed project include potential impacts to community character and cohesion, biological resources, aesthetics, air quality, cultural resources, geology, hazardous waste, noise, land use, hydrology and water quality, transportation/traffic, public services and utilities, and paleontological resources. With consideration of environmental impacts and public input during circulation of the draft environmental document, Caltrans has identified Alternative 3 as the Preferred Alternative.

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Summary

S-1 Joint CEQA/NEPA Document

The proposed project is a joint project by the California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA), and is subject to State and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Caltrans is the lead agency under NEPA. The San Bernardino County Transportation Authority (SBCTA)[1] is the project proponent, and Caltrans is the lead agency under CEQA. In addition, FHWA's responsibility for environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 United States Code (U.S.C.) 327.

Some impacts determined to be significant under CEQA may not lead to a determination of significance under NEPA. One of the most commonly seen joint document types is an Environmental Impact Report/Environmental Impact Statement (EIR/EIS).

After receiving comments from the public and reviewing agencies, this Final EIR/EIS was prepared to address comments received on the Draft EIR/EIS, which was circulated for a 50-day review period from April 25 to June 13, 2016. Appendix O of this Final EIR/EIS provides responses to comments received during the public review period of the Draft EIR/EIS. In addition, minor editorial changes and clarifications have been made in the Final EIR/EIS to address comments from public and reviewing agencies. Throughout this document, a vertical line in the margin indicates a content change or update made since the Draft EIR/EIS.

Based on the comments received on the Draft EIR/EIS and public input, Caltrans has identified Alternative 3 (Express Lanes) as the Preferred Alternative.

After the Final EIR/EIS is circulated, if Caltrans decides to approve the project, a Notice of Determination (NOD) will be published for compliance with CEQA, and a Record of Decision (ROD) will be published for compliance with NEPA.

[1] In January 2017, per Senate Bill 1305 and as approved by the Governor, SBCTA was formed as a unified and comprehensive institution that combines the transportation-related functions and authorities previously exercised by the San Bernardino Associated Governments (SANBAG) joint powers authority by statute. The intent was to vest responsibility and liability for transportation-related functions in San Bernardino County in a single entity to promote administrative efficiency, enhance public transparency, and ensure maximum accountability to the people.

S-2 Purpose and Need

The project purpose is a set of objectives the project is intended to meet. The project need is the range of transportation deficiencies that the project was initiated to address.

Purpose of the Project

The purpose of the Interstate 10 Corridor Project (I-10 CP) is to improve traffic operations on Interstate 10 (I-10) in San Bernardino County to reduce congestion, increase throughput, enhance trip reliability, and accommodate long-term congestion management of the corridor for the planning design year of 2045.

In furtherance of the project's purpose, the objectives of the project are to:

- Reduce volume-to-capacity (v/c) ratios along the corridor;
- Improve travel times within the corridor;
- Relieve congestion and improve traffic flow on the regional transportation system;
- Address increased travel associated with existing and planned development;
- Provide a facility that is compatible with transit and other modal options;
- Provide consistency with the Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP), where feasible and in compliance with federal and State regulations;
- Provide a cost-effective project solution;
- Minimize environmental impacts and right-of-way (ROW) acquisition; and
- Promote sustainable travel and livability for the corridor.

Need for the Project

I-10 is a critical link in the State transportation network and is used by interstate travelers, local commuters, and regional and inter-regional trucks. The efficient movement of people through San Bernardino County is limited by the existing capacity of the transportation networks.

Existing deficiencies of I-10 include:

- General purpose lanes peak-period traffic demand currently exceeds capacity; and
- I-10 high-occupancy vehicle (HOV) lanes operation is degraded during peak periods.

Forecasted deficiencies of I-10 include:

- Local and regional traffic demand is expected to increase due to population growth;
- Increase in delays;
- Increase in accidents;
- Regional/local circulation will worsen as additional traffic avoids congestion on the facility;
- Interchange/junction traffic service will worsen as additional traffic attempts to enter and exit the facility;
- Bus/multimodal travel time will increase due to congestion and become unreliable; and
- I-10 HOV will continue to degrade as speed decreases on the facility due to the increase in traffic volumes.

As described in further detail below, Alternatives 2 and 3 are considered viable project alternatives because they would achieve the project's purpose and need; however, the Transportation System Management (TSM)/Transportation Demand Management (TDM) Alternative and No Build Alternative are not considered viable project alternatives because they fail to meet the project's purpose and need.

S-3 Proposed Action

Caltrans, in cooperation with SBCTA, proposes to improve I-10 by constructing additional lane(s) and other improvements through all or a portion of the 33-mile-long segment of I-10 from the Los Angeles/San Bernardino (LA/SB) county line to Ford Street in San Bernardino County. The project limits, including transition areas, extend from approximately 0.4 mile west of White Avenue in the city of Pomona at LA Post Mile (PM) 44.9 to Live Oak Canyon Road in the city of Yucaipa at SBd PM 37.0. Please refer to Figures 1-1 and 1-2 of this Final EIR/EIS for project location and vicinity maps. The I-10 CP consists of a No Build Alternative (Alternative 1) and two build alternatives (Alternatives 2 and 3). Implementation of the build alternatives associated with the I-10 CP would reduce traffic congestion, increase throughput, and enhance trip reliability for the planning design year of 2045. The project is currently expected to be open to traffic in year 2025.

Alternative 2 – One High-Occupancy Vehicle Lane in Each Direction

Alternative 2 would extend the existing HOV lane in each direction of I-10 from the current HOV terminus near Haven Avenue in Ontario to Ford Street in Redlands, a distance of approximately 25 miles from SBd PM 4.7 to SBd PM 37.0. Preliminary cost estimates for this alternative are $567 million (approximately $659 million in future dollars), including $446 million in construction, $14 million in ROW and utility relocation, and $100 million in support costs.

In addition to the mainline widening, the project includes reconstruction and/or modification of interchange ramps, local arterials, and structures that are necessary to accommodate the proposed freeway widening, including new or reconstruction of retaining walls and soundwalls where appropriate. Existing concrete barriers, temporary railings, metal beam guardrails, and thrie-beam barriers in the median of Alternative 2 improvements extend through 3 system interchanges (I-10/Interstate 15 [I-15] interchange, I-10/Interstate 215 [I-215] interchange, and I-10/State Route [SR] 210 interchange), in addition to 21 local street interchanges from Haven Avenue to Ford Street.

The proposed improvements under Alternative 2 would involve construction work within the following routes and post miles:

- 08-SBd-10 PM 4.7/R37.0
- 08-SBd-15 PM 0.7/4.0
- 08-SBd-38 PM 0.0/0.3
- 08-SBd-210 PM R33.0/R31.5
- 08-SBd-215 PM 2.1/5.7

Alternative 2 Mainline Improvements

- Add one HOV lane in each direction from Haven Avenue to Ford Street.
- Re-establish existing auxiliary lanes along the corridor.
- Construct new westbound (WB) auxiliary lane between Rancho Avenue and La Cadena Drive.

Alternative 2 Connector and Interchange Ramp Improvements

Alternative 2 would require reconstruction of several connector and interchange ramps due to the I-10 widening. Table 2-1 of the EIR/EIS summarizes the proposed connector and interchange ramp improvements along the project corridor.

Alternative 2 Local Street Improvements

Richardson Street, as a local street, and Tennessee Street, as a connector street, are two arterials crossing over I-10 that would need to be replaced with a longer-span structure to accommodate the widened freeway under Alternative 2.

Alternative 2 Structure Improvements

Alternative 2 would necessitate replacement of 3 structures and modification of 44 structures along the corridor.

Alternative 2 Railroad Involvement

Four railroad crossings over or under I-10 require bridgework to construct the proposed freeway widening:

1. Union Pacific Railroad (UPRR) Kaiser Spur Overhead (OH) (widen)
2. Burlington Northern Santa Fe (BNSF) Colton Crossing OH (widen)
3. Pavilion Spur OH (widen or abandon)
4. BNSF West Redlands OH (widen)

Alternative 2 Drainage Improvements

Several drainage structures along the project corridor would be improved as part of the proposed project, including 12 that cross I-10 and 1 that parallels I-10.

Pedestrian and Bicycle Facilities

Existing sidewalks within the project limits would be maintained. Alternative 2 requires reconstruction of Richardson Street and Tennessee Street. The sidewalks on those streets would be replaced in kind. Pedestrian facilities on arterials being improved would meet current Americans with Disabilities Act (ADA) standards.

Existing bike lanes and trails within the project limits would be maintained. In addition, new bike lanes (Class II or III) would be incorporated in the design of the proposed arterial improvements at Tennessee Street.

Transit Operator Planning

Omnitrans express routes would be able to use approximately 24 miles of the HOV lanes on I-10. The I-10 CP would add bus stops at the Sierra Avenue interchange and incorporate associated intersection, pedestrian access, and traffic signal improvements to accommodate the Omnitrans express bus services.

Alternative 3 (Preferred Alternative) – Two Express Lanes in Each Direction

Caltrans identified Alternative 3 as the Preferred Alternative, as discussed in Chapter 2, Project Alternatives.

Alternative 3 would provide two Express Lanes in each direction of I-10 from the LA/SB county line to California Street in Redlands and one Express Lane in each direction from California Street to Ford Street in Redlands, a total of 33 miles. West of Haven Avenue, a single new lane would be constructed and combined with the existing HOV lane to provide two Express Lanes in each direction; between Haven Avenue and California Street, two new Express Lanes would be constructed in each direction by the project, and between California Street and Ford Street, one new Express Lane would be constructed in each direction.

The Express Lanes would be price-managed lanes, otherwise known as high-occupancy Express Lanes, in which vehicles not meeting the minimum occupancy requirement would need to pay a toll. This is done to encourage ride-sharing along the freeway. Preliminary cost estimates for this alternative are $1.7 billion (approximately $1.9 billion in future dollars), including $1.3 billion in construction, $83 million in ROW and utility relocation, and $332 million in support costs. The term Express Lanes refers to managed lanes, which would operate as high-occupancy toll (HOT) lanes, free for motorcycle/bus/emergency vehicles/some HOVs. The lanes would be managed to optimize free-flow conditions, so that a journey through the corridor would be possible as free-flow, even when congestion on I-10 is severe with gridlock. With additional support costs funded by SBCTA, the total programmed cost for the project is $1.9 billion.

Alternative 3 project limits pass through 3 system interchanges (I-10/I-15 interchange, I-10/I-215 interchange, and I-10/SR-210 interchange) and 29 local street interchanges, including 1 interchange (Indian Hill Boulevard) in Los Angeles County. Alternative 3 would require reconstruction of several freeway-to-freeway connectors and interchange ramps to accommodate the I-10 widening.

Alternative 3 (Preferred Alternative) Mainline Improvements

- Add one Express Lane in each direction from the LA/SB county line to Haven Avenue to operate jointly with existing HOV lanes as two Express Lanes in each direction
- Add two Express Lanes in each direction from Haven Avenue to California Street
- Add one Express Lane in each direction from California Street to Ford Street
- Provide 10 at-grade access points, 9 with an additional weave lane and 1 as a weave zone
- Provide California Highway Patrol (CHP) enforcement/observation areas in the median at selected locations along the corridor
- Re-establish existing auxiliary lanes along the corridor

- Construct new eastbound (EB) auxiliary lane between Mountain Avenue and Euclid Avenue
- Construct new WB auxiliary lane for 1,300 feet preceding Mountain Avenue WB off-ramp
- Modify existing WB auxiliary lane at Haven Avenue WB on-ramp to begin at Haven Avenue WB loop on-ramp
- Modify existing EB auxiliary lane at Haven Avenue EB on-ramp to begin at Haven Avenue EB loop on-ramp
- Extend WB auxiliary lane preceding the Riverside Avenue off-ramp to Pepper Avenue
- Construct new WB auxiliary lane between Rancho Avenue and La Cadena Drive

The proposed improvements under Alternative 3 would involve construction work within the following routes and post miles:

- 07-LA-10 PM 44.9/48.3
- 08-SBd-10 PM 0.0/R37.0
- 08-SBd-15 PM 0.7/4.0
- 08-SBd-38 PM 0.0/0.3
- 08-SBd-83 PM 10.7/11.5
- 08-SBd-210 PM R33.0/R31.5
- 08-SBd-215 PM 2.1/5.7

To accommodate two Express Lanes, the project includes reconstruction and/or modification of existing interchange ramps, local arterials, and structures, including new or reconstruction of retaining walls and soundwalls. Existing concrete barrier, temporary railings, metal beam guardrails, and thrie-beam barriers in the median of I-10 would be replaced with Type 60G concrete barriers, and median lighting at intermediate access points would be provided. Existing auxiliary lanes would be re-established in kind and additional ones added where warranted. CHP enforcement areas would be provided on I-10 at selected locations, including on-ramps and medians.

Ingress/Egress Access Points

Proposed entry and exit points for the toll lanes will be provided by 10 at-grade ingress/egress (I/E) access points in each direction along the project corridor, including 9 additional weave lanes.

- Mountain Avenue, Upland

- 6th Street, Ontario
- Haven Avenue, Ontario
- Etiwanda Avenue, Fontana
- Citrus Avenue, Fontana
- Cedar Avenue, Bloomington
- Pepper Avenue, Colton
- Tippecanoe Avenue, San Bernardino
- California Street (transition from 2 to 1 Express Lane)
- Orange Street (weave zone)

Except for the California Street I/E and Orange Street I/E, all other access points are proposed with an additional weave or speed change lane provided between the No. 1 general purpose lane and the No. 2 Express Lane.

At the California Street I/E, a separate I/E is provided in the EB direction. At the egress location, the No. 1 EB Express Lane continues while the No. 2 Express Lane becomes a general purpose lane. A separate ingress opening is provided downstream. In the WB direction, the No. 2 Express Lane is opened up just upstream of the California Street I/E and is anticipated to operate as a weave lane.

The Orange Street I/E is proposed as a weave zone in both directions without a weave lane between the No. 1 general purpose lane and the No. 2 Express Lane. It would operate similarly to existing HOV lane I/E locations. A weave zone is a portion of the freeway where a single lane is used by vehicles slowing down to exit while other vehicles are using the same lane to increase speed while entering the highway.

Alternative 3 (Preferred Alternative) Connector and Interchange Ramp Improvements

Alternative 3 would require reconstruction of several freeway-to-freeway connector ramps and interchange ramps to accommodate the two Express Lanes. Table 2-6 of the EIR/EIS provides a summary of connector and interchange improvements that are required in Alternative 3.

Alternative 3 (Preferred Alternative) Local Street Improvements

Ten arterial streets crossing under or over I-10 would be reconstructed by widening and lengthening to accommodate the I-10 improvements, as listed below:

1. Monte Vista Avenue (Montclair)
2. San Antonio Avenue (Upland)

3. Euclid Avenue (Ontario)
4. Sultana Avenue (Ontario)
5. Campus Avenue (Ontario)
6. 6^{th} Street (Ontario)
7. 4^{th} Street (Ontario)
8. Vineyard Avenue (Ontario)
9. Richardson Street (Loma Linda)
10. Tennessee Street (Redlands)

Several arterials that parallel I-10 would be modified as part of the proposed project improvements:

1. Palo Verde Street between Mills Avenue and Monte Vista Avenue (reduced landscaped parkway along north side)
2. Azure Court near San Antonio Avenue (minor intersection modification)
3. Alvarado Street at Sultana Avenue (minor roadway reconstruction to tie in to the higher profile of Sultana Avenue).
4. Richland Street at Sultana Avenue (minor roadway reconstruction to tie in to the higher profile of Sultana Avenue)
5. 7^{th} Street between Euclid Avenue and the Euclid Avenue WB hook off-ramp (minor roadway modification)
6. Richland Street at Campus Avenue (minor intersection improvements)
7. Hope Avenue at 6^{th} Street (minor roadway reconstruction to tie in to the higher profile of 6^{th} Street)
8. El Dorado Avenue at 4^{th} Street (minor intersection reconstruction)
9. J Street between 3^{rd} Street and Pennsylvania Avenue near Rancho and Colton OH (widening on the north side with new curb, gutter, sidewalk, curb ramps, driveway approaches, and on-street parking; and rehabilitation of existing pavement)

Alternative 3 (Preferred Alternative) Railroad Involvement

Five railroad crossings over or under I-10 would require bridgework to construct the proposed freeway widening:

1. UPRR Kaiser Spur OH (widen)
2. UPRR Slover Mountain UP (replace)
3. BNSF Colton Crossing OH (widen)

4. UPRR Pavillion Spur OH (widen or abandon)
5. BNSF West Redlands OH (widen)

Alternative 3 (Preferred Alternative) Structure Improvements

Alternative 3 would necessitate replacement of 13 structures and modification of 61 structures.

Alternative 3 (Preferred Alternative) Drainage Improvements

Several drainage structures along the project corridor would be improved as part of the proposed project, including 17 that cross I-10 and 2 that parallel I-10.

Transportation System Management/Transportation Demand Management Alternative

A TSM/TDM Alternative was analyzed for the I-10 corridor. This alternative did not meet the project purpose and is further described in Section 2.2.5, Alternatives Considered but Eliminated from Further Discussion. The TSM/TDM Alternative consists primarily of operational investments, policies, and actions aimed at improving traffic flow, promoting travel safety, and increasing transit usage and rideshare participation. Although this alternative would provide minimal enhancement of operations, it would not maximize throughput or provide trip reliability for the corridor.

TSM consists of strategies to maximize efficiency of the existing facility by providing options such as ridesharing, parking, and traffic-signal optimization. TSM options to improve traffic flow typically increase the number of vehicle trips a facility can carry without increasing the number of through lanes. Such strategies include replacing existing stop signs with traffic signals at intersections to improve existing peak-hour traffic flow and to reduce queuing of vehicles. TSM also encourages automobile, public and private transit, ridesharing programs, and bicycle and pedestrian improvements as elements of a unified urban transportation system. Multimodal alternatives integrate multiple forms of transportation modes, such as pedestrian, bicycle, automobile, rail, and transit.

TDM focuses on regional strategies for reducing the number of vehicle trips and vehicle miles traveled (VMT), as well as increasing vehicle occupancy. It facilitates higher vehicle occupancy or reduces traffic congestion by expanding the traveler’s transportation choice in terms of travel experience. Typical activities within this alternative reduce the amount of single-occupancy vehicle trips by providing funds to regional agencies that are actively promoting ridesharing, maintaining rideshare databases, and providing limited rideshare services to employers and individuals. Promoting mass transit and facilitating nonmotorized alternatives are two such examples, but TDM strategies may also include reducing the need for travel altogether through initiatives such as telecommuting.

The TSM/TDM components that have been included in the proposed build alternatives are described in Section 2.2.1.1, Common Design Features of the Build Alternatives.

No Build Alternative

The No Build Alternative would not provide any improvements to the I-10 corridor within the project limits. No additional lanes or interchange improvements would be provided, except by other planned projects identified in the growth/cumulative impacts section of this environmental document. The No Build Alternative configuration is not expected to accommodate future traffic demand, improve speed or travel times, or relieve congestion. Congestion along the corridor would continue and is expected to deteriorate by 2045.

Direct effects of the No Build Alternative would include continued deterioration of VMT, level of service (LOS), and congestion of freeway and local interchange operations. Indirect and cumulative effects of the No Build Alternative are projected to increase effects on the communities related to increased commute times and traffic diversion through adjacent neighborhoods. Additionally, the No Build Alternative could increase the amount of time the corridor cities and users/travelers have to endure construction-related effects, as corridor needs would need to be addressed to accommodate future traffic demand through many smaller projects completed over an extended period of time. Figure 2-5 displays the current I-10 lane configurations associated with the No Build Alternative.

The No Build Alternative is not considered a viable project alternative because it would not achieve the project's purpose. The No Build Alternative would not meet the following aspects of the project's purpose:

- Reduce congestion;
- Increase throughput;
- Enhance trip reliability for the planning design year of 2045; or
- Accommodate long-term congestion management of the corridor.

Construction

Construction of the proposed project is planned to commence in 2019 and is anticipated to be open for use by 2024. For Alternative 2, the project is anticipated to be implemented using the design-bid-build delivery process and constructed over a period of 42 months (3.5 years) under one construction contract. Due to the scale of Alternative 3 and the need to minimize impacts and maintain traffic during construction, the proposed improvements are envisioned to be constructed in two construction stages from west to east with some overlap. Although there is overlap in the construction of two contracts, the overall construction period within the overlap area will be less than 12 months. Alternative 3 is anticipated to utilize a design-build delivery process. Alternative 3 is anticipated to be constructed in two project contracts over a period of 60 months (5 years). Contract 1 covers the proposed improvements from the LA/SB county line to I-15 and is anticipated to be constructed within 36 months (3 years) between 2019 and 2022. Contract 2 covers the improvements from I-15 to Ford Street and is anticipated to be constructed within 36 months (3 years) between 2021 and 2024. Construction would intermittently move along the length of the alignment, and it is not anticipated that construction activity would occur in one location for more than 5 years. Construction activities would not last for more than 5 years at one general location, so construction-related emissions do not need to be included in regional and project-level conformity analysis (40 *Code of Federal Regulations* [CFR] 93.123(c)(5)).

Construction of interchange improvements, consisting of freeway ramp reconstruction, local arterial improvements, and overcrossing structure replacement, is envisioned to be staggered throughout the corridor to minimize impacting two consecutive interchanges or closing two consecutive on- or off-ramps at the same time. If feasible, arterials and overcrossing improvements that would add capacity over the existing condition would be constructed in the earlier stages in an attempt to ease traffic congestion during subsequent construction stages.

It is anticipated that during final design and construction, additional hazardous materials investigations may be required to minimize potential waste releases that could be a detriment to air and water quality, human health, and land use. In addition, site-specific exploratory geotechnical borings may be necessary during final design and construction to understand the underlying geologic formations and soil consistency at planned construction locations.

Construction staging area (CSA) locations will be finalized during the design-build phase, but they are anticipated to generally be located within the existing ROW at interchange locations. The design-build phase of the project involves the transition of the project from concept through design and includes performing topographic, geotechnical, and hydraulic field reconnaissance and analysis.

Additionally, no material borrow sites have been identified for this project. The contractor will be responsible for ensuring that all import material comes from permitted commercial material providers and does not contain hazardous materials, in accordance with 2015 Caltrans Standard Special Specifications 19-7.

Construction operation would necessitate the closures of various facilities, such as the I-10 mainline, branch connectors, interchange ramps, and local arterials. Closures of these facilities may be overnight, short-term, during an extended weekend (i.e., 55-hour window from Friday night to Monday morning), or long-term, as discussed in Section 3.1.4, Community Impacts. Lane reductions and restrictions are also anticipated on mainline, connector, ramp, and arterial roadway facilities to accommodate construction activities. Long-term closure of arterial overcrossings may be employed during construction to expedite construction and shorten the duration that the overcrossing is out of service.

S-4 Project Impacts

Table S-1 summarizes project impacts by alternative and identifies avoidance and minimization measures. Where applicable, these measures are sometimes also mitigation measures, as discussed in Chapter 4 of this Final EIR/EIS. For detailed information regarding the impacts of each alternative, see Chapters 3 and 4 of this Final EIR/EIS and the associated technical studies.

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Table S-1 Project Impact Summary Table

Resource Impacts	Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 – Preferred Alternative (Two Express Lanes in Each Direction)	Avoidance, Minimization and/or Mitigation Measures
Project Cost	Not Applicable.	$567 million (approximately $659 million in future dollars).	$1.7 billion (approximately $1.9 billion in future dollars).	Not applicable.
Construction Duration	Not Applicable.	42 months.	60 months.	Not applicable.
Land Use	Inconsistent with regional and local planning goals and policies.	**Existing and Future Land Use** Permanent conversion, through partial acquisition, of approximately 0.33 acre of land designated as other land uses to transportation. Temporary and intermittent inconvenience for some current land use operations due to temporary traffic lane and ramp closures and temporary construction easements (TCEs) on 122 parcels to accommodate construction of the project. **Consistency with State, Regional, and Local Plans and Programs** Consistent with the goals, objectives, and policies of all surrounding communities' General Plans. Alternative 2 is consistent with the 2012 Regional Transportation Plan (RTP) and 2013 Federal Transportation Improvement Program (FTIP). **Parks and Recreational Facilities** ***Santa Ana River Trail*** Direct Use: None Temporary Use: Yes (temporary overnight closures of the trail would be required to widen the I-10 mainline bridge) Constructive Use: None ***Orange Blossom Trail*** Direct Use: None Temporary Use: Yes (1.12 miles of the trail would be affected by temporary closures and detours, which would be required to widen the I-10 mainline bridge) Constructive Use: None	**Existing and Future Land Use** Permanent conversion, through partial and full acquisition, of approximately 19.05 acres of land designated as other land uses to transportation. Temporary and intermittent inconvenience for some current land use operations due to temporary traffic lane and ramp closures and TCEs on 426 parcels to accommodate construction of the project. **Consistency with State, Regional, and Local Plans and Programs** Consistent with the goals, objectives, and policies of all surrounding communities' General Plans. Alternative 3 is consistent with the 2016 RTP and 2017 FTIP. **Parks and Recreational Facilities** ***MacArthur Park*** Direct Use: Yes (0.14-acre permanent acquisition, 0.04-acre footing easement) Temporary Use: Yes (0.16-acre temporary construction easement [TCE]) Constructive Use: None ***Santa Ana River Trail*** Direct Use: None Temporary Use: Yes (temporary overnight closures of the trail would be required to widen the I-10 mainline bridge) Constructive Use: None ***Orange Blossom Trail*** Direct Use: None Temporary Use: Yes (1.12 miles of the trail would be affected by temporary closures and detours, which would be required to widen the I-10 mainline bridge) Constructive Use: None ***Euclid Avenue/SR-83*** Direct Use: Yes (0.48-acre permanent impact to medians, 470 linear feet of historic cobblestone curb impacts, removal of 9 character defining trees) Temporary Use: Yes (TCEs not required) Constructive Use: None	**LU-1:** SBCTA shall request the County of San Bernardino and the City of Montclair to amend their respective General Plans to reflect the selected build alternative and the modification of land use designations for properties that would be acquired for the project that are not currently designated for transportation uses. **LU-2:** Any landscaping temporarily disturbed or removed during construction will be returned to pre-project or better conditions. **LU-3:** Access and circulation for recreational users will be maintained at impacted locations identified in Section 3.1.1 and the Section 4(f) Technical Study. Detours for any temporary closures of the recreational facilities identified will be implemented. Informational and detour signage will be posted in advance to inform users of any temporary closures and detour routes. **LU-4:** Signs will be installed at the Santa Ana River Trail indicating "construction ahead." Signs shall be posted 100 feet and 50 feet prior to work area and on both sides of the trail as it approaches the underpass. Informational posting regarding where to direct concerns with a phone number, address, and agency will also be posted at both sides of the trail. Temporary United States Fish and Wildlife Service (USFWS)-approved lighting shall be installed to illuminate signage. **LU-5:** Approval from San Bernardino Regional Parks Department will be obtained for any work on the trail that may conflict with primary usage of pedestrian and cyclist transportation 30 days prior to scheduled work. Requests for temporary closures shall be made in writing to San Bernardino Regional Parks. **LU-6:** Final design shall not reduce grade separation over the Santa Ana River Trail. **LU-7:** Eight (8)-foot head clearance for Santa Ana River Trail users will be maintained. Signage shall be posted on the east and west side of the underpass trail alerting users of height clearance. Temporary USFWS-approved lighting shall be installed to illuminate signage. **LU-8:** The trail closures will occur at night after sunset to avoid all impacts to users of the Santa Ana River Trail. Given that the Santa Ana River Trail is only open from sunrise to sunset, work outside of these hours will not require closure or detour of the trail. **LU-9:** Coordination with the City of Montclair will be maintained to provide the compensation required under the Park Preservation Act.

Table S-1 Project Impact Summary Table

Resource Impacts	Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 – Preferred Alternative (Two Express Lanes in Each Direction)	Avoidance, Minimization and/or Mitigation Measures
Growth	The No Build Alternative is not consistent with the regional mobility goals in the study area; however, it is not anticipated to influence growth within the study area.	No impact.	No impact.	No measures required.
Farmlands/ Timberlands	No impact.	No impact.	6 farmland parcels would result in partial acquisition, footing easements, or temporary impacts.	**FARM-1:** Environmentally sensitive area (ESA) fencing will be installed at the limits of construction for all temporarily and permanently impacted farmlands prior to initiating work within or adjacent to these sites. No construction will occur within these ESAs. All construction equipment will be operated in a manner so as to prevent accidental damage to nearby ESAs. No structure of any kind, or incidental storage of equipment or supplies, will be allowed within the ESAs. Silt fence barriers will be installed at the ESA boundaries to prevent accidental deposition of fill material in areas where vegetation is adjacent to planned grading activities. **FARM-2:** All existing citrus trees within the proposed partial acquisition and TCE at Assessor's Parcel Number (APN) 029-206-402 will be protected in place. **FARM-3:** All farmlands temporarily impacted by the project will be restored to pre-project conditions. **FARM-4:** Access to all temporarily and permanently impacted farmlands will be maintained. For permanently impacted farmlands, any relocated access will be developed with Caltrans and SBCTA.
Community Impacts	The quality of accessibility to and mobility within corridor communities within the project area would continue to deteriorate. This would potentially erode community cohesion-related activities over time.	**Community Character and Cohesion** Construction of Alternative 2 would not displace residents or businesses. **Relocations** Under Alternative 2, six partial acquisitions would be required, totaling 0.33 acres. In addition, permanent underground footing easements would be needed at four parcels, totaling 0.14 acre. No residential or nonresidential properties would be displaced. **Environmental Justice** Environmental justice populations exist within the study area, particularly in two census tracts in the cities of Colton, San Bernardino, and Redlands. Both build alternatives would benefit most study area residents, including minority and low-income populations, by improving mobility and circulation throughout the study area. Alternative 2 would not cause disproportionately high and adverse effects on minority or low-income populations within the context and intent of Executive Order (EO) 12898.	**Community Character and Cohesion** Construction of Alternative 3 would displace 40 residential units (104 displacees) and 12 nonresidential properties, and it would result in physical changes that could permanently alter the character of the existing community. **Relocations** Under Alternative 3, 151 partial acquisitions would be required, totaling 8.69 acres. In addition, permanent underground footing easements would be needed at 128 parcels, totaling 4.71 acres. A total of 40 residential units (104 displacees) in the cities of Montclair, Ontario, and Fontana would be acquired to construct Alternative 3, including 21 single-family residences and 19 units in multi-family residences. Based on preliminary engineering, displacement of 12 businesses that are currently used for nonresidential purposes would be required to construct Alternative 3; although, the utility-related structure would be displaced to a different location on its existing parcel. These nonresidential displacements would occur in the cities of Montclair, Fontana, Rialto, and Colton. **Environmental Justice** Environmental justice populations exist within the study area, particularly in seven census tracts in the cities of Upland, Ontario, Redlands, Colton, and San Bernardino. Both build alternatives would benefit most study area residents, including minority and low-income populations, by improving mobility and	**Community Impacts** **COM-1:** No two consecutive/adjacent off-ramps or two consecutive/adjacent on-ramps in the same direction will be closed concurrently. **COM-2:** Business access will be maintained at all times during construction, consistent with Section 7-1.03 Public Convenience of Standard Specifications (2015). **COM-3:** To keep residents, businesses, community services, and service providers within the affected area informed about the proposed project construction schedule and traffic-impacted areas, provide motorist information (i.e., existing changeable message signs [CMSs], portable CMSs, stationary ground-mounted signs, traffic radio announcements, and the Caltrans Highway Information Network [CHIN]). **COM-4:** Traffic circulation construction strategies (i.e., lane closure restrictions during holidays and special local events, closure of secondary streets during construction to allow quick construction and reopening, lane modifications to maintain the number of lanes needed, allowing night work and extended weekend work, maintaining business access, and maintaining pedestrian and bicycle access) will be incorporated into project design in consultation with Caltrans, SBCTA, and affected cities to keep residents, businesses, community services, and service providers within the affected area informed about the proposed project construction schedule and traffic-impacted areas. **COM-5:** Implementation of alternate and detour routes strategies; street/intersection improvements (e.g., widening, pavement rehabilitation, removal of median) to provide added capacity to handle detour traffic; signal improvements; adjustment of signal timing and/or signal coordination to increase vehicle throughput, improve traffic flow and optimize intersection capacity; turn restrictions at intersections and roadways necessary to reduce congestion and improve safety; and parking restrictions on alternate and detour routes during work hours to increase capacity, reduce traffic conflicts, and improve access will be implemented. **COM-6:** Coordination with the relevant parks and recreation departments of affected parks shall occur during construction to ensure the access and safety of users in the parks and trails adjacent to the proposed project. **Utilities** **COM-7:** Close coordination with utility service providers and the implementation of a public outreach program will be conducted to minimize impacts to surrounding communities. A public outreach plan for relocation of utilities will be developed. **Circulation and Access** **COM-8:** A Transportation Management Plan (TMP) will be implemented throughout the duration of the construction activities. The TMP will minimize project-related construction disruptions by including traffic strategies designed in coordination with local jurisdictions. **COM-9:** Close coordination with railroad owners and operators will be conducted during the design-build phase to

Table S-1 Project Impact Summary Table

Resource Impacts	Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 – Preferred Alternative (Two Express Lanes in Each Direction)	Avoidance, Minimization and/or Mitigation Measures
			circulation throughout the study area. Alternative 3 would not cause disproportionately high and adverse effects on minority or low-income populations within the context and intent of EO 12898.	minimize impacts to railroad operations. **COM-10:** Close coordination with affected property owners will be conducted to identify means to avoid and minimize parking impacts, including space management such as restriping of parking areas and identifying parking replacement options. **COM-11:** A robust public outreach program will be maintained to minimize objections to the unavoidable construction impacts. A community information plan will be implemented to maintain good relations with the public by providing timely information about anticipated construction activities to affected citizens and adjacent property owners. Notification methods could include, but are not limited to, website, fliers, mailers, e-mail notifications, and electronic messaging on the freeway. **COM-12:** At identified locations, all pedestrian facilities will be designed to meet or exceed requirements of the Americans with Disabilities Act (ADA) and current safety standards. Access to the pedestrian and bicycle facilities shall be maintained to the extent practicable during the construction period. **COM-13:** Coordination with Metrolink, Foothill Transit, Omnitrans, and other affected transit providers will be conducted to request and comply with applicable procedures for any required temporary bus stop relocations or other disruptions to transit service during construction. **COM-14:** As part of the demand management component, SBCTA will promote the use of public transit, ride sharing, and variable work hours to reduce the amount of traffic using the freeway and roadways in and around the construction zone. Through the public awareness campaign through SBCTA, large employers will be urged to consider staggered working hours and encourage their employees to use the transit system and rideshare resources. As such, during development of the Final TMP during the design-build phase, Caltrans and SBCTA will coordinate with Southern California Regional Rail Authority (SCRRA) to develop public awareness programs and incentive programs to encourage usage of SCRRA resources. **Relocations** **COM-15:** Where acquisition and relocation are unavoidable, the provisions of the Uniform Act and the 1987 Amendments, as implemented by the Uniform Relocation Assistance and Real Property Acquisition Regulations for Federal and Federally Assisted Programs adopted by the United States Department of Transportation (USDOT) (March 2, 1989) and where applicable, the California Public Park Preservation Act of 1971, will be followed. An appraisal of the affected property will be obtained, and an offer for the full appraisal will be made. **Environmental Justice** **COM-16:** A Low-Income Equity Program will be created, which will include policies to enable low-income households to utilize the proposed project improvements, such as waiving account maintenance fees or allowing the use of cash to open and replenish toll accounts and/or implementing video license plate recognition as an alternative to toll-collection technology. Account maintenance fees often apply to toll road or Express Lane transponders that do not incur a minimum amount in tolls in a stated period of time. Waiving these fees would allow low-income and minority communities to utilize the Express Lanes without being required to spend a minimum amount per month. This, in addition to allowing the use of cash to open and replenish toll accounts and/or implementing video license plate recognition, would make the Express Lanes more accessible and equitable for these communities. **COM-17:** To minimize impacts to surrounding low-income or minority communities, continue to conduct outreach activities targeted to low-income residents will continue to be conducted during the design-build process. Community outreach will include providing timely information about anticipated construction activities to affected citizens and adjacent property owners. Notification methods could include, but are not limited to, website, fliers, mailers, e-mail notifications, and electronic messaging on the freeway.
Utilities/ Emergency Services	No impact.	Approximately 69 utilities have the potential to be affected by the proposed improvements.	Approximately 281 utilities have the potential to be affected by the proposed improvements. The Monte Vista Pump House would be removed from its existing location, but it would be relocated on the same parcel.	**UT-1:** Utility relocation plans will be prepared in consultation with the affected utility providers/owners for those utility facilities that will need to be relocated, removed, or protected in-place. If relocation is necessary, the final design will focus on relocating utilities within the State ROW or other existing public ROWs and/or easements. If relocation outside of existing or the additional public ROWs and/or easements required for the project is necessary, the final design will focus on relocating those facilities to minimize environmental impacts as a result of project construction and ongoing maintenance and repair activities. **UT-2:** Protection of Metropolitan Water District (MWD) Upper Feeder Pipeline. To protect the integrity of the MWD pipeline, geotechnical exploration and analysis will be coordinated with Caltrans and SBCTA before the start of

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Resource Impacts	Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 – Preferred Alternative (Two Express Lanes in Each Direction)	Avoidance, Minimization and/or Mitigation Measures
				construction, including: • Stress analysis to determine the increased load imposed on the affected reach of the pipeline. • Settlement/rebound analysis to determine potential settlement and lateral displacement. • Slope stability analysis to determine potential induced instability of the affected reach of the pipeline. **UT-3:** To minimize risk of fire prior to and during any construction activities, Caltrans and SBCTA will require implementation of the following to minimize the risk of fires during construction: • Coordinate with the applicable local fire department to identify and maintain defensible spaces around active construction areas. • Coordinate with the applicable local fire department to identify and maintain firefighting equipment (e.g., extinguishers, shovels, water tankers) in active construction areas. • Post emergency services phone numbers (i.e., fire, emergency medical, police) in visible locations in all active construction areas.
Traffic and Transportation/ Pedestrian and Bicycle Facilities	The quality of accessibility to and mobility within area communities would continue to deteriorate.	Alternative 2 daily vehicle miles traveled (VMT) in the study corridor is forecast to be 8,451,000 in 2025 and 10,013,000 in 2045, compared to 8,195,000 in 2025 and 9,746,000 in 2045 under Alternative 1 (No Build). Operations for general purpose lanes under Alternative 2 in year 2025: • Level of service (LOS) F during both the AM and PM peak hours in both directions between the Los Angeles/San Bernardino (LA/SB) county line and California Street • LOS C in the eastbound (EB) direction during the AM peak hour and LOS C in the westbound (WB) direction during the PM peak hour between California Street and Ford Street Operations for high-occupancy vehicle (HOV) lanes under Alternative 2 in year 2025: • Between the LA/SB county line and Haven Avenue, operations are anticipated to be LOS F in the WB direction during both the AM and PM peak hour, LOS F in the EB direction during the PM peak hour, and LOS C in the EB direction during the AM peak hour • LOS B to F during the AM peak hour in both directions and LOS D to F during the PM peak hour in both directions between Haven Avenue and Ford Street Operations for general purpose lanes under Alternative 2 in year 2045: • LOS F during both the AM and PM peak hours in both directions between the LA/SB county line and California Street	Alternative 3 daily VMT in the study corridor is forecast to be 8,937,000 in 2025 and 10,736,000 in 2045, compared to 8,195,000 in 2025 and 9,746,000 in 2045 under Alternative 1 (No Build). Operations for general purpose lanes under Alternative 3 in year 2025: • LOS F during both the AM and PM peak hours in both directions between the LA/SB county line and California Street in Redlands • LOS C during the AM peak hour in the EB direction and LOS C during the PM peak hour in WB direction between California Street to Ford Street Operations for HOV lanes under Alternative 3 in year 2025: • LOS D or better during both the AM and PM peak hours in both directions between the LA/SB county line and Ford Street Operations for general purpose lanes under Alternative 3 in year 2045: • LOS F during both the AM and PM peak hours in both directions between the LA/SB county line and California Street • LOS D during both the AM and PM peak hours in both directions between California Street to Ford Street Operations for HOV lanes under Alternative 3 in year 2045: • LOS D or better during both the AM and PM peak hours in both directions between the LA/SB county line and Ford Street	**T-1:** A Final TMP will be prepared prior to project construction that identifies methods to avoid and minimize construction-related traffic and circulation effects and minimize impacts to pedestrian and bicycle access, including ADA-compliant features, as a result of the proposed project. During construction, the contractor shall implement the methods identified in the Final TMP. **T-2:** Every effort will be made to incorporate the following TSM and TDM elements: • Improved ramp metering hardware and software and closed-circuit television (CCTV) systems for viewing ramps and nearby arterials • At locations of interchange improvements, upgraded traffic signals interconnected and coordinated with adjacent signals and ramp meters • Additional way-finding signs on freeways and arterials • Design of on- and off-ramps to limit impacts to nonmotorized travel and preserve access to bike lanes and trails • Intelligent Transportation System (ITS) elements, including fiber-optic and other communication systems for improved connectivity and remote management; CMS; CCTV coverage of the entire freeway mainline, ramps, and adjacent arterials; video detection systems; and vehicle detection system (VDS) for volume, speed, and vehicle classification • Traveler Information Management System improvements to enhance dissemination of real-time information on roadway conditions • Vanpool initiatives • Carpooling programs • Promote and integrate public transit design features • CCTV with Pan-Tilt-Zoom (PTZ) capability • Ramp Metering System (RMS) • VDS

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Resource Impacts	Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 – Preferred Alternative (Two Express Lanes in Each Direction)	Avoidance, Minimization and/or Mitigation Measures
		• LOS D during the AM peak hour in the EB direction and LOS C during the PM peak hour in the WB direction between California Street and Ford Street Operations for HOV lanes under Alternative 2 in year 2045: • LOS F during both the AM and PM peak hour in both directions between the LA/SB county line and Haven Avenue • LOS F during both the AM and PM peak hour in both directions between Haven Avenue and Ford Street • LOS D in the EB direction during the AM peak hour between Haven Avenue and Ford Street • LOS E in the WB direction during the PM peak hour between California Street and Ford Street		
Visual/ Aesthetics	No impact.	Differences in visual effects would primarily consist of roadway views pertaining to pavement width and bridge replacements. The project would result in changes to the visual quality and/or character associated with vegetation removal, construction activities, and the introduction of new and modified permanent structures. Removal of the eucalyptus trees and other vegetation within the interchange areas would likely have the greatest impact on the visual quality; however, this effect would remain until trees grow back to existing conditions. Depending on the species selected, the point at which visual maturity is reached will vary between 15 to 25 years. Other elements, such as replacement structures, new retaining walls, and soundwalls, would be a permanent change to the elements within the existing viewsheds along the corridor. The summary below describes the anticipated changes to the visual environment by each project element. **Overcrossings/Bridges:** Construction of Alternative 2 would require the following improvements to overcrossings/bridges: • 3 structure replacements • 44 structure widening/modification **Vegetation:** Removal of approximately 374 eucalyptus trees. **Retaining Walls:** 67,000 linear feet of retaining walls. **Soundwalls:** 17 new soundwalls.	Differences in visual effects would primarily consist of roadway views pertaining to pavement width and bridge replacements. The project would result in changes to the visual quality and/or character associated with vegetation removal, construction activities, and the introduction of new and modified permanent structures. Removal of the eucalyptus trees and other vegetation within the interchange areas would likely have the greatest impact on the visual quality; however, this effect would remain until trees grow back to existing conditions. Depending on the species selected, the point at which visual maturity is reached will vary between 15 to 25 years. Other elements, such as replacement structures, new retaining walls, and soundwalls, would be a permanent change to the elements within the existing viewsheds along the corridor. The summary below describes the anticipated changes to the visual environment by each project element. **Overcrossings/Bridges:** Construction of Alternative 3 would require the following improvements to overcrossings/bridges: • 13 structure replacements • 61 structure widening/modifications **Vegetation:** Removal of approximately 1,148 eucalyptus trees. **Retaining Walls:** 180,000 linear feet of retaining walls. **Soundwalls:** 26 new soundwalls.	**VA-1:** For the corridor aesthetics and landscaping, the Caltrans I-10 Corridor Master Plan (dated November 2011) will be used as the basis for the designs. During the design review and approval process, coordination will continue to occur with all corridor stakeholders for decisions on specific design elements. **VA-2:** Beginning with preliminary design and continuing through the design-build phase, as much existing vegetation in the corridor as feasible will be saved and protected, especially eucalyptus and other skyline trees. It is anticipated that approximately 295 eucalyptus trees will be protected-in-place during construction. Trees to be protected-in-place will be identified in project design plans. **VA-3:** Under SBCTA oversight, exact locations, species, and conditions for all existing trees within the project impact area over 2 caliper inches (as measured 6 inches above grade) and, in particular, the eucalyptus windrows/ colonnades included in the plan set will be surveyed. A Tree Removal and Replacement Plan will be prepared, which will include locations of all species of trees to be removed, diameter of trees at breast height, trees to be protected-in-place, and replacement locations to be reviewed and approved by the Caltrans District Landscape Architect prior to clearing and grubbing. **VA-4:** Preserved trees within the project impact area will be identified, and the drip zone of preserved trees will be protected during construction with temporary fencing. **VA-5:** As determined by SBCTA and Caltrans, large infield areas of existing plantings to be preserved through the construction period with temporary fencing will be identified. **VA-6:** Construction plans will be developed that apply aesthetic treatments, including color, textures, and patterns, to the soundwalls that follow the guidelines in the I-10 Corridor Master Plan. **VA-7:** As part of the project, the existing San Bernardino Gateway soundwall at the county line will be redesigned. **VA-8:** Vine plantings on one or both faces of soundwalls will be included wherever feasible (given Caltrans setback and maintenance requirements). If vines are only planted on one side of the wall, vine portals will be included in the design of the wall to accommodate vine access to both sides of the wall. **VA-9:** Construction plans will be developed that apply aesthetic treatments to the retaining walls that follow the guidelines for color, patterns, and textures, as outlined in the I-10 Corridor Master Plan. **VA-10:** Construction plans will be developed that apply aesthetic treatments, including color, texture, and patterns, to the proposed bridges in the corridor that follow the guidelines in the I-10 Corridor Master Plan. **VA-11:** The Euclid Avenue Bridge over I-10 will be designed to be consistent with the requirements of the local communities, including plantings on the bridge, decorative fencing, and replacement/reconstruction of existing historically contributing elements. **VA-12:** Aesthetic treatment will be included on concrete median barrier, including color, texture, and patterns, that are consistent with the I-10 Corridor Master Plan. **VA-13:** Fencing will be designed to match the ornamental fencing shown in the I-10 Corridor Master Plan for all

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Resource Impacts	Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 – Preferred Alternative (Two Express Lanes in Each Direction)	Avoidance, Minimization and/or Mitigation Measures
				pedestrian fencing on all overcrossings, pedestrian bridges, or other elements associated with pedestrian traffic. **VA-14:** Plans will be developed and implemented to landscape and revegetate disturbed areas to the greatest extent feasible, as directed by the Caltrans District Landscape Architect. Coordination between various construction stages will be facilitated to ensure that planting is not completed until construction in that area is complete and no further disturbance will occur. **VA-15:** Replacement plants will be provided at the rate determined by the Caltrans District Landscape Architect. At a minimum, a tree replacement ratio of 2:1 will be used, unless a higher ratio is required by the District Landscape Architect, to address the large number of removals that have occurred in the corridor. **VA-16:** Skyline trees will be included in the planting palette, where feasible and acceptable to local agencies, to soften the new freeway elements and recreate a sense of the existing tree colonnades. The District Landscape Architect will approve locations of proposed tree plantings during the design-build phase. **VA-17:** Plant material will be comprised of drought-tolerant and native species of trees and shrubs to the extent feasible. The District Landscape Architect will approve the location(s) and amount of plantings. **VA-18:** All replanting will be prioritized within the project ROW. Where insufficient space, locations, or water limits the plantings, then every effort will be made to find other locations in Caltrans ROW at other highways in the area. Consideration will also be given to planting in public space within adjacent communities, beyond the ROW, if other agencies commit to maintenance of these plantings (refer to PDPM 29-17). Final replanting concepts will be concurred by SBCTA with approval of Caltrans. **VA-19:** Trees will be planted to the maximum extent feasible, given space constraints, to provide screening of the facility and structures. **VA-20:** Replanting the corridor will not be delayed and will commence prior to the end of each construction period. **VA-21:** Close coordination with the District Landscape Architect will occur for approval of the number and location for the installation of trees in a variety of sizes from 36-inch box, 24-inch box, and 15-gallon containers, with 24-inch box trees being the dominant size at installation. **VA-22:** Close coordination with the District Landscape Architect and Caltrans Maintenance will occur to develop and implement plans that include Caltrans Maintenance access roads through the landscape so that these elements are integral to the overall design. **VA-23:** With approval of the District Landscape Architect, permanent irrigation system to all plantings will be developed and implemented. All irrigation should follow the latest requirements for design and installation, including any requirements associated with drought, water restrictions, recycled water use, and water conservation as required by Caltrans. **VA-24:** With approval of the District Landscape Architect, reclaimed/recycled water will be used as sources for all irrigation systems, where feasible, including any recycled/reclaimed water supply within 250 feet of the project corridor. **VA-25:** A 3-year plant and irrigation establishment period or equivalent 1-year plant establishment plus 2-year Establish Existing Planting (EEP) period will be included as part of the construction period to provide a single source of maintenance through the establishment period. **VA-26:** With approval of the District Landscape Architect, drainage and water quality elements will be used, where required, that maximize the allowable landscape. **VA-27:** Design plans will be developed and implemented that locate basins so that they are at least 10 feet from the edge of the Caltrans plant setback to allow landscape screening to be installed. **VA-28:** Infiltration/detention basins will be designed so that they appear to be a natural landscape feature, such as a dry streambed or a riparian pool. These elements will be shaped in an informal, curvilinear manner to the greatest extent possible. **VA-29:** Plans will be developed and implemented that incorporate slope rounding, variable gradients, and similar techniques to the surrounding topography of any basin slope to de-emphasize the edge. If a wall or hard feature is necessary, its design must appear integral to the overall design concept. **VA-30:** Plans will be designed and implemented that locate maintenance access drives in unobtrusive areas away from local streets. Such drives must consist of inert materials or herbaceous groundcover that is visually compatible with the surrounding landscape. **VA-31:** Basins will be designed so that chain-link perimeter fencing is not required.

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Resource Impacts	Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 – Preferred Alternative (Two Express Lanes in Each Direction)	Avoidance, Minimization and/or Mitigation Measures
				VA-32: All visible concrete structures and surfaces will be designed to visually blend with the adjacent landscaping and natural plantings. **VA-33:** Rock slope protection will be designed to consist of aesthetically pleasing whole material with a variety of sizes. **VA-34:** Plans will be developed and implemented that limit the use of bioswales within corridor landscape areas. If they must be used, they will be located in nonobtrusive areas, and designed to appear natural to the greatest extent possible. **VA-35:** Side slopes of detention and/or stormwater basins, as well as any bioswales, will be revegetated with container planting. These plants must be integral to the other replacement plantings in the corridor. **VA-36:** To deter graffiti, textures will be included on walls and surfaces and/or anti-graffiti coatings on all walls, barriers, and bridges. Where feasible, include vine plantings will be included on walls to also deter graffiti. **VA-37:** For all new or relocated light fixtures and other sources of glare, shielded fixtures will be provided that prevent light trespass onto adjacent properties. **VA-38:** For portions of the freeway designated as a "Classified Landscaped Freeway" and where landscaping/trees will be removed, every effort will be made to keep this designation by creating areas for replacement landscaping.
Cultural Resources	No impact.	**Permanent** The project avoids all historic and archaeological resources within the project area of potential effects (APE). While there is potential for indirect effects on the Mill Creek Zanja and El Carmelo/The Peppers, the impacts from modifying the existing I-10 corridor are minimal. **Temporary** No impacts.	**Permanent** The project only has the potential to contribute to a permanent effect on Euclid Avenue/State Route (SR) 83, because it is the only property being directly affected for Alternative 3. The proposed project would require modification of the medians, curbs, and/or mature vegetation that are character-defining features of Euclid Avenue/SR-83. In addition, the Euclid Avenue/I-10 Overcrossing (Bridge No. 54 0445) would be replaced. While this bridge is not a character-defining feature of Euclid Avenue/SR-83, care must be given to the design and aesthetics of the replacement structure to ensure that the new structure does not impact the setting of the corridor. However, Alternative 3 would have No Adverse Effect with Non-Standard Conditions on Euclid Avenue/SR-83. **Temporary** The temporary construction improvements with Non-Standard Conditions would not adversely affect a historic property as defined in 36 CFR 800.5(a)(2).	**CUL-1:** If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find. **CUL-2:** If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to California Public Resources Code (PRC) Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC), which will then notify the Most Likely Descendent (MLD). At this time, the person who discovers the remains will contact the Caltrans District 8 Native American Coordinator so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable. **CUL-3:** Design plans will be prepared and implemented for replacement of the Euclid Avenue/I-10 structure so that: • The deck of the replacement structure will be landscaped in a manner consistent with the historic landscape design of Euclid Avenue to the north and the south of this bridge. • The existing median width will be maintained to the extent feasible. • Single or double tree line(s) will be recreated as feasible. • Cobblestone curbs will be recreated on raised median planters. • Raised median walls with shallow-rooted trees depicted in Figure 5 in Appendix G of the Finding of No Adverse Effect (FNAE) will be constructed. • The replacement structure shall be reviewed by the Caltrans Professional Qualified Staff (PQS) Architectural Historian to ensure compliance with Condition 1 during the design-build phase. If the minimum criteria established herein are not met, State Historic Preservation Officer (SHPO) consultation will be required. **CUL-4:** Plans for contributing tree replacement (Euclid Avenue) will be developed and implemented: • All contributing trees required to be removed from the Euclid Avenue parkway and median will be replaced within the parkway or median. Trees to be removed and replaced are depicted in Figure 5 in Appendix G of the FNAE. Any additional contributing trees that are subsequently identified for removal during planning or construction will also be subject to this condition. • Replacement locations of contributing trees will be decided on by the Caltrans PQS Architectural Historian in consultation with the Caltrans Landscape Design, SBCTA, and the appropriate city (Ontario or Upland). • The Euclid Avenue median between 6th Street and the new I-10 bridge structure, where most of the contributing trees are to be removed, will be replanted with a double row of California pepper trees to recreate the historic planting scheme of the median. Where space does not allow for a double row of trees (i.e., areas of reduced median width), a single row of trees will be planted. Decisions regarding the planting of median trees will be overseen by the Caltrans PQS Architectural Historian in consultation with Caltrans Landscape Design, SBCTA, and the appropriate city (Ontario or Upland).

Table S-1 Project Impact Summary Table

Resource Impacts	Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 – Preferred Alternative (Two Express Lanes in Each Direction)	Avoidance, Minimization and/or Mitigation Measures
				• Planting activities shall be spot monitored by the Caltrans PQS architectural historian. **CUL-5:** Final design plans that include replacement of stone curbs (Euclid Avenue) will be developed and implemented: • All sections of contributing cobblestone curbs along Euclid Avenue/SR-83 removed by this undertaking will be replaced in-kind using the Secretary of the Interior's Standards (SOIS) for Rehabilitation based on plans provided and approved by the cities. • Existing concrete median curbs that will be removed and replaced as part of this undertaking between 6th Street and the I-10 Overcrossing (OC) will be replaced/restored with cobblestone curb using the SOIS for Rehabilitation based on plans provided by the cities to recreate a continuous cobblestone curb along the entire section of median affected. • Reconstruction of the stone curbs shall be spot monitored by the Caltrans PQS architectural historian. **CUL-6:** Final design plans for replacement of streetlights (Euclid Avenue) will be developed and implemented: • Historic period streetlights that are removed to enable construction will be replaced in-kind per the SOIS for Rehabilitation. **CUL-7:** Final design plans for signs (Euclid Avenue) will be developed and implemented: • National Register signs will be installed on Euclid Avenue. • The Euclid Avenue Historic District rock monument sign will be installed to match other historic districts. **CUL-8:** Monitoring • A cultural resources monitoring plan will be developed, and it will be approved by the Caltrans PQS Architectural Historian prior to commencement of any construction-related activities at Euclid Avenue. The monitoring plan will, at a minimum, specify timeframes, locations, and durations of monitoring and specify requirements for monitoring logs. • Upon completion of all construction related to the conditions in the FNAE, a Monitoring Report will be prepared to document that all conditions have been met. The monitoring report will be approved by the Caltrans PQS Architectural Historian and submitted to SHPO to document compliance with the FNAE conditions. • Construction plans and activities in the vicinity of the remaining historic properties in the APE (Euclid Avenue/SR-83, the Mill Creek *Zanja*, 1055 E. Highland Avenue, and the Peppers/El Carmelo) will be spot monitored by the Caltrans PQS. **CUL-9:** Plans that designate and enforce ESA (Curtis Homestead) in accordance with the ESA Action Plan will be developed and implemented. • Establishment of the ESA shall be executed by a qualified archaeologist. • Enforcement of the ESA shall be spot monitored by a qualified archaeologist.
Hydrology and Floodplains	No impact.	Alternative 2 would impact several channels and drains and their floodplain at varying degrees; however, the proposed freeway widening would have very small impact on: • Life and property; • Interruption or termination of a transportation facility; or • Natural and beneficial floodplain values. Alternative 2 is anticipated to result in 13 transverse and 5 longitudinal floodplain encroachments. **Potential Floodplain Encroachment:** • California Commerce Center Storm Drain • East Etiwanda Creek • San Sevaine Channel	Alternative 3 would impact several channels and drains and their floodplain at varying degrees; however, the proposed freeway widening would have very small impact on: • Life and property; • Interruption or termination of a transportation facility; or • Natural and beneficial floodplain values. Alternative 3 is anticipated to result in 13 transverse and 5 longitudinal floodplain encroachments. **Potential Floodplain Encroachment:** • West Cucamonga Creek • Cucamonga Creek/Deer Creek • Lower Deer Creek • California Commerce Center Storm Drain • East Etiwanda Creek	**HYD-1:** Positive drainage will be provided during construction, and the project will refrain from filling designated floodplains. **HYD-2:** Recommended BMPs, as identified in the Caltrans Storm Water Quality Handbooks, will be implemented during construction. **HYD-3:** Erosion control and water quality protection will be implemented during in-river construction and post-construction as identified in the Caltrans Storm Water Quality Handbooks. **HYD-4:** Contractor shall develop a contingency plan for unforeseen discovery of underground contaminants in the Stormwater Pollution Prevention Plan (SWPPP). **HYD-5:** Construction activities will be limited between October and May to those actions that can adequately withstand high flows and entrainment of construction materials. The Contractor shall prepare a Rain Event Action Plan (REAP) and discuss high flows mitigation. **HYD-6:** Adequate conveyance capacity at bridge crossings will be provided to ensure no net increase in velocity. A hydraulic analysis will be completed to assess existing and post hydraulic conditions.

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Resource Impacts	Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 – Preferred Alternative (Two Express Lanes in Each Direction)	Avoidance, Minimization and/or Mitigation Measures
		• I-10 Channel • Colton Southwest Storm Drain • 11th Street Storm Drain • Warm Creek • Santa Ana River (SAR) • San Timoteo Creek • Mission Zanja • The Zanja	• San Sevaine Channel • I-10 Channel • Colton Southwest Storm Drain • 11th Street Storm Drain • Warm Creek • SAR • San Timoteo Creek • Mission Zanja • The Zanja	
Water Quality and Stormwater Runoff	Currently, there are no treatment BMPs within the project corridor; this would remain the case.	**Permanent** Alternative 2 would increase the impervious surface area by 51 acres and potentially increase stormwater runoff from construction. **Temporary** During construction, the total disturbed soil area is estimated to be 346 acres for Alternative 2.	**Permanent** Alternative 3 would increase the impervious surface area by 140 acres and potentially increase stormwater runoff from construction. **Temporary** During construction, the total disturbed soil area is estimated to be 661 acres for Alternative 3.	**WQ-1: Implement Storm Water Best Management Practices (BMPs).** The project will comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) Permit for Construction Activities, Order No. 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ, NPDES No. CAS000002, as well as implementation of the BMPs specified in the Caltrans SWMP. **WQ-2: Discharge of Construction Water.** If dewatering is expected, the Contractor shall fully conform to the requirements specified in the Los Angeles Regional Water Quality Control Board (RWQCB) Order R4-2013-0095 (NPDES No. CAG994004) (if dewatering occurs in Los Angeles) or the Santa Ana RWQCB's dewatering permit Order R8-2005-0041 (NPDES No. CAG998001). **WQ-3: Implement Treatment BMPs.** The project will conform to the requirements of the Caltrans Statewide NPDES Storm Water Permit, Order No. 2012-0011-DWQ, NPDES No. CAS000003, adopted by the State Water Resources Control Board (SWRCB) on September 19, 2012, and any subsequent permit in effect at the time of project operation. **WQ-4: Comply with Local Jurisdiction Requirements.** The project will comply with Los Angeles County and San Bernardino County conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution associated with street and road construction, as appropriate. These conditions and approvals are referenced in the Waste Discharge Requirements (WDRs) associated with the Municipal Separate Storm Sewer System (MS4) permits per Order No. R4-2012-0175 for the coastal watersheds of Los Angeles County (NPDES Permit No. CAS004001) and Order No. R8-2010-0036 (NPDES No. CAS618036) for the County of San Bernardino and the incorporated cities of the County of San Bernardino. **WQ-5: Implement Erosion Control Plan.** Slopes steeper than 4:1 require an Erosion Control Plan that will need to be approved by the Caltrans District Landscape Architect.
Geology/Soils/ Seismic/ Topography	No impact.	**Liquefaction** The area close to the SAR has a shallow groundwater table. Several structures are located in the shallow groundwater area, including Mt. Vernon Avenue OC, Warm Creek Bridge, Santa Ana River Bridge, I-10/ I-215 Interchange, Waterman Avenue Undercrossing (UC), and San Timoteo Creek Bridge. Liquefaction potential at these bridge sites is expected to range from medium to high, and seismically induced settlement could be up to 3 inches. The liquefaction potential and resulting seismically induced settlement should be confirmed during the design-build phase using site-specific subsurface data. Areas with a potential for high liquefaction during a seismic event would be designed to meet current design standards for both Caltrans and the cities adjacent to the project corridor to minimize liquefaction hazards. The current risks associated with	**Liquefaction** The area close to the SAR has a shallow groundwater table. Several structures are located in the shallow groundwater area, including Mt. Vernon Avenue OC, Warm Creek Bridge, Santa Ana River Bridge, I-10/ I-215 Interchange, Waterman Avenue UC, and San Timoteo Creek Bridge. Liquefaction potential at these bridge sites is expected to range from medium to high, and seismically induced settlement could be up to 3 inches. The liquefaction potential and resulting seismically induced settlement should be confirmed during the design-build phase using site-specific subsurface data. Areas with a potential for high liquefaction during a seismic event would be designed to meet current design standards for both Caltrans and the cities adjacent to the project corridor to minimize liquefaction hazards. The current risks associated with liquefaction at the interchange area would remain the same as	**GEO-1:** In accordance with standard Caltrans requirements, detailed geotechnical studies shall be conducted during the design-build phase. If results of these studies find high potential for seismic slope instability or lateral spreading, additional measures will be incorporated for new structures associated with the project, including bridges, embankments, and retaining walls. Resulting recommendations from the detailed studies shall be incorporated into the project plans during the PS&E phase to address seismic safety, liquefaction, and load-bearing concerns present in the project area. **GEO-2:** Selection of earth-retaining system types will be based on consideration of foundation bearing capacity, anticipated settlement and ability of the system to tolerate settlements, overall slope stability, constructability, and cost. **GEO-3:** Corrosion mitigation for steel and concrete structures will generally follow Caltrans Corrosion Guidelines (2003 or latest). The latest Caltrans Highway Design Manual (HDM) (Section 855) provides corrosion requirements for roadway structures (e.g., culverts, signs) for a 50-year design life. **GEO-4:** A Materials Report will be developed in the early stage of the design-build phase. The report shall include the results of field tests and sampling for corrosion for use in recommending culvert materials and concrete mix designs. Sampling and testing shall be performed in accordance with Caltrans Corrosion Guidelines (2003 or latest). **GEO-5:** If corrosive soils are found near foundations of bridges and walls, reinforced concrete (including piles) will include corrosion mitigation in accordance with Bridge Design Specifications, Article 8.22; when steel piles are specified, sacrificial corrosion allowance is required per Caltrans Corrosion Guidelines. **GEO-6:** Earthwork shall be conducted in accordance with Sections 6 and 19 of the latest Caltrans Standard Specifications: • Consideration of existing utilities in the area must be incorporated into project plans.

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Resource Impacts	Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 – Preferred Alternative (Two Express Lanes in Each Direction)	Avoidance, Minimization and/or Mitigation Measures
		liquefaction at the interchange area would remain the same as existing conditions if any of the proposed build alternatives were constructed; therefore, the proposed build alternatives would not have the potential to introduce new liquefaction-related hazards. **Seismicity** Although the proposed project site is located in seismically active southern California, it is within an existing transportation corridor. The project would be designed to meet current corridor cities' and Caltrans' design standards to minimize geologic and seismic hazards. No structures would be constructed that would increase the current risk of loss, injury, or death as a result of ground shaking or other seismically induced effects. The proposed project would not increase the risk of exposing people or structures to potential substantial adverse effects because of seismic activities or seismic-related ground failure beyond the existing level already present with the current freeway configuration. **Embankment Settlement** The project involves constructing new earthen embankments for median lanes and widening existing embankments to create new alignments and configurations. The proposed embankments are anticipated to be up to approximately 30 feet high. Because the subsurface soils are predominantly granular, the soils are not expected to undergo large consolidation settlement (i.e., settlement over long periods of time); however, the soils can undergo "immediate" elastic settlement, which usually occurs during earthwork activities and shortly thereafter. **Earth Retaining Structures** Cantilevered retaining walls are proposed at various locations throughout the project, including along the on- and off-ramps. Retaining walls are proposed to be standard Caltrans retaining walls; however, other types will be investigated during the design-build phase. Based on the subsurface information shown on the available as-built Log of Test Boring (LOTB) sheets, spread footings are suitable for supporting standard Caltrans retaining walls with heights equal to or less than 20 feet. Pile foundation might be required to support taller retaining walls. Some amount of remedial earthwork below the proposed	existing conditions if any of the proposed build alternatives were constructed; therefore, the proposed build alternatives would not have the potential to introduce new liquefaction-related hazards. **Seismicity** Although the proposed project site is located in seismically active southern California, it is within an existing transportation corridor. The project would be designed to meet current corridor cities' and Caltrans' design standards to minimize geologic and seismic hazards. No structures would be constructed that would increase the current risk of loss, injury, or death as a result of ground shaking or other seismically induced effects. The proposed project would not increase the risk of exposing people or structures to potential substantial adverse effects because of seismic activities or seismic-related ground failure beyond the existing level already present with the current freeway configuration. **Embankment Settlement** The project involves constructing new earthen embankments for median lanes and widening existing embankments to create new alignments and configurations. The proposed embankments are anticipated to be up to approximately 30 feet high. Because the subsurface soils are predominantly granular, the soils are not expected to undergo large consolidation settlement (i.e., settlement over long periods of time); however, the soils can undergo "immediate" elastic settlement, which usually occurs during earthwork activities and shortly thereafter. **Earth Retaining Structures** Cantilevered retaining walls are proposed at various locations throughout the project, including along the on- and off-ramps. Retaining walls are proposed to be standard Caltrans retaining walls; however, other types will be investigated during the design-build phase. Based on the subsurface information shown on the available as-built LOTB sheets, spread footings are suitable for supporting standard Caltrans retaining walls with heights equal to or less than 20 feet. Pile foundation might be required to support taller retaining walls. Some amount of remedial earthwork below the proposed spreading footings to remove loose near-surface soils should be anticipated; remedial overexcavations will	• In areas where compacted fill will be placed, removal of compressible surficial materials, including topsoil, loose or soft alluvium or fill soil, dry or saturated soil, and unsuitable fill, is required prior to fill placement. • A minimum overexcavation of 2 feet is recommended within areas to receive fill; the overexcavation shall extend horizontally a minimum distance of 2 feet from edges of new fills or structures. • Fill placed on sloping ground shall be properly keyed and benched into existing ground and placed as specified in Section 19-6 of the Caltrans Standard Specifications. • Overexcavations shall be observed by qualified geotechnical personnel to verify that firm and unyielding bottoms are exposed. • Overexcavated areas shall be cleaned of loose soils and debris and should be observed to be firm and unyielding before receiving fill. • These onsite materials can be excavated using conventional heavy-duty earth-moving equipment, and the materials are not expected to pose a rippability problem. **GEO-7:** Monitoring during construction shall be done by a licensed geologist and engineer to ensure that the construction site was properly characterized by the geotechnical studies and that the project design is in compliance with geotechnical and seismic safety standards and practices included in the design-build packages. **GEO-8:** Standard Caltrans BMPs shall be followed to minimize soil loss and erosion during construction. To minimize potential soil erosion, all finish slopes shall be planted as soon as practical after grading. **GEO-9:** The liquefaction potential and resulting seismically induced settlement of structures located in the shallow ground area, including Mt. Vernon Avenue OC, Warm Creek Bridge, Santa Ana River Bridge, I-10/I-215 Interchange, Waterman Avenue UC, and San Timoteo Creek Bridge, shall be confirmed during the design-build phase using site-specific subsurface data. **GEO-10:** Before ground-disturbance activities in an area where hazardous or toxic materials are present, a specialist in hazardous waste or materials will be consulted for proper characterization, handling, and disposal. **GEO-11:** Exploratory borings throughout the project area shall be performed during the design-build phase of the project to investigate site-specific soils and conditions and to collect samples of subsurface soils for laboratory testing. • The locations and depths of the borings will be selected once locations of proposed improvements have been finalized. • Because groundwater is anticipated to be deep for most locations, a truck-mounted drilling rig equipped with hollow-stem augers will be adequate; however, for the area adjacent to the Santa Ana River, a mud-rotary drilling rig is recommended due to the shallow groundwater table. • Soil samples recovered during the supplemental field investigation shall be tested to determine soil type, soil shear strength, compressibility characteristics, and corrosion potential. **GEO-12:** Per Topic 304 of Caltrans HDM, 4H:1V side slopes or flatter will be used in the design-build plans where possible. These side slopes will be globally and surficially stable. Caltrans design exception and approval process will be required for side slopes with gradients steeper than 4H:1V. However, proper maintenance with erosion protection and drainage control in accordance with Section 21 of Caltrans Standard Specifications (2015) will still be implemented throughout the project area for long-term performance. **GEO-13:** If earthen embankments are constructed using compacted fill having a minimum friction angle of 32 degrees and minimum cohesion of 200 pounds per square foot (psf), slopes up to 30 feet high and with inclinations of 2H:1V or flatter will be globally stable (i.e., minimum factor-of-safety is 1.5 and 1.1 under static and pseudo-static conditions, respectively). **GEO-14:** Use of minimum friction angles of 32 degrees and minimum cohesion of 200 psf, slopes with inclinations of 2H:1V or flatter will be surficially stable based on the infinite slope method. Shear strength parameters or fines content and plasticity of soils that will be used to construct the earthen embankments will need to be verified during construction.

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Resource Impacts	Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 – Preferred Alternative (Two Express Lanes in Each Direction)	Avoidance, Minimization and/or Mitigation Measures
		spreading footings to remove loose near-surface soils should be anticipated; remedial overexcavations will most likely be less than 3 feet. **Ground Rupture** Based on the detailed geophysical investigations conducted at the Highland Avenue structure, it was concluded that although there were some possible geophysical anomalies at the Highland Avenue site, these features did not project through the overcrossing or its abutments, so no further investigations were done at the site. Geophysical data and trenching study at the Warm Creek site indicated that the fault projects well south of the Warm Creek Bridge; therefore, it was concluded that there is little potential for fault rupture at the Warm Creek Bridge.	most likely be less than 3 feet. **Ground Rupture** Based on the detailed geophysical investigations conducted at the Highland Avenue structure, it was concluded that although there were some possible geophysical anomalies at the Highland Avenue site, these features did not project through the overcrossing or its abutments, so no further investigations were done at the site. Geophysical data and trenching study at the Warm Creek site indicated that the fault projects well south of the Warm Creek Bridge; therefore, it was concluded that there is little potential for fault rupture at the Warm Creek Bridge.	
Paleontology	No impact.	**Permanent** Alternative 2 has the potential to impact paleontological resources during construction; however, because fossils are located subsurface, there is no way to know the full extent of the effect of the two build alternatives on fossil resources until excavation is underway. The fact that no fossils were observed during the paleontological reconnaissance is typical because most fossils are subsurface. Existing fossil localities nearby in the same rock units present within the project study area have produced significant vertebrate paleontological resources. On this basis, the San Timoteo Formation has high sensitivity or potential to produce significant fossils. This sensitivity increases with increasing depth below the ground surface.	**Permanent** Alternative 3 has the potential to impact significant paleontological resources during construction; however, because fossils are located subsurface, there is no way to know the full extent of the effect of the two build alternatives on fossil resources until excavation is underway. The fact that no fossils were observed during the paleontological reconnaissance is typical because most fossils are subsurface. Existing fossil localities nearby in the same rock units present within the project study area have produced significant vertebrate paleontological resources. On this basis, the San Timoteo Formation has high sensitivity or potential to produce significant fossils. This sensitivity increases with increasing depth below the ground surface.	**PA-1:** A Paleontological Mitigation Plans (PMP) will be prepared by a qualified paleontologist, prior to construction of this project. All elements of the PMP will follow the PMP format published in the Caltrans Standard Environmental Reference (Caltrans, 2003). The PMP will detail the paleontological monitoring to be implemented during construction and shall include, at a minimum, a description of the following elements: • Content to be presented during the required 1-hour preconstruction paleontological awareness training for earth-moving personnel, including the method that will be used for documenting training, such as sign-in sheets and hardhat stickers, to establish communications protocols between construction personnel and the Principal Paleontologist. • A signed repository agreement with a qualified institution to establish a curation process in the event of sample collection. • Requirements for monitoring of the following locations: – The San Timoteo Formation – Excavations deeper than 5 feet in Quaternary old alluvial fan, very old alluvial fan, very old axial channel deposits, and old eolian deposits – Excavations deeper than 10 feet into young alluvial fan, young eolian, young axial channel, and very young deposits should be spot checked periodically for the presence of older, paleontologically sensitive sediments • Field and laboratory methods will be implemented for monitoring, reporting, collection, and curation of collected specimens. • The required Paleontological Mitigation Report (PMR) upon completion of project earthmoving.
Hazardous Waste/ Materials	No impact.	Eleven (11) potential recognized environmental condition (REC) parcels have been preliminarily identified for acquisition in the Alternative 2 project area. All acquisition properties identified for Alternative 2 are partial acquisitions. The potential environmental concerns for Alternative 2 are described below: • Nine of the 11 properties are located within 25 feet of rail lines and should be sampled for pesticides containing arsenic if Alternative 2 is selected. • One parcel contains at least one	Fifty-three (53) potential REC parcels have been preliminarily identified for acquisition in the Alternative 3 project area; 38 of these parcels are partial acquisitions and 15 are full acquisitions. The potential environmental concerns for Alternative 3 are described below: • Forty-four (44) structures to be demolished and were sampled for asbestos-containing materials (ACM) and lead-based paint (LBP). Some bridges contain ACM and LBP. Handling of these materials will be addressed during the design phase by	**HAZ-1:** If additional properties and/or structures are identified to be removed and/or altered beyond those identified in this Final EIR/EIS, surveys for hazardous building materials, including ACM, and LBP, and polychlorinated biphenyls (PCBs) will be conducted for the residential and commercial structures and bridge structures that will be removed as part of the proposed project. **HAZ-2:** Parcels beyond those analyzed in this Final EIR/EIS that are required for partial or full acquisition will be surveyed to determine whether any USTs, ASTs, or arsenic-contaminated soils are located within an area identified for acquisition. If any hazardous materials are located within the area to be acquired, proper removal procedures in accordance with standard provisions and requirements would minimize any direct or indirect adverse temporary impacts. **HAZ-3:** Prior to construction, Caltrans will require utility owners to inspect for potential PCBs in utility pole-mounted transformers that will be relocated or removed as part of the project. The pole-mounted transformers will be inspected for leaks, and any leaking transformers will be considered a PCB hazard unless tested and confirmed otherwise, and will be handled accordingly.

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		aboveground storage tank (AST), which may or may not be within the portion identified for acquisition. Further investigation determined that the parcel is not a REC. • One parcel identified for partial acquisition has at least one underground storage tank (UST) on the property and will be further investigated if Alternative 2 is selected. If Alternative 2 is selected, these 11 parcels will need to be surveyed to determine whether any USTs, ASTs, or arsenic-contaminated soils are located within an area identified for acquisition. If any hazardous materials are located within the area to be acquired, proper removal procedures in accordance with standard provisions and requirements would minimize any direct or indirect adverse temporary impacts.	preparation of an appropriate Special Provision. • Two parcels contain at least one AST, but only one may be located within the portion identified for acquisition. Ten identified parcels contain at least one UST on the property. After further investigation, only one property reported a leaking UST. Additional information is needed for another three parcels. • Based on the analytical results of the ADL study, excavated soil along the project corridor is classified as non-hazardous and is not restricted for on-site use. If Alternative 3 is selected, any hazardous materials located within the areas to be acquired will be removed via proper procedures in accordance with standard provisions and requirements which would minimize any direct or indirect adverse temporary impacts.	**HAZ-4:** Prior to construction, testing of yellow traffic stripes and pavement marking material will be performed.. **HAZ-5:** If additional disturbance within unpaved areas are required beyond those identified in the Final EIR/EIS, sampling for ADL shall be conducted. A Site Assessment for ADL will be prepared and will include the following: • A detailed description of where the ADL is located on the project site, including the length, width, and depth of the contamination; • A determination of the Caltrans "soil type" (Unregulated, C, R1, R2, Z0, Z2, or Z3) that is found during the survey; • A discussion of how the soil will be reused on the project in accordance with the Department of Toxic Substances Control (DTSC)-issued agreement or if the soil will require offsite disposal; and • A discussion of the Caltrans Special Provisions that must be followed. **HAZ-6:** Based on preliminary design plans, USTs and ASTs would not be removed at any of the proposed partial acquisition parcels. If design plans change and require any of the USTs and ASTs to be removed, additional site investigation(s) will be necessary. Removal of USTs and ASTs will be conducted in accordance with Section 2672 (for USTs) of Title 23 of the California Code of Regulations (CCR) as implemented by the local RWQCB will be followed. Minimum requirements for AST removal include removal of tank contents (including material in associated piping, rinsate, and decontamination products) to be managed as hazardous waste; and tank atmosphere to be rendered vapor free (for tanks that held flammable/combustible products). If the USTs or ASTs contain hazardous materials, soils surrounding the tanks will be collected and analyzed for said hazardous materials after removal of the tanks to determine proper handling and disposal requirements. **HAZ-7:** Herbicides and pesticides may be present along the project location where historic and current agricultural activities occur. If additional soil disturbance is required within historic and current agricultural uses beyond those identified in the Final EIR/EIS, soil samples will be collected and analyzed for herbicides and pesticides to determine proper handling and disposal requirements. **HAZ-8:** If additional site investigations are necessary and hazardous waste/materials are found, coordination with all appropriate all appropriate regulatory agencies will be required for the removal, disposal, and/or handling of potentially hazardous materials. **HAZ-9:** If signs of potential impacts (e.g., odors, discolored soil) are observed during construction activity, construction shall cease and Caltrans' Unknown Hazards Procedures for construction shall be followed. If groundwater is encountered during construction activities, or if construction dewatering is necessary, then sampling and analysis of groundwater shall be conducted to identify the appropriate management and disposal of the groundwater. **HAZ-10:** A Health and Safety Plan will be developed to guide all construction activities. A certified industrial hygienist will prepare this plan based on evaluations of proposed construction activities, the potential hazards identified in this Final EIR/EIS, and any future assessment prepared for the project. This plan will contain specific procedures for encountering expected and unexpected contaminants. It will prescribe safe work practices, contaminant monitoring, personal protective equipment, emergency response procedures, and safety training requirements to protect construction workers and third parties. The plan will meet the requirements of 29 CFR 1910 and 1926 and all other applicable federal, State, and local regulations and requirements.
Air Quality	Congestion within the project corridor would continue to increase and contribute to decreased air quality within the project corridor and region.	**Permanent** Alternative 2 would result in negligible changes in regional emissions for volatile organic compounds (VOC), nitrogen oxides (NOx), and carbon monoxide (CO) (i.e., 1 to 2 percent decrease in 2025 and 2 to 4 percent increase in 2045) from no build conditions. The decrease in regional emissions for particulate matter less than 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) would be 7 and 4 percent in 2025, and 1 and 4 percent in 2045, respectively. The change in no build to build mobile source air toxic (MSAT) emissions ranges from a decrease of	**Permanent** Alternative 3 would increase regional VOC, NOx, and CO emissions by approximately 9 to 10 percent in 2025 and 2045 from no build conditions. The increase in regional PM_{10} emissions in 2025 and 2045 would be 5 and 4 percent, respectively. PM2.5 emissions would grow by 1 percent in years 2025 and 2045. The change in no build to build MSAT emissions ranges from an increase of 7 to 14 percent in 2025 and from no increase to 14 percent in 2045. Alternative 3 would result in a diesel particulate matter change of 8 percent in 2025 and 7 percent in 2045. **Temporary**	**AQ-1:** The construction contractor must comply with the Caltrans Standard Specifications in Section 14-9 (2015). **AQ-2:** Section 14-9-02 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances. **AQ-3:** Section 14-9.03 is directed at controlling dust. If dust palliative materials other than water are to be used, material specifications are described in Section 18. **AQ-4:** The construction contractor must comply with South Coast Air Quality Management District (SCAQMD) Rule 403 (Fugitive Dust). Water or dust palliative will be applied to the site and equipment as often as necessary to control fugitive dust emissions. Fugitive emissions generally must meet a "no visible dust" criterion either at the point of emissions or at the ROW line depending on local regulations. **AQ-5:** Soil binder will be spread on any unpaved roads used for construction purposes and on all project construction parking areas. **AQ-6:** Trucks will be washed as they leave the ROW as necessary to control fugitive dust emissions. **AQ-7:** A dust control plan will be developed documenting sprinkling, temporary paving, speed limits, and timely revegetation of disturbed slopes as needed to minimize construction impacts to existing communities.

Table S-1 Project Impact Summary Table

Resource Impacts	Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 – Preferred Alternative (Two Express Lanes in Each Direction)	Avoidance, Minimization and/or Mitigation Measures
		7 percent to an increase of 5 percent in 2025, and 2045 emissions range from no increase to 8 percent increases. Alternative 2 would result in a diesel particulate matter change of 5 percent in 2025 and 8 percent in 2045. **Temporary** Construction of the proposed project is anticipated to last 42 months. As a result, project construction would not last more than 5 years and is considered temporary. Construction emissions would be associated with the following stationary or mobile-powered onsite construction equipment: • Trucks • Tractors • Signal Boards • Excavators • Backhoes • Concrete Saws • Crushing and/or Processing Equipment • Graders • Trenchers • Pavers • Other Paving Equipment	Construction of the proposed project is anticipated to last 60 months. As a result, project construction would not last more than 5 years and is considered temporary. Construction emissions would be associated with the following stationary or mobile-powered onsite construction equipment: • Trucks • Tractors • Signal Boards • Excavators • Backhoes • Concrete Saws • Crushing and/or Processing Equipment • Graders • Trenchers • Pavers • Other Paving Equipment	**AQ-8:** Equipment and materials storage sites will be located as far away from residential and park uses as practicable. Construction areas will be kept clean and orderly. **AQ-9:** Track-out reduction measures, such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic, will be used. **AQ-10:** All transported loads of soils and wet materials will be covered before transport, or adequate freeboard (i.e., space from the top of the material to the top of the truck) will be provided to minimize emission of dust (i.e., particulate matter [PM]) during transportation. **AQ-11:** Dust and mud that are deposited on paved, public roads due to construction activity and traffic will be promptly and regularly removed to decrease PM. **AQ-12:** Mulch will be installed or vegetation planted as soon as practical after grading to reduce windblown particulate in the area. Be aware that certain methods of mulch placement, such as straw blowing, may themselves cause dust and visible emission issues and may need to use controls such as dampened straw. Hydroseeding may be used as an alternative to mulch. **AQ-13:** Construction equipment and vehicles will be properly tuned and maintained. All construction equipment will use low sulfur fuel as required by California Code of Regulations (CCR) Title 17, Section 93114. **AQ-14:** ESAs or their equivalent will be established within 1,000 feet of sensitive air receptors. Within these areas, construction activities involving the extended idling of diesel equipment or vehicles will be prohibited, to the extent feasible. **AQ-15:** A plan will be developed to ensure that construction traffic will be scheduled and routed, to the extent feasible, to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times. **AQ-16:** Under the California Air Resources Board's (ARB) idling emissions rule, 2008 and newer model year heavy-duty diesel engines will be equipped with a nonprogrammable engine shutdown system that automatically shuts down the engine after 5 minutes of idling, or optionally meet a stringent nitrogen oxides (NO_X) idling emission standard. This rule applies to diesel-fueled commercial motor vehicles that operate in California with gross vehicular weight ratings of greater than 10,000 pounds that are or must be licensed for operation on highways. **AQ-17:** To the extent feasible, all construction signal/message boards shall be solar powered. **AQ-18:** To the extent feasible, electricity shall be obtained from power poles rather than temporary diesel or gasoline generators. **AQ-19:** To the extent feasible, commuter incentives and ITS programs, such as traffic management centers or incident management systems, will be incorporated per FHWA's MSAT guidance. **AQ-20:** Congestion pricing per FHWA's MSAT guidance will be implemented as a means to counter the effects of MSAT emissions. **AQ-21:** Implement Best Available Control Technology (BACT) during construction and operation of projects where feasible, including: solicit bids that include use of energy and fuel-efficient fleets; solicit preference construction bids that use BACT, particularly those seeking to deploy zero- and/or near zero emission technologies; employ use of alternative fuel vehicles; use lighting systems that are energy efficient, such as limited wavelength amber light-emitting diode (LED) technology; use CEQA Guidelines Appendix F, Energy Conservation, to create an energy conservation plan; use an adopted emissions calculator to estimate construction-related emissions; use the minimum feasible amount of greenhouse gas (GHG)-emitting construction materials that is feasible; use of cement blended with the maximum feasible amount of flash or other materials that reduce GHG emissions from cement production; use of lighter-colored pavement where feasible; recycle construction debris to maximum extent feasible; and plant shade trees in or near construction projects where feasible.
Noise	Noise conditions within the corridor are projected to experience a 1- to 4-decibel (dB) increase under the 2045 no-build conditions.	**Permanent** Increases in operational noise at all receptors are considered minor with implementation of the recommended soundwalls summarized below. Project future noise conditions, when compared to the future no-build noise conditions, generally increase or decrease slightly compared to the future no-build noise condition. With incorporation of the	**Permanent** Increases in operational noise at all receptors are considered minor with implementation of the recommended soundwalls summarized below. Project future noise conditions, when compared to the future no-build noise conditions, generally increase or decrease slightly compared to the future no-build noise condition. With incorporation of the abatement, maximum changes in future build	**N-1:** Noise barriers presented in Appendix L, Sections L3 and L4, and identified in Section 3.2.7 of the Final EIR/EIS will be included in the design-build plans and constructed for noise abatement. **N-2:** Sound control used will conform to the provisions in Section 14-8.02, "Noise Control," of the Standard Specifications. **N-3:** The following are control measures that will be implemented to minimize noise disturbances at sensitive areas during construction: • All equipment shall have sound-control devices no less effective than those provided on the original equipment. Each internal combustion engine used for any purpose on the job or related to the job shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine should be operated on the

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Resource Impacts	Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 – Preferred Alternative (Two Express Lanes in Each Direction)	Avoidance, Minimization and/or Mitigation Measures
		abatement, maximum changes in future build noise range from a 3-dB increase to a 12-dB decrease. *Recommended Soundwalls:* • 18 New **Temporary** Construction noise varies greatly depending on the construction process, type, and condition of the equipment used, and layout of the construction site. Projections of potential construction noise levels may vary from actual noise experienced during construction due to these factors. In general, construction activities conducted during daytime hours would have a lesser impact on sensitive receptors than nighttime construction; however, nighttime construction is expected to be necessary to avoid unacceptable disruptions to traffic during daytime hours.	noise range from a 4-dB increase to a 10-dB decrease. *Recommended Soundwalls:* • 28 New (1 Gap Closure) • 20 Replace In-kind Following soundwall surveys, only 26 new soundwalls would be constructed. **Temporary** Construction noise varies greatly depending on the construction process, type, and condition of the equipment used, and layout of the construction site. Projections of potential construction noise levels may vary from actual noise experienced during construction due to these factors. In general, construction activities conducted during daytime hours would have a lesser impact on sensitive receptors than nighttime construction; however, nighttime construction is expected to be necessary to avoid unacceptable disruptions to traffic during daytime hours.	jobsite without an appropriate muffler. • Construction methods or equipment that will provide the lowest level of noise impact (e.g., avoid impact pile driving near residences and consider alternative methods that are also suitable for the soil condition) will be used. • Idling equipment shall be turned off. • Truck loading, unloading, and hauling operations shall be restricted through residential neighborhoods to the greatest possible extent. • Construction activities shall be coordinated to build recommended permanent soundwalls during the first phase of construction to protect sensitive receivers from subsequent construction noise, dust, light, glare, and other impacts, to the extent feasible. • Temporary noise barriers shall be used and relocated, as needed. Noise barriers can be made of heavy plywood, moveable insulated sound blankets, or other best available control techniques. • Newer equipment with improved noise muffling shall be used, and all equipment items shall have the manufacturers' recommended noise abatement measures (e.g., mufflers, engine covers, and engine vibration isolators) intact and operational. All construction equipment shall be inspected at periodic intervals to ensure proper maintenance and presence of noise-control devices (e.g., mufflers and shrouding). • Construction activities shall be minimized in residential areas during evening, nighttime, weekend, and holiday periods. Coordination with each city shall occur before construction can be performed in noise sensitive areas. • Construction lay-down or staging areas shall be selected in industrially zoned districts. If industrially zoned areas are not available, commercially zoned areas may be used, or locations that are at least 100 feet from any noise-sensitive land use (e.g., residences). • Contractor shall prepare a Noise and Vibration Monitoring and Mitigation Plan by a qualified Acoustical Engineer and submit it for approval. The Plan must outline noise and vibration monitoring procedures at predetermined noise and vibration sensitive sites, as well as historic properties. The Plan also must include calculated noise and vibration levels for various construction phases and mitigation measures that may be needed to meet the project specifications. The Contractor shall not start any construction work or operate any noise-generating construction equipment at the construction site before approval of the Plan. The Plan will be updated every 3 months or sooner if there are any changes. **N-4:** The following are some procedures that will be used to minimize the potential impacts from construction vibration: • Hours of vibration-intensive activities, such as vibratory rollers, will be restricted to minimize adverse impacts to the residents (e.g., weekdays during daytime hours only when as many residents as possible are away from home). • The owner of a building close enough to a construction vibration source where damage to that structure due to vibration is possible would be entitled to a preconstruction building inspection to document the preconstruction condition of that structure. • Conduct vibration monitoring during vibration-intensive activities.
Energy	No impact.	Energy impacts would be minimized with incorporation of energy conservation measures. Energy conservation measures include, but are not limited to, the following: • Selecting energy-efficient project features (e.g., lighting, pavement surface), using energy-efficient design (i.e., reduced grades, decrease in out-of-direction travel, traffic flow improvements), including ramp metering, auxiliary lanes, and other TSM/TDM measures, as well as bicycle and pedestrian facilities, to further offset increased fuel consumption associated with the projected increase in VMT.	Energy impacts would be minimized with incorporation of energy conservation measures. Energy conservation measures include, but are not limited to, the following: • Selecting energy-efficient project features (e.g., lighting, pavement surface), using energy-efficient design (i.e., reduced grades, decrease in out-of-direction travel, traffic flow improvements), including ramp metering, auxiliary lanes, and other TSM/TDM measures, as well as bicycle and pedestrian facilities, to further offset increased fuel consumption associated with the projected increase in VMT.	No measures required.
Natural Communities	No impact.	**Permanent** The area of permanent impact of	**Permanent** The area of permanent impact of RSS habitat	**NC-1:** SBCTA's Design Engineer will coordinate with the qualified biologist to delineate all ESAs within the project footprint and immediately surrounding areas in the project specifications. ESAs include riparian vegetation

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		Riversidean sage scrub (RSS) habitat was calculated to be 0.23 acre for Alternative 2. Approximately 35 acres of vegetation communities would be permanently affected by Alternative 2. **Temporary** There would be temporary impacts to riparian plant communities, including southern willow scrub and mule fat scrub. In addition, 2.85 acres of RSS habitat would be temporarily affected for Alternative 2.	was calculated to be 0.25 acre for Alternative 3. Approximately 150 acres of vegetation communities would be permanently affected by Alternative 3. **Temporary** There would be temporary impacts to riparian plant communities, including southern willow scrub and mule fat scrub. In addition, 2.85 acres of RSS habitat would be temporarily affected for Alternative 3.	communities and Riversidean sage scrub vegetation within the Santa Ana River and Warm Creek Channel that are not identified as temporarily or permanently impacted in the environmental document. Prior to clearing vegetation or construction within or adjacent to ESAs, the Contractor will install highly visible barriers (e.g., orange construction fencing) adjacent to the project footprint to designate ESAs to be preserved in place. No grading or fill activity of any type will be permitted within these ESAs. In addition, no construction activities, materials, or equipment will be allowed within the ESAs. All construction equipment will be operated in a manner to prevent accidental damage to nearby ESAs. No structure of any kind, or incidental storage of equipment or supplies, will be allowed within the ESAs. Silt fence barriers will be installed at the ESA boundaries to prevent accidental deposition of fill material in areas where vegetation is adjacent to planned grading activities. The ESA fencing will conform to the provisions of Section 14-1.03 “Type ESA Temporary Fence,” of Caltrans’ 2010 Standard Specifications and Special Provisions. A qualified biologist will supervise the placement of ESA fencing. **NC-2:** Prior to the completion of construction, the Resident Engineer will require the Contractor to hydroseed and/or plant container plants to restore temporarily impacted vegetation communities with appropriate native plant species that are approved by the Caltrans District 8 Biologist. Plant species used in the seeding or plantings should be similar to what was present in each area prior to the impact unless prohibited by Measures VA-17, VA-34, and VA-35.
Wetlands and Other Waters	No impact.	**Permanent** Based on preliminary engineering, Alternative 2 would result in 0.07 acre of permanent impacts to California Department of Fish and Wildlife (CDFW) and RWQCB jurisdiction. **Temporary** Based on preliminary engineering, Alternative 2 would result in 0.46 acre of temporary impacts to United States Army Corps of Engineers (USACE) jurisdictional areas. Alternative 2 would result in 1.86 acres of temporary impacts to waters pursuant to CDFW and RWQCB jurisdiction.	**Permanent** Based on preliminary engineering, Alternative 3 would result in 0.09 acre of permanent impacts to waters pursuant to CDFW and RWQCB jurisdiction. **Temporary** Based on preliminary engineering, Alternative 3 would result in 12.42 acres of temporary impacts to USACE jurisdictional areas. Alternative 3 would result in 16.81 acres of temporary impacts to waters pursuant to CDFW and RWQCB jurisdiction.	**WET-1:** The Design Engineer will coordinate with the qualified biologist to delineate all ESAs within the project footprint and immediately surrounding areas in the project specifications. ESAs will include the Santa Ana River, Warm Creek Channel, and other Waters of the U.S. and Waters of the State that are not identified as temporarily or permanently impacted in the environmental document. Prior to clearing vegetation or construction within or adjacent to ESAs, the Contractor will be required to install highly visible barriers (e.g., orange construction fencing) adjacent to the project footprint to designate ESAs to be preserved in place. No grading or fill activity of any type will be permitted within these ESAs. In addition, no construction activities, materials, or equipment will be allowed within the ESAs. All construction equipment will be operated in a manner to prevent accidental damage to nearby ESAs. No structure of any kind, or incidental storage of equipment or supplies, will be allowed within the ESAs. Silt fence barriers will be installed at the ESA boundaries to prevent accidental deposition of fill material in areas where vegetation is adjacent to planned grading activities. The ESA fencing will conform to the provision of Section 14-1.03 “Type ESA Temporary Fence” of the California Department of Transportation’s 2010 Standard Specifications and Special Provisions. A qualified biologist will supervise the placement of ESA fencing. **WET-2:** A SWPPP will be prepared and implemented for the project, which will include all applicable water pollution control measures for the project. In addition, construction activities within the Santa Ana River will be designed and conducted to maintain downstream flow conditions. All construction activities will be effectively isolated from water flows to the greatest extent feasible. This may be accomplished by working in the dry season or dewatering the work area in the wet season. When work in standing or flowing water is required, structures for isolating the in-water work area and/or diverting the water flow must not be removed until all disturbed areas are cleaned and stabilized. The diverted water flow must not be contaminated by construction activities. Structures used to isolate the in-water work area and/or diverting the water flow (e.g., coffer dam, geotextile silt curtain) must not be removed until all disturbed areas are stabilized. **WET-3:** If groundwater dewatering is required for the project, the Applicant shall consult with the RWQCB to determine if additional permits are required. If additional RWQCB permits relating to dewatering are required, the designated RWQCB staff contact identified in this Certification must be notified and copied on pertinent correspondence pertaining to those other required permits. When dewatering is necessary, the water must be pumped or channeled through a sediment settling or filtration device prior to return discharge to the water body. The enclosure and the supporting material for settling or filtration devices must be removed when the dewatering activity is completed. Removal must proceed from upstream to downstream when multiple devices are deployed. Construction plans and specifications for dewatering and nonstormwater construction BMPs for clearwater diversion and dewatering operations will be implemented. **WET-4:** Prior to the completion of construction, the Resident Engineer will require the Contractor to hydroseed or re-vegetate with container plants, temporarily impacted, earthen-bottom Waters of the U.S., Waters of the State, and other drainages with appropriate native plant species that are approved by the Caltrans District 8 Biologist. Plant species used in the seeding or plantings should be similar to what was present in each area prior to the impact. Specific revegetation criteria and plant establishment requirements may be required as part of the project’s 401, 404, and 1602 permit conditions.

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				WET-5: To offset impacts to jurisdictional resources and riparian vegetation communities, compensation for impacts will be made by purchasing mitigation credits from a mitigation bank or in-lieu fee program at a minimum 1:1 impact to mitigation ratio, or as otherwise indicated in the project's 401, 404, and/or 1602 permits. SBCTA will be responsible for purchasing these credits.
Plant Species	No impact.	No impact.	No impact.	No measures required.
Animal Species	No impact.	**Permanent** *Burrowing Owl* Under Alternative 2, there would be 11.68 acres of permanent impacts to potential BUOW habitat. The build alternatives could result in indirect permanent effects to burrowing owls (BUOWs) through the loss of potential habitat. *Nesting Birds and Swallows* Raptors and migratory birds potentially using shrubs within the Biological Study Area (BSA) could be affected by their removal and/or proximity to construction activities. The proposed project would require removal of 374 eucalyptus trees adjacent to I-10. These trees harbor a higher potential to support nesting bird species due to their age and size. *Bats* The proposed widening of bridges to accommodate the additional EB and WB lanes could result in bat mortality if they are not excluded from the structures prior to the bridge widening activities. *Other Special-Status Animal Species* Permanent indirect effects to other non-listed special-status species could occur as a result of habitat loss and habitat fragmentation under the proposed build alternatives. **Temporary** Temporary effects to several special-status animal species may occur during construction of the build alternatives. *Burrowing Owl* The build alternatives could result in temporary construction effects to BUOWs through the unavailability of potential habitat during construction. Under Alternative 2, there would be 309.84 acres of temporary impacts to potential BUOW habitat. With implementation of the proposed	**Permanent** *Burrowing Owl* Under Alternative 3, there would be 39.43 acres of permanent impacts to potential BUOW habitat. The build alternatives could result in indirect permanent effects to BUOWs through the loss of potential habitat. *Nesting Birds and Swallows* Raptors and migratory birds potentially using shrubs within the BSA could be affected by their removal and/or proximity to construction activities. The proposed project would require removal of 1,148 eucalyptus trees adjacent to I-10. These trees harbor a higher potential to support nesting bird species due to their age and size. *Bats* The proposed widening of bridges to accommodate the additional EB and WB lanes could result in bat mortality if they are not excluded from the structures prior to the bridge widening activities. *Other Special-Status Animal Species* Permanent indirect effects to other non-listed special-status species could occur as a result of habitat loss and habitat fragmentation under the proposed build alternatives. **Temporary** Temporary effects to several special-status animal species may occur during construction of the build alternatives. *Burrowing Owl* The build alternatives could result in temporary construction effects to BUOWs through the unavailability of potential habitat during construction. Under Alternative 3, there would be 312.47 acres of temporary impacts to potential BUOW habitat. With implementation of the proposed measures, no substantial effects on BUOWs are anticipated. *Nesting Birds and Swallows* No raptor nests or other nests in trees or	**Nesting Birds and Swallow Species** **AS-1:** To avoid effects to nesting birds, the SBCTA Resident Engineer will require the Contractor to conduct any native or exotic vegetation removal or tree-trimming activities outside of the nesting bird season (i.e., February 15 through August 31). If vegetation clearing or the start of construction in a previously undisturbed area is necessary during the nesting season, SBCTA's Resident Engineer will require the Contractor to have a qualified biologist conduct a preconstruction survey within 300 feet of construction areas no more than three days prior to construction at the location to identify the locations of nests, if any. If an occupied nest is discovered, the biologist will monitor the nests on a weekly basis when new equipment is utilized or when night work is performed to ensure lighting is shielded and directed away from the nest. These preconstruction surveys are also required to comply with the federal MBTA. A qualified biologist is one that has previously surveyed for nesting bird species within southern California. Should nesting birds be found, an exclusionary buffer of 300 feet will be established by the qualified biologist around each nest site. The buffer will be clearly marked in the field by construction personnel under guidance of the contractor's qualified biologist, and construction or clearing will not be conducted within this zone until the qualified biologist determines that the young have fledged or the nest is no longer active. The qualified biologist will monitor the nests on a weekly basis to ensure that construction activities do not disturb or disrupt nesting activities. If the qualified biologist determines that construction activities are disturbing or disrupting nesting activities, then the biologist will notify the Resident Engineer to stop or modify construction, and immediately contact the U.S. Fish and Wildlife Service, Palm Springs Office to determine appropriate actions to reduce the noise and/or disturbance to the nests. Responses may include, but are not limited to, increasing the size of the exclusionary buffer to 500 feet, curtailing nearby work activities, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nest and the construction activities, and/or working in other areas until the young have fledged. If more than three days lapse between the preconstruction survey and construction start date at that location, the survey will be reconducted. **AS-2:** Because work may occur during the swallow/swift nesting season (March 1 through August 31), swallows will be excluded from structures, if necessary, by a qualified biologist during the nonbreeding season no earlier than 5 days prior to the start of construction. Exclusion structures (e.g., netting and weep hole plugs) will be left in place and maintained through August 31 of each breeding season or until the work is complete. All nest exclusion techniques will be coordinated among the Caltrans District 8 Biologist, SANBAG's Project Manager, SANBAG's Resident Engineer, the Contractor, and CDFW. **Burrowing Owl** **AS-3:** Although current known areas of BUOW habitat have been mapped as part of this study, land development or other factors could modify the distribution of habitat within the study corridor. The Design Engineer will coordinate with the designated qualified biologist to reassess potential BUOW habitat within the project footprint or in the immediately surrounding areas and will designate those areas on the project plans and specifications. To ensure that any BUOW that may occupy the site in the future are not affected by construction activities, the Resident Engineer will require the Contractor to have preconstruction BUOW surveys conducted by a qualified biologist within 30 days prior to any phase of construction in the areas identified as potential BUOW habitat in the project specifications. These preconstruction surveys are also required to comply with the federal Migratory Bird Treaty Act (MBTA). If any of the preconstruction surveys determine that BUOW are present, SBCTA's Resident Engineer will contact CDFW to identify appropriate avoidance and minimization measures, such as establishing an avoidance buffer and/or work in the vicinity with a biological monitor on hand. SBCTA's Resident Engineer will ensure that any BUOW measures determined to be required based on the results of the preconstruction surveys and the required coordination described above are properly implemented by the Contractor prior to and during construction in areas occupied by BUOW, as identified in the preconstruction surveys.

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Resource Impacts	Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 – Preferred Alternative (Two Express Lanes in Each Direction)	Avoidance, Minimization and/or Mitigation Measures
		measures, no substantial effects on BUOWs are anticipated. *Nesting Birds and Swallows* No raptor nests or other nests in trees or shrubs were observed during biological surveys, indicating that these resources may be less suitable for nesting than other resources located outside the BSA and farther away from I-10. Temporary effects on swallows would occur during exclusion activities. Depending on the timing of construction, swallow exclusion would not likely be required for more than two nesting seasons. *Bats* Both build alternatives would have impacts on bridges that are likely used as habitat by bats. *Other Special-Status Animal Species* Temporary direct impacts to other special-status animal species would include temporary loss of habitat, including trees and shrubs used for nesting and burrows used by ground-dwelling mammals and reptiles. Species that are relatively mobile (e.g., birds and many small mammals and reptiles) would likely disperse into nearby areas. Some mortality of less mobile and burrowing species may occur. Temporary impacts would be limited to the construction period and include increased noise levels and increased human disturbance, and no substantial temporary effects on nesting birds are anticipated. Temporary indirect effects on wildlife beyond the BSA could result from impacts to water quality during construction.	shrubs were observed during biological surveys, indicating that these resources may be less suitable for nesting than other resources located outside the BSA and farther away from I-10. Temporary effects on swallows would occur during exclusion activities. Depending on the timing of construction, swallow exclusion would not likely be required for more than two nesting seasons. *Bats* Both build alternatives would have impacts on bridges that are likely used as habitat by bats. *Other Special-Status Animal Species* Temporary direct impacts to other special-status animal species would include temporary loss of habitat, including trees and shrubs used for nesting and burrows used by ground-dwelling mammals and reptiles. Species that are relatively mobile (e.g., birds and many small mammals and reptiles) would likely disperse into nearby areas. Some mortality of less mobile and burrowing species may occur. Temporary impacts would be limited to the construction period and include increased noise levels and increased human disturbance, and no substantial temporary effects on nesting birds are anticipated. Temporary indirect effects on wildlife beyond the BSA could result from impacts to water quality during construction.	**Bats** **AS-4: Bat Surveys.** SBCTA will coordinate with the designated qualified biologist to identify all areas of potential bat habitat within and immediately adjacent to the project footprint and will designate those areas on the project specifications, including, but not limited to, the following assessment features: bridge type, geographic region, and potential deterrents. Structures currently considered to contain potential bat habitat include bridges that span surface water within the vicinity including, but not limited to, the Warm Creek Channel, Santa Ana River, San Sevaine Channel, Etiwanda Wash, Rialto Channel, Mission Channel, San Timoteo Creek, and Zanja Creek. Ornamental trees that will be impacted where roosting may occur will also be included in the bat surveys. Prior to construction at structures with potential bat habitat as identified in the project specifications, the Project Manager will require the Contractor to have a qualified bat biologist conduct a series of surveys of all potential bat habitat areas. Surveys will occur during the bat breeding season (preferably May or June) immediately preceding the start of construction, to assess the potential for the presence of roosts. The qualified bat biologist must have previously conducted bat surveys for the bat species most likely to be present within the study corridor. Bat surveys may be conducted acoustically, using an acoustic bat-call detector such as an Anabat device, or may be conducted visually by inspection of suspected bat roost areas. The qualified bat biologist will also perform preconstruction surveys at structures and ornamental trees potentially containing bats because bat roosts can change seasonally. The surveys will include structure inspection, sampling, exit counts, and acoustic surveys. **AS-5: Bat Exclusion.** If bat roosts are found, a qualified bat biologist will be onsite for the duration of construction activities that may impact bats. If it is determined that the roosts are present and, based on consultation with CDFW, exclusion is warranted, bats will be excluded from the bridge using CDFW-approved exclusionary devices to the extent necessary to prevent mortality to the colony. Exclusion will take place prior to April 15. Caltrans or SBCTA will confer with CDFW to identify and implement appropriate avoidance and minimization efforts that are satisfactory to CDFW. Examples of exclusion devices are provided in Figures 4-5, 4-6, and 4-7 of the Natural Environment Study (NES). Coordination with CDFW will occur prior to exclusion if measures are proposed after April 15. **AS-6: Bat Replacement Roosting Structures.** If bat exclusion is conducted, replacement roosting habitat may also be required by CDFW to offset and minimize impacts to excluded bats in the project's Lake and Streambed Alteration Agreement. Replacement roosts will be built according to bat house standards (e.g., those endorsed by Bat Conservation International) and will be placed within close proximity to impact areas. Bat houses must be constructed, painted, and placed carefully in specific locations based on the aspect of a given site, the expected temperatures within the bat house location, and the exposure to weather elements. All bat exclusion techniques and replacement roosting habitat will be coordinated among the Caltrans District 8 Biologist, Caltrans's Project Manager, SBCTA's Project Manager, the Contractor, the Contractor's Designated Qualified Bat Biologist, and CDFW. Replacement roosting habitat will adhere to guidance provided in the *Bat and Bridges Technical Bulletin: Hitch Hikers Guide to Bat Roosts* (September 2002).
Threatened and Endangered Species	No impact.	Alternative 2 would result in 0.39 acre of temporary impacts and less than 0.01 acre of permanent effects to mapped Santa Ana Sucker Critical Habitat (CH). Alternative 2 would result in 0.11 acres of permanent impacts and 2.29 acres of temporary impacts to suitable, occupied Delhi Sands Flower-Loving Fly (DSF) habitat. Alternative 2 would result in 0.33 acre of temporary effects to mapped Southwestern Willow Flycatcher CH.	Alternative 3 would result in 0.59 acre of temporary impacts and less than 0.01 acre of permanent effects to mapped Santa Ana Sucker CH. Alternative 3 would result in 0.77 acre of permanent impacts and 1.63 acres of temporary impacts to suitable, occupied DSF habitat. Alternative 3 would result in 0.59 acre of temporary effects to mapped Southwestern Willow Flycatcher CH.	**TE-1:** SBCTA's Design Engineer will coordinate with the qualified biologist to delineate all ESAs within the project footprint and immediately surrounding areas in the project specifications. ESAs will include the Santa Ana River and Warm Creek Channel, as well as Delhi soils (potential DSF habitat) that are not identified as temporarily or permanently impacted in the environmental document. Prior to clearing vegetation or construction within or adjacent to ESAs, the Contractor, under the direction of the qualified biologist, will install highly visible barriers (e.g., orange construction fencing) adjacent to the project footprint to designate ESAs to be preserved in place. No grading or fill activity of any type will be permitted within these ESAs. In addition, no construction activities, materials, or equipment will be allowed within the ESAs. All construction equipment will be operated in a manner to prevent accidental damage to nearby ESAs. No structure of any kind, or incidental storage of equipment or supplies, will be allowed within the ESAs. Silt fence barriers will be installed at the ESA boundaries to prevent accidental deposition of fill material in areas where vegetation is adjacent to planned grading activities. The ESA fencing will conform to the provision of Section 14-1.03 "Type ESA Temporary Fence" of the California Department of Transportation's 2010 Standard Specifications and Special Provisions. A qualified biologist will supervise the placement of ESA fencing. **TE-2:** A preconstruction survey will be conducted by a qualified biologist for the Santa Ana River woolly-star within the

Table S-1 Project Impact Summary Table

Resource Impacts	Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 – Preferred Alternative (Two Express Lanes in Each Direction)	Avoidance, Minimization and/or Mitigation Measures
				BSA in the vicinity of Warm Creek Channel and the Santa Ana River. The preconstruction survey will be conducted during the blooming season (i.e., May to September) prior to initiation of construction activities within the area of Warm Creek Channel and the Santa Ana River. If the species is found within the construction footprint during the preconstruction surveys, then Caltrans will reinitiate consultation with USFWS and CDFW in accordance with the Federal Endangered Species Act (FESA) and California Endangered Species Act (CESA). If present, one or more of the following mitigation strategies will be required: purchase of credits from a mitigation bank; onsite conservation of existing Santa Ana River woolly-star through avoidance and designation of ESAs; and/or translocation of Santa Ana River woolly-star outside of the project ROW to areas of suitable habitat, as identified by a Contractor-supplied plant biologist with knowledge of and experience with translocation of local flora species of the region. **TE-3:** A preconstruction survey will be conducted by a qualified biologist for the slender-horned spineflower within the BSA in the vicinity of Warm Creek Channel and the Santa Ana River. The preconstruction survey will be conducted during the blooming season (i.e., May through September) prior to initiation of construction activities within the area of Warm Creek Channel and the Santa Ana River. If the species is found within the construction footprint during the preconstruction surveys, then Caltrans will reinitiate consultation with USFWS and CDFW in accordance with FESA and CESA. If present, one or more of the following mitigation strategies will be required: purchase of credits from a mitigation bank; onsite conservation of existing slender-horned spineflower through avoidance and designation of ESAs; and/or translocation of slender-horned spineflower outside of the project ROW to areas of suitable habitat, as identified by a Contractor-supplied plant biologist with knowledge of and experience with translocation of local flora species of the region. **TE-4:** Permanent impacts to *occupied* suitable DSF habitat will be mitigated through the purchase of mitigation credits at a 3:1 ratio. For temporary impacts to *occupied* suitable DSF habitat, mitigation credits will be purchased at a 1:1 ratio. Potential regional DSF conservation programs that may be used for compensatory mitigation include the Reichel HCP, the Angelus Block Property, the Owl Company Property, the Laing Homes (King is Coming) Site, the Hospital Site, the Colton Substation Site, the Vulcan Materials DSF Mitigation Bank or other appropriate mitigation area as approved by USFWS. Prior to the onset of ground disturbance, Caltrans will submit a record of credits purchased to USFWS for review and approval. **TE-5:** To avoid potential downstream impacts to Santa Ana Sucker (SAS) and its habitat, silt fencing will be installed at construction areas adjacent to the river, and the requirements of measure WET-2 will be implemented prior to construction within the Santa Ana River and Warm Creek Channel. **TE-6:** For night lighting during construction, wildlife-friendly limited wavelength amber LED roadway lighting fixtures will be used. Night lighting during construction will be directed away from San Bernardino kangaroo rat (SBKR) CH within the Santa Ana River. A qualified biological monitor will be present to inspect onsite lighting prior to initiating night-time construction activities. **TE-7: For DSF Occupied, Suitable Habitat.** Prior to initiation of ground-disturbing activities, construction personnel will receive training regarding potential impacts to DSF and restricted areas in accordance with USFWS BO Amendment (FWS-SB-08B0369-17F0669). In addition, a qualified biologist will periodically monitor and report on compliance with the established construction limits. If there are unanticipated impacts to DSF occupied, suitable habitat, construction in that area will be halted and USFWS will be contacted immediately. Caltrans will submit a report following completion of the project to USFWS, identifying total DSF habitat impacted.
Invasive Species	No impact.	The plant palette used for revegetation would not include invasive species; therefore, the build alternatives for the proposed project would not have a substantial effect on invasive species.	The plant palette used for revegetation would not include invasive species; therefore, the build alternatives for the proposed project would not have a substantial effect on invasive species.	**IS-1:** In compliance with the Executive Order on Invasive Species, EO 13112, and guidance from FHWA, the landscaping and erosion control included in the project will not use species listed as invasive. In areas of particular sensitivity (i.e., near or adjacent to drainages), extra precautions will be taken if invasive species are found in or next to the construction areas. This will include the inspection and cleaning of construction equipment and eradication strategies, as required by the Caltrans Biological Monitor, to be implemented should an invasion occur. Any cleaning of equipment or site watering will be conducted in adherence to any applicable drought conditions and related regulations.
Cumulative Impacts	Continued and increasing congestion, travel times, and related air emissions.	No adverse cumulative impacts are anticipated.	No adverse cumulative impacts are anticipated.	Project-specific measures described within this table would reduce and minimize potential cumulative impacts.

Table S-1 Project Impact Summary Table

Resource Impacts	Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 – Preferred Alternative (Two Express Lanes in Each Direction)	Avoidance, Minimization and/or Mitigation Measures
Climate Change	Continued increase in GHG emissions	Alternative 2 would increase GHG emissions by 12 percent in 2025 and by 38 percent in 2045 compared to the existing conditions. During construction, Alternative 2 would generate 5,504 metric tons per year and 19,265 total metric tons over the 42-month schedule.	Alternative 3 would increase the GHG emissions by 23 percent in 2025 and 48 percent in 2045 compared to the existing conditions. During construction, Alternative 3 would generate 5,711 metric tons per year and 28,557 total metric tons over the 60-month schedule.	Measures AQ-1, AQ-2, AQ-13, AQ-15, AQ-16, and AQ-19 through AQ-21 will help minimize constructed-related GHG emissions.

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S-5 Coordination with Public and Other Agencies

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process. It helps planners determine the necessary scope of environmental documentation and level of analysis required, and to identify potential impacts, mitigation measures, and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including monthly Project Development Team (PDT) meetings, Community Advisory Group (CAG) meetings, meetings with corridor city staff, meetings with other organizations or groups as requested, interagency coordination meetings, public scoping meetings, and public announcements placed in local newspapers, the *Federal Register*, at the County Clerk's office, and in public libraries. Chapter 5, Comments and Coordination, summarizes the results of Caltrans' efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

In compliance with 23 U.S.C. 139, Caltrans undertook an extensive effort first to provide an opportunity for public and interagency involvement, followed by agency participation in the definition of the project's purpose and need. Caltrans utilized the 23 U.S.C. 139 guidance to establish a plan to continue providing opportunities for public involvement, as well as closely working with participating and cooperating agencies.

Many means were used to announce the beginning of the environmental process and updates thereafter. Stakeholders in the San Bernardino County area, as well as local, State, and federal agencies, were notified of the commencement of the environmental process for the project, invited to the two public scoping meetings, and given the opportunity to submit comments in a variety of formats.

Between November 2012 and April 2016, SBCTA and Caltrans continued a robust public outreach effort. To date, 903 meetings have been held and fall within the general classifications provided below.

- Public Scoping Meetings – Formal Scoping Meetings, advertised for public input.
- Agency Scoping Meeting – Formal Scoping Meeting.
- CAG Meetings – Meetings to inform local community leaders about the project and gather input from the local community leaders.

- Briefings – Meetings with key stakeholders, including local governments (elected officials and City staff), boards, committees, community-based groups, and other entities.
- Grassroots Canvassing – Visits to each of the cities and communities along the I-10 corridor, including ‘downtown’ districts and small business strips, as well as public attractions within that community (e.g., city halls, libraries, senior centers, community centers).
- SBCTA Board Meetings – Business matters and/or updates on the project at regularly scheduled SBCTA Board and Committee meetings. Input provided by SBCTA Board Members.
- PDT Meetings.
- Agency Coordination/Tech Workshops.

Native American and cultural resources coordination was also conducted, as described in Chapter 5.

The I-10 CP Draft EIR/EIS was circulated for a 50-day review by agencies and members of the public between April 25 and June 13, 2016. Additionally, Caltrans, in cooperation with SBCTA, held 3 public meetings between 4:30 p.m. and 7:30 p.m. at the following dates and locations:

- DoubleTree Hotel, 285 East Hospitality Lane, San Bernardino, CA 92408 on May 17, 2016
- Bloomington Senior Center, 18313 Valley Boulevard, Bloomington, CA 92316 on May 18, 2016
- Ontario Airport Hotel, 700 North Haven Avenue, Ontario, CA 91764 on May 19, 2016

A total of 56 comments were received on the Draft EIR/EIS. These comments were received via mail, e-mail, and at the public hearing. All comments from the public hearings and those received during the public review period have been considered and addressed in Appendix O.

Unresolved Issues and Areas of Controversy

The concept of Express Lanes proposed under Alternative 3 is a new concept in San Bernardino County; therefore, the level of public acceptance was unknown prior to circulation of the Draft EIR/EIS. After circulation of the Draft EIR/EIS, 60 individuals attended the public meetings and 56 comments were received during the public review period. Based on the relatively low attendance at the public meetings and minimal comments received on the draft environmental document, the level of controversy regarding the I-10 CP is low. Unresolved issues and areas of controversy are minimal.

Project Schedule

Table S-2 summarizes the general schedule for the project, subject to funding availability and obtaining all required approvals and permits.

Table S-2 Project Schedule

Milestone	Date
Circulation of Draft EIR/EIS	Spring 2016
Identify Preferred Alternative	Spring 2016
Circulation of Final EIR/EIS	Spring 2017
Issue ROD	Summer 2017
Completion of anticipated permits, licenses, and approvals after ROD	2018
Anticipated begin construction	2019

Permits and Approvals Needed

The permits and/or approvals listed in Table S-3 are anticipated to be required for project construction. Caltrans will work closely with all of the agencies, utility companies, municipalities, and/or local jurisdictions to maintain communication and coordination throughout the project development process and receipt of the various permits.

The proposed project is a “Major Project” as defined by FHWA because it would cost in excess of $500 million. Consequently, FHWA requires that a Project Management Plan and Financial Plan be prepared for the project. Additionally, the project is subject to federal Cost Estimate Reviews. A draft Project Management Plan must be submitted to FHWA prior to approval of the Final EIR/EIS. The Initial Financial Plan must be approved by FHWA prior to authorization of federal aid funds for construction, although it could be submitted for approval as early as issuance of the ROD. The Financial Plan must be updated annually thereafter over the life of the project. The first Cost Estimate Review was performed in March 2017 and will be updated periodically following approval of ROD.

Table S-3 Permits and Approvals

Agency	Permits/Approval	Status
Federal Agency Permits/Approvals		
United States Army Corps of Engineers (USACE)	Section 404 Permit for filling or dredging waters of the U.S.	Section 404 Permit will be obtained prior to project construction. Application for 404 Permit is anticipated after Final EIR/EIS distribution.
	Section 408 Permit	Section 408 Permit will be obtained prior to project construction. Application for 408 Permit is anticipated after Final EIR/EIS distribution.
FHWA	Project-Level Air Quality Conformity Finding	FHWA conformity determination was obtained in February 2016.
	Project Management Plan, Initial Financial Plan, and Cost Estimate Review	The Cost Estimate Review was performed in March 2017. The Project Management Plan and Initial Financial Plan will be submitted to FHWA after approval of the Final EIR/EIS.
United States Fish and Wildlife Service (USFWS)	Section 7 Consultation has been reinitiated for potential impacts to DSF. The previously issued BO for the *Interstate 10 Corridor Interchange Improvement Projects* (FWS-SB-4339.5, April 2006) has been amended.	USFWS issued an amendment to the previously issued BO on April 2017 (FWS-SB-08B0369-17F0669).
State Agency Permits/Approvals		
California Department of Fish and Wildlife (CDFW)	Section 1602 Streambed Alteration Agreement	Application for Section 1602 agreement anticipated after Final EIR/EIS distribution. The Section 1602 Agreement will be obtained prior to construction.
Regional Water Quality Control Board (RWQCB), Region 8 (Santa Ana)	Section 401 Water Quality Certification	Application for Section 401 certification anticipated after Final EIR/EIS distribution. This permit will be obtained prior to construction.
State Water Resources Control Board (SWRCB)	Construction General Stormwater and Caltrans' Statewide National Pollutant Discharge Elimination System (NPDES) Permits	Project design plans will comply with RWQCB General Orders No. 2009-0009-DWQ (NPDES Permit No. CAS000002) and 99-06-DWQ (NPDES Permit No. CAS000003).

Table S-3 Permits and Approvals

Agency	Permits/Approval	Status
California Department of Water Resources (DWR)	Encroachment permit/ review	Prior to construction activities near the Santa Ana Pipeline, approval to construct within DWR ROW will be obtained.
California Public Utilities Commission (CPUC)	The relocation may qualify for an exemption from the CPUC Certificate of Public Convenience and Necessity (CPCN) requirements discussed in Section III.A of CPUC General Order 131-D and/or pursuant to related case law. Compliance with CPUC General Order 131-D regarding relocation electrical lines 50 kilovolts (kV) or greater	SCE will make the determination of CPUC permitting upon review of further engineering and the Final EIR/EIS. Prior to relocation of electrical lines 50 kV or greater, permit approval must be obtained from CPUC. Coordination to obtain the permit is ongoing.
	Approval of the project, based on review of the Railroad Construction and Maintenance Agreement	Must be completed prior to construction within or above railroad ROW. Coordination has not begun.
UPRR and BNSF	Memorandum of Understanding (MOU) and Construction and Maintenance Agreement with the Railroad	Must be completed prior to construction within or above railroad ROW. Coordination with UPRR and BNSF will begin after approval of the Final EIR/EIS.
County Agency Permits/Approvals		
San Bernardino County Flood Control District (SBCFCD)	Encroachment Permit	Letter or permit will be obtained during final design or construction within SBCFCD property. Coordination has not begun. Coordination with SBCFCD will begin after approval of the Final EIR/EIS.
SBCTA	Maintenance, Operations, and Law Enforcement Agreements (Alternative 3 only)	Maintenance, toll operations, and law enforcement agreements between SBCTA, the toll operator, CHP, and Caltrans will be required. These will be obtained prior to opening of the Express Lanes.

Table S-3 Permits and Approvals

Agency	Permits/Approval	Status
Utility Company/County and Municipal Service Provider Permits/Approvals		
American Cablevision, AT&T, Atchison, California-Nevada Pipeline, Charter, Chino Basin Municipal Water District, City of Chino Hills, City of Colton, City of Fontana, City of Loma Linda, City of Montclair, City of Ontario, City of Rialto, City of Riverside, City of San Bernardino, City of Upland, City of Upland, Comcast, County Sanitation District – San Gabriel, Crown Castle, Cucamonga Valley Water District, Fontana Water Company, Frontier, Golden State Water Company, Inland Empire Utilities Agency, Kinder Morgan, Level 3 Communications, Marygold Mutual Water Company, Metropolitan Water District, Monte Vista Water District, Plains All American Pipeline, Praxair, Riverside Highland Water Company, San Antonio Water Company, San Gabriel Valley Water Company, Santa Ana Watershed Project Authority, Southern California Edison, Southern California Gas, Southern California Water, Southern Pacific Transportation Company/UPRR, Sprint, SUNESYS, Time Warner Cable, Topeka and Santa Fe Railway, Union Carbide Company, Verizon, Water Facilities Authority, West San Bernardino Water District, West Valley Water District, Western Pacific Sanitation, Western Union Telegraph, WILCON, Zayo	Approval to relocate, protect in place, or remove utility facilities	Approval will be obtained prior to any construction within utility conflict areas. Coordination began following the selection of a Preferred Alternative.
Local Jurisdiction Permits/Approvals		
Cities of Pomona, Montclair, Upland, Ontario, Fontana, Rialto, Colton, San Bernardino, Loma Linda, and Redlands	Freeway Agreements	Agreements will be concluded with each of the cities in which project construction will take place. Freeway agreements will be developed following the completion of final design. Coordination has not begun.
Cities of Montclair, Ontario, Upland, and Redlands, and County of San Bernardino	Section 4(f) Technical Study finding	Concurrence from jurisdictional authority regarding impacts to Section 4(f) resources (parks) has been obtained.

Table of Contents

List of Appendices

List of Figures

List of Tables

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List of Technical Studies

Aerially Deposited Lead Site Investigation (Group Delta Consultants, Inc., October 2016)

Air Quality Conformity Analysis (Terry A. Hayes Associates, Inc., October 2016)

Air Quality Technical Study (Terry A. Hayes Associates, Inc., March 2016)

Archaeological Survey Report (Applied Earthworks, Inc., April 2015)

Community Impact Assessment (Parsons, October 2015)

District Preliminary Geotechnical Report (Earth Mechanics, Inc., April 2015)

Energy Technical Report (Terry A. Hayes Associates, Inc., January 2017)

Finding of No Adverse Effect with Non-Standard Conditions (Applied EarthWorks, Inc., May 2015)

Floodplain Evaluation Report (Parsons, December 2014)

Hazardous Materials Survey (Group Delta Consultants, Inc., October 2016)

Historical Resources Evaluation Report (Applied EarthWorks, Inc., April 2015)

Historic Property Survey Report (Applied Earthworks, Inc., April 2015)

Initial Site Assessment (Parsons, September 2014)

Jurisdictional Delineation Report (Ecorp, Inc./Parsons, September 2016)

Natural Environment Study (Parsons, December 2015)

Noise Abatement Decision Report (Parsons, July 2015)

Noise Abatement Decision Report Addendum (Parsons, August 2015)

Noise Abatement Decision Report Addendum #2 (Parsons, March 2017)

Noise Study Report (Parsons, July 2015)

Noise Study Report Addendum (Parsons, August 2015)

Paleontological Identification Report and Paleontological Evaluation Report (Cogstone, December 2014)

Phase II Environmental Site Investigation (Group Delta Consultants, Inc., October 2016)

Preliminary Geotechnical Report (Caltrans, April 2015)

Final Relocation Impact Statement (Parsons, July 2016)

Section 4(f) Technical Study (Parsons, September 2016)

Supplemental Natural Environment Study (Parsons, April 2017)

Traffic Study (Parsons, August 2014)

UST/AST Location Research Technical Memorandum (Group Delta Consultants, Inc., December 2016)

Visual Impact Assessment (Parsons, March 2015)

Water Quality Assessment Report (Parsons, May 2015)

Chapter 1 Proposed Project

1.1 Introduction

California Department of Transportation (Caltrans), in cooperation with the San Bernardino County Transportation Authority (SBCTA), proposes to add freeway lanes along the 33-mile segment of Interstate 10 (I-10 between the Los Angeles/San Bernardino (LA/SBd) County Line and Ford Street in San Bernardino County to reduce traffic congestion, increase throughput, enhance trip reliability, and provide long-term congestion management of the corridor. Please refer to Figures 1-1 and 1-2 for project location and vicinity maps. The Interstate 10 Corridor Project (I-10 CP) proposes a No Build Alternative (Alternative 1) and two build alternatives (Alternatives 2 and 3) for the planning design year of 2045 with an opening year of 2025.

Caltrans is the lead agency under the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). SBCTA is the project sponsor.

1.1.1 Project Location and Setting

I-10 is a transcontinental freeway extending eastward from Santa Monica, California, to Jacksonville, Florida. The 1990 Federal Surface Transportation Assistance Act (STAA) identifies I-10 as a “National Network” route for STAA trucks. The Federal Functional Clarification for I-10 is a Rural Principal Arterial and extension of a Rural Principal Arterial into an urban area. Within southern California, I-10 is included in the National Highway System and the Rural and Single Interstate Routing System.

Within the project study area, I-10 is a major east-west freeway facility that has major junctions with Interstate 15 (I-15), Interstate 215 (I-215), and State Route (SR) 210, designated as either the San Bernardino Freeway or Redlands Freeway.

The project limits, including transition areas, extend from approximately 0.4 mile west of White Avenue in the city of Pomona at LA Post Mile (PM) 44.9 to Live Oak Canyon Road in the city of Yucaipa at SBd PM R37.0. Within the project limits, I-10 is generally an eight-lane divided controlled-access freeway with four general purpose lanes in each direction and auxiliary lanes along selected portions of the route. Between the Los Angeles/San Bernardino (LA/SB) county line and Haven Avenue, there is one high-occupancy vehicle (HOV) lane in each direction, with continuous access to and from the general purpose lanes.

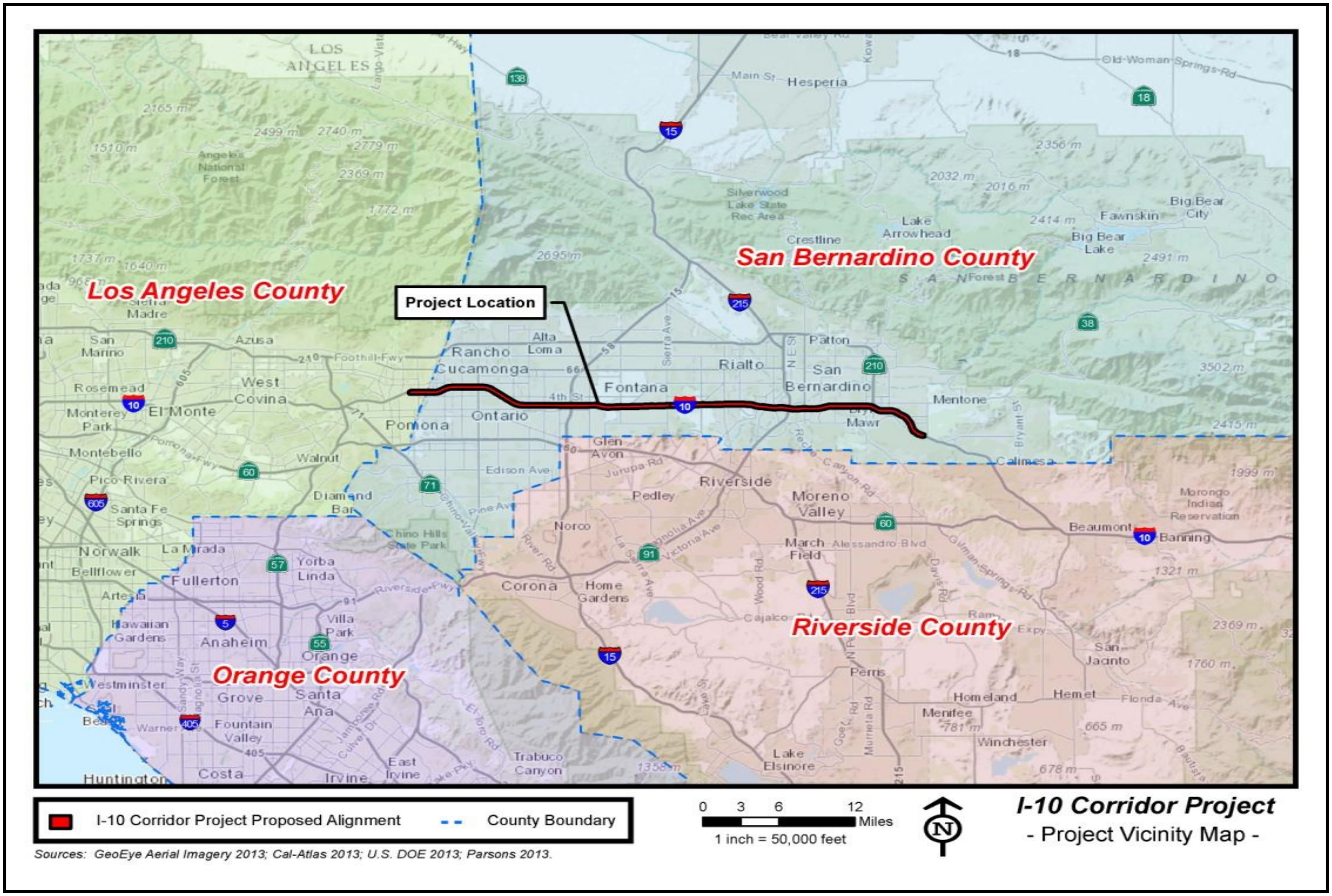

Figure 1-1 Vicinity Map

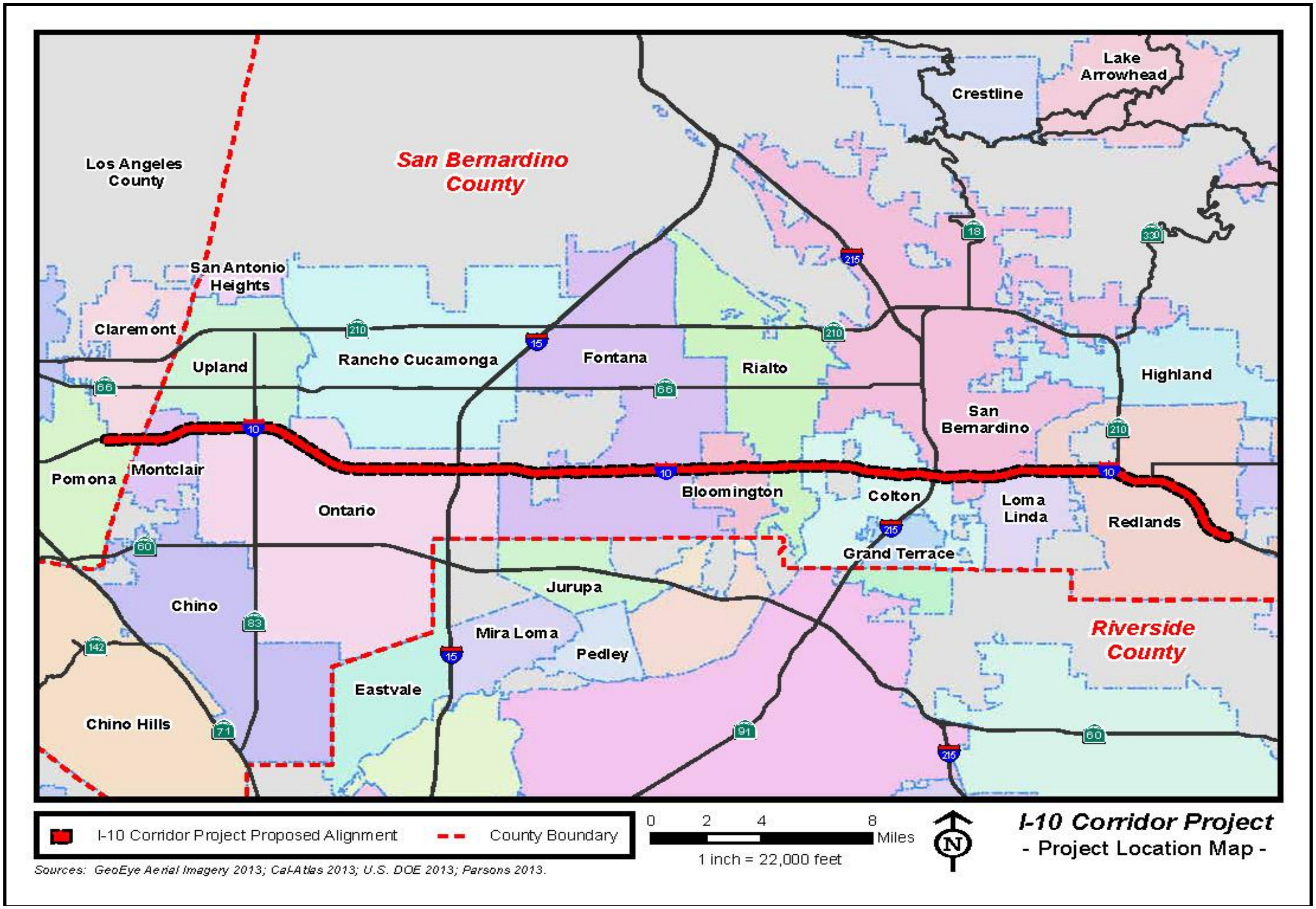

Figure 1-2 Location Map

The existing lane width is generally 12 feet throughout the corridor. The outside shoulder has the standard width of 10 feet, while the inside shoulder varies from 8 feet west of I-15 to 17 feet (not entirely paved) east of I-15. There are 45 existing auxiliary lanes along the project corridor, including 21 in the westbound (WB) direction and 24 in the eastbound (EB) direction. All of the existing auxiliary lanes would be re-established as part of the project improvements. The project traverses the communities of Pomona, Claremont, Montclair, Upland, Ontario, Fontana, Bloomington, Rialto, Colton, San Bernardino, Loma Linda, and Redlands. Land uses in the project study area include residential, commercial, industrial, undeveloped/vacant, and governmental west of I-15; a mix of residential, commercial, and industrial land uses between I-15 and SR-210; and residential communities between SR-210 and Ford Street.

1.1.2 Programming Status

The proposed I-10 CP is included in the 2016 Regional Transportation Plan (RTP) (RTP ID 4H01001, 4122004, 4120005) and 2017 Federal Transportation Improvement Program (FTIP). The 2016-2040 RTP/SCS includes both Alternatives 2 and 3. Alternative 2 is identified by RTP ID 4H01001 and is described as “I-10 HOV Lane Addition – from Haven (Ontario) to Ford Street (Redlands) – widening from 8-10 lanes, aux lanes widening, undercrossing, and reconstruction of ramps where needed.” Alternative 3 is identified by RTP IDs 4122004 and 4122005, and is described as “I-10 Corridor Express Lane Widening (Phase 1): From San Antonio Avenue to I-10/I-15 interchange; implement 2 express lanes in each direction for a total of 4 general purpose and 2 express lanes in each direction and auxiliary lane widening, undercrossing, overcrossings, and reconstruction of ramps and lane transitions where needed” and “I-10 Corridor Express Lane Widening (Phase 2): Implement 2 express lanes in each direction from I-10/I-15 interchange to California Street; implement 1 express lane in each direction from California Street to Ford Street in Redlands for a total of 10-12 lanes, and auxiliary lanes, undercrossings, overcrossings, ramp reconstruction, and lane transitions where needed,” respectively.

The I-10 CP is also included in SBCTA’s 2017 Measure I 10-Year Delivery Plan which is developed to define the scope, schedule, and budgets for projects to be implemented during the next 10 years, in conformance with the requirements of the Measure I 2010-2040 strategic Plan, and is updated every 2 years. The 10-Year Delivery Plan describes the I-10 CP as follows: “I-10 Express Lanes – Contract 1: The project will provide two express lanes in each direction for ten miles from the Los Angeles County line to just east of I-15 in Ontario” and “I-10 Express Lanes –

Contract 2: The project will provide two express lanes in each direction from just east of I-15 to SR-210 in Redlands and one express lane in each direction from SR-210 to Ford Street in Redlands."

1.1.3 Planning Background

The current Route Concept Report identifies the ultimate concept facility for I-10 within the project area as a 12-lane freeway, with 4 HOV and 8 mixed-flow lanes. In 2000, HOV lanes were constructed on I-10 between the LA/SB county line and Haven Avenue in Ontario. In 2007, the I-10 corridor widened from 6 lanes to 8 lanes from Orange Street to Ford Street in Redlands.

An Initial Study/Environmental Assessment (IS/EA) was initiated for the I-10 HOV Lane Addition Project in 2008. This 25-mile-long project proposed to construct HOV lanes in both directions of I-10 in San Bernardino County, in addition to adding auxiliary lanes between freeway ramps at various locations. In 2010, SBCTA evaluated the feasibility of including a 33-mile-long Express Lane Alternative as part of the I-10 HOV Lane Addition Project. SBCTA also evaluated funding strategies for implementing an Express Lane project. SBCTA concluded that the Express Lane Alternative would be appropriate to include as an alternative to be studied within the I-10 HOV Lane Addition Project. This conclusion was reached based on preliminary studies showing the physical feasibility, operational benefits, and economic viability of this alternative, including its consistency with the I-10 Project purpose and need. In August 2011, the SBCTA Board of Directors voted in favor of moving forward with a comprehensive study and included the Express Lane Alternative in the I-10 CP.

1.2 Purpose and Need

1.2.1 Purpose

The purpose of the I-10 CP is to improve traffic operations on I-10 in San Bernardino County to:

- Reduce congestion;
- Increase throughput;
- Enhance trip reliability; and
- Accommodate long-term congestion management of the corridor.

In furtherance of the project's purpose, the objectives of the project are to:

- Reduce volume-to-capacity (v/c) ratios along the corridor;
- Improve travel times within the corridor;
- Relieve congestion and improve traffic flow on the regional transportation system;
- Address increased travel associated with existing and planned development;
- Provide a facility that is compatible with transit and other modal options;
- Provide consistency with the SCAG RTP, where feasible and in compliance with Federal and State regulations;
- Provide a cost-effective project solution;
- Minimize environmental impacts and right-of-way (ROW) acquisition; and
- Promote sustainable travel and livability for the corridor.

1.2.2 Need

I-10 is a critical link in the state transportation network and is used by interstate travelers, local commuters, and regional and inter-regional trucks. The efficient movement of traffic through San Bernardino County is limited by the existing capacity of the transportation networks.

Existing deficiencies of I-10 include:

- General purpose lanes peak-period traffic demand currently exceeds capacity; and
- I-10 HOV lanes operation is reduced during peak periods.

Forecasted deficiencies of the I-10 include:

- Local and regional traffic demand is expected to increase due to population growth;
- Increase in delays;
- Increase in accidents;
- Regional/local circulation will worsen as additional traffic avoids congestion on the freeway;
- Interchange/junctions traffic service will worsen as additional traffic attempts to enter and exit the freeway;
- Bus/multimodal travel time will increase due to congestion and become unreliable due to additional congestion; and

- I-10 HOV will continue to degrade as speed decreases on the facility due to the increase in traffic volumes.

1.2.2.1 Existing Capacity and Level of Service

Currently, there is insufficient capacity on I-10 to accommodate existing and future travel demands within the project limits with the current configuration.

The ability of a highway to accommodate traffic is typically measured in terms of traffic levels of service (LOS)[1]. Figure 1-3 shows a pictorial representation of the six LOS for freeways. An analysis of the existing LOS on I-10 from the LA/SB county line to Ford Street (see Table 1-1 for mainline general purpose and Table 1-2 for mainline HOV analysis) was conducted.

Tables 1-1 and 1-2 show that the current configuration on I-10 has insufficient capacity to accommodate existing travel demands. Based on 2012 traffic volumes, traffic capacity analysis shows that sections of I-10 currently operate at unacceptable LOS with v/c[2] ratios in excess of 1.00 on all segments during one or both of the peak hours.

Under the current configuration, an HOV lane exists between the LA/SB county line and Haven Avenue within the project area. The existing EB HOV lane experiences congestion during the afternoon peak hours. Based on the 2013 California HOV Degradation Determination Report prepared by Caltrans, the existing HOV lane in the EB direction of I-10 between 4th Street (PM 5.0) and Milliken Avenue (PM 9.9) experienced considerable congestion in 2013 and is considered to be "degraded," requiring corrective actions in accordance with the mandates of the federal Moving Ahead for Progress in the 21st Century Act (MAP-21).

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[1] LOS is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Six LOS are defined for each type of facility that has analysis procedures available.

Letters designate each level, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each LOS represents a range of operating conditions and the driver's perception of those conditions. (HCM 2-2)

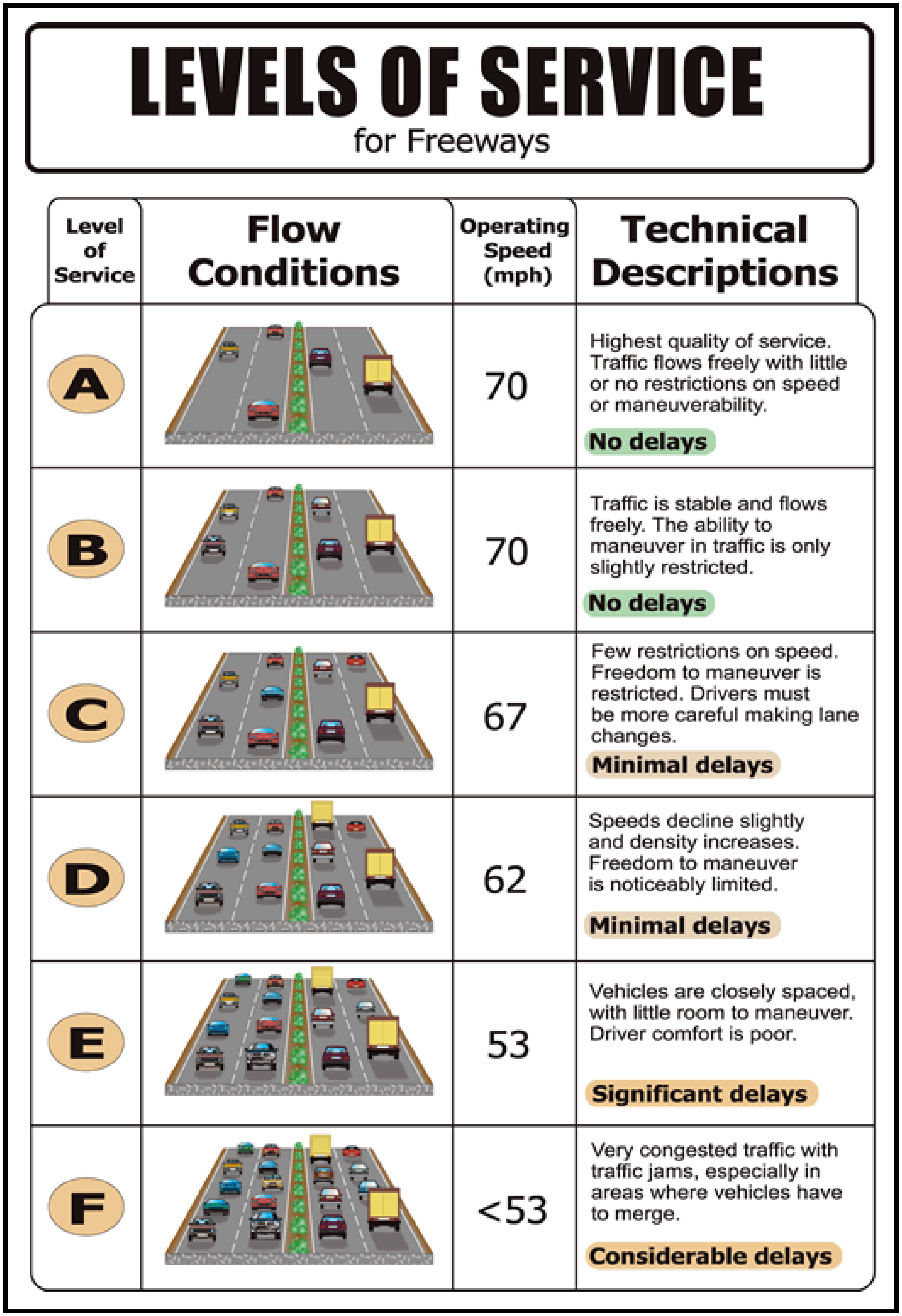
[2] V/C ratio is a measure of the amount of traffic (volume) compared to the ability of the roadway (capacity) to serve the volume. A value below 1.00 indicates that the roadway can accommodate additional volume, and a value in excess of 1.00 indicates that the roadway will have substantial congestion and unstable traffic flow. Under future conditions, v/c in excess of 1.00 indicates that forecast traffic demand exceeds capacity. Under existing conditions, v/c in excess of 1.00 indicates that the volume exceeds the maximum sustainable flow rate, and congested conditions are likely.

By year 2045, traffic is projected to grow by approximately 36 to 60 percent in response to population and employment increases in the corridor and region. Tables 1-1 and 1-2 show that by 2025 all segments of I-10 in the project area will be operating at unacceptable LOS F in both directions during one or both peak hours, with v/c ratios in excess of 1.00. This is indicative of extensive congestion.

Population and Traffic Forecasts

According to population growth forecasts published by SCAG, the population within the southern California region is expected to increase by 4.3 million new residents between 2008 and 2035. The SCAG region consists of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. Key demographic projections for San Bernardino County and the SCAG region are provided in Table 1-3.

Although the regional growth rate stabilized in the last 20 years, from 1990 to 2010 the urbanization and suburbanization of the region has continued (SCAG RTP). In 2010, San Bernardino County exceeded 2 million people and increased its share of the population from 17.7 percent in 1990 to 23.4 percent in 2010. According to SCAG, the fast growth of population relative to employment in Riverside and San Bernardino counties has led to an imbalance of jobs and housing in the region, which has led to increased congestion that is expected to continue.



Source: Caltrans Standard Environmental Reference, 2008.

Figure 1-3 LOS Thresholds for a Basic Freeway Segment

Table 1-1 I-10 Mainline General Purpose Lane Density, LOS, and Volume-to-Capacity Ratio

Segment	EB or WB	Existing 2012				Year 2025 No Build				Year 2045 No Build			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		LOS	V/C	LOS	V/C	LOS	D/C	LOS	D/C	LOS	D/C	LOS	D/C
LA/SB County Line to Haven Avenue	EB	D	1.00	F	0.99	D	0.94	F	1.03	F	1.17	F	1.09
	WB	F	1.11	F	1.01	F	1.18	F	1.32	F	1.23	F	1.49
Haven Avenue to California Street	EB	F	1.06	F	1.16	F	1.27	F	1.39	F	1.37	F	1.41
	WB	F	1.17	E	0.99	F	1.29	F	1.25	F	1.44	F	1.39
California Street to Ford Street	EB	B	0.52	F	1.02	C	0.58	F	1.23	D	0.78	F	1.42
	WB	F	1.08	C	0.64	F	1.31	C	0.73	F	1.54	F	0.91

EB – Eastbound; WB – Westbound; Den – Density; LOS – Level of Service; V/C – Volume-to-Capacity Ratio; D/C – Demand Volume-to-Capacity Ratio
* General purpose lane LOS is based on density, except when traffic demand v/c or d/c is greater than 1.00, which is LOS F.

Source: I-10 Corridor Project Traffic Study, 2014.

Table 1-2 I-10 Mainline HOV Lane Density, LOS, and Volume-to-Capacity Ratio

Segment	EB or WB	Existing 2012				Year 2025 No Build				Year 2045 No Build			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		LOS	V/C	LOS	V/C	LOS	D/C	LOS	D/C	LOS	D/C	LOS	D/C
LA/SB County Line to Haven Avenue	EB	C	0.72	F	0.78	C	0.68	F	1.02	E	0.95	F	1.12
	WB	D	0.81	C	0.63	E	0.92	F	1.31	F	1.04	F	1.46

EB – Eastbound; WB – Westbound; Den – Density; LOS – Level of Service; V/C – Volume-to-Capacity Ratio; D/C – Demand Volume-to-Capacity Ratio;
* HOV lane LOS is based on v/c ratios (or d/c ratios).

Source: I-10 Corridor Project Traffic Study, 2014.

Table 1-3 Key Demographic Data

Area	Population	Resident Population	Households	Residents Employed
Existing – 2012				
San Bernardino County	2,015,994	1,962,290	605,913	700,600
SCAG Region	16,964,830	16,640,598	548,465	7,386,196
2035				
San Bernardino County	2,749,810	2,685,254	847,405	1,059,329
SCAG Region	21,852,486	21,497,514	7,230,262	9,310,132
Percent Growth from 2012 to 2035				
San Bernardino County	36	37	40	51
SCAG Region	29	29	29	26

Source: SCAG, Regional Growth Forecasts, 2012-2035
http://www.scag.ca.gov/DataAndTools/Pages/GrowthForecasting.aspx.

I-10 is continuing to experience increased congestion as a result of population growth, particularly in San Bernardino County, and due to an increase in jobs in San Bernardino and Los Angeles counties. Based on the demographic projections for the SCAG region shown in Table 1-3, the number of residents in San Bernardino County is expected to increase by approximately 37 percent by 2035, which would result in increased congestion and delays on I-10. Those projections show that population and employment in San Bernardino County and the SCAG region are forecast to increase substantially by 2035, by 26 to 51 percent, as shown in Table 1-3.

Average daily traffic (ADT) volumes and vehicle miles traveled (VMT) projections along the I-10 corridor for opening year 2025 and design year 2045 conditions compared to existing (2012) conditions are summarized in Table 1-4.

Table 1-4 ADT and VMT Existing (2012), 2025 No Build, and 2045 No Build

Segment	Existing (2012)		Year 2025 No Build		Year 2045 No Build	
	ADT	VMT[1]	ADT	VMT[1]	ADT	VMT[1]
LA/SB County Line and Haven Avenue	230,000	2,258,000	288,000	2,736,000	313,000	3,067,000
Haven Avenue and California Street	181,000	3,875,000	221,000	4,313,000	257,000	5,303,000
California Street and Ford Street	151,000	1,146,000	191,000	1,146,000	241,000	1,376,000
[1]Average weekday vehicle miles traveled.						

Source: I-10 Corridor Project Traffic Study, 2014.

Projected Capacity Needs, Delay, and Level of Service

Without any improvements in the I-10 corridor, additional traffic congestion resulting from regional growth will further degrade traffic LOS and worsen operational deficiencies in the future, as shown in Tables 1-1 and 1-2. In years 2025 and 2045, traffic is forecast to operate at LOS F along the entire corridor for both the general purpose lanes and HOV lanes during one or both peak hours, with v/c ratios ranging from 1.02 to 1.42.

Average Speed, Travel Time, and Delay

Given SCAG's projections of population growth, travel speeds are forecasted to decrease considerably, operating at an unacceptable LOS F. The *I-10 Corridor Project Traffic Study* (August 2014) used peak-hour speeds, travel time, annual delay in time, and annual cost of delay to compare the current and projected trip reliability.

Table 1-5 summarizes the year 2012, year 2015 and forecast peak-hour speeds during the morning (AM) and evening (PM) peak hours for existing and no-build conditions. Year 2015 speeds are also provided in Table 1-5 as supplemental data to year 2012 existing condition speeds. The year 2015 speeds do not replace the year 2012 speeds. The speed data provide supplemental and more current information than the year 2012 existing condition data. As shown in Table 1-5, the entire corridor speeds have decreased in year 2015. The decreases in speeds predominantly occur in Segment 1 in both directions in the general purpose and HOV lanes and in the EB direction in the general purpose lanes during the PM peak hour in all segments.

Table 1-5 I-10 Freeway Mainline Speed[1]
2012, 2015, and No-Build Conditions (2025 and 2045)

I-10 Average Speed (miles per hour)	2012				2015[2]				2025 Alternative 1				2045 Alternative 1			
	GP		HOV		GP		HOV		GP		HOV		GP		HOV	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
EASTBOUND																
Segment 1 (County Line to I-15)	57	54	65	63	54	34	56	41	52	41	65	52	28	33	57	44
Segment 2 (I-15 to I-215)	60	56			58	36			46	31			14	16		
Segment 3 (I-215 to SR-210)	63	42			63	28			58	16			40	10		
Segment 4 (SR-210 to Ford)	65	42			60	45			65	21			63	10		
Entire Corridor[3]	**60**	**53**	**61**	**56**	**59**	**36**	**58**	**37**	**52**	**33**	**55**	**38**	**29**	**21**	**36**	**27**
WESTBOUND																
Segment 1 (County Line to I-15)	48	46	62	65	30	38	49	51	20	13	53	13	15	10	43	10
Segment 2 (I-15 to I-215)	59	59			56	60			46	39			29	15		
Segment 3 (I-215 to SR-210)	32	62			49	62			20	55			10	42		
Segment 4 (SR-210 to Ford)	34	65			38	64			13	64			10	56		
Entire Corridor[3]	**48**	**57**	**52**	**59**	**43**	**56**	**45**	**55**	**32**	**38**	**37**	**32**	**21**	**24**	**27**	**21**

[1] The average peak-hour travel speed is calculated based on the demand-to-capacity (d/c) ratios and Modified Bureau of Public Roads (Modified BPR) Curve. This curve calculates the speed relative to the d/c ratios. The data used for the calculation is based on the SBTAM post-processed forecast data.

[2] Year 2015 travel speeds are provided as supplemental data to year 2012 travel speeds and do not replace the year 2012 travel speeds. The 2015 travel speeds provide supplemental and more current information than the year 2012 travel speeds. Year 2015 GP travel speeds are based on a speed survey conducted in October 2015 on the I-10 corridor for the *I-10 and I-15 Express Lanes Traffic Revenue Study* developed by CDM Smith. Year 2015 HOV travel speeds are based on speed data from the Caltrans Freeway Performance Measurement System (PeMS).

[3] The entire corridor HOV travel speeds for year 2012, year 2015, and Alternative 1 (years 2025 and 2045) are a combination of HOV lane speeds west of Haven Avenue and GP lane speeds east of Haven Avenue, weighted for the distance of each.

GP – General Purpose

Source: I-10 Corridor Project Traffic Study Addendum, 2016.

As discussed above, a portion of the existing HOV lane in the EB direction is identified as degraded based on the 2013 California HOV Degradation Determination Report. The report states that the EB HOV lane between 4th Street and Milliken Avenue is considered to be "slightly degraded" during the first half of year 2013 and "very degraded" during the second half of year 2013. It is anticipated that this degradation in the HOV lane will continue to worsen as traffic volume increases in future years. Based on the 2014 California HOV Degradation Determination Report, by the end of year 2014, the entire segment of the HOV lane in both directions within San Bernardino County was deemed degraded.

In comparing year 2012 existing condition speeds to the forecasted years 2025 and 2045 Alternative 1 (No Build) speeds, speeds are projected to worsen in both the general purpose and HOV lanes in both directions due to the higher volume forecasted for the I-10 corridor in years 2025 and 2045. Under Alternative 1, the segment speeds in the general purpose lanes range from 13 to 65 miles per hour (mph) in year 2025 and 10 to 63 mph in year 2045 compared to 32 to 65 mph in year 2012 and 28 to 64 mph in year 2015. In the HOV lanes west of Haven Avenue, the speed ranges from 13 to 65 mph in year 2025 and 10 to 57 mph in year 2045, compared to 62 to 65 mph in year 2012 and 41 to 56 mph in year 2015.

Table 1-6 shows the travel time through the corridor between the LA/SB county line and Ford Street. In comparing year 2012 existing condition travel times to the forecasted years 2025 and 2045 Alternative 1 (No Build) travel times, travel times are projected to worsen in the general purpose and HOV lanes in both directions due to the decrease in the corridor speed resulting from higher volume forecasted for the I-10 corridor in years 2025 and 2045. Under Alternative 1, the segment travel times in the general purpose lanes range from 2 to 37 minutes in year 2025 and 2 to 57 minutes in year 2045 compared to 2 to 14 minutes in year 2012 and 2 to 22 minutes in year 2015. In the HOV lanes west of Haven Avenue, the speed ranges from 7 to 37 minutes in year 2025 and 8 to 49 minutes in year 2045, compared to 7 to 8 minutes in year 2012 and 8 to 12 minutes in year 2015.

Table 1-7 shows existing and forecast vehicle hours of delay (VHD) and cost of delay. Under the existing condition, there are approximately 4.8 million VHD on I-10, which represents an annual cost of delay of approximately $76 million. Without any improvements to the corridor, delay is anticipated to increase to 5.4 million vehicle hours in 2025 and 8.0 million vehicle hours in 2045. The annual cost of those hours of delay in 2025 is estimated at $85 million and $125 million in 2045.

Table 1-6 I-10 Freeway Mainline Travel Time[1] 2012, 2015, and No-Build Conditions (2025 and 2045)

I-10 Travel Time (minutes)	2012				2015				2025 Alternative 1				2045 Alternative 1			
	GP		HOV		GP		HOV		GP		HOV		GP		HOV	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
WESTBOUND																
Segment 1 (County Line to I-15)	10	11	8	7	16	13	10	10	24	37	9	37	32	49	11	49
Segment 2 (I-15 to I-215)	14	14			15	14			18	21			29	56		
Segment 3 (I-215 to SR-210)	9	5			6	5			14	5			28	7		
Segment 4 (SR-210 to Ford)	4	2			4	2			12	2			15	3		
Entire Corridor	**37**	**31**	**34**	**30**	**41**	**31**	**39**	**32**	**56**	**46**	**47**	**55**	**85**	**72**	**66**	**84**
EASTBOUND																
Segment 1 (County Line to I-15)	8	9	7	8	9	14	8	12	9	12	7	9	17	14	8	11
Segment 2 (I-15 to I-215)	13	14			14	22			17	26			57	50		
Segment 3 (I-215 to SR-210)	5	7			5	11			5	19			8	31		
Segment 4 (SR-210 to Ford)	2	3			2	3			2	6			2	12		
Entire Corridor	**29**	**33**	**28**	**31**	**29**	**48**	**29**	**46**	**33**	**52**	**31**	**46**	**59**	**80**	**47**	**63**

[1] Corridor travel time is calculated using speeds shown in Table 1-5 and the length of the corridor within the project limits.

[2] Year 2015 travel times are provided as supplemental data to year 2012 travel times and do not replace the year 2012 travel times.

[3] The entire corridor HOV travel times for year 2012, year 2015 and Alternative 1 (years 2025 and 2045) are a combination of travel times for the HOV lane west of Haven Avenue and GP lanes east of Haven Avenue, weighted for the distance of each.

GP – General Purpose

Source: I-10 Corridor Project Traffic Study Addendum, 2016.

Table 1-7 Vehicle Hours of Delay – Existing and Years 2025 and 2045 on Weekdays in the Area of Proposed Improvements

	Existing	2025 No Build	2045 No Build
Daily Vehicle Hours of Delay on Weekdays[1]	19,295	21,705	31,871
Annual Vehicle Hours of Delay on Weekdays[2]	4,823,646	5,426,194	7,967,850
Annual Costs of Delay[3]	$76,000,000	$85,000,000	$125,000,000

[1] Source: SBTAM.

[2] Based on 250 weekdays per year.

[3] Cost based on weekday hours of delay times cost of hourly delay from Caltrans "Life-Cycle Benefit-Cost Analysis Economic Parameters 2012" (available at http://www.dot.ca.gov/hq/tpp/offices/eab/benefit_cost/LCBCA-economic_parameters.html) assuming 9 percent trucks, which is the corridor average.

Source: I-10 Corridor Project Traffic Study, 2014.

Safety

Corridors that are highly congested generally have higher congestion-related accident rates. Congestion-related accidents typically include rear-end collisions and sideswipes. Operational inefficiencies, such as weaving conflicts or comingling of commuter and goods movement traffic, also increase the accident rate. The 2045 projected increase in traffic volumes along the I-10 corridor would likely increase the number of congestion-related accidents within the project area.

The accident data provided by Caltrans Traffic Accident Surveillance and Analysis Systems (TASAS) indicates that the prevalent cause of accidents along the I-10 mainline is traffic congestion, resulting in rear-end, sideswipe, and hit object collisions. Although the project is not intended to directly address safety issues along I-10, it is anticipated that implementing the I-10 CP would improve traffic flow, thereby reducing traffic accidents on the I-10 corridor.

1.2.2.2 Legislation and Project Funding

In November 1989, San Bernardino County voters approved Measure I, a half-cent sales tax, to ensure that needed transportation projects were implemented countywide through 2010. In 2004, San Bernardino County voters overwhelmingly approved the extension of the Measure I sales tax, with 80.03 percent voting to extend the measure through 2040. The proposed I-10 CP is a key component of SBCTA's recent extension of the Measure I Plan. In 2000, HOV lanes were constructed on I-10 between the LA/SB county line and Haven Avenue in Ontario. In 2007, I-10 was widened from six lanes to eight lanes from Orange Street to Ford Street in Redlands.

In August 2011, the SBCTA Board of Directors voted to move forward with including an Express Lane Alternative for the project.

This project is a major element of the SBCTA 10-Year Delivery Plan, with an estimated construction cost range of $537 million to more than $1.49 billion (estimated nominal construction cost range is approximately $650 million to $1.8 billion in future dollars), depending on the alternative chosen. Future plans, specifications, and estimate (PS&E), ROW, and construction of the proposed project are anticipated to be funded with a combination of Measure I, State, and federal funds and potential toll revenues.

1.2.2.3 Modal Interrelationships and System Linkages

I-10 is part of the National Highway System and is considered a direct route through the heart of Los Angeles and San Bernardino, providing intra-regional and inter-regional access for people and goods traveling within or to Los Angeles, San Bernardino, and the surrounding communities. I-10 represents a major link to other freeway systems within the San Bernardino County area and is a strategic component of the County's transportation system. As a major regional east-west freeway corridor, I-10 is an important route for facilitating commuter traffic, transit service, goods movement, and major truck movement between the Inland Empire and the greater Los Angeles region, as well as from southern California to the rest of the nation. Improvements along the I-10 corridor proposed by both build alternatives would provide benefits to commuter traffic, transit services, and goods movement by reducing congestion, increasing throughput, and enhancing trip reliability. Alternative 2 would provide additional capacity by extending the existing HOV lane in each direction of I-10 from the current HOV terminus near Haven Avenue in Ontario to Ford Street in Redlands, a distance of approximately 25 miles. Alternative 3 would provide more capacity than Alternative 2 by constructing two Express Lanes in each direction of I-10 from the LA/SB county line to California Street in Redlands and one Express Lane from California Street to Ford Street in Redlands.

Under the proposed HOV lane (Alternative 2) and Express Lanes (Alternative 3), mass transit vehicles may access the additional lane(s). Transit operators depend on travel time reliability to meet scheduled stops for a given route. Maintaining a consistent travel time for transit could be achieved through alleviating traffic congestion. An LOS analysis was conducted to analyze the level of congestion along the proposed additional HOV lane or Express Lanes, which would indicate whether the project would result in enhanced trip reliability for transit. Based on the results of the LOS analysis for both alternatives, the single HOV lane in Alternative 2 provides less benefit to HOV and transit vehicles than the dual Express Lanes included in Alternative 3. Table 3.1.6-5 shows that in 2025 the single HOV lane in Alternative 2 is projected to operate at LOS F in the EB direction during the PM peak hour along two of the three study segments; it is projected to operate at LOS F in the WB direction during both the AM and PM peak hours along two of the three study segments. Table 3.1.6-13 shows that in 2045 the single HOV lane is projected to operate at LOS F in the EB direction during the AM peak hour along one of the three study segments and during the PM peak hour along all three of the study segments; it is projected to operate at LOS F in the WB direction during the AM peak hour in all three of the study segments and during the PM peak hour along two of the three study segments. The dual Express Lanes in Alternative 3 are projected to operate at LOS D or better in both directions in 2025 and 2045 along all study segments. Therefore, HOV and transit vehicles would encounter less congestion and operate with greater trip reliability in the Express Lanes under Alternative 3 compared to the HOV lanes under Alternative 2.

The greater capacity provided under Alternative 3, compared with Alternative 2, will provide greater transportation benefits to commuters, transit, and goods moving both through the corridor and to/from destinations along the corridor.

Freight and Logistics Movement

With approximately 40 percent of the national imports arriving at the Los Angeles/ Long Beach seaport facilities, the continuous movement of goods along I-10 is a crucial aspect of continued economic development for San Bernardino County, the southern California region, and the nation as a whole. Freight movement via truck transport is a major component for maintaining the region's complex trade and goods production and movement system, including southern California's seaports, airports, rail yards, logistics facilities, and distribution centers. If no improvements are made to the I-10 corridor, trucks traveling through the I-10 corridor will experience severe traffic congestion before the design year 2045.

The project study area, as well as all of southern California, has experienced dramatic growth in the last 30 years, and this trend is expected to continue, including expansion of seaports, airports, rail yards, logistics facilities, and distribution centers, which will increase truck traffic. During the past several decades, the SCAG region, including Orange, Imperial, Riverside, San Bernardino, Los Angeles, and Ventura counties, has been one of the fastest-growing regions in the nation. Cities within San Bernardino County are projected to increase at a faster rate than cities within Los Angeles County (see Table 3.1.2-1 in Section 3.1.2, Growth). It is therefore crucial that I-10, as a vital east/west artery for intra-regional and inter-regional travel for goods and people, including to and from some of the largest ports in the country, be improved for this projected growth.

While freight generally moves in the general purpose lanes, some freight in lighter trucks (e.g., local FedEx and UPS vehicles) would be allowed to use the HOV and Express Lanes with both Alternative 2 and Alternative 3. The addition of an Express Lane west of Haven Avenue would provide benefits to freight movement by directly serving some local delivery freight vehicles, as well as by freeing up capacity in general purpose lanes for heavier longer distance trucks. The provision of an HOV lane east of Haven Avenue would free up capacity in the general purpose lanes for all trucks, but the dual Express Lanes between Haven Avenue and I-215 would free up even more capacity in the general purpose lanes for heavier trucks and directly serve some lighter trucks.

LA/Ontario International Airport

LA/Ontario International Airport is located in Ontario just south of the I-10 freeway alignment. Access to the airport is less than 0.5 mile south from I-10, with the primary entrance located at Archibald Avenue. With projected growth of population and jobs within San Bernardino County and the region, the airport is anticipated to serve as an important transportation hub for the region. The proposed improvements associated with the I-10 CP between Haven Avenue and Vineyard Avenue are considered an integral component for the success of the airport because it would greatly enhance access and east-west mobility leading directly to LA/Ontario International Airport.

The build alternatives would improve access to and from LA/Ontario International Airport and the surrounding area, which also includes major logistics, UPS airlines, and distribution businesses developed around the airport.

Metrolink and Regional Rail Transit Services

Metrolink is a southern California commuter rail system consisting of 7 service lines and 55 rail stations in Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. The San Bernardino Line, which is the heaviest utilized of the 7 lines, runs parallel to the I-10 corridor, extending from downtown Los Angeles to downtown San Bernardino. The San Bernardino Line stops at stations near the I-10 CP, including Pomona (North), Claremont, Montclair, Upland, Rancho Cucamonga, Fontana, Rialto, and San Bernardino.

Improvements to the I-10 corridor under either build alternative would increase travel speeds, reduce congestion, and thereby improve access to and from Metrolink stations along the corridor. This is anticipated to encourage a greater growth and regional expansion of efficient transit options at the same time. In comparison, Alternative 3 would have additional benefit and greater capacity compared to Alternative 2 by providing improved access to/from the Metrolink stations along the corridor and enhanced trip reliability. Alternative 2 provides some benefits east of Haven Avenue; however, it will not provide the same level of long-term congestion relief as Alternative 3; the general purpose lanes have projected congestion less than 10 years after opening the HOV lane.

The build alternatives also complement other regional rail transit services planned for San Bernardino and Los Angeles counties by enhancing access to these services. One project that would benefit from the I-10 CP build alternatives is the proposed Metro

Gold Line Foothill Extension Project, which will ultimately extend the existing Gold Line light rail system from its current terminus in Pasadena to Montclair. Both build alternatives would support this planned system by improving vehicular access for San Bernardino County commuters to and from the ultimate eastern terminus of the light rail in Montclair, which will be located north of the I-10/Monte Vista Avenue interchange. Specifically, Alternative 3 would include ramp and structure improvements at the I-10/Monte Vista Avenue interchange, which would also facilitate better access to the planned Montclair Station.

Omnitrans

Omnitrans also provides transit services along the I-10 corridor within the San Bernardino Valley. As the largest transit agency in San Bernardino County, the Omnitrans fixed-route service consists of 27 bus routes covering 15 cities and unincorporated areas of the county. Fixed-route bus service runs primarily along major east-west and north-south corridors. The average wait for each route (headway) varies from 15 minutes to hourly service, with approximately 18 hours of service on weekdays, 13 hours on Saturdays, and 12 hours on Sundays.

Omnitrans began providing express bus passenger services along the I-10 corridor in September 2015. This freeway express bus route along I-10 connects the downtown San Bernardino Transit Center with Arrowhead Regional Medical Center, Ontario Mills, and the Montclair Transit Center (see Figures 1-4 and 1-5). Omnitrans is considering several locations along I-10 that may be suitable for implementing key bus stop locations, allowing greater transit connectivity and opportunities to accommodate trip transfers for existing and future customers. As part of the I-10 CP, bus stops would be constructed at the WB and EB on-ramps of the Mountain Avenue interchange in Alternative 3 and at the WB and EB on-ramps of the Sierra Avenue interchange in Alternatives 2 and 3. Associated intersection improvements, pedestrian access enhancement, and traffic signal modifications would be included in the project design to accommodate the Omnitrans express bus services and facilitate the trip transfers to and from local bus services. Once either of the build alternatives is constructed, the proposed Omnitrans route would be able to use approximately 24 miles of the HOV or Express Lanes on I-10, resulting in a reduced travel time of approximately 50 percent compared to local bus services. The route is designed to maximize transfer potential to Foothill Transit's SilverStreak in Montclair, Metrolink trains, and other Omnitrans routes for better connectivity regionally. Omnitrans also offers a freeway express bus route along Route 215, which connects downtown San Bernardino with downtown Riverside.

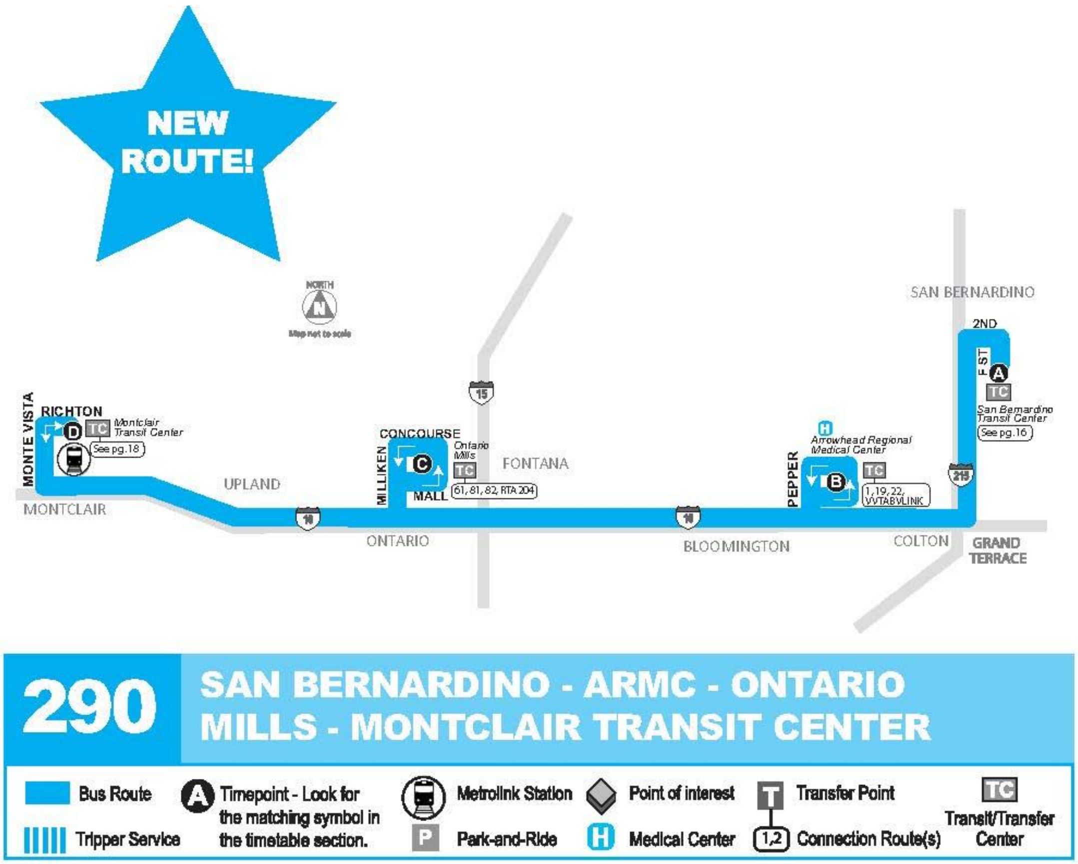


Figure 1-4 Omnitrans Freeway Express Bus Route along I-10

Figure 1-5 Omnitrans Freeway Express Bus

Another express bus line, the sbX Green line, San Bernardino County's first-ever Bus Rapid Transit (BRT) Line, travels a 15.7-mile route along the E Street Corridor, from Cal State University San Bernardino in the north to Loma Linda University & Medical Center in the south. BRT is a premium transit service that includes the development of coordinated improvements to a bus transit system's infrastructure, equipment, operations, and technology to provide a faster, more attractive, high-quality, high-capacity bus service. Service runs weekdays, Monday through Friday, with service every 10 minutes during peak hours and every 15 minutes during off-peak hours. Additionally, the sbX Green line has stations in close proximity to the I-10 corridor and crosses the corridor in some locations.

Omnitrans has also proposed additional BRT services, including two routes paralleling and serving the I-10 corridor: the Holt Boulevard/4th Street corridor and the San Bernardino Avenue corridor. The proposed lines would link the Pomona Transcenter in Los Angeles County with Metrolink Stations and downtown San Bernardino.

Additionally, Omnitrans provides its Access Service, which is a public transportation service for people unable to independently use the fixed-route bus service for all or some of their trips, and mandated by the Americans with Disabilities Act (ADA). Access Service provides curb-to-curb service to complement the Omnitrans fixed-route bus system and is available during the same periods that fixed-route service operates.

By improving the I-10 corridor, it is anticipated that the project will enhance Omnitrans' current service and access to and from transit centers and encourage increased ridership, thereby increasing transit usage along the I-10 corridor and surrounding communities. Several Omnitrans routes utilize facilities that would be improved by either build alternative, though the Alternative 2 improvements would provide less capacity than Alternative 3 and would not provide the same level of long-term trip reliability as Alternative 3 because the HOV lanes are projected to become congested less than 10 years after opening. Conversely, Alternative 3 would provide the greatest capacity for the existing express bus services and trip reliability along I-10, adding potential for expanded express bus services connecting primary transit stops at the San Bernardino, Pepper, Sierra, Ontario Mills Shopping Center, and Monte Vista transit hubs.

Vanpool Programs

Vanpool programs are designed to transport groups of people to work in shared vans. It is an example of "shared mobility," an emerging transportation strategy to provide the public with alternatives to driving alone. The Federal Transportation Administration (FTA) considers vanpools a public transportation mode when a vanpool is subsidized on an ongoing basis and meets certain FTA public transit requirements. Employees that live and work near one another and share similar schedules can form a group that commutes together between home and work. In most vanpool programs, such as those operated by the San Diego Association of Governments (SANDAG), Orange County Transportation Authority (OCTA), and Los Angeles County Metropolitan Transportation Authority (Metro), which has the largest public vanpooling program in North America, riders pay a low monthly fare based on distance and number of participants. This monthly fare covers all costs of the vanpool, including fuel, maintenance, insurance, tolls, roadside assistance, and other assorted costs.

In San Bernardino County, SBCTA and the Victor Valley Transit Authority partnered to develop and administer the San Bernardino Regional Vanpool Program (Victor Valley Phase), which began in September 2012. By March 2014, the program had 139 active vanpools. Of these vanpools, the average occupancy was 80 percent, and the participants traveled roughly 300,000 miles annually. Based on the success of this pilot program, SBCTA is currently working to expand the program countywide and possibly extend it into Riverside County in partnership with the Riverside County Transportation Commission (RCTC).

Vanpools traveling along the I-10 corridor would benefit to some extent under both of the build alternatives because both build alternatives would result in reduced congestion, increased throughput, and enhanced trip reliability. Although Alternative 2 would provide limited capacity for the near term, Alternative 3 would provide the greatest benefit for vanpools by providing additional capacity and long-term trip reliability in the Express Lanes. Implementation of either of the build alternatives is anticipated to potentially increase vanpool usage within the I-10 corridor.

Carpool Programs

The purpose of carpool lanes, also known as HOV lanes, is to decrease the number of vehicles on freeways by providing incentives for commuters to carpool instead of commuting alone. Alternative 2 would extend the existing HOV lane in each direction of I-10 from the current HOV terminus near Haven Avenue in Ontario to

Ford Street in Redlands, a distance of approximately 25 miles. The extended HOV lanes would result in reduced congestion, increased throughput, and enhanced trip reliability for carpoolers; however, the HOV lanes proposed for Alternative 2 would only provide congestion relief for less than 10 years after opening before they become congested. For Alternative 3, the current toll policy is to open the Express Lanes for carpools with three or more occupants (HOV3+) for free, with the exception of heavy peak-period traffic. During heavy peak-period traffic (e.g., weekends and some holidays), HOV3+ may pay a discounted toll. Though both build alternatives would benefit commuter connectivity for carpoolers along the corridor by reducing congestion, providing increased trip reliability, and improving access to and from carpool facilities along the corridor, Alternative 3 provides a greater overall improvement in every regard.

Park-and-Ride Facilities

There are three existing park-and-ride lots in the vicinity of the I-10 corridor between the LA/SB county line and Ford Street as listed below:

- Montclair Transportation Center, 5091 Richton Street, Montclair
- Bloomington Facility, 10175 Cedar Avenue, Bloomington
- sbX Redlands Boulevard Parking Facility, 10554 Anderson Street, Loma Linda

These park-and-ride lots are part of SBCTA's mobility program that promotes public transit and carpooling/van pooling throughout San Bernardino County. Caltrans and SBCTA will continue to work together to identify the need for park-and-ride lots for the future. No improvements to the existing parking lots are proposed as part of this project.

1.3 Independent Utility and Logical Termini

A transportation project is required by the Federal Highway Administration (FHWA) (23 *Code of Federal Regulations* [CFR] 771.111) to meet standards that establish a project's "independent utility" and "logical termini." For a project to have "independent utility," it must be usable and a reasonable expenditure, even if there are no additional transportation benefits that "stand alone" and are not dependent on or trigger the implementation/need of other projects. Additionally, a project must not preclude other potential transportation projects from being implemented in the future.

Both of the build alternatives propose improvements in the corridor that would be fully usable regardless of any other planned future improvements in the corridor. The additional lanes represent a reasonable expenditure of transportation funds because of the peak-period congestion that currently exists in the corridor and is forecast to become more extensive over time. Additionally, the I-10 CP is, and would be, independent of other actions/projects by meeting the objectives of the project's stated purpose and need, and by not creating/introducing congestion for areas outside of the project limits.

As described in Section 3.1.6, Traffic and Transportation/Pedestrian and Bicycle Facilities, and Section 3.2.6, Air Quality, the proposed project would provide many benefits, including:

- Reducing travel time in the corridor by providing additional travel lane(s) in each direction on I-10.
- Promoting carpooling and transit, thereby helping to achieve air quality benefits.
- Reducing congestion and increasing travel speeds in the corridor during peak periods.
- Increasing mobility in the corridor.
- Improving access to the facility.

These benefits would be provided by the proposed project and would not require the completion of any other projects.

1.3.1 Logical Termini

Logical termini are required for project development to establish project boundaries that allow for a comprehensive response to transportation deficiencies. Rational endpoints are required for transportation improvements and the review of environmental impacts.

The project corridor is of sufficient length to adequately address transportation issues that have been identified in the stated purpose and need.

Both of the build alternatives would be of sufficient length to provide considerable congestion relief on this corridor within the project limits. Both of the build alternatives would result in improvements to current traffic conditions along the I-10 corridor without further additional transportation improvements being made in the area. For Alternative 2, the proposed western terminus at Haven Avenue would remove the lane drop that occurs with the termination of the existing HOV lane by extending the lane to the east.

For Alternative 3, the proposed western terminus near the LA/SB county line is in an area where WB peak-hour freeway traffic currently drops approximately 5 percent and is forecast in 2045 to drop by approximately 9 percent, or roughly 1,400 vehicles per hour through successive interchanges.

The proposed eastern terminus of both build alternatives is at Ford Street in Redlands. Ford Street represents logical termini because it coincides with the start of the existing EB truck climbing lane, which extends to Live Oak Canyon Road in Yucaipa. The truck climbing lane provides the fifth lane; therefore, there would be no reduction in lanes where the proposed additional lanes end.

“Segmentation” is when a transportation need extends throughout an entire corridor, but environmental issues and transportation needs are inappropriately discussed for just a segment of that corridor. Such segmentation could result in analyses that downplay total impacts, but result in more (smaller) projects with the same or more total impact, to address traffic needs within a corridor. The proposed project has been determined to have independent utility and logical termini and analyzes and addresses issues holistically within a large corridor, avoiding “segmentation.”

Furthermore, the proposed build alternatives would not restrict any other foreseeable transportation improvements, or trigger the need for any, in the corridor. Alternative 2 would not preclude implementation of the Express Lanes on I-10 that are included in the SCAG RTP because the Express Lanes would incorporate the proposed HOV lane in each direction. The change in management of the existing HOV lane to an Express Lane from the Los Angeles county line to Haven Avenue proposed under Alternative 3 would not prevent the HOV lane in Los Angeles County from continuing to operate as an HOV lane or, with a change in management, to operate as an Express Lane. Likewise, completion of an Express Lane to Ford Street in Redlands proposed under Alternative 3 would not prevent the addition of general purpose, HOV, or Express Lanes east of the project terminus.

Chapter 2 Project Alternatives

2.1 Project Description

This chapter describes the alternatives that were developed to address the project's purpose and need, described in Chapter 1, Proposed Project. The evaluation of project alternatives included an assessment of traffic level of service (LOS) and other congestion-relief performance criteria, environmental impacts, and effectiveness in addressing the project's purpose and need. The alternatives considered viable for the I-10 Corridor Project (I-10 CP) are Alternative 1 (No Build), Alternative 2 (One High-Occupancy Vehicle [HOV] Lane in Each Direction), and Alternative 3 (Two Express Lanes in Each Direction), with Transportation Systems Management (TSM)/Traffic Demand Management (TDM) elements included in each alternative, except the No Build Alternative. Conceptual Design Plans for each of the proposed build alternatives are provided in Appendix N, Major Project Features Maps.

The project is located in Los Angeles and San Bernardino counties along the existing Interstate 10 (I-10) corridor from approximately 0.4 mile west of White Avenue in Pomona at LA Post Mile (PM) 44.9 to Live Oak Canyon Road in Yucaipa at SBd PM R37.0. Within the project limits, I-10 is generally an eight-lane divided controlled-access freeway with four general purpose lanes in each direction and auxiliary lanes along selected portions of the route. Between the Los Angeles/San Bernardino (LA/SB) county line and Haven Avenue, there is one HOV lane in each direction, which is separated from the general purpose lanes via a 2- to 4-foot-wide striped buffer. The existing lane width is generally 12 feet throughout the corridor except for the HOV lanes west of I-15 which are 11 feet wide. The outside shoulder has the standard width of 10 feet while the inside shoulder varies from 8 feet west of I-15 to 17 feet (not entirely paved) east of I-15. There are 45 existing auxiliary lanes along the project corridor, including 21 in the westbound (WB) direction and 24 in the eastbound (EB) direction.

In San Bernardino County, I-10 (also known as the San Bernardino Freeway) is approximately 50 miles long, from the LA/SB county line to the San Bernardino/ Riverside county line. In this 50-mile stretch, I-10 has important interchanges with other major freeways in the region. These include Interstate 15 (I-15), Interstate 215 (I-215), State Route (State Route) 210, and SR-38. The initial construction of I-10 began in 1953 as SR-26, with two general purpose lanes in each direction. The highway was converted to I-10 through a route adoption in 1958 and infrastructure upgrade in the mid 1960s. Inside and outside widening for the third and fourth general purpose lanes took place throughout the 1970s through 2000s. The addition of the HOV lanes between the LA/SB county line and Haven Avenue was completed in 2000.

The purpose of the I-10 CP is to improve traffic operations on I-10 in San Bernardino County to reduce congestion, increase throughput, enhance trip reliability, and accommodate long-term congestion management of the corridor for the planning design year of 2045.

Project Study Report/Project Development Support

A Project Study Report/Project Development Support (PSR/PDS) for the I-10 improvements from Haven Avenue to Ford Street (EA 08-0C2500) was approved in December 2006. The PSR/PDS proposed extending the existing HOV lanes on I-10 from its current terminus at Haven Avenue in Ontario to Ford Street in Redlands to relieve congestion along the I-10 corridor in San Bernardino County. This alternative would become known as Build Alternative 2.

A Supplemental PSR/PDS was prepared in early 2013 and approved in April 2013 to include an additional alternative (Express Lanes Alternative) to the study. The new alternative would extend the corridor project limits westerly to the LA/SB county line and provide two Express Lanes in each direction from the LA/SB county line to SR-210 and a single Express Lane in each direction from SR-210 to Ford Street. This would become known as Build Alternative 3.

2.2 Project Alternatives

All of the build alternatives are evaluated on criteria that would achieve the objectives of the project to reduce congestion, increase throughput, enhance trip reliability, and accommodate long-term congestion management of the corridor. Some of these criteria include the ability to relieve traffic congestion for the long term, project cost, environmental impacts, and to achieve acceptable LOS along the I-10 corridor. If an alternative does not achieve the intended purpose established for the project, it is eliminated from further consideration.

Two build options are proposed (Alternatives 2 and 3), as well as a No Build Alternative 1. A TSM/TDM Alternative was also considered, but it did not meet the project purpose as a stand-alone alternative; therefore, it has been eliminated from further review. Components from the TSM/TDM Alternative have been incorporated into each of the build alternatives. Descriptions of Alternatives 2 and 3 are provided in Sections 2.2.1.2 and 2.2.1.3. The TSM/TDM Alternative and the No Build Alternative are described in Sections 2.2.1.3 and 2.2.1.4, respectively. The potential effectiveness of each alternative was rigorously explored and objectively evaluated to achieve the project purpose and address the project need based on informed decision making by the Project Development Team (PDT); input garnered from various State, federal, and local agencies; and comments received from the public during the public scoping meetings. A comparison between the build alternatives and the No Build Alternative is provided in Table 2-11.

2.2.1 Build Alternatives

Alternative 2 – One High-Occupancy Vehicle Lane in Each Direction

Alternative 2 would extend the existing HOV lane in each direction of I-10 from the current HOV terminus near Haven Avenue in Ontario to Ford Street in Redlands, a distance of approximately 25 miles, by adding a lane in each direction. Alternative 2 would add one HOV lane in each direction from Haven Avenue to Ford Street and construct a new WB auxiliary lane between Rancho Avenue and La Cadena Drive.

Alternative 3 (Preferred Alternative) – Two Express Lanes in Each Direction

Alternative 3 would provide two Express Lanes in each direction of I-10 between the LA/SB county line to California Street in Redlands, and one Express Lane in each direction from California Street to Ford Street in Redlands. Transition areas would be provided on I-10 at the LA/SB county line and at Ford Street to transition the Express Lanes back to existing lane configuration.

2.2.1.1 Common Design Features of the Build Alternatives

Both build alternatives propose to reduce congestion, increase throughput, and enhance trip reliability by providing improvements to the corridor and constructing additional lanes on EB and WB I-10. Though the alignment and design characteristics differ by alternative, there are common design features to each of the two build alternatives, as noted below.

- Provide/maintain pedestrian facilities on overcrossings and along arterials within interchanges.
- Existing sidewalks within the project limits will be maintained or replaced in-kind.
- Existing bike lanes and trails within the project limits will be maintained.

- Pedestrian facilities on arterials being improved would meet current Americans with Disabilities Act (ADA) standards.
- To the extent feasible, existing concrete barriers, temporary railings, metal beam guardrails, and metal thrie-beam barriers in the median of I-10 will be replaced with 56-inch-high concrete barrier to reduce glare.
- In both build alternatives, new chain link fence will be installed along the existing or proposed right-of-way (ROW) where needed.
- Maintenance vehicle pullouts (MVP) would be included in various locations under each build alternative. These locations will be determined during the design-build phase.
- Relocation of existing utilities, which includes electric, gas, telephone, cable, water, sewer, oil, gas, and waste water.
- Modification of existing stormwater drainage channels and construction of new drainage and/or retention facilities, and water quality Best Management Practices (BMPs).
- New or reconstructed soundwalls and retaining walls.
- Median lighting is proposed at selected locations along the corridor. Lighting is anticipated to improve headlight sight distance in sag vertical curves (i.e., vertical curves with descending slopes forming a bowl or a valley bottom). Median lighting is anticipated to be on 35-foot-tall poles.
- Replacement and/or new shielded light fixtures.
- Landscaping and hardscaping elements.
- Safety lighting improvements between the 4th Street undercrossing and I-10/I-15 freeway interchange. Install double-luminaire mast arm lighting in the existing concrete median barrier at approximately 200-foot intervals from PM 5.00 to PM 6.35 and PM 7.03 to PM 10.00. Install high mast lighting in the dirt median at seven locations at approximately 450-foot intervals from PM 6.45 to PM 6.95 and at four locations in the dirt area at PM 10.0 (one in each quadrant of I-10/I-15 interchange).
- Replacement of approximately 28 overhead signs on EB and WB I-10 between PM 5.00 and PM 10.75.
- Due to ROW constraints and existing nonstandard features, design exceptions are being requested as part of the proposed project. Examples of such design exceptions include:
  - Horizontal stopping sight distance
  - Vertical stopping sight distance

- Super-elevation rate
- Traveled way width
- Shoulder width and minimum horizontal clearance
- Median width
- Vertical clearance
- Corner sight distance
- Interchange spacing
- Partial interchange and isolated off-ramp
- Ramp lane width
- Weaving length
- Access control
- Access rights opposite ramp terminal
- Curb ramps
- Decision sight distance
- Super-elevation transition
- Super-elevation of compound curves
- Compound curves
- Tangent length between reversing curves
- Minimum grade
- Vertical curve length
- Bridge median
- Minimum outer separation width
- Design of freeway entrances and exits
- Vertical curve beyond exit nose SSD
- Crossroad grade at ramp terminal
- Single-lane ramps
- Successive on-ramps
- Freeway connector design speed
- Single-lane connections
- Branch connections number of lanes
- Branch connections merge/diverge
- Access control

- Under both Build Alternatives, Omnitrans express routes would be able to use the HOV or Express Lanes on I-10.
- Although TSM and TDM measures alone do not satisfy the purpose and need of the project, TSM and TDM measures will be incorporated into each of the build

alternatives for the proposed project. Every effort will be made to incorporate the following TSM and TDM elements:

- Improved ramp metering hardware and software and closed-circuit television (CCTV) systems for viewing ramps and nearby arterials
- At locations of interchange improvements, upgraded traffic signals interconnected and coordinated with adjacent signals and ramp meters
- Additional way-finding signs on freeways and arterials
- Design of on- and off-ramps to limit impacts to pedestrian and nonmotorized travel and preserve access to bike lanes and trails
- Intelligent Transportation System (ITS) elements, including fiber-optic and other communication systems for improved connectivity and remote management; changeable message signs (CMS); CCTV coverage of the entire freeway mainline, ramps, and adjacent arterials; video detection systems; and vehicle detection system (VDS) for volume, speed, and vehicle classification
- Traveler Information Management System improvements to enhance dissemination of real-time information on roadway conditions
- Vanpool initiatives
- Carpooling programs
- Promote and integrate public transit design features
- CCTV with Pan-Tilt-Zoom (PTZ) capability
- Ramp Metering System (RMS)
- VDS

2.2.1.2 Unique Features of the Build Alternatives

A comparison of impacts for each build alternative and the No Build Alternative is provided in Table 2-11.

Alternative 2

Alternative 2 would extend the existing HOV lane in each direction of I-10 from the current HOV terminus near Haven Avenue in Ontario to Ford Street in Redlands, a distance of approximately 25 miles.

Alternative 2 improvements extend through 3 system interchanges (I-10/I-15 interchange, I-10/I-215 interchange, I-10/SR-210 interchange), in addition to 21 local street interchanges from Haven Avenue to Ford Street.

Alternative 2 Mainline Improvements

- Add one HOV lane in each direction from Haven Avenue to Ford Street.

- Re-establish existing auxiliary lanes along the corridor.
- Construct new WB auxiliary lane at Cedar Avenue westbound on-ramp
- Construct new WB auxiliary lane between Rancho Avenue and La Cadena Drive.

The proposed improvements under Alternative 2 would involve construction work within the following routes and post miles:

- 08-SBd-10 PM 4.7/R37.0
- 08-SBd-15 PM 0.7/4.0
- 08-SBd-38 PM 0.0/0.3
- 08-SBd-210 PM R33.0/R31.5
- 08-SBd-215 PM 2.1/5.7

In addition to the addition/extensions of the HOV lanes, the project includes reconstruction of demolished structures and/or modification of 3 system interchanges, 19 local street interchanges from Haven Avenue to Ford Street, 2 local street improvements, and structure improvements necessary to accommodate the proposed HOV lanes. Structure improvements for Alternative 2 include replacement of 3 structures and modification of 43 structures along the corridor. Alternative 2 includes new or reconstruction of retaining walls and soundwalls where appropriate. The existing concrete barrier, temporary railings, metal beam guardrails, and thrie-beam barriers in the median of I-10 would be replaced with a Type 60G concrete barrier for enhanced safety. Existing auxiliary lanes would be replaced in kind, in addition to the construction of additional auxiliary lanes at some locations to improve merging and diverging of vehicles.

Preliminary cost estimates for this alternative are $567 million (approximately $652 million in future dollars), including $446 million in construction, $14 million in ROW and utility relocation, and $100 million in support costs. Figure 2-1 displays the proposed I-10 lane configurations associated with Alternative 2. The HOV lane extension proposed in Alternative 2 is a TSM/TDM measure that would reduce system demand by promoting carpooling.

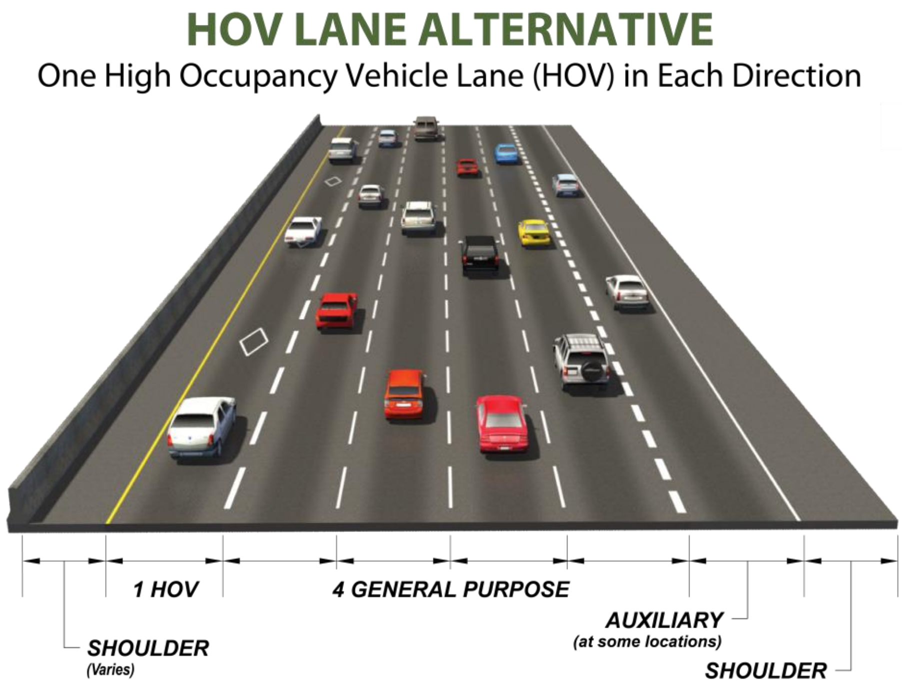


Figure 2-1 Alternative 2 – One HOV Lane in Each Direction

Alternative 2 Connector and Interchange Ramp Improvements

Alternative 2 would require reconstruction of several connector and interchange ramps due to the I-10 widening. Table 2-1 summarizes the proposed connector and ramp improvements along the project corridor.

Table 2-1 Alternative 2 Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 2 Ramp Construction			
			None	Gore	Partial	Full
Haven	1	Haven EB off-ramp	x			
	2	Haven EB loop on-ramp	x			
	3	Haven EB on-ramp	x			
	4	Haven WB on-ramp	x			
	5	Haven WB loop on-ramp	x			
	6	Haven WB off-ramp	x			
Milliken	7	Milliken EB off-ramp		x		
	8	Milliken EB loop on-ramp				x
	9	Milliken WB on-ramp		x		
	10	Milliken WB loop off-ramp		x		

Table 2-1 Alternative 2 Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 2 Ramp Construction			
			None	Gore	Partial	Full
I-15	11	E10-N15 Connector			x	
	12	E10-S15 Connector			x	
	13	N15-E10 Connector			x	
	14	S15-E10 Connector			x	
	15	N15-W10 Connector			x	
	16	S15-W10 Connector			x	
	17	W10-N/S15 Connector C-D			x	
	18	W10-N15 Connector	x			
	19	W10-S15 Connector	x			
Etiwanda	20	Etiwanda EB C-D off-ramp			x	
	21	Etiwanda EB off-ramp			x	
	22	Etiwanda EB loop on-ramp	x			
	23	Etiwanda EB on-ramp	x			
	24	Valley EB off-ramp	x			
	25	Etiwanda EB C-D on-ramp			x	
	26	Etiwanda WB on-ramp	x			
	27	Etiwanda WB loop on-ramp	x			
	28	Valley WB on-ramp	x			
	29	Etiwanda WB off-ramp	x			
Cherry	30	Cherry EB off-ramp		x		
	31	Cherry EB on-ramp	x			
	32	Cherry WB on-ramp		x		
	33	Cherry WB loop on-ramp			x	
	34	Cherry WB off-ramp		x		
Citrus	35	Citrus EB off-ramp		x		
	36	Citrus EB on-ramp		x		
	37	Citrus WB on-ramp		x		
	38	Citrus WB loop on-ramp			x	
	39	Citrus WB off-ramp			x	

Table 2-1 Alternative 2 Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 2 Ramp Construction			
			None	Gore	Partial	Full
Sierra	40	Sierra EB off-ramp				x
	41	Sierra EB on-ramp				x
	42	Sierra WB on-ramp				x
	43	Sierra WB off-ramp				x
Cedar	44	Cedar EB off-ramp		x		
	45	Cedar EB on-ramp			x	
	46	Cedar WB on-ramp			x	
	47	Cedar WB off-ramp			x	
Riverside	48	Riverside EB off-ramp		x		
	49	Riverside EB on-ramp			x	
	50	Riverside WB on-ramp			x	
	51	Riverside WB off-ramp			x	
Pepper	52	Pepper EB off-ramp			x	
	53	Pepper EB on-ramp				x
	54	Pepper WB on-ramp		x		
	55	Pepper WB off-ramp			x	
Rancho	56	Rancho EB off-ramp				x
	57	Rancho EB on-ramp				x
	58	Rancho WB on-ramp				x
	59	Rancho WB off-ramp				x
La Cadena/9th	60	9th EB off-ramp				x
	61	9th EB on-ramp				x
	62	La Cadena WB on-ramp	x			
	63	9th WB off-ramp		x		
Mt. Vernon	64	Mt. Vernon EB off-ramp			x	
	65	Mt. Vernon EB on-ramp	x			
	66	Mt. Vernon WB on-ramp		x		
	67	Sperry WB off-ramp			x	

Table 2-1 Alternative 2 Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 2 Ramp Construction			
			None	Gore	Partial	Full
I-215	68	E10-N/S215 Connector C-D	x			
	69	E10-N215 Connector	x			
	70	E10-W215 Connector	x			
	71	N215-E10 Connector			x	
	72	S215-E10 Connector	x			
	73	S215-W10 Connector		x		
	74	N215-W10 Connector			x	
	75	W10-N/S215 Connector C-D		x		
	76	W10-N215 Connector	x			
	77	W10-S215 Connector	x			
	78	Sunwest WB on-ramp			x	
Waterman	79	Redlands EB off-ramp	x			
	80	Waterman EB C-D off-ramp			x	
	81	Waterman EB loop on-ramp	x			
	82	Waterman EB loop off-ramp	x			
	83	Waterman EB on-ramp	x			
	84	Waterman EB C-D on-ramp			x	
	85	Waterman WB on-ramp to N/S215			x	
	86	Carnegie WB hook on-ramp				x
	87	Carnegie WB hook off-ramp			x	
Tippecanoe	88	Tippecanoe EB off-ramp		x		
	89	Tippecanoe EB on-ramp			x	
	90	Tippecanoe WB on-ramp		x		
	91	Tippecanoe WB loop on-ramp			x	
	92	Tippecanoe WB off-ramp			x	
Mountain View	93	Mountain View EB off-ramp			x	
	94	Mountain View EB on-ramp				x
	95	Mountain View WB on-ramp			x	
	96	Mountain View WB off-ramp			x	

Table 2-1 Alternative 2 Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 2 Ramp Construction			
			None	Gore	Partial	Full
California	97	California EB off-ramp			x	
	98	California EB on-ramp			x	
	99	California WB on-ramp			x	
	100	California WB off-ramp			x	
Alabama	101	Alabama EB off-ramp			x	
	102	Alabama WB on-ramp			x	
	103	Alabama WB off-ramp			x	
SR-210	104	E10-W210 Connector			x	
	105	E210-W10 Connector		x		
	106	E210-E10 Connector			x	
Tennessee	107	Tennessee EB off-ramp				x
	108	Tennessee EB on-ramp				x
	109	Tennessee WB off-ramp			x	
Eureka/Orange/6th	110	Eureka EB off-ramp		x		
	111	6th EB on-ramp	x			
	112	Orange WB on-ramp	x			
	113	Orange WB loop on-ramp	x			
	114	6th WB off-ramp	x			
University/Cypress	115	University EB off-ramp	x			
	116	Cypress EB on-ramp	x			
	117	University WB on-ramp	x			
	118	Cypress WB off-ramp	x			
Ford	119	Ford EB off-ramp				x
	120	Ford EB on-ramp				x
	121	Ford WB on-ramp				x
	122	Ford WB off-ramp	x			

Alternative 2 Local Street Improvements

Richardson Street, as a local street, and Tennessee Street, as a collector street, are two arterials crossing over I-10 that would need to be replaced with a longer-span structure to accommodate the widened freeway under Alternative 2.

Alternative 2 Structure Improvements

Alternative 2 would necessitate replacement of 3 structures and modification of 44 structures along the corridor. Table 2-2 summarizes the proposed structure improvements under Alternative 2.

Table 2-2 Alternative 2 Structures Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
1	8.16	Haven Ave OC (Lt)	54-1201L	None
2	8.16	Haven Ave OC (Rt)	54-1201R	None
3	9.17	Milliken Ave OC	54-0539	Tie-back wall
4	9.87	E10-N15 Connector OC	54-0913G	None
5	9.91	N15-W10 Connector OC	54-0908G	None
6	9.92	W10-S15 Connector OC	54-1065F	None
7	9.93	Route 15/10 Sep (Lt)	54-0909L	None
8	9.94	Route 15/10 Sep (Rt)	54-0909R	None
9	9.96	S15-E10 Connector OC	54-0910F	None
10	9.98	W10-S15 Bridge over Day Canyon	54-0914F	None
11	10.13	Day Canyon Channel Bridge	54-0351	Widen
12	10.12	W10-S15 Bridge over Day Canyon	54-0351F	None
13	10.13	W10-N15 Bridge over Day Canyon	54-0927F	None
14	10.99	Etiwanda Wash Bridge (Lt)	54-0378L	Widen
15	10.99	Etiwanda Wash Bridge (Rt)	54-0378R	Widen
16	10.99	Etiwanda Wash Bridge (EB Off-Ramp)	54-0378S	Widen
17	11.13	Etiwanda Ave OC	54-0463	None
18	11.35	Valley Blvd WB On-Ramp Separation	54-1214K	None
19	11.50	Valley Blvd EB Off-Ramp UC (Lt)	54-0030L	Widen
20	11.50	Valley Blvd EB Off-Ramp UC (Rt)	54-0030R	Widen
21	11.64	Etiwanda-San Sevaine Channel (Lt)	54-0454L	Widen

Table 2-2 Alternative 2 Structures Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
22	11.64	Etiwanda-San Sevaine Channel (Rt)	54-0454R	Widen
23	11.64	Etiwanda-San Sevaine Channel (EB On-Ramp)	54-0454S	None
24	11.74	Kaiser Spur OH	54-0416	Widen
25	11.82	San Sevaine Creek Channel	54-0434	Abandon
26	12.14	Mulberry Creek Channel	54-0425M	Abandon
27	13.17	Cherry Ave OC	54-0543	None
28	15.18	Citrus Ave OC	54-0538	None
29	15.70	Cypress Ave OC	54-1280	None
30	16.22	Sierra Ave OC	54-1169	None
31	18.49	Cedar Ave OC	54-0035	Tie-back wall
32	19.90	Rialto Channel RCB Bridge	54-1116	None
33	19.97	Riverside Ave OC	54-0536	None
34	20.97	Pepper Ave OC	54-0531	None
35	21.46	Slover Mountain UP	54-0835	None
36	21.96	Rancho Ave OC	54-0817	Tie-back wall
37	22.36	Colton OH (Rt)	54-0464R	Widen
38	22.38	Colton OH (Lt)	54-0464L	Widen
39	22.62	La Cadena Dr UC	54-0462	Widen
40	22.62	La Cadena Dr UC (EB Off-ramp)	54-0462S*	Replace
41	22.71	9^{th} St UC	54-0461	Widen
42	22.82	Pavillion OH (9^{th} WB Off-Ramp)	54-0861K	None
43	22.86	Pavillion Spur OH	54-0460	Widen or abandon
44	23.25	Mt. Vernon Ave OC	54-0459	Tie-back wall
45	23.60	Warm Creek Bridge (Lt)	54-0830L	Widen
46	23.60	Warm Creek Bridge (Rt)	54-0830R	Widen
47	23.80	Santa Ana River Bridge (E10-N/S215)	54-0292G	None
48	23.82	Santa Ana River Bridge (Rt)	54-0292R	Widen
49	23.83	Santa Ana River Bridge (Lt)	54-0292L	Widen

Table 2-2 Alternative 2 Structures Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
50	24.19	E10-N215 Connector OC	54-0823G	None
51	R24.23	S215-E10 Connector OC	54-0824F	None
52	24.23	Route 215/10 Sep (Lt)	54-0479L	None
53	24.25	Route 215/10 Sep (Rt)	54-0479R	None
54	24.27	W10-N215 Connector OC	54-1064F	None
55	24.30	W10-S215 Connector OC	54-0822F	None
56	24.57	E St/Sunwest Ln WB On-Ramp UC	54-0821F	None
57	24.76	Hunts Ln UC	54-0601	None
58	25.26	Waterman Ave UC	54-0600	Widen
59	25.46	San Timoteo Creek (Carnegie Dr WB On-Ramp)	54-1105K	Widen
60	25.54	San Timoteo Creek	54-0599	Widen
61	26.27	Tippecanoe Ave UC	54-0598	Widen
62	26.81	Richardson St OC	54-0597*	Replace
63	27.30	Mountain View Ave UC	54-0596	Widen
64	27.64	West Redlands OH/Mission Channel	54-0570	Widen
65	28.30	California St UC	54-0595	Widen
66	28.80	Nevada St UC	54-0594	Widen
67	29.31	Alabama St OC	54-0593	None
68	29.58	E210-W10/Alabama St WB Off-Ramp OC	54-0937G	None
69	29.70	E10-W210 Connector OC	54-0938G	None
70	29.76	E210-E10 Connector OC	54-0929G	None
71	29.82	Tennessee St OC	54-0592*	Replace
72	29.83	W10-W210 over Tennessee St UC	54-0930F	None
73	30.10	New York St/Colton Ave UC	54-0591	None
74	30.38	Texas St UC	54-0583	Widen
75	30.66	Eureka St UC	54-0580	Modify for new soundwall
76	30.88	Orange St UC (Route 10/38 Sep)	54-0581	None
77	31.01	6th St UC	54-0579	Reconstruct median

Table 2-2 Alternative 2 Structures Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
78	31.41	Church St UC	54-0578	Modify median
79	31.52	Mill Creek Zanja Channel/Redlands OH	54-0472	Modify median
80	31.87	University St UC	54-0582	Modify median
81	31.99	Citrus Ave UC	54-0584	Reconstruct median
82	32.11	Cypress Ave UC	54-0585	Reconstruct median
83	32.36	Palm Ave UC	54-0586	Modify median
84	32.61	Highland Ave UC	54-0587	Reconstruct median
85	33.13	Ford St UC	54-0588	Widen
86	33.29	Redlands Blvd WB Off-Ramp UC	54-0589	Widen

*Structure to be replaced will be assigned a new bridge no.

Alternative 2 Railroad Involvement

Four railroad crossings over or under I-10 would be impacted by the proposed freeway widening, as summarized in Table 2-3. Improvements to railroad crossing facilities would be required to construct Alternative 2.

Table 2-3 Alternative 2 Railroad Crossing Improvements

Railroad and Crossing Location	Proposed Work
UPRR Kaiser Spur OH	Widen
BNSF Colton Crossing OH	Widen
Pavillion Spur OH	Widen or Abandon
BNSF West Redlands OH	Widen

Alternative 2 Drainage Improvements

Several drainage structures along the project corridor would be widened or lengthened as part of the proposed project, as shown in Table 2-4:

Table 2-4 Alternative 2 Drainage Structures

No.	Channel Facility	Approximate Location	Proposed Work
Crossing System			
1	Haven Ave RCB	West of Haven Ave parallel Turner Ave	None
2	California Commerce SD	East of I-15	Extend RCB
3	Day Creek Channel	East of I-15	Widen I-10 bridges
4	Etiwanda Creek	East of I-15	Widen I-10 bridges
5	Etiwanda-San Sevaine Wash	East of Etiwanda Ave	Widen I-10 bridges
6	San Sevaine Creek RCB	East of Etiwanda Ave	Abandon culvert
7	Mulberry Creek RCB	East of Etiwanda Ave	Abandon culvert
8	Rialto Channel RCB	West of Riverside Ave	None
9	Colton SW and NW SD	East of BNSF/Colton Crossing	Lengthen culvert
10	11^{th} Street SD	East of 9^{th} Street	Lengthen culvert
11	Warm (Lytle) Creek	East of Mt. Vernon Ave	Widen I-10 bridge
12	Santa Ana River	East of Mt. Vernon Ave	Widen I-10 bridges
13	San Timoteo Creek	East of Waterman Ave	Widen I-10 bridges
14	Mission Channel	West of California St	Widen I-10 bridge
15	Mill Creek Zanja Channel	West of University Ave	None
Parallel System			
1	I-10 Channel	Etiwanda Ave to Riverside Ave (inside State ROW)	Reconstruct portions

Alternative 2 Pedestrian and Bicycle Facilities

Existing sidewalks within the project limits will be maintained. Under Alternative 2, the project includes reconstruction of Richardson Street, which has one sidewalk along the west side of the roadway, and Tennessee Street, which has one sidewalk along the east side of the roadway. The project would replace the existing sidewalk on these streets in kind. Pedestrian facilities on arterials being improved will meet current ADA standards. In addition, there is a project currently in planning to retrofit existing curb ramps on various cross streets along the I-10 corridor (EA 1C490).

Existing bike lanes and trails within the project limits will be maintained. In addition, new bike lanes (Class II or III) will be incorporated in the design of the proposed arterial improvements at Tennessee Street in Alternative 2. These streets have been identified in their respective local circulation plans as having a bicycle facility.

Transit Operator Planning

As noted, under Alternative 2, Omnitrans express routes would be able to use approximately 24 miles of the HOV lanes on I-10. The I-10 CP would add bus stops at the Sierra Avenue interchange and incorporate associated intersection, pedestrian access, and traffic signal improvements to accommodate the Omnitrans express bus services.

Alternative 3 (Preferred Alternative)

Alternative 3 would provide two Express Lanes in each direction of I-10 from the LA/SB county line to California Street in Redlands, and one Express Lane in each direction from California Street to Ford Street in Redlands, a total of 33 miles. West of Haven Avenue, a single new lane would be constructed and combined with the existing HOV lane to provide two Express Lanes in each direction; between Haven Avenue and California Street, two new Express Lanes would be constructed in each direction by the project, and between California Street and Ford Street, one new Express Lane would be constructed in each direction. The Express Lanes would be price-managed lanes, otherwise known as Express Lanes, in which vehicles not meeting the minimum occupancy requirement, such as an HOV 3+, would need to pay a toll. This is done to encourage ride-sharing along the freeway. Addition of managed lanes is a TDM feature in and of itself, and is a sustainable transportation system management strategy focusing on long-term reliability. Managed lanes promote car-pooling and transit patronage, reduce GHG emissions, and maximize the efficiency of a freeway by increasing person and vehicle throughput, while reducing congestion and delay. “Pricing” provides the ability to actively manage demand and encourage ridesharing and transit. Providing “free-flow” conditions in these lanes provides an incentive for transit agencies to implement future bus services and routes. Travel is possible through the corridor, even when congestion is severe on the freeway, with obvious benefits to the community as bus and emergency services are not severely delayed. This sustainable solution would enhance livability for people within the corridor. Preliminary cost estimates for this alternative are $1.7 billion (approximately $1.9 billion in future dollars), including $1.3 billion in construction, $83 million in ROW and utility relocation, and $332 million in support costs. With additional support costs funded by SBCTA, the total cost for the project is $1.9 billion, as programmed in the 2017 FTIP. Table 2-5 compares the cost (in current dollars) of Alternatives 2 and 3. Figure 2-2 displays the proposed I-10 lane configurations associated with Alternative 3.

Table 2-5 Cost Comparison of Build Alternatives

	Alternative 2	Alternative 3 (Preferred Alternative)
Preliminary Cost	$567 million	$1.7 billion
Construction	$446 million	$1.3 billion
ROW and Utility Relocation	$14 million	$83 million
Support Costs	$100 million	$332 million

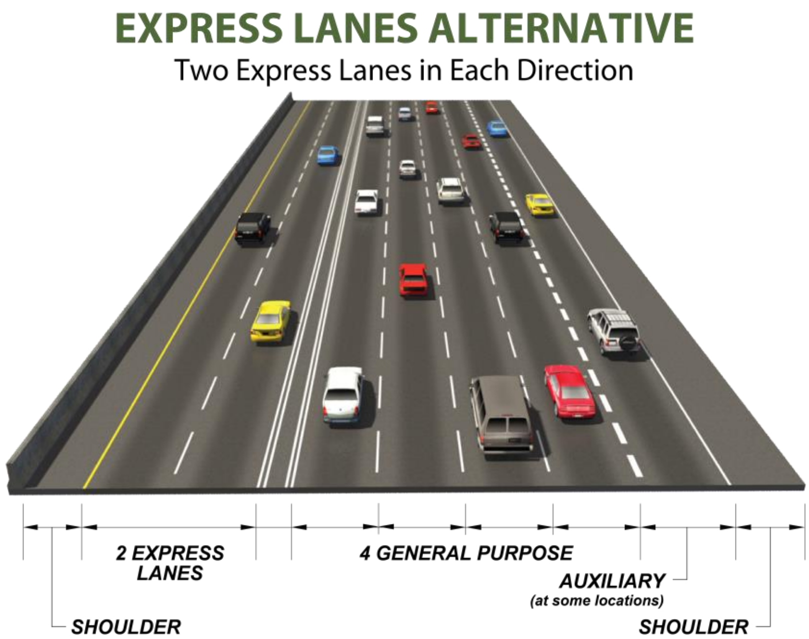


Figure 2-2 Alternative 3 (Preferred Alternative) – Two Express Lanes in Each Direction

Alternative 3 project limits pass through 3 system interchanges (I-10/I-15 interchange, I-10/I-215 interchange, and I-10/SR-210 interchange) and 29 local street interchanges, including 1 interchange (Indian Hill Boulevard) in Los Angeles County. Alternative 3 would require reconstruction of several freeway-to-freeway connectors and interchange ramps to accommodate the I-10 widening.

The proposed improvements under Alternative 3 would involve construction work within the following routes and post miles:

- 07-LA-10 PM 44.9/48.3
- 08-SBd-10 PM 0.0/R37.0

- 08-SBd-15 PM 0.7/4.0
- 08-SBd-38 PM 0.0/0.3
- 08-SBd-83 PM 10.7/11.5
- 08-SBd-210 PM R33.0/R31.5
- 08-SBd-215 PM 2.1/5.7

To accommodate two Express Lanes, the project includes reconstruction and/or modification of existing interchange ramps, local arterials, and structures, including new or reconstruction of retaining walls and soundwalls. Existing concrete barrier, temporary railings, metal beam guardrails, and thrie-beam barriers in the median of I-10 would be replaced with Type 60G (or Type 60G in tangent sections with nonstandard shoulder width). concrete barriers, and median lighting at intermediate access points would be provided. Existing auxiliary lanes would be re-established in kind and additional ones added where warranted.

Alternative 3 (Preferred Alternative) Mainline Improvements

- Add one Express Lane in each direction from the LA/SB county line to Haven Avenue to operate jointly with existing HOV lanes as two Express Lanes in each direction
- Add two Express Lanes in each direction from Haven Avenue to California Street
- Add one Express Lane in each direction from California Street to Ford Street
- Provide 10 at-grade access points, with an additional weave lane and 1 as a weave zone
- Provide California Highway Patrol (CHP) enforcement/observation areas in the median at selected locations along the corridor
- Re-establish existing auxiliary lanes along the corridor
- Construct new EB auxiliary lane between Mountain Avenue and Euclid Avenue
- Construct new WB auxiliary lane for 1,300 feet preceding Mountain Avenue WB off-ramp
- Modify existing WB auxiliary lane at Haven Avenue WB on-ramp to begin at Haven Avenue WB loop on-ramp
- Modify existing EB auxiliary lane at Haven Avenue EB on-ramp to begin at Haven Avenue EB loop on-ramp
- Construct new WB auxiliary lane at Cedar Avenue westbound on-ramp
- Extend WB auxiliary lane preceding the Riverside Avenue off-ramp to Pepper Avenue
- Construct new WB auxiliary lane between Rancho Avenue and La Cadena Drive

Ingress/Egress Access Points

Ten at-grade ingress/egress (I/E) access points are proposed in each direction along the project corridor, typically spaced at 3- to 4-mile intervals, to provide access to and from the Express Lanes for all freeway-to-freeway and local street interchanges along the corridor. Median lighting is proposed at I/E access points to and from the Express Lanes and is anticipated to be on 35-foot-tall poles. Nine access points would be provided with an additional weave lane and one as a weave zone. The following locations of these access points were selected to serve heavy traffic interchanges along the corridor and major destinations such as the LA/Ontario International Airport, while meeting the requirements for geometric, safety, and operational constraints:

- Mountain Avenue, Upland
- 6th Street, Ontario
- Haven Avenue, Ontario
- Etiwanda Avenue, Fontana
- Citrus Avenue, Fontana
- Cedar Avenue, Bloomington
- Pepper Avenue, Colton
- Tippecanoe Avenue, San Bernardino
- California Street (transition from 2 to 1 Express Lane), San Bernardino
- Orange Street (weave zone), Redlands

Except for the California Street I/E and Orange Street I/E, all other access points are proposed with an additional weave or speed change lane provided between the No. 1 general purpose lane and the No. 2 Express Lane.

At the California Street I/E, a separate I/E access configuration is provided in the EB direction. At the egress location, the No. 1 EB Express Lane continues while the No. 2 Express Lane becomes a general purpose lane. A separate ingress opening is provided downstream. In the WB direction, the No. 2 Express Lane is opened up just upstream of the California Street I/E and is anticipated to operate as a weave lane.

The Orange Street I/E is proposed as a weave zone in both directions without a weave lane between the No. 1 general purpose lane and the No. 2 Express Lane. It will operate similarly to existing HOV lane I/E locations. A weave zone is a portion of the freeway where a single lane is used by vehicles slowing down to exit while other vehicles are using the same lane to increase speed while entering the highway.

Alternative 3(Preferred Alternative) Connector and Interchange Ramp Improvements

Alternative 3 would require reconstruction of several freeway-to-freeway connector and interchange ramps to accommodate the two Express Lanes. Table 2-6 provides a summary of connector and ramp improvements that are required in Alternative 3.

Table 2-6 Alternative 3 (Preferred Alternative) Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 3			
			None	Gore	Partial	Full
Indian Hill	1	Indian Hill EB off-ramp	x			
	2	Indian Hill EB on-ramp	x			
	3	Indian Hill WB on-ramp	x			
	4	Indian Hill WB off-ramp		x		
Monte Vista	5	Monte Vista EB off-ramp				x
	6	Monte Vista EB on-ramp				x
	7	Monte Vista WB on-ramp				x
	8	Monte Vista WB off-ramp				x
Central	9	Central EB off-ramp		x		
	10	Central EB on-ramp				x
	11	Central WB on-ramp				x
	12	Central WB off-ramp			x	
Mountain	13	Mountain EB off-ramp				x
	14	Mountain EB on-ramp				x
	15	Mountain WB on-ramp				x
	16	Mountain WB off-ramp				x
Euclid	17	Euclid EB off-ramp				x
	18	Euclid EB on-ramp				x
	19	Euclid WB on-ramp				x
	20	Euclid WB loop on-ramp				x
	21	Euclid WB hook off-ramp				x
4^{th}	22	4^{th} EB off-ramp				x
	23	4^{th} EB on-ramp				x
	24	4^{th} WB on-ramp				x
	25	4^{th} WB off-ramp				x

**Table 2-6 Alternative 3 (Preferred Alternative)
Connector and Interchange Ramp Improvements**

Interchange	No.	Ramps	Alternative 3			
			None	Gore	Partial	Full
Vineyard	26	Vineyard EB off-ramp			x	
	27	Vineyard EB on-ramp				x
	28	Vineyard WB on-ramp				x
	29	Vineyard WB loop on-ramp				x
	30	Vineyard WB off-ramp				x
Archibald	31	Archibald EB off-ramp	x			
	32	Holt EB on-ramp			x	
	33	Archibald EB on-ramp			x	
	34	Archibald WB on-ramp	x			
	35	Holt WB off-ramp			x	
	36	Archibald WB off-ramp			x	
Haven	37	Haven EB off-ramp			x	
	38	Haven EB loop on-ramp				x
	39	Haven EB on-ramp			x	
	40	Haven WB on-ramp				x
	41	Haven WB loop on-ramp				x
	42	Haven WB off-ramp			x	
Milliken	43	Milliken EB off-ramp	x			
	44	Milliken EB loop on-ramp			x	
	45	Milliken WB on-ramp			x	
	46	Milliken WB loop off-ramp		x		
I-15	47	E10-N15 Connector			x	
	48	E10-S15 Connector			x	
	49	N15-E10 Connector			x	
	50	S15-E10 Connector			x	
	51	N15-W10 Connector			x	
	52	S15-W10 Connector			x	
	53	W10-N/S15 Connector			x	
	54	W10-N15 Connector			x	
	55	W10-S15 Connector			x	

Table 2-6 Alternative 3 (Preferred Alternative) Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 3			
			None	Gore	Partial	Full
Etiwanda	56	Etiwanda EB C-D off-ramp			x	
	57	Etiwanda EB off-ramp			x	
	58	Etiwanda EB loop on-ramp	x			
	59	Etiwanda EB on-ramp	x			
	60	Valley EB off-ramp			x	
	61	Etiwanda EB C-D on-ramp			x	
	62	Etiwanda WB on-ramp		x		
	63	Etiwanda WB loop on-ramp	x			
	64	Valley WB on-ramp	x			
	65	Etiwanda WB off-ramp	x			
Cherry	66	Cherry EB off-ramp		x		
	67	Cherry EB on-ramp			x	
	68	Cherry WB on-ramp		x		
	69	Cherry WB loop on-ramp			x	
	70	Cherry WB off-ramp		x		
Citrus	71	Citrus EB off-ramp			x	
	72	Citrus EB on-ramp			x	
	73	Citrus WB on-ramp			x	
	74	Citrus WB loop on-ramp			x	
	75	Citrus WB off-ramp			x	
Sierra	76	Sierra EB off-ramp			x	
	77	Sierra EB on-ramp				x
	78	Sierra WB on-ramp				x
	79	Sierra WB off-ramp				x
Cedar	80	Cedar EB off-ramp			x	
	81	Cedar EB on-ramp			x	
	82	Cedar WB on-ramp				x
	83	Cedar WB off-ramp			x	

Table 2-6 Alternative 3 (Preferred Alternative) Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 3			
			None	Gore	Partial	Full
Riverside	84	Riverside EB off-ramp			x	
	85	Riverside EB on-ramp			x	
	86	Riverside WB on-ramp			x	
	87	Riverside WB off-ramp			x	
Pepper	88	Pepper EB off-ramp			x	
	89	Pepper EB on-ramp				x
	90	Pepper WB on-ramp				x
	91	Pepper WB off-ramp				x
Rancho	92	Rancho EB off-ramp				x
	93	Rancho EB on-ramp				x
	94	Rancho WB on-ramp				x
	95	Rancho WB off-ramp				x
La Cadena/9th	96	9th EB off-ramp				x
	97	9th EB on-ramp				x
	98	La Cadena WB on-ramp			x	
	99	9th WB off-ramp		x		
Mt. Vernon	100	Mt. Vernon EB off-ramp			x	
	101	Mt. Vernon EB on-ramp			x	
	102	Mt. Vernon WB on-ramp				x
	103	Sperry WB off-ramp				x
I-215	104	E10-N/S215 Connector		x		
	105	E10-N215 Connector	x			
	106	E10-S215 Connector	x			
	107	N215-E10 Connector			x	
	108	S215-E10 Connector			x	
	109	S215-W10 Connector			x	
	110	N215-W10 Connector			x	
	111	W10-N/W215 Connector		x		
	112	W10-N215 Connector	x			
	113	W10-S215 Connector	x			
	114	Sunwest WB on-ramp				x

**Table 2-6 Alternative 3 (Preferred Alternative)
Connector and Interchange Ramp Improvements**

Interchange	No.	Ramps	Alternative 3			
			None	Gore	Partial	Full
Waterman	115	Redlands EB off-ramp	x			
	116	Waterman EB C-D off-ramp		x		
	117	Waterman EB loop on-ramp	x			
	118	Waterman EB loop off-ramp	x			
	119	Waterman EB on-ramp			x	
	120	Waterman EB C-D on-ramp			x	
	121	Waterman WB on-ramp to 215			x	
	122	Carnegie WB hook on-ramp				x
	123	Carnegie WB hook off-ramp			x	
Tippecanoe	124	Tippecanoe EB off-ramp			x	
	125	Tippecanoe EB on-ramp			x	
	126	Tippecanoe WB on-ramp			x	
	127	Tippecanoe WB loop on-ramp			x	
	128	Tippecanoe WB off-ramp			x	
Mountain View	129	Mountain View EB off-ramp				x
	130	Mountain View EB on-ramp				x
	131	Mountain View WB on-ramp				x
	132	Mountain View WB off-ramp				x
California	133	California EB off-ramp				x
	134	California EB on-ramp				x
	135	California WB on-ramp				x
	136	California WB off-ramp				x
Alabama	137	Alabama EB off-ramp			x	
	138	Alabama WB on-ramp			x	
	139	Alabama WB off-ramp			x	
SR-210	140	E10-W210 Connector			x	
	141	E210-W10 Connector		x		
	142	E210-W10 Connector		x		

Table 2-6 Alternative 3 (Preferred Alternative)
Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 3			
			None	Gore	Partial	Full
Tennessee	143	Tennessee EB off-ramp				x
	144	Tennessee EB on-ramp				x
	145	Tennessee WB off-ramp			x	
Eureka/Orange/6th	146	Eureka EB off-ramp	x			
	147	6th EB on-ramp	x			
	148	Orange WB on-ramp	x			
	149	Orange WB loop on-ramp	x			
	150	6th WB off-ramp	x			
University/Cypress	151	University EB off-ramp	x			
	152	Cypress EB on-ramp	x			
	153	University WB on-ramp	x			
	154	Cypress WB off-ramp	x			
Ford	155	Ford EB off-ramp				x
	156	Ford EB on-ramp				x
	157	Ford WB on-ramp				x
	158	Ford WB off-ramp	x			

Alternative 3 (Preferred Alternative) Local Street Improvements

Ten arterial streets crossing under or over I-10 would be reconstructed by widening and lengthening to accommodate the I-10 improvements, as listed below. Eight of these are overcrossing structures, which would need to be replaced with a longer-span structure to accommodate the widened freeway. The Monte Vista Avenue and 4th street undercrossing structures would also need to be replaced to accommodate the proposed widening of the local streets. To address comments from the City of Ontario on the Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS), the 4th Street bridge would be replaced to accommodate the future I-10/Grove Avenue Interchange Project and avoid unnecessary throwaway cost when the City project is constructed after completion of the I-10 CP. The 4th Street bridge replacement has been included in the list below.

1. Monte Vista Avenue (Montclair)
2. San Antonio Avenue (Upland)
3. Euclid Avenue (Ontario)
4. Sultana Avenue (Ontario)
5. Campus Avenue (Ontario)
6. 6^{th} Street (Ontario)
7. 4^{th} Street (Ontario)
8. Vineyard Avenue (Ontario)
9. Richardson Street (Loma Linda)
10. Tennessee Street (Redlands)

Several arterials that parallel I-10 would be modified as part of the proposed project improvements:

1. Palo Verde Street between Mills Avenue and Monte Vista Avenue (reduced landscaped parkway along north side)
2. Azure Court near San Antonio Avenue (minor intersection modification)
3. Alvarado Street at Sultana Avenue (minor roadway reconstruction to tie in to the higher profile of Sultana Avenue).
4. Richland Street at Sultana Avenue (minor roadway reconstruction to tie in to the higher profile of Sultana Avenue)
5. 7^{th} Street between Euclid Avenue and the Euclid Avenue WB hook off-ramp (minor roadway modification)
6. Richland Street at Campus Avenue (minor intersection improvements)
7. Hope Avenue at 6^{th} Street (minor roadway reconstruction to tie in to the higher profile of 6^{th} Street)
8. El Dorado Avenue at 4^{th} Street (minor intersection reconstruction)
9. J Street between 3^{rd} Street and Pennsylvania Avenue near Rancho and Colton OH (widening on the north side with new curb, gutter, sidewalk, curb ramps, driveway approaches, and on-street parking; and rehabilitation of existing pavement)

Alternative 3 (Preferred Alternative) Railroad Involvement

Five railroad crossings over or under I-10 would be impacted and require bridgework, as shown in Table 2-7.

**Table 2-7 Alternative 3 (Preferred Alternative)
Railroad Crossing Improvements**

Railroad and Crossing Location	Proposed Work
UPRR Kaiser Spur OH	Widen
UPRR Slover Mountain UP	Replace
BNSF Colton Crossing OH	Widen
UPRR Pavillion Spur OH	Widen or Abandon
BNSF West Redlands OH	Widen

Alternative 3 (Preferred Alternative) Structure Improvements

Alternative 3 would necessitate construction replacement of 13 structures, and modification of 61 structures. Table 2-8 summarizes the proposed structure improvements under Alternative 3.

Table 2-8 Alternative 3 (Preferred Alternative) Structures Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
1	47.74	Indian Hill Blvd UC (LA County)	53-0860	Maintain
2	48.00	College Ave Box Culvert/Pedestrian Undercrossing (LA County)	53-1019	Maintain
3	0.01	Mills Ave UC	54-0453	Widen
4	0.32	San Antonio Wash Bridge	54-0451	Widen
5	0.68	Monte Vista Ave UC	54-0450*	Replace
6	1.23	Central Ave UC	54-1186	Widen
7	1.75	Benson Ave UC	54-0448	Widen
8	2.37	Mountain Ave UC	54-1187	Widen
9	2.92	San Antonio Ave OC	54-0446*	Replace
10	3.47	Euclid Ave OC (Route 83/10 Sep)	54-0445*	Replace
11	3.75	Sultana Ave OC	54-0444*	Replace
12	4.02	Campus Ave OC	54-0443*	Replace
13	4.33	6th St OC	54-0442*	Replace
14	4.70	West Cucamonga Channel Box Culvert	54-1117	Modify
15	4.88	Grove Ave UC	54-0441	Widen
16	5.24	4th St UC	54-0440	Replace

Table 2-8 Alternative 3 (Preferred Alternative) Structures Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
17	6.10	Vineyard Ave OC	54-0439*	Replace
18	6.70	Cucamonga Wash Bridge (Lt)	54-0438L	Widen
19	6.70	Cucamonga Wash Bridge (Rt)	54-0438R	Widen
20	6.80	Holt Blvd Off-Ramp UC (Lt)	54-0437L	Widen
21	6.80	Holt Blvd Off-Ramp UC (Rt)	54-0437R	Widen
22	6.90	Archibald Ave EB Off-Ramp/Holt Blvd UC	54-1107	Maintain
23	7.16	Archibald Ave OC	54-1166	Maintain
24	8.16	Haven Ave OC (Lt)	54-1201L	Tie-back wall
25	8.16	Haven Ave OC (Rt)	54-0560R	Tie-back wall
26	9.17	Milliken Ave OC	54-0539	Tie-back wall
27	9.87	E10-N15 Connector OC	54-0913G	Maintain
28	9.91	N15-W10 Connector OC	54-0908G	Maintain
29	9.92	W10-S15 Connector OC over Railroad	54-1065F	Maintain
30	9.93	Route 15/10 Sep (Lt)	54-0909L	Modify slope
31	9.94	Route 15/10 Sep (Rt)	54-0909R	Modify slope
32	9.96	S15-E10 Connector OC	54-0910F	Maintain
33	9.98	W10-S15 Connector OC	54-0914F	Maintain
34	10.12	Day Canyon Channel Bridge	54-0351	Widen
35	10.12	W10-S15 Bridge over Day Canyon	54-0351F	Maintain
36	10.13	W10-N15 Bridge over Day Canyon	54-0927F	Maintain
37	10.99	Etiwanda Wash Bridge (Lt)	54-0378L	Widen
38	10.99	Etiwanda Wash Bridge (Rt)	54-0378R	Widen
39	10.99	Etiwanda Wash Bridge (EB Off-Ramp)	54-0378S	Widen
40	11.13	Etiwanda Ave OC	54-0463	Maintain
41	11.35	Valley Blvd WB On-Ramp Separation	54-1214K	Maintain
42	11.50	Valley Blvd EB Off-Ramp UC (Lt)	54-0030L	Widen
43	11.50	Valley Blvd EB Off-Ramp UC (Rt)	54-0030R	Widen
44	11.64	Etiwanda-San Sevaine Channel (Lt)	54-0454L	Widen
45	11.64	Etiwanda-San Sevaine Channel (Rt)	54-0454R	Widen

Table 2-8 Alternative 3 (Preferred Alternative) Structures Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
46	11.64	Etiwanda-San Sevaine Channel (EB On-Ramp)	54-0454S*	Replace
47	11.74	Kaiser Spur OH	54-0416	Widen
48	11.82	San Sevaine Creek Channel	54-0434	Abandon
49	12.14	Mulberry Creek Channel	54-0425M	Abandon
50	13.17	Cherry Ave OC	54-1292	Maintain
51	15.18	Citrus Ave OC	54-1293	Maintain
52	15.73	Cypress Ave OC	54-1280	Maintain
53	16.22	Sierra Ave OC	54-1169	Maintain
54	R18.49	Cedar Ave OC	54-0035	Tie-back wall
55	R19.90	Rialto Channel RCB Bridge	54-1116	Maintain
56	R19.97	Riverside Ave OC	54-1267	Maintain
57	R20.97	Pepper Ave OC	54-1324	Maintain
58	R21.46	Slover Mountain UP	54-0835*	Replace
59	R21.96	Rancho Ave OC	54-0817	Tie-back wall
60	R22.36	Colton OH (Rt)	54-0464R	Widen
61	R22.38	Colton OH (Lt)	54-0464L	Widen
62	R22.62	La Cadena Dr UC	54-0462	Widen
63	R22.62	La Cadena Dr UC (EB Off-Ramp)	54-0462S*	Replace
64	R22.71	9th St UC	54-0461	Widen
65	R22.82	Pavillion OH (9th St WB Off-Ramp)	54-0861K	Maintain
66	R22.86	Pavillion Spur OH	54-0460	Widen or Abandon**
67	R23.25	Mt. Vernon Ave OC	54-0459	Tie-back wall
68	R23.60	Warm Creek Bridge (Lt)	54-0830L	Widen
69	R23.60	Warm Creek Bridge (Rt)	54-0830R	Widen
70	R23.80	Santa Ana River Bridge (E10-N/S215)	54-0292G	Maintain
71	R23.82	Santa Ana River Bridge (Rt)	54-0292R	Widen
72	R23.83	Santa Ana River Bridge (Lt)	54-0292L	Widen
73	R24.19	E10-N215 Connector OC	54-0823G	Maintain
74	R24.23	S215-E10 Connector OC	54-0824F	Maintain

Table 2-8 Alternative 3 (Preferred Alternative) Structures Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
75	R24.23	Route 215/10 Sep (Lt)	54-0479L	Modify slope
76	R24.25	Route 215/10 Sep (Rt)	54-0479R	Modify slope
77	R24.27	W10-N215 Connector OC	54-1064F	Maintain
78	R24.30	W10-S215 Connector OC	54-0822F	Maintain
79	R24.57	E St/Sunwest Ln WB On-Ramp UC	54-0821F	Maintain
80	R24.76	Hunts Ln UC	54-0601	Maintain
81	R25.26	Waterman Ave UC	54-0600	Widen
82	R25.46	San Timoteo Creek (Carnegie Dr WB On-Ramp)	54-1105K	Widen
83	R25.54	San Timoteo Creek	54-0599	Widen
84	R26.27	Tippecanoe Ave UC	54-0598	Widen
85	R26.81	Richardson St OC	54-0597*	Replace
86	R27.30	Mountain View Ave UC	54-0596	Widen
87	R27.64	West Redlands OH/Mission Channel	54-0570	Widen
88	R28.30	California St UC	54-0595	Widen
89	R28.80	Nevada St UC	54-0594	Widen
90	R29.31	Alabama St OC	54-0593	Maintain
91	R29.58	E210-W10/Alabama St WB Off-Ramp UC	54-0937G	Maintain
92	R29.70	E10-W210 Connector OC	54-0938G	Maintain
93	R29.76	E210-E10 Connector OC	54-0929G	Maintain
94	R29.82	Tennessee St OC	54-0592*	Replace
95	R29.83	W10-W210/Tennessee St UC	54-0930F	Maintain
96	R30.10	Colton Ave UC/New York St	54-0591	Maintain
97	R30.38	Texas St UC	54-0583	Widen
98	R30.66	Eureka St UC	54-0580	Modify to add soundwall
99	R30.88	Orange St UC (Route 10/38 Sep)	54-0581	Maintain
100	R31.01	6th St UC	54-0579	Reconstruct median
101	R31.41	Church St UC	54-0578	Modify median
102	R31.52	Mill Creek Zanja Channel/Redlands OH	54-0472	Modify median
103	R31.87	University St UC	54-0582	Modify median

Table 2-8 Alternative 3 (Preferred Alternative) Structures Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
104	R31.99	Citrus Ave UC	54-0584	Reconstruct median
105	R32.11	Cypress Ave UC	54-0585	Reconstruct median
106	R32.36	Palm Ave UC	54-0586	Modify median
107	R32.61	Highland Ave UC	54-0587	Reconstruct median
108	R33.13	Ford St UC	54-0588	Widen
109	R33.29	Redlands Blvd WB Off-Ramp UC	54-0589	Widen

*Structure to be replaced will be assigned a new bridge number.

**Railroad facility is no longer in service; structure could be widened or abandoned in place by filling with earth material.

Alternative 3 (Preferred Alternative) Drainage Improvements

Several major drainage structures that either cross or run parallel to the project corridor would be modified as part of the proposed project, as shown in Table 2-9.

Table 2-9 Alternative 3 (Preferred Alternative) Drainage Structures

No.	Channel Facility	Approximate Location	Proposed Work
Crossing System			
1	College Ave RCB	Near LA/SBd County Line	None
2	San Antonio Wash	East of Mills Ave	Widen I-10 bridge
3	Palmetto Ave SD & Vault	East of Mountain Ave	Extend RCB
4	West Cucamonga Channel	East of 6th St	Widen I-10 bridge
5	Cucamonga Wash	East of Vineyard Ave	Widen I-10 bridges
6	Haven Ave RCB	West of Haven Ave parallel Turner Ave	Extend RCB
7	California Commerce SD	East of I-15	Extend RCB
8	Day Creek Channel	East of I-15	Widen I-10 bridges
9	Etiwanda Creek	East of I-15	Widen I-10 bridges
10	Etiwanda-San Sevaine Wash	East of Etiwanda Ave	Widen I-10 bridges
11	San Sevaine Creek RCB	East of Etiwanda Ave	Abandon culvert
12	Mulberry Creek RCB	East of Etiwanda Ave	Abandon culvert
13	Rialto Channel RCB	West of Riverside Ave	None
14	Colton SW & NW SD	East of BNSF/Colton Crossing	Lengthen culvert

Table 2-9 Alternative 3 (Preferred Alternative) Drainage Structures

No.	Channel Facility	Approximate Location	Proposed Work
15	11th Street SD	East of 9th St	Lengthen culvert
16	Warm (Lytle) Creek	East of Mt. Vernon Ave	Widen I-10 bridge
17	Santa Ana River	East of Mt. Vernon Ave	Widen I-10 bridges
18	San Timoteo Creek	East of Waterman Ave	Widen I-10 bridges
19	Mission Channel	West of California St	Widen I-10 bridge
20	Mill Creek Zanja Channel	West of University Ave	None
Parallel System			
1	Montclair Storm Drain	North side of I-10 from west of Monte Vista Ave to Central Ave (outside State ROW)	Reconstruct underground
2	I-10 Channel	Etiwanda Ave to Riverside Ave (inside State ROW)	Reconstruct portions

Alternative 3 Pedestrian and Bicycle Facilities

Existing sidewalks within the project limits would be maintained. Under Alternative 3, sidewalks would be provided on both sides of proposed arterial improvement locations, including Monte Vista Avenue, San Antonio Avenue, Euclid Avenue, Sultana Avenue, Campus Avenue, and 6th Street. Reconstruction of Vineyard Avenue, Richardson Street, and Tennessee Street in Alternative 3 would provide one continuous sidewalk on these streets, similar to the current condition. Pedestrian facilities on arterials being improved would meet current ADA standards. In addition, there is a project currently in planning to retrofit existing curb ramps on various cross streets along the I-10 corridor (EA 1C490).

Existing bike lanes and trails within the project limits would be maintained. Under Alternative 3, new bike lanes (Class II or III) would be incorporated in the design of the proposed arterial improvements at Monte Vista Avenue, Euclid Avenue, Vineyard Avenue, and Tennessee Street. These streets have been identified in their respective local circulation plans as having a bicycle facility.

Transit Operator Planning

As described in Section 2.2.1.1, under both build alternatives, Omnitrans express routes would be able to use the HOV or Express Lanes on I-10. Alternative 3 proposes to add bus stops at the on-ramps of the Mountain Avenue interchange and the Sierra Avenue interchange, and it would also incorporate associated intersection, pedestrian access, and traffic signal improvements to accommodate the Omnitrans express bus services.

California Highway Patrol Enforcement

CHP enforcement areas would be provided on I-10 at selected locations, including on-ramps and medians. Median lighting is proposed at CHP enforcement/observation areas and is anticipated to be on 35-foot-tall poles, as previously noted.

Nine CHP observation/enforcement areas are proposed in the WB direction and eight in the EB direction to provide enforcement for the Express Lanes, as listed below.

<u>Westbound</u>

1. WB between Central Avenue and Mountain Avenue
2. WB between Mountain Avenue and Euclid Avenue
3. WB between Vineyard Avenue and Archibald Avenue
4. WB between Cherry Avenue and Citrus Avenue
5. WB between Sierra Avenue and Cedar Avenue
6. WB between Riverside Avenue and Pepper Avenue
7. WB between La Cadena Drive and Mt. Vernon Avenue
8. WB near Mountain View Avenue interchange
9. WB between California Street and Alabama Street

<u>Eastbound</u>

1. EB between Mountain Avenue and Euclid Avenue
2. EB between Vineyard Avenue and Archibald Avenue
3. EB between Cherry and Citrus Avenue
4. EB between Sierra Avenue and Cedar Avenue
5. EB between Cedar Avenue and Riverside Avenue
6. EB between 9th Street and Mt. Vernon Avenue
7. EB between Mountain View Avenue and California Street
8. EB between California Street and Alabama Street

Toll Infrastructure

The tolling and signage infrastructure needed to operate the Express Lanes are features unique to Alternative 3. This infrastructure would include:

- Toll gantries (toll reader) with transponder readers and high-speed digital cameras located at the I-10 I/E access points in each direction of I-10

- Nine CHP enforcement areas proposed in the WB direction
- Eight CHP enforcement areas proposed in the EB direction
- Signage approaching Express Lane entry and exit points, including variable message signs before entry points indicating the toll amount
- Complete CCTV coverage of the entire Express Facility to provide security for tolling equipment and to enable quick response to breakdowns and other incidents in the Express Lanes
- Fiber optics linking the electronic infrastructure to a centralized toll operations office

The policies governing operation of the Express Lanes in Alternative 3 are additional features unique to this alternative.

Preliminary Express Lane Operation Policies

The policies under which the Express Lanes in Alternative 3 would be operated have not been finalized, but the preliminary policies are presented here to provide the current plans anticipated to operate the Express Lanes. Final decisions on operating policies would be made during the design-build phase and prior to opening of the project. Operating policies would be needed for:

- Type of tolling (i.e., static, variable, or dynamic);
- Toll policies for HOVs and others;
- Maximum target volume in the Express Lanes to maintain speed and minimize congestion;
- Method of determining toll amounts;
- Methods of toll collection, including requirements for use of transponders;
- Methods of toll enforcement; and
- Provision of an Express Lane service patrol.

The current plan for each of these topics is addressed below. As stated, because Alternative 3 is identified as the preferred alternative, final decisions on operating policies would be made during the design-build phase and prior to opening of the project; therefore, plans for each of the following topics are subject to change as the project further develops.

Type of Tolling. The type of tolling to be used in the Express Lanes is anticipated to be dynamic. Dynamic tolling varies toll amounts minute to minute in response to the real-time volume of traffic in the Express Lanes.

According to the FHWA Freeway Management and Operations Handbook, implementation of variable or congestion pricing utilizes lane capacity more efficiently[1]. Toll amounts are adjusted to manage the volume of traffic in the Express Lanes and avoid congestion. As a result of limited congestion, there would be more throughput per Express Lane than per general purpose lane during periods of congestion in the general purpose lanes. With the additional throughput in the Express Lanes, there is a related reduction in general purpose lane traffic, thereby reducing congestion in the general purpose lanes. Under either variable or dynamic tolling, both the Express Lanes and general purpose lanes would benefit. Dynamic pricing would increase or lower the toll amount based on demand, while variable tolling would increase or reduce the toll price based on time of day or week. These tolling strategies encourage drivers to use the lanes when the general purpose lanes are congested or to utilize the general purpose lanes when the tolling lanes are congested. Static, or fixed, tolling would not be used because it does not vary by hour of the day or day of the week. Consequently, static tolling does not provide the flexibility in toll amounts needed to manage congestion in the corridor.

Toll Discounts. The current toll policy is to allow HOV with three or more occupants to use the Express Lanes for free in the segment west of Haven Avenue and either toll-free or at discounted rates east of Haven Avenue. The Express Lanes would also be free to buses, vanpools, motorcycles, transit vehicles, CHP vehicles, California Department of Transportation (Caltrans) vehicles, and emergency vehicles (i.e., police, fire, ambulance). While Clean Air Vehicles that meet specified emission standards of the California Air Resources Board (ARB) and identified through decals issued by the Department of Motor Vehicles (DMV) are currently allowed to use the HOV lanes in California, this legislation will expire before the opening of the Express Lanes. With the implementation of the Express Lanes, the San Bernardino County Transportation Authority (SBCTA) intends to provide a discount to Clean Air Vehicles for Express Lane access if state law is extended.

Maximum Target Volume in the Express Lanes. During peak periods of traffic congestion, the volume of traffic using the Express Lanes would be managed to maintain optimal speeds and minimize congestion in the Express Lanes. This would be accomplished by managing the volume of traffic in the Express Lanes. Toll amounts would be increased when a certain vehicle threshold is met to manage the

[1] "Managed Lanes." *Freeway Management and Operations Handbook*. FHWA. 2006.

demand and to keep traffic moving; toll amounts would be adjusted down when volumes fall below the threshold to attract more traffic into the Express Lanes.

Toll Amounts. Toll amounts would be set at the time the Express Lanes are open to traffic. It is anticipated that toll rates to use the entire 33 miles of the proposed I-10 Express Lanes from the LA/SB county line to Ford Street in Redlands would range from $2.00 to $7.15 (approximately $0.06 to $0.22 per mile). For comparison purposes, the current tolls on Orange County Transportation Authority's (OCTA) 10-mile SR-91 Express Lanes range from $1.45 to $9.85 (approximately $0.15 to $0.98 per mile), depending on the hour of the day and day of the week. Toll amounts would be displayed on variable message signs just before each Express Lane ingress point. Such signs would be similar to the sign shown in Figure 2-3. Variable message signs are necessary because the toll amount will change due to dynamic tolling.

Figure 2-3 Example of Sign at Express Lane Ingress Points Showing Tolls for Use of Express Lanes

Methods of Toll Collection. The tolling operation is proposed to be fully electronic, with no tollbooths to make cash payments or for controlling access for a trip. Based on current technology, vehicles would be identified through either an electronic transponder or through video-imaging/license plate recognition. To qualify for free or discounted travel, such as an HOV 3+, a vehicle must use a transponder. A FasTrak™ transponder uses radio frequency to transmit user information to an overhead reader. Each transponder transmits a unique signal that identifies the transponder unit/user. There would be no traditional toll booths where motorists stop and pay cash. Drivers with a registered transponder would be charged to their account immediately following their use of the Express Lanes. Rental cars would likely be given a stated grace period to pay their one-time toll either online or over the phone. Transponders may be equipped with a switch that motorists would utilize to declare their vehicle occupancy. A transponder with such a switch is shown in Figure 2-4. The position of the switch would be used to assess the correct toll amount based on HOV/occupancy status.

Figure 2-4 Transponder with Occupancy Switch

Transponders would be read and tolls charged at toll gantries. A toll gantry is the overhead structure on which transponder readers would be mounted. The 33-mile-long I-10 Express Lanes corridor is divided into four segments: County Line to I-15, I-15 to I-215, I-215 to SR-210, and SR-210 to Ford Street. To discourage short trips in the Express Lanes, which cause additional weaving and congestion, a toll would be collected for use of each toll segment of the Express Lanes, regardless of the distance traveled within that segment. A toll gantry would be located along each separately tolled segment of the Express Lanes where transponders would be read to charge the toll. All toll equipment would be able to operate and share information to State and federal requirements and standards.

Methods of Toll Enforcement. Ensuring that each motorist pays the correct toll and minimizing toll evasion enforcement would be an essential component of the operation of the Express Lanes. Examples of toll violations that may be monitored and how surveillance may be conducted are as follows. Using a transponder set to an occupancy that results in a discounted toll charge to which the motorist is not entitled would be a toll violation. These violations would be enforced by CHP officers in the field. Enforcement of the HOV occupancy requirement would be accomplished in a manner similar to that used to enforce the HOV occupancy requirement; officers would use visual checks to determine if occupancy requirements are met. Each enforcement area would be equipped with a toll gantry and a transponder reader. Enforcement areas would be lighted to assist officers in the area with visual inspection of the number of occupants in a vehicle. Enforcement areas would also be equipped with a set of lighted indicators that would be illuminated to show an enforcement officer stationed at the enforcement area whether the vehicle has a transponder and what vehicle occupancy the transponder declares. The lighted indicators would be positioned to allow an officer to view both the lighted indicators and traffic at the same time.

Other electronic methods of enforcement would also be used, including digital imagery of vehicles passing a toll gantry without a transponder. The digital images would be used to determine the license plate number of the vehicle without a transponder, and toll violation notices would be mailed to vehicle owners to collect both the unpaid toll and a toll violation penalty.

Express Lane Service Patrol. A service patrol similar to the existing Freeway Service Patrol would be provided during the heavy traffic periods, comparable to the current service patrol provided on the SR-91 Express Lanes. The service patrol would be available to assist motorists with a disabled vehicle, move disabled vehicles out of Express Lanes onto the shoulder, and assist CHP in removing vehicles from the Express Lanes following a collision.

Toll Operations Office. A Toll Operations Office would be needed to administer the tolling operation. No building would be built; it is assumed office space would be leased for administrative tasks near the corridor. The office location has not yet been identified. The Toll Operations Office would determine the range of toll amounts, given time of day or week and demand, and display them on variable message signs near the ingress points to the Express Lanes. Among the Toll Operations Office principal duties would be distribution of transponders to motorists, establishing and maintaining toll accounts for Express Lane users receiving transponders, charging toll accounts based on transponder readings along the Express Lanes, and providing periodic account statements to account holders.

2.2.1.3 Transportation System Management and Transportation Demand Management Alternatives

A TSM/TDM Alternative was analyzed for the I-10 corridor. This alternative did not meet the project purpose as a stand-alone alternative and is further described in Section 2.2.5, Alternatives Considered but Eliminated from Further Discussion. The TSM/TDM Alternative consists primarily of operational investments, policies, and actions aimed at improving traffic flow, promoting travel safety, and increasing transit usage and rideshare participation. Although this alternative would provide minimal enhancement of operations, it would not maximize throughput or provide trip reliability for the corridor.

TSM consists of strategies to maximize efficiency of the existing facility by providing options such as ridesharing, parking, and traffic-signal optimization. TSM options to improve traffic flow typically increase the number of vehicle trips a facility can carry without increasing the number of through lanes. Such strategies include replacing existing stop signs with traffic signals at intersections to improve existing peak-hour traffic flow and to reduce queuing of vehicles. TSM also encourages automobile, public and private transit, ridesharing programs, and bicycle and pedestrian improvements as elements of a unified urban transportation system. Multimodal alternatives integrate multiple forms of transportation modes, such as pedestrian, bicycle, automobile, rail, and transit.

TDM focuses on regional strategies for reducing the number of vehicle trips and vehicle miles traveled (VMT), as well as increasing vehicle occupancy. It facilitates higher vehicle occupancy or reduces traffic congestion by expanding the traveler's transportation choice in terms of travel experience. Typical activities within this alternative reduce the amount of single-occupancy vehicle trips by providing funds to regional agencies that are actively promoting ridesharing, maintaining rideshare databases, and providing limited rideshare services to employers and individuals. Promoting mass transit and facilitating nonmotorized alternatives are two such examples, but TDM strategies may also include reducing the need for travel altogether through initiatives such as telecommuting.

Although TSM and TDM measures alone do not satisfy the purpose and need of the project, every effort will be made to incorporate the TSM/TDM components described in Section 2.2.1.1, Common Design Features of the Build Alternatives, into the proposed build alternatives.

2.2.2 No Build Alternative

The No Build Alternative would not provide any improvements to the I-10 corridor within the project limits. No additional lanes or interchange improvements would be provided, except by projects identified in the growth/cumulative impacts section of this environmental document. The No Build Alternative configuration is not expected to accommodate future traffic demand, and existing nonstandard geometric features would not be corrected. Congestion along the corridor would continue and is expected to worsen by 2045.

Direct effects of the No Build Alternative would include continued deterioration of LOS and local interchange operations, in addition to exacerbating the existing "degraded" freeway congestion conditions (California HOV Degradation Determination Report, Caltrans, 2013). Indirect and cumulative effects of the No Build Alternative are projected to increase effects on the communities related to increased commute times and traffic diversion through adjacent neighborhoods. Additionally, the No Build Alternative could increase the amount of time the corridor cities and users/travelers have to endure construction-related effects associated with addressing the corridor needs through many smaller projects completed over an extended period of time. Figure 2-5 displays the current I-10 lane configurations associated with the No Build Alternative.

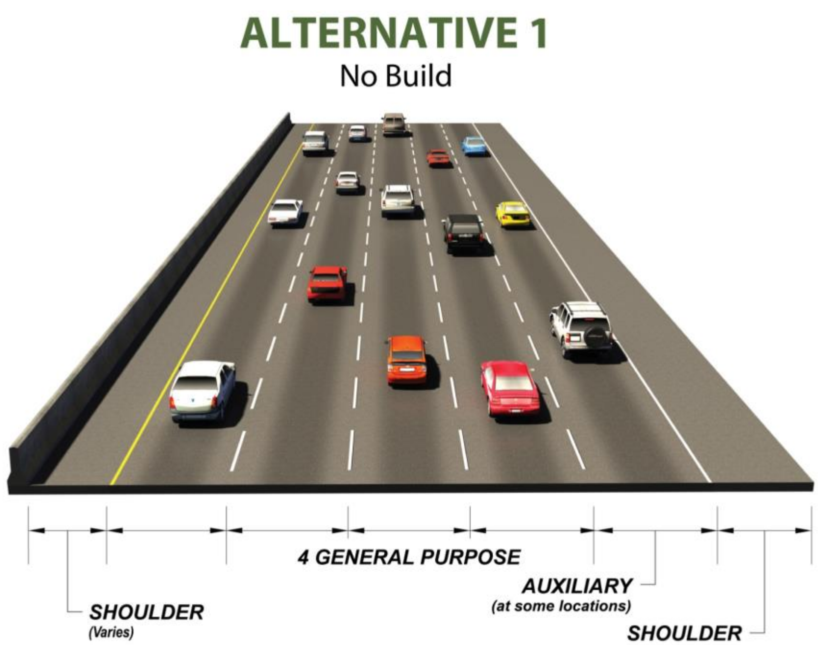


Figure 2-5 Alternative 1 – No Build Alternative

The No Build Alternative is not considered a viable project alternative because it would not achieve the project's purpose. The No Build Alternative would not meet the following aspects of the project's purpose:

- Reduce congestion;
- Increase throughput;
- Enhance trip reliability; and

- Accommodate long-term congestion management of the corridor for the planning design year of 2045.

2.2.3 Construction

Construction of the proposed project is planned to commence in 2019 and is anticipated to be open for use by 2024. For Alternative 2, the project is anticipated to be implemented using the design-bid-build delivery process and constructed over a period of 42 months (3.5 years) under one construction contract.

Due to the scale of Alternative 3 and the need to minimize impacts and maintain traffic during construction, the proposed improvements are envisioned to be constructed in two construction stages from west to east with some overlap, as shown in Table 2-10. Although there is overlap in the construction of two contracts, the overall construction period within this overlap area will be less than 12 months. Alternative 3 is anticipated to utilize a design-build delivery process. Alternative 3 is anticipated to be constructed in two project contracts over a period of 60 months (5 years). Contract 1 covers the proposed improvements from the LA/SB county line to I-15 and is anticipated to be constructed within 36 months (3 years) between 2019 and 2022. Contract 2 covers the improvements from I-15 to Ford Street and is anticipated to be constructed within 36 months (3 years) between 2021 and 2024. Construction would intermittently move along the length of the alignment, so construction-related emissions do not need to be included in regional and project-level conformity analysis (40 *Code of Federal Regulations* [CFR] 93.123(c)(5)).

Table 2-10 Alternative 3 (Preferred Alternative) Construction Contract Breakdown

Contract	Post Miles and Limits	Length	Start Construction	End Construction/ Begin Revenue Service
Contract 1	07-LA-10 PM 44.9/48.3 08-SBd-10-PM 0.0/13.2 0.4 mile west of White Avenue overcrossing to Cherry Avenue overcrossing	16.6 miles	2019	2022
Contract 2	08-SBd-10 PM 8.0/R37.0 0.2 mile west of Haven Avenue overcrossing to Live Oak Canyon Road overcrossing	29 miles	2021	2024

Construction of interchange improvements, consisting of freeway ramp reconstruction, local arterial improvements, and overcrossing structure replacement, is envisioned to be staggered throughout the corridor to minimize impacting two consecutive interchanges or closing two consecutive on- or off-ramps at the same time. If feasible, arterials and overcrossing improvements that add capacity over the existing condition would be constructed from west to east for both project contracts in efforts to ease traffic congestion.

Closures of the I-10 mainline, branch connectors, interchange ramps, and local arterials may be overnight, short-term, during an extended weekend (i.e., 55-hour window from Friday night to Monday morning), or long-term, as discussed in Section 3.1.4, Community Impacts. Lane reductions and restrictions are also anticipated on mainline, connector, ramp, and arterial roadway facilities to accommodate construction activities. Long-term closure of arterial overcrossings may be employed during construction to expedite construction and shorten the duration that the overcrossing is out of service.

Additional hazardous materials investigations will be required to minimize potential hazardous waste releases that could be a detriment to air and water quality, human health, and land use. In addition, additional site-specific exploratory geotechnical borings will be necessary to understand the underlying geologic formations and soil consistency at planned construction locations.

Existing pedestrian and bicycle facilities within the project limits are anticipated to be maintained during construction, except where the arterial roadways are closed to traffic during construction. A Transportation Management Plan (TMP) will be prepared prior to construction to identify methods to minimize impacts to pedestrian and bicycle traffic. In either of the build alternatives, the project may require periodic or temporary closure of the Santa Ana River Trail and the Class I bicycle facility along the river during widening of the Santa Ana River bridges. During construction, the trail on at least one riverbank would remain open at all times.

Borrow/Fill Sites

Borrow/fill is required to construct the proposed project; however, no material borrow sites have been identified for this project. For Alternative 2, approximately 993,000 cubic yards of excavation is anticipated, 290,000 cubic yards of which would be reused on site as fill material. For Alternative 3, approximately 2.2 million cubic yards of excavation is anticipated, 842,000 cubic yard of which would be reused on site as embankment fill. Based on the above quantities, it is most likely that the project would export soil from the project area. The Design-Build Contractor will identify borrow sites and be required to comply with environmental requirements for import of borrow material and/or export of fill material.

Borrow/fill sites are typically identified when a construction contractor has been retained during the construction phase of the project. The contractor will determine borrow/fill sites for the proposed project and will be responsible for ensuring that all import material comes from permitted commercial material providers and does not contain hazardous materials, in accordance with 2010 Caltrans Standard Specifications 19-7, which requires the construction contractor to submit permit, license, agreements for each imported borrow site and that the borrow material is "free of unsuitable material, including organic matter."

Construction Staging Areas

Construction staging area (CSA) locations will be finalized during the design-build phase. Areas within State ROW may be used as CSA locations. In addition, several private parcels along the project corridor have been identified for potential use as construction staging areas. These parcels are vacant at the time of this report preparation, and covered by the project environmental studies. Environmental studies did not reveal any adverse issues with these properties. However, future investigations will take place as needed during the design-build phase to develop the final determination of construction staging areas, and every effort will be made to locate these away from homes/sensitive receptors. If new sites are proposed that have not been studied as part of the project footprint, then environmental evaluations will be conducted for any impacts to these areas.

Construction Access

The construction contractor's access to the construction site would be within existing local roadways, interchange ramps, and the freeway mainline, generally within the project study area limits.

2.2.4 Comparison of Alternatives

Each of the build alternatives requires a commitment of resources and would result in environmental impacts. This commitment is balanced with the ability to meet the project purpose and need and the effects of not implementing the project (the No Build Alternative). Table 2-11 provides a comparison between the build alternatives and the No Build Alternative.

After the public circulation period for the Draft EIR/EIS, all comments were considered, and the PDT identified a Preferred Alternative and made a final determination of the project's effect on the environment. In accordance with the California Environmental Quality Act (CEQA), Caltrans will certify that the project complies with CEQA. Caltrans will then file a Notice of Determination (NOD) with the State Clearinghouse that will identify the mitigation measures included as conditions of project approval. With respect to the National Environmental Policy Act (NEPA), Caltrans, as assigned by the Federal Highway Administration (FHWA), will document and explain its decision regarding the identified alternative, project impacts, and mitigation measures in a Record of Decision (ROD) published in the *Federal Register*.

Table 2-11 Comparison of Alternatives

Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 (Two Express Lanes in Each Direction) (Preferred Alternative)
Project Cost		
None	Preliminary Cost: $567 million (approximately $659 million in future dollars) Construction: $446 million ROW and Utility Relocation: $14 million Support Costs: $100 million	Preliminary Cost: $1.7 billion (approximately $1.9 billion in future dollars) Construction: $1.3 billion ROW and Utility Relocation: $83 million Support Costs: $332 million
Construction Duration		
None	42 Months	60 Months
Ramp Closures		
None	The following ramps were identified to potentially result in closures and detours for a period up to 30 days: • La Cadena Drive EB off-ramp • E Street/Sunwest Lane WB on-ramp • Waterman Avenue EB on-ramp • Tennessee Street EB off-ramp	The following ramps were identified to potentially result in full closures and detours for a period up to 30 days: • Monte Vista Avenue WB off-ramp • Monte Vista Avenue WB on-ramp • Monte Vista Avenue EB off-ramp • Central Avenue EB on-ramp • Central Avenue WB off-ramp • 4th Street EB off-ramp • Etiwanda Avenue EB loop on-ramp • Etiwanda Avenue EB on-ramp • 9th Street EB off-ramp • E Street/Sunwest Lane WB on-ramp • Waterman Avenue EB on-ramp • Alabama Street EB off-ramp • Tennessee Street EB off-ramp The following ramp has been identified to potentially result in closure and detour to the Central Avenue EB on-ramp for approximately 16 to 24 months, outside of the holiday season, during replacement of the Monte Vista Avenue undercrossing structure: • Monte Vista Avenue EB on-ramp
Pedestrian and Bicycle Facilities		
None	Existing sidewalks within the project limits would be maintained. The project would replace the existing sidewalks on Richardson Street and Tennessee Street in-kind. Pedestrian facilities on arterials being improved would meet current ADA standards. Existing bike lanes and trails within the project limits will be maintained. New bike lanes (Class II or III) would be incorporated in the design of the proposed arterial improvements at Tennessee Street in Alternative 2.	Existing sidewalks within the project limits would be maintained. Sidewalks would be provided on both sides of Monte Vista Avenue, San Antonio Avenue, Euclid Avenue, Sultana Avenue, Campus Avenue, 6th Street, and Vineyard Avenue. Reconstruction of Richardson Street, and Tennessee Street in Alternative 3 would provide one continuous sidewalk on these streets, similar to the existing condition. Pedestrian facilities on arterials being improved would meet current ADA standards. Existing bike lanes and trails within the project limits would be maintained. New bike lanes (Class II or III) would be incorporated in the design of the proposed arterial improvements at Monte Vista Avenue, Euclid Avenue, Vineyard Avenue, and Tennessee Street.
Parking Effects		
None	A total of 22 parking spaces would be permanently removed after implementation of Alternative 2. The parking loss would result entirely in Fontana, at commercial locations, for public parking and employee parking.	A total of 217 parking spaces would be permanently removed after implementation of Alternative 3. Most of the parking losses would occur in Fontana and Montclair. In Fontana, commercial, light industrial, and parking at one multi-family residential property would be affected by Alternative 3. After replacement parking is implemented, mall parking at the Baralat Property would experience the greatest impact. Montclair would lose an estimated 25 street parking spaces, as well as church parking and mall parking. In Colton, 29 street parking spaces would be removed as a result of Alternative 3.

Table 2-11 Comparison of Alternatives

Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 (Two Express Lanes in Each Direction) (Preferred Alternative)
Drainage		
None	Drainage structures along the project corridor that would be improved under Alternative 2 include the following: • California Commerce SD • Day Creek Channel • Etiwanda Creek • Etiwanda-San Sevaine Wash • San Sevaine Wash • Mulberry Creek RCB • Colton SW & NW SD • 11th Street Storm Drain • Warm (Lytle) Creek • Santa Ana River • San Timoteo Creek • Mission Channel • I-10 Channel	Drainage structures along the project corridor that would be improved under Alternative 3 include the following: • San Antonio Wash • Palmetto Ave SD & Vault • West Cucamonga Channel • Cucamonga Wash • Haven Avenue RCB • California Commerce SD • Day Creek Channel • Etiwanda Creek • Etiwanda-San Sevaine Wash • San Sevaine Creek RCB • Mulberry Creek RCB • Colton SW & NW SD • 11th Street Storm Drain • Warm (Lytle) Creek • Santa Ana River • San Timoteo Creek • Mission Channel • Montclair SD • I-10 Channel
Mainline Improvements		
None	• Add one HOV lane in each direction from Haven Avenue to Ford Street • Re-establish existing auxiliary lanes along the corridor • Construct new WB auxiliary lane between Rancho Avenue and La Cadena Drive	• Add one Express Lane in each direction from the LA/SB county line to Haven Avenue to operate jointly with existing HOV lanes as two Express Lanes in each direction • Add two Express Lanes in each direction from Haven Avenue to California Street • Add one Express Lane in each direction from California Street to Ford Street • Provide 10 at-grade access points, 9 with an additional weave lane and 1 as a weave zone • Provide CHP enforcement/observation areas in the median at selected locations along the corridor • Re-establish existing auxiliary lanes along the corridor • Construct new EB auxiliary lane between Mountain Avenue and Euclid Avenue • Modify existing WB auxiliary lane at Haven Avenue WB on-ramp to begin at Haven Avenue WB loop on-ramp • Modify existing EB auxiliary lane at Haven Avenue EB on-ramp to begin at Haven Avenue EB loop on-ramp • Extend WB auxiliary lane preceding the Riverside Avenue off-ramp to Pepper Avenue • Construct new WB auxiliary lane between Rancho Avenue and La Cadena Drive Proposed entry into and exits from the toll lanes will be provided by 10 at-grade I/E access points in each direction along the project corridor, including 9 additional weave lanes: • Mountain Avenue, Upland • 6th Street, Ontario • Haven Avenue, Ontario • Etiwanda Avenue, Fontana • Citrus Avenue, Fontana • Cedar Avenue, Bloomington • Pepper Avenue, Colton

Table 2-11 Comparison of Alternatives

Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 (Two Express Lanes in Each Direction) (Preferred Alternative)
		• Tippecanoe Avenue, San Bernardino • California Street (transition from 2 to 1 Express Lane) • Orange Street
Connector Ramp and Interchange Ramp Improvements		
None	• Alternative 2 would require reconstruction of 15 connector ramps. • Alternative 2 would require reconstruction of 70 interchange ramps.	• Alternative 3 would require reconstruction of 19 connector ramps. • Alternative 3 would require reconstruction of 112 interchange ramps.
Local Street Improvements		
None	Richardson Street, as a local street, and Tennessee Street, as a collector road, are two arterials crossing over I-10 that would need to be replaced with a longer-span structure to accommodate the widened freeway under Alternative 2.	Ten arterial streets crossing over I-10 would be reconstructed by widening and lengthening to accommodate the I-10 improvements, as listed below: • Monte Vista Avenue • San Antonio Avenue • Euclid Avenue • Sultana Avenue • Campus Avenue • 6th Street • 4th Street • Vineyard Avenue • Richardson Street • Tennessee Street Several arterials that parallel to I-10 would be modified as part of the proposed project improvements: • Palo Verde Street between Mills Avenue and Monte Vista Avenue • Azure Court near San Antonio Avenue • Alvarado Street at Sultana Avenue • Richland Street at Sultana Avenue • 7th Street between Euclid Avenue and the Euclid Avenue WB hook off-ramp • Richland Street at Campus Avenue • Hope Avenue at 6th Street • El Dorado Avenue at 4th Street • J Street between 3rd Street and Pennsylvania Avenue near Rancho and Colton
Structural Improvements		
None	Alternative 2 would necessitate replacement of 3 structures and modification of 43 structures along the corridor.	Alternative 3 would necessitate replacement of 13 structures, and modification of 61 structures.
Railroad Crossing Facilities		
None	The following railroad crossing facilities would be improved in order to construct Alternative 2: • Union Pacific Railroad (UPRR) and Kaiser Spur Overhead (OH) (widen) • UPRR Colton Crossing OH (widen) • Pavillion Spur OH (widen or abandon) • Burlington Northern Santa Fe (BNSF) West Redlands OH (widen)	The following railroad crossing facilities would be improved in order to construct Alternative 3: • UPRR and Kaiser Spur OH (widen) • UPRR Slover Mountain UP (replace) • UPRR Colton Crossing OH (widen) • UPRR Pavillion Spur OH (widen or abandon) • BNSF West Redlands OH (widen)

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2.2.4.1 Identification of the Preferred Alternative

This section identifies the Preferred Alternative (PA) for construction, as well as the rationale and process used in its identification. The PDT recommended Alternative 3 as the PA on June 22, 2016, which proposes to add two Express Lanes in each direction of I-10 between the LA/SB county line to California Street in Redlands, and one Express Lane in each direction from California Street to Ford Street in Redlands.

Prior to circulation of the Draft EIR/EIS, SBCTA determined that Alternative 3 was the Locally Preferred Alternative (LPA) on July 2, 2014. This decision was reached after it was determined that traditional methods of improving freeways would not accommodate the projected population growth of this region and associated increase in traffic. SBCTA concluded that Alternative 3 is viable from an engineering and financial standpoint, and it provides a transportation improvement that is sustainable over time. By designating Alternative 3 as the LPA prior to circulation of the Draft EIR/EIS for public review, SBCTA provided disclosure of its preference among the alternatives to the public, as well as to other agencies that may have an interest in the project.

The PA identification contained in this document was made after considering all information in the Draft EIR/EIS and technical studies. Input from the internal PDT members, members of the public, project stakeholders, cooperating agencies, and participating agencies during the project development process was also taken into account. Extensive public outreach and coordination resulted in comments from the public and agencies; all of which were carefully considered during the PA process. Consideration was given to all issues raised, including funding, public concerns, and project purpose and need (described in Section 1.2), as well as the project's environmental, economic, and social impacts (described in Chapter 3), and the PA's evaluation criteria, which also included a balancing of the following factors:

- Traffic Management
- Improve Traffic Flow
- Vehicle Hours of Delay (VHD)
- VMT
- Trip Reliability
- Benefit to General Purpose Lanes
- Compatibility with Transit and Other Modal Options
- Consistency
- HOV Federal Operating Standards
- Comprehensive HOV System

Analysis of each alternative with respect to the aforementioned criteria is summarized below:

Alternative 1: No Build

- **Traffic Management –** Provides no traffic management advantages for highway users.
- **Improve Traffic Flow –** Without additional mainline lanes, congestion resulting from regional growth would further degrade traffic conditions along the corridor and worsen operational deficiencies, resulting in reduced travel speeds and longer commute times.
- **VHD –** Increase in VHD compared to existing condition.
- **VMT –** No change.
- **Trip Reliability –** Trip lengths would become increasingly volatile as traffic conditions continue to degrade.
- **Benefit to General Purpose Lanes –** No benefit to general purpose lanes.
- **Compatibility with Transit and Other Modal Options** – Alternative 1 does not facilitate multi-modal options such as buses, vanpooling, and light rail.
- **Consistency** – Alternative 1 is inconsistent with the latest Regional Transportation Plan (RTP).
- **HOV Federal Operating Standards –** The HOV lane west of Haven Avenue to the Los Angeles county line currently does not meet the federal operating standard for an HOV lane.
- **Comprehensive HOV System –** Without improvements, the HOV lanes would not meet the objective of providing a comprehensive HOV lane system.

Alternative 2: HOV Lanes

- **Traffic Management –** Provides travel time advantage for vehicles with the required number of occupants per vehicle.
- **Improve Traffic Flow –** Reduces volume to capacity (v/c) ratios on the general purpose lanes at some segments of the corridor. Alternative 2 general purpose lane v/c ratios range from 0.17 less than to 0.08 greater than v/c ratios in the general purpose lanes under Alternative 1 (No Build).
- **VHD –** Decreases VHD by approximately 14 percent compared to Alternative 1 (No Build).
- **VMT –** Increases VMT by approximately 3 percent compared to Alternative 1 (No Build).
- **Trip Reliability** – Continued HOV degradation will have unfavorable effects on the reliability of trips.

- **Benefit to General Purpose Lanes** – By providing an increase in corridor capacity, HOV lanes would also provide a benefit to motorists who remain in the general purpose lanes. The combination of additional lane miles and traffic management greatly increases the overall corridor capacity, which is expected to reduce the general purpose lane travel time compared to the No Build Alternative. Corridor users traveling to locations west of Haven Avenue would benefit from the extended HOV lanes.
- **Compatibility with Transit and Other Modal Options** – Alternative 2 facilitates multi-modal options such as buses, vanpooling, and light rail.
- **Consistency –** Alternative 2 is consistent with the latest RTP.
- **HOV Federal Operating Standards –** The HOV lane west of Haven Avenue to the Los Angeles county
- line currently does not meet the federal operating standard for an HOV lane. Without a change in the occupancy requirement or other operational changes that result in the HOV lane meeting the federal standards, operations in the lane would continue to deteriorate.
- **Comprehensive HOV System –** The HOV lanes would meet the objective of providing a comprehensive HOV lane system.

Alternative 3: Express Lanes

- **Traffic Management –** Through the dynamic congestion management pricing proposed for the Express Lanes in Alternative 3 that adjusts toll rates up or down in response to traffic demand, the Express Lanes are able to maintain optimal traffic flow even during peak-hour traffic periods. A free-flowing freeway lane can carry upwards of 1,800 to 2,000 vehicles per hour per lane (vphpl), whereas a congested lane typically carries 1,000 to 1,200 vehicles or less. That is, two Express Lanes can carry as many vehicles as four congested general purpose lanes during periods of peak congestion.
- **Improve Traffic Flow –** Reduces v/c ratios on the general purpose lanes at some segments of the corridor.
- **VHD –** Decreases VHD by approximately 24 percent compared to Alternative 1 (No Build).
- **VMT –** Increases VMT by approximately 10 percent compared to Alternative 1 (No Build).
- **Trip Reliability –** The congestion pricing proposed for the Express Lanes in Alternative 3 provides congestion-free freeway speed travel in the Express Lanes. This results in the provision of a travel time for travel using the Express Lanes that is consistent from hour to hour, day to day, and week to week. Users of the

Express Lanes will be able to rely on the time it takes to travel from Express Lane entrance to exit.

- **Benefit to General Purpose Lanes** – By providing a significant increase in corridor capacity and then managing the additional capacity to its fullest potential, Express Lanes will also provide a significant benefit to motorists who remain in the general purpose lanes. The combination of additional lane miles and traffic management greatly increases the overall corridor capacity, which is expected to reduce the general purpose lane travel time upwards of 50 percent during peak hours compared to a No Build Alternative. All corridor users will benefit from Express Lanes, whether they choose to use the Express Lanes or not.
- **Compatibility with Transit and Other Modal Options** – Alternative 3 facilitates multi-modal options such as buses, vanpooling, and light rail. Buses, carpools, and vanpools will be eligible to use the Express Lanes in Alternative 3 free if they meet the occupancy and other requirements.
- **Consistency –** The Express Lanes meet the RTP goals to develop an Express Lane network on freeways throughout the Los Angeles metropolitan area.
- **HOV Federal Operating Standards –** The change in management of the HOV lane west of Haven Avenue to the Los Angeles county line to a tolled Express Lane and the addition of a second tolled Express Lane in each direction would provide a reduced toll to HOVs meeting the minimum occupancy requirement. The Express Lanes would address the current degraded condition of the HOV lanes (congested and not meeting the federal operating standard for HOV lanes) in this area.
- **Comprehensive HOV System –** The Express Lanes, which would charge a reduced toll to HOVs meeting the occupancy requirement, would meet the objective of providing a comprehensive Express/HOV lane system consistent with the RTP.

Both build alternatives include comprehensive measures to ensure that environmental impacts are not substantial (see Appendix E, Environmental Commitments Record).

Drawing from the results of the analysis, the PDT made the following conclusions:

- *Alternative 1 No Build Alternative* – Although this alternative would have the least impact on the environment, it does not meet the stated purpose and need of the project.
- *Alternative 2 HOV Lanes* – Although this alternative partially meets the project’s purpose and need, Caltrans has determined that the existing HOV lane west of

Haven Avenue is degraded. A degraded HOV facility is one that does not provide a speed of 45 miles per hour (mph) 90 percent of the time during peak hours. Alternative 2 adds a single HOV lane in each direction from Haven Avenue to Ford Street. Because the existing HOV lane west of Haven Avenue does not meet federal HOV lane operating criteria and the proposed HOV lane is anticipated to operate over capacity in some locations as soon as it is opened, operation forecasts under Alternative 2 are not anticipated to result in better performance compared to Alternative 3.

- *Alternative 3 Express Lanes* – This alternative meets the project's stated purpose and need. Alternative 3 more fully addresses the purpose and need compared to Alternative 2 because it provides: greater congestion reduction, greater throughput capacity, better trip reliability for single-occupant and HOV users, greater transit opportunities, and long-term congestion management.

As such, the PDT has identified Alternative 3 as the Preferred Alternative.

2.2.5 Alternatives Considered but Eliminated from Further Discussion

Reversible Lanes Alternative

After public review of the I-10 CP Draft EIR/EIS, Assembly Bill (AB) 2542 was signed into law on September 23, 2016, and the requirement was effective as of January 1, 2017. This new act requires Caltrans or a regional transportation planning agency, when submitting a capacity-increasing project or a major street or highway lane realignment project to the California Transportation Commission (CTC) for approval, to demonstrate that reversible lanes were considered for the project.

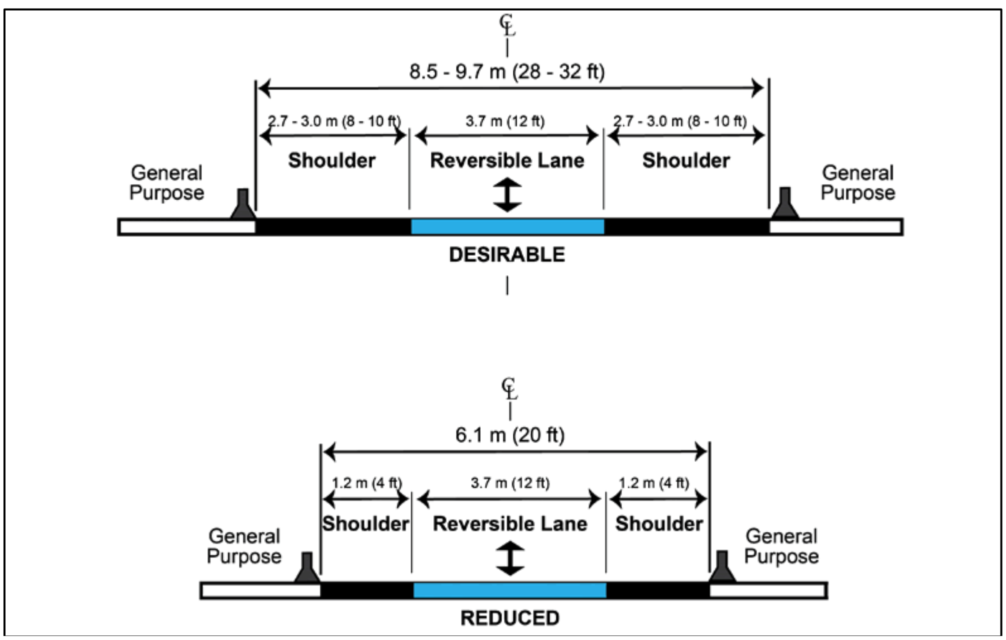
The purpose of AB 2542 is "to encourage the use of reversible lanes when they are the best option. Reversible lanes reduce congestion and prevent unnecessary road expansions. Road expansions can exacerbate our infrastructure backlog and have detrimental effects on the environment[2]." As described by the California Senate Floor Analysis on AB 2542, "Reversible lanes add peak-direction capacity to a two-way road and decrease congestion by utilizing available lane capacity from the other (off-peak) direction. The lanes are particularly beneficial where the cost to increase capacity is especially expensive (e.g., bridges, dense urban areas)." Based on the purpose of AB 2542, reversible lanes in the context of the I-10 CP are considered an alternative option to constructing additional lanes along I-10; hence, reversible lanes

[2] Senate Rules Committee, Office of Senate Floor Analyses, Senate Floor Analyses AB 2542; August 3, 2016.

are analyzed without consideration of the construction of additional lanes to minimize environmental effects and reduce the cost to increase capacity.

Existing I-10 Freeway Configuration and Geometrics

Reversible flow lanes are most appropriate on facilities that experience large directional traffic imbalances. Reversible facilities are best suited for long-distance trips with limited intermediate access needs along the affected route to minimize traffic disruptions[3]. All freeway reversible lanes must be separated by "Jersey" barriers in a high-speed roadway setting. They are typically constructed in the median of freeway facilities and may be one, two, or more lanes wide. To meet the purpose of AB 2542 in reducing cost and minimizing environmental impacts, a single-lane minimum option is considered for the I-10 CP. Reversible lanes would be incorporated along I-10 between LA/SB county line to Ford Street in Yucaipa. Reversible lanes would be implemented within the freeway median at the WB and EB directions of I-10. The inside lane at the off-peak direction of travel would be converted to a general purpose lane to improve vehicle throughput at the peak-period direction of travel. Figure 2-6 illustrates a typical cross section for a single reversible lane.



Source: AASHTO, Guide for High-Occupancy Vehicle (HOV) Facilities, October 2004.

Figure 2-6 Cross Section for a Single-Lane Reversible Flow

[3] *Freeway Management and Operations Handbook*, Managed Lane Chapter, FHWA, January 2011: http://ops.fhwa.dot.gov/freewaymgmt/publications/frwy_mgmt_handbook/revision/jan2011/mgdlaneschp8/sec8.htm.

Potential benefits of the Reversible Lanes Alternative are as follows:

- Capital cost of construction would be reduced because reversible lanes would be implemented within the existing freeway median.
- Environmental impacts would not be substantial because the Reversible Lanes Alternative would be mostly constructed within the existing freeway ROW.

Peak-Period Directional Split

The I-10 CP has been divided into three segments along I-10 to assess the viability of reversible lanes:

1) LA/SB County Line to Haven Avenue
2) Haven Avenue to California Street
3) California Street to Ford Street

To warrant reversible lanes, peak-period traffic volumes should anticipate significant directional imbalance. A directional split of 60/40 percent is commonly used as a threshold for the level of traffic imbalance needed to warrant a reversible facility[4]; however, other research also identified directional imbalance as high as 70/30 percent[5] for reversible lanes to be a viable option. Based on peak-period traffic demand, 2045 traffic volumes along I-10 are not projected to result in a large directional traffic imbalance. As summarized in Table 2-12, directional imbalance ranges between 54/46 percent and 63/37 percent during the AM peak period with mainline LOS operating at LOS F at the WB direction. At the off-peak direction (EB), only the HOV lane at the LA/SB county line to Haven Avenue (LOS E) and California Street to Ford Street segment (LOS D) are anticipated to operate at acceptable LOS. During the PM peak period, directional traffic does not *reverse* to the EB direction at two of the three segments at the LA/SB county line to Haven Avenue and Haven Avenue to California Street segments. For these two segments, a directional imbalance is near a 50 percent directional split at 58/42 percent and 55/45 percent for the WB direction, respectively. Only the Ford Street to California Street segment is anticipated to reverse peak-period traffic at the EB direction with a 61/39 percent split during the PM peak period. All three segments at both directions of travel are anticipated to operate at LOS F during the PM peak period, except for the WB Ford Street to California Street segment, which is anticipated to operate at LOS D.

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4 *NCHRP Report 414: HOV Systems Manual.* TRB, National Research Council, Washington, D.C., 1998.

5 *Freeway Management and Operations Handbook, Final Report*, FHWA, June 2006.

Reversible Lanes Level of Service

A limitation of implementing a reversible flow design is that it cannot serve congestion that may be present in the off-peak traffic direction[6]. Without improvements along I-10, all three segments are projected to operate at or near unacceptable LOS at the off-peak direction. Converting an HOV lane and/or a general purpose lane at the off-peak direction to a general purpose lane at the peak-period direction resulted in marginal improvement to demand V/C, but significantly decreased capacity at the off-peak direction. Based on demand V/C analysis provided in Table 2-13, although capacity at the peak-direction increased, the off-peak direction LOS is projected to worsen with reversible lanes. With implementation of reversible lanes, all three segments are anticipated to operate at unacceptable LOS F during both AM/PM peak-periods.

I-10 Freeway Geometric Constraints

I-10 is not conducive to reversible lanes because there are local interchange accesses approximately every mile and three system interchanges within the corridor, requiring multiple crossover locations to adequately serve these interchanges. There are also several geometric challenges that pose operational difficulties and safety concerns, including various roadway elements in the I-10 median (i.e., OH signs, bridge columns, and proposed safety median lighting) limiting locations of crossovers; grade differential between the WB and EB roadbeds affecting the safety of crossover pavement; and the narrow footprint, which cannot accommodate additional shoulder and removable barrier needed to operate the reversible lanes. Numerous geometric design exceptions would be necessary to address nonstandard horizontal sight distance at curved alignments, shoulder widths, and horizontal clearance, as well as superelevation rate/cross slope of the reversible lanes.

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6 http://ops.fhwa.dot.gov/freewaymgmt/publications/frwy_mgmt_handbook/revision/jan2011/mgdlaneschp8/sec8.htm.

Table 2-12 1-10 Freeway Mainline Year 2045 No Build Directional Peak-Hour Demand Volume-to-Capacity Ratio and Level of Service

I-10 Segment/Direction		No Build 2045 AM Peak-Hour Traffic Volumes (GP + HOV)[1]				No Build 2045 PM Peak-Hour Traffic Volumes (GP + HOV)[1]			
		Demand Volume[2]	Total Peak-Hour Traffic Directional Split (%)	Demand Volume to Capacity[3]	LOS	Demand Volume[2]	Total Peak-Hour Traffic Directional Split (%)	Demand Volume to Capacity[3]	LOS
1	LA/SB County Line to Haven Avenue (Eastbound)	10,200	46%	0.95 (HOV)	E	9,830	42%	1.12 (HOV)	F
				1.17 (GP)	F			1.09 (GP)	F
	Haven Avenue to LA/SB County Line (Westbound)	11,980	54%	1.02 (HOV)	F	13,350	58%	1.46 (HOV)	F
				1.23 (GP)	F			1.49 (GP)	F
2	Haven Avenue to California Street (Eastbound)	11,530	46%	1.37	F	10,430	45%	1.41	F
	California Street to Haven Avenue (Westbound)	13,280	54%	1.44	F	12,900	55%	1.39	F
3	California Street to Ford Street (Eastbound)	6,590	37%	0.78	D	10,510	61%	1.42	F
	Ford Street to California Street (Westbound)	11,430	63%	1.54	F	6,750	39%	0.91	D

[1] Worst-case Demand Volume to Capacity is shown for each I-10 segment.
[2] Peak-hour capacity and traffic volumes are shown in vehicles per hour (vph).
[3] Peak-hour capacities for freeway lanes include:
- 1,850 vph for each General Purpose (GP) lane and 1,600 vph for a single High-Occupancy Vehicle (HOV) lane.
- 1,850 vph for an auxiliary (AUX) lane if the AUX length exceeds 1 mile.
- 1,000 vph for an AUX lane if the AUX length is greater than 0.5 mile and less than 1 mile.
- 0 vph for an AUX lane if the AUX length is less than 0.5 mile.

Source: I-10 CP Traffic Study, August 2014, Parsons.

Table 2-13 I-10 Freeway Mainline Year 2045 Reversible Lanes Peak-Hour Demand Volume-to-Capacity Ratio and Level of Service

I-10 Segment/Direction		No Build 2045 AM Peak-Hour Traffic Volumes (GP + HOV)[1]				No Build 2045 PM Peak-Hour Traffic Volumes (GP + HOV)[1]			
		Demand Volume[2]	Lane to be Converted during Peak Hours	Demand Volume to Capacity[3]	LOS	Demand Volume[2]	Lane to be Converted during Peak Hours	Demand Volume to Capacity[3]	LOS
1	LA/SB County Line to Haven Avenue (Eastbound)	10,200	-1 HOV Lane	N/A[4]	N/A[4]	9,830	-1 HOV Lane	N/A[4]	N/A[4]
				1.38 (GP)	F			1.33 (GP)	F
	Haven Avenue to LA/SB County Line (Westbound)	11,980	+1 GP Lane	1.02 (HOV)	F	13,350	+1 GP Lane	1.46 (HOV)	F
				1.01 (GP)	F			1.19 (GP)	F
2	Haven Avenue to California Street (Eastbound)	11,530	-1 GP Lane	1.76	F	10,430	-1 GP Lane	1.88	F
	California Street to Haven Avenue (Westbound)	13,280	+1 GP Lane	1.20	F	12,900	+1 GP Lane	1.16	F
3	California Street to Ford Street (Eastbound)	6,590	-1 GP Lane	1.01	F	10,510	+1 GP Lane	1.14	F
	Ford Street to California Street (Westbound)	11,430	+1 GP Lane	1.24	F	6,750	-1 GP Lane	1.22	F

* It is assumed that the HOV lane would be converted to a GP lane during peak hour. During peak hours, the HOV lane for non-peak directional traffic would be eliminated; therefore, d/c and LOS for the non-peak HOV are not provided.

** There are no existing HOV lanes to convert to GP lanes during peak period. It is assumed that one GP lane at the non-peak hour direction would be converted to accommodate peak directional traffic.

1 Worst-case Demand Volume to Capacity is shown for each I-10 segment.

2 Peak-hour capacity and traffic volumes are shown in vehicles per hour (vph).

3 Peak-hour capacities for freeway lanes include:

- 1,850 vph for each General Purpose (GP) lane and 1,600 vph for a single High Occupancy Vehicle (HOV) lane.
- 1,850 vph for an auxiliary (AUX) lane if the AUX length exceeds 1 mile.
- 1,000 vph for an AUX lane if the AUX length is greater than 0.5 mile and less than 1 mile.
- 0 vph for an AUX lane if the AUX length is less than 0.5 mile.

Source: I-10 CP Traffic Study, August 2014, Parsons.

The Reversible Lanes Alternative is not considered an effective option in fulfilling the project purpose for the following reasons:

- Does not reduce congestion because it is forecast to have demand in excess of capacity and therefore be congested in all segments by 2045 between the Los Angeles county line and Ford Street;
- Negatively impacts off-peak direction of traffic without providing substantial traffic improvements to the peak-period direction;
- Does not maximize an increase in throughput;
- Does not enhance operations and improve trip reliability due to the extent of the corridor in which traffic demand exceeds capacity, as noted in the previous bullet; and
- Requires substantial modifications to existing freeway mainline and interchange facilities, which would counter the main purpose of AB 2542 of reducing cost and environmental impacts.

The Reversible Lanes Alternative would partially meet the project purpose and need by providing additional capacity to reduce congestion for the peak direction. Conversely, the reversible lanes would have the opposite effect to freeway operations in the off-peak direction, resulting in increased congestion and worsen LOS (higher D/C ratio). At the off-peak direction, several of the project's stated purpose and objectives would not be met, which include: increasing throughput, enhancing trip reliability, long-term management of the corridor, reduce v/c ratios, improve travel times, relieve congestion, and improve traffic flow on the regional transportation system. In addition, this alternative would incur substantial construction cost for the freeway widening needed to accommodate the reversible lane cross section, as well as, ongoing daily operation to move the barrier.

2.2.6 Alternatives Considered but Eliminated from Further Discussion Prior to Draft EIR/EIS

Below is a brief description of alternatives that were considered during the project development process but were eliminated from consideration because they do not meet the project purpose. These alternatives are not viable and therefore are not fully analyzed in this Final EIR/EIS. Also included below is the rationale for removing each alternative from further consideration.

Value Analysis

In December 2009, a Value Analysis (VA) was performed for Alternative 2 to evaluate the performance of the proposed project design and develop alternate methods to improve value of the proposed improvements. Two design variations of Alternative 2 were reviewed at that time. Through a 6-day study, the VA team developed five ideas to help improve the proposed design features and reduce the environmental impacts associated with the proposed improvements. Of the proposed VA alternatives, one was accepted by the PDT and has been incorporated into the current project design for both build alternatives.

- Relocate the utility towers in the freeway median outside of Caltrans ROW and construct I-10 widening to the inside to eliminate replacement of the Etiwanda Avenue Overcrossing (OC).

In March 2013, a second VA was conducted for Alternative 3. Through a 6-day study, the VA team developed eight ideas that aim to improve the proposed design and implementation, and reduce the environmental impacts. Of the proposed VA alternatives, five have been accepted by the PDT for incorporation (where practical and verified viable), including:

- Utilize Superior Performing Asphalt Pavement technology (Superpave) in lieu of hot-mix asphalt (HMA).
- Modify ramps at Haven Avenue interchange to avoid ROW acquisitions.
- Replace/rehabilitate two outside lanes with 40-year concrete pavement when performing widening in both directions.
- Use precast/prestressed concrete girders for bridge replacements, where feasible, to reduce traffic impacts and closures.
- Initially construct two Express Lanes in each direction in Segment 1 through the I-15/I-10 system interchange to Cherry Avenue and then one Express Lane in each direction in Segments 2 through 4.

Detailed documentation of the VA alternatives is provided in a report titled *Value Analysis Study Report*, dated July 2013, prepared by Value Management Strategies, Inc. (VMS).

Alternative 4

Alternative 4 would extend the existing HOV lane in each direction of I-10 from the current HOV terminus near Haven Avenue in Ontario to Ford Street in Redlands (as in Alternative 2) and add a general purpose lane in each direction from the LA/SB county line to SR-210. Figure 2-7 displays the I-10 lane configurations associated with Alternative 4.

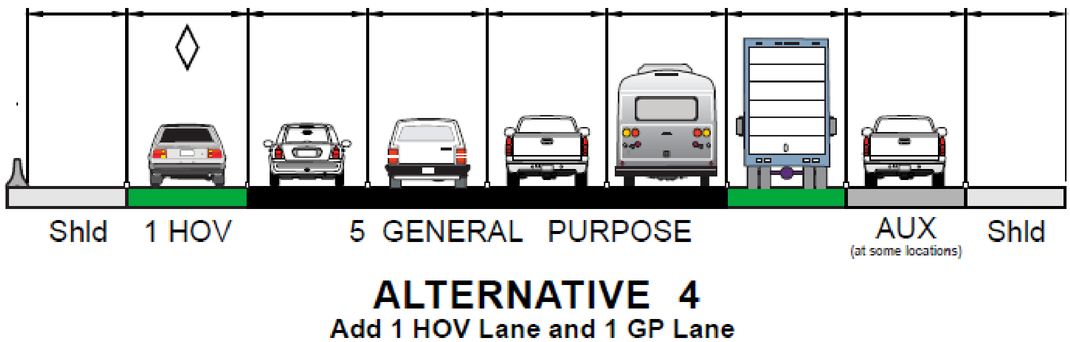

Figure 2-7 Alternative 4 –
One HOV Lane and One General Purpose Lane in Each Direction

The benefits of this alternative are:

- The existing HOV lane west of Haven Avenue would be extended east to Ford Street. This would provide a continuous HOV facility along a more extensive portion of the I-10 corridor in the urbanized area.
- The easterly extension of the HOV lane would meet the objective of providing a comprehensive HOV lane system.
- An additional general purpose lane would provide more capacity for all corridor motorists.

The HOV lane west of Haven Avenue is currently degraded (i.e., congested and not meeting the federal operating standard for HOV lanes), and it will further deteriorate for the planning years of 2025/2045.

The congestion, existing and anticipated, in the single HOV lane would limit the ability to improve HOV trip reliability without conversion to HOV3+. Addressing the degraded HOV condition would require consideration of increasing the occupancy requirement to 3 persons per vehicle, which would result in unused capacity in the HOV lane and therefore more congestion in the general purpose lanes.

Portions of the new HOV lane east of Haven Avenue to Ford Street will be over capacity when it is planned to be opened to traffic in 2025, as shown in Figure 2-8. By 2045, the single HOV lane will be over capacity for most of the corridor, as shown in

Figure 2-9. Figures 2-8 and 2-9 show the forecast HOV lane demand in the most heavily trafficked portion of each of the four segments of I-10 within the project limits. The volume shown for each segment is the highest volume in that segment forecast for either the AM or PM peak hour. The figures also show with a solid red line the capacity of a single HOV lane, which is 1,600 vehicles per hour and which is limited to that value by the inability to pass without merging into the general purpose lanes. For those segments where HOV demand is forecast to exceed capacity, severe congestion is anticipated. Because severely congested lanes provide less traffic flow than free-flowing lanes, a throughput of 1,200 vphpl is used for severely congested conditions and is shown in Figures 2-8 and 2-9 with a dashed red line. For lanes where HOV demand is not forecast to exceed capacity, throughput is the same as demand.

Figures 2-10 and 2-11 show the forecast general purpose lane demand in the most heavily trafficked portion of each of the four segments of I-10 within the project limits. The figures also show with a solid red line the capacity of the general purpose lanes in each segment, which is 1,850 vphpl (or 9,250 vehicles per hour in the 5 general purpose lanes west of California Street and 7,400 vehicles per hour in the 4 general purpose lanes east of California Street). For those segments where demand is forecast to exceed capacity, severe congestion is anticipated. Because severely congested lanes provide less traffic flow than free-flowing lanes, a throughput of 1,200 vphpl is used for severely congested conditions and is shown in Figures 2-10 and 2-11 with a dashed red line.

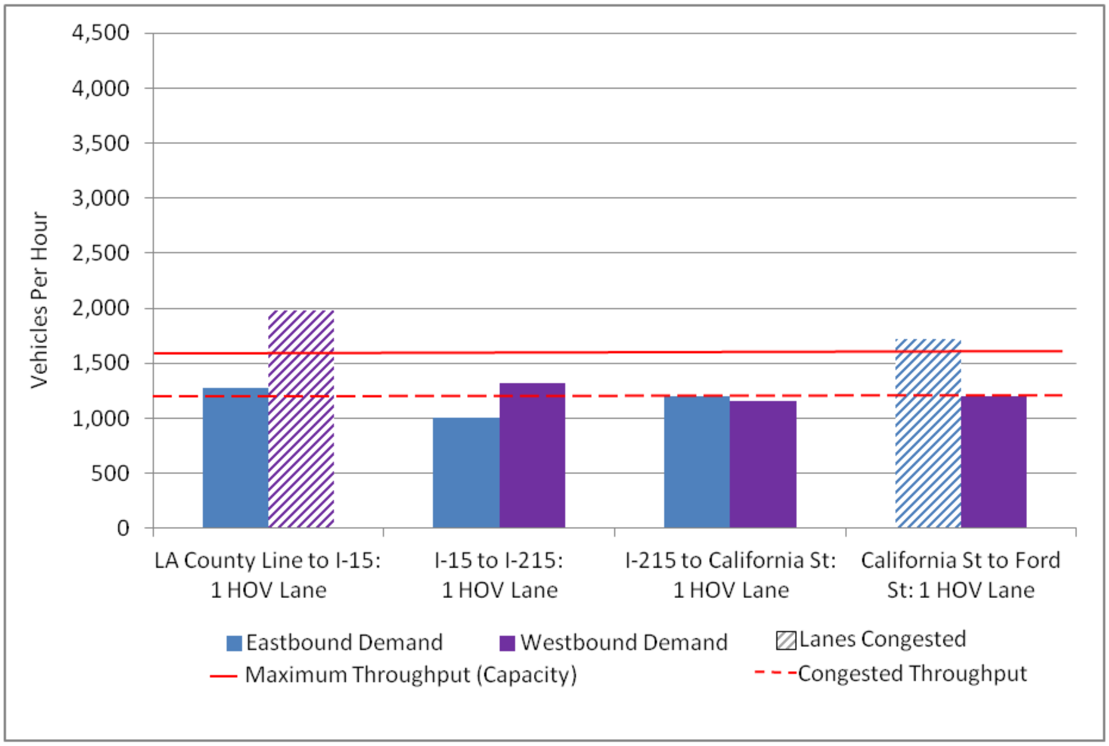

Figure 2-8 Maximum 2025 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 4: HOV Lanes

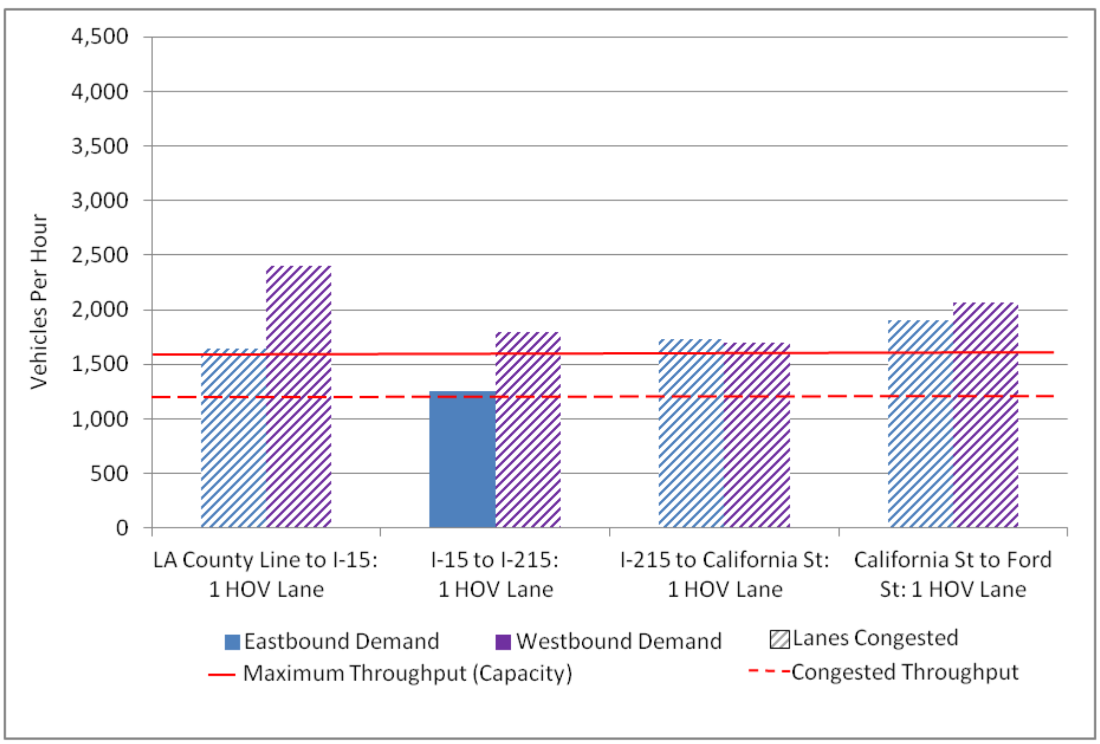

Figure 2-9 Maximum 2045 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 4: HOV Lanes

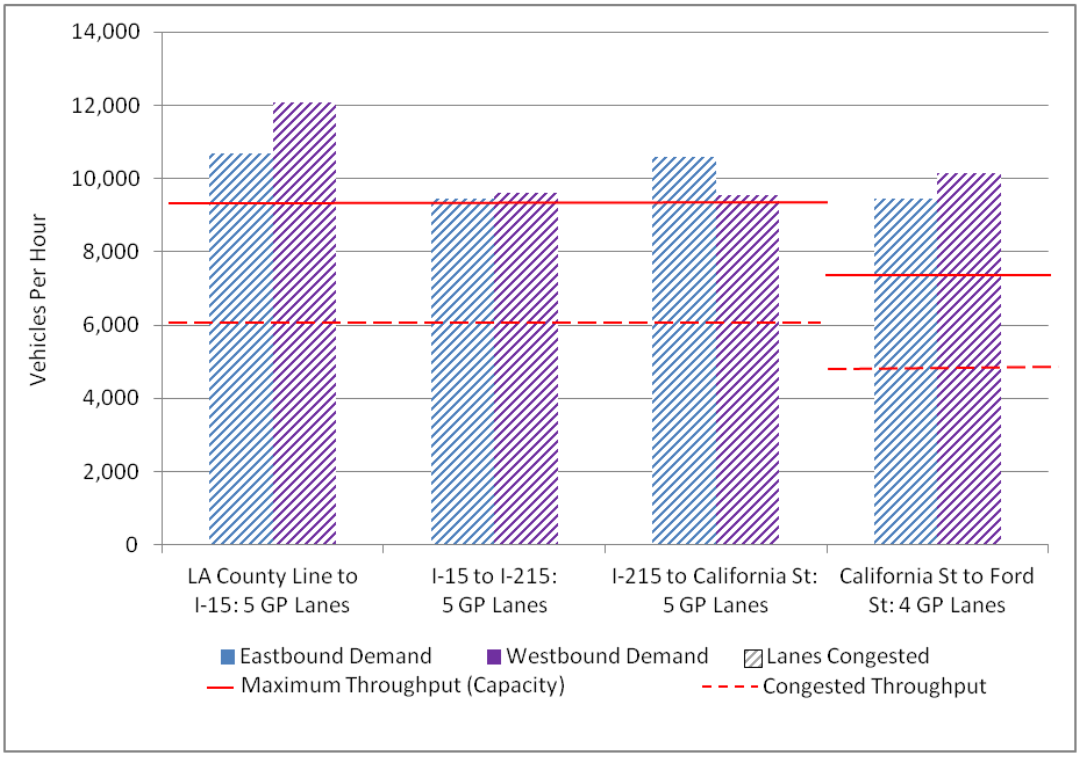

Figure 2-10 Maximum 2025 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 4: General Purpose Lanes

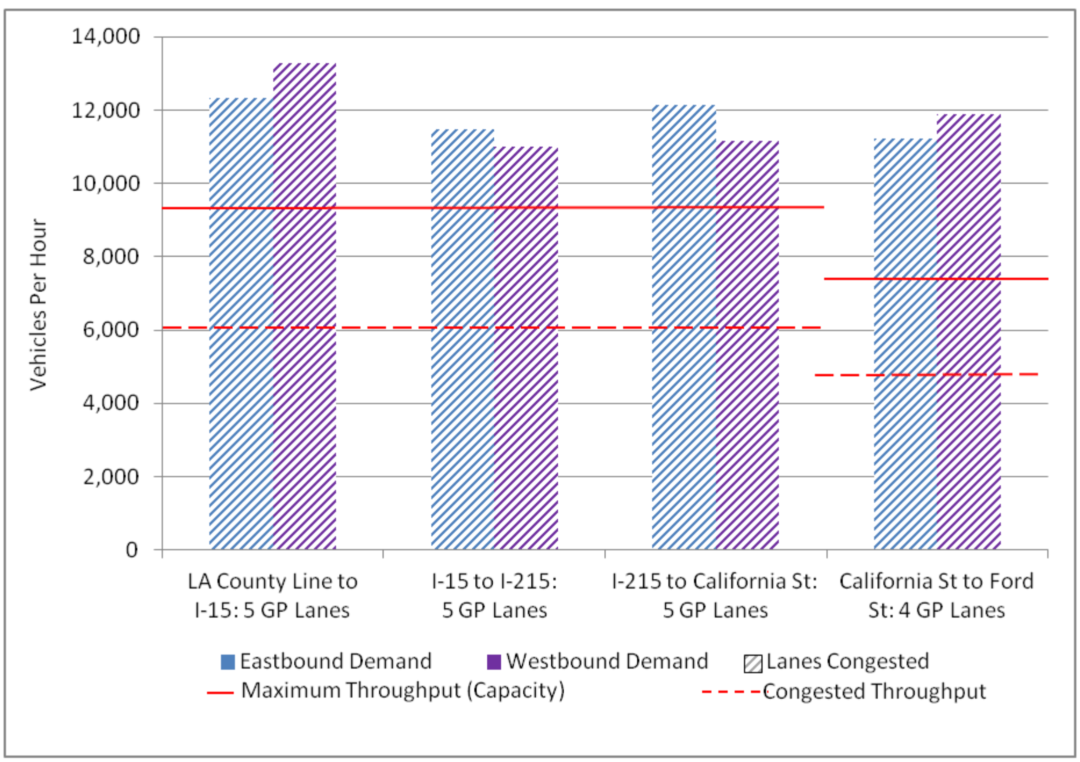

Figure 2-11 Maximum 2045 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 4: General Purpose Lanes

Single managed lanes do not provide the ability to pass. Even assuming continuous access to the HOV lane, congestion in the general purpose lanes during congested periods would make passing a slow HOV lane motorist by using the #1 general purpose lane problematic.

Because MAP-21 (Moving Ahead for Progress in the 21st Century) prohibits the conversion of a free general purpose lane to a tolled Express Lane (see Background Information section above), construction of Alternative 4 would preclude future management of more than the single HOV lane and implementation of the Express Lanes Network identified in the Southern California Association of Governments (SCAG) RTP. Management of the single HOV lane could be changed to a single Express Lane, but a single Express Lane has severely restricted benefits because of the inability to pass in the lane.

As such, Alternative 4 is not considered a prudent alternative for the following reasons:

- Provides limited congestion reduction;
- Precludes future management of the proposed general purpose lane because MAP-21 prohibits the conversion of free general purpose lanes to a tolled Express Lane, which would be in conflict with the purpose and need of accommodating long-term congestion management of the corridor;
- Provides problematic passing in the HOV lane, which cannot be done without merging into the general purpose lane, limiting throughput and reliability;
- Provides minimal enhancement of operations and improvement in trip reliability as measured by changes in corridor travel time; and
- Does not maximize an increase in throughput.

Based on the preliminary cost estimate for this alternative, less than 50 percent of the cost could be funded with available funding sources identified within the SBCTA 10-Year Delivery Plan and the SBCTA Measure I Strategic Plan; therefore, the high unfunded cost of Alternative 4 also contributes to the determination that the alternative is not a cost-effective option.

Alternative 5

Alternative 5 would extend the existing HOV lane in each direction of I-10 from the current HOV terminus near Haven Avenue in Ontario to Ford Street in Redlands (as in Alternative 2) and add a second HOV lane from the LA/SB county line to SR-210. Figure 2-12 displays the I-10 lane configurations associated with Alternative 5.

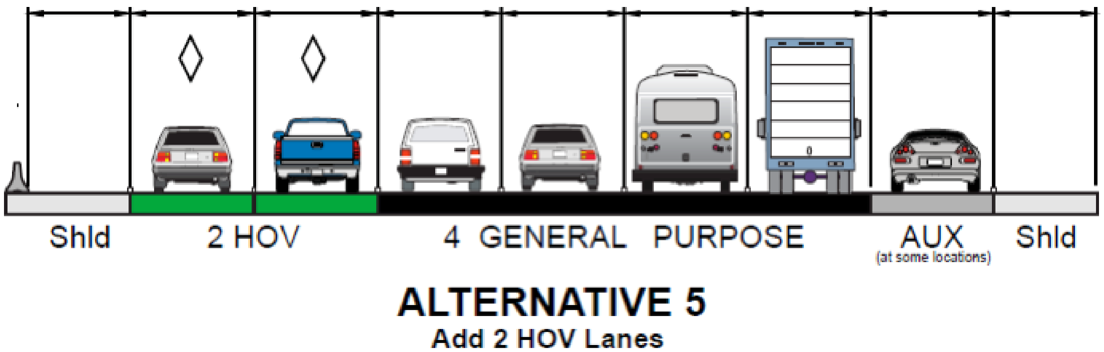

Figure 2-12 Alternative 5 – Two HOV Lanes in Each Direction

The benefits of this alternative are:

- Dual HOV lanes would more fully meet the demand for HOV capacity than a single HOV lane. The forecast demand for HOVs, as shown by Figure 2-13, will exceed the capacity of a single HOV lane (capacity of 1,600 vphpl) west of SR-210 in 2025 and on all segments in 2045 as shown in Figure 2-14.
- Provision of additional HOV capacity encourages carpooling.
- The easterly extension of the HOV lanes would meet the objective of providing a comprehensive HOV lane system.
- HOV trip reliability would be enhanced only in the segments where forecast HOV lane demand is not anticipated to exceed HOV lane capacity. Trip times would not be reliable WB from I-15 to the Los Angeles county line and in both directions between California Street and Ford Street, as shown by Figures 2-13 and 2-14.
- Flexibility would be provided to convert the dual HOV lanes to Express Lanes in the future.

Management flexibility is unavailable to improve lane utilization where substantial HOV capacity is unused or where HOV demand exceeds capacity.

Dual HOV lanes provide excess HOV capacity through 2045 in some locations, as shown in Figure 2-14.

In the area west of I-15, dual WB HOV lanes are anticipated to be degraded (based on demand exceeding capacity) upon opening in 2025. A degraded condition is also anticipated WB from Ford Street to California Street. Figure 2-13 shows that WB HOV demand in these segments exceeds capacity, which will result in congestion, low operating speeds, and the reduced throughput shown in Figure 2-13 with the dashed red line. Addressing degradation would require consideration of increasing the occupancy requirement to 3 persons per vehicle, which would result in substantial unused capacity in the HOV lane.

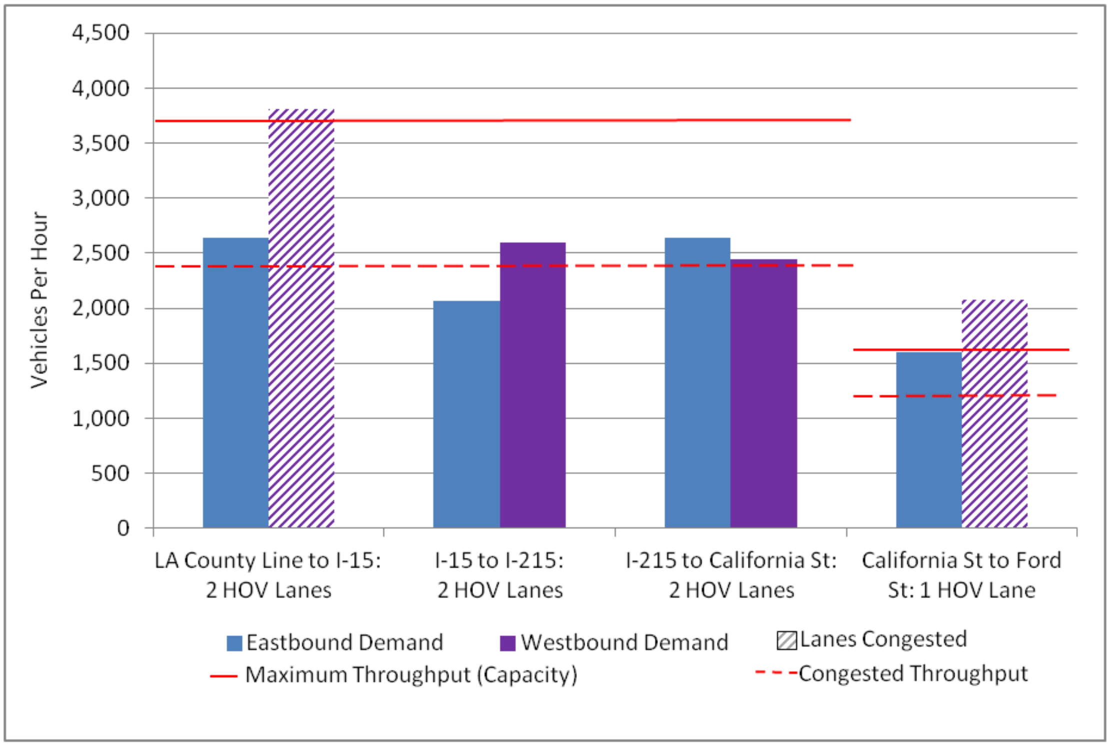

Figure 2-13 Maximum 2025 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 5: HOV Lanes

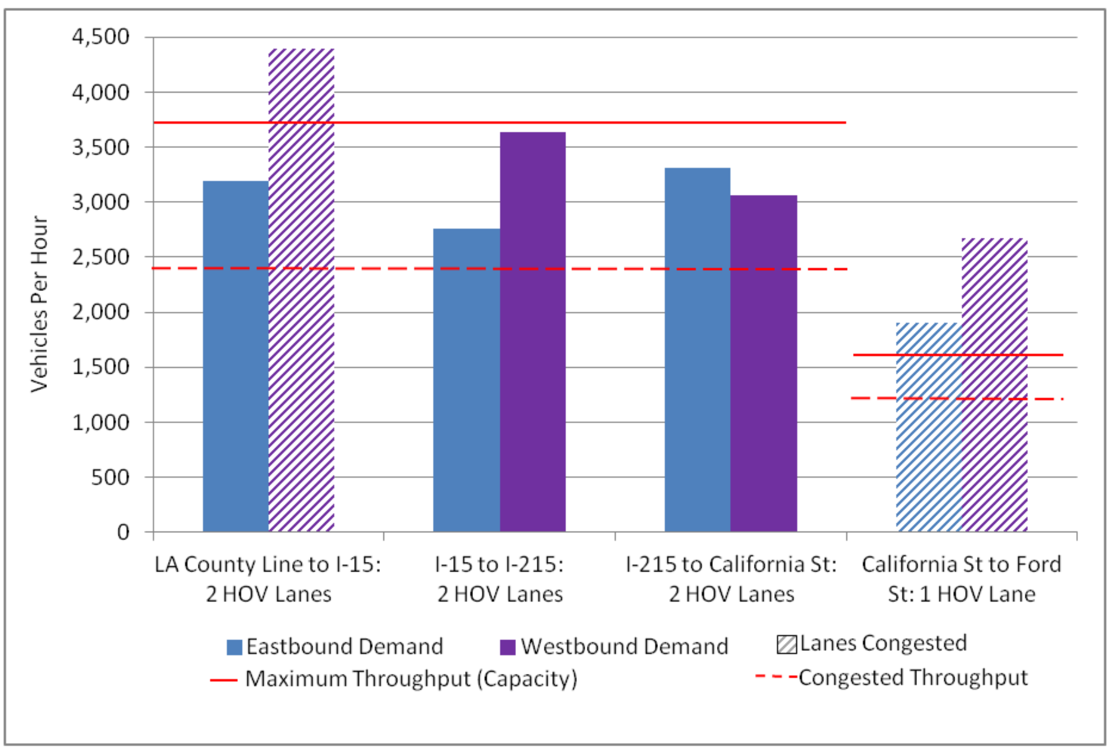

Figure 2-14 Maximum 2045 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 5: HOV Lanes

Figures 2-15 and 2-16 show the forecast general purpose lane demand in the most heavily trafficked portion of each of the four segments of I-10 within the project limits. The volume shown for each segment is the highest volume in that segment forecast for either the AM or PM peak hour. The figures also show with a solid red line the capacity of the general purpose lanes in each segment, which is 1,850 vphpl or 7,400 vehicles per hour in the 4 general purpose lanes. When demand is forecast to exceed capacity, severe congestion is anticipated. Because severely congested lanes provide less traffic flow than free-flowing lanes, a throughput of 1,200 vphpl is used for severely congested conditions and is shown in Figures 2-15 and 2-16 with a dashed red line.

Alternative 5 is not considered an effective option in fulfilling the project purpose for the following reasons:

- Provides limited congestion reduction;
- Does not maximize an increase in throughput; and
- Provides minimal or no enhancement of operations and improvement in trip reliability as measured by the ability to traverse the corridor without encountering areas of substantial congestion. In addition, based on the preliminary cost estimate for this alternative, less than 50 percent of the cost could be funded with available funding sources identified within the SBCTA 10-Year Delivery Plan and the SBCTA Measure I Strategic Plan; therefore, the high unfunded cost of Alternative 5 also contributes to the determination that the alternative is not a cost-effective option.

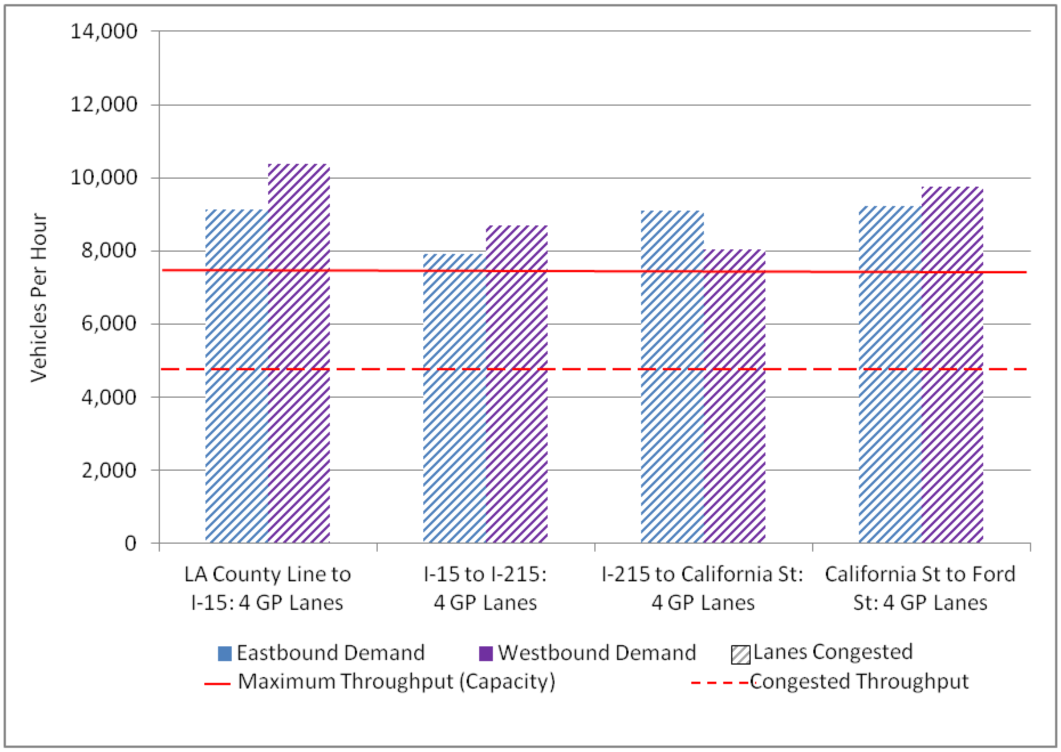

Figure 2-15 Maximum 2025 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 5: General Purpose Lanes

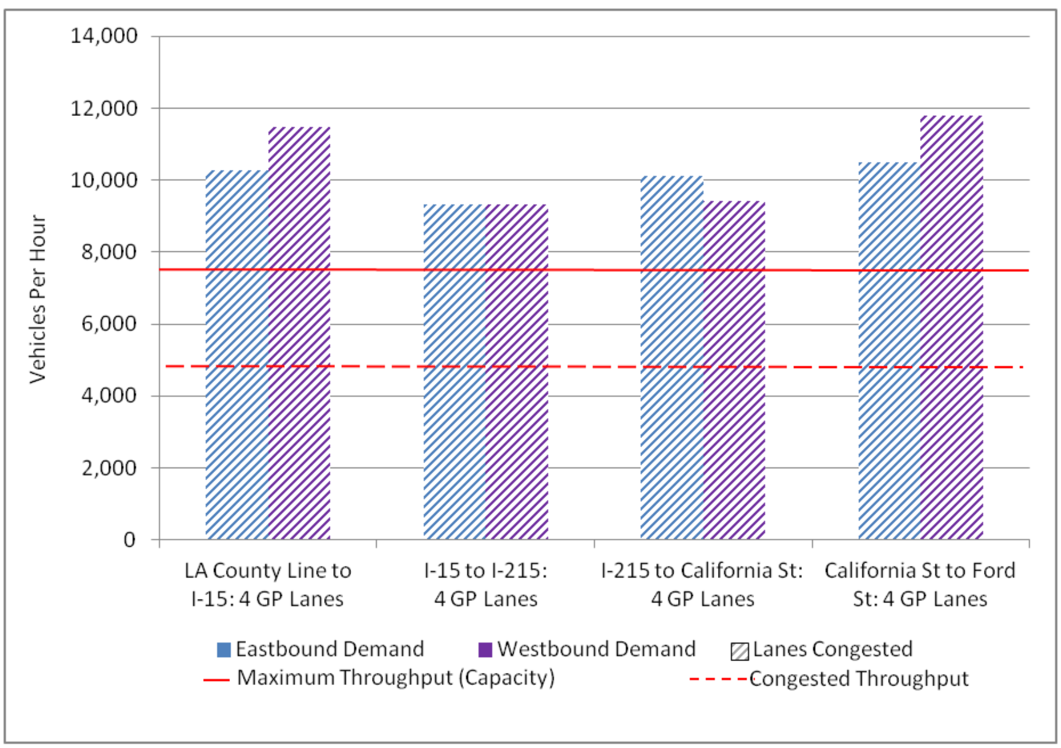

Figure 2-16 Maximum 2045 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 5: General Purpose Lanes

Alternative 6

Alternative 6 proposed the construction of two additional general purpose lanes in each direction of the I-10 corridor from the LA/SB county line to Ford Street in Redlands. Figure 2-17 displays the I-10 lane configurations associated with Alternative 6.

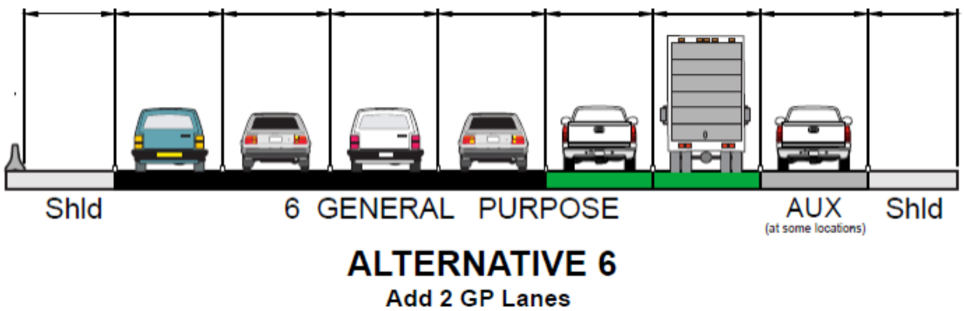

Figure 2-17 Alternative 6 – Two General Purpose Lanes in Each Direction

The benefit of this alternative is:

- Construction of the two lanes would increase the capacity of I-10 within the project limits. Increased capacity would allow more traffic to use I-10. At opening year of this project alternative, congestion and traffic delay would be reduced along I-10.

Although this alternative would reduce traffic delay and congestion at opening year, Figure 2-18 shows that traffic demand during the peak hour is anticipated to exceed general purpose lane capacity in portions of three segments when opened in 2025. By 2045, all segments would have portions over capacity. Figures 2-18 and 2-19 show the forecast general purpose lane demand in the most heavily trafficked portion of each of the four segments of I-10 within the project limits. The forecast shown for each segment is the highest volume in that segment forecast for either the AM or PM peak hour. The figures also show with a solid red line the capacity of the general purpose lanes in each segment, which is 1,850 vphpl (or 9,250 vehicles per hour in the 5 general purpose lanes west of I-15 and east of California Street and 11,100 vehicles per hour in the 6 general purpose lanes between I-15 and California Street). For those segments where demand is forecast to exceed capacity, severe congestion is anticipated. Because severely congested lanes provide less traffic flow than free-flowing lanes, a throughput of 1,200 vphpl is used for severely congested conditions and is shown in Figures 2-18 and 2-19 with a dashed red line.

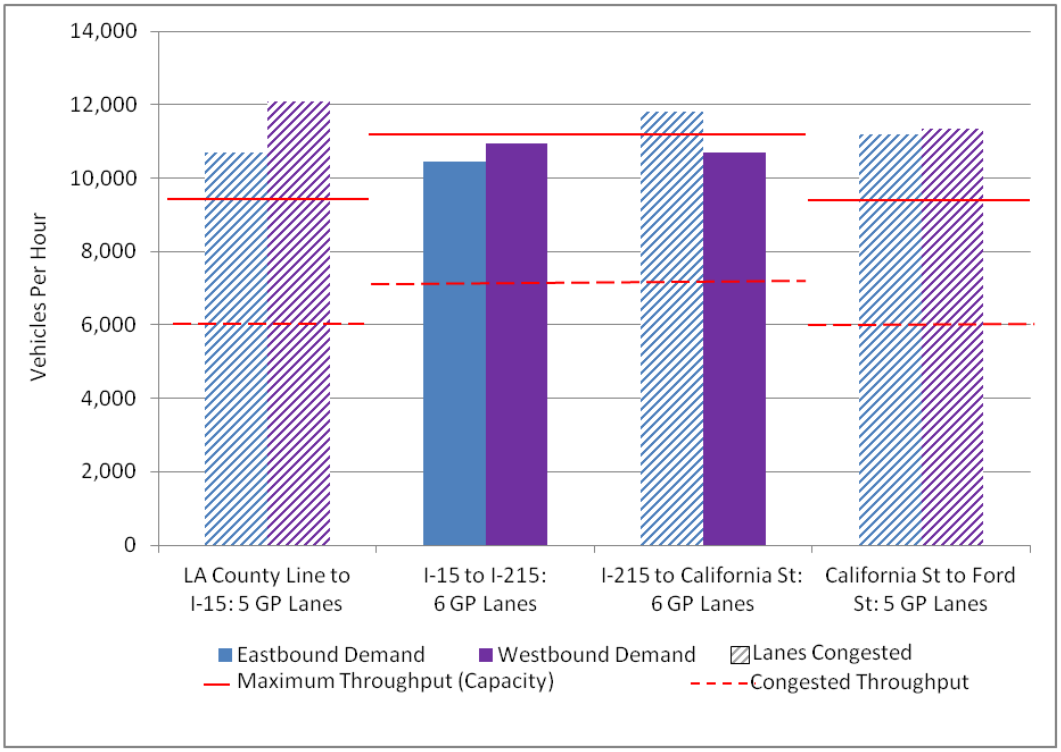

Figure 2-18 Maximum 2025 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 6: General Purpose Lanes

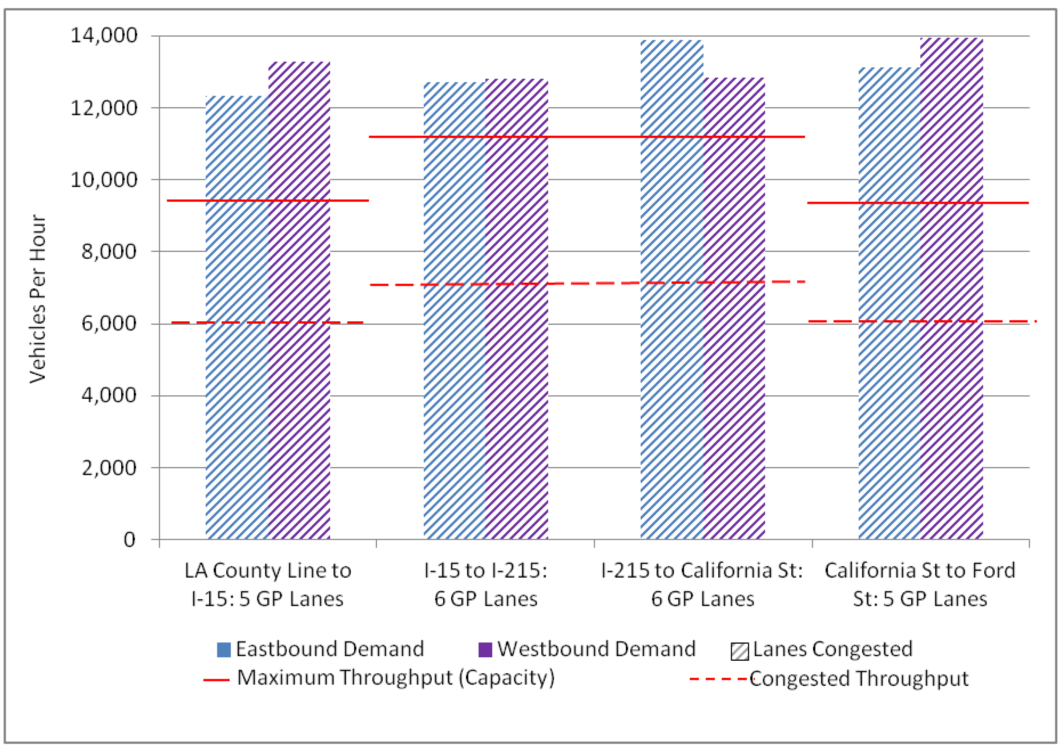

Figure 2-19 Maximum 2045 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 6: General Purpose Lanes

Alternative 6 does not address the degradation in the existing HOV lane west of Haven Avenue. The degradation will deteriorate further over time as HOV traffic increases. The HOV lane is anticipated to exceed capacity in 2045 and be severely congested, with throughput of approximately 1,200 vehicles per hour, as shown in Figure 2-19 with a dashed red line.

The RTP project identified for the corridor is an HOV lane. Alternative 6 is inconsistent with that project definition.

Because MAP-21 prohibits the conversion of a free general purpose lane to a tolled Express Lane, construction of Alternative 6 would preclude future managed lanes. Implementation of the Express Lanes Network identified in the SCAG RTP would be effectively precluded because of the cost of acquiring the necessary additional ROW for two future additional lanes.

Alternative 6 is not considered an effective option in fulfilling the project purpose for the following reasons:

- Does not reduce congestion because it is forecast to have demand in excess of capacity and therefore be congested in three of the four segments between the Los Angeles county line and Ford Street on opening day and in all segments by 2045;
- Does not maximize an increase in throughput;
- Provides minimal enhancement of operations and improvement in trip reliability due to the extent of the corridor in which traffic demand exceeds capacity as noted in the previous bullet; and
- Because MAP-21 prohibits the conversion of free general purpose lanes to a tolled Express Lane, this alternative provides no additional managed lanes in the corridor and no potential to introduce additional managed lanes in the future. This precludes the ability to accommodate long-term congestion management of the corridor, which is inconsistent with the SCAG RTP Express Lane Network plans.

In addition, based on the preliminary cost estimate for this alternative, less than 50 percent of the cost could be funded with available funding sources identified within the SBCTA 10-Year Delivery Plan and the SBCTA Measure I Strategic Plan; therefore, the high unfunded cost of Alternative 6 also contributes to the determination that the alternative is not a cost-effective option.

TSM/TDM Alternative

A TSM/TDM Alternative was evaluated. Although TSM and TDM measures alone do not satisfy the purpose and need of the project and are therefore not a viable option, some of the TSM and TDM measures may be incorporated into each of the build alternatives for the proposed project and are included in Section 2.2.1.1, Common Design Features of the Build Alternatives.

The TSM/TDM Alternative is not considered a viable option because it does not fulfill the project purpose stated in Chapter 1 for the following reasons:

- TSM consists of strategies to maximize efficiency of the existing facility by providing options such as ridesharing, parking, and traffic-signal optimization. Because these options to improve traffic flow typically increase the number of vehicle trips a facility can carry without increasing the number of through lanes, this alternative would provide only minimal congestion reduction.
- The TSM/TDM Alternative does not maximize throughput because no additional through lanes are provided.
- Minimal enhancement in trip reliability would be provided.
- Long-term congestion management of the corridor would not be accommodated because existing capacity does not meet the projected demand.

2.3 Permits and Approvals Needed

Table 2-14 shows the permits, reviews, and approvals would be required for project construction common to both build alternatives:

Table 2-14 Required Permits and Approvals

Agency	Permits/Approval	Status
Federal Agency Permits/Approvals		
United States Army Corps of Engineers (USACE)	Section 404 Permit for filling or dredging waters of the U.S.	Application for Section 404 Permit anticipated after Final EIR/EIS distribution.
	Section 408 Permit	Section 408 Permit will be obtained after project approval.
FHWA	Project-Level Air Quality Conformity Finding	FHWA conformity determination was obtained in February 2016.
	Draft Project Management Plan, Draft Initial Financial Plan, and first Cost Estimate Review	The Cost Estimate Review was performed in March 2017. The Project Management Plan and Initial Financial Plan will be submitted to FHWA after approval of the Final EIR/EIS.

Table 2-14 Required Permits and Approvals

Agency	Permits/Approval	Status
United States Fish and Wildlife Service (USFWS)	The previously issued Biological Opinion (BO) for the *Interstate 10 Corridor Interchange Improvement Projects* (FWS-SB-4339.5, April 2006) has been amended to address impacts to Delhi sands flower-loving fly (DSF).	USFWS provided an amendment to the previously issued BO in April 2017.
State Agency Permits/Approvals		
California Department of Fish and Wildlife (CDFW)	Section 1602 Streambed Alteration Agreement	Application for Section 1602 agreement anticipated after Final EIR/EIS distribution.
Regional Water Quality Control Board (RWQCB), Region 8 (Santa Ana)	Section 401 Water Quality Certification	Application for Section 401 certification anticipated after Final EIR/EIS distribution.
State Water Resources Control Board (SWRCB)	Construction General Stormwater and Caltrans' Statewide National Pollutant Discharge Elimination System (NPDES) Permits	Project design plans will comply with RWQCB General Orders No. 2009-0009-DWQ (NPDES Permit No. CAS000002) and 99-06-DWQ (NPDES Permit No. CAS000003).
California Department of Water Resources (DWR)	Encroachment permit	Prior to construction activities near the Santa Ana Pipeline, an encroachment permit from DWR will be obtained.
California Public Utilities Commission (CPUC)	Compliance with CPUC General Order 131-D regarding relocation electrical lines 50 kilovolts (kV) or greater	Prior to relocation of electrical lines 50 kV or greater, approval must be obtained from CPUC.
	Approval of the project, based on review of the Railroad Construction and Maintenance Agreement	Must be completed prior to construction within or above railroad ROW.
UPRR and BNSF	Memorandum of Understanding and Construction and Maintenance Agreement with the Railroad	Must be completed prior to construction within or above railroad ROW.
County Agency Permits/Approvals		
San Bernardino County Flood Control District (SBCFCD)	Encroachment Permit	Letter or permit will be obtained during the design-build phase or construction within SBCFCD property.

Table 2-14 Required Permits and Approvals

Agency	Permits/Approval	Status
Utility Company/County and Municipal Service Provider Permits/Approvals		
American Cablevision, AT&T, Atchison, California-Nevada Pipeline, Charter, Chino Basin Municipal Water District, City of Chino Hills, City of Colton, City of Fontana, City of Loma Linda, City of Montclair, City of Ontario, City of Rialto, City of Riverside, City of San Bernardino, City of Upland, City of Upland, Comcast, County Sanitation District – San Gabriel, Crown Castle, Cucamonga Valley Water District, Fontana Water Company, Frontier, Golden State Water Company, Inland Empire Utilities Agency, Kinder Morgan, Level 3 Communications, Marygold Mutual Water Company, Metropolitan Water District, Monte Vista Water District, Plains All American Pipeline, Praxair, Riverside Highland Water Company, San Antonio Water Company, San Gabriel Valley Water Company, Santa Ana Watershed Project Authority, Southern California Edison, Southern California Gas, Southern California Water, Southern Pacific Transportation Company/UPRR, Sprint, SUNESYS, Time Warner Cable, Topeka and Santa Fe Railway, Union Carbide Company, Verizon, Water Facilities Authority, West San Bernardino Water District, West Valley Water District, Western Pacific Sanitation, Western Union Telegraph, WILCON, Zayo	Approval to relocate, protect in place, or remove utility facilities	Prior to any construction within utility conflict areas.
Local Jurisdiction Permits/Approvals		
Cities of Pomona, Montclair, Upland, Claremont, Ontario, Fontana, Rialto, Colton, San Bernardino, Loma Linda, and Redlands	Freeway Agreements	Agreements will be concluded with each of the cities in which project construction will take place.
Cities of Montclair, Ontario, Upland, and Redlands, and County of San Bernardino	Section 4(f) Technical Study finding	Concurrence from each jurisdictional authority regarding impacts to Section 4(f) resources (parks) has been obtained.

Table 2-15 shows the permits, reviews, and approvals that would be required for project construction of Alternative 3 only:

Table 2-15 Additional Required Permits and Approvals for Alternative 3 (Preferred Alternative)

Agency	Permits/Approval	Status
State Agency Permits/Approvals		
SBCTA	Maintenance, Operations, and Law Enforcement Agreements (Alternative 3 only)	Maintenance, toll operations, and law enforcement agreements between SBCTA, the toll operator, CHP, and Caltrans will be required since Alternative 3 has been identified as the Preferred Alternative. These will be obtained prior to beginning operations.

Chapter 3 Affected Environment, Environmental Consequences, and Avoidance, Minimization and/or Mitigation Measures

3.0 Introduction

The following technical reports were prepared in support of this Environmental Document and are incorporated by reference:

- *Aerially Deposited Lead Site Investigation* (Group Delta Consultants, Inc., October 2016)
- *Air Quality Conformity Analysis* (Terry A. Hayes Associates, Inc., October 2016)
- *Air Quality Technical Study* (Terry A. Hayes Associates, Inc., March 2016)
- *Archaeological Survey Report* (Applied Earthworks, Inc., April 2015)
- *Community Impact Assessment* (Parsons, October 2015)
- *District Preliminary Geotechnical Report* (Earth Mechanics, Inc., April 2015)
- *Energy Technical Report* (Terry A. Hayes Associates, Inc., January 2017)
- *Finding of No Adverse Effect with Non-Standard Conditions* (Applied EarthWorks, Inc., May 2015)
- *Floodplain Evaluation Report* (Parsons, December 2014)
- *Hazardous Materials Survey* (Group Delta Consultants, Inc., October 2016)
- *Historical Resources Evaluation Report* (Applied EarthWorks, Inc., April 2015)
- *Historic Property Survey Report* (Applied Earthworks, Inc., April 2015)
- *Initial Site Assessment* (Parsons, September 2014)
- *Jurisdictional Delineation Report* (Ecorp, Inc/Parsons, September 2016)
- *Natural Environment Study* (Parsons, December 2015)
- *Noise Abatement Decision Report* (Parsons, July 2015)
- *Noise Abatement Decision Report Addendum* (Parsons, August 2015)
- Noise Abatement Decision Report Addendum #2 (Parsons, March 2017)
- *Noise Study Report* (Parsons, July 2015)
- *Noise Study Report Addendum* (Parsons, August 2015)

- *Paleontological Identification and Paleontological Evaluation Report* (Cogstone, December 2014)
- *Phase II Environmental Site Investigation* (Group Delta Consultants, Inc., October 2016)
- *Final Relocation Impact Statement* (Parsons, July 2016)
- *Section 4(f) Technical Study* (Parsons, March 2017)
- Supplemental Natural Environment Study (Parsons, April 2017)
- *Traffic Study* (Parsons, August 2014)
- UST/AST Location Research Technical Memorandum (Group Delta Consultants, Inc., December 2016)
- *Visual Impact Assessment* (Parsons, March 2015)
- *Water Quality Assessment Report* (Parsons, May 2015)

Analysis of each environmental factor in this Final Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) includes discussion of the affected environment; environmental consequences, including construction impacts, permanent impacts, cumulative impacts, and, in some cases, indirect impacts; and avoidance, minimization, and/or mitigation measures for each project alternative, including the No Build Alternative and two build alternatives. The environmental conditions existing in 2012, when the Notice of Preparation (NOP) was issued and when the traffic counts were conducted, serve as the basis for impact analysis for each alternative evaluated in this Final EIR/EIS.

Per National Environmental Policy Act (NEPA) regulations (40 *Code of Federal Regulations* [CFR] 1508.27), significance is based on context and intensity. The magnitude of the impact is evaluated, and no judgment of its significance is made in the document. Usage of the term “significance” in this document is made pursuant to the California Environmental Quality Act (CEQA) only, and the evaluation of environmental factors pursuant to CEQA significance thresholds is confined to Chapter 4, CEQA Evaluation, and Appendix A, CEQA Checklist. Each section in Chapter 3 discusses the context and intensity of environmental impacts and mitigation measures, as required by NEPA.

Analysis for cumulative and indirect effects of the proposed project was completed consistent with the adopted California Department of Transportation (Caltrans) guidance for Preparers of Cumulative Impact

Analysis (http://www.dot.ca.gov/ser/cumulative_guidance/purpose.htm), Caltrans-adopted guidance for Preparers of Growth-Related, Indirect Impact Analyses (http://www.dot.ca.gov/ser/Growth-related_IndirectImpactAnalysis/gri_guidance.htm), the Council on Environmental Quality (CEQ) handbook entitled *Considering Cumulative Effects under the National Environmental Policy Act* (CEQ, 1997), and the Federal Highway Administration (FHWA) position paper entitled *Secondary and Cumulative Impact Assessment in the Highway Project Development Process* (FHWA, 1992). Three major steps, which are parallel with the environmental impact assessment process, were used in analyzing cumulative effects. These consist of (1) scoping, (2) defining the affected environment, and (3) determining the environmental consequences.

Resources Considered but Determined to not be Relevant

As part of the scoping and environmental analysis carried out for the project, the following environmental issues were considered, but no adverse impacts were identified. As a result, there is no further discussion about these issues in this document.

- ***Coastal Zone.*** The project site is not located within the designated coastal zone area.
- ***Wild and Scenic Rivers.*** There are no State or federally designated or candidate rivers within the project area (National and Wild Scenic Rivers, 2010).

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3.1 Human Environment

3.1.1 Land Use

This section discusses impacts to land use as a result of implementation of the proposed project. The analysis is based on the results of the *Community Impact Assessment* (October 2015) prepared for this project. The discussions in this section related to land use are provided in the following three subsections:

- Existing and Future Land Use
- Consistency with State, Regional, and Local Plans and Programs
- Parks and Recreational Facilities

3.1.1.1 Existing and Future Land Use

This section addresses potential impacts to existing and planned land uses in the project area that could result from implementation of the project alternatives.

Affected Environment

The Interstate 10 (I-10) corridor study area consists of a mixture of urbanized mixed-use, residential, agricultural, industrial, commercial, and open space land uses. The City and County General Plans were reviewed to understand the development trends, land use related goals, and specific policies that could affect or be affected by the proposed improvements to the I-10 corridor. General Plans from the 12 cities of Pomona, Claremont, Montclair, Upland, Ontario, Fontana, Rialto, Colton, San Bernardino, Loma Linda, Redlands, and Yucaipa; the community of Bloomington; and the counties of Los Angeles and San Bernardino were reviewed for this analysis**.** Although no construction would physically occur within Los Angeles County, the Los Angeles County General Plan was reviewed for relevant goals and policies to evaluate consistency within the transition area, which may include construction staging or roadway striping in Los Angeles County. Regional plans affecting the project area were also reviewed. The General Plan land uses are shown in the figures in Appendix H, Land Use Maps.

Existing land uses located immediately adjacent to the proposed project area were identified from west to east based on Google Earth, windshield surveys conducted in 2014, and regional and local plans in the affected project area.

Pomona. Medical facilities dominate the west end of Pomona immediately adjacent to I-10. These medical facilities include Pomona Valley Medical Center and other doctors' offices. These facilities are also mixed with residential and typical highway commercial uses. Schools, churches, and parks are also located within this area. Single-family residential uses dominate the east end of Pomona.

Claremont. Commercial uses, including hotels, are clustered around Indian Hill Boulevard at the west end of Claremont adjacent to I-10. There is also the Claremont Center shopping center to the south of I-10 and multi-family residential uses. The east end of Claremont immediately adjacent to I-10 consists of single-family residential uses mixed with retail uses.

Montclair. From Mills Avenue to Monte Vista Avenue, there are mostly residential and open space uses. There are three parks located immediately to the south of I-10 within Montclair. From Monte Vista Avenue to Central Avenue is the Montclair Plaza, a large mall to the north of I-10, and auto sales properties to the south. The north side of I-10 continues with commercial uses at the east end of Montclair, while the south side is mostly residential.

Upland. Upland is located north of I-10, and the western portion of this part of the city consists of larger commercial properties, including an entertainment park, retail, and a motel. Continuing east from here, there are some light industrial uses, and State Route (SR) 83/Euclid Avenue runs north-south through the city. The eastern end of Upland within the study area consists primarily of multi-family and single-family residential properties.

Ontario. Residential neighborhoods dominate the land uses to the south of I-10, with commercial uses clustered at major intersections. There are also open space uses immediately adjacent to the southern side of I-10. The northern side is also dominated by residential uses until Vineyard Avenue. At this point, Cucamonga-Guasti Regional Park occupies the area immediately adjacent to I-10 to the north and the LA/Ontario International Airport is located to the south of I-10. Several business parks are located around the same area north of I-10. There are several hotel properties and commercial/retail uses surrounding the Haven Avenue intersection, which are likely to accommodate the Citizens Business Bank Arena, an event center, located north of this area. The Ontario Mills Mall and other commercial uses dominate the area northwest of the Interstate 15 (I-15) interchange. Business parks and light industrial uses encompass the eastern end of Ontario.

Fontana. The west end of Fontana is comprised primarily of industrial uses. The city is known for its economic reliance on distribution centers, which contributes to the heavy truck usage in this area. There is a small patch of unincorporated San Bernardino County that also consists primarily of industrial uses. Industrial uses continue to dominate this part of Fontana, with some residential interspersed. At the east end of Fontana, there are three large commercial centers: Inland Empire Center, Palm Court at Empire Center, and Vineyard Valley Shopping Center. These commercial uses include retail spaces, a gym, and a restaurant.

Bloomington. To the north of I-10, most of the land uses are industrial, with one patch of open space. Near the east end, there are mobile homes, single-family residential uses, and some commercial uses. Light industrial uses and the Union Pacific Colton Railyard border the southern side of I-10 in the community of Bloomington.

Rialto. Light industrial uses, including used car dealerships and vacant lots, line the portion of Rialto immediately north of I-10. Near the eastern end of the city limits, there is a concrete channel. The Union Pacific Colton Railyard is located south of I-10.

Colton. At the western limit of Colton, land uses consist primarily of industrial, with the Union Pacific Colton Railyard to the south of I-10. The Sam Snead Golf Course is located to the north of I-10 near Pepper Avenue. The Arrowhead Regional Medical Center is also located to the north of I-10, just east of Pepper Avenue. There is a portion of unincorporated San Bernardino County south of I-10 from approximately Pepper Avenue to Rancho Avenue where the recently closed Colton Cement Plant (or Mt. Slover) is located. Mt. Slover originally served as a marble quarry. North of I-10 and Mt. Slover is the recently completed rail grade-separation project, Colton Crossing, and to the east of that is an unincorporated residential neighborhood. At this point in incorporated Colton, there are mainly residential uses south of I-10 and residential, commercial, and light industrial uses north of I-10. Near the Interstate 215 (I-215) interchange is the Santa Ana River and trail, which is under the jurisdiction of unincorporated San Bernardino County.

San Bernardino. North of I-10, there are many restaurants on Hospitality Lane, which runs parallel to I-10. Immediately adjacent to I-10 within San Bernardino, there are some hotel uses north of I-10, as well as retail uses. The east end of San Bernardino consists primarily of single-family residential uses, including a planned development residential property. South of I-10, there are large retail/commercial uses, as well as fast-food businesses.

Loma Linda. Strip malls, office uses, and light industrial uses exist along Redlands Boulevard at the west end of Loma Linda. Near Anderson Street, there are more commercial uses, including fast-food chains. At this point, automobile sales uses begin to occupy Redlands Boulevard. Following the automobile uses, there are open space uses. Before Mountain View Avenue, there is a mobile home park. Office uses occupy most of the eastern end of Loma Linda within close proximity to I-10.

Redlands. There are agricultural uses mixed with light industrial uses and office buildings north of I-10, at the west end of Redlands. A water park is also located north of I-10 to the west of California Street, and the San Bernardino County Museum is located to the east of California Street. There is a City-owned citrus grove immediately south of I-10 at California Street and the Pavillion at Redlands Shopping Center. More light industrial uses flank I-10, with some hotels near Alabama Street. Similar uses continue up until the SR-210 interchange. After the interchange, the uses change to primarily residential, with several freeway-adjacent open space uses, Redlands High School, and some commercial uses. Undeveloped hillside dominates the study area to the east end of the city limits.

Yucaipa. Low-density retail/commercial businesses and undeveloped land dominate the land uses within the project study area in Yucaipa. There are also small, single-family residential neighborhoods within close proximity of the proposed project alignment.

Development Trends

Recent development trends in the I-10 corridor study area have primarily focused on transportation projects. Table 3.1.1-1 identifies transportation and residential projects located within 5 miles of the proposed alignment and all other land development project types (e.g., commercial development) located within 2 miles of the proposed project alignment. The project timeframe includes any projects that may occur within 3 years of the proposed project implementation. The projects listed were used to analyze cumulative impacts of the proposed project.

Table 3.1.1-1 Related Projects

Project Name, Type, Status	Project Description
I-10 Projects • Transportation projects • Located at various locations along the I-10 corridor • California Department of Transportation (Caltrans) projects • In various phases of planning or development through the year 2045	Caltrans has 38 projects proposed for I-10, ranging from minor maintenance to interchange projects. Of the 38 projects along I-10, only 5 interchange projects require measures to address impacts.
Metrolink Station Accessibility Improvement Project • Transportation project • Located parallel to the proposed project at various Metrolink stations and their surrounding catchment areas • Final design has been completed, and the project is currently in the construction phase with anticipated completion in 2018	The San Bernardino County Transportation Authority (SBCTA) is proposing to improve bicycle and pedestrian access to the regional transit network and extend the catchment areas of the Metrolink stations included in the proposed project along the San Bernardino Line. The proposed projects would be located within the 0.5-mile radius for pedestrian access and 1.5-mile radius for bicycle access from the six existing Metrolink transit stations in the cities of Montclair, Upland, Rancho Cucamonga, Fontana, Rialto, and San Bernardino. The individual Active Transportation Program (ATP) projects aim to improve transit/bicycle/pedestrian connectivity and safety.
I-15 Express Lanes Project • Transportation project • Located in the cities of Jurupa Valley, Eastvale, Norco, Corona, and Riverside • Riverside County Transportation Commission (RCTC) and Caltrans project • Currently in the environmental phase, which is expected to be completed in 2016.	RCTC, in partnership with Caltrans District 8, are exploring improvements on a 14.6-mile segment of the I-15 corridor. The project includes the addition of one to two tolled Express Lanes in each direction from Cajalco Road where it crosses I-15 in Corona to just south of the I-15 and SR-60 interchange at Riverside Drive. This project has an estimated construction cost of $425 to $450 million.
I-15 Corridor Project • Transportation project • Located in the cities of Victorville, Hesperia, Rialto, Fontana, Rancho Cucamonga, Ontario, and unincorporated San Bernardino County • SBCTA and Caltrans Project • Currently in the environmental phase which is expected to be completed in 2017.	SBCTA is studying another Express Lane corridor along I-15 in San Bernardino County in conjunction with this I-10 CP. The I-15 Corridor Project is currently in the PA/ED phase, proposing to add two Express Lanes in each direction from Cantu-Galleano Ranch Road near State Route 60 (SR-60) to SR-210, approximately 13 miles. A future phase to extend the Express Lanes to U.S Highway 395 (US-396) is also under consideration.

Table 3.1.1-1 Related Projects

Project Name, Type, Status	Project Description
I-10/I-15 Express Lanes Direct Connectors • Transportation project • Located in the city of Ontario • SBCTA and Caltrans project • Project currently under preliminary evaluation	As part of SBCTA's consideration of the Express Lane corridors on I-10 and I-15, a preliminary evaluation has been performed to evaluate the potential future direct connectors between the proposed I-10 and I-15 Express Lanes to provide system connectivity and further improve traffic operations in the vicinity of the I-10/I-15 interchange. Though they are not economically viable at this time, the direct connectors could be implemented as a separate future project after construction of the I-10 and I-15 Express lanes as additional system-wide improvements when additional funds are available.
San Bernardino County Flood Control District's Master Stormwater System Maintenance Program (MSWSMP) • Located within the San Bernardino County Flood Control District jurisdiction • San Bernardino County Flood Control District (SBCFCD) project • A Notice of Preparation of a Draft Environmental Impact Report (EIR) was circulated on June 30, 2014	The SBCFCD is proposing to implement a comprehensive program to prepare and implement a Maintenance Plan for maintenance of flood facilities throughout San Bernardino County. Types of routine operations and maintenance activities include, but are not limited to, the removal of excess sediment, debris, and vegetation; stockpiling excess material and debris following removal; maintaining sufficient flowpaths; grooming/repairing earthen and improved channel slopes and bottoms; and maintaining culverts and bridges to ensure proper drainage and structural integrity.
State Route 210 Foothill Freeway Planned Construction Activity • Transportation project • Located in the cities of La Verne, Claremont, Upland, Rancho Cucamonga, Fontana, Rialto, and San Bernardino • SBCTA and Caltrans project • Future planned project; timeline is uncertain • Construction/approval dates range for the varying activities; see Project Description column	Future work on SR-210 would include: • Freeway landscaping is planned for the final 8 miles (Segment 11) of SR-210 ending at the I-10 interchange. Caltrans is developing the landscaping design, which will follow the elements of the Foothill Corridor Beautification Master Plans. Irrigation systems, trees, shrubs, groundcover, flowers, and rock treatments will be installed under separate landscaping contracts in the future. • Seismic retrofit of the Union Pacific Railroad (UPRR) bridge in San Bernardino. • Construction of an interchange at Pepper Avenue in Rialto. SBCTA built a bridge at this location. Once the City of Rialto extends Pepper Avenue north to SR-210, SBCTA will build on-ramps and off-ramps at this location. Preliminary engineering and preparation of the environmental document are currently underway. • SR-210 to I-215 high-speed connectors.
Redlands Passenger Rail Project • Transportation project • Located in the cities of San Bernardino, Loma Linda, Redlands, and unincorporated areas of San Bernardino County. • Federal Transit Administration (FTA), SBCTA, Omnitrans, Metrolink, and the City of San Bernardino project • Project construction is expected to begin in late 2017	The Redlands Passenger Rail Project is proposed to run along existing railroad right-of-way (ROW) from E Street just before Stoddard Avenue in San Bernardino to Rialto Avenue in Redlands, roughly a 9-mile extension of passenger rail service. The project is proposing to build five new stations. The project will incorporate track improvements, including redesign of the existing track alignment, track ballast, and subgrade foundation. Additional project components include the replacement or strengthening of five bridges; additional traffic and rail signals; utility replacement and relocation; and culvert replacements, extensions, and relocations.

Table 3.1.1-1 Related Projects

Project Name, Type, Status	Project Description
Metro Gold Line Foothill Extension Construction Activity: Azusa to Montclair • Transportation project • Located in the cities of Glendora, San Dimas, La Verne, Pomona, Claremont, and Montclair • Metro project • In March 2016, Addendum No. 3 to the Final EIR was approved	The Metro Gold Line light-rail transit (LRT) system extension is proceeding in two phases. Construction of the first phase from the Pasadena Sierra Madre Villa Madre Station, located at Raymond Avenue and Del Mar, to the Azusa-Citrus Station, located between Palm Drive and Citrus Avenue, began in late 2011, and construction is anticipated to be completed in late 2015. The Foothill extension from Vermont Avenue in Azusa to just east of Monte Vista Avenue and north of Arrow Highway in Montclair will extend the Metro Gold Line 12.3 miles and add six stations in the cities of Glendora, San Dimas, La Verne, Pomona, Claremont, and Montclair.
Metro Gold Line Foothill Extension Construction Activity: Ontario Airport Extension • Transportation project • Located in the cities of Montclair, Upland, and Ontario • Metro project • Funding for the Ontario Airport Extension has not been identified; project timeline is uncertain • No progress has been made on the airport extension since 2014	The Ontario Airport Extension will extend the Gold Line approximately 8 miles – from the TransCenter in Montclair, located just east of Monte Vista Avenue and north of Arrow Highway, to Ontario – and terminate the line at the LA/Ontario International Airport. Although not formally part of the Foothill Extension Project, the Construction Authority completed a study to understand the feasibility of extending the line from Montclair to the airport in 2008. The initial study concluded that extending the line was feasible and provided many potential route options.
The Paseos • Land development project • Located in the city of Montclair • GLJ Partners and Alliance project • Specific Plan approved in 2010 • Multi-family residential development opened in 2013	The proposed project would construct a 385-unit multi-family residential development at the northeast corner of Monte Vista Avenue and Moreno Street.
Arrow Station • Land development project • Located in the city of Montclair • Hutton Companies project • The project was completed in 2016	The Specific Plan proposes a 129-unit residential development consisting of 99 urban-style multi-family units and 30 single-family detached homes, which was approved by the City Council in December 2010. Arrow Station is to be located on the north side of Arrow Highway just east of Monte Vista Avenue.
Park View Specific Plan • Land development project • Located in the city of Upland • City of Upland Housing Element – Specific Plan • Project timeline is uncertain	The Park View Specific Plan is envisioned as a mixed-use village that will be located in between east Baseline Road, SR-210, and Cajon Road. The plan calls for the development of up to 100,000 square feet of commercial/ retail space, residential, and open space on 42 acres of land. When built to capacity, the Specific Plan will add 400 housing units to Upland, most of which will be single-family housing.

Table 3.1.1-1 Related Projects

Project Name, Type, Status	Project Description
Upland Crossing Specific Plan • Land development project • Located in the city of Upland • City of Upland Housing Element – Specific Plan • Project timeline is uncertain; Specific Plan adopted in 2006	This Specific Plan area is composed of a residential development with a small commercial-retail component. The Specific Plan proposes 355 multi-family attached and detached residential condominium units and 27,500 square feet of commercial/retail space. The area is bounded by Foothill Boulevard, Monte Vista Avenue, and west Arrow Route, just below Central Avenue.
College Park Specific Plan • Land development project • Located in the city of Upland • City of Upland Housing Element – Specific Plan • Project is open; Specific Plan adopted in 2004	In 2004, the City adopted the College Park Specific Plan to encourage mixed-use development in southwest Upland and provide housing opportunities for the Claremont Colleges. The planning area includes 25 acres of residential land that can accommodate approximately 500 housing units. A total of 450 apartment units have been built. An additional 92 small-lot, detached single-family units are planned at a density of 10 units per acre.
Meredith International Centre Specific Plan • Land development project • Located in the city of Ontario • City of Ontario Specific Plan • An Initial Study was prepared for the project in 2014	The Meredith International Centre Specific Plan Amendment Project proposes a mix of industrial, commercial, and residential land uses on approximately 257 acres located in the southeast portion of Ontario within San Bernardino County. The site is generally located north of I-10, south of 4th Street, between Vineyard Avenue, and Archibald Avenue. The project area is located in between the Southern Pacific Trail and west Arrow Route.
Ontario Center Specific Plan • Land development project • Located in the city of Ontario • City of Ontario Specific Plan • An amendment to the Ontario Specific Plan was approved in 2006	The Ontario Center site consists of approximately 88 acres of vacant land located at the northerly boundary of the eastern portion of Ontario, south of 4th Street, between Haven Avenue and Milliken Avenue, and less than 0.25 mile north of I-10. The Ontario Center will include urban commercial, urban residential, garden commercial, and open space elements.
Ontario Festival Specific Plan • Land development project • Located in the city of Ontario • City of Ontario Specific Plan • Approved in 2012	The Ontario Festival Specific Plan is a comprehensive plan for the development of a planned residential site that could accommodate up to 472 dwelling units on approximately 37.6 acres. This project will be located along Inland Empire Boulevard between Archibald Avenue and Turner Avenue, just below Guasti Regional Park.
Wagner Properties Specific Plan • Land development project • Located in the city of Ontario • City of Ontario Specific Plan • Approved in 2010	The Specific Plan addresses the development of 11 parcels, totaling 54.57 acres located in eastern Ontario.
Southwest Industrial Park • Land development project • Located in the city of Fontana • City of Fontana Specific Plan • Latest Specific Plan amendment approved in 2009	The Southwest Industrial Park (SWIP) Specific Plan is expected to promote economic development and provide opportunities for existing property owners and new businesses. A total of 1,101 acres have been included in the plan since its adoption in 1977. The project area spans both sides of I-10 and is roughly between Etiwanda Avenue and Citrus Avenue.

Table 3.1.1-1 Related Projects

Project Name, Type, Status	Project Description
Alliance California Gateway South Building 3 • Land development project • Located in the city of San Bernardino • City of San Bernardino project • Final EIR certified in February 2014	The proposed project involves construction and operation of an industrial warehouse building consisting of 1,199,360 square feet of interior floor space and 215 loading bays on a 49.65-acre portion of a 62.65-acre property located south of and adjacent to East Orange Show Road and approximately 450 feet east of South Waterman Avenue in the south-central portion of San Bernardino.
Downtown Redlands Specific Plan (Amendment No. 15) • Land development project • Located in the city of Redlands • City of Redlands Project • Plan approved in 2011	The Specific Plan area extends from Texas Street in the west to North Church Street in the east, and from the south side of I-10 in the north to San Gorgonio Drive, Brookside Avenue, West Vine Street, South 6th Street, East Olive Avenue, and East Citrus Avenue in the south. Rail tracks cut through the site, just south of Stuart Avenue.
West of Devers Project • Public infrastructure project • Located within incorporated and unincorporated areas of Riverside and San Bernardino counties, cities of Banning, Beaumont, Calimesa, Colton, Grand Terrace, Loma Linda, and Redlands • Southern California Edison (SCE) Project • EIR finalized in 2015; Errata submitted to State Clearinghouse in 2016 • Project scheduled to be operational and in service 2019-2020	This project will consist of removing and replacing approximately 48 miles of existing 220-kilovolt (kV) transmission lines with new double-circuit 220-kV transmission lines, between the existing Devers Substation (located on 10th Avenue and Diablo Road, near Palm Springs), Vista Substation (in Grand Terrace), and San Bernardino Substation (located on San Bernardino Avenue in between Mountain View Avenue and California Street).
Freeway Corridor Specific Plan • Land development project • Located in the city of Yucaipa • City of Yucaipa project • Plan approved in 2007 • Final EIR certified in 2008	The Specific Plan site encompasses 1,234.3 acres and is located in the southwestern corner of Yucaipa within San Bernardino County. The Specific Plan site is bisected by I-10 and abuts the Riverside county line to the south. The proposed Specific Plan is composed of three distinct neighborhoods. Each neighborhood includes residential, commercial, business park, public facilities, and open space land uses. Local access to the location is provided by Live Oak Canyon Road, County Line Road, Oak Glen Road, Wildwood Canyon Road, and Calimesa Boulevard.
Oak Hills Marketplace Specific Plan • Land development project • Located in the city of Yucaipa • City of Yucaipa project • Plan approved in 2007	The Oak Hills Marketplace (OHM) property occupies approximately 63.66 acres located in southern Yucaipa. The site is located adjacent to eastbound I-10, immediately east of Live Oak Canyon Road. Wildwood Creek traverses the project site, and several unnamed hills are located along the southern border of the property. The proposed project aims to provide a regional shopping destination, including dining and shopping opportunities, and approximately 1,000 new jobs to area residents.

Table 3.1.1-1 Related Projects

Project Name, Type, Status	Project Description
Robinson Ranch Planned Development • Land development project • Located in the city of Yucaipa • City of Yucaipa project • Plan approved in 2011	The Planned Development area covers 522 acres in the southwest portion of Yucaipa. The planned development area is divided into the following three primary planning areas: Robinson Ranch North, West Oak Center, and Wildwood Ranch. In total, the planned development envisions 4,159 multi- and single-family attached and detached dwelling units distributed throughout 385 acres, 109 acres of general commercial uses, and 28 acres of business park uses. Approximately 119 acres of improved open space and 49 acres of natural open space areas would be included within these land uses. I-10 separates the Robinson Ranch North Planning Area on the north side of I-10 and the Wildwood Ranch and Wildwood Center planning areas to the south of I-10.
Comprehensive 3-5 Storm Drain Project (Installation of 2 RCP under I-10) • Public infrastructure project • Located in the city of Colton and unincorporated San Bernardino County • City of Colton project • Construction anticipated to begin in 2019 or 2020	As part of the Comprehensive 3-5 Storm Drain Project, two 108-inch-diameter reinforced concrete pipes (RCP) will be installed under I-10 between Rancho Avenue and Cypress Avenue in the city of Colton and unincorporated San Bernardino County. The installation of these pipes under I-10 would benefit stormwater management to the Santa Ana River.
Mt. Vernon Bridge over UPRR Widening: M Street to I-10 Ramp • Transportation project • Located in the city of Colton • City of Colton project • Project anticipated to be completed by 2019	The project will consist of widening the Mt. Vernon Bridge from two to four lanes over the UPRR from M Street to the I-10 ramp in the city of Colton.
I-10/Grove Avenue Interchange Project • Transportation project • Located in the city of Ontario • City of Ontario and Caltrans project • Project currently in preliminary engineering and environmental document phase	The project would construct a new interchange at Grove Avenue, close the existing I-10/4th Street interchange, and include improvements along Grove Avenue and 4th Street near the interchange.

Note: Information was collected from each project's website in 2016, when available.

Environmental Consequences

No Build Alternative

The No Build Alternative would maintain the current configuration of I-10 in the study area. Under the No Build Alternative, the project would not be constructed, and no impacts to land use would occur.

Common to Both Build Alternatives

The build alternatives run through incorporated cities and unincorporated communities. This analysis evaluates existing land uses that would be converted to transportation uses for the I-10 Corridor Project (I-10 CP). The analysis is based on the most current General Plan Land Use maps available from each jurisdiction.

Table 3.1.1-2 shows the number of affected acres for the proposed project. Both of the I-10 CP build alternatives would affect existing residential, commercial, industrial, agricultural, open space, and public facilities. General Plan land use impacts were calculated based on a per-alternative basis against General Plan land use information.

Table 3.1.1-2 Land Use Impacts by Build Alternative

Land Use	Alternative 2 (Permanent Impacts by Acres)	Alternative 3 – Preferred Alternative (Permanent Impacts by Acres)	Alternative 2 (Number of Temporary Construction Easements [TCEs])	Alternative 3 – Preferred Alternative (Number of TCEs)
Residential	0	5.35	46	184
Commercial/Office	0.0 (9 sq. ft)	5.28	22	99
Industrial	0	3.14	1	9
Agricultural	0	0.00 (41 sq. ft)	0	1
Open Space	0.15	0.17	2	5
Public Facilities/Utilities	0.03	0.33	3	19
Transportation/ROW	0.15	1.06	30	57
Vacant	0	3.73	19	52
Total	**0.33**	**19.05**	**122**	**426**

Source: I-10 Corridor ROW data, 2017.

Indirect impacts (e.g., changes in regional development and growth-related changes) to land use patterns are not anticipated with implementation of the build alternatives. The area subject to right-of-way (ROW) acquisition is urbanized, containing few vacant parcels. It is possible that the presence of a new major transportation corridor could result in localized changes in adjacent land parcels; however, the ROW acquisition process would take into account this potential, and the post-project land use pattern is expected to foster continuing stability to those land uses through such methods as avoiding unusable small remnant parcels and providing adequate buffer space for sensitive land uses. Based on Caltrans guidance[4], indirect impacts to land use typically occur outside of the project study area and can last longer than direct impacts. Because the project's impacts will be contained within the area of potential effects (APE), implementation of either build alternative would not result in indirect impacts on land use. The proposed project improvements would result in a more efficient transportation system, which would be locally and regionally beneficial through design year 2045.

Alternative 2

Implementation of Alternative 2 would not result in full acquisition of any properties; however, it would result in partial acquisition of approximately 6 properties (approximately 0.33 acre), including commercial/office, open space, public facilities/utilities, and transportation/ROW land uses. Acquisitions of properties for Alternative 2 are considered direct impacts to land use because they would require physical changes in the community.

Alternative 3 (Preferred Alternative)

Alternative 3 would affect 40 residential units for full acquisitions (approximately 3.94 acres) from 21 single-family residential parcels and 4 multi-family residential parcels, 12 nonresidential acquisitions (approximately 6.28 acres), and 150 other properties (approximately 9.25 acres) for partial acquisitions. Most of the impacts would occur on residential and commercial/office use properties. Industrial, agricultural, open space, public facilities/utilities, transportation/ROW, and vacant land uses would also be affected. The partial and full acquisitions of properties required to construct Alternative 3 are considered direct impacts to land use because they would require physical changes in the community. In addition, the acquired properties would be used for project ROW and converted to transportation uses, which is considered a direct impact to land use.

Temporary/Construction Impacts

Alternative 2

Temporary construction easements (TCEs) would be required to construct the proposed project. Alternative 2 would require 122 TCEs. Most of the TCEs for Alternative 2 would occur on parcels containing residential, commercial/office, and transportation/ROW land uses.

[4] Caltrans. *Community Impact Assessment*. Standard Environmental Reference Environmental Handbook, Volume 4. October 2011.

Alternative 3 (Preferred Alternative)

Alternative 3 would require 426 TCEs. Most of the TCEs for Alternative 3 would occur on parcels containing residential and commercial/office land uses.

Avoidance, Minimization, and/or Mitigation Measures

The project design of the I-10 corridor will be carried out to minimize ROW impacts. The project is consistent with current and future planned local land uses discussed in Section 3.1.1.1, with the exception of acquisitions required for the build alternatives. Both build alternatives have been designed to avoid impacts to existing built land uses to the extent practicable while adhering to design and operational criteria to maintain a safe roadway. During the design-build phase, efforts will be undertaken to further minimize construction and operation impacts to existing and planned land uses.

3.1.1.2 Consistency with State, Regional, and Local Plans and Programs

The following discussion describes the adopted plans within the project study area and goals, policies, or objectives that are applicable to this project.

Affected Environment

This section provides an analysis of the consistency of the build alternatives with transportation and land use plans and policies included in the general and specific plans for the various jurisdictions within the project limits. Specific goals and policies are identified in Table 3.1.1-3.

Regional Plans

SCAG 2008 Regional Comprehensive Plan

The Southern California Association of Governments (SCAG) Regional Comprehensive Plan (RCP), adopted in 2008, provides a vision for the southern California region that addresses future needs while recognizing the interrelationship between economic prosperity, natural resource sustainability, and quality of life. Through measured performance, the RCP serves as a voluntary action plan with short-term guidance and strategic, long-term initiatives. The RCP complements SCAG's Compass Blueprint and the Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS), which is discussed in detail in this document.

SCAG Regional Transportation Plan/Sustainable Communities Strategy

The 2016 RTP/SCS contains goals and policies that are pertinent to the proposed project, and the SCS is incorporated into the RTP/SCS, per Senate Bill (SB) 375. The SCS will demonstrate how the region will meet its greenhouse gas (GHG) reduction targets. The RTP/SCS's vision encompasses three principles that motivate southern California planning: mobility, economy, and sustainability.

SCAG Compass Blueprint

The fundamental goal of the Compass Blueprint effort is to help the SCAG region build long-lasting partnerships and foster innovative transportation and land use planning. The Compass Blueprint informs the development of the RTP/SCS, assists local government planning efforts, and is driven by four key principles: mobility, livability, prosperity, and sustainability.

County General Plans

San Bernardino County General Plan (Adopted 2007, Amended 2013)

San Bernardino County is bordered by Los Angeles County, Orange County, and Kern County on the west; the Colorado River and the states of Arizona and Nevada on the east; Riverside County on the south; and Inyo County and the southwest corner of Clark County, Nevada, on the north. The county of San Bernardino includes the following cities located within the proposed project area: Montclair, Upland, Ontario, Fontana, Rialto, Colton, San Bernardino, Loma Linda, Redlands, and Yucaipa, and the community of Bloomington.

San Bernardino County, with a land area of 20,106 square miles, is the largest county in the continental United States. Although San Bernardino County is the largest county in the contiguous United States, the span of control of the Board of Supervisors over the entire county is limited. Federal and State agencies own and control most of the County lands, and only 15 percent of the total land area in San Bernardino County is regulated by the County Board of Supervisors.

The County identifies itself as a crossroads of global, multimodal transportation, and commerce, with an abundance of affordable land and a skilled workforce. It also recognizes its rural and urban amenities.

Los Angeles County General Plan (2014 Draft)

Los Angeles County is bordered to the east by Orange County and San Bernardino County, to the north by Kern County, and to the west by Ventura County. The county also includes two offshore islands: Santa Catalina Island and San Clemente Island. The unincorporated areas of the county account for approximately 65 percent of the total land area of the county (approximately 2,650 square miles), while the total land area is 4,083 square miles. It includes the following cities located within the proposed project area: Pomona and Claremont.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	Alternative 2 HOV Lane	Alternative 3 (Preferred Alternative) Express Lanes	
SCAG 2008 Regional Comprehensive Plan				
Land Use and Housing Chapter: Focusing growth in existing and emerging centers and along major transportation corridors.	Consistent	Consistent	Consistent	The build alternatives would not induce growth because the proposed project would be built along an existing corridor and is consistent with existing and future plans. The No Build Alternative would not induce growth because there would be no construction.
Land Use and Housing Chapter: Protecting important open space, environmentally sensitive areas (ESAs), and agricultural lands from development.	Consistent	Consistent	Inconsistent	Alternative 2 would avoid any permanent impacts to open space, ESAs, and agricultural lands. Alternative 3 open space impacts would be avoided when possible and mitigation measures would minimize any unavoidable temporary or permanent impacts to important open space. No open space, ESAs, or agricultural lands would be affected as a result of the No Build Alternative.
Open Space and Habitat Chapter: Conserving natural lands that are necessary to preserve the ecological function and value of the region’s ecosystems.	Consistent	Consistent	Inconsistent	See response immediately above.
Open Space and Habitat Chapter: Conserving wildlife linkages as critical components of the region’s open space infrastructure.	Consistent	Consistent	Consistent	No wildlife linkages would be affected by any of the alternatives.
Open Space and Habitat Chapter: Coordinating transportation and open space to reduce transportation impacts to natural lands.	Consistent	Consistent	Consistent	Alternative 2 would avoid any permanent impacts to open space. Coordination is ongoing to minimize impacts from Alternative 3. No open space would be affected as a result of the No Build Alternative.
Transportation Chapter: A more efficient transportation system that reduces and better manages vehicle activity.	Inconsistent	Consistent	Consistent	Proposed project improvements would result in a more efficient transportation system. I-10 traffic conditions would continue to worsen without implementation of the proposed project.
Transportation Chapter: A cleaner transportation system that minimizes air quality impacts and is energy efficient.	Inconsistent	Consistent	Consistent	Alternative 2 would encourage fewer vehicles on I-10 by using the high-occupancy vehicle (HOV) lane, thereby minimizing air quality impacts and increasing energy efficiency. Alternative 3 would encourage fewer vehicles on I-10 by using the HOV lane and Express Lanes, thereby minimizing air quality impacts and increasing energy efficiency. I-10 traffic conditions would continue to worsen without implementation of the proposed project, thereby increasing air quality impacts and decreasing energy efficiency.
SCAG Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS)				
Goal: Maximize mobility and accessibility for all people and goods in the region.	Inconsistent	Consistent	Consistent	Both build alternatives would improve traffic flow and decrease congestion along I-10, thereby improving mobility and enhancing goods movement capabilities. I-10 traffic conditions would continue to worsen without implementation of the proposed project.
Goal: Ensure travel safety and reliability for all people and goods in the region.	Inconsistent	Consistent	Consistent	The proposed build alternatives would increase freeway capacity and freeway speeds. It is anticipated to reduce rear-end and sideswipe accidents due to stop-and-go traffic and weaving, respectively. I-10 traffic conditions would continue to worsen without implementation of the proposed project, thereby worsening safety and trip reliability.
Goal: Preserve and ensure a sustainable regional transportation system.	Inconsistent	Consistent	Consistent	The proposed build alternatives would increase freeway capacity and freeway speeds. It is anticipated to improve the regional transportation system. I-10 traffic conditions would continue to worsen without implementation of the proposed project.
Goal: Maximize the productivity of our transportation system.	Inconsistent	Consistent	Consistent	Alternative 2 would increase freeway capacity and freeway speeds with the addition of an HOV lane. Alternative 3 would further maximize the productivity of the regional transportation system, as the proposed project includes additional capacity in the form of two Express Lanes in each direction. I-10 traffic conditions would continue to worsen without implementation of the proposed project.
Goal: Protect the environment and health of our residents by improving air quality and encouraging active transportation (nonmotorized transportation, such as bicycling and walking)	Inconsistent	Consistent	Consistent	The proposed build alternatives would increase freeway speeds and encourage transit use and carpooling. Reductions in vehicle miles traveled (VMT), air quality impacts, and energy usage would occur because vehicle idling time would be reduced. I-10 traffic conditions would continue to worsen without implementation of the proposed project, thereby increasing air quality impacts and decreasing energy efficiency.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	Alternative 2 HOV Lane	Alternative 3 (Preferred Alternative) Express Lanes	
Goal: Actively encourage and create incentives for energy efficiency, where possible.	Inconsistent	Consistent	Consistent	See response immediately above.
Goal: Encourage land use and growth patterns that facilitate transit and nonmotorized transportation.	Consistent	Consistent	Consistent	Nonmotorized transportation options would be preserved or enhanced as a result of the proposed project. No changes to transit or nonmotorized transportation would result from the No Build Alternative.
Policy 2: Ensuring safety, adequate maintenance, and efficiency of operations on the existing multimodal transportation system should be the highest RTP/SCS priorities for any incremental funding in the region.	Inconsistent	Consistent	Consistent	The existing multimodal transportation system would continue to degrade without proposed project improvements, thereby diminishing safety, adequate maintenance, and efficiency.
Policy 5: HOV gap closures that significantly increase transit and rideshare usage will be supported and encouraged, subject to Policy 1.	Inconsistent	Consistent	Consistent	The proposed project would result in an HOV gap closure that would increase transit and rideshare usage. The No Build Alternative would not fill in an HOV gap closure.
SCAG Compass Blueprint				
Increase the region's mobility: Encourage transportation investments and land use decisions that are mutually supportive.	Consistent	Consistent	Consistent	Any land use changes resulting from the build alternatives would result in improvements to the region's transportation system. No changes to the transportation or land use would result from the No Build Alternative.
Increase the region's mobility: Promote a variety of travel choices.	Inconsistent	Consistent	Consistent	The proposed project would increase travel options along I-10. Alternative 2 would provide an HOV alternative, and Alternative 3 would provide an HOV and Express Lanes alternative. The No Build Alternative would not provide additional travel options.
Enable prosperity: Ensure environmental justice regardless of race, ethnicity, or income class.	Consistent	Consistent	Consistent	Neither the build alternatives nor the No Build Alternative would result in an impact to any environmental justice population.
Promote sustainability for future generations: Develop strategies to accommodate growth that use resources efficiently, and minimize pollution and GHG emissions.	Inconsistent	Consistent	Consistent	The proposed project would aim to minimize GHG emissions by removing cars from I-10. The proposed project would not result in induced growth in the project area. The No Build Alternative would not develop additional methods for accommodating growth or minimizing pollution or GHG emissions.
Promote sustainability for future generations: Preserve rural, agricultural, recreational, and environmentally sensitive areas.	Consistent	Consistent	Consistent	Alternative 2 would avoid any permanent impacts to rural, agricultural, recreational, or ESAs. Alternative 3 open space impacts would be avoided when possible and mitigation measures would minimize any unavoidable temporary or permanent impacts to important open space. No rural, agricultural, recreational, or ESAs would be affected as a result of the No Build Alternative.
San Bernardino County General Plan				
Goal CI 1. The County will provide a transportation system, including public transit, which is safe, functional, and convenient; meets the public's needs; and enhances the lifestyles of county residents.	Consistent	Consistent	Consistent	The proposed project would not result in any permanent impacts to the County's public transportation system, but it would result in improved I-10 conditions within the project area. The No Build Alternative would not result in changes to the County's transportation system.
Goal CI 2. The County's comprehensive transportation system will operate at regional, countywide, community, and neighborhood scales to provide connectors between communities and mobility between jobs, residences, and recreational opportunities.	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy CI 2.1. Work with adjacent jurisdictions to minimize inconsistencies in existing and ultimate ROW and roadway capacity across jurisdictional boundaries.	Inconsistent	Consistent	Consistent	Coordination is ongoing between the multiple regional and local government agencies involved in the proposed project to improve traffic conditions on I-10 throughout the jurisdictions located in the project area. The No Build Alternative would not result in any traffic improvements to I-10.
Policy CI 2.2. Coordinate financial plans for transportation system improvements with other agencies and jurisdictions in the county.	Inconsistent	Consistent	Consistent	See response immediately above.
Policy CI 2.3. Where appropriate, jointly fund studies and improvements to the transportation system, with cities and other public agencies and developers.	Inconsistent	Consistent	Consistent	The proposed build alternatives would result in jointly funded improvements to I-10. The No Build Alternative would not result in any transportation studies.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	Alternative 2 HOV Lane	Alternative 3 (Preferred Alternative) Express Lanes	
Policy CI 2.4. Work with Caltrans and SBCTA on appropriate fair-share mitigation for impacts of development on State highways.	Inconsistent	Consistent	Consistent	The proposed build alternatives would share mitigation requirements with Caltrans and SBCTA. The No Build Alternative would not require mitigation because no construction would occur.
Policy CI 2.5. Work with Caltrans on mitigating the impacts of State highway projects on local communities.	Inconsistent	Consistent	Consistent	The proposed build alternatives would mitigate impacts to local communities, as much as possible. The No Build Alternative would not require mitigation because no construction would occur.
Policy CI 2.7. Coordinate with Caltrans, SBCTA, SCAG, and other agencies regarding transportation system improvements in the County's Measure I and other adopted Capital Improvement Programs.	Consistent	Consistent	Consistent	Coordination is ongoing between the multiple regional and local government agencies involved in the proposed project to improve traffic conditions on I-10 throughout the jurisdictions located in the project area. The No Build Alternative would not result in any traffic improvements to I-10.
Policy CI 2.8. Continue to participate in SBCTA, which is the County's Transportation Commission and transportation planning coordinator for all local agencies in the County, and regularly attend meetings of SBCTA Plans and Programs Committee and Comprehensive Transportation Plan Technical Advisory Committee meetings to discuss planning items of mutual concern.	Consistent	Consistent	Consistent	See response immediately above.
Policy CI 2.10. Identify important long-range transportation corridors, in conjunction with plans of regional transportation agencies (e.g., SCAG and SBCTA) to protect sufficient ROW for the development of long-range corridors.	Consistent	Consistent	Consistent	The intent of this policy is to provide ROW for, and minimize ROW impacts of, transportation corridor projects planned by agencies such as SCAG and SBCTA. The proposed project is shown on plans on both of those agencies, so the proposed project is clearly consistent with this policy. The No Build Alternative is not inconsistent with this policy because it does not reduce the available ROW for a different future project should none of the build alternatives proposed here be selected as the Preferred Alternative.
Goal CI 3. The County will have a balance between different types of transportation modes, reducing dependency on the automobile and promoting public transit and alternate modes of transportation, in order to minimize the adverse impacts of automobile use on the environment.	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy CI 3.1. Encourage the reduction of automobile usage through various incentive programs.	Inconsistent	Consistent	Consistent	Alternative 2 would offer HOV lane travel options that would encourage people to combine automobile trips, which would reduce overall automobile usage. Alternative 3 would offer HOV and Express Lane travel options that would encourage people to combine automobile trips, which would reduce overall automobile usage. The No Build Alternative would not result in changes to automobile usage.
Policy CI 4.5. Coordinate with local and regional transportation agencies and cities to plan and construct new multi-modal transportation facilities on the basis of this General Plan that are consistent throughout the neighboring jurisdictions.	Inconsistent	Consistent	Consistent	The proposed project would result in the construction of new bike lanes and Americans with Disabilities (ADA)-compliant sidewalks, as well as improvements to I-10 capacity within the proposed project area. The No Build Alternative would not result in any transportation improvements.
Goal CI 5: The County's road standards for major thoroughfares will complement the surrounding environment appropriate to each geographic region.	See related policy below	See related policy below	See related policy below	See related policy below for consistency analysis.
Policy CI 5.2: Protect and increase the designed roadway capacity of all vehicular thoroughfares and highways.	Inconsistent	Consistent	Consistent	Both build alternatives would result in increased roadway capacity, as well as offer alternative travel options. The No Build Alternative would not result in construction or increase roadway capacity.
Goal CI 6: The County will encourage and promote greater use of nonmotorized means of personal transportation. The County will maintain and expand a system of trails for bicycles, pedestrians, and equestrians that will preserve and enhance the quality of life for residents and visitors.	See related policy below	See related policy below	See related policy below	See related policy below for consistency analysis.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	**Alternative 2 HOV Lane**	**Alternative 3 (Preferred Alternative) Express Lanes**	
Policy CI 6.1: Require safe and efficient pedestrian and bicycle facilities in residential, commercial, industrial, and institutional developments to facilitate access to public and private facilities and to reduce vehicular trips. Install bicycle lanes and sidewalks on existing and future roadways, where appropriate and as funding is available.	Inconsistent	Consistent	Consistent	New ADA-compliant sidewalks would be constructed in Montclair, Upland, Ontario, San Bernardino, Loma Linda, and Redlands as a result of the proposed project, thereby increasing opportunities for walking. New bikeways are proposed in Montclair, Upland, Ontario, and Redlands, thereby increasing opportunities for bicycle usage. The No Build Alternative would not construct new sidewalks.
Goal CI 13: The County will minimize impacts to stormwater quality in a manner that contributes to improvement of water quality and enhances environmental quality.	See related policy below	See related policy below	See related policy below	See related policy below for consistency analysis.
Policy CI 13.1: Utilize site-design, source-control, and treatment control best management practices (BMPs) on applicable projects, to achieve compliance with the County Municipal Stormwater National Pollutant Discharge Elimination System (NPDES) Permit.	Consistent	Consistent	Consistent	BMPs would be incorporated into the proposed project design to comply with the County Municipal Stormwater NPDES Permit. No changes to stormwater would result from the No Build Alternative.
Los Angeles County General Plan				
Goal M 1: Street designs that incorporate the needs of all users.	See related policies below	N/A	See related policies below	See related policies below for consistency analysis.
Policy M 1.1: Provide for the accommodation of all users, including pedestrians, motorists, bicyclists, equestrians, users of public transit, seniors, children, and persons with disabilities, when requiring or planning for new, or retrofitting existing, roads and streets.	Consistent	N/A	Consistent	Alternative 3 would not result in impacts to any areas outside of the I-10 transportation facility in Los Angeles County because this portion of the proposed project would be a transition area, resulting in minor changes to I-10, such as striping. The No Build Alternative would not result in changes to I-10 or other non-transportation modalities.
Policy M 1.2: Ensure that streets are safe for sensitive users, such as seniors and children.	Consistent	N/A	Consistent	See response immediately above.
Policy M 1.3: Utilize industry standard rating systems, such as the Institute for Sustainable Infrastructure (ISI) Rating System, to assess sustainability and effectiveness of street systems for all users.	Consistent	N/A	Consistent	See response immediately above.
Goal C/NR 1: Open space areas that meet the diverse needs of Los Angeles County.	See related policy below	See related policy below	See related policy below	See related policy below for consistency analysis.
Policy C/NR 1.2: Protect and conserve natural resources, natural areas, and open spaces on park properties.	Consistent	N/A	Consistent	No open space areas would be affected within Los Angeles County for the proposed project because improvements would only result in transition area improvements, such as roadway striping. The No Build Alternative would not result in any impacts to open space.
Goal P/R 3: Acquisition and development of additional parkland.	See related policy below	See related policy below	See related policy below	See related policy below for consistency analysis.
Policy P/R 3.8: Mitigate impacts from freeways to new parks to the extent feasible.	Consistent	N/A	Consistent	No new parks would be affected within Los Angeles County for the proposed project because improvements would only result in transition area improvements, such as roadway striping. The No Build Alternative would not result in any impacts to parks.
City of Pomona General Plan				
Policy 6D.P24: Facilitate and undertake improvements along Garey and Holt avenues (including the Holt Avenue underpass) between I-10, SR-71, and the Downtown/City Center area to create a front door to the city. Improvements should include landscaping, pedestrian amenities, lighting, signage, and public art.	Inconsistent	N/A	N/A	Alternative 3 would not result in impacts to any areas outside of the I-10 transportation facility in Pomona because this portion of the proposed project would be a transition area, resulting in minor changes to I-10, such as striping. Therefore, no improvements would result to arterial roadways. The No Build Alternative would not result in changes to I-10.
Goal 7C.G16: Minimize the physical impact of I-10 and its interchanges on the visual character and form of the city.	See related policies below	N/A	See related policies below	See related policies below for consistency analysis.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	Alternative 2 HOV Lane	Alternative 3 (Preferred Alternative) Express Lanes	
Policy 7C.P29: Work with Caltrans to improve landscaping along I-10, SR-57, SR-71, and SR-60. Encourage Caltrans to incorporate more landscaping and the planting of trees. Lessen the visual impact of existing soundwalls through the use of vegetation. Improve the visual character of freeway interchanges and overpasses through public art, landscaping, and improved lighting.	Inconsistent	N/A	N/A	Alternative 3 would not result in impacts to any areas outside of the I-10 transportation facility in Pomona because this portion of the proposed project would be a transition area, resulting in minor changes to I-10, such as striping. The No Build Alternative would not result in changes to I-10 or other non-transportation modalities.
Goal 7D.G2: Strengthen Pomona's position as an important regional center through quality transportation planning.	Inconsistent	N/A	Consistent	Alternative 3 would result in minor changes to I-10 in Pomona, such as striping, because this portion of the proposed project would be a transition area. The proposed project overall would contribute to the strengthening of Pomona's position as a regional center. The No Build Alternative would not result in changes to I-10.
Goal 7D.G3: Support regional efforts to the extent feasible, to reduce GHG emissions from cars and light trucks.	Inconsistent	N/A	Consistent	Alternative 3 would result in minor changes to I-10 in Pomona, such as striping, because this portion of the proposed project would be a transition area; however, the proposed project overall would contribute to the reduction of GHG emissions by providing HOV or Express Lane transportation options that are anticipated to reduce the number of cars from the road. The No Build Alternative would not result in changes to I-10.
Goal 7D.G4: Monitor congestion on the five freeways serving Pomona and control spillover traffic from freeways onto city streets.	Inconsistent	N/A	Consistent	Alternative 3 would result in minor changes to I-10 in Pomona, such as striping, because this portion of the proposed project would be a transition area; however, the proposed project overall would reduce congestion on adjacent freeways by improving traffic flow. The No Build Alternative would not result in changes to I-10.
Goal 7D.G5: Minimize the impacts of freeways on the quality of life of Pomona's residents.	See related policies below	N/A	See related policies below	See related policies below for consistency analysis.
Policy 7D.P2: Collaborate with regional transportation planning and transit agencies to plan for the efficient allocation of transportation resources.	Inconsistent	N/A	Consistent	Coordination is ongoing between the multiple regional and local government agencies involved in the proposed project to improve traffic conditions on I-10 throughout the jurisdictions located in the project area. The No Build Alternative would not result in any traffic improvements to I-10.
Policy 7D.P3: Work with regional agencies to proactively plan future improvements and achieve timely implementation of programmed freeway and interchange improvements.	Inconsistent	N/A	Consistent	See response immediately above.
City of Claremont General Plan				
Goal 2-4. Protect, preserve, and manage the city's diverse and valuable open space, water, air, and habitat resources.	See related policy below	N/A	See related policy below	See related policy below for consistency analysis.
Policy 2.4-1. Encourage the preservation of different types of open spaces.	Consistent	N/A	Consistent	Neither Alternative 3 nor the No Build Alternative would result in any impacts to open space resources.
Goal 2-9. Make roads comfortable, safe, accessible, and attractive for use day and night.	See related policy below	N/A	See related policy below	See related policy below for consistency analysis.
Policy 2-9.1. Provide crosswalks and sidewalks along streets that are accessible for people with disabilities and people who are physically challenged.	Inconsistent	N/A	Consistent	Alternative 3 would not result in impacts to sidewalks in Claremont because the proposed project would be a transition area in this city. Pedestrian safety is a priority for the proposed project. New ADA-compliant sidewalks would be constructed in other cities along the corridor. The No Build Alternative would not construct new sidewalks.
Goal 2-10. Maintain and expand where possible the system of neighborhood connections that attach neighborhoods to larger roadways.	See related policies below	N/A	See related policies below	See related policies below for consistency analysis.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	Alternative 2 HOV Lane	Alternative 3 (Preferred Alternative) Express Lanes	
Policy 2-10.1. Provide sidewalks where they are missing and provide wide sidewalks where appropriate with buffers and shade so that people can walk comfortably.	Inconsistent	N/A	Consistent	Alternative 3 would not result in impacts to sidewalks in Claremont because the proposed project would be a transition area in this city. Pedestrian safety is a priority for the proposed project. New ADA-compliant sidewalks would be constructed in other cities along the corridor. The No Build Alternative would not construct new sidewalks.
Policy 2-10.2. Make walking comfortable at intersections through traffic-calming, landscaping, and designated crosswalks.	Consistent	N/A	Consistent	See response immediately above. Additional landscaping would also be incorporated into the design of both build alternatives. All crosswalks would be maintained.
Goal 4-1. Support efforts that will enhance the regional transportation network and benefit Claremont residents.	See related policies below	N/A	See related policies below	See related policies below for consistency analysis.
Policy 4-1.1. Participate in regional transportation planning, and encourage systems that meet regional goals while protecting Claremont from external impacts.	Inconsistent	N/A	Consistent	Alternative 3 would improve traffic flow and decrease congestion along I-10, thereby improving mobility and enhancing goods movement capabilities. I-10 traffic conditions and goods movement efforts would continue to worsen without implementation of the proposed project.
Policy 4-1.2. Work closely with Caltrans, the counties of Los Angeles and San Bernardino, and adjacent municipalities to minimize transportation problems, address cross-country transportation issues, and improve coordination of future improvements.	Inconsistent	N/A	Consistent	Alternative 3 proposes to minimize transportation problems, address cross-country transportation issues, and improve coordination of future improvements. The No Build Alternative would not result in any improvements.
Policy 4-1.5. Continue to work with Caltrans and other agencies to provide proper maintenance of Caltrans facilities, and to protect surrounding neighborhoods from noise and traffic impacts associated with Caltrans roads and freeways.	Inconsistent	N/A	Consistent	Alternative 3 would result in minor improvements along I-10 in Claremont, including roadway striping and construction staging areas (CSAs). The proposed project aims to improve traffic flow and decrease congestion along I-10, thereby improving mobility and enhancing goods movement capabilities. I-10 traffic conditions and goods movement efforts would continue to worsen without implementation of the proposed project.
Goal 4-2. Reduce traffic congestion while retaining the historic patterns and functions of city streets.	See related policies below	N/A	See related policies below	See related policies below for consistency analysis.
Policy 4-2.3. Limit width of all city streets to no more than four vehicle lanes, unless special circumstances demonstrate that additional lanes within limited stretches or at key intersections are needed for merging, congestion, or safety reasons.	Consistent	N/A	Consistent	Alternative 3 would not increase the number of vehicle lanes on city streets. The No Build Alternative would not increase the number of vehicle lanes on city streets.
Policy 4-2.5. Provide medians on all major and secondary streets with sufficient ROW, and use bulb-outs and pedestrian refuge medians where appropriate.	Consistent	N/A	Consistent	Alternative 3 would result in minor improvements along I-10 in Claremont, including roadway striping and CSAs. No city streets would be affected in Claremont. The No Build Alternative would not result in improvements.
Policy 4-2.10. Limit city streets to two travel lanes where traffic volumes warrant to increase pedestrian and vehicle safety.	Consistent	N/A	Consistent	Alternative 3 would not increase the number of vehicle lanes on city streets. The No Build Alternative would not increase the number of vehicle lanes on city streets.
Policy 4-2.11. Continue to implement the Congestion Management Plan of the Los Angeles County Metropolitan Transportation Authority and the City's Transportation Demand Management Ordinance.	Consistent	N/A	Consistent	All applicable design and traffic plans would be followed to the extent feasible for Alternative 3. No construction would result from the No Build Alternative, and the applicable design and traffic plans would continue to be followed.
Goal 4-3. Establish and maintain a comprehensive system of pedestrian ways and bicycle routes that provides viable options to travel by automobile.	See related policy below	N/A	See related policy below	See related policy below for consistency analysis.
Policy 4-3.5. Recognize and accommodate the pedestrian ADA access in Claremont's neighborhoods, and continue to make improvements to increase pedestrian safety.	Consistent	N/A	Consistent	Alternative 3 would not result in impacts to sidewalks in Claremont, and pedestrian safety is a priority for the proposed project. Other cities along the corridor would result in new sidewalks. The No Build Alternative would not result in changes to pedestrian safety.
Goal 4-8. Maintain truck routes that minimize adverse impacts on residential neighborhoods.	See related policies below	N/A	See related policies below	See related policies below for consistency analysis.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	Alternative 2 HOV Lane	Alternative 3 (Preferred Alternative) Express Lanes	
Policy 4-8.1. Maintain and enforce use of a preferred truck route network.	Consistent	N/A	Consistent	Alternative 3 would maintain the truck route along I-10, as the project proposes to improve goods movement in the region by improving traffic flow along I-10. The No Build Alternative would not result in changes to I-10, and truck routes would not be altered.
Policy 4-8.2. Improve signage on designated truck routes to reduce truck traffic on neighborhood streets.	Inconsistent	N/A	Consistent	Alternative 3 would maintain the truck route along I-10, as the project proposes to improve goods movement in the region by improving traffic flow along I-10. This area of the proposed project would also be a transition area, resulting in roadway striping and signage improvements. The No Build Alternative would not result in changes to I-10, and signage would not be altered.
City of Montclair General Plan				
Goal LU-1.1.4. Participate in and support regional activities of SCAG, SBCTA, City/County Planning Commissioners Conference, and other such agencies.	Inconsistent	N/A	Consistent	Coordination is ongoing between the multiple regional and local government agencies involved in the proposed project to improve traffic conditions on I-10 throughout the jurisdictions located in the project area. The No Build Alternative would not result in any traffic improvements to I-10.
Goal CE-1.1.0. To promote a circulation and transportation system, including freeways, all classes of streets, accommodations for public mass transportation and pedestrian walkways, and bicycle routes that will serve traffic needs efficiently and safely, and be attractive in appearance.	Consistent	N/A	Consistent	Alternative 3 would provide transportation options that would reduce traffic congestion along I-10, including HOV and Express Lanes. Sidewalks and bicycle lanes would also be incorporated into the project to create a truly multimodal project that accommodates different transportation needs. The No Build Alternative would not result in any changes to the I-10 transportation system.
Goal CE-1.1.12. Establish and review priorities for grade separations at roadway and railroad crossings. Sources of funding should be explored for these improvements.	Consistent	N/A	Consistent	Neither Alternative 3 nor the No Build Alternative would result in grade separations.
City of Upland General Plan				
Goal 1. To develop transportation planning, services, and facilities that are coordinated with and support the Land Use Plan.	Consistent	N/A	Consistent	Alternative 3 would support the Land Use plan for Upland. If acquisitions are required, all efforts to minimize ROW impacts would be made. No changes to the Land Use plan would result from the No Build Alternative.
Goal 2. To minimize the impact of existing and future roadways on adjacent land uses, particularly residential, and ensure compatibility between land uses and roadway facilities to the greatest extent possible. Nonlocal through traffic shall be discouraged from traversing the city on collector and local streets. The major and secondary highway system is intended to accommodate nonlocal traffic. Where feasible, circulation improvements shall be implemented that minimize impacts on adjacent residential neighborhoods. Wherever possible, a buffer zone shall be required between residential land uses and arterial highway facilities. Buffer measures shall be required between any land use and the I-10 and SR-30 freeways. All roadways shall be encouraged to be designed in a manner that will enhance the interplay of vehicular and pedestrian safety.	Consistent	N/A	Consistent	Alternative 3 would encourage alternative transportation options, including carpooling and driving at nonpeak traffic periods, potentially discouraging travel through city streets. All efforts to minimize impacts to neighborhoods adjacent to I-10 would be incorporated into the project design for Alternative 3. Buffers, including landscaping, would be incorporated into the project design, to minimize impacts. ADA-compliant pedestrian and bikeway improvements would also be incorporated into the project design. No changes to adjacent neighborhoods would result from the No Build Alternative.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	Alternative 2 HOV Lane	Alternative 3 (Preferred Alternative) Express Lanes	
Goal 3. To accommodate alternative modes of transportation to the private automobile in the city, including nonmotorized transportation (i.e., bicycle and pedestrian), public transportation, and recreational trails. All new development shall be required to provide sidewalks, in accordance with the Master Plan of Streets and Highways. The special needs of the physically disadvantaged shall be recognized by ensuring that all sidewalks, streets and street crossings, public areas, and related facilities that are normally used by the general public will be accessible to the physically disabled.	Consistent	N/A	Consistent	See response immediately above.
Goal 5. To promote the aesthetic qualities of the street system. Wherever feasible, street construction and improvement projects shall be designed with a concern for street aesthetics, including street trees, landscaping, and paving materials. All new development shall be encouraged to provide landscaped parkways, appropriate pedestrian amenities, and other streetscape improvements that improve the aesthetics of the roadway to both vehicular and pedestrian traffic. Adequate street lighting that is energy efficient and appropriate to the area shall be encouraged.	Consistent	N/A	Consistent	Alternative 3 would include buffers, including landscaping, incorporated into the project design, to minimize impacts. Adequate street lighting would be maintained. Pedestrian and bikeway improvements would also be incorporated into the project design. No changes to the aesthetic quality of the city would result from the No Build Alternative.
Goal 6. To ensure that land use and transportation projects under the jurisdictions of private and other public agencies are compatible with the objectives of the City of Upland Circulation Element. Prior to development, all land use and transportation projects in the unincorporated portions of Upland's sphere-of-influence shall be reviewed and approved by the City Planning Commission for compliance with applicable City transportation policies. Every effort shall be made to coordinate with the State, regional, and local governments and agencies to ensure that any future improvements to the State Highway System are conducted to the City's best interest.	Consistent	N/A	Consistent	Alternative 3 would support Upland's General Plan, including the Circulation element. Coordination is ongoing between the multiple regional and local government agencies involved in the proposed project to improve traffic conditions on I-10 throughout the jurisdictions located in the project area. No impacts to Upland's Circulation element would result from the No Build Alternative.
City of Ontario General Plan				
Goal LU 2-6. Infrastructure Compatibility. We require infrastructure to be aesthetically pleasing and in context with the community character.	Consistent	Consistent	Consistent	Buffers, including landscaping, would be incorporated into the project design for both build alternatives to minimize impacts and be aesthetically pleasing in conformance with the context and community character of Ontario. No changes to the aesthetic quality of the city would result from the No Build Alternative.
Goal M 2. A system of trails and corridors that facilitates and encourages bicycling and walking.	See related policies below	N/A	See related policies below	See related policies below for consistency analysis.
Policy M 2-1. Bikeway Plan. We maintain our Multipurpose Trails & Bikeway Corridor Plan to create a comprehensive system of on- and off-street bikeways that connects residential areas, businesses, schools, parks, and other key destination points.	Consistent	Consistent	Consistent	New bikeways are proposed for both build alternatives in Ontario, and existing bikeways would be maintained. The No Build Alternative would not result in new bikeways.
Policy M 2-2. Bicycle System. We provide off-street multipurpose trails and Class II bikeways as our primary paths of travel and use the Class III for connectivity in constrained circumstances.	Consistent	Consistent	Consistent	See response immediately above.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	Alternative 2 HOV Lane	Alternative 3 (Preferred Alternative) Express Lanes	
Policy M 2-3. Pedestrian Walkways. We require walkways that promote safe and convenient travel between residential areas, businesses, schools, parks, recreation areas, and other key destination points.	Consistent	Consistent	Consistent	New ADA-compliant sidewalks are proposed for both build alternatives in Ontario, and existing sidewalks would be maintained. The No Build Alternative would not result in new sidewalks.
Goal M 4-2. Regional Participation. We work with regional and subregional transportation agencies to plan and implement goods movement strategies, including those that improve mobility, deliver goods efficiently and minimize negative environmental impacts.	Inconsistent	Consistent	Consistent	Both build alternatives would improve traffic flow and decrease congestion along I-10, thereby improving mobility and enhancing goods movement capabilities. Coordination is ongoing between the multiple regional and local government agencies involved in the proposed project. I-10 traffic conditions and goods movement efforts would continue to worsen without implementation of the proposed project.
Goal CD 1-4. Transportation Corridors. We will enhance our major transportation corridors within the city through landscape, hardscape, signage, and lighting.	Consistent	Consistent	Consistent	Both build alternatives would include buffers, including landscaping, in the project design to minimize impacts. Adequate street lighting and signage would be maintained or enhanced. No changes to the aesthetic quality of the city would result from the No Build Alternative.
City of Fontana General Plan				
Goal 2 (Land Use). Quality of life in our community is supported by development that avoids negative impacts on residents and businesses and is compatible with, and enhances, our natural and built environment.	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy 1. New development with potentially adverse impacts on existing neighborhoods or residents such as noise, traffic, emissions and stormwater runoff, shall be located and designed so that quality of life and safety in existing neighborhoods are preserved.	Consistent	Consistent	Consistent	Both build alternatives would include buffers, including landscaping, in the project design to minimize impacts to neighborhoods. Adequate street lighting and signage would be maintained or enhanced. Minimization and mitigation measures and BMPs would be implemented for other project-related impacts. No changes to the aesthetic quality of the city would result from the No Build Alternative.
Policy 2. Regionally beneficial land uses such as transportation corridors, flood control systems, utility corridors, and recreational corridors shall be sensitively integrated into our community.	Consistent	Consistent	Consistent	Both build alternatives would minimize effects to surrounding areas by implementing minimization and mitigation measures, including landscaping buffers and context-sensitive design. The No Build Alternative would not result in impacts to the surrounding communities.
Goal 3 (Land Use). Our community is developing in a unified, orderly, logical, environmentally sound manner, which ensures that the City is unified and accessible to all residents, and results in economically sound commercial areas, vibrant neighborhoods, and jobs rich centers.	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy 1. Areas adjacent to freeway and major arterial corridors shall be given special land use and development standards guidance.	Consistent	Consistent	Consistent	Both build alternatives would minimize effects to surrounding areas by implementing minimization and mitigation measures, including landscaping buffers and context-sensitive design. The No Build Alternative would not result in impacts to the surrounding communities.
Policy 3. Circulation system improvements shall continue to be pursued that facilitate connectivity across freeway and rail corridors.	Inconsistent	Consistent	Consistent	Both build alternatives would improve traffic flow and decrease congestion along I-10, thereby improving circulation. I-10 traffic conditions would continue to worsen without implementation of the proposed project.
Policy 4. Improvements shall be made to transportation corridors that promote physical connectivity and reflect consistently high aesthetic values.	Inconsistent	Consistent	Consistent	See response immediately above. In addition, aesthetic treatments, including landscaping and hardscape buffers, would be implemented into project design.
Goal 1 (Transportation). A balanced transportation system for Fontana is provided that meets the mobility needs of current and future residents and ensures the safe and efficient movements of vehicles, people, and goods throughout the city.	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy 9. Coordinate arterial street design standards with neighboring jurisdictions within the City's sphere of influence to maintain and/or develop consistent street segments.	Consistent	Consistent	Consistent	Coordination is ongoing between the multiple regional and local government agencies involved in the proposed project to improve traffic conditions on I-10 throughout the jurisdictions located in the project area, while maintaining design standards with neighboring jurisdictions. The No Build Alternative would not result in any traffic improvements to I-10.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	Alternative 2 HOV Lane	Alternative 3 (Preferred Alternative) Express Lanes	
Policy 12. All streets and intersections designed after the adoption of the General Plan will be planned to function at Level of Service (LOS) C or better, wherever possible. Improvements to existing streets will be designed to LOS C standards whenever feasible.	Consistent	Consistent	Consistent	The only intersections within the City of Fontana included in the proposed project are the intersections associated with the I-10/Etiwanda interchange that are south of the I-10 freeway mainline. Those intersections are anticipated to operate at LOS C or better under all of the alternatives based on data in the Traffic Study.
Policy 14. Plan for the design and construction of new freeway interchange facilities on I-10 at Alder Avenue and Beech Avenue.	Consistent	Consistent	Consistent	Although the proposed project would not build new local interchange facilities at the identified streets, the proposed project would not preclude their implementation by others at a later date.
Policy 15. Plan for the design and construction of new arterial overcrossings on I-10 at Mulberry Avenue, Poplar Avenue, and Cypress Avenue to provide for mobility, community connectivity, and efficient access to safety vehicles.	Consistent	Consistent	Consistent	Although the proposed project would not build new arterial overcrossings at the identified streets, the proposed project would not preclude their implementation by others at a later date. The Cypress Avenue overcrossing has already been constructed by others.
Policy 18. Maintain and improve intersection capacity by implementing ultimate intersection geometries through the use of left-turn pockets and dedicated right-turn lanes wherever feasible.	Inconsistent	Consistent	Consistent	Both build alternatives would improve traffic flow and decrease congestion along I-10 within the project area and coordinated with adjacent jurisdictions. Numerous intersections would be improved in many ways, including the provision of dedicated left- and right-turn pockets.
Goal 3. The major arterial thoroughfares of the city contribute to the overall image and diverse character of the community.	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy 1. Major arterial highways shall be improved according to customized design guidance within and adjacent to public ROWs.	Consistent	Consistent	Consistent	Both build alternatives would follow Caltrans design guidelines. No changes to I-10 would result from the No Build Alternative.
Policy 3. Continue to pay special attention to designs that include screening, berms, fencing, and landscaping for industrial uses, especially regarding outside storage and handling areas.	Consistent	Consistent	Consistent	Both build alternatives would include buffers, including landscaping, in the project design to minimize impacts. No changes to the aesthetic quality of the city would result from the No Build Alternative.
Community of Bloomington Community Plan				
Goal BL/CI 1. Ensure a safe and effective transportation system that provides adequate traffic movement while preserving the rural character of the community.	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy BL/CI 1.2. Ensure that transportation system improvements are made to Slover Avenue and Valley Boulevard where facilities are at or near capacity.	Consistent	Consistent	Consistent	The proposed project would improve I-10 and some local interchanges. The proposed project would generally draw traffic off of parallel facilities such as Slover Avenue and Valley Boulevard, thereby reducing the need for improvements to those facilities. No improvements are proposed as part of the build alternatives along either Slover Avenue or Valley Boulevard in the community of Bloomington. Neither the proposed build alternatives nor the No Build Alternative limits the ability of localities to make improvements to local streets.
Policy BL/CI 1.5. Work with adjacent cities and appropriate agencies to identify deficiencies and provide needed improvements at the intersections of Cedar Avenue, Alder Avenue, Cactus Avenue, and I-10. Researched deficiencies shall include an evaluation of both vehicular and pedestrian access, and circulation at these intersections.	Consistent	Consistent	Consistent	Although the proposed project would not build new local interchange facilities at the identified streets or improve the local streets near I-10, the proposed project would not preclude their improvement by others at a later date.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	Alternative 2 HOV Lane	Alternative 3 (Preferred Alternative) Express Lanes	
Policy BL/CI 1.6. Adopt and enforce a truck route plan for the Bloomington plan area that limits truck traffic to designated truck routes. Signs and improved enforcement shall direct nonlocal and through trucks to the designated truck routes. The truck route plan shall also identify opportunities for transportation services within the plan area to accommodate truck parking. Coordinate truck routing plans with the adjacent cities. Truck routes to include the following: **A.** Slover Avenue **B.** Cedar Avenue	Inconsistent	N/A	N/A	Neither the build alternatives nor the No Build Alternative would result in a truck route plan.
Goal BL/CI 2. Ensure safe and efficient nonmotorized traffic circulation within the community.	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy BL/CI 2.3. Where feasible, separate pedestrian/bicycle/ equestrian traffic from vehicular traffic on major roadways to protect the safety of trail users.	Consistent	Consistent	Consistent	Any existing pedestrian/bicycle/equestrian paths would be maintained as a result of the build alternatives. No impacts to pedestrian/bicycle/equestrian paths would result from the No Build Alternative.
Policy BL/CI 2.4. Ensure that crossings of the railroad and I-10 can safely accommodate pedestrian traffic.	Consistent	Consistent	Consistent	Both build alternatives would ensure safe crossings at I-10 or any railroads. The No Build Alternative would not affect any I-10 or railroad crossings.
Goal BL/OS 2. Establish a communitywide trail system.	See related policy below	See related policy below	See related policy below	See related policy below for consistency analysis.
Policy BL/OS 2.6. Investigate the possible joint use of a proposed flood control drainage easement by equestrians to provide a north/south crossing of I-10 and the railroad.	Inconsistent	Inconsistent	Inconsistent	Neither of the build alternatives nor the No Build Alternative would include a joint use flood control drainage easement for equestrian use.
City of Rialto General Plan				
Goal 2-13. Achieve quality aesthetic design of all signage in the city of Rialto.	See related policy below	See related policy below	See related policy below	See related policy below for consistency analysis.
Policy 2-13.1. Prohibit the indiscriminate placement of highway directional signs, traffic signs, street identification signs, and other similar devices in any manner that creates visual blight or driver confusion.	Consistent	Consistent	Consistent	Both build alternatives would follow Caltrans design guidelines to avoid indiscriminate placement of signage. No additional signage would be added as a result of the No Build Alternative.
Goal 2-17. Provide high-quality and environmentally sustainable landscaping.	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy 2-17.1. Require the planting of street trees along public streets and inclusion of trees and landscaping for private developments to improve airshed, minimize urban heat island effect, and lessen impacts of high winds.	Consistent	Consistent	Consistent	Both build alternatives would include landscaping amenities as part of construction. Over time, the replacement plantings included in the project would grow and eventually provide a similar element provided by the existing vegetation. The No Build Alternative would not plant new trees.
Goal 4-1. Provide transportation improvements to reduce traffic congestion associated with regional and local trip increases.	Inconsistent	Consistent	Consistent	Both build alternatives would improve traffic flow and decrease congestion along I-10, thereby improving traffic circulation and improving goods movement capabilities. I-10 traffic conditions would continue to worsen without implementation of the proposed project.
Policy 4-1.5. Reduce delays to local traffic, facilitate emergency response, and enhance safety by pursuing railroad grade separations.	Inconsistent	Consistent	Consistent	See response immediately above. Emergency response vehicles would benefit from the improved traffic flow and enhanced travel options on I-10.
Policy 4-1.9. Work with Caltrans to improve coordination of traffic signals at freeway interchanges with those on city streets.	Consistent	Consistent	Consistent	Although the proposed project would not improve local freeway interchange facilities in the city of Rialto, the proposed project would not preclude traffic signal coordination with Caltrans under a different project.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	Alternative 2 HOV Lane	Alternative 3 (Preferred Alternative) Express Lanes	
Policy 4-1.12. Support the County's efforts to improve the I-10 freeway interchange at Cedar Avenue to relieve regional freeway congestion.	Consistent	Consistent	Consistent	The Cedar Avenue interchange was recently improved with a project implemented by others.
Policy 4-1.15. Support the construction of HOV lanes on I-10 between Ontario and Redlands.	Inconsistent	Consistent	Consistent	Both build alternatives would result in the construction of HOV or Express Lanes between Ontario and Redlands. The No Build Alternative would not result in the construction of HOV lanes between Ontario and Redlands.
Goal 4-5. Ensure the provision of adequate, convenient, and safe parking for all land uses.	See related policies below	See related policies below.	See related policies below	See related policies below for consistency analysis.
Policy 4-5.1. Support provision of park-and-ride facilities near the I-10 and SR-210 freeways to encourage carpooling, vanpooling, and other ride-sharing opportunities.	Consistent	Consistent	Consistent	Both build alternatives would preserve existing park-and-ride facilities near I-10. The No Build Alternative would not affect park-and-ride facilities.
Goal 4-8. Establish and maintain a comprehensive system of pedestrian trails and bicycle routes that provide viable connections throughout the city.	See related policy below	See related policy below	See related policy below	See related policy below for consistency analysis.
Policy 4-8.6. Coordinate recreational trail plans with neighboring cities and San Bernardino County to ensure linkage of local trails across jurisdictional boundaries and with regional trail systems.	Consistent	Consistent	Consistent	Coordination is ongoing between Caltrans, San Bernardino County, and City of Redlands for any affected trails. The No Build Alternative would not affect any trails.
Goal 4-9. Promote walking.	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy 4-9.1. Install sidewalks where they are missing and make improvements to existing sidewalks for accessibility purposes. Priority should be given to needed sidewalk improvement near schools and activity centers. Provide wider sidewalks in areas with higher pedestrian volumes.	Inconsistent	Consistent	Consistent	New ADA-compliant sidewalks would be constructed in Montclair, Upland, Ontario, San Bernardino, Loma Linda, and Redlands as a result of the proposed project, thereby increasing opportunities for walking. The No Build Alternative would not construct new sidewalks.
Policy 4-9.4. Accommodate pedestrians and bicyclists – in addition to automobiles – when considering new development projects.	Inconsistent	Consistent	Consistent	New ADA-compliant sidewalks would be constructed in Montclair, Upland, Ontario, San Bernardino, Loma Linda, and Redlands as a result of the proposed project, thereby increasing opportunities for walking. New bikeways are proposed in Montclair, Upland, Ontario, and Redlands, thereby increasing opportunities for bicycle usage. The No Build Alternative would not construct new sidewalks or bikeways.
Policy 4-9.5. Seek to maintain pedestrian access in the event of any temporary or permanent street closures.	Consistent	Consistent	Consistent	Pedestrian access would be maintained, as feasible, during construction. In cases of full, temporary road closures, pedestrian access would likely not be possible. The No Build Alternative would not close any streets.
Policy 4-9.7. Require ADA compliance on all new or modified handicap ramps.	Consistent	Consistent	Consistent	Both build alternatives would ensure compliance with ADA when constructing or modifying handicap ramps. The No Build Alternative would not affect handicap ramps.
Goal 4-10. Provide a circulation system that supports Rialto's position as a logistics hub.	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy 4-10.1. Designate and enforce truck routes for use by commercial trucking as part of the project approval process.	Consistent	Consistent	Consistent	Both build alternatives would maintain I-10 as a major truck route. The No Build Alternative would not result in any physical changes to I-10.
Policy 4-10.3. Develop appropriate noise mitigation along truck routes to minimize noise impacts on nearby sensitive land uses.	Consistent	Consistent	Consistent	Both build alternatives would mitigate any noise impacts with the appropriate federally designated noise mitigation, including soundwalls. The No Build Alternative would not increase noise along I-10.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	Alternative 2 HOV Lane	Alternative 3 (Preferred Alternative) Express Lanes	
City of Colton General Plan				
Goal M-1. Provide an integrated and balanced multimodal transportation network of Complete Streets to meet the needs of all users and transportation modes.	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy M-1.1. Provide for the needs of drivers, public transportation vehicles and patrons, bicyclists, and pedestrians of all ages and abilities in planning, programming, design, construction, reconstruction, retrofit, operations, and maintenance activities of all streets.	Consistent	Consistent	Consistent	In addition to providing new transportation options along I-10, new sidewalks would be constructed in Montclair, Upland, Ontario, San Bernardino, Loma Linda, and Redlands as a result of the proposed project, thereby increasing opportunities for walking along adjacent streets or bridges. New bikeways are proposed in Montclair, Upland, Ontario, and Redlands, thereby increasing opportunities for bicycle usage. No permanent impacts to public transportation would result from the proposed project. The No Build Alternative would not construct new sidewalks or bikeways.
Policy M-1.2. View all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in Colton. Recognize bicycle, pedestrian, and transit modes as integral elements of the transportation system.	Consistent	Consistent	Consistent	See response immediately above.
Goal M-3. Develop a safe, efficient, and attractive street system that provides capacity to meet existing and future demand.	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy M-3.1. Apply General Plan roadway standards for roadways to the design and construction of future street improvements. Take into account not only automobiles, but also transit vehicles, bicycles, and pedestrians as identified by the Street Typology system.	Consistent	Consistent	Consistent	See response above.
Policy M-3.5. Maintain intersection traffic flows at LOS D during peak hours for all roadways in Colton, except at those locations identified in this Mobility Element where peak-hour LOS E is allowed.	Consistent	Consistent	Consistent	The only intersections within the city of Colton included in the proposed project are the intersections associated with the I-10/Pepper and I-10/Cadena/9th interchanges. Those intersections are anticipated to operate at LOS D or better under all of the alternatives based on data in the Traffic Study.
Policy M-3.11. Reconfigure the Mt. Vernon, Valley Boulevard, and I-10 freeway interchange to remove the five-legged intersection and improve the operations of this interchange.	Consistent	Consistent	Consistent	Although the proposed project would not make local street improvements at the identified interchange, the proposed project would not preclude their implementation by others at a later date.
Goal M-4. Provide appropriate access, logical configuration, and adequate capacity at freeway interchanges, street and rail intersections, and at bridges.	See related policy below	See related policy below	See related policy below	See related policy below for consistency analysis.
Policy M-4.6. Ensure that all interchange reconfiguration projects, grade separation improvements, and bridge widening projects be designed and implemented in a manner that provides positive benefit to the city of Colton.	Consistent	Consistent	Consistent	Both build alternatives would improve affected interchanges and ramps, as identified in the Traffic Study, to increase traffic flow and reduce congestion. The No Build Alternative would not result in any interchange improvements.
Goal M-5. Maintain an efficient network of goods and freight movement that supports the needs of Colton businesses while reducing truck and rail traffic impacts on residential neighborhoods.	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy M-5.5. Vigorously enforce established truck routes to discourage truck shortcuts through residential neighborhoods.	Consistent	Consistent	Consistent	Both build alternatives would maintain the truck route along I-10, as the project proposes to improve goods movement in the region by improving traffic flow along I-10. The No Build Alternative would not result in changes to I-10, and truck routes would not be altered.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	Alternative 2 HOV Lane	Alternative 3 (Preferred Alternative) Express Lanes	
Policy M-5.6. Ensure that the designated truck routes conform to the following performance criteria: • Truck routes must avoid intrusions into residential neighborhoods to limit noise, vibration, and air quality impacts. • To the extent feasible, truck routes will not be provided on local streets and on streets with mostly residential frontage. • Truck routes must be located on roadways that provide direct and convenient access between Major Arterials and freeways (I-10 and I-215) and industrial and commercial businesses. • Truck routes must be located on roadways with the design and construction capacity to accommodate truck traffic.	Consistent	Consistent	Consistent	See response immediately above.
Goal M-7. Coordinate with other jurisdictions and agencies on regional transportation projects.	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy M-7.1. Actively pursue federal, State, and regional funds for local and regional roadway improvements.	Inconsistent	Consistent	Consistent	Multiple funding sources, including Measure I, would be used to implement the proposed build alternatives. No funding would be required for the No Build Alternative.
Policy M-7.3. Consult with Caltrans, SCAG, the South Coast Air Quality Management District (SCAQMD), SBCTA, Omnitrans, San Bernardino County, Riverside County, and the cities of Rialto, San Bernardino, Loma Linda, Grand Terrace, and Riverside to coordinate regional transportation facilities, and to pursue federal, State, and regional funds for local and regional traffic improvements.	Consistent	Consistent	Consistent	Coordination is ongoing between the multiple regional and local government agencies involved in the proposed project to improve traffic conditions on I-10 throughout the jurisdictions located in the project area. The No Build Alternative would not result in any traffic improvements to I-10.
City of San Bernardino General Plan				
Goal 2.2. Promote development that integrates with and minimizes impacts on surrounding land uses.	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy 2.2.2. Require new uses to provide mitigation or buffers between existing uses where potential adverse impacts could occur, including, as appropriate, decorative walls, landscape setbacks, restricted vehicular access, enclosure of parking structures to prevent sound transmission, and control of lighting and ambient illumination.	Consistent	Consistent	Consistent	Both build alternatives would incorporate buffers, including landscaping and soundwalls, into the proposed project design. The No Build Alternative would not result in changes to I-10.
Policy 2.2.5. Establish and maintain an ongoing liaison with Caltrans, the railroads, and other agencies to help minimize impacts and improve aesthetics of their facilities and operations; including possible noise walls, berms, limitation on hours and types of operations, landscaped setbacks, and decorative walls along its periphery.	Consistent	Consistent	Consistent	Coordination is ongoing between the multiple regional and local government agencies involved in the proposed project to improve traffic conditions and aesthetics on I-10 throughout the jurisdictions located in the project area. The No Build Alternative would not result in any traffic improvements to I-10.
Goal 2.3. Create and enhance dynamic, recognizable places for San Bernardino's residents, employees, and visitors	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy 2.3.6. Circulation system improvements shall continue to be pursued that facilitate connectivity across freeway and rail corridors.	Inconsistent	Consistent	Consistent	Both build alternatives would improve traffic flow and decrease congestion along I-10, while maintaining and improving the aesthetic quality along the corridor. I-10 traffic conditions would continue to worsen without implementation of the proposed project.
Policy 2.3.7. Improvements shall be made to transportation corridors that promote physical connectivity and reflect consistently high aesthetic values.	Inconsistent	Consistent	Consistent	See response immediately above.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	Alternative 2 HOV Lane	Alternative 3 (Preferred Alternative) Express Lanes	
Goal 6.1. Provide a well-maintained street system.	See related policies below	See related policies below	See related policies below	See related policies below for consistency analysis.
Policy 6.1.1. Maintain and rehabilitate all components of the circulation system, including roadways, sidewalks, bicycle facilities, and pedestrian facilities.	Inconsistent	Consistent	Consistent	Both build alternatives would improve traffic flow and decrease congestion along I-10. New sidewalks would be constructed in Montclair, Upland, Ontario, San Bernardino, Loma Linda, and Redlands as a result of the proposed project, thereby increasing opportunities for walking. New bikeways are proposed in Montclair, Upland, Ontario, and Redlands, thereby increasing opportunities for bicycle usage. I-10 traffic conditions would continue to worsen without implementation of the proposed project, and the No Build Alternative would not construct new sidewalks or bikeways.
Policy 6.1.3. Coordinate maintenance or enhancement of transportation facilities with related infrastructure improvements.	Inconsistent	Consistent	Consistent	Both build alternatives would improve traffic flow and decrease congestion along I-10. Any affected flood control or utility services would be improved or maintained. I-10 traffic conditions, flood control, utility services, and aesthetic amenities would continue to worsen without implementation of the proposed project.
Goal 6.2. Maintain efficient traffic operations on city streets.	See related policy below	See related policy below	See related policy below	See related policy below for consistency analysis.
Policy 6.2.1. Maintain a peak-hour LOS D or better at street intersections.	Consistent	Consistent	Consistent	None of the proposed alternatives would make intersection improvements within the city of San Bernardino.
Goal 6.3. Provide a safe circulation system.	See related policy below	See related policy below	See related policy below	See related policy below for consistency analysis.
Policy 6.3.1. Promote the principle that streets have multiple uses and users, and protect the safety of all users.	Consistent	Consistent	Consistent	Both build alternatives would improve traffic flow and decrease congestion along I-10. New sidewalks would be constructed in Montclair, Upland, Ontario, San Bernardino, Loma Linda, and Redlands as a result of the proposed project, thereby increasing opportunities for walking. New bikeways are proposed in Montclair, Upland, Ontario, and Redlands, thereby increasing opportunities for bicycle usage. I-10 traffic conditions would continue to worsen without implementation of the proposed project, and the No Build Alternative would not construct new sidewalks or bikeways.
Goal 6.4. Minimize the impact of roadways on adjacent land uses and ensure compatibility between land uses and highway facilities to the extent possible.	See related policy below	See related policy below	See related policy below	See related policy below for consistency analysis.
Policy 6.4.1. Work with Caltrans to ensure that construction of new facilities includes appropriate soundwalls or other mitigating noise barriers to reduce noise impacts on adjacent land uses.	Consistent	Consistent	Consistent	Both build alternatives would mitigate any noise impacts with the appropriate federally designated noise mitigation, including soundwalls. The No Build Alternative would not increase noise along I-10.
Policy 6.4.2. Require, wherever possible, a buffer zone between residential land uses and highway facilities.	Consistent	Consistent	Consistent	See response immediately above.
Policy 6.4.3. Continue to participate in forums involving the various governmental agencies, such as Caltrans, SBCTA, SCAG, and the County, that are intended to evaluate and propose solutions to regional transportation problems.	Consistent	Consistent	Consistent	Coordination is ongoing between the multiple regional and local government agencies involved in the proposed project to improve traffic conditions on I-10 throughout the jurisdictions located in the project area. The No Build Alternative would not result in any traffic improvements to I-10.
Policy 6.4.8. Develop appropriate protection measures along routes frequently used by trucks to minimize noise impacts to sensitive land uses including, but not limited to, residences, hospitals, schools, parks, daycare facilities, libraries, and similar uses.	Consistent	Consistent	Consistent	Both build alternatives would mitigate any noise impacts with the appropriate federally designated noise mitigation, including soundwalls. The No Build Alternative would not increase noise along I-10.
Goal 6.5. Develop a transportation system that reduces conflicts between commercial trucking, private/public transportation, and land uses.	See related policy below	See related policy below	See related policy below	See related policy below for consistency analysis.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	Alternative 2 HOV Lane	Alternative 3 (Preferred Alternative) Express Lanes	
Policy 6.5.1. Provide designated truck routes for use by commercial/industrial trucking that minimize impacts on local traffic and neighborhoods.	Consistent	Consistent	Consistent	Both build alternatives would maintain the truck route along I-10, as the project proposes to improve goods movement in the region by improving traffic flow along I-10. The No Build Alternative would not result in changes to I-10, and truck routes would not be altered.
City of Loma Linda General Plan				
Goal 6.10. Provide a balanced, convenient, energy-efficient, and safe transportation system that incorporates all feasible modes of transportation.	Consistent	Consistent	Consistent	Both build alternatives would improve traffic flow and decrease congestion along I-10. Any affected intersections would be improved. New sidewalks would be constructed in Montclair, Upland, Ontario, San Bernardino, Loma Linda, and Redlands as a result of the proposed project, thereby increasing opportunities for walking. New bikeways are proposed in Montclair, Upland, Ontario, and Redlands, thereby increasing opportunities for bicycle usage. I-10 traffic conditions would continue to worsen without implementation of the proposed project, and the No Build Alternative would not construct new sidewalks.
Goal 6.10.1. Vehicular Circulation **a.** Maintain long-term traffic levels of service at LOS C. **e.** Facilitate roadway capacity by implementing the Loma Linda Circulation Plan. **j.** Encourage regional goods movement to remain on area freeways and other appropriate routes.	Inconsistent	Consistent	Consistent	None of the proposed alternatives would make improvements to local streets or substantially impact their LOS or capacity within the city of Loma Linda. The proposed project would improve I-10 and generally reduce diversion from I-10 due to congestion on the freeway.
Goal 6.10.2. Nonmotorized Transportation **b.** Provide lighting that is attractive, functional, and appropriate to the character and scale of the neighborhood or area, and which contributes to pedestrian and bicycle safety. **c.** Maintain roadway designs that maintain mobility and accessibility for bicyclists and pedestrians through incorporation of sidewalks and bicycle lanes, where appropriate.	Inconsistent	Consistent	Consistent	Both build alternatives would incorporate new sidewalks and bicycle lanes into the proposed project, as well as maintain existing ones, to create a truly multimodal project that accommodates different transportation needs. Lighting amenities would also be incorporated into the proposed project. The No Build Alternative would not result in any changes to the I-10 transportation system.
Goal 6.10.3. Transit **b.** Preserve options for future transit use when designing roadway and highway improvements.	Inconsistent	Consistent	Consistent	Both build alternatives would not result in any permanent impacts to public transit ROW. Beneficial impacts would result from the decreased traffic congestion. The No Build Alternative would not result in any changes to the I-10 public transportation system.
City of Redlands General Plan				
Guiding Policies: Residential Areas **Policy 4.40c.** Conserve existing citrus groves and encourage planting new ones along street frontages to be developed.	Consistent	Consistent	Consistent	Alternative 2 would not result in any permanent or temporary acquisitions to citrus groves. Alternative 3 would result in a partial acquisition to the I-10/California Grove parcel containing a City-operated citrus grove; however, no citrus trees would be affected as a result of this acquisition. A mitigation measure would be implemented to protect the citrus grove during construction. The No Build Alternative would not affect any citrus groves.
Guiding Policies: Downtown **Policy 4.61c.** Provide public improvements for traffic circulation, flood control, utility services, and aesthetic amenities that will attract new private investment and economic development.	Inconsistent	Consistent	Consistent	Both build alternatives would improve traffic flow and decrease congestion along I-10, thereby improving traffic circulation in Redlands. Any affected flood control or utility services would be improved or maintained. Aesthetic improvements include landscaping and consistency in design. I-10 traffic conditions, flood control, utility services, and aesthetic amenities would continue to worsen without implementation of the proposed project.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	Alternative 2 HOV Lane	Alternative 3 (Preferred Alternative) Express Lanes	
Guiding Policies: Standards for Traffic Service **Policy 5.20a.** Maintain LOS C or better as standard at all intersections presently at LOS C or better. **Policy 5.20b.** Within the area identified in GP Figure 5.3, including that unincorporated County area identified on GP Figure 5.3 as the donut hole, maintain LOS C or better; however, accept a reduced LOS on a case-by-case basis upon approval by a four-fifths (4/5ths) vote of the total authorized membership of the City Council. **Policy 5.20c.** Where the current LOS at a location within the city of Redlands is below the LOS C standard, no development project shall be approved that cannot be mitigated so that it does not reduce the existing LOS at that location except as provided in Section 5.20b.	Inconsistent	Consistent	Consistent	Both build alternatives would improve traffic flow and decrease congestion along I-10 within the project area and coordinated with adjacent jurisdictions. Any affected intersections would be improved. I-10 traffic conditions would continue to worsen without implementation of the proposed project.
Guiding Principles: Freeway Improvements **Policy 5.33a.** Work with Caltrans to achieve timely construction of freeway and interchange improvements.	Inconsistent	Consistent	Consistent	Coordination is ongoing between the multiple regional and local government agencies involved in the proposed project to improve traffic conditions on I-10 throughout the jurisdictions located in the project area. The No Build Alternative would not result in any traffic improvements to I-10.
Implementing Policies: Freeway Improvements **Policy 5.33b.** Develop improvement plans for the SR-30 interchange at San Bernardino Avenue and for the I-10 freeway interchanges at Alabama Street, California Street, and Mountain View Avenue to ensure adequate capacity to meet future needs associated with the *East Valley Corridor Specific Plan.* **Policy 5.33c.** Provide an SR-30 freeway crossing (no ramps) at Palmetto Avenue and widen I-10 crossings at Nevada Street to reduce overdependence on other freeway crossings such as San Bernardino Avenue, Alabama Street, and California Street. **Policy 5.33d.** Seek funding for interchange improvements as needed to accommodate traffic growth in the East Valley Corridor. **Policy 5.33e.** Seek funding for I-10/Wabash Avenue interchange improvements.	Inconsistent	Consistent	Consistent	Both build alternatives would improve affected interchanges and ramps, as identified in the Traffic Study and the Ramp Closure Study. The No Build Alternative would not result in any ramp or interchange improvements.
Guiding Policies: Bikeways **Policy 5.50o.** Plan and design bikeways with special consideration to the safety of bicyclists and pedestrians.	Inconsistent	Consistent	Consistent	New bikeways are proposed in Montclair, Upland, Ontario, and Redlands, thereby increasing opportunities for bicycle usage. The No Build Alternative would not construct new bikeways.
Guiding Policies: Pedestrianways **Policy 5.60a.** Treat pedestrians as if they are more important than cars.	Inconsistent	Consistent	Consistent	New sidewalks are proposed in Montclair, Upland, Ontario, San Bernardino, Loma Linda, and Redlands, thereby increasing opportunities for pedestrian walkways. The No Build Alternative would not construct new sidewalks.

Table 3.1.1-3 Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy			Consistency Analysis
	Alternative 1 No Build	Alternative 2 HOV Lane	Alternative 3 (Preferred Alternative) Express Lanes	
Implementing Policies: City Design **Policy 3.10l.** Use Caltrans and local resources to implement the I-10 Corridor Landscape Master Plan. A future 10-lane freeway will overwhelm Redlands unless it is part of a major landscape element. **Policy 3.10n.** Avoid soundwalls as a standard on arterial streets in residential areas. Walled cities with deserted sidewalks and bleak streets have become the norm in many recently built cities. Redlands has avoided this blight by using side-on cul-de-sacs, but design to mitigate noise resulting from projected traffic increases will require other techniques. Preservation of citrus frontage, use of berms, and frontage roads are alternatives.	Inconsistent	Consistent	Consistent	Both build alternatives would incorporate landscaping in the proposed project along I-10. Soundwalls would only be constructed along I-10. The No Build Alternative would not result in increased landscaping.
City of Yucaipa General Plan				
Goal LU-9. Locate new development so that the economic strength derived from agricultural, mineral, and other natural resources is preserved. **A.** Prime agricultural lands must be protected from the adverse effects of urban encroachment, particularly increased erosion and sedimentation, trespass, and nonagricultural land development. **D.** Because agricultural uses are valuable, the City shall encourage the retention of productive, commercially viable agricultural land and discourage the premature or unnecessary conversion of agricultural land to nonagricultural uses through the implementation of the following actions.	Consistent	N/A	Consistent	Alternative 3 would not result in any impacts to agricultural land in Yucaipa. The No Build Alternative would not affect agricultural land.
Goal T-1. Develop a transportation system for current and future needs that moves people and goods safely and efficiently.	Inconsistent	N/A	Consistent	Alternative 3 would improve traffic flow and decrease congestion along I-10, thereby improving mobility and enhancing goods movement capabilities. I-10 traffic conditions and goods movement efforts would continue to worsen without implementation of the proposed project.
Goal T-5. Strive to achieve minimum LOS C on all highways and intersections.	Inconsistent	N/A	Consistent	See response immediately above.
Goal T-7. Encourage nonmotorized alternative transportation by creating bicycle lanes and pedestrian paths to commercial areas, parks, and schools.	Inconsistent	N/A	Consistent	Alternative 3 would encourage alternative nonmotorized transportation options by incorporating ADA-compliant pedestrian and bikeway improvements into the project design. Existing sidewalks and bikeways would be maintained. Alternative 3 would not result in impacts to sidewalks or bikeways in Yucaipa because the proposed project would be a transition area in this city. No changes to nonmotorized transportation options would result from the No Build Alternative.
Goal TP-1. Promote the development of safe and convenient bicycle and pedestrian corridors that provide alternative transportation routes to schools, parks, and employment and commercial areas.	Consistent	N/A	Consistent	See response immediately above.
Goal OS-8. Minimize conflicts between open space and surrounding land uses.	Consistent	N/A	Consistent	Alternative 3 is not anticipated to result in impacts to open space in Yucaipa. The No Build Alternative would not result in open space impacts.

Sources: Counties of Los Angeles and San Bernardino; Cities of Pomona, Claremont, Montclair, Upland, Ontario, Fontana, Rialto, Bloomington, Colton, San Bernardino, Loma Linda, Redlands, and Yucaipa; and Parsons, 2015.

The major policies of the General Plan include expanding Transit-Oriented Districts (TODs), promoting mixed use, expanding Significant Ecological Areas (SEA), creating Employment Protection Districts (EPDs), and protecting Agricultural Resource Areas (ARAs).

Local General Plans

City of Pomona General Plan (2011 Draft)

Pomona is surrounded by the cities of Claremont, La Verne, San Dimas, Walnut, Diamond Bar, Chino, and Montclair. The area contained within the city of Pomona boundaries comprises 22.84 square miles. Pomona has excellent access, positioned at the confluence of I-10, SR-57, SR-71 and SR-60, as well as two Union Pacific Railroad (UPRR)/Metrolink rail lines. The City of Pomona General Plan's guiding themes include maintaining its diverse land uses, embracing development changes, economic prosperity by way of varied development patterns, maintaining neighborhood character and cohesion, protecting cultural resources and open spaces, and public safety.

City of Claremont General Plan (adopted 2006, revised 2009)

Claremont shares its boundaries with the cities of Upland, Pomona, La Verne, and Montclair and the county of San Bernardino. Claremont occupies approximately 14.14 square miles in Los Angeles County. I-10, SR-66, and SR-210 traverse the city east to west, providing regional connections; Claremont is also regionally connected by Metrolink. The main goal of the City of Claremont's General Plan is sustainability by conserving its natural resources; protecting its culture and heritage; meeting the housing and community service needs of a diverse demographic; and preserving the quality of life that currently exists in the city.

City of Montclair General Plan (1999)

The western boundary of Montclair is contiguous with the Los Angeles county line, which also includes the cities of Pomona and Claremont. Upland borders Montclair on the north and east, Ontario on the east, and an unincorporated portion of San Bernardino County to the south. The Montclair planning area consists of approximately 6.48 square miles. The primary land use in Montclair is residential, with a smaller percentage of land uses dedicated to commercial uses near I-10 and vacant or agricultural land.

City of Upland General Plan (1996)

Upland is bordered by Montclair to the southwest and Ontario to the south and encompasses a land area of 15.3 square miles. I-10 runs along the southern edge of the city. SR-66 and SR-210 run east-west through the city, while SR-83 runs north-south. Upland serves as a gateway to the Angeles National Forest and the Mt. Baldy Recreation Areas. This General Plan aims to protect its neighborhoods, preserve cultural resources, encourage a mix of land uses, and develop a balanced, regional transportation system.

City of Ontario General Plan (2010)

Ontario is comprised of approximately 50 square miles. It is bordered by unincorporated San Bernardino County, Montclair, Upland, Rancho Cucamonga, and Fontana to the north, and Chino and Riverside County to the south. I-10, I-15, and SR-60 run through the city limits. The vision of the Ontario General Plan, or the Ontario Policy Plan, includes goals and policies to create and maintain distinct neighborhoods and activity centers; encourage diverse residential uses; a mix of employment, retail, entertainment, community, and recreational services; and a world-class airport, which are connected through a unified mobility system.

City of Fontana General Plan (2003)

Fontana is positioned as a gateway into southern California's economy and the Inland Empire from I-15. I-10, SR-66, and SR-210 also run through the city. Fontana can play an important role in linking to the critical goods movement system known as Alameda Corridor East due to the city's level of rail service. With a large amount of undeveloped land in its incorporated boundaries and sphere of influence, Fontana has many opportunities for developing its economy.

Community of Bloomington Community Plan (2007)

Bloomington encompasses approximately 7 square miles of unincorporated land area. Fontana is adjacent to the west and north, and Rialto is located along the north and east boundaries. I-10 bisects Bloomington, and the community contains limited commercial uses and has larger residential lots and more agricultural uses than nearby urban areas. The Community of Bloomington Community Plan emphasizes its priority is to protect the rural character of the community.

City of Rialto General Plan (2010)

Rialto encompasses approximately 22 square miles of land area. It is bordered by unincorporated San Bernardino County to the north, Fontana and Bloomington to the west, San Bernardino and Colton to the east, and unincorporated San Bernardino County to the south. Rialto contains a varied mix of land uses; SR-210, SR-66, and I-10 run through the city, as does a UPRR line. The City of Rialto General Plan emphasizes its commitment to family neighborhoods, new development, encouraging a healthy and diverse economic environment, and its support for recreational facilities and transportation alternatives.

City of Colton General Plan (1987, Land Use and Mobility Elements 2013)

Colton is bordered by the cities of Rialto, San Bernardino, Loma Linda, and Grand Terrace and Riverside County. Located in San Bernardino County, Colton encompasses approximately 18 square miles and is located within the Santa Ana River floodplain. The UPRR main switching yard is located in the city, and a large intermodal hub for the Burlington Northern Santa Fe (BNSF) railroad is located just a few miles north of Colton, in the city of San Bernardino. I-10 and I-215 also traverse the city, from east to west and south to north, respectively.

Its physical geographic characteristics and constraints associated with its convergence of rail and freeway corridors create the unique character of Colton. These issues also present limitations for development. The City's General Plan aims to support its existing position as a major transit/goods movement hub, while accompanying growth at the same time.

City of San Bernardino General Plan (2005)

San Bernardino is surrounded by Rialto to the west, Colton to the southwest, Loma Linda to the south, Redlands to the southeast, Highland to the east, and the San Bernardino National Forest to the north. San Bernardino is a gateway to mountain resorts and a gateway to southern California due to its proximity to the Cajon Pass, a major natural entry from the high deserts and points east. The historic development of San Bernardino as a transportation hub is directly related to the proximity to the Cajon Pass (e.g., railroad lines, Santa Fe rail depot, U.S. Route 66, I-215, SR-18). I-10 borders the southern edge of the city, and the city's total planning area is 71 square miles.

Key strategies that supported the development of this General Plan include entrepreneurship, Inland Empire economy, fiscal priorities, community diversity, quality housing and attractive neighborhoods, cultural and recreational opportunities, education, and community pride.

City of Loma Linda General Plan (2009)

Loma Linda is bordered by Redlands and San Bernardino to the north; Redlands and unincorporated San Bernardino County to the east; unincorporated Riverside and San Bernardino counties to the south; and unincorporated San Bernardino County and Colton and San Bernardino to the west. I-10 provides the northern border of the city. The planning area covers approximately 10.41 square miles.

The main vision for the City of Loma Linda is for it to continue to be a small, friendly, beautiful community with natural assets, a unique economy, and healthy lifestyle. Also important to the City is its university; to avoid large-scale, high-density development; and promote a pedestrian-friendly environment.

City of Redlands General Plan (1995)

Redlands is bounded on the north by the Santa Ana Wash, Highland, and the San Bernardino Mountains, on the east by Yucaipa, on the south by Riverside County, and on the west by Loma Linda and San Bernardino. I-10, SR-38, and SR-210 run through the middle of the city. The planning area encompasses 52 square miles. Major themes that are prevalent throughout the General Plan include maintaining its position as a freestanding city, its citrus heritage, small town feeling, and its sense of history.

City of Yucaipa General Plan (2004)

Yucaipa is bounded on the west by Redlands, and unincorporated San Bernardino County on all other sides. The San Bernardino Mountains are located immediately to the north of Yucaipa. I-10 runs through the middle of Yucaipa. The planning area encompasses almost 28 square miles. The major goals and objectives of the General Plan are intended to preserve the community’s rural atmosphere.

Specific Plans

The following Specific Plans are located within or immediately adjacent to the proposed project alignment.

Centrelake Business Park Specific Plan (1983)

The Centrelake Business Park Specific Plan is master planned as a mixed-use park to be aesthetically pleasing and self sufficient. It is located adjacent to LA/Ontario International Airport and bound by I-10 to the north, Turner Avenue to the west, and Haven Avenue to the east in Ontario. A significant portion of Centrelake is intended for development as office facilities.

Crossroads Business Park Specific Plan (1997)

The Crossroads Business Park Specific Plan was approved for the exclusive development of light industrial uses. It attempts to duplicate the development standards established by California Commerce Center South. It is bounded by I-10 to the south, Etiwanda Avenue to the east, 4th Street to the north, and parcels adjacent to I-15 on the west in Ontario.

Guasti Plaza Specific Plan (2007)

The Guasti Plaza Specific Plan has a long history as an Italian agricultural/agrarian, working environment. It is bounded by I-10 to the north, Turner Avenue to the east, Old Guasti Road to the south, and Archibald Avenue to the west in Ontario. It is approved for the exclusive development of light industrial uses.

Meredith International Centre Specific Plan (1999)

The Meredith International Centre Specific Plan is a major mixed-use development on approximately 250 acres. A key amenity to the project is the Cucamonga/Guasti Regional Park, which occupies the northeast corner of the site. It is bounded by I-10 to the south, Archibald Avenue to the east, 4th Street to the north, and Vineyard Avenue to the west in Ontario. The land uses proposed for the plan are primarily office, hotel, and retail/commercial with some residential uses.

Mountain Village Specific Plan (1997)

The Mountain Village Specific Plan was approved to ensure the development of commercial, office, and residential uses. It is bounded by I-10 to the north, Colony Park and single-family residences to the south, single-family residences to the east, and multi-family residences to the west in Ontario. The Specific Plan area contains four Development Districts that are characterized by different land uses and design objectives, including “Entertainment District,” “Main Street District,” “Sixth Street District,” and “Residential District.”

Ontario Center Specific Plan (1981)

The Ontario Center Specific Plan consists of a mix of uses, including commercial, residential, and open space covering 549 acres. It is bounded by I-10 to the south, Turner Avenue to the west, 4th Street to the north, and Milliken Avenue to the east in Ontario.

Ontario Mills Specific Plan (1996)

The Ontario Mills Specific Plan consists primarily of commercial and office land uses and encompasses approximately 251 acres. It is generally bounded by 4th Street to the north, Milliken Avenue to the west, I-15 to the east, and I-10 to the south in Ontario. The site is located at the interchange of two freeways, frontage on major arterials, and within close proximity of LA/Ontario International Airport.

Rancon Center Specific Plan (1991)

The Rancon Center Specific Plan is approved for the development of light industrial uses. It is bounded by I-10 to the south, I-15 to the west, light industrial to the north, and parcels adjacent to Etiwanda to the east in Ontario.

Shea Business Center Specific Plan (1996)

The Shea Business Center Specific Plan is approved for the development of industrial/commercial/office uses. It is bounded by I-10 to the north, I-15 to the west, Airport Drive to the south, and Etiwanda Avenue to the east in Ontario.

Transpark Specific Plan (1981)

The Transpark Specific Plan is approved for the development of commercial and industrial uses. It is bounded by I-10 to the south, one parcel from Archibald Avenue to the west, Inland Empire Boulevard to the north, and Turner Avenue to the east in Ontario.

Wagner Properties Specific Plan (1982)

The Wagner Properties Specific Plan contains approximately 54 acres. The plan is to guide creation of a commercial center with commercial and residential uses. It is bounded by I-10 to the south, Turner Avenue to the west, 4th Street to the north, and Haven Avenue to the east in Ontario.

Fontana Gateway Specific Plan (1987)

The Fontana Gateway Specific Plan is located in the unincorporated area of San Bernardino County, adjacent to Fontana’s Southwest Gateway corridor. The site is bounded by I-10 on the north, Mulberry Avenue on the east, Jurupa Avenue on the south, and Etiwanda Avenue on the west. The Fontana Gateway Specific Plan is primarily a planned industrial land use encompassing approximately 755 acres in the urbanizing area of southwest Fontana. The project would create a major new employment center, providing jobs for existing city residents and new residents of nearby planned residential communities.

Southwest Industrial Park Specific Plan (2012)

The Southwest Industrial Park (SWIP) Specific Plan is located within the southwest area of Fontana, between I-10 and the San Bernardino/Riverside county boundary.

The SWIP plan area of the project is generally bounded by Jurupa Avenue on the north, Etiwanda Avenue on the west, the county line on the south, and Mulberry Avenue on the east. The second industrial park area (Jurupa Industrial Park Plan Area) of the project is defined by an irregular boundary, generally bounded by Slover Avenue on the north, Cherry Avenue on the west, Jurupa Avenue on the south, and Catawba Avenue on the east, with two additional areas extending north of the freeway to Valley Boulevard. The Original SWIP plan area is divided into 55 separate parcels ranging in size from 1.25 to 21.28 acres. The average parcel size is 7.03 acres. Most of the developments are oriented toward the transportation industry.

Empire Center Specific Plan (1990)

The Empire Center Specific Plan is generally bounded on the north by the UPRR/Southern Pacific Railroad, on the east by the city limits boundary, on the south by Slover Avenue, and on the west by Sierra Avenue in Fontana. The City of Fontana has taken various actions since 1990 that have covered the 292.5-acre Empire Center Specific Plan or the more than 500-acre Empire Center project area. The Empire Center will include a business park, community commercial area, entertainment center, neighborhood commercial area, park-and-ride facility, promotional center, and a regional mall.

Gateway Specific Plan (1990)

The Gateway Specific Plan consists of 366 acres of land north of I-10 at the Riverside Avenue intersection in Rialto. Existing development is a mixture of industrial, commercial, retail, and residential uses, as well as vacant land.

West Valley Specific Plan (1996)

The West Valley Specific Plan consists of East and West Subareas, separated by a section of county land. The West Subarea is bounded by San Bernardino Avenue on the north, the city of Fontana boundary on the west, I-10 on the south, and the Southern Pacific Railroad and county line on the east. The East Subarea is bounded by C Street on the north, Grand Avenue on the west, I-10 on the south, and the UPRR and Santa Fe Railroad tracks on the east in Colton. A large portion of the specific plan was designed around the railroad uses, and the area is approved for a large mix of uses.

East Valley Corridor Specific Plan (1989)

The East Valley Corridor Specific Plan includes approximately 4,300 acres and is generally bounded by the Santa Ana River Wash on the north; Texas Street on the east, north of I-10; Kansas Street on the east, south of I-10; Barton Road on the south; California Street on the west; and Mountain View Avenue on the west, north of I-10 in Redlands. The area consists of a mix of uses, including agriculture.

Agua Mansa Specific Plan (1986)

The Agua Mansa Specific Plan is intended to be a master plan for the economic development of the 4,285-acre project area, which comprises segments of unincorporated San Bernardino and Riverside counties and Colton and Rialto. It is bounded by I-10 on the north, Rancho Avenue on the east, and the Santa Ana River on the southeast. The southwesterly boundary is formed by Market Street and Rubidoux Boulevard; the northwesterly boundary varies from I-10 and Lilac Avenue on the north to Hall Avenue. The easterly portion of the study area is located in the floodplain of the Santa Ana River on the westerly bank of the main channel. It is approved for a mix of uses within the various jurisdictions; however, the land use trend within the study area has been primarily towards heavy industrial development.

Freeway Corridor Specific Plan (2007)

The Freeway Corridor Specific Plan site encompasses 1,234.3 acres and is located in the southwestern corner of Yucaipa. The Specific Plan site is bisected by I-10 and abuts the Riverside county line to the south. The proposed Specific Plan is composed of three distinct neighborhoods. Each neighborhood includes residential, commercial, business park, public facilities, and open space land uses.

Oak Hills Marketplace Specific Plan (2007)

The Oak Hills Marketplace (OHM) property occupies approximately 63.66 acres located in southern Yucaipa. The site is located adjacent to eastbound I-10, immediately east of Live Oak Canyon Road. Wildwood Creek traverses the project site, and several unnamed hills are located along the southern border of the property.

Robinson Ranch Planned Development (2011)

The Robinson Ranch Planned Development area covers 522 acres in the southwest portion of Yucaipa. The Planned Development area is divided into the following three primary planning areas: Robinson Ranch North, West Oak Center, and Wildwood Ranch. In total, the planned development envisions 4,159 multiple and single-family attached and detached dwelling units distributed throughout 305 acres, 109 acres of general commercial uses, and 28 acres of business park uses. Approximately 119 acres of improved open space and 49 acres of natural open space areas would be included within these land uses.

Environmental Consequences

No Build Alternative

The No Build Alternative would maintain the current configurations of I-10 in the study area. Under the No Build Alternative, the project would not be constructed, and the existing multimodal transportation system would not be enhanced by new choices for commuting, as well as improved traffic conditions on I-10, without the proposed project improvements. The No Build Alternative is inconsistent with various goals and policies identified in Table 3.1.1-3. Some of the goals and policies the No Build Alternative is inconsistent with include creating a more efficient transportation system; improving travel safety and reliability for all people and goods; promoting sustainability; accommodating pedestrians, bicyclists, and motorists; and improving intersection capacity. The No Build Alternative would not create a more efficient transportation system.

Common to All Build Alternatives

City and County General Plans

The adoption of either of the build alternatives may require the affected counties and cities to amend their General Plan Land Use and Circulation Elements to reflect the final I-10 CP alignment interchange locations that may need to be acquired for the project.

The purpose of the proposed project is to reduce volume-to-capacity (v/c) ratios, improve travel times, and relieve congestion within the corridor, in addition to providing consistency with the SCAG RTP/SCS. The proposed project is generally consistent with each of the County General Plans, Area Plans, and City General Plans. These plans anticipate growth within the study area and have adopted goals and policies to reduce congestion. The Circulation Elements of all plans reference improvements to I-10 specifically. Many of these same plans also emphasize goals to minimize the effect of the expansion of I-10 on the surrounding community, including providing landscaping and buffers between I-10 and the community.

The proposed project is generally consistent with local plans, as long as efforts to minimize effects are included in the project plans. The proposed improvements would support continued economic vitality of the surrounding communities by improving conditions for the movement of goods and people. The project would enhance public safety and security through the improvement of driving conditions, enhance environmental conditions through an improvement in traffic mobility and accessibility, and serve as a benefit to the surrounding communities and future land use goals. Landscaping elements and buffers between I-10 and the community will be included in project designs to the greatest extent feasible to concur with the goals of applicable General Plans.

Specific Plans

The proposed project is consistent with each of the Specific Plans described in Section 3.1.1.2, Consistency with State, Regional, and Local Plans and Programs. The Specific Plans identified in Section 3.1.1.2 may require modifications to land use designations immediately adjacent to I-10 as a result of implementation of the I-10 CP.

Because the proposed project is not anticipated to alter any planning policies, the jurisdictions located within the proposed project area would not experience any deviations from growth projections or development opportunities identified in the above-referenced plans. The proposed project is anticipated to improve traffic flow and ease congestion along I-10, which will in turn eliminate the need for those traveling along I-10 to use alternate routes through the neighboring communities. As a result, the proposed project would create beneficial impacts, including easing traffic flow on surface streets adjacent to I-10.

Alternative 2

Alternative 2 is included in SCAG's 2012 RTP/SCS, which was found to be conforming by the Federal Highway Administration (FHWA)/Federal Transit Administration (FTA) on January 22, 2010. On September 11, 2014, the SCAG Regional Council approved Amendment #2 to the 2012-2035 RTP/SCS after a 30-day public review and comment period. Amendment #2 was developed as a response to changes to projects in the 2012-2035 RTP/SCS but also includes the complete list of modeled projects. Alternative 2 is identified with the following RTP Project ID: 4H01001 and description, "I-10 HOV Lane Addition – From Haven (Ontario) to Ford Street (Redlands) – Widening from 8-10 lanes, aux lanes widening, undercrossing and reconstruction of ramps where needed." Alternative 2 is also included in SCAG's 2016-2040 RTP/SCS with the same Project ID and description.

Alternative 2 is also included in the 2013 Federal Transportation Improvement Program (FTIP), which was found to be conforming by FHWA/FTA on December 14, 2012 (RTP Project ID: 4H01001; Description: I-10 HOV Lane Addition – From Haven [Ontario to Ford St (Redlands)] – widening from 8-10 lanes, AUX lanes widening undercrossings and overcrossings and reconstruction of ramps where needed). Alternative 2 is consistent with the scope of the design concept of the RTP/SCS and FTIP.

Alternative 3 (Preferred Alternative)

Alternative 3 is consistent with the project description listed in the 2016-2040 RTP/SCS, which was found to conform by SCAG on April 7, 2016 and received a FHWA and FTA regional conformity determination finding on June 1, 2016. Alternative 3 is also included in SCAG's 2017 FTIP, which was found to be conforming by FHWA on December 16, 2016. This alternative has two entries in the RTP/SCS and FTIP (Project ID: 4122004-20159902 and 4122005-20159903). Phase 1 of the project is described as "I-10 Corridor Express Lane Widening (Phase 1): From San Antonio Avenue to I-10/I-15 Interchange; Implement 2 express lanes in each direction for a total of 4 general purpose and 2 express lanes in each direction and aux lane widening, undercrossings, overcrossings, and reconstruction of ramps and lane transitions where needed." Phase 2 of the project is described as "I-10 Corridor Express Lane Widening (Phase 2): Implement 2 express lanes in each direction from I-10/I-15 interchange to California Street; Implement 1 express lane in each direction from California Street to Ford Street in Redlands for a total of 10-12 lanes, an aux lanes, undercrossings, overcrossings, ramp reconstruction and lane transitions where needed." Alternative 3 is consistent with the scope of the design concept of the RTP/SCS and is included in the 2017 FTIP.

Temporary/Construction Impacts

TCEs would be required to construct both build alternatives. Alternative 2 would require 122 TCEs, and Alternative 3 would require 426 TCEs. Construction of the proposed project would create some temporary and intermittent inconvenience for some current land uses due to equipment operations, storage, and staging.

TCEs would not be needed for the No Build Alternative. No temporary impacts to land use are expected.

Avoidance, Minimization, and/or Mitigation Measures

The design of the I-10 corridor will be carried out to minimize ROW impacts. The project is generally consistent with current and future planned local land uses as identified through the local government planning process. Both build alternatives have been designed to avoid existing built land uses to the extent practicable while adhering to design and operational criteria to maintain a safe roadway. During the design-build phase, efforts will be undertaken to further minimize construction and operation impacts to existing and planned land uses.

3.1.1.3 Parks and Recreational Facilities

The information in this section is from the *Community Impact Assessment* (October 2015) and the *Section 4(f) Technical Study* (September 2016) prepared for this project. The project area for parks and recreational facilities includes those resources within a 0.5-mile radius of the project.

Regulatory Setting

This project will affect facilities that are protected by the Park Preservation Act (California Public Resources Code [PRC] Sections 5400-5409). The Park Preservation Act prohibits local and state agencies from acquiring any property that is in use as a public park at the time of acquisition unless the acquiring agency pays sufficient compensation or land, or both, to enable the operator of the park to replace the park land and any park facilities on that land.

Affected Environment

A total of 39 public parks and recreation areas and 4 trails are located within 0.5 mile of the existing I-10 corridor and are considered Section 4(f) resources. Of these Section 4(f) properties, Sylvan Park is also identified as a Section 6(f) resource.

Table 3.1.1-4 lists the parks and recreational areas within the study area.

Table 3.1.1-4 Parks and Recreational Facilities within the Study Area

Property Name	Location	Current Ownership	Facilities
Kiwanis Park	950 Weber Street Pomona, CA 91768	City of Pomona	6.37 acres; basketball court, playground, community center, picnic tables, drinking fountains
Ganesha Park	1575 N. White Avenue Pomona, CA 91768	City of Pomona	60.74 acres; picnic pavilions bandshell, walking trails, playground, tennis courts, pool with water slide, picnic tables, drinking fountains, restroom
Ted Greene Park	2105 N. Orange Grove Avenue Pomona, CA 91767	City of Pomona	1.11 acres; baseball field, playground, grass field, picnic tables, drinking fountains, concession stand, restroom
Lincoln Park	400 East Lincoln Avenue Pomona, CA 91767	City of Pomona	3.45 acres; baseball fields, playground, restrooms, picnic tables, restrooms, community center

Table 3.1.1-4 Parks and Recreational Facilities within the Study Area

Property Name	Location	Current Ownership	Facilities
Jaycee Park	2000 N. San Antonio Avenue Pomona, CA 91767	City of Pomona	5.11 acres; baseball fields, playgrounds, grass field, restrooms, community center
Rancho San Jose Park	600 Block of W. San Jose Avenue Claremont, CA 91711	City of Claremont	0.95 acre; basketball court, playgrounds, grass fields, picnic tables, benches, picnic shelter
Wheeler Park	626 Vista Drive Claremont, CA 91711	City of Claremont	6.88 acres; baseball field, playground, roller hockey rink, basketball court, wading pool, restrooms, community center
Blaisdell Park	440 S. College Avenue Claremont, CA 91711	City of Claremont	2.65 acres; softball field, tennis court, grass field, playground, picnic shelter, restrooms, community center
Montvue Park	1555 Cordova Street Pomona, CA 91767	City of Pomona	6.08 acres; baseball field, softball field, playground, open grass, picnic shelters, drinking fountains, restrooms, concession stand
Moreno Vista Park	4600 Block of Moreno Street Montclair, CA 91763	City of Montclair	1.27 acres; tennis courts, grass field
Wilderness Basin Park	South of the I-10 Corridor Bounded by Mills Avenue and Monte Vista Avenue Montclair, CA 91763	City of Montclair	5.72 acres; walking trail, benches, native plant demonstration garden, grass field
MacArthur Park	5450 Deodar Street Montclair, CA 91763	City of Montclair	2.64 acres; playground, baseball/ softball backstop, grass field, benches
George Gibbs Park	South of the I-10 Corridor Bounded by W. Fifth Street and W. Princeton Street Ontario, CA 91762	City of Ontario	0.36 acre; softball field, soccer field, grass field, picnic benches, barbeques
Anthony Munoz Hall of Fame Park	1240 W. Fourth Street Ontario, CA 91762	City of Ontario	1.24 acres; basketball courts, baseball fields, soccer fields, hockey court, playground, restrooms, community center
Citrus Park	8^{th} Street between San Antonio Avenue and Mountain Avenue Upland, CA 91786	City of Upland	5.63 acres; baseball fields, a grass field, barbeques, restrooms, playground
Fern Reservoir Park	8^{th} Street between Euclid Avenue and San Antonio Avenue Upland, CA 91786	City of Upland	0.87 acre; playground, grass field, picnic tables
Olivedale Park	8^{th} Street between Campus Avenue and Sultana Avenue Upland, CA 91786	City of Upland	6.58 acres; baseball field, concession stand, playground, picnic tables, barbeques, picnic shelter, restrooms

Table 3.1.1-4 Parks and Recreational Facilities within the Study Area

Property Name	Location	Current Ownership	Facilities
8th Street Reservoir Park	8th Street and Campus Avenue Upland, CA 91786	City of Upland	1.28 acres; baseball fields, bleachers, benches
John Galvin Park	Grove Avenue and 4th Street Ontario, CA 91764	City of Ontario	31.74 acres; Jay Littleton baseball fields, basketball courts, concession stand, tennis courts, volleyball courts, multipurpose concrete court, sheltered picnic areas, restrooms, playgrounds, community center, West Cucamonga Creek Trail
Memorial Grove Park	Grove Avenue and "I" Street Ontario, CA 91764	City of Ontario	1.15 acres; rolling grass field, scattered trees
Vineyard Park	E. 6th Street and N. Baker Avenue Ontario, CA 91764	City of Ontario	2.39 acres; basketball court, swimming pool, playground, multipurpose trail, barbeques, picnic tables, benches
Cucamonga-Guasti Regional Park	800 N. Archibald Avenue Ontario, CA 91764	San Bernardino County Regional Parks	31.17 acres; two fishing lakes, pedal boating, playground, swimming complex, picnic areas, barbeques, benches
Ayala Park	Valley Boulevard Fontana, CA 92335	San Bernardino County Regional Parks	5.32 acres; basketball court, grass field, playground, picnic shelters, barbeques, walking path, dog park
Fleming Park	535 N. La Cadena Drive Colton, CA 92324	City of Colton	1.61 acres; stage, amphitheater seating, benches, grass lawns, landscaped vegetation, Vietnam War Memorial
Central Park	Colton Avenue and "E" Street Colton, CA 92324	City of Colton	1.46 acres; baseball field, bleacher seating, gazebo
Colton Plunge Park	601 N. Mount Vernon Avenue Colton, CA 92324	City of Colton	7.53 acres; baseball fields, soccer fields, basketball courts, tennis courts, picnic tables, grass field, pools, playground
Veterans Park	290 E. "O" Street Colton, CA 92324	City of Colton	12.61 acres; softball fields, basketball court, horseshoes, handball courts, playground, splash pad, community center, picnic shelters, restrooms
Rich Dauer Park	955 Torrey Pines Drive Colton, CA 92324	City of Colton	3.85 acres; playground, open grass, picnic shelter, BBQs, restrooms
Mid City Connector Trail (Future)	North of I-10 Corridor from 40th Street to Santa Ana River Trail San Bernardino, CA 92408	San Bernardino County Regional Parks Department	A future 7.5-mile paved off-street, Class I bicycle path

Table 3.1.1-4 Parks and Recreational Facilities within the Study Area

Property Name	Location	Current Ownership	Facilities
Santa Ana River Trail	Along the Santa Ana River from Waterman Avenue to the Riverside County Line San Bernardino County, CA 92408	San Bernardino County Regional Parks Department	7.5 miles of trail; paved off-street, Class I bicycle path
Colony Park	Weir Road and Harwick Drive San Bernardino, CA 92408	City of San Bernardino	0.36 acre; softball field, benches, playground, picnic tables, restrooms
Cooley Ranch Park	2020 Duron Street Colton, CA 92324	City of Colton	2.53 acres; basketball courts picnic shelters picnic tables, BBQs; drinking fountains
Ted and Lila Dawson Park	Anderson Street and Court Street Loma Linda, CA 92354	City of Loma Linda	0.29 acre; small grass lawn, landscaped vegetation, park bench
Elmer Digneo Park	Corner of Anderson Street and Parkland Street Loma Linda, CA 92354	City of Loma Linda	5.03 acres; basketball court, playground restrooms, BBQ pit benches, drinking fountains
Sun Park	25300 E. 3rd Street Loma Linda, CA 92354	City of Loma Linda	0.62 acre; gazebo, picnic tables, landscaped vegetation, park benches
Cottonwood Park	Corner of Cottonwood Road and Mountain View Avenue Loma Linda, CA 92354	City of Loma Linda	0.89 acre; playground, gazebo, open grass areas
Orange Blossom Trail (Future)	Between Mountain View Avenue and Ford Street Redlands, CA 92373	City of Redlands	A future 3.7-mile paved off-street, multiple-use trail; some portions already constructed outside study area
Jeannie Davis Park	923 W. Redlands Boulevard Redlands, CA 92373	City of Redlands	3.42 acres; multipurpose trail, playground, grass field, picnic tables
Ed Hales Park	101 E. State Street Redlands, CA 92373	City of Redlands	0.20 acre; benches, sheltered seating, fountain
The Terrace Park	106 & 500 E. Colton Avenue Redlands, CA 92374	City of Redlands	1.97 acres; multipurpose trail with benches
Sylvan Park	730 Chapel Street Redlands, CA 92374	City of Redlands	19.41 acres; volleyball courts, baseball field, horseshoe pits, lawn bowling, walking trails, playground, multipurpose field, community garden, picnic tables and shelters, stage, restrooms
Zanja Trail (Future)	Between Church Street and Grove Street Redlands, CA 92374	City of Redlands	A future 0.7-mile natural-surface trail and greenway
Ford Park	955 Parkford Drive Redlands, CA 92374	City of Redlands	19.83 acres; tennis courts, picnic tables, playground, fishing pond, grass field

Source: Section 4(f) Technical Study, 2016.

Environmental Consequences

No Build Alternative

The No Build Alternative would maintain the current configurations of I-10 in the study area. Under the No Build Alternative, the project would not be constructed, and no impacts to parks or recreational activities would occur.

Alternative 2

Alternative 2 would not result in any permanent impacts to parks and recreational activities.

Alternative 3 (Preferred Alternative)

Alternative 3 would require acquisition of 0.14 acre of MacArthur Park, which represents 5.3 percent of the park's pre-project acreage. This acquisition would be necessary to widen I-10, accommodate on-ramp realignment at the I-10/Central Avenue interchange, and replace a soundwall on top of the retaining wall. The 0.14-acre acquisition would be used for project ROW and converted to transportation uses. The 0.14-acre area contains only landscaping, with no recreational facilities or playing fields. Although the acquisition area would minimally reduce the overall size of the park from 2.64 acres to 2.50 acres, it would not inhibit existing recreational activities within the park. In addition, a 0.04-acre footing easement would be required to provide structural support for the new soundwall on top of the retaining wall to be constructed adjacent to MacArthur Park. The footing easement would be underground and would not permanently affect recreational activities, features, or attributes within the park. The surface above the footing easement area would be returned to pre-project conditions after temporary use of the area during construction.

Temporary/Construction Impacts

Alternative 2

Table 3.1.1-5 includes a summary of temporary impacts associated with Alternative 2.

Table 3.1.1-5 Alternative 2 Temporary Parks and Recreation Impacts

Property Name	Property Description
Santa Ana River Trail	Temporary overnight closures of the trail would be required to widen the I-10 mainline bridge.
Orange Blossom Trail and the Zanja Trail (Future)	1.12 miles of the trail would be affected by temporary closures and detours that would be required to widen the I-10 mainline bridge.

Source: Section 4(f) Technical Study, 2016.

Alternative 3 (Preferred Alternative)

Alternative 3 would result in the same temporary impacts as Alternative 2, as well as an additional temporary impact to MacArthur Park in Montclair (Table 3.1.1-6).

Table 3.1.1-6 Alternative 3 (Preferred Alternative) Temporary Parks and Recreation Impacts

Property Name	Property Description
MacArthur Park	0.16-acre TCE
Santa Ana River Trail	Temporary overnight closures of the trail would be required to widen the I-10 mainline bridge.
Orange Blossom Trail and the Zanja Trail (Future)	1.12 miles of the trail would be affected by temporary closures and detours that would be required to widen the I-10 mainline bridge.

Source: Section 4(f) Technical Study, 2016.

Santa Ana River Trail. Under Alternatives 2 and 3, a temporary closure of the Santa Ana River Trail would be necessary to widen three I-10 mainline bridges that cross over the trail.

There would be no interference with the activities and purpose of the Santa Ana River Trail during construction of the I-10 CP because the closures would be at night. The duration of occupancy would be temporary, no changes would occur to the trail, and land would be fully restored to pre-project or better conditions.

Orange Blossom Trail and the Zanja Trail (Future). Under Alternatives 2 and 3, a detour of approximately 1.12 miles of the western segment of the planned Orange Blossom Trail would be necessary to widen the I-10 mainline bridge, which crosses over the trail on both sides. The proposed trail closure would occur from Mountain View Avenue to California Street in Redlands. If the trail is opened prior to construction of the I-10 CP, trail traffic would be detoured during project construction at this location for approximately 18 months.

MacArthur Park. Under Alternative 3, a 0.16-acre TCE would be required at MacArthur Park to allow mainline roadway widening along I-10 and construction of a new soundwall adjacent to the park. Although this TCE would temporarily reduce the overall park area during construction, it would not affect existing recreational activities, features, or attributes in the park because construction activities would only occur within landscaped areas. Access to and parking for MacArthur Park would be maintained at all times during construction and operation of Alternative 3. In addition, no traffic impacts are anticipated.

Indirect Impacts

Although a partial acquisition is anticipated from the MacArthur Park property, it would not inhibit existing recreational activities within the park; therefore, it would not create any indirect impacts.

Avoidance, Minimization, and/or Mitigation Measures

The following measures were identified for the proposed project. Measures will be implemented under SBCTA and Caltrans oversight. Any changes would require Caltrans and SBCTA approvals. Further details are identified in the Section 4(f) Technical Study.

LU-1: SBCTA shall request the County of San Bernardino and the City of Montclair to amend their respective General Plans to reflect the selected build alternative and the modification of land use designations for properties that would be acquired for the project that are not currently designated for transportation uses.

LU-2: Any landscaping temporarily disturbed or removed during construction will be returned to pre-project or better conditions.

LU-3: Access and circulation for recreational users will be maintained at impacted location identified in Section 3.1.1 and the *Section 4(f)* Technical Study. Detours for any temporary closures of the recreational facilities identified will be implemented. Informational and detour signage will be posted in advance to inform users of any temporary closures and detour routes.

LU-4: Signs will be installed at the Santa Ana River Trail indicating "construction ahead". Signs shall be posted 100 feet and 50 feet prior to work area and on both sides of the trail as it approaches the underpass. Informational posting regarding where to direct concerns with a phone number, address, and agency will also be posted at both sides of the trail. Temporary United States Fish and Wildlife Service (USFWS)-approved lighting shall be installed to illuminate signage.

LU-5: Approval from San Bernardino Regional Parks Department will be obtained for any work on the trail that may conflict with primary usage of pedestrian and cyclist transportation 30 days prior to scheduled work. Requests for temporary closures shall be made in writing to San Bernardino Regional Parks.

LU-6: Final design shall not reduce grade separation over the Santa Ana River Trail.

LU-7: Eight (8)-foot head clearance for Santa Ana River Trail users will be maintained. Signage shall be posted on the east and west sides of the underpass trail alerting users of height clearance. Temporary USFWS-approved lighting shall be installed to illuminate signage.

LU-8: The trail closures will occur at night after sunset to avoid all impacts to users of the Santa Ana River Trail. Given that the Santa Ana River Trail is only open from sunrise to sunset, work outside of these hours will not require closure or detour of the trail.

LU-9: Coordination with the City of Montclair will be maintained to provide compensation required under the Park Preservation Act.

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3.1.2 Growth

Analysis of the potential growth-inducing impacts of the proposed project is based on demographic information from the 2010 United States Census data, the Southern California Association of Governments (SCAG) 2012–2035 Regional Transportation Plan (RTP) growth forecasts for the cities of Pomona, Claremont, Montclair, Upland, Ontario, Fontana, Rialto, Colton, San Bernardino, Loma Linda, Redlands, and Yucaipa, and San Bernardino and Los Angeles counties.

3.1.2.1 Regulatory Setting

The Council on Environmental Quality (CEQ) regulations, which established the steps necessary to comply with the National Environmental Policy Act (NEPA) of 1969, require evaluation of the potential environmental effects of all proposed federal activities and programs. This provision includes a requirement to examine indirect effects, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations (40 *Code of Federal Regulations* [CFR] 1508.8) refer to these consequences as indirect impacts. Indirect impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

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

3.1.2.2 Affected Environment

The growth impact analysis is based on the *Community Impact Assessment* (CIA) (October 2015) and follows the First-Cut Screening guidelines provided in the California Department of Transportation's (Caltrans) *Guidance for Preparers of Growth-Related, Indirect Impact Analyses* (August 2007).

Under NEPA and CEQA, growth inducement is not necessarily considered detrimental, beneficial, or environmentally significant. Typically, the growth-inducing potential of a project is considered significant if it fosters growth or a concentration of population in excess of what is assumed in relevant master plans, land use plans, or in projections made by regional planning agencies. Significant growth impacts could be manifested through the provision of infrastructure or service capacity to accommodate growth beyond the levels currently permitted by local or regional plans and policies. In general, growth induced by a project is considered a significant impact if it directly or indirectly affects the ability of agencies to provide needed public services, or if it can be demonstrated that the potential growth significantly affects the environment in some other way.

Different transportation projects will influence growth to different degrees and in different ways, and the guidance adopted a two-phase approach to the evaluation of growth-related impacts. The first phase, called "first-cut screening," is designed to help the environmental planner figure out the likely growth potential effect and whether further analysis of the issue is necessary. The first-cut screening involves examining a variety of interrelated factors to address the following issues:

- To what extent would travel times, travel cost, or accessibility to employment, shopping, or other destinations be changed? Would this change affect travel behavior, trip patterns, or the attractiveness of some areas to development over others?
- To what extent would change in accessibility affect growth or land use change—its location, rate, type, or amount?
- To what extent would resources of concern be affected by this growth or land use change?

This section discusses whether the proposed I-10 Corridor Project (I-10 CP) improvements would result in unforeseen direct, indirect, or secondary growth, or would otherwise influence population growth. Examples of potentially growth-influencing projects include those that create access to an area previously inaccessible or occur within an already developed area and remove barriers to future growth. Growth influence is generally dependent on the presence or lack of existing utilities and municipal or public services. The provision of roadways, utilities, water, and sewer service to a previously unserviced area can induce growth by removing impediments to development. There are many factors that may affect the amount, location, and rate of growth in the region of a project. Such factors include:

- Market demand for housing, employment, and commercial services
- Desirability of the climate and living or working environment
- Strength of the local employment and commercial economy
- Availability of other roadway improvements
- Availability of other services and infrastructure (e.g., schools, water)
- Land use and growth management policies of the local jurisdictions

The growth-inducing potential of a project could be considered significant if it fosters growth in excess of what is projected in general plans (land use elements) or in forecasts made by regional planning agencies. Factors affecting growth and its effects tend to be regional and specific in nature; therefore, this analysis presents information about the larger region (San Bernardino County) and the 13 jurisdictions comprising the study area.

The project study area, as well as all of southern California, has experienced dramatic growth in the last 30 years, and this trend is expected to continue. During the past several decades, the SCAG region, including Orange, Imperial, Riverside, San Bernardino, Los Angeles, and Ventura counties, has been one of the fastest-growing regions in the nation. Between 1950 and 1970, the population doubled in size, growing at a rate of 5 percent per year. Between 1980 and 1990, the region's population grew by more than 25 percent, to 14.6 million. Between 1990 and 2000, the region's population grew by nearly 15 percent, to 16.5 million. Additional population and employment growth within the study area is expected to take place through the natural increase and redevelopment of existing land uses or infill development of vacant parcels. Land uses within the study area are already established, with limited opportunity for a new unplanned large-scale development.

SCAG population, household, and employment estimates and the annual average growth rates between 2008 and 2035 for growth forecasts for cities within the study area, including Pomona, Claremont, Montclair, Upland, Ontario, Fontana, Rialto, Colton, San Bernardino, Loma Linda, Redlands, and Yucaipa; San Bernardino and Los Angeles counties; and the SCAG region, for comparison, are provided in Table 3.1.2-1.

According to these forecasts, cities within San Bernardino County are projected to increase at a faster rate than cities within Los Angeles County and the SCAG region overall. The projected growth shown includes future approved development as discussed in Section 3.1.1, Land Use. Due to the lack of undeveloped private vacant land in the study area, there are limited opportunities for large-scale new development to occur in the study area.

Table 3.1.2-1 Annual Average Growth Rate Percentages

Jurisdiction	Population 2008-2035	Households 2008-2035	Employment 2008-2035
Regional			
SCAG	0.9	1.0	0.8
Los Angeles County	0.6	0.7	0.4
San Bernardino County	1.3	1.5	1.9
Los Angeles County Cities			
Pomona	1.2	1.0	0.3
Claremont	0.3	0.3	0.5
San Bernardino County Cities			
Montclair	0.8	0.9	0.4
Upland	0.4	0.9	0.7
Ontario	3.3	3.5	3.2
Fontana	1.2	1.4	1.7
Rialto	1.0	1.4	1.6
Colton	1.4	1.5	0.9
San Bernardino	0.9	1.1	1.6
Loma Linda	1.4	1.7	3.2
Redlands	1.0	1.2	1.7
Yucaipa	0.8	1.1	1.6

3.1.2.3 Environmental Consequences

Permanent Impacts

Direct growth inducement is generally regarded as providing urban services and extending infrastructure to undeveloped areas. Growth inducement is also possible if capacity enhancements are provided well beyond expected or planned growth in demand.

No Build Alternative

Under the No Build Alternative, no modifications to the existing freeway facility would occur. The existing condition of the Interstate 10 (I-10) corridor within the study area is not consistent with the regional mobility goals of Caltrans, the San Bernardino County Transportation Authority (SBCTA), or the affected cities, and it would not provide the transportation infrastructure or meet the goals and objectives of SBCTA's Long-Range Transportation Plan and the SCAG RTP. These regional planning documents anticipate the growth planned within the local jurisdictions within San Bernardino County, specifically the study area, and respond to this projected growth. The No Build Alternative would not influence the level of growth within the local cities in the study area because these jurisdictions are primarily built out, and there are limited areas available for development or redevelopment; therefore, the No Build Alternative is not anticipated to influence the amount, location, and/or distribution of growth or housing and jobs in the local cities and unincorporated areas within the study area. Existing congestion would remain within the study area and is projected to continue in the future under this alternative.

Common to Both Build Alternatives

The “first-cut screening” for the proposed build alternatives is discussed below.

The build alternatives do not change points of current accessibility along I-10 or provide new access to the area. Access to I-10 general purpose lanes remains unchanged because neither of the build alternatives would remove or limit access. Both alternatives would result in improvements to existing interchanges; Alternative 2 would improve one interchange, and Alternative 3 would improve four interchanges. These improvements would create benefits for those traveling to work, shopping centers, or other destinations by improving the travel times due to the decreased congestion; however, no new on- or off-ramps to employment or commercial amenities are proposed.

The build alternatives would provide continuity to the existing high-occupancy vehicle (HOV) system or a new travel option currently unavailable to those traveling along I-10 in this area. The build alternatives are intended to reduce congestion and improve travel times within the corridor. The build alternatives would not accommodate additional traffic beyond what is currently projected. Auxiliary lanes, ramps, interchanges, and other planned system improvements would reduce congestion, increase throughput, and enhance trip reliability for the planning design year of 2045. The build alternatives do not remove an impediment to growth because the proposed project would not provide an entirely new public facility.

In terms of influencing growth, both build alternatives would address existing operational and capacity deficiencies and would not foster growth in excess of what is projected per SCAG and general plans. The build alternatives would not be expected to influence the amount, location, and/or distribution of growth in the cities within the study area or the counties because no new interchanges are proposed and much of the study area is built out. It is not anticipated that the proposed project would induce land development. Some interchanges would be reconfigured to accommodate current and future traffic congestion. Because there are very few open areas available in the close vicinity of the study area, the build alternatives would not create new housing or opportunities for capital investment by the public or private sectors.

In terms of project-related growth, the proposed project is not growth inducing because it includes minor land use changes that would convert existing uses to transportation uses. The proposed project would not influence growth because it accommodates existing and future plans for the project area. In addition, the location, timing, and level of future growth in the study area would also depend on the availability of certain types of infrastructure/services (e.g., water, sanitary sewers, and schools). Accommodating critical future infrastructure is addressed by the individual jurisdictions and agencies providing these services that would affect the location, level, and timing of future development regardless of the proposed project. No infrastructure plans have been identified in any local agency plans or service providers at this time. Because the proposed transportation improvements accommodate existing and planned development, the proposed project would have minor influence for stimulating the location, rate, timing, or amount of growth locally or regionally.

The build alternatives include capacity enhancements along an existing freeway corridor that are intended to respond to expected demand and improve current operations.

The build alternatives are not anticipated to influence the amount, location, and/or distribution of growth or housing and/or jobs in the local cities and unincorporated areas within the study area. All land use plans in the counties and cities within the study area include future growth. Service providers also regularly evaluate growth trends and provide required infrastructure upgrades as needed. As noted above, the build alternatives would not result in project-related growth or influence growth.

This “first-cut screening” analysis demonstrates that the build alternatives would not change access but would instead facilitate improved mobility through reduced congestion and trip reliability, resulting in improved commute times for I-10 corridor users. Utilities, land use, community facilities, and traffic would not be affected because the build alternatives are not growth inducing and would not result in reasonably foreseeable growth. Based on the analysis above, the build alternatives do not require further analysis of growth-related impacts.

Alternative 2

Alternative 2 would include capacity enhancements for HOVs, including decreasing travel times and increasing travel speed for HOVs; however, the improvements in accessibility are not substantial and are not expected to influence trip patterns or the attractiveness of some areas to development over others. The build alternatives would not induce or influence growth directly or indirectly because of minor changes in land use or minor influence on economic vitality, and they are not anticipated to encourage population density or construction of additional housing.

Alternative 3 (Preferred Alternative)

The “first-cut screening” requires an assessment of any change in travel cost, time, or accessibility and whether these changes would affect travel behavior, travel patterns, or attractiveness of one area over another. Under Alternative 3, the Express Lanes would be free or price-managed lanes in which vehicles not meeting the minimum occupancy requirement would pay a toll. Alternative 3 encourages carpooling and/or maximizing capacity by requiring a toll for single-occupancy vehicle (SOV) drivers and incentives for vehicles carrying more than two occupants. During peak periods, any excess capacity in the Express Lanes that is not used by carpools would be used by SOV drivers paying a toll. The volume of traffic using the Express Lanes would be managed to minimize congestion in the Express Lanes. This would be accomplished by limiting the volume of traffic in the Express Lanes. Toll amounts would increase when the target volume is exceeded to reduce the volume in the Express Lanes; conversely, toll amounts would decrease when volumes fall below the target volume to attract more vehicles into the Express Lanes.

In terms of accessibility, Alternative 3 would provide the greatest improvements related to decreased travel time and increased travel speed by maximizing use of capacity within the toll facility. Alternative 3 would provide another option currently unavailable to existing I-10 users, which includes two Express Lanes in each direction of I-10 from the LA/SB county line to California Street (near SR-210) in Redlands and one Express Lane in each direction from California Street to Ford Street in Redlands, a total of 33 miles. By adding Express Lanes, there would be increased accessibility, including improved speeds to reach the existing interchanges and employment, as well as the interchanges that would be improved as a result of the proposed project. The Express Lanes would be price-managed lanes in which vehicles not meeting the minimum occupancy requirement would pay a toll. West of Haven Avenue, a single new lane would be constructed and combined with the existing HOV lane to provide two Express Lanes in each direction; east of Haven Avenue, all Express Lanes would be constructed by the project.

As discussed above, Alternative 3 would not induce or influence growth directly or indirectly because of minor changes in land use or minor influence on economic vitality, and it is not anticipated to encourage population density or construction of additional housing. The improvements in accessibility are not expected to influence travel trip patterns or the attractiveness of some areas to induce additional growth.

Temporary/Construction Impacts

No Build Alternative

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

Build Alternatives

The build alternatives would not have any temporary direct or indirect impacts on growth-inducing factors because temporary construction does not induce growth.

3.1.2.4 Avoidance, Minimization, and/or Mitigation Measures

The proposed project is not growth-inducing, and no further analysis of growth-related impacts is required. The potential for unplanned development is limited given the built-out nature of the study area and entitlement status of existing vacant land. Therefore, no avoidance, minimization, and/or mitigation measures are required.

3.1.3 Farmlands

Within the study corridor, agriculture faces continuing conversion pressures from urbanization, foreign competition, and rising production costs for agricultural producers; therefore, the conversion of agricultural land to nonagricultural uses represents an important environmental concern requiring appropriate consideration as part of this environmental analysis. This section identifies applicable federal, state, and local policies regarding agricultural resources, summarizes existing agricultural conditions in the study area, and identifies potential project impacts for each of the build alternatives.

3.1.3.1 Regulatory Setting

The National Environmental Policy Act (NEPA) and the Farmland Protection Policy Act of 1981 (FPPA) (7 United States Code [U.S.C.] 4201-4209; and its regulations, 7 *Code of the Federal Regulations* [CFR] Part 658) require federal agencies, such as the Federal Highway Administration (FHWA), to coordinate with the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) if their activities may irreversibly convert farmland (directly or indirectly) to nonagricultural use. For purposes of the FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance.

The FPPA requires that before taking or approving any federal action that would result in conversion of farmland, the agency must examine the effects of the action using criteria set forth in the FPPA, and, if there are adverse effects, must consider alternatives to lessen them.

The California Environmental Quality Act (CEQA) requires the review of projects that would convert lands preserved under the California Land Conservation Act of 1965 (the Williamson Act) from agricultural to nonagricultural uses. The main purposes of the Williamson Act are to preserve agricultural land and to encourage open space preservation and efficient urban growth. The Williamson Act provides incentives to landowners through reduced property taxes to discourage the early conversion of agricultural and open space lands to other uses. According to California Government Code Section 51291(b), the California Department of Conservation (DOC) must be notified when there is a need for a public agency or other eligible entity to acquire land enrolled in a Williamson Act contract or located in an agricultural preserve. Specific information must accompany the notification to ensure that the requirements of the applicable Government Code are met.

3.1.3.2 Affected Environment

The information and analysis in this section regarding farmlands are based on the *Community Impact Assessment* (CIA) (October 2015) prepared for this project.

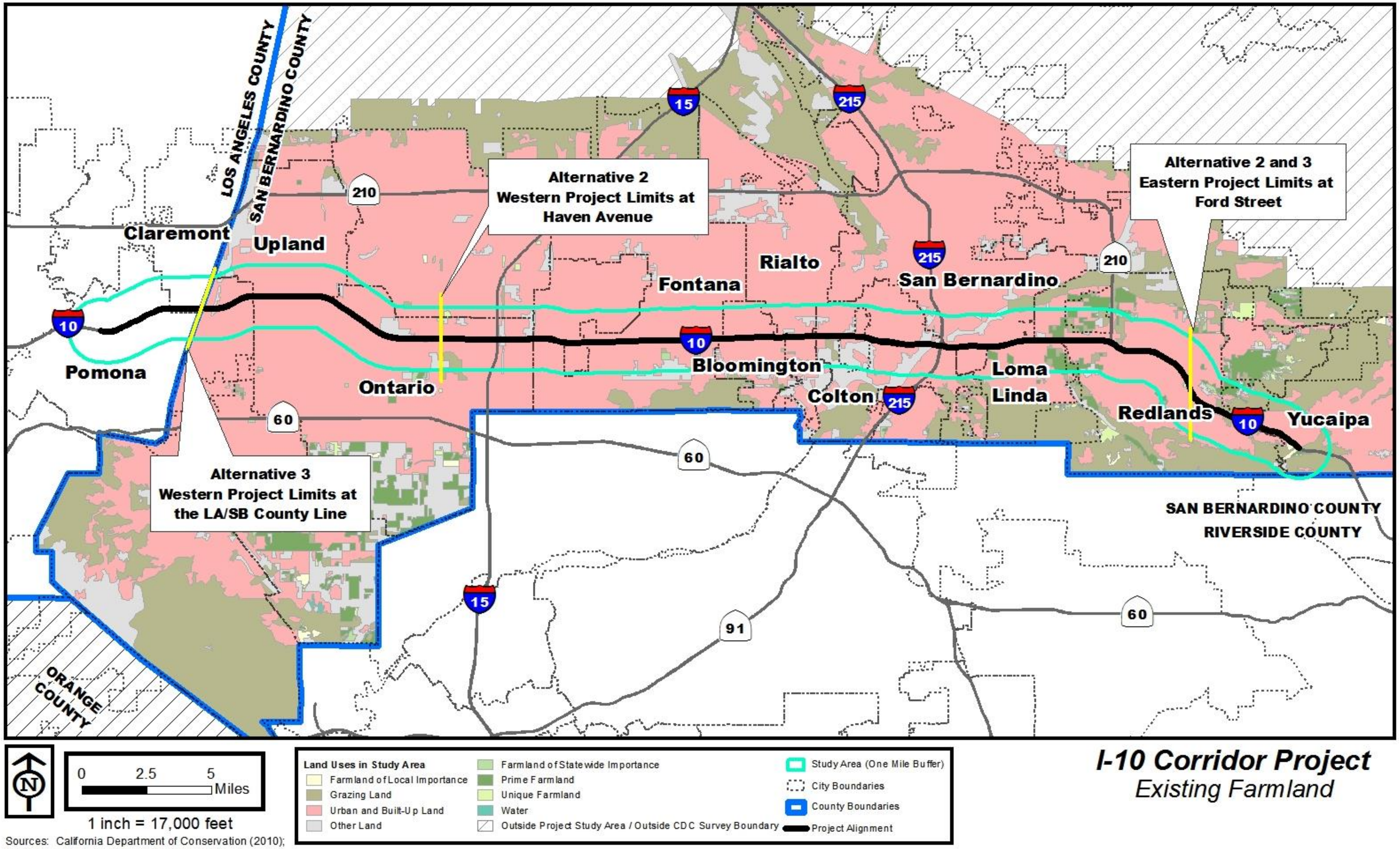
Given that all affected farmland parcels are within 1 mile of I-10, a 1-mile buffer for the farmland resource study area was established (Figure 3.1.3-1).

Farmland Designations and Existing Agricultural Uses

Farmland Mapping and Monitoring Program Agricultural Land Designations

Pursuant to California Government Code, Section 65570, the California DOC Farmland Mapping and Monitoring Program (FMMP) reports biannually on the conversion of farmland and grazing land, and it compiles important farmland maps and datasets for each county in the state. The farmland maps incorporate data from the USDA NRCS soil survey and current county land use information. Maps and statistics are produced every 2 years using a process that integrates aerial photo interpretation, field mapping, computerized mapping, and public review. The FMMP maps and datasets categorize land use into nine different mapping categories to describe farmland and nonagricultural uses, as described below:

1. **Prime Farmland:** Prime Farmland is land that has the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods. Prime Farmland must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use.
2. **Farmland of Statewide Importance:** Farmland of Statewide Importance is land other than Prime Farmland that has a good combination of physical and chemical characteristics for the production of crops. It must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use.
3. **Unique Farmland:** Unique Farmland is land that does not meet the criteria for Prime Farmland or Farmland of Statewide Importance that has been used for the production of specific high-economic-value crops at some time during the 4 years prior to the mapping date. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality and/or high yields of a specific crop when treated and managed according to current farming methods. Examples of such crops may include oranges, olives, avocados, rice, grapes, and cut flowers. It does not include publicly owned lands for which there is an adopted policy preventing agriculture use.



Sources: California Department of Conservation (2010); US Census Bureau (2014); Parsons (2014).

Figure 3.1.3-1 Farmland Mitigation and Monitoring Plan Data for the I-10 CP Study Area

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4. **Farmland of Local Importance:** Farmland of Local Importance is either currently producing crops, has the capability of production, or is used for the production of confined livestock. Farmland of Local Importance is land other than Prime Farmland, Farmland of Statewide Importance, or Unique Farmland. This land may be important to the local economy due to its productivity or value. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use.
5. **Grazing Land:** Grazing Land is land on which the existing vegetation, whether grown naturally or through management, is suitable for grazing or browsing of livestock. The minimum mapping unit for Grazing Land is 40 acres. Grazing Land does not include land previously designated as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance. It also does not include heavily brushed, timbered, excessively steep, or rocky lands that restrict the access and movement of livestock, rural residential land, or publicly owned land for which there is an adopted policy preventing agricultural use.
6. **Urban and Built-Up Land:** Urban and Built-Up Land is used for residential, industrial, commercial, construction, institutional, public administrative process, railroad yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment plants, water control structures, and other development purposes. Highways, railroads, and other transportation facilities are mapped as part of Urban and Built-Up Land if they are part of the surrounding urban area.
7. **Other Land:** Land that does not meet the criteria of any other category is designated as Other Land. Typical uses include low-density rural development, heavily forested land, mined land, or government land with restrictions on use.
8. **Water:** Water areas with an extent of at least 40 acres are designated Water.
9. **Area Not Mapped:** Areas that fall outside of the NRCS soil survey are designated Area Not Mapped.

Existing Agricultural Uses

In general, agricultural production in the study area is limited due to continued and proposed conversion of remaining farmlands along I-10 to nonagricultural uses. According to annual Crop Reports prepared by the San Bernardino County Department of Agriculture/Weights and Measures, the total value of production in the county dropped from approximately $520 million in 2011 to $386 million in 2013, representing a 32 percent decline. Much of the change in the total value of production was due to a continued decline in the dairy industry, which constituted approximately 60 percent of production as of 2013. From 2011 to 2013, dairy production in San Bernardino County dropped by 24 percent, from $306 million in 2011 to $232 million in 2013.

There are FMMP mapped farmlands in the study area in the cities of Colton, Fontana, Ontario, Rancho Cucamonga, Redlands, Rialto, San Bernardino, Yucaipa, and unincorporated sections of San Bernardino County. Figure 3.1.3-1 shows the locations of these mapped farmlands. Table 3.1.3-1 summarizes the amount of farmland within the study area by each of the FMMP land mapping categories. A total of 4,386.23 acres (8.18 percent) of the project study area is designated as farmland according to the DOC FMMP maps; whereas 49,168.22 acres (91.71 percent) of the study area are categorized as nonagricultural lands by the FMMP.

Table 3.1.3-1 I-10 CP Study Area Farmland Acres by Land Category

Land Mapping Category	Total Acres within the Study Area	% of Total Study Area Acres
Agricultural Lands		
Prime Farmland	1,048.92	1.96
Farmland of Statewide Importance	131.37	0.20
Unique Farmland	83.77	0.20
Farmland of Local Importance	0.50	0.00
Grazing Land	3,121.67	5.80
Nonagricultural Lands		
Urban and Built-Up Land	40,652.02	75.82
Other Land	3,240.43	6.00
Outside of Survey Boundary/Data Not Available	5,335.77	10.00
Total Agricultural Lands	**4,386.23**	**-**
Total Nonagricultural Lands	**49,168.22**	**-**
Total Acres within the Study Area	**53,614.45**	**-**

Source: Farmland Mapping and Monitoring Program, State of California DOC, 2010.

In addition to FMMP farmlands, there are many existing citrus groves, which are zoned as different land uses but are not identified as farmlands in the FMMP data, along I-10 in Redlands.

According to the latest California DOC Land Conservation Maps, Geographic Information System (GIS) datasets, and Farmland Conversion Reports, there are no parcels with Williamson Act contracts or agricultural preserves located within the proposed project study area.

3.1.3.3 Environmental Consequences

Permanent Impacts

No Build Alternative

The No Build Alternative would maintain the current configuration of I-10 in the study area. Under the No Build Alternative, the project would not be constructed; therefore, no impacts to farmland would occur.

Alternative 2

Conversion of Designated Farmland

No conversion of designated farmland or other permanent impacts to existing farmland would occur as a result of Alternative 2.

Agricultural Preserves, Williamson Act Contract Lands, and Timberlands

There are no agricultural preserves, Williamson Act Contract lands, or timberlands in the study area; therefore, Alternative 2 would result in no permanent impacts to these lands.

Alternative 3 (Preferred Alternative)

A summary of potential impacts to farmlands that would result from construction and operation of Alternative 3 is provided in Table 3.1.3-2. Figure 3.1.3-2 shows the affected FMMP-designated parcels in Ontario. Detailed information on potential impacts at each parcel is provided below. Coordination with the NRCS was conducted in March 2015; Figure 3.1.3-3 shows the results of the coordination.

Table 3.1.3-2 Summary of Potential Impacts to Farmlands under Alternative 3 (Preferred Alternative)

APN	City	FMMP Designation	Partial Acquisition (Square Feet)	Permanent Footing Easement (Square Feet)	Temporary Construction Easement (Square Feet)
021-019-221	Ontario	Grazing Land	0	0	3,498
021-019-222	Ontario	Grazing Land	300	405	3,236
021-019-223	Ontario	Grazing Land	1,450	453	2,715
021-019-224	Ontario	Grazing Land	4,056	880	5,282
021-055-101	Ontario	Grazing Land	4,807	999	5,992
029-206-402	Redlands	None*	41	0	2,581
		TOTAL	**10,654**	**2,737**	**23,304**
*Zoned as commercial in the City of Redlands Zoning Ordinance.					

Source: I-10 Corridor ROW data, 2015.

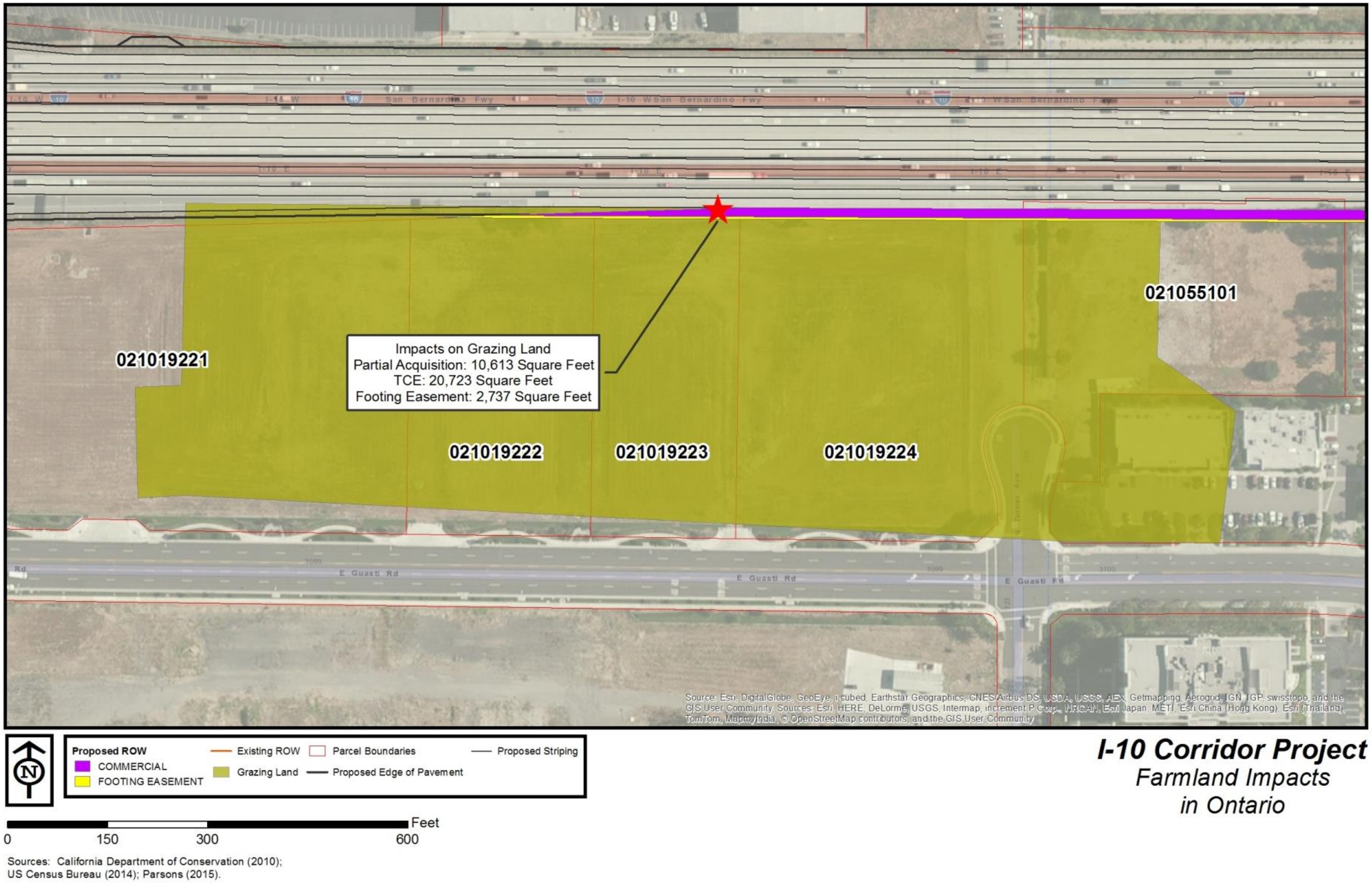


Figure 3.1.3-2 Farmland Impacts in Ontario

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING
FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request 3/13/15 — 4. Sheet 1 of 1
1. Name of Project **Interstate 10 Corridor Project**	5. Federal Agency Involved **Federal Highway Administration (FHWA)**
2. Type of Project **Transportation**	6. County and State **San Bernardino County, CA**
PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS **3/13/15** — 2. Person Completing Form **Kim Lary**
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☑ NO ☐	4. Acres Irrigated **40,961** — Average Farm Size 635
5. Major Crop(s) **Citrus, avocados, apples, and strawberries** — 6. Farmable Land in Government Jurisdiction Acres: **58,141** % **0.4**	7. Amount of Farmland As Defined in FPPA Acres: 39,925 % **0.31**
8. Name Of Land Evaluation System Used **CA Revised Storie Index** — 9. Name of Local Site Assessment System **San Bernardino County LESA system**	10. Date Land Evaluation Returned by NRCS **3/24/15**

PART III *(To be completed by Federal Agency)*	Maximum Points	Corridor A	Corridor B	Corridor C	Corridor D
		Alternative Corridor For Segment ______			
A. Total Acres To Be Converted Directly		0.000	0.000	0.253	
B. Total Acres To Be Converted Indirectly, Or To Receive Services		0.000	0.000	0.000	
C. Total Acres In Corridor			0.2	26.3	
PART IV *(To be completed by NRCS) Land Evaluation Information*					
A. Total Acres Prime And Unique Farmland		0	0.00	4.7	
B. Total Acres Statewide And Local Important Farmland		0	0.2	15	
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted		0	0.00000344	0.00045	
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value		0	0.00000344	0.00045	
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*			5	5	
PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))*	**Maximum Points**				
1. Area in Nonurban Use	15	0	0	0	
2. Perimeter in Nonurban Use	10	0	0	0	
3. Percent Of Corridor Being Farmed	20	0	0	0	
4. Protection Provided By State And Local Government	20	0	0	0	
5. Size of Present Farm Unit Compared To Average	10	0	0	0	
6. Creation Of Nonfarmable Farmland	25	0	0	0	
7. Availablility Of Farm Support Services	5	0	0	5	
8. On-Farm Investments	20	0	0	15	
9. Effects Of Conversion On Farm Support Services	25	0	0	0	
10. Compatibility With Existing Agricultural Use	10	0	0	1	
TOTAL CORRIDOR ASSESSMENT POINTS	160	0	0	21	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland (From Part V)	100	0	5	5	0
Total Corridor Assessment (From Part VI above or a local site assessment)	160	0	0	21	0
TOTAL POINTS *(Total of above 2 lines)*	260	0	5	26	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES ☐ NO ☑

5. Reason For Selection:

Signature of Person Completing this Part: | DATE 10-22-2015

NOTE: Complete a form for each segment with more than one Alternate Corridor

Figure 3.1.3-3 Farmland Conversion Impact Rating Form (NRCS CPA-106)

Conversion of Designated Farmland

Designated Grazing Land in Ontario: It is anticipated that 2,737 square feet of permanent underground footing easements and 10,613 square feet of partial acquisitions would be required from four of the five adjacent parcels located in Ontario. Although the four parcels are designated as Grazing Land in the FMMP dataset, the land is not currently occupied by any grazing animals, and there is no sign that any of the parcels have been used for grazing or other agricultural purposes in recent years. In addition, those parcels are currently zoned for office/commercial uses in the Guasti Plaza Specific Plan Land Use Map, adopted by the City of Ontario in May 2011. The footing easement and partial acquisition would not inhibit use of the parcel for future agricultural purposes. After installation of the footings, temporarily disturbed portions of the site would be restored to pre-project conditions. No adverse permanent impacts to these designated grazing lands are anticipated. Temporarily disturbed portions of the site would also be restored to pre-project conditions.

California Street Citrus Grove in Redlands: Alternative 3 would result in a partial acquisition of 41 square feet of APN 029-206-402, an existing citrus grove. The parcel and citrus grove are owned and operated by the City of Redlands, and they are located at the southeastern quadrant of the I-10/California Street interchange. Partial acquisition at this parcel would be required to accommodate a new sidewalk and curb ramp and to support retaining wall construction along the eastbound (EB) on-ramp. The 5.08-acre parcel is zoned for commercial use in Redlands, but the parcel is identified as “Developed” in the FMMP dataset. The proposed partial acquisition at this parcel would not result in direct loss of any citrus trees because there are no citrus trees located on the acquired portion of the property. The proposed acquisition would not otherwise inhibit access to or movement within the site; therefore, although a small portion of the site (0.02 percent of the total acreage) would be acquired, the City’s current zoning for this parcel would remain the same after project construction.

Agricultural Preserves, Williamson Act Contract Lands, and Timberlands

There are no agricultural preserves, Williamson Act Contract lands, or timberlands in the study area; therefore, Alternative 3 would result in no permanent impacts to these lands.

Temporary/Construction Impacts

No Build Alternative

The No Build Alternative would maintain the current configuration of I-10 in the study area. Under the No Build Alternative, the project would not be constructed; therefore, no impacts to farmland would occur.

Alternative 2

No temporary construction easements (TCEs), footing easements, or other direct temporary construction impacts to existing farmland would occur as a result of Alternative 2. Temporary fugitive dust emissions from grading and exhaust emissions from construction equipment may have an indirect impact on farmlands adjacent to construction areas under Alternative 2. These impacts would be minimized through implementation of the dust control measures described in Measures AQ-1 through AQ-21, which are discussed in Section 3.2.6, Air Quality.

Alternative 3 (Preferred Alternative)

TCEs needed for Alternative 3 would temporarily affect farmland identified by the FMMP as Grazing Land designations. In addition, a citrus grove owned and operated by the City of Redlands, zoned for commercial use, would also be temporarily affected by a TCE.

Designated Grazing Land in Ontario: It is anticipated that 20,723 square feet of TCEs would be needed from four adjacent parcels to construct a proposed retaining wall. All four parcels are designated as grazing land; however, they are not currently used for grazing or other agricultural purposes. These parcels have been entitled for development as part of the Guasti Plaza Specific Plan, which designated these four parcels as office/commercial use. The proposed TCEs would be needed for approximately 9 months. The TCEs would be temporary and would not inhibit use of the remaining portion of the site for agricultural purposes. Temporarily disturbed portions of the site would be restored to pre-project conditions. No adverse permanent impacts to these designated grazing lands are anticipated.

California Street Citrus Grove in Redlands: A 2,581-square-foot TCE would be needed for a proposed retaining wall, located along the EB on-ramp. No citrus trees would need to be removed to accommodate this work. In addition, access to the site and movement within the site would be maintained during construction and operation.

In addition to farmland areas being used for TCEs, temporary fugitive dust emissions from grading and exhaust emissions from construction equipment may have an indirect impact on farmlands that are adjacent to construction areas under Alternative 3. These impacts would be minimized through implementation of the dust control measures described in Measures AQ-1 through AQ-12, which are discussed in Section 3.2.6, Air Quality.

3.1.3.4 Avoidance, Minimization, and/or Mitigation Measures

FARM-1: ESA fencing will be installed at the limits of construction for all temporarily and permanently impacted farmlands prior to initiating work within or adjacent to these sites. No construction will occur within these ESAs. All construction equipment will be operated in a manner so as to prevent accidental damage to nearby ESAs. No structure of any kind, or incidental storage of equipment or supplies, will be allowed within the ESAs. Silt fence barriers will be installed at the ESA boundaries to prevent accidental deposition of fill material in areas where vegetation is adjacent to planned grading activities.

FARM-2: All existing citrus trees within the proposed partial acquisition and TCE at APN 029-206-402 will be protected in place.

FARM-3: All farmlands temporarily impacted by the project will be restored to pre-project conditions.

FARM-4: Access to all temporarily impacted farmlands will be maintained. For permanently impacted farmlands, any relocated access will be developed with Caltrans and SBCTA.

3.1.4 Community Impacts

This section discusses impacts to the community as a result of implementation of the proposed project. The analysis is based on the results of the *Community Impact Assessment* (CIA) (October 2015) prepared for this project.

3.1.4.1 Community Character and Cohesion

Community character is all of the attributes, including social and economic characteristics, and assets that make a community unique and that establish a sense of place for its residents. Community cohesion is the degree to which residents have a "sense of belonging" to their neighborhood, a level of commitment to the community, or a strong attachment to neighbors, groups, and institutions, usually because of continued association over time.

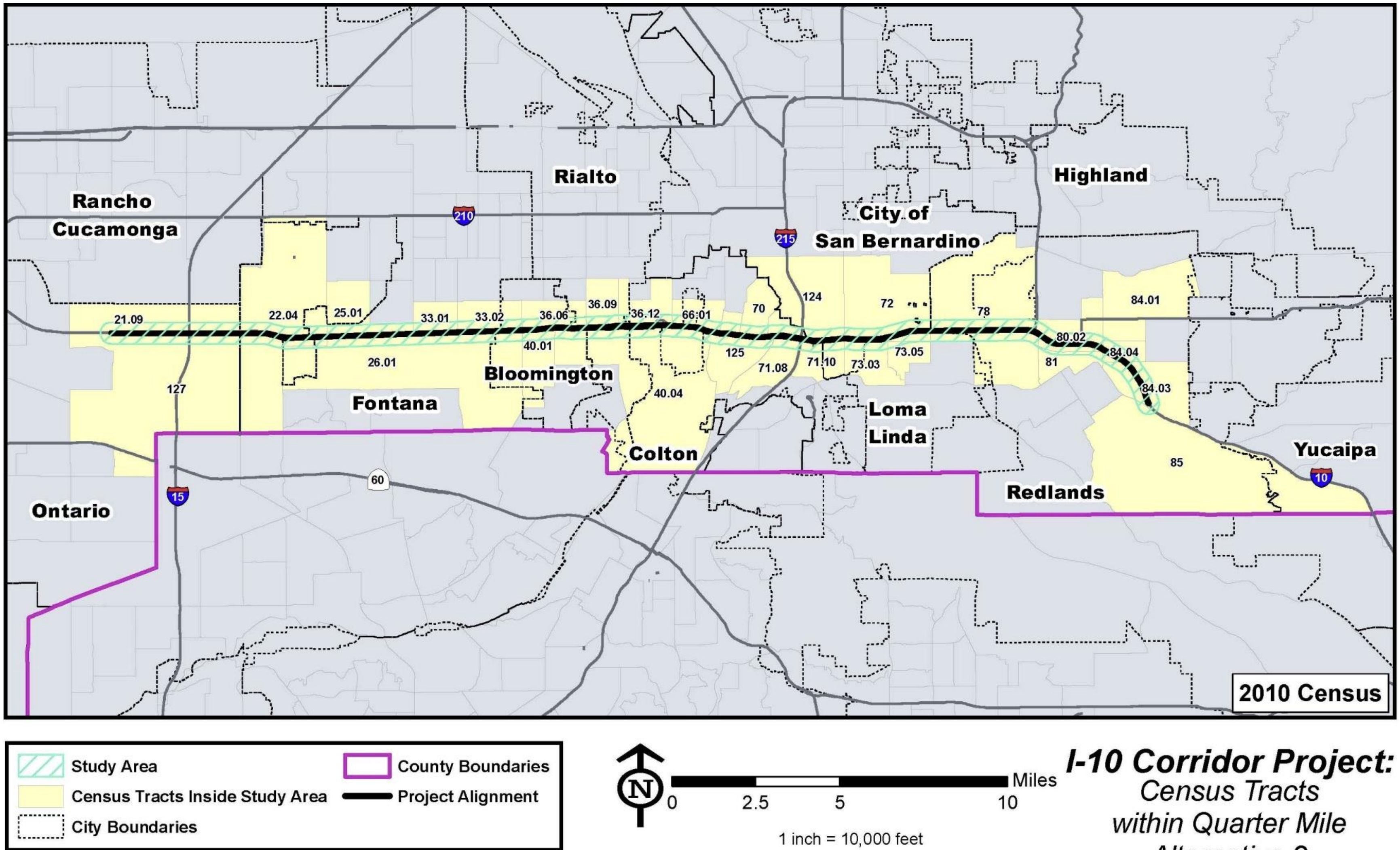
Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969, as amended, established that the federal government use all practicable means to ensure that all Americans have safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 United States Code [U.S.C.] 4331[b][2]). The Federal Highway Administration (FHWA) in its implementation of NEPA (23 U.S.C. 109[h]) directs that final decisions on projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

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

Affected Environment

Figures 3.1.4-1 and 3.1.4-2 identify the census tract study area within 0.25 mile from the proposed project for both build alternatives. Alternative 2 consists of 28 census tracts delineated for the 2010 Census. Alternative 3 consists of 57 census tracts delineated for the 2010 Census. The study area includes an area much larger than that directly affected by project construction and right-of-way (ROW) acquisitions, but it



Sources: US Census Bureau 2014; Parsons 2014.

Figure 3.1.4-1 Census Tracts within 0.25 Mile (Alternative 2)

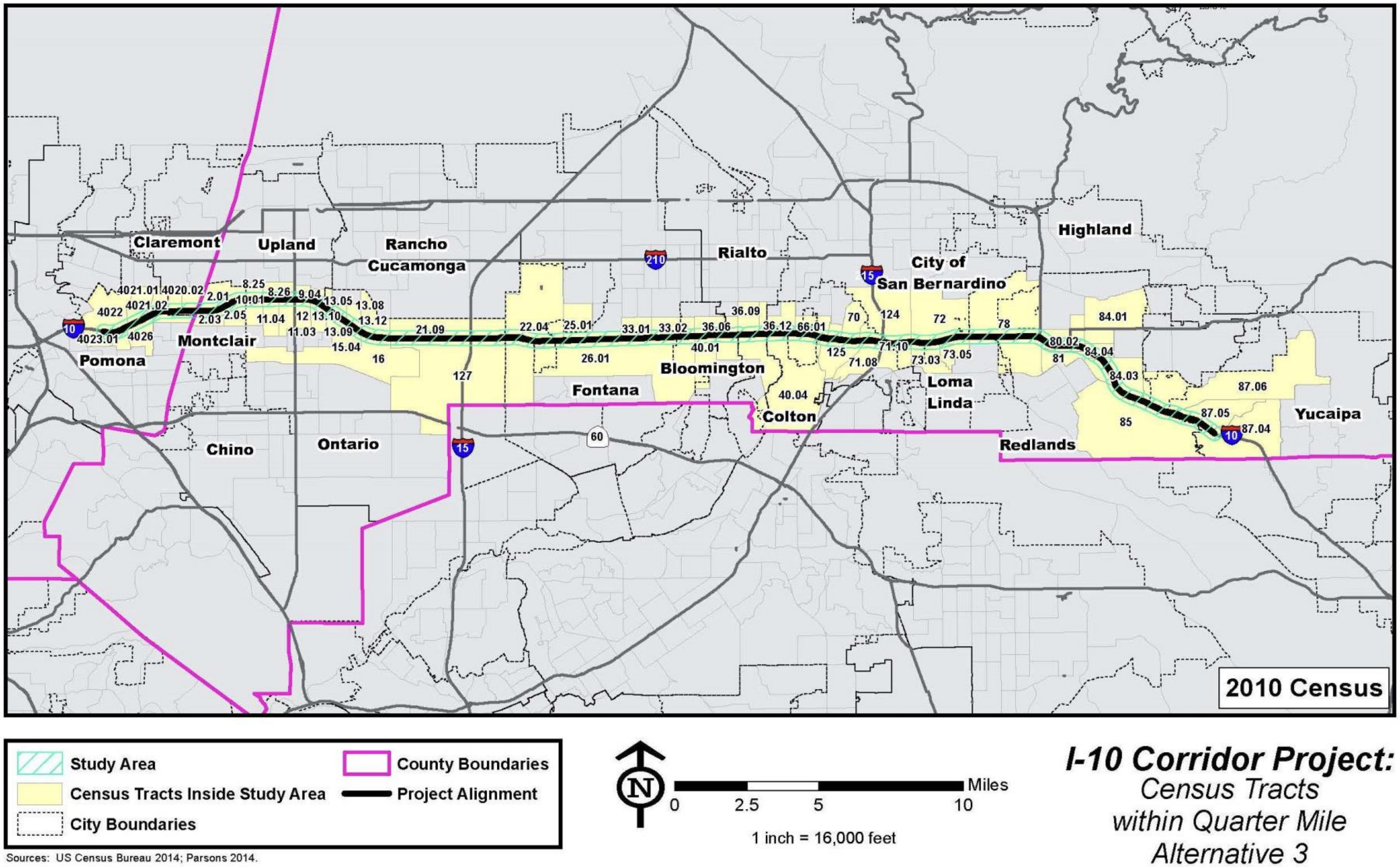


Figure 3.1.4-2. Census Tracts within 0.25 Mile (Alternative 3 [Preferred Alternative])

provides a broader picture of the area affected by the project than city and county demographics alone can provide. City and county demographic data were analyzed to present the general population and housing characteristic of the study area. Census tracts are also used to incorporate populations that may not be directly affected by the project but may be indirectly affected by project construction and operation.

Neighborhoods

The following neighborhoods were identified within the study area for the proposed project; neighborhoods for Alternative 2 include any that fall between Ontario and Redlands, as shown in Table 3.1.4-1.[1]

Table 3.1.4-1 Neighborhoods

Neighborhood	Alternative 2	Alternative 3 (Preferred Alternative)
Pomona		
Arrow Corridor Neighborhood (North of I-10)		X
Lincoln Park Neighborhood (South of I-10)		X
North Pomona Neighborhood (North of I-10)		X
East Pomona Neighborhood (South of I-10)		X
Claremont		
Vista Neighborhood (North of I-10)		X
Oakmont Neighborhood (North of I-10)		X
Claremont South Neighborhood (South of I-10)		X
Montclair		
East Montclair Plaza Neighborhood (North of I-10)		X
San Bernardino Street/Rosewood Street Neighborhood (South of I-10)		X
City Center Neighborhood (South of I-10)		X
Upland		
South of Foothill Neighborhood (North of I-10)		X
North Ontario Neighborhood (North of I-10)		X
Ontario		
North Ontario Neighborhood (North of I-10)	X	X

[1] Neighborhood research retrieved May 16, 2014, from http://www.neighborhoodscout.com/ and http://www.city-data.com/.

Table 3.1.4-1 Neighborhoods

Neighborhood	Alternative 2	Alternative 3 (Preferred Alternative)
Fontana		
Downtown Fontana Neighborhood (Both North/South of I-10)	X	X
Fontana Gateway Neighborhood (South of I-10)	X	X
Jurupa Industrial Park Neighborhood (Both North/South of I-10)	X	X
Bloomington		
Aqua Mansa Neighborhood (Both North/South of I-10)	X	X
Rialto		
I-10 Corridor Neighborhood (Both North/South of I-10)	X	X
Colton		
Iron Horse Neighborhood (North of I-10)	X	X
West Colton Neighborhood (South of I-10)	X	X
Rana Neighborhood (North of I-10)	X	X
Downtown Neighborhood (North of I-10)	X	X
East Colton Heights Neighborhood (South of I-10)	X	X
San Bernardino		
Ward 3 Neighborhood (Both North/South of I-10)	X	X
North Loma Linda Neighborhood (North of I-10)	X	X
Loma Linda		
Victoria Neighborhood (North of I-10)	X	X
Redlands		
Crown Jewel/Marigold Neighborhood (Both North/South of I-10)	X	X
Colton Avenue/Tennessee Street Neighborhood (Both North/South of I-10)	X	X
University of Redlands Neighborhood (Both North/South of I-10)	X	X
Evergreen Center/Lytle Street Neighborhood (Both North/South of I-10)	X	X
Yucaipa		
Dunlap Acres (North of I-10)		X
Yucaipa Boulevard and 14th Street (North of I-10)		X
5th Place and Avenue H (North of I-10)		X

Source: http://www.neighborhoodscout.com/ and http://www.city-data.com/, 2014.

Pomona

Arrow Corridor Neighborhood (North of I-10). The Arrow Corridor is located west of Damien Avenue, east of Towne Avenue, north of McKinley Avenue, and south of Bonita Avenue, covering 3.7 square miles. This neighborhood is home to a population of 14,302 residents and has a population density of approximately 3,865 people per square mile.

Lincoln Park Neighborhood (South of I-10). The Lincoln Park neighborhood is located west of Towne Avenue, east of Garey Avenue, south of Interstate 10 (I-10), and north of Alvarado Street, covering 0.32 square mile. This neighborhood is home to 4,282 residents and has a population density of approximately 13,381 people per square mile.

North Pomona Neighborhood (North of I-10). The North Pomona neighborhood is located west of Garey Avenue, north of I-10, east of Fairplex Drive, and south of Arrow Highway, covering 6.7 square miles. The neighborhood is home to a population of 37,174 and has a population density of approximately 5,548 people per square mile.

East Pomona Neighborhood (South of I-10). The East Pomona neighborhood is located east of North Towne Avenue, west of Mills Avenue, south of I-10, and north of State Route (SR) 60, covering 4.6 square miles. The neighborhood is home to a population of 40,582 residents and has a population density of approximately 8,822 people per square mile.

Claremont

Vista Neighborhood (North of I-10). The Vista neighborhood is located north of Palo Verde Street, south of the Metrolink railroad tracks, west of Indian Hill Boulevard, and east of Mountain Avenue, covering 0.4 square mile. This neighborhood has a population of 2,233 and a population density of approximately 5,583 people per square mile.

Oakmont Neighborhood (North of I-10). The Oakmont neighborhood is located east of Indian Hill Boulevard, west of Mills Avenue, north of Palo Verde Drive, and south of the Metrolink Railroad tracks, covering 0.6 square mile. The neighborhood is home to 3,468 residents and has a population density of approximately 5,780 people per square mile.

Claremont South Neighborhood (South of I-10). The Claremont South neighborhood is located north of San Bernardino Avenue, south of I-10, west of Mills Avenue, and east of Mountain Avenue, covering 0.2 square mile. The neighborhood is home to 371 residents and has a population density of approximately 1,855 people per square mile.

Montclair

East Montclair Plaza Neighborhood (North of I-10). The East Montclair Plaza neighborhood is located north of I-10, south of Arrow Highway, east of Mills Avenue, and west of Benson Avenue, covering approximately 1.26 square miles. The neighborhood has a population density of approximately 3,693 people per square mile.

San Bernardino Street/Rosewood Street Neighborhood (South of I-10). The San Bernardino Street/Rosewood Street neighborhood is located south of I-10, north of Benito Street, east of Mills Avenue, and west of Fremont Avenue, covering approximately 0.55 square mile. The neighborhood has a population density of approximately 7,874 people per square mile.

City Center Neighborhood (South of I-10). The City Center neighborhood is located south of I-10, north of Benito Avenue, east of Fremont Avenue, and west of Benson Avenue, covering approximately 0.61 square mile. The neighborhood has a population density of approximately 7,563 people per square mile.

Upland

South of Foothill Neighborhood (North of I-10). The South of Foothill neighborhood is located east of Vineyard Avenue, west of Monte Vista Avenue, south of Foothill Avenue, and north of I-10, covering 8.7 square miles. This neighborhood is home to 61,657 residents and has a population density of approximately 7,087 people per square mile.

North Ontario Neighborhood (North of I-10). The North Ontario neighborhood is located south of 9th Street, north of I-10, west of Grove Avenue, and east of Euclid Avenue, covering 0.6 square mile. This neighborhood is home to 4,219 residents and has a population density of approximately 7,031 people per square mile.

Ontario

North Ontario Neighborhood (North of I-10). The North Ontario neighborhood is located south of 9th Street, north of I-10, west of Grove Avenue, and east of Euclid

Avenue, covering 0.6 square mile. This neighborhood is home to 4,219 residents and has a population density of approximately 7,031 people per square mile.

Fontana

Downtown Fontana Neighborhood (Both North/South of I-10). The Downtown Fontana neighborhood is located south of Foothill Avenue, north of Jurupa Avenue, west of Alder Avenue, and east of Juniper Avenue, covering 2.9 square miles. This neighborhood is home to 15,942 residents and has a population density of approximately 5,497 people per square mile.

Fontana Gateway Neighborhood (South of I-10). The Fontana Gateway neighborhood is located south of I-10, north of Jurupa Street, west of Mulberry Avenue, and east of Etiwanda Avenue, covering 1.3 square miles. The neighborhood is home to 1,227 residents and has a population density of approximately 944 people per square mile.

Jurupa Industrial Park Neighborhood (Both North/South of I-10). The Jurupa Industrial Park neighborhood is located north of Jurupa Street, west of Catawba Avenue, south of Valley Boulevard, and east of Banana Avenue, covering 2.0 square miles. This neighborhood is home to 5,917 residents and has a population density of approximately 2,959 people per square mile.

Bloomington

Aqua Mansa Neighborhood (Both North/South of I-10). The Aqua Mansa neighborhood is located south of Valley Boulevard, north of SR-60, west of La Cadena Drive, and east of Cedar Avenue, covering 6.5 square miles. This neighborhood is home to 8,049 residents and has a population density of approximately 1,238 people per square mile.

Rialto

I-10 Corridor Neighborhood (Both North/South of I-10). The I-10 Corridor neighborhood is located south of West Randall Avenue, north of West Slover, east of Cedar Avenue, and west of Pepper Avenue, covering 3.2 square miles. This neighborhood is home to 21,562 residents and has a population density of approximately 6,738 people per square mile.

Colton

Iron Horse Neighborhood (North of I-10). The Iron Horse neighborhood is located east of South Riverside Avenue, west of South Rancho, north of I-10, and south of

Rialto Avenue, covering 3.7 square miles. This neighborhood is home to 26,913 residents and has a population density of approximately 7,274 people per square mile.

West Colton Neighborhood (South of I-10). The West Colton neighborhood is located east of Riverside Avenue, west of Interstate 215 (I-215), south of I-10, and north of Center Street, covering 6.5 square miles. This neighborhood is home to 9,478 residents and has a population density of approximately 1,458 people per square mile.

Rana Neighborhood (North of I-10). The Rana neighborhood is located north of I-10, south of Foothill Avenue, west of I-215, and east of Pepper Avenue, covering 6.5 square miles. This neighborhood is home to 38,849 residents and has a population density of approximately 5,976 people per square mile.

Downtown Neighborhood (North of I-10). The Downtown neighborhood is located north of I-10, south of Colton Avenue, west of Mount Vernon Avenue, and east of 9th Street, covering 0.32 square mile. This neighborhood is home to 1,771 residents and has a population density of approximately 5,534 people per square mile.

East Colton Heights Neighborhood (South of I-10). The East Colton neighborhood is located south of I-10, north of Barton Road, east of I-215, and west of Waterman Avenue, covering 3.1 square miles. This neighborhood is home to 14,742 residents and has a population density of approximately 4,756 people per square mile.

San Bernardino

Ward 3 Neighborhood (Both North/South of I-10). The Ward 3 neighborhood is located north of Barton Road, south of 5th Street, east of Pepper Avenue, and west of Mountain View Avenue, covering 8.9 square miles. This neighborhood is home to 31,824 residents and has a population density of approximately 3,576 people per square mile.

North Loma Linda Neighborhood (North of I-10). The North Loma Linda neighborhood is located north of I-10, south of Palm Meadow Drive, west of Mountain View Avenue, and east of Tippecanoe Avenue, covering 1.1 square miles. This neighborhood is home to 5,150 residents and has a population density of approximately 4,682 people per square mile.

Loma Linda

Victoria Neighborhood (North of I-10). The Victoria neighborhood is located north of I-10, south of San Bernardino Avenue, east of Richardson Street, and west of

Mountain View Avenue, covering 0.3 square mile. This neighborhood is home to 2,082 residents and has a population density of approximately 6,940 people per square mile.

Redlands

Crown Jewel/Marigold Neighborhood (Both North/South of I-10). The Crown Jewel/Marigold neighborhood is located south of the Santa Ana River, north of Barton Road, west of SR-210, and east of Sterling Avenue. The neighborhood has a population density of approximately 776 people per square mile.

Colton Avenue/Tennessee Street Neighborhood (Both North/South of I-10). The Colton Avenue/Tennessee Street neighborhood is located south of San Bernardino Avenue, north of Redlands Boulevard, east of SR-210, and west of Church Street. The neighborhood has a population density of approximately 5,254 people per square mile.

University of Redlands Neighborhood (Both North/South of I-10). The University of Redlands neighborhood is located south of Colton Avenue, north of Citrus Avenue, east of Church Street, and west of Ford Street. This neighborhood has a population density of approximately 5,457 people per square mile.

Evergreen Center/Lytle Street Neighborhood (Both North/South of I-10). The Evergreen Center/Lytle Street neighborhood is located south of Citrus Avenue, north of Redlands Boulevard, east of Redlands Boulevard, and west of Wabash Avenue. The neighborhood has a population density of approximately 2,870 people per square mile.

Yucaipa

Dunlap Acres (North of I-10). The Dunlap Acres neighborhood is located west of Wabash Avenue, north of Yucaipa Boulevard, east of Fremont Street, and south of Mill Creek Road. The neighborhood has a population density of approximately 2,131 people per square mile.

Yucaipa Boulevard and 14th Street (North of I-10). The Yucaipa Boulevard and 14th Street neighborhood is located west of Oak Glen Road, north of I-10, east of Yucaipa Boulevard, and south of Yucaipa Boulevard. The neighborhood has a population density of approximately 2,598 people per square mile.

5th Place and Avenue H (North of I-10). The 5th Place and Avenue H neighborhood is located west of 5th Street, north of I-10, east of Oak Glen Road, and south of Yucaipa Boulevard. The neighborhood has a population density of approximately 3,009 people per square mile.

Demographic Data

Elements of community cohesion can be found in demographic data used to profile communities from the 2000 and 2010 Census. Some specific indicators of community cohesion are as follows (and discussed later in this chapter):

- **Age:** Elderly and stay-at-home parents tend to be more active in their community. They have time to become involved. The transit-dependent population is comprised of the population under age 18 and age 65 and older.
- **Ethnicity:** Ethnic homogeneity is associated with a higher degree of community cohesion.
- **Household Size:** Households of two or more people tend to correlate with a higher degree of community cohesion.
- **Home Ownership:** Prevalence of owner-occupied units is also associated with a high degree of community cohesion.

Age

Table 3.1.4-2 shows the distribution of the population by age in the state and in the study area cities and counties for 2000 and 2010. Census tract data was also collected for 2010 for both build alternatives. Alternative 3 consists of all census tracts contained within Table 3.1.4-2, while Alternative 2 census tracts are only those that are shaded in gray. According to the U.S. Census Bureau, between 2000 and 2010, the population under 18 years of age decreased for every jurisdiction and the state, as a whole. At the same time, the population between 18 and 64 increased, and for the most part, the population greater than 64 years old increased, with a few exceptions (Bloomington, San Bernardino, Loma Linda, and Yucaipa). Pomona saw the greatest decrease (5.2 percent) among the population less than 18 years, while Rialto saw the greatest increase (4.2 percent) in its population between 18 and 64. Claremont experienced the greatest increase (1.9 percent) in its population greater than 64, while Yucaipa saw the greatest decrease (2.2 percent) in its population greater than 64.

Table 3.1.4-2 Age Distribution

Geography	Year	Total (Percentage)		
		Population < 18	Population 18-64	Population > 64
State				
California	2000	9,249,829 (27.3%)	21,026,161 (62.1%)	3,595,658 (10.6%)
	2010	9,295,040 (25.0%)	23,712,402 (63.6%)	4,246,514 (11.4%)
County				
Los Angeles	2000	2,667,976 (28.0%)	5,924,689 (62.3%)	926,673 (9.7%)
	2010	2,402,208 (24.5%)	6,350,698 (64.6%)	1,065,699 (10.9%)
San Bernardino	2000	552,047 (32.3%)	1,010,928 (59.1%)	146,459 (8.6%)
	2010	594,588 (29.2%)	1,259,274 (61.9%)	181,348 (8.9%)
City/Community				
Pomona	2000	51,742 (34.6%)	88,180 (59.0%)	9,551 (6.4%)
	2010	43,853 (29.4%)	93,835 (63.0%)	11,370 (7.6%)
Claremont	2000	7,031 (20.7%)	22,001 (64.7%)	4,966 (14.6%)
	2010	6,459 (18.5%)	22,697 (65.0%)	5,770 (16.5%)
Montclair	2000	10,948 (33.1%)	19,345 (58.6%)	2,756 (8.3%)
	2010	10,756 (29.3%)	22,825 (62.3%)	3,083 (8.4%)
Upland	2000	18,699 (27.3%)	42,336 (61.9%)	7,358 (10.8%)
	2010	18,091 (24.5%)	46,743 (63.4%)	8,898 (12.1%)
Ontario	2000	54,304 (34.4%)	94,381 (59.7%)	9,322 (5.9%)
	2010	49,443 (30.2%)	103,427 (63.1%)	11,054 (6.7%)
Fontana	2000	48,794 (37.8%)	74,022 (57.5%)	6,113 (4.7%)
	2010	64,521 (32.9%)	120,464 (61.4%)	11,084 (5.7%)
Bloomington	2000	7,033 (36.4%)	10,840 (56.1%)	1,445 (7.5%)
	2010	8,013 (33.6%)	14,273 (59.8%)	1,565 (6.6%)
Rialto	2000	34,626 (37.7%)	51,335 (55.9%)	5,912 (6.4%)
	2010	32,604 (32.9%)	59,661 (60.1%)	6,906 (7.0%)
Colton	2000	16,655 (34.9%)	27,954 (58.7%)	3,053 (6.4%)
	2010	16,671 (32.0%)	31,820 (61.0%)	3,663 (7.0%)
San Bernardino	2000	65,180 (35.2%)	104,955 (56.6%)	15,266 (8.2%)
	2010	67,238 (32.0%)	126,152 (60.1%)	16,534 (7.9%)
Loma Linda	2000	4,100 (21.9%)	11,696 (62.7%)	2,885 (15.4%)
	2010	4,859 (20.9%)	15,161(65.2%)	3,241 (13.9%)
Redlands	2000	16,651 (26.2%)	38,959 (61.2%)	7,981 (12.6%)
	2010	16,273 (23.7%)	43,496 (63.2%)	8,978 (13.1%)
Yucaipa	2000	11,762 (28.5%)	23,070 (56.0%)	6,375 (15.5%)
	2010	13,444 (26.2%)	31,089 (60.5%)	6,834 (13.3%)

*Alternative 2 study area includes all shaded jurisdictions. Alternative 3 study area includes all jurisdictions included in the table.

Source: U.S. Census, 2000, 2010.

The CIA (2015) collected data for 57 census tracts within the project study area. According to data collected for these census tracts, the 18-64 age range contained most of the population within the study area, ranging from 57.3 of the population to 74.1 percent. The census tract with the lowest percentage of people in this age range was located in Colton (Tract 125), and the tract with the highest percentage was in Ontario (Tract 21.09). This same census tract had the lowest percentage of the elderly population along the proposed corridor (2.1 percent). The census tract with the highest percentage of elderly population was Tract 85 in Redlands. The youth population (younger than 18 years) percentage is concentrated between 20.4 percent in Loma Linda and 35.4 percent in Ontario. Please see Table 4-3 in the CIA for age distribution within census tracts included in the study area.

Ethnicity

Table 3.1.4-3 shows the ethnic composition of the study area counties and cities for 2000 and 2010. Census tract data was also collected for 2010 for both build alternatives. Based on the 2010 Census, the largest racial category in San Bernardino County and the study area cities was Hispanic or Latino. For several of the cities, the White racial category was the larger percentage, including Claremont, Upland, Loma Linda, Redlands, and Yucaipa.

For all jurisdictions located within the study area, the White racial category decreased between 2000 and 2010 and the Hispanic or Latino category increased during the same time. Between 2000 and 2010, Rialto and Bloomington experienced the greatest increase in the Hispanic or Latino population, at approximately 16 percent. Overall, Los Angeles County experienced the least amount of change in its ethnic composition of all the jurisdictions that were analyzed, with an approximately 3.1 percentage increase in its Hispanic or Latino population and a 3.3 percentage decrease in the White population.

Table 3.1.4-3 Ethnic Composition

Geography	Year	Total (Percentage)							
		White	Black	American Indian/Native Alaskan	Asian	Hawaiian/ Pacific Islanders	Other	Two or More Races	Hispanic or Latino
County									
Los Angeles	2000	2,959,614 (31.1%)	901,472 (9.5%)	25,609 (0.3%)	1,124,569 (11.8%)	23,265 (0.2%)	19,935 (0.2%)	222,661 (2.3%)	4,242,213 (44.6%)
	2010	2,728,321 (27.8%)	815,086 (8.3%)	18,886 (0.2%)	1,325,671 (13.5%)	22,464 (0.2%)	25,367 (0.3%)	194,921 (2.0%)	4,687,889 (47.7%)
San Bernardino	2000	752,222 (44.0%)	150,201 (8.8%)	9,804 (0.6%)	78,154 (4.6%)	4,387 (0.3%)	3,039 (0.2%)	42,240 (2.5%)	669,387 (39.2%)
	2010	677,598 (33.3%)	170,700 (8.4%)	8,523 (0.4%)	123,978 (6.1%)	5,845 (0.3%)	4,055 (0.2%)	43,366 (2.1%)	1,001,145 (49.2%)
City/Community									
Pomona	2000	25,348 (17.0%)	13,834 (9.3%)	505 (0.3%)	10,518 (7.0%)	247 (0.2%)	183 (0.1%)	2,468 (1.7%)	96,370 (64.5%)
	2010	18,672 (12.5%)	10,107 (6.8%)	320 (0.2%)	12,303 (8.3%)	240 (0.2%)	282 (0.2%)	1,999 (1.3%)	105,135 (70.5%)
Claremont	2000	22,098 (65.0%)	1,642 (4.8%)	81 (0.2%)	3,851 (11.3%)	44 (0.1%)	87 (0.3%)	974 (2.9%)	5,221 (15.4%)
	2010	20,568 (58.9%)	1,560 (4.5%)	80 (0.2%)	4,500 (12.9%)	35 (0.1%)	71 (0.2%)	1,193 (3.4%)	6,919 (19.8%)
Montclair	2000	7,784 (23.6%)	1,986 (6.0%)	124 (0.4%)	2,641 (8.0%)	84 (0.3%)	37 (0.1%)	570 (1.7%)	19,823 (60.0%)
	2010	5,293 (14.4%)	1,702 (4.6%)	93 (0.3%)	3,275 (8.9%)	60 (0.2%)	63 (0.2%)	434 (1.2%)	25,744 (70.2%)
Upland	2000	37,456 (54.8%)	4,990 (7.3%)	238 (0.3%)	4,866 (7.1%)	83 (0.1%)	104 (0.2%)	1,826 (2.7%)	18,830 (27.5%)
	2010	32,564 (44.2%)	5,031 (6.8%)	184 (0.2%)	6,057 (8.2%)	134 (0.2%)	149 (0.2%)	1,578 (2.1%)	28,035 (38.0%)

Table 3.1.4-3 Ethnic Composition

Geography	Year	Total (Percentage)							
		White	Black	American Indian/Native Alaskan	Asian	Hawaiian/ Pacific Islanders	Other	Two or More Races	Hispanic or Latino
Ontario	2000	42,048 (26.6%)	11,317 (7.2%)	475 (0.3%)	5,914 (3.7%)	519 (0.3%)	284 (0.2%)	2,840 (1.8%)	94,610 (59.9%)
	2010	29,898 (18.2%)	9,598 (5.9%)	361 (0.2%)	8,078 (4.9%)	448 (0.3%)	386 (0.2%)	2,070 (1.3%)	113,085 (69.0%)
Fontana	2000	30,865 (23.9%)	14,629 (11.3%)	458 (0.4%)	5,398 (4.2%)	351 (0.3%)	197 (0.2%)	2,607 (2.0%)	74,424 (57.7%)
	2010	30,279 (15.4%)	18,157 (9.3%)	454 (0.2%)	12,456 (6.4%)	474 (0.2%)	338 (0.2%)	2,954 (1.5%)	130,957 (66.8%)
Bloomington	2000	5,581 (28.9%)	736 (3.8%)	115 (0.6%)	192 (1.0%)	28 (0.1%)	9 (<0.0%)	221 (1.1%)	12,436 (64.4%)
	2010	3,369 (14.1%)	555 (2.3%)	70 (0.3%)	283 (1.2%)	39 (0.2%)	27 (0.1%)	182 (0.8%)	19,326 (81.0%)
Rialto	2000	19,713 (21.5%)	19,954 (21.7%)	370 (0.4%)	2,162 (2.4%)	341 (0.4%)	194 (0.2%)	2,089 (2.3%)	47,050 (51.2%)
	2010	12,475 (12.6%)	15,457 (15.6%)	237 (0.2%)	2,037 (2.1%)	313 (0.3%)	186 (0.2%)	1,428 (1.4%)	67,038 (67.6%)
Colton	2000	9,911 (20.8%)	5,031 (10.6%)	224 (0.5%)	2,474 (5.2%)	69 (0.1%)	69 (0.1%)	950 (2.0%)	28,934 (60.7%)
	2010	6,803 (13.0%)	4,648 (8.9%)	126 (0.2%)	2,430 (4.7%)	136 (0.3%)	100 (0.2%)	872 (1.7%)	37,039 (71.0%)
San Bernardino	2000	53,630 (28.9%)	29,654 (16.0%)	1,129 (0.6%)	7,594 (4.1%)	582 (0.3%)	288 (0.2%)	4,502 (2.4%)	88,022 (47.5%)
	2010	39,977 (19.0%)	29,897 (14.2%)	867 (0.4%)	8,027 (3.8%)	704 (0.3%)	361 (0.2%)	4,097 (2.0%)	125,994 (60.0%)

Table 3.1.4-3 Ethnic Composition

Geography	Year	Total (Percentage)							
		White	Black	American Indian/Native Alaskan	Asian	Hawaiian/ Pacific Islanders	Other	Two or More Races	Hispanic or Latino
Loma Linda	2000	8,799 (47.1%)	1,300 (7.0%)	62 (0.3%)	4,536 (24.3%)	33 (0.2%)	42 (0.2%)	859 (4.6%)	3,050 (16.3%)
	2010	8,600 (37.0%)	1,932 (8.3%)	52 (0.2%)	6,509 (28.0%)	139 (0.6%)	68 (0.3%)	790 (3.4%)	5,171 (22.2%)
Redlands	2000	40,265 (63.3%)	2,625 (4.1%)	336 (0.5%)	3,186 (5.0%)	118 (0.2%)	88 (0.1%)	1,669 (2.6%)	15,304 (24.1%)
	2010	37,103 (54.0%)	3,326 (4.8%)	236 (0.3%)	5,100 (7.4%)	201 (0.3%)	138 (0.2%)	1,833 (2.7%)	20,810 (30.3%)
Yucaipa	2000	31,626 (76.7%)	353 (0.9%)	277 (0.7%)	455 (1.1%)	35 (0.1%)	61 (0.1%)	839 (2.0%)	7,561 (18.3%)
	2010	33,866 (65.9%)	736 (1.4%)	242 (0.5%)	1,358 (2.6%)	62 (0.1%)	86 (0.2%)	1,074 (2.1%)	13,943 (27.1%)

*Alternative 2 study area includes all shaded jurisdictions. Alternative 3 study area includes all jurisdictions included in the table.

Source: U.S. Census, 2000, 2010.

As noted above for San Bernardino County, the Hispanic or Latino racial category contained the largest proportion of the population in 2010. The census tract with the highest percentage of the Hispanic or Latino population was in Ontario at 91.1 percent. The census tract with the highest percentage of the white population was located in Redlands at 75.6 percent, while that same census tract (85) had the lowest percentage of the Hispanic or Latino population (12.4 percent). The black population throughout the corridor had a wide percentile range from less than 1 percent in Ontario (Tract 16) to almost 26 percent in Colton (Tract 71.08). The Asian population also had a wide range in population percentages from less than 1 percent to almost 25 percent. In Loma Linda and San Bernardino, there was a high concentration of Asians (Census Tracts 71.10, 72, 73.03, and 73.05). The other racial categories did not represent a large proportion of the population, ranging from zero to 4 percent. Table 4-4 in the CIA (2015) shows ethnic composition of study area census tracts.

Housing

As shown in Table 3.1.4-4, the affected communities in the I-10 corridor study area have a comparable percentage of owner-occupied and renter-occupied units to the Los Angeles County and San Bernardino County averages. Overall, Los Angeles County has a much larger number of housing units; however, only two of the total jurisdictions located within the study area are located in Los Angeles County. San Bernardino County has more owner-occupied units than Los Angeles County. Yucaipa has the highest proportion of owner-occupied units, at approximately 74 percent. The average household size is smaller in Los Angeles County than San Bernardino County. The cities of Claremont and Loma Linda have the smallest average household size, with approximately 2.6 persons per household. Vacancy rates are highest in the cities of San Bernardino and Loma Linda, at about 9 percent.

CIA (2015) census tract data collected for the study area shows that the number of housing units within each census tract ranges between 1,000 and 2,000 units; however, a tract in Yucaipa (87.06) has almost 5,000 housing units. There is generally a high level of occupied units, with all census tracts showing an occupied rate above 87 percent. There is a wide percentile range of owner-occupied units compared to renter-occupied units. In Redlands, Census Tract 85 has the highest percentage of owner-occupied units (92.1 percent), and Census Tract 71.08 in Colton has the highest percentage of renter-occupied units at 91.7 percent. The average household size ranges from 2 to almost 5 people. Census Tract 40.01 in Bloomington had the largest average household size at 4.76 people. Table 4-5 in the CIA shows the housing profile information for each census tract located within the study area.

Table 3.1.4-4 Housing Profile

Geography	Total (Percentage)					
	Total Housing Units	Housing Units, Occupied	Housing Units, Vacant	Owner-Occupied Units	Renter-Occupied Units	Average Household Size
Los Angeles	3,445,076	3,241,204 (94.1%)	203,872 (5.9%)	1,544,749 (47.7%)	1,696,455 (52.3%)	2.98
San Bernardino	699,637	611,618 (87.4%)	88,019 (12.6%)	383,573 (62.7%)	228,045 (37.3%)	3.26
Pomona	40,685	38,477 (94.6%)	2,208 (5.4%)	21,197 (55.1%)	17,280 (44.9%)	3.77
Claremont	12,156	11,608 (95.5%)	548 (4.5%)	7,700 (66.3%)	3,908 (33.7%)	2.57
Montclair	9,911	9,523 (96.1%)	388 (3.9%)	5,683 (59.7%)	3,840 (40.3%)	3.81
Upland	27,355	25,823 (94.4%)	1,532 (5.6%)	14,948 (57.9%)	10,875 (42.1%)	2.83
Ontario	47,449	44,931 (94.7%)	2,518 (5.3%)	24,832 (55.3%)	20,099 (44.7%)	3.63
Fontana	51,857	49,116 (94.7%)	2,741 (5.3%)	33,862 (68.9%)	15,254 (31.1%)	3.98
Bloomington	5,745	5,428 (94.5%)	317 (5.5%)	3,740 (68.9%)	1,688 (31.1%)	4.36
Rialto	27,203	25,202 (92.6%)	2,001 (7.4%)	16,294 (64.7%)	8,908 (35.3%)	3.92
Colton	16,350	14,971 (91.6%)	1,379 (8.4%)	7,766 (51.9%)	7,205 (48.1%)	3.46
San Bernardino	65,401	59,283 (90.6%)	6,118 (9.4%)	29,838 (50.3%)	29,445 (49.7%)	3.42
Loma Linda	9,649	8,764 (90.8%)	885 (9.2%)	3,432 (39.2%)	5,332 (60.8%)	2.56
Redlands	26,634	24,764 (93.0%)	1,870 (7.0%)	15,061 (60.8%)	9,703 (39.2%)	2.68
Yucaipa	19,642	18,231 (92.8%)	1,411 (7.2%)	13,503 (74.1%)	4,728 (25.9%)	2.79

*Alternative 2 study area includes all shaded jurisdictions. Alternative 3 study area includes all jurisdictions included in the table.

Source: U.S. Census, 2010.

Access and Circulation

I-10 is the main east-west transportation and traffic corridor along the southern United States. As a major regional east-west freeway corridor, I-10 is heavily used by travelers between San Bernardino County and Los Angeles County, and it is also a major truck route between southern California and the rest of the nation. As shown in the *Traffic Study* (2014), I-10 is currently at capacity within the proposed project corridor for many hours of the day, and that condition is expected to worsen significantly during the coming years if more capacity is not added.

Park-and-ride lots are used to encourage carpooling. There are two existing park-and-ride lots located within the project area. There is one in Pomona at 110 East McKinley, which is just east of Garey Avenue, with 112 parking spaces. The second lot is located in Bloomington at 10175 Cedar Avenue and has 20 parking spaces.

The primary components of the pedestrian circulation system are sidewalks and crosswalks. Most of the developed properties adjacent to the study area are improved with sidewalks.

Community Facilities and Services

Many community facilities and services are located in the I-10 corridor study area (Figure 3.1.4-3), including fire protection and emergency medical services, law enforcement, schools, and other public facilities (e.g., libraries, city halls, and post offices) that may be affected as a result of the proposed project. Utilities, fire protection, and emergency services are discussed in further detail in Section 3.1.5, Utilities.

Public Transit

Public transportation options are located throughout the proposed project area, with several lines that run through the proposed project, as identified below. Metrolink is the regional rail system for commuters in the southern California region. The San Bernardino Line runs through the proposed project in Colton. Foothill Transit provides fixed-route bus service to the San Gabriel and Pomona valleys and is governed by a joint powers authority of 22 member cities and the County of Los Angeles. Lines 292, 855, and 480 run through the proposed project area, while Line 699 and the Silver Streak run parallel and adjacent to the project area. Omnitrans is the public transit agency serving the San Bernardino Valley region. This operator carries approximately 16 million passengers each year throughout its service area. In addition to regular bus operations, Omnitrans offers its Access service for individuals with disabilities. The following Omnitrans bus routes run through the proposed project area: 68, 65, 80, 83, 63, 61, 81, 82, 29, 19, 215, 5, sbX, 2, 8, 15, and 19.

Economic Outlook

This subsection provides a look into the guiding economic forces driving business growth within each jurisdiction along the proposed project corridor.

Los Angeles County. Los Angeles County has the largest county economy in the nation and would be the 21st largest economy in the world if it were a country. The entertainment industry is one of the most visible and important industries in Los Angeles County. Average annual employment in motion picture and sound recording is just over 118,000 jobs. International trade continues to play an important role in the local economy. The San Pedro Bay Ports of Los Angeles and Long Beach are the two busiest container ports in the nation. The professional, scientific, and technical services industry is the fifth largest in Los Angeles County. Firms in these industries employ a wide array of professionals, including architects, engineers, and attorneys. Employment in these sectors stood at 276,800 in 2013, up 3.7 percent from a year earlier. Growth is expected to continue in these sectors over the next 2 years.

San Bernardino County. Small firms comprise most of San Bernardino County's economy, but large firms remained more stable during the downturn. In the 2011-2013 Strategic Plan, the San Bernardino County Workforce Investment Board (WIB) identified the top five sectors that will employ the largest number of residents. These high demand sectors are health care; aviation; transportation and logistics; manufacturing; and green technology.

City of Pomona. Pomona continues to enjoy a broadly based diverse economy, albeit one with an emphasis on government, healthcare, and other service-oriented industries. Among Pomona's large employers are Pomona Unified School District, the City of Pomona itself, California State Polytechnic University, and the Department of Social Services. Notable private-sector employers include First Transit, Hamilton Sundstrand, Hayward Industries, Inland Valley Care and Rehab, Lloyd's Material Supply, Verizon, and Walmart. As a regional healthcare hub, Pomona boasts a premier facility in the Pomona Valley Hospital Medical Center, the Lanterman Developmental Center, and the nonprofit Casa Colina Centers for Rehabilitation.

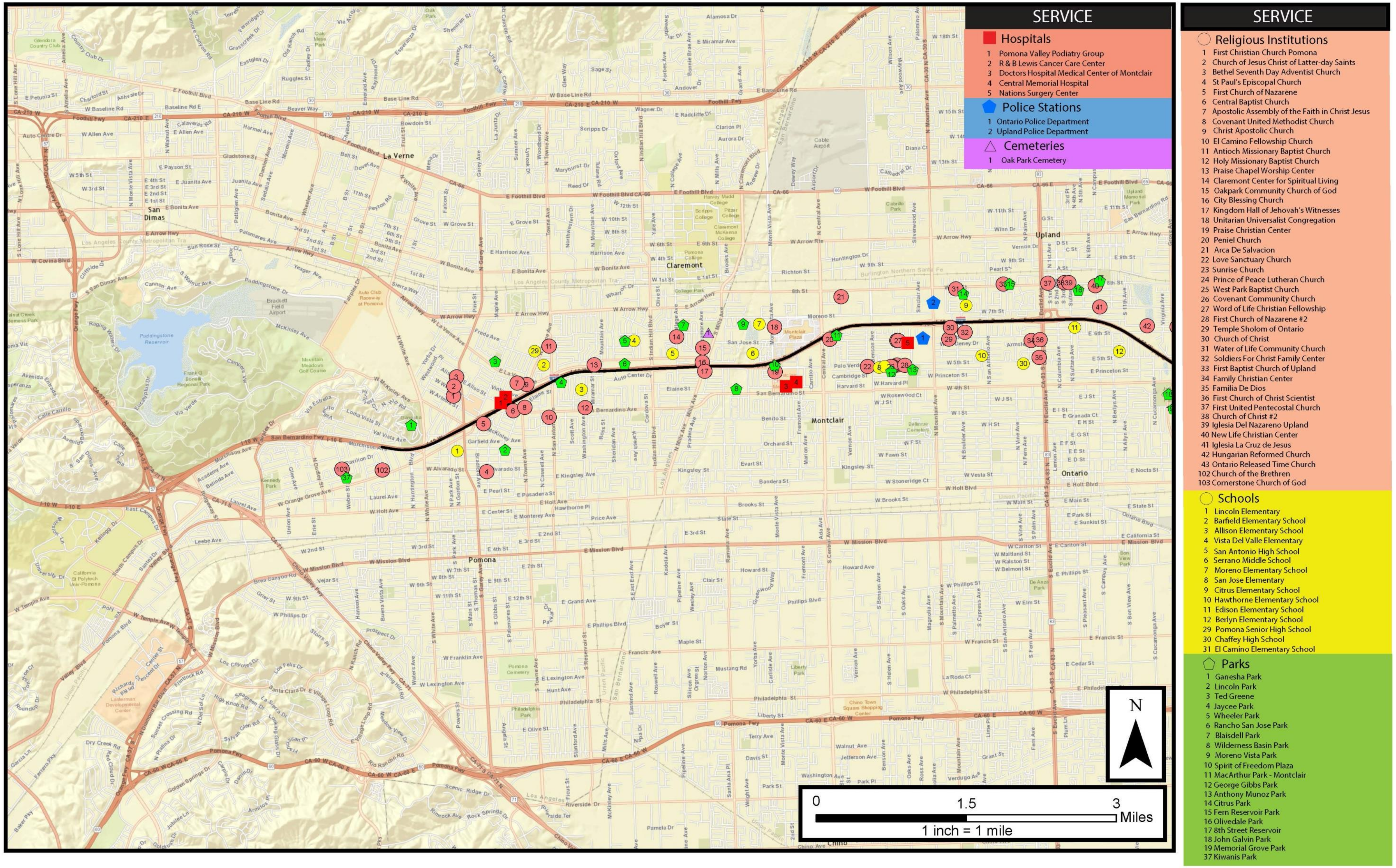


Figure 3.1.4-3 Community Facilities and Services (Sheet 1 of 5)

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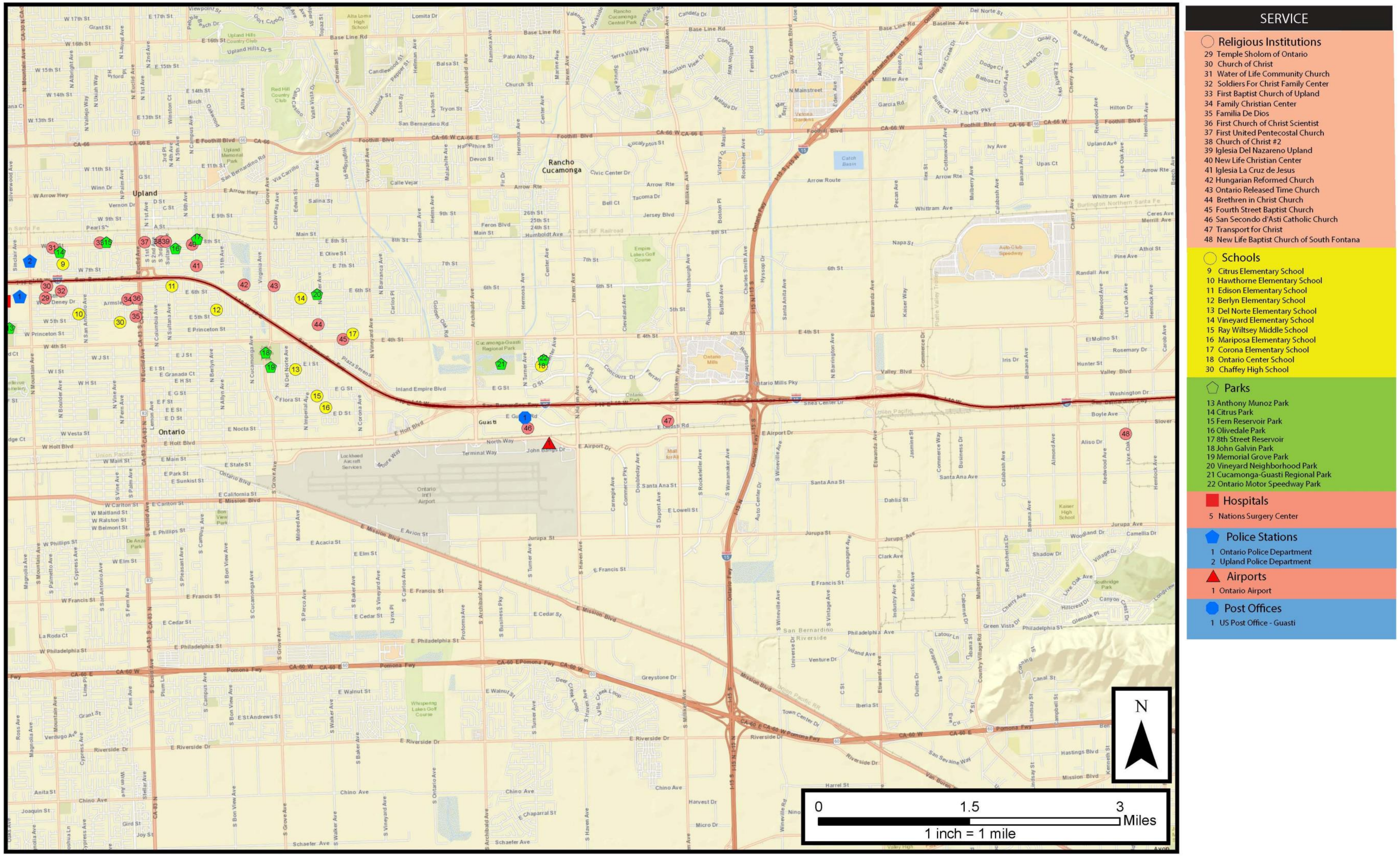

Figure 3.1.4-3 Community Facilities and Services (Sheet 2 of 5)

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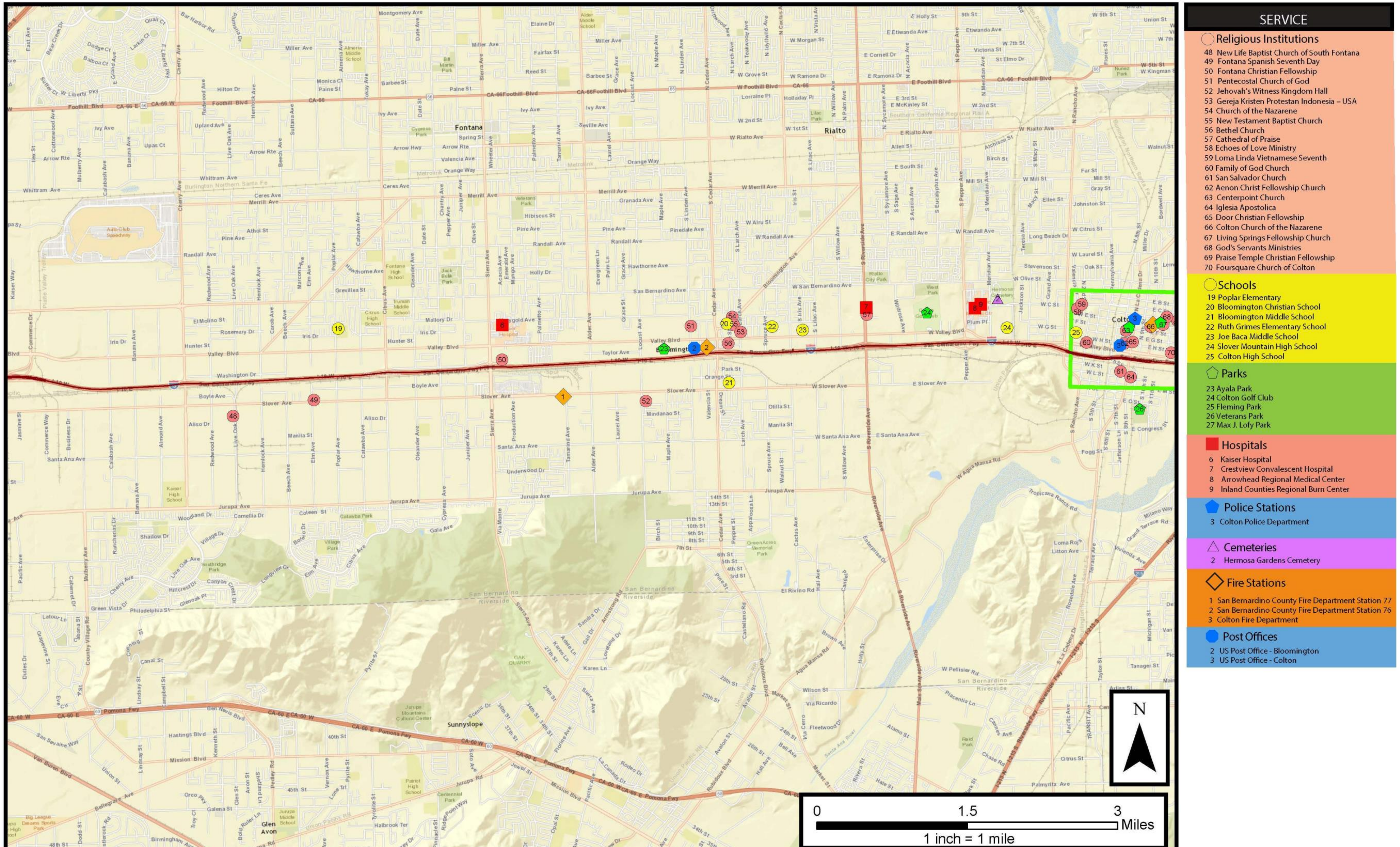

Figure 3.1.4-3 Community Facilities and Services (Sheet 3 of 5)

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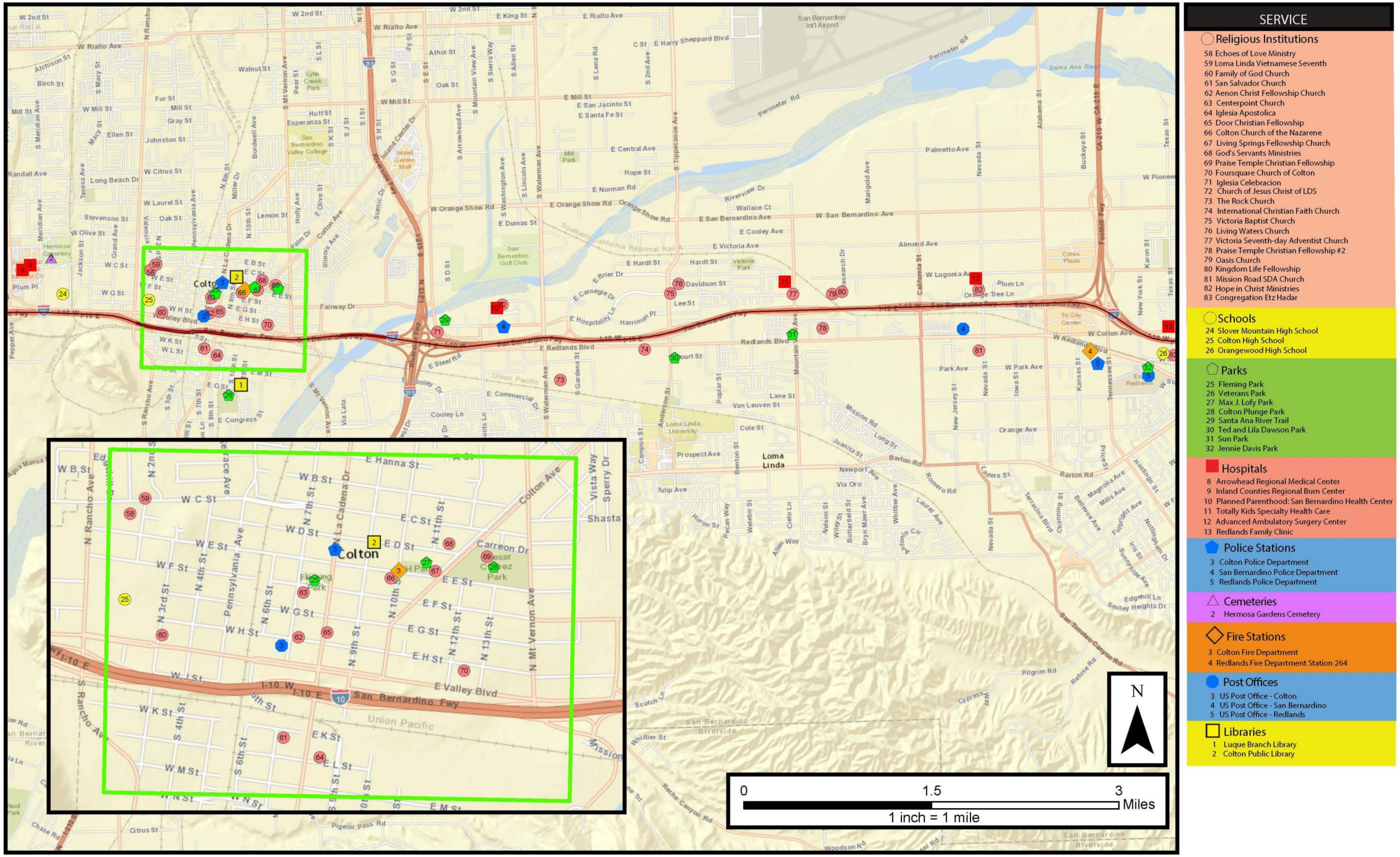

Figure 3.1.4-3 Community Facilities and Services (Sheet 4 of 5)

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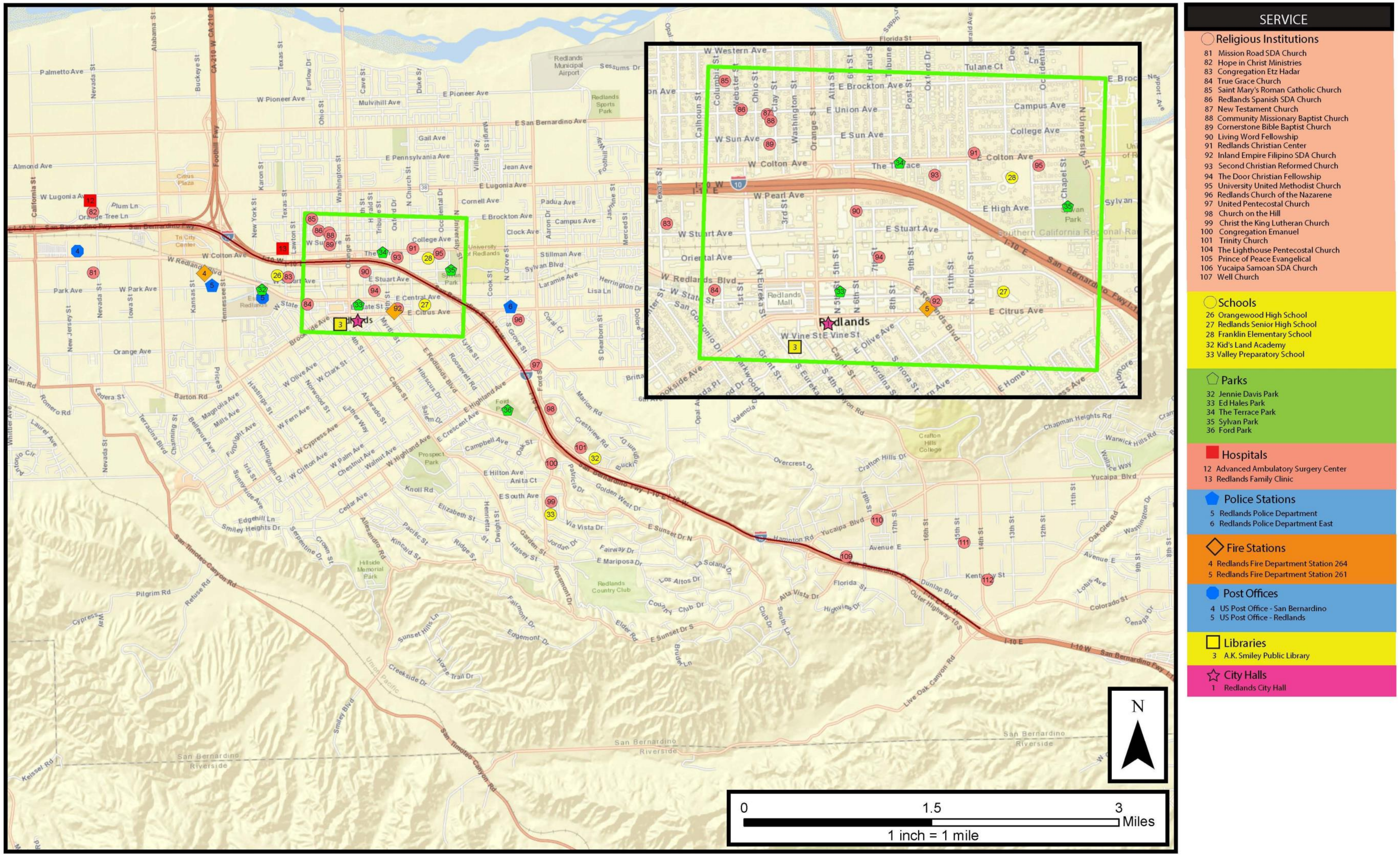

Figure 3.1.4-3 Community Facilities and Services (Sheet 5 of 5)

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City of Claremont. There are 1,555 businesses operating within Claremont, with more than 17,600 employees living in Claremont. Claremont has long been known as a cultural arts center for Pomona Valley. It continues to provide opportunities for a variety of cultural pursuits showcasing local talent, as well as attracting well-known national artists. Major Commercial enterprises located within Claremont include automobile retailers, hotels, restaurants, general retail, and service establishments, as well as several educational institutions. Many major economic development and commercial revitalization projects are currently in progress, with the goal of providing additional venues for entertainment, dining, and shopping. Changes in the economy, particularly in the auto industry, have had a significant effect on Claremont over the past several years. The auto center has lost many dealers, and only Claremont Toyota remains at this location. The loss of revenue related to sales tax from a decrease in auto sales in Claremont and the economic slowdown in general has resulted in the need to reduce expenditures.

City of Montclair. Montclair is home to the regional mall, Montclair Plaza, a 1.3-million-square-foot fashion mall with 4 major anchors and more than 200 specialty stores, plus a dining/entertainment district of top restaurants and retail. Recognized as a major Inland Valley destination, Montclair's job and retail growth continues to increase. The development of new retail, restaurants, and business parks throughout Montclair has contributed to the expansion of local employment.

City of Upland. Upland has also seen some positive movement in its local economy. Development activity has begun again, and there are several new residential developments under construction, causing a slight increase in building permit revenues. Sales tax revenues recently reported an increase of 2 percent over last year, and the opening of new stores in the Colonies will generate new sales tax revenue in the coming fiscal year.

City of Ontario. Ontario is referred to by the Southern California Association of Governments (SCAG) as the “Next Urban Center in Southern California” and the urban core of the Inland Empire. LA/Ontario International Airport is the 15th busiest airport in the nation, as measured by air cargo. Steady growth and rapid development adjacent to the airport, along freeway corridors, and throughout Ontario reflect the city’s distinctive advantages. City records show that Ontario is home to more than 10,000 businesses, which account for approximately 108,000 jobs.

City of Fontana. Fontana has faced a host of difficult problems, ranging from very high unemployment (10.2 percent) to stagnant median income levels and growing poverty levels. Although California's economy is improving in many ways, including employment growth and increases in retail sales and housing sales, the Inland Empire has experienced a rise in poverty as a result of the most recent recession. Wage and salary employment has slowed in the Inland Empire, with an increase of only 0.6 percent over the last year, adding only 7,300 jobs. The job growth has started to return, essentially due to expansion in logistics (28 percent), health care (17 percent), and resumption of construction projects (17 percent). Retail sales are increasing. Taxable sales are a major City revenue source that is now recovering from a steep downturn. Taxable retail sales were up 8.1 percent over the last year within Fontana, which was well above California's growth of 6.8 percent. Fontana is ranked fifth in taxable retail sales in the Inland Empire with sales of $2.5 billion.

Community of Bloomington. See the description above for San Bernardino County.

City of Rialto. Rialto's labor force consists of more than 45,000 people and has a diversified mix of manufacturing, distribution, service, and retail businesses. Rialto is home to a variety of recognizable manufacturing companies, including Angelus Block, Eagle Tile, Tree Top, and Biscomerica. Rialto has also become a logistics hub for many national companies, such as FedEx Ground, Home Depot, Unilever, Staples, Black and Decker, Target, and Toy 'R' Us, which have located their regional distribution facilities in Rialto. The top employers in Rialto are the Rialto School District and FedEx Ground.

City of Colton. Growth will continue throughout other areas of Colton, including the Chino Valley Ranchers food processing plant, United Packaging Group's facility expansion, Lineage Logistics' cold-storage facility, and completion of a more than 800,000-square-foot industrial building. The economic growth within Colton will enhance revenues, especially property and sales taxes.

City of San Bernardino. San Bernardino's labor force consists of 85,000 people and has a diversified mix of businesses. Top employers in the city of San Bernardino include Cal State University, San Bernardino; San Bernardino Community Hospital; San Bernardino County Schools; and San Bernardino County Sheriff, among others.

City of Loma Linda. Loma Linda is a unique community with strong ties to its religious, educational, and healing arts roots. The Loma Linda University Medical Center and the Jerry L. Pettis Memorial Veterans Medical Center provide much of the economic base of the community through the employment of a highly trained local labor force. The City is seeking to expand upon this economic base with medical support services, research facilities, professional offices, and lodging accommodations for visitors to the medical centers and community. In addition to increasing commercial and industrial opportunities, Loma Linda is in the process of managing residential growth to provide an appropriate range of housing opportunities to accommodate the diverse work force needed by the medical facilities.

City of Redlands. The economy of Redlands is based largely in the service and trade sectors (i.e., health care, retail trade, government, and education) and light manufacturing. The region has a varied manufacturing and industrial base that has added to the relative stability of the unemployment rate over the years. Redlands has significant land still available for industrial/commercial/office use, with only a portion of these areas utilized. Major industries with headquarters or divisions within the electrical controls, furniture manufacturing, and automobile component manufacturing, include ESRI (Environmental Systems Research Institute); Redlands Unified School District; United States Postal Service; Redlands Community Hospital; Verizon; University of Redlands; City of Redlands; Beaver Medical Group; Walmart Stores, Inc.; La-Z-Boy, Inc.; Southern California Gas; and Loma Linda University Medical Center.

City of Yucaipa. Yucaipa is a mature, well-established community nestled in the foothills of the San Bernardino Mountains. The City of Yucaipa applies a sensitive balance of growth, technology, and regard for the environmental, cultural, and rural aspects of the area. Their initiatives focus on developing infrastructures, buildings, and sites; uptown revitalization; and creation of a strong regional identity to market the area, all intended to facilitate new investment and development in the community.

Environmental Consequences

Permanent Impacts

No Build Alternative

According to several indicators of community cohesion described above in this chapter, including high homeownership rates, ethnic homogeneity, and a high percentage of persons aged 65 and over, it can be concluded there is a high degree of community cohesion in many parts of the study area.

The No Build Alternative would maintain the current configuration of I-10 in the study area. Under the No Build Alternative, the project would not be constructed, and congestion would continue to worsen for adjacent neighborhood residents without the proposed project improvements. Potential indirect impacts to the regional economy could result from the continued decrease in traffic flow and capacity associated with congested roadways such as I-10.

Common to Both Build Alternatives

Access and Circulation. Implementation of either of the build alternatives would promote economic growth and interregional/intraregional trade and goods movement by improving transportation linkages. Improved connectivity alone is not expected to affect the area's major employers in a substantial way. Such economic improvements are generally measured incrementally, in part by time savings on transport services and less roadway congestion and traffic delay. Area residents and workers would benefit with less time stuck in traffic congestion and improved access associated with any of the build alternatives. It is not expected that small or minority-owned businesses in the area would experience particular benefits.

The project would be designed to retain existing pedestrian and bicycle circulation routes. Several roadways would be designed to include new bikeways or sidewalks. Because no arterial roadways would be permanently closed and there are no permanent impacts to access or circulation, no indirect impacts are anticipated. No permanent impacts to public transportation are anticipated as a result of the proposed project, other than beneficial impacts associated with improved traffic flow and congestion.

Parking. Both build alternatives would result in the loss of parking, as identified below. In some cases, parking would be affected by construction of the proposed project, but it would be partially replaced, or in some cases, completely replaced. No park-and-ride lots would be affected by the proposed project.

Alternative 2

As shown in Table 3.1.4-5, Alternative 2 would not result in any permanent full acquisitions; however, there would be partial acquisitions and permanent easements.

Table 3.1.4-5 Potential Residential and Nonresidential Displacements

Type	Alternative 2	Alternative 3 (Preferred Alternative)
Single-Family Residence	0	21
Multi-Family Residence	0	19
Retail	0	1
General Office	0	1
Light Industrial	0	2
Automotive repair	0	7
Water District Pump House	0	1
Total Displaced Residents	0	104
Total Displaced Employees	0	66

Source: I-10 Corridor FRIS, 2016.

Parking. A total of 22 parking spaces would be permanently removed after implementation of Alternative 2. The parking loss would result entirely in Fontana, at commercial locations, for public parking and employee parking.

Community Character/Cohesion. Changes to the community's visual character and quality may occur as a result of Alternative 2. This includes removal of mature trees and the addition of urbanizing elements (e.g., new bridges, soundwalls, widened pavement sections). Please refer to Section 3.1.7, Visual/Aesthetics, for further discussion of impacts to visual quality of communities. Alternative 2 would be constructed along an existing corridor; therefore, major permanent impacts to community character/cohesion within the study area are not anticipated.

Alternative 3 (Preferred Alternative)

Alternative 3 would require full and partial acquisitions of private and publicly owned property, including residential and nonresidential uses (Table 3.1.4-5). In the case of full acquisitions that lead to relocations of residential and nonresidential uses, it is anticipated that displacees could be relocated in proximity to their locations of origin. More detail regarding acquisitions and displacements is available in Section 3.1.4.2, Relocations and Real Property Acquisition.

Residential Displacement Impacts. Alternative 3 would displace 40 residential units as a result of full property acquisitions and result in physical changes that could alter the character of the existing community and affect community cohesion. The I-10 Corridor Project (I-10 CP) improvements would result in a wider facility than currently exists through the study area. On local streets affected by the project, sidewalks, crosswalks, lighting, and landscaping familiar to the residents would be replaced with new sidewalks, crosswalks, lighting, and landscaping.

Housing occupancy status within the study area is presented above in Table 3.1.4-4. Vacancy rates in the study area range from 3.9 percent in Montclair to 9.4 percent in the city of San Bernardino. Alternative 3 would result in 35 residential impacts in Fontana, along with four single-family residences (SFR) in Montclair and one single-family residences in Ontario. The Final Relocation Impact Statement (FRIS) prepared for this project identified adequate relocation resources for residential displacements that would occur with implementation of either of the build alternatives.

Adequate resources appear to currently exist within the city or area vicinity to relocate residents (i.e., a sufficient number of comparable replacement dwellings meeting the decent, safe, and sanitary standards exist within the study area or in neighboring communities). It is anticipated that finding replacement housing for owner- or tenant-occupied residences would not present any unusual problems for this project. Because I-10 is an existing facility, widening of the lanes would not divide an existing community or create a barrier between communities; therefore, no adverse permanent impacts to community character and cohesion would occur.

Nonresidential Displacement Impacts. Property acquisitions would result in the displacement of established businesses and places of employment. These displacements could affect community character and cohesion if the businesses were regularly frequented by local residents or if long-term employees become unemployed. Partial acquisitions of nonresidential properties could disrupt the visual character and familiarity of the area by affecting sidewalks, crosswalks, lighting, and landscaping, which would be replaced. The displacement of businesses would result in up to 101 employees being relocated within the same city or area vicinity as the business. As shown in Table 3.1.4-5, only Alternative 3 would result in potential full acquisitions of nonresidential properties/businesses. The 12 businesses are located along I-10 in Montclair, Fontana, Rialto, and Colton. Because 12 nonresidential acquisitions would result from the implementation of Alternative 3, a small portion of employees along the corridor could be affected. If a business was relocated, but an employee did not choose to work at the new business location, they could lose their employment. There may be a few instances where people are displaced from their homes, but stay employed; however, they are forced to travel much farther, resulting in higher commuting costs. These employees or residents could experience financial hardship as a result of their place of employment being displaced. This hardship would affect their quality of life and sense of community; however, the Caltrans relocation team would fully comply with the Uniform Relocation Assistance and Real Property Acquisition, including providing relocation assistance payments and counseling to persons and businesses affected by displacements resulting from the proposed project.

The proposed project would not create any permanent financial repercussions to the proposed project corridor or surrounding area as a result of the proposed project. No permanent secondary impacts would occur in the study area or nearby communities. Beneficial impacts associated with improved traffic flow and capacity could indirectly affect port operations at the Ports of Long Beach and Los Angeles by allowing greater access for goods movement operations for trucks on I-10.

Community Facilities and Services. As discussed in Section 3.1.1.3, Parks and Recreational Facilities, there would be a partial acquisition of MacArthur Park under Alternative 3. Although the acquisition area would minimally reduce the overall size of the park, it would not inhibit existing recreational activities within the park. In addition, no community facilities impacts would create any indirect impacts as a result of the proposed project.

Alternative 3 would add additional capacity along this freeway segment and beyond, thereby providing enhanced access to and from LA/Ontario International Airport and the surrounding area, which also includes significant logistics, UPS airlines, and distribution businesses developed around the airport. Coordination, including an interview, was conducted with the General Manager of the airport and is documented in Chapter 5 of this document.

The proposed project would be built along an existing corridor and would not create any permanent repercussions for the proposed project corridor or surrounding area.

Parking. A total of 233 parking spaces would be permanently removed after implementation of Alternative 3. Most of the parking losses would occur in Fontana and Montclair. In Fontana, commercial, light industrial, and parking at one multi-family residential (MFR) property would be affected by Alternative 3. After replacement parking is implemented, movie theater and strip mall parking at the Baralat Property would experience the greatest impact. Montclair would lose an estimated 25 street parking spaces, as well as some church parking and mall parking. In Colton, 45 street parking spaces would be removed as a result of Alternative 3.

Community Character/Cohesion. Changes to the community's visual character and quality may occur as a result of Alternative 3. This includes removal of mature trees and the addition of urbanizing elements (e.g., new bridges, soundwalls, widened pavement sections). Please refer to Section 3.1.7, Visual/Aesthetics for further discussion of impacts to visual quality of communities.

Most of the displacements are anticipated to occur in the city of Fontana in an area that features scattered residences among a multitude of various industrial uses. As such, even though the census tract data of the area suggests a large percentage of minority populations, it is unlikely that strong community character/cohesion exists given the existing land use mix and its proximity to an existing highway corridor.

Alternative 3 would be constructed along an existing corridor; therefore, major permanent impacts to community character/cohesion within the study area are not anticipated.

Temporary/Construction Impacts

Construction of the I-10 CP has the potential to result in short-term effects to neighborhoods (e.g., temporary road closures). Construction activities include grading, excavation, road detours, and temporary road closures. Implementation of a Transportation Management Plan (TMP), which is discussed in detail in the Avoidance, Minimization, and/or Mitigation Measures section below, would reduce project-related temporary impacts to community character and cohesion.

Long-term closure (8 to 16 months) that could affect access to schools may be required during bridge construction. Coordination with affected schools will be ongoing. It is anticipated that San Antonio Avenue, Richardson Street, Sultana Avenue, Campus Avenue, and 6th Street would experience long-term, temporary closure lasting up to 16 months and would affect access to/from nearby schools. In addition, Palo Verde Street between Mills Avenue and Helena Avenue (west of Monte Vista Avenue) and Alvarado Street between Euclid Avenue and Sultana Avenue will need to be modified to a one-way street during certain periods of the project construction to facilitate the I-10 widening and construction of the proposed retaining walls and soundwalls along the freeway ROW. Other arterials in the vicinity of the project improvements, including Azure Court, 7th Street, Richland Street, Hope Avenue, and Gibralter Street, may also be subject to periodic lane reduction and closure.

These impacts are subject to change as the design process moves forward. No temporary construction easements (TCEs) would be required at schools located along the project alignment.

Access and Circulation

The presence of construction equipment and the temporary removal of signage could diminish the visibility of businesses from freeways and local roadways. Access to some businesses situated in the immediate vicinity of the project corridor could be restricted; however, access would be maintained at all times during construction.

As shown in Table 5-2 in the CIA (2015), 10 arterial roadways within the project area would require bridge replacement, resulting in temporary impacts to the existing nonmotorized transportation circulation patterns. For each of these closures, there are multiple alternate routes that can be used. Closure of streets that are located in close proximity to one another would not coincide so that there would be convenient nearby alternate routes available for school pedestrians.

Arterials that cross under I-10 are expected to be open for traffic during construction; however, reduction in the number of traffic lanes and narrowing of the lane widths would be necessary to accommodate construction for undercrossing bridge widening or replacement. Full nighttime or weekend closures would also be required during demolition and construction of undercrossing bridges. Additionally, Monte Vista Avenue and 4^{th} Street would need to be lowered to accommodate the standard vertical clearance of the replacement bridge; as such, full nighttime or weekend closure would be necessary on these arterials at various times during the roadway reconstruction and utility relocation.

As noted in the *Ramp Closure Study* (Appendix E of the CIA), several on- or off-ramps would require closure during construction of between 10 to 30 days, with other ramp closures less than 10 days. The Monte Vista Avenue eastbound (EB) on-ramp is anticipated to require long-term closure of approximately 16 to 24 months during replacement of the Monte Vista Avenue undercrossing structure. Per an agreement with the City of Montclair, the facility would reopen temporarily for the holiday season to ensure proper traffic circulation between I-10 and the Montclair Plaza shopping center. No two consecutive off-ramps or on-ramps in the same direction would be closed at the same time. Preliminary detour routes for all long-term closures have been identified to accommodate access changes lost due to the temporary long-term closures. The following ramps were identified to potentially result in long-term closure and detours:

- Monte Vista Avenue westbound (WB) off-ramp (up to 30 days)
- Monte Vista Avenue WB on-ramp (up to 30 days)
- Monte Vista Avenue EB off-ramp (up to 30 days)
- Monte Vista Avenue EB on-ramp (approximately 16 to 24 months)
- Central Avenue EB on-ramp (up to 30 days)
- Central Avenue WB off-ramp (up to 30 days)
- 4th Street EB off-ramp (up to 30 days)
- Etiwanda Avenue EB loop on-ramp (up to 30 days)
- Etiwanda Avenue EB on-ramp (up to 30 days)
- 9th Street EB off-ramp (up to 30 days)
- La Cadena Drive EB off-ramp (up to 30 days)
- Sunwest Lane WB on-ramp (up to 30 days)
- Waterman Avenue EB on-ramp (up to 30 days)
- Alabama Street EB off-ramp (up to 30 days)
- Tennessee Street EB off-ramp (up to 30 days)

Temporary impacts to circulation and access would result from construction activities, including full closures of various facilities such as the freeway mainline lane, branch connectors, interchange ramps, and local arterials. The freeway and street closures and detours could temporarily delay goods shipment, affect business parking, and impede business access. Closures of these facilities may be overnight, short-term, or during weekends. Ramps that provide access to major shopping centers would not be closed from November 1 to January 31. In addition, ramp closures would be coordinated with the Auto Club Speedway so that they do not occur on major race days.

Temporary impacts to public transportation would result from construction activities, including mainline lane closures and ramp connector closures. Coordination with local jurisdictions and public transportation providers will continue through the design-build phase to identify public transit routes and emergency service routes that serve hospitals, fire/police stations, emergency shelters, emergency command centers, and other facilities that provide essential services in times of emergencies within the study area. Emergency service routes would be maintained during construction, or alternate routes would be provided. Additional coordination with public transportation providers would provide detour information, as well as information regarding temporary bus stop alternatives when complete roadway closure is required for construction. The temporary impacts to access, circulation, and parking would be the same as temporary public transportation impacts.

Avoidance, Minimization, and/or Mitigation Measures

No Build Alternative

No avoidance, minimization, and/or mitigation measures are required.

Build Alternatives

Community Impacts

Community disruption during project construction as a result of construction activities would be temporary and mitigated by implementing a traffic staging plan and a TMP as required by Measure T-1 (Section 3.1.6, Traffic and Transportation/Pedestrian and Bicycle Facilities), as summarized below, as well as the measures in Section 3.1.7, Visual/Aesthetics; Section 3.2.7, Noise; and Section 3.2.6, Air Quality.

The San Bernardino County Transportation Authority (SBCTA) and Caltrans shall prepare a TMP to minimize direct and cumulative construction impacts on the community. Upon completion, the final TMP will be available to the public and can be obtained by request from SBCTA. The TMP shall be submitted with the construction plan to the police and fire departments of affected cities prior to commencement of construction activities. The TMP shall include, but not be limited to, the following features:

- Public Information: Provide project update to the affected residents, businesses, general public, schools, and public transportation agencies via brochures and mailers, community meetings, project website, radio and newspaper advertisements, and broadcast via social media.
- Motorist Information: Provide project information using changeable message signs (CMS) and ground-mounted signs.
- Incident Management: Implement Construction Zone Enhanced Enforcement Program (COZEEP), freeway service patrol, and California Highway Patrol (CHP) traffic handling.

- Traffic Management during Construction: Provide traffic lane closure chart, detour route, pedestrian routes, residential and commercial access routes, and temporary traffic signals during construction.

Additionally, the following measures are required to minimize project construction effects on neighborhoods and community cohesion. Measures will be implemented under SBCTA and Caltrans oversight. Any changes would require Caltrans and SBCTA approvals.

COM-1: No two consecutive/adjacent off-ramps or two consecutive/adjacent on-ramps in the same direction will be closed concurrently.

COM-2: Business access will be maintained at all times during construction, consistent with Section 7-1.03 Public Convenience of Standard Specifications (2015).

Community Services and Facilities

SBCTA and Caltrans would continue the outreach program discussed in Chapter 5, Comments and Coordination, to keep residents, businesses, community facilities and any service providers within the affected area informed, and to inform the surrounding communities about the proposed project construction schedule, traffic-impacted areas and the TMP. Minimization measures, in addition to outreach programs, include the following:

COM-3: To keep residents, businesses, community services, and service providers within the affected area informed about the proposed project construction schedule and traffic-impacted areas, provide motorist information (i.e., existing CMSs, portable CMSs, stationary ground-mounted signs, traffic radio announcements, and the Caltrans Highway Information Network [CHIN]).

COM-4: Traffic circulation construction strategies (i.e., lane closure restrictions during holidays and special local events, closure of secondary streets during construction to allow quick construction and reopening, lane modifications to maintain the number of lanes needed, allowing night work and extended weekend work, maintaining business access, and maintaining pedestrian and bicycle access) will be incorporated into project design in consultation with Caltrans, SBCTA, and affected cities to keep residents, businesses, community services, and service providers within the affected area informed about the proposed project construction schedule and traffic-impacted areas.

COM-5: Implementation of alternate and detour routes strategies; street/ intersection improvements (e.g., widening, pavement rehabilitation, removal of median) to provide added capacity to handle detour traffic; signal improvements; adjustment of signal timing and/or signal coordination to increase vehicle throughput, improve traffic flow and optimize intersection capacity; turn restrictions at intersections and roadways necessary to reduce congestion and improve safety; and parking restrictions on alternate and detour routes during work hours to increase capacity, reduce traffic conflicts, and improve access will be implemented.

COM-6: Coordination with the relevant park and recreation departments of affected parks shall occur during construction to ensure the access and safety of users in the parks and trails adjacent to the proposed project.

Utilities

COM-7: Close coordination with utility service providers and the implementation of a public outreach program will be conducted to minimize impacts to surrounding communities. A public outreach plan for relocation of utilities will be developed.

Circulation and Access

COM-8: A TMP will be implemented throughout the duration of the construction activities. The TMP will minimize project-related construction disruptions by including traffic strategies designed in coordination with local jurisdictions.

COM-9: Close coordination with railroad owners and operators will be conducted during the design-build phase to minimize impacts to railroad operations.

COM-10: Close coordination with affected property owners will be conducted to identify means to avoid and minimize parking impacts, including space management such as restriping of parking areas and identifying parking replacement options.

COM-11: A robust public outreach program will be maintained to minimize objections to the unavoidable construction impacts. A community information plan will be implemented to maintain good relations with the public by providing timely information about anticipated construction activities to affected citizens and adjacent property owners. Notification methods could include, but are not limited to, website, fliers, mailers, e-mail notifications, and electronic messaging on the freeway.

COM-12: At identified locations, all pedestrian facilities will be designed to meet or exceed requirements of the Americans with Disabilities Act (ADA) and current safety standards. Access to the pedestrian and bicycle facilities shall be maintained to the extent practicable during the construction period.

COM-13: Coordination with Metrolink, Foothill Transit, Omnitrans, and other affected transit providers will be conducted to request and comply with applicable procedures for any required temporary bus stop relocations or other disruptions to transit service during construction.

COM-14: As part of the demand management component, SBCTA will promote the use of public transit, ride sharing, and variable work hours to reduce the amount of traffic using the freeway and roadways in and around the construction zone. Through the public awareness campaign through SBCTA, large employers will be urged to consider staggered working hours and encourage their employees to use the transit system and rideshare resources. As such, during development of the Final TMP during the design-build phase, Caltrans and SBCTA will coordinate with Southern California Regional Rail Authority (SCRRA) to develop public awareness programs and incentive programs to encourage usage of SCRRA resources.

3.1.4.2 Relocations and Real Property Acquisition

This section addresses impacts to the communities as a result of required ROW acquisitions and project construction activities. The analysis is based on the results of the CIA (2015) and the FRIS (2016).

Regulatory Setting

Caltrans' Relocation Assistance Program (RAP) is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended) and Title 49 *Code of Federal Regulations* (CFR) Part 24. The purpose of the RAP is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. Please see Appendix D for a summary of the RAP.

All relocation services and benefits are administered without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 U.S.C. 2000d, *et seq.).* Please see Appendix C for a copy of Caltrans' Title VI Policy Statement.

Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (PL 91-646)

Frequently referred to as the Uniform Relocation and Assistance Act, this law provides for the uniform and equitable treatment of persons displaced from their homes or businesses by federally assisted programs. "Displaced persons" include any individual, family, corporation, partnership, or association required to move from real property or required to move personal property from real property acquired in part or in whole because of a written notice from the agency to vacate a property needed for public projects. Displacees may be entitled to moving cost reimbursements or replacement housing payments (i.e., purchase supplements, rental assistance, and down payments). Implementation protocols also provide for the acquisition of real property on a "fair market" basis, which permits displacees to obtain independent property appraisals and arbitration, if required.

Affected Environment

The project study area is located within an extensively urbanized area of Los Angeles and San Bernardino counties. The dominant land uses within the project study area consists of a mixture of urbanized mixed-use, residential, agricultural, industrial, commercial, and open space land uses. As described below, relocations of residential and nonresidential uses would occur in Montclair, Ontario, Fontana, and Colton.

Environmental Consequences

Permanent Impacts

No Build Alternative

No homes would be displaced, and no relocation of residences or businesses would be required under this alternative.

Alternative 2

Partial Acquisitions and Footing Easements: Under Alternative 2, six partial acquisitions would be required, totaling 0.33 acre. In addition, permanent underground footing easements would be needed at four parcels, totaling 0.14 acre.

Residential Displacements: No homes would be displaced, and no relocation of residential units would be required with implementation of Alternative 2.

Nonresidential Displacements: No nonresidential displacements would be required with implementation of Alternative 2.

Alternative 3 (Preferred Alternative)

Partial Acquisitions and Footing Easements: Under Alternative 3, 151 partial acquisitions would be required, totaling 8.69 acres. In addition, permanent underground footing easements would be needed at 128 parcels, totaling 4.71 acres. None of these partial acquisitions or permanent footing easements would result in the displacement of residences or businesses.

Residential Displacements: A total of 40 residential units would be displaced as a result of full property acquisitions to construct Alternative 3, including 21 single-family residences and 19 units in multi-family residences. Total resident displacements are estimated at 104, based on an average of 2.58 residents per unit calculated by the 2010 U.S. Census. Under Alternative 3, residential displacements would occur in the cities of Montclair, Ontario, and Fontana. Residential displacements are illustrated in Figure 3.1.4-4.

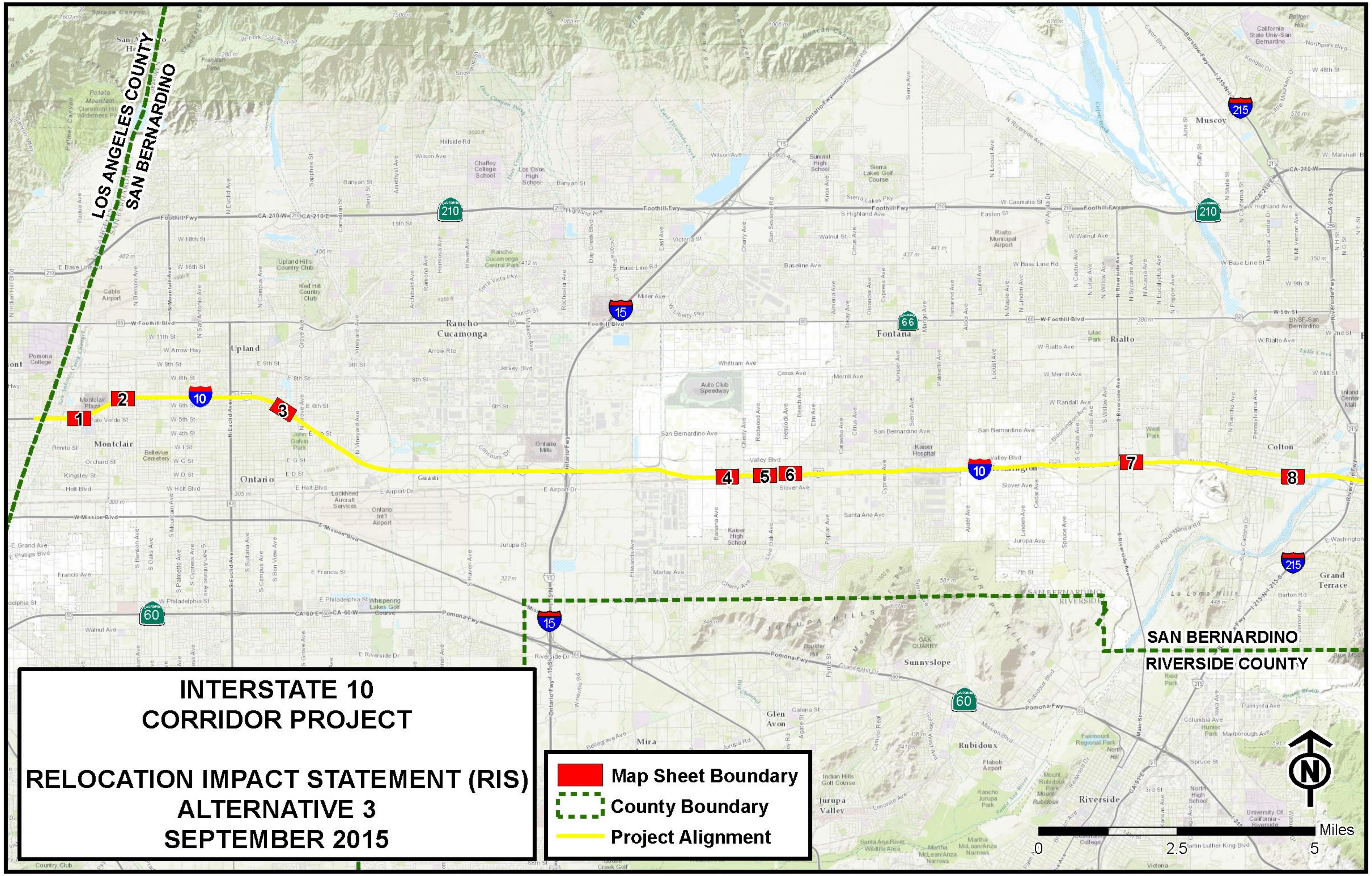

Figure 3.1.4-4 Residential and Nonresidential Impacts (Alternative 3 [Preferred Alternative]) (Index Map)

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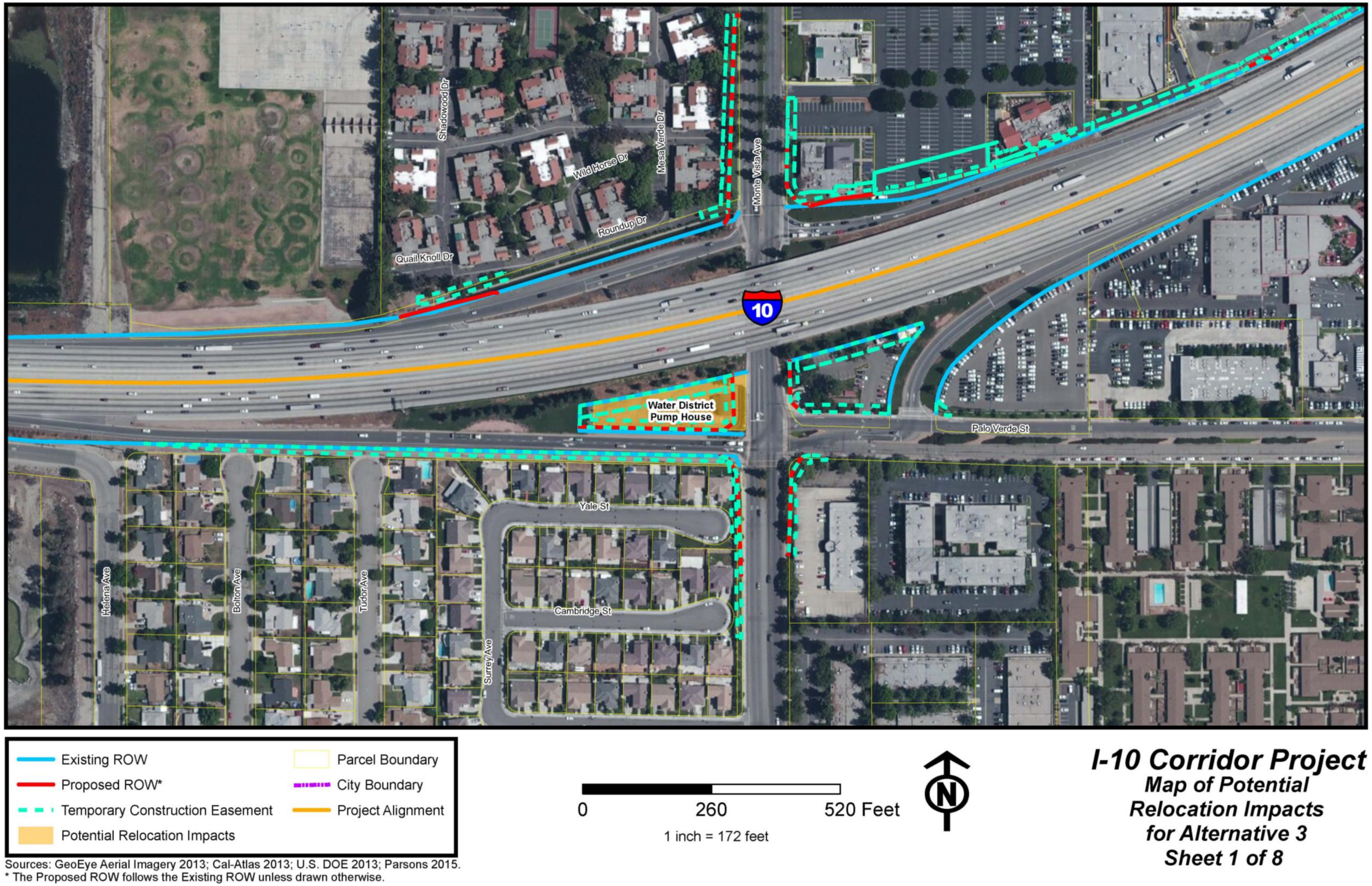

Figure 3.1.4-4 Residential and Nonresidential Impacts (Alternative 3 [Preferred Alternative]) (Page 1 of 8)

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Figure 3.1.4-4 Residential and Nonresidential Impacts (Alternative 3 [Preferred Alternative]) (Page 2 of 8)

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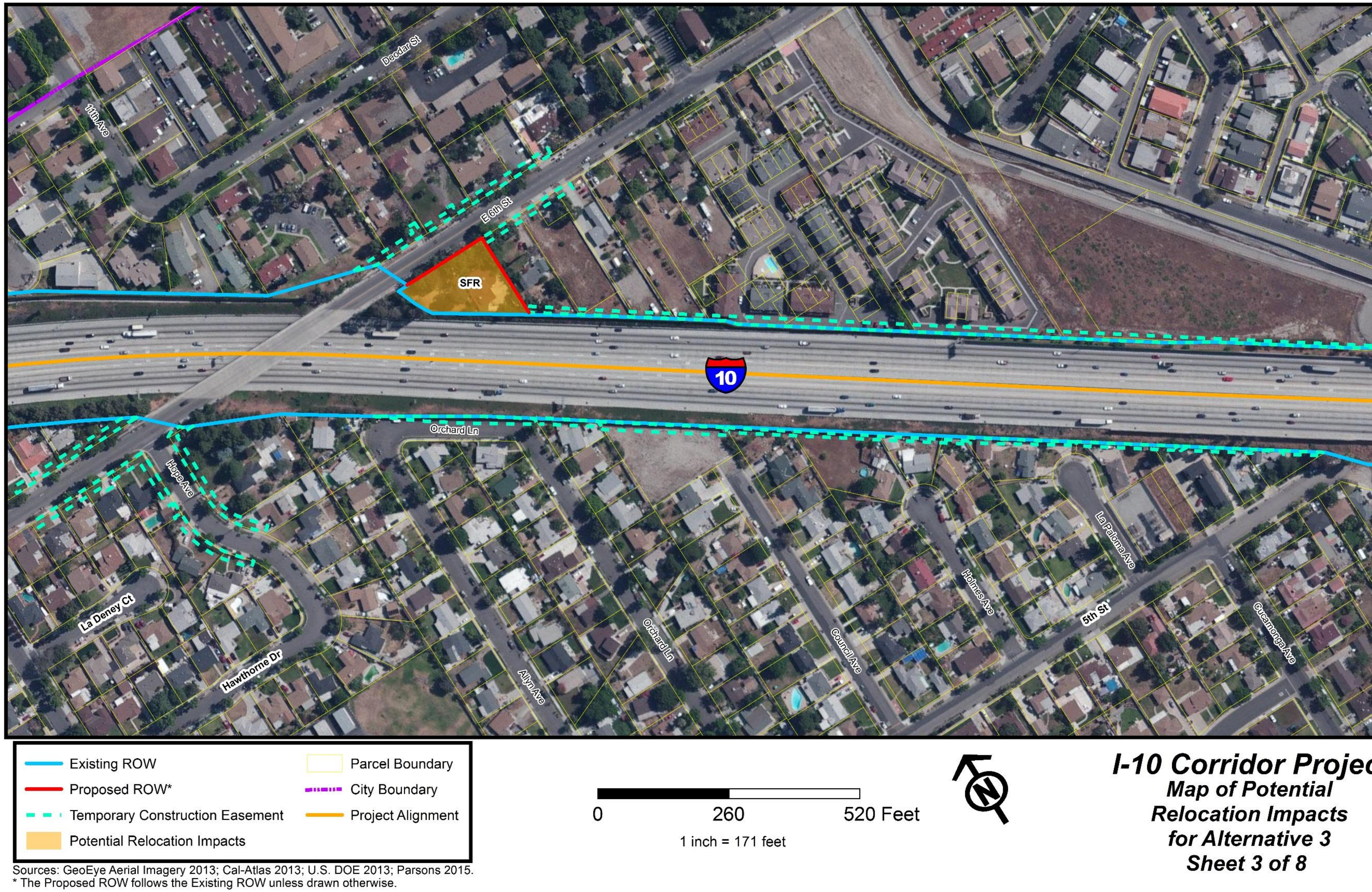

Figure 3.1.4-4 Residential and Nonresidential Impacts (Alternative 3 [Preferred Alternative]) (Page 3 of 8)

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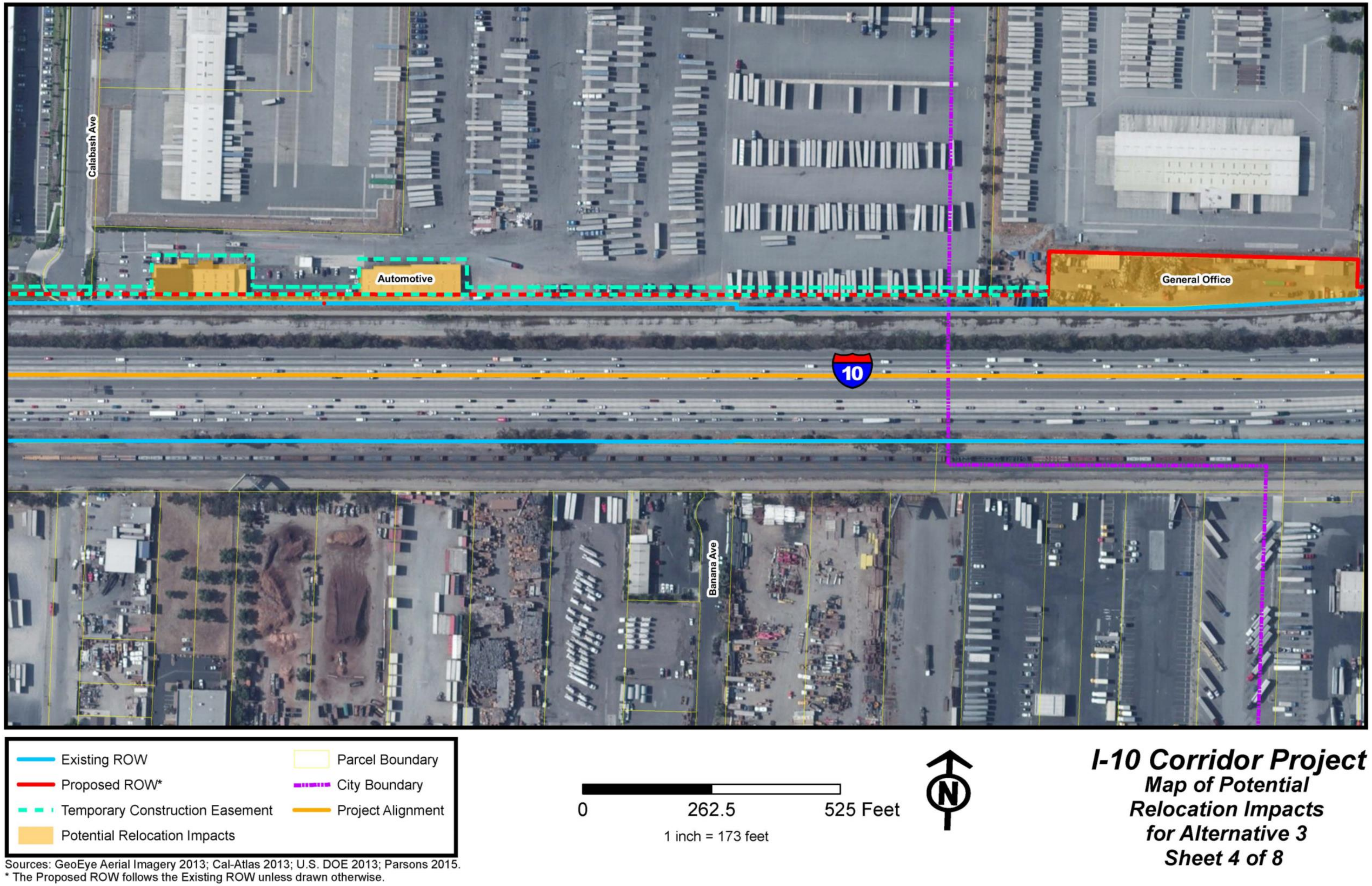

Figure 3.1.4-4 Residential and Nonresidential Impacts (Alternative 3 [Preferred Alternative]) (Page 4 of 8)

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Figure 3.1.4-4 Residential and Nonresidential Impacts (Alternative 3 [Preferred Alternative]) (Page 5 of 8)

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Sources: GeoEye Aerial Imagery 2013; Cal-Atlas 2013; U.S. DOE 2013; Parsons 2015.
* The Proposed ROW follows the Existing ROW unless drawn otherwise.

Figure 3.1.4-4 Residential and Nonresidential Impacts (Alternative 3 [Preferred Alternative]) (Page 6 of 8)

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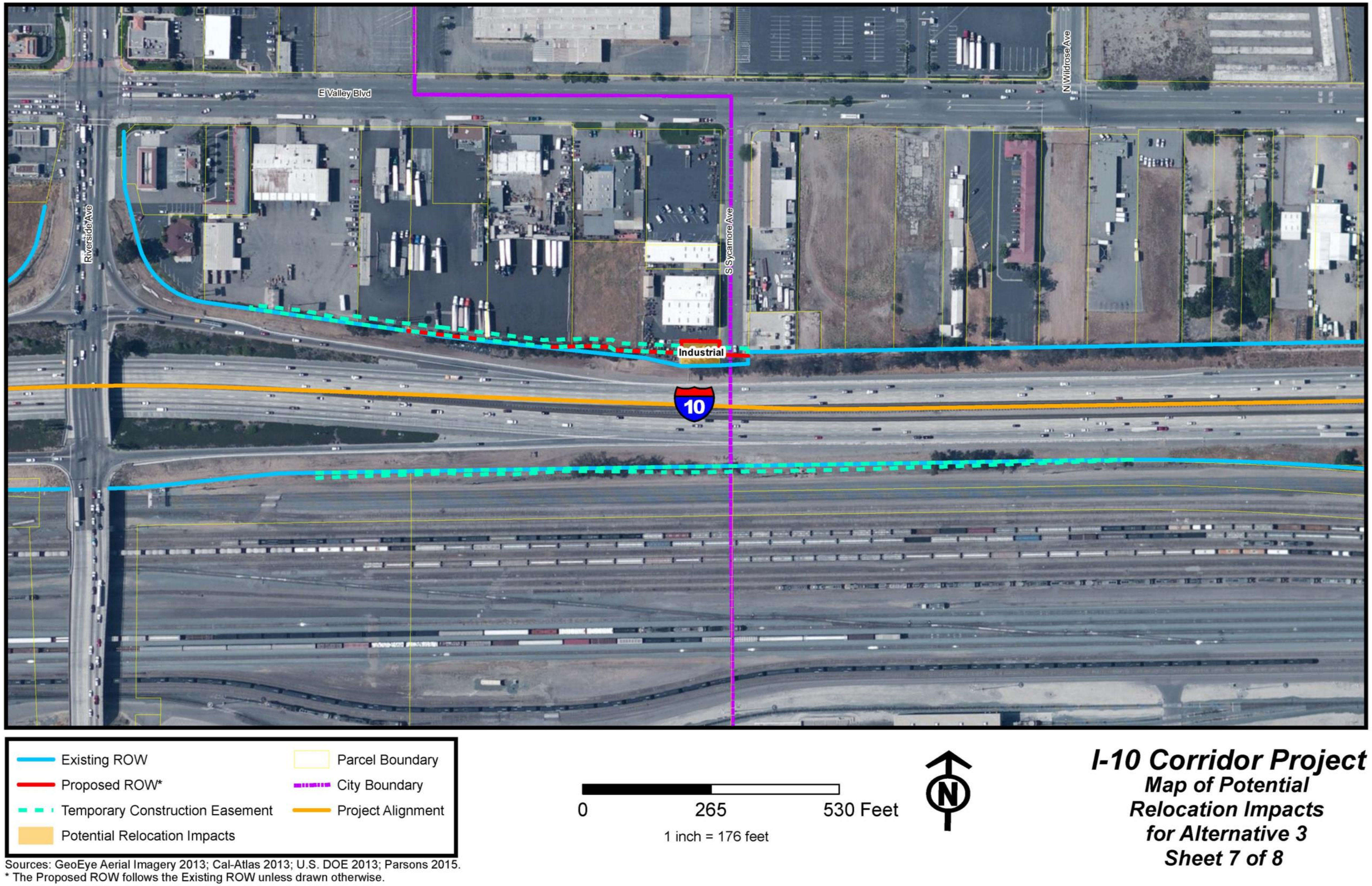

Figure 3.1.4-4 Residential and Nonresidential Impacts (Alternative 3 [Preferred Alternative]) (Page 7 of 8)

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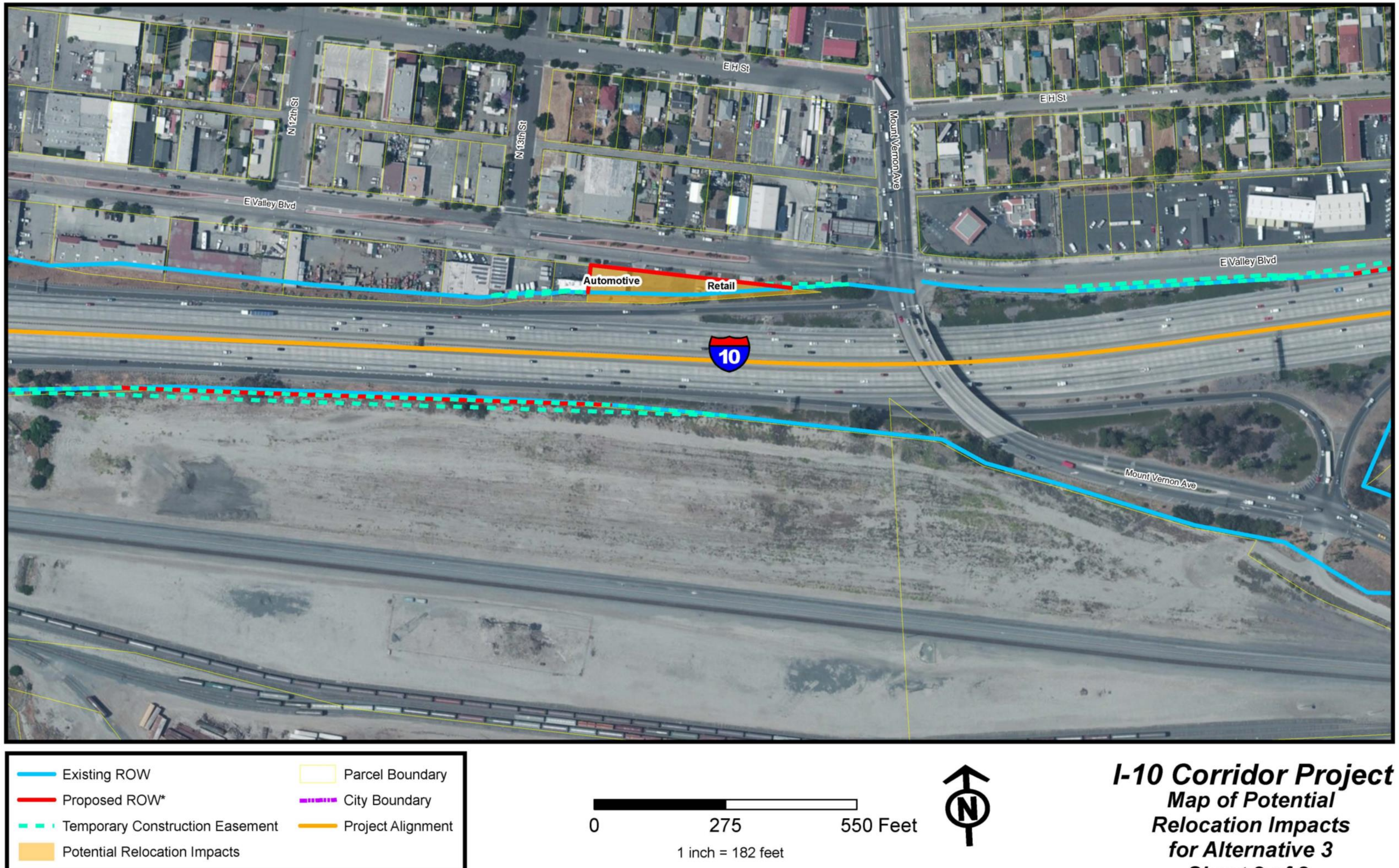

Sources: GeoEye Aerial Imagery 2013; Cal-Atlas 2013; U.S. DOE 2013; Parsons 2015.
* The Proposed ROW follows the Existing ROW unless drawn otherwise.

Figure 3.1.4-4 Residential and Nonresidential Impacts (Alternative 3 [Preferred Alternative]) (Page 8 of 8)

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Nonresidential Displacements: Based on preliminary engineering, permanent acquisition of 11 parcels that are currently used for nonresidential purposes would be required to construct Alternative 3. One utility-related structure would also be displaced to a different location on its existing parcel, which would not result in full acquisition of the parcel; the remaining nonresidential displacements would result from full parcel acquisitions. These nonresidential displacements would occur in the cities of Montclair, Fontana, Rialto, and Colton. The locations of nonresidential displacements are illustrated in Figure 3.1.4-4. To the extent feasible, during the project approval and design-build phase of the project, ROW impacts to these parcels would be minimized and some may be avoided. Property owners of impacted parcels would be entitled to compensation to the extent provided by law in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act, as amended.

Based on current market research conducted for the FRIS, there are comparable locations where these businesses can be reestablished. Relocation assistance payments and counseling would be provided to persons and businesses subject to replacement in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and in conformance with all applicable regulations. All real property to be acquired would be appraised to determine its fair market value. An offer of just compensation, not less than the approved appraisal, would be made to each property owner.

Onsite appraisals to determine actual market value would be conducted for each property to be relocated or affected based on current market conditions prior to acquisition. Any person (i.e., individual, family, corporation, partnership, or association) who moves from real property or moves personal property from real property as a result of the acquisition of the real property, or as a result of a written notice from Caltrans to relocate from the real property required for a transportation project is eligible for Relocation Assistance, including Last Resort Housing benefits, should that be necessary. All activities would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and the Caltrans ROW Manual.

Impacts associated with the displacement of the 12 businesses could result in losses to property and sales tax revenue. This loss in tax revenue is anticipated to be minimal, with businesses relocating within the same municipality and continuing to pay taxes after resettling.

To the extent practicable, businesses would be relocated within the areas and jurisdictions in which they were previously located. It should be noted, however, that tax-related impacts to the jurisdiction in which it is located would only result if the business cannot be relocated within the same jurisdiction or if the business ceases operation. Moreover, partial acquisition of property by the proposed project would not normally affect tax revenue unless the use of the parcel is significantly affected. Additional information on the 12 nonresidential displacements that would occur under Alternative 3 is provided below.

Monte Vista Water District Pump House (Montclair): During project construction, the Monte Vista Water District pump house facility would be displaced in Montclair. During the design-build phase, Caltrans will work with the Monte Vista Water District to reconfigure the site, relocate the pump house, and maintain temporary and permanent utility service to the District's customers. Closure and relocation of the pump house is not anticipated to result in temporary or permanent job loss for Monte Vista Water District employees, or loss of income or tax revenue.

Werner Enterprises, Inc. (Fontana): Werner Enterprises, Inc is a transportation and logistics company founded in 1956. Werner is a large truckload carrier in the United States with locations worldwide. Werner Logistic's portfolio includes freight management, truck brokerage, intermodal and international services. The Fontana terminal offers a variety of amenities to professional drivers. According to records obtained from manta.com, the Fontana branch terminal of Werner Enterprises, Inc. has annual revenues between $5 and $10 million with an a unknown number of employees. Conservative estimates of employees at this location based on employment at other Werner terminal locations in the country and other trucking businesses in the area is around 40 employees. Under Alternative 3, partial acquisition of the parcel (Assessor's Parcel Number [APN] 023-418-112) would be necessary, requiring the relocation of two buildings on the 23.56 acre property. The site could be reconfigured to accommodate relocation of the buildings, resulting in no impacts to the business, its employees, or tax revenues resulting from its operations. Otherwise, as discussed previously, based on analysis conducted for the FRIS, ample relocation properties are available for this business. All efforts would be made to relocate displaced businesses affected by Alternative 3 within the same city or area vicinity, thereby minimizing income or tax revenue loss.

Titan Industrial Metal Corporation (Fontana): Titan Industrial Metal Corporation, also known as TIMCORP, is a wholesale scrap metal recycling merchant that was established in 2004. TIMCORP buys and sells aluminum, brass, copper, stainless steel, and other scrap metals, and it provides services such as cleanups and removal of junk vehicles, machinery, and truck bodies. According to records obtained on January 29, 2015, from manta.com, this company has annual revenues of $2.1 million and 12 employees. Under Alternative 3, the entire parcel (Assessor's Parcel Number [APN] 023-420-101) would be acquired, which would require the permanent relocation of this business. As discussed previously, based on analysis conducted for the FRIS, ample relocation properties are available for this business. All efforts would be made to relocate displaced businesses affected by Alternative 3 within the same city or area vicinity, thereby minimizing income or tax revenue loss.

Automotive Repair Businesses (Fontana and Colton): Of the 12 total nonresidential displacements, 6 are informal automotive repair businesses, which are operated on parcels zoned as single-family residential, in Fontana and Colton. During windshield surveys (2014) at each of these parcels, no signage with business names was observed, nor was any online presence confirmed for these informal businesses. Therefore, given the informal nature and lack of identifying information available for these businesses, no further information on years of operation, number of employees, or estimated income and tax revenue is available. For the purposes of impact analysis, each automotive repair facility is assumed to have 5 employees, which is typical of similarly sized automotive repair businesses within the study corridor. Under Alternative 3, the entire parcel for each of the 6 businesses would be acquired, which would require the permanent relocation of this business within the same city or area vicinity; employees could experience income loss if the business owners decide not to relocate or dismiss existing employees when relocated.

Peterson Equipment Systems Incorporated (Fontana): This business provides construction equipment and supplies, and it is also a transportation company licensed to haul general freight within California. During windshield surveys at the site, no employees were observed. At the time of the site visit in 2014, the parcel was being used for staging of concrete k-rails, traffic control devices, and other construction materials. According to the information listed on the City of Fontana's Chamber of Commerce website, this company has 15 employees and annual sales between $1 million and $1,999,999. Under Alternative 3, the entire parcel (APN 023-518-204) would be acquired, which would require the permanent relocation of this business. As discussed previously, based on analysis conducted for the FRIS, ample relocation properties are available for this business.

Myers Select Material Handling (Rialto): The Myers Select Material Handling business in Rialto sells new and used forklifts, and it provides forklift rentals, repairs, and training. The business operates out of four adjacent parcels (APN 013-221-105, 013-221-106, 013-221-108, and 013-221-111). The impacted parcel (APN 013-221-108) contains one traditional single-family residential building, which has been converted for use as a business office. Although a full parcel acquisition would occur, no closure, displacement, or other significant impact to the business is anticipated. Currently, less than half (0.61 acre of 1.41 acres) of APN 013-221-111 is actively used. The remnant 0.80 acre within the parcel is undeveloped. Therefore, it is anticipated that the remnant acreage within the site could be reconfigured to accommodate relocation of the business office, resulting in no impacts to the business, its employees, or tax revenues resulting from its operations.

Turfstore Direct & 4West (Colton): These two businesses located on a single parcel specialize in artificial turf products and off road vehicles, respectively. No published information is available on the annual revenues or number of employees for this establishment. A review of records was conducted on January 29, 2015, on www.manta.com for five similar establishments in the study corridor area. Based on this review, it is anticipated that this business has annual revenues between $500,000 and $1 million, and has between two and four employees. Under Alternative 3, the entire parcel (APN 016-304-129) would be acquired, which would require the permanent relocation of these businesses within the same city or area vicinity; employees could experience income loss if the business owner decides not to relocate or dismisses existing employees when relocated.

Economic Impacts to Property Taxes, Sales Taxes, and Employment: When properties are permanently acquired for new ROW, the property tax base is reduced. The removal of residences and business operations and the acquisition of ROW for the proposed project for Alternative 3 would result in the loss of property tax revenue.

Alternative 3 may require the displacement of 40 residential units (21 single-family residences and 19 multi-family units) and 12 nonresidential properties, as discussed in the FRIS. Most of the residential acquisitions would occur in Fontana, along with 4 single-family residences in Montclair and a single-family residence in Ontario. According to the jurisdiction’s 2013-2014 Annual Budgets, property tax revenue for Montclair was $2,459,398, Ontario was $41,250,000, and Fontana was $108,133,010. Fontana’s property tax revenue is significantly higher than the other affected jurisdictions along the project corridor, and it is anticipated the acquisition of these residential properties in any of the affected cities would not result in a significant decrease in property tax revenue as a result of the proposed project.

Temporary impacts are anticipated to have little or no impact on property values in the proposed project area because the project would be constructed along an existing ROW, business access would be maintained throughout construction, and temporary impacts would end when construction of the proposed project is finalized.

Sales tax may decrease as a result of the 12 nonresidential properties that may be acquired or displaced in Montclair, Fontana, Rialto, and Colton. Displacement of the Water District Pump House would not result in any changes to sales tax because it would be relocated on the same parcel. As discussed in the CIA, the total sales tax revenue collected in 2013 in Fontana was $30,300,000, $7,218,000 in Rialto, and $5,827,000 in Colton. Acquisition of the nonresidential properties would result in an insignificant decrease in sales tax revenue along the total project area because most businesses would be relocated within the same city or area vicinity and the tax would remain within the City’s tax base. The overall impact would be less than significant due to the small proportion of sales tax generated from these businesses compared to the overall sales tax generated in the cities. Impacts to sales tax would be temporary until the relocation process has been completed for the project.

As stated earlier in this section, up to 12 businesses would be subject to full acquisition to accommodate the proposed corridor improvements. Based on conservative estimates, up to 101 employees would become unemployed if the owners of these businesses decided to discontinue their businesses. According to the State of California Employment Development Department, the unemployment rate of San Bernardino County was 6.5 percent, or 59,800 unemployed workers, in 2015. Given the scale of the local and regional economies, the potential loss of employment as a result of the proposed business relocations would not adversely affect the local and regional economy over the long term. Impacts to employment would be temporary until the relocation process has been completed for the project.

Temporary/Construction Impacts

No Build Alternative

Because there would be no construction activity and no relocation of any residences or businesses, no indirect or secondary impacts on community or business disruption are anticipated.

Alternative 2

Proposed improvements along I-10 would occur mostly within the existing Caltrans ROW; however, 122 TCEs from adjacent public and privately owned parcels are anticipated to accommodate construction of the proposed improvements. Areas and/or activities would be restricted within TCEs when construction activities are occurring, and temporary use restrictions are not anticipated to result in substantial effects on business operations, neighborhoods, or community cohesion.

Alternative 3 (Preferred Alternative)

Temporary construction-related project effects would be the same as Alternative 2, but would require 426 TCEs.

Avoidance, Minimization, and/or Mitigation Measures

COM-15: Where acquisition and relocation are unavoidable, the provisions of the Uniform Act and the 1987 Amendments, as implemented by the Uniform Relocation Assistance and Real Property Acquisition Regulations for Federal and Federally Assisted Programs adopted by the United States Department of Transportation (March 2, 1989) and where applicable, the California Public Park Preservation Act of 1971, will be followed. An appraisal of the affected property will be obtained, and an offer for the full appraisal will be made.

3.1.4.3 Environmental Justice

Executive Order (EO) 12898 requires each federal agency (or its designee) to take the appropriate and necessary steps to identify and address “disproportionately high and adverse” effects of federal proposed projects on the health or environment of minority and low-income populations.

Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* signed by President William J. Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines. For 2016, this was $24,300 for a family of four.

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have also been included in this project. Caltrans’ commitment to upholding the mandates of Title VI is demonstrated by its Title VI Policy Statement, signed by the Director, which can be found in Appendix C of this document.

Affected Environment

The environmental justice analysis was conducted using census tract information from the 2010 Census for the referenced populations of Los Angeles County, San Bernardino County, and the census tracts located within 0.25 mile of the proposed project, as shown in Table 3.1.4-6. To accurately reflect the existence of environmental justice populations in any given census tract, the municipality within which most of the tract is located was selected as the reference community, providing a context regarding potential future impacts associated with the project. The following analysis provides a comparison of four measures with which to evaluate environmental justice:

- Percentage of non-white residents in the study area census tracts, as shown in Figure 3.1.4-5 (Alternative 2) and Figure 3.1.4-6 (Alternative 3 [Preferred Alternative])
- Percentage of Hispanic or Latino residents in the study area census tracts, as shown in Figure 3.1.4-7 (Alternative 2) and Figure 3.1.4-8 (Alternative 3 [Preferred Alternative])
- Percentage of population below poverty level in the study area census tracts, as shown in Figure 3.1.4-9 (Alternative 2) and Figure 3.1.4-10 (Alternative 3 [Preferred Alternative])
- Median household income in the study area census tracts, as shown in Figure 3.1.4-11 (Alternative 2) and Figure 3.1.4-12 (Alternative 3 [Preferred Alternative])

Table 3.1.4-6 Environmental Justice

Census Tract	Non-White	Hispanic or Latino	Persons below Poverty Level	Median Household Income
2.01 (Montclair)	74.3%	60.3%	21.4%	$52,279
2.03 (Montclair)	84.0%	64.5%	9.4%	$60,625
2.05 (Montclair)	78.4%	51.8%	12.9%	$55,824
8.25 (Upland)	**82.3**	54.7%	18.7%	$41,576

Table 3.1.4-6 Environmental Justice

Census Tract	Non-White	Hispanic or Latino	Persons below Poverty Level	Median Household Income
8.26 (Upland)	63.2%	43.1%	7.8%	$57,127
9.04 (Upland)	**72.2%**	61.9%	12.9%	$46,218
10.01 (Ontario)	78.9%	65.1%	13.7%	$41,848
11.03 (Ontario)	43.4%	31.7%	3.4%	$67,674
11.04 (Ontario)	66.7%	60.5%	11.6%	$60,016
12 (Ontario)	59.1%	44.6%	10.7%	$62,270
13.05 (Ontario)	91.2%	85.4%	14.7%	$46,357
13.08 (Ontario)	86.4%	75.2%	25.6%	$49,406
13.09 (Ontario)	85.1%	63.8%	23.7%	$55,087
13.10 (Ontario)	78.8%	70.4%	9.0%	$58,882
13.12 (Ontario)	74.1%	55.1%	5.1%	$65,139
15.04 (Ontario)	88.9%	66.2%	28.9%	$46,343
16 (Ontario)	**95.2%**	94.7%	30.0%	$35,974
21.09 (Ontario)	77.1%	42.0%	5.4%	$51,259
22.04 (Unincorporated San Bernardino County/Fontana)	87.5%	80.4%	19.2%	$50,716
25.01 (Unincorporated San Bernardino County/Fontana)	91.4%	85.8%	9.2%	$50,086
26.01 (Unincorporated San Bernardino County/Fontana)	83.9%	64.3%	11.2%	$75,230
33.01 (Fontana)	84.9%	79.2%	16.9%	$37,500
33.02 (Fontana/Bloomington)	81.6%	70.4%	22.7%	$39,094

Table 3.1.4-6 Environmental Justice

Census Tract	Non-White	Hispanic or Latino	Persons below Poverty Level	Median Household Income
36.06 (Bloomington/Rialto)	91.7%	85.0%	15.4%	$43,478
36.09 (Rialto)	91.3%	84.6%	13.1%	$45,890
36.12 (Rialto/Colton)	85.2%	59.6%	9.2%	$50,340
40.01 (Fontana/Bloomington)	79.6%	74.4%	15.8%	$49,926
40.04 (Rialto/Colton)	77.8%	62.9%	12.9%	$50,755
66.01 (Unincorporated San Bernardino County/Colton)	91.1%	88.7%	23.5%	$45,987
70 (Colton)	91.7%	85.7%	22.1%	$37,857
71.08 (Colton)	75.4%	46.7%	13.3%	$32,949
71.10 (Colton/San Bernardino)	77.8%	40.4%	6.1%	$79,158
72 (San Bernardino/Loma Linda)	81.3%	49.7%	24.8%	$41,012
73.03 (San Bernardino/Loma Linda)	54.2%	26.8%	24.5%	$38,052
73.05 (Loma Linda)	72.0%	49.0%	22.5%	$43,833
78 (Redlands/Unincorporated San Bernardino County)	52.8%	25.6%	10.1%	$51,380
80.02 (Redlands)	**82.2%**	65.6%	27.0%	$41,351
81 (Redlands)	45.2%	27.8%	15.2%	$39,018
84.01 (Redlands)	47.0%	33.9%	5.0%	$70,104
84.03 (Redlands)	28.0%	13.6%	4.0%	$88,085
84.04 (Redlands)	51.7%	40.3%	17.4%	$36,723
85 (Redlands)	27.8%	12.1%	4.8%	$113,413

Table 3.1.4-6 Environmental Justice

Census Tract	Non-White	Hispanic or Latino	Persons below Poverty Level	Median Household Income
87.04 (Yucaipa)	35.7%	27.6%	8.3%	$47,572
87.05 (Yucaipa)	38.6%	29.9%	9.0%	$50,492
87.06 (Redlands/Unincorporated San Bernardino County/Yucaipa)	32.9%	19.7%	9.1%	$75,919
124 (Colton/San Bernardino)	**94.3%**	75.5%	13.0%	$43,328
125 (Colton)	95.4%	91.5%	33.8%	$32,618
127 (Ontario)	66.3%	57.3%	8.4%	$78,295
4020.01 (Claremont)	**65.1%**	38.1%	18.6%	$35,927
4020.02 (Claremont)	**55.3%**	33.7%	7.7%	$70,938
4021.01 (Pomona)	92.0%	67.9%	15.1%	$61,509
4021.02 (Pomona)	86.9%	56.1%	14.7%	$47,944
4022 (Pomona)	74.3%	47.0%	6.3%	$61,649
4023.01 (Pomona)	90.8%	80.3%	17.8%	$51,781
4023.03 (Pomona)	86.6%	76.6%	37.3%	$46,058
4026 (Pomona)	83.4%	73.8%	18.4%	$45,941
4027.03 (Pomona)	88.8%	74.0%	13.2%	$56,014
City of Bloomington	85.87%	81.0%	21.7%	$48,985
City of Claremont	41.11%	19.8%	8.0%	$89,648
City of Colton	86.96%	71.0%	23.3%	$39,915
City of Fontana	84.56%	66.8%	16.0%	$64,995
City of Loma Linda	63.03%	22.2%	17.7%	$58,259
City of Montclair	85.56%	70.2%	19.0%	$48,767
City of Ontario	81.76%	69.0%	18.3%	$54,156

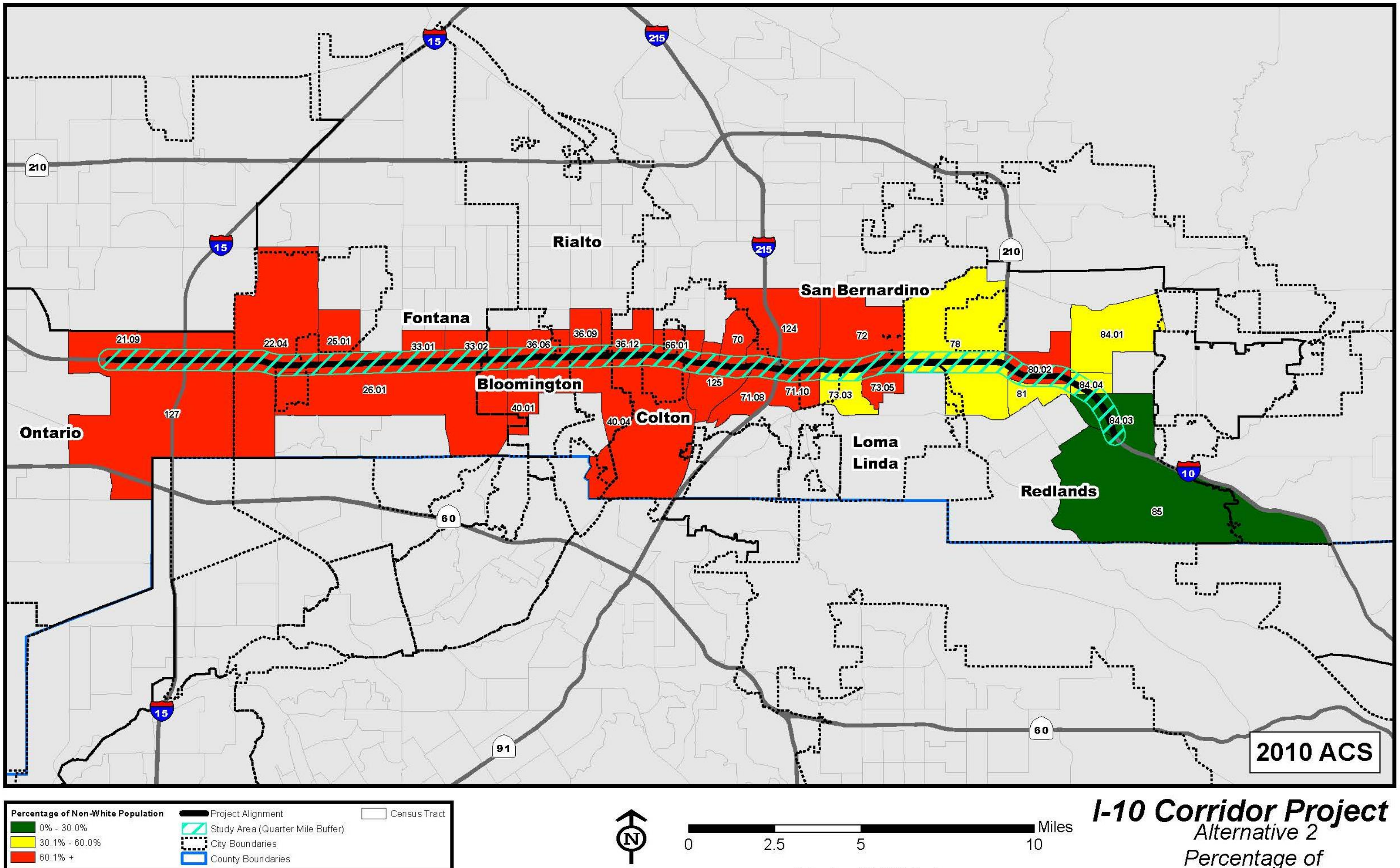
Table 3.1.4-6 Environmental Justice

Census Tract	Non-White	Hispanic or Latino	Persons below Poverty Level	Median Household Income
City of Pomona	87.47%	70.5%	22.6%	$48,993
City of Redlands	46.03%	30.3%	14.5%	$67,112
City of Rialto	87.42%	67.6%	20.3%	$50,277
City of San Bernardino	80.96%	60.0%	33.0%	$38,774
City of Upland	55.83%	38.0%	14.8%	$61,551
City of Yucaipa	34.07%	27.1%	16.4%	$58,506
Alternative 2 Study Area	75.2%	58.9%	15.6%	$52,051
Alternative 3 Study Area	73.7%	57.8%	15.1%	$52,839
Los Angeles County	71.6%	44.6%	15.7%	$55,476
San Bernardino County	65.3%	39.2%	14.8%	$55,845

*Alternative 2 study area includes all shaded census tracts. Alternative 3 study area includes all census tracts included in the table.

*Non-white percentages in bold indicate values meaningfully greater than their respective reference community.

Source: U.S. Census, American Community Survey, 5-year estimates, 2010.



Sources: US Census Bureau 2000; US Census Bureau 2010; Parsons 2014.

Figure 3.1.4-5 Percentage of Non-White Population (Alternative 2)

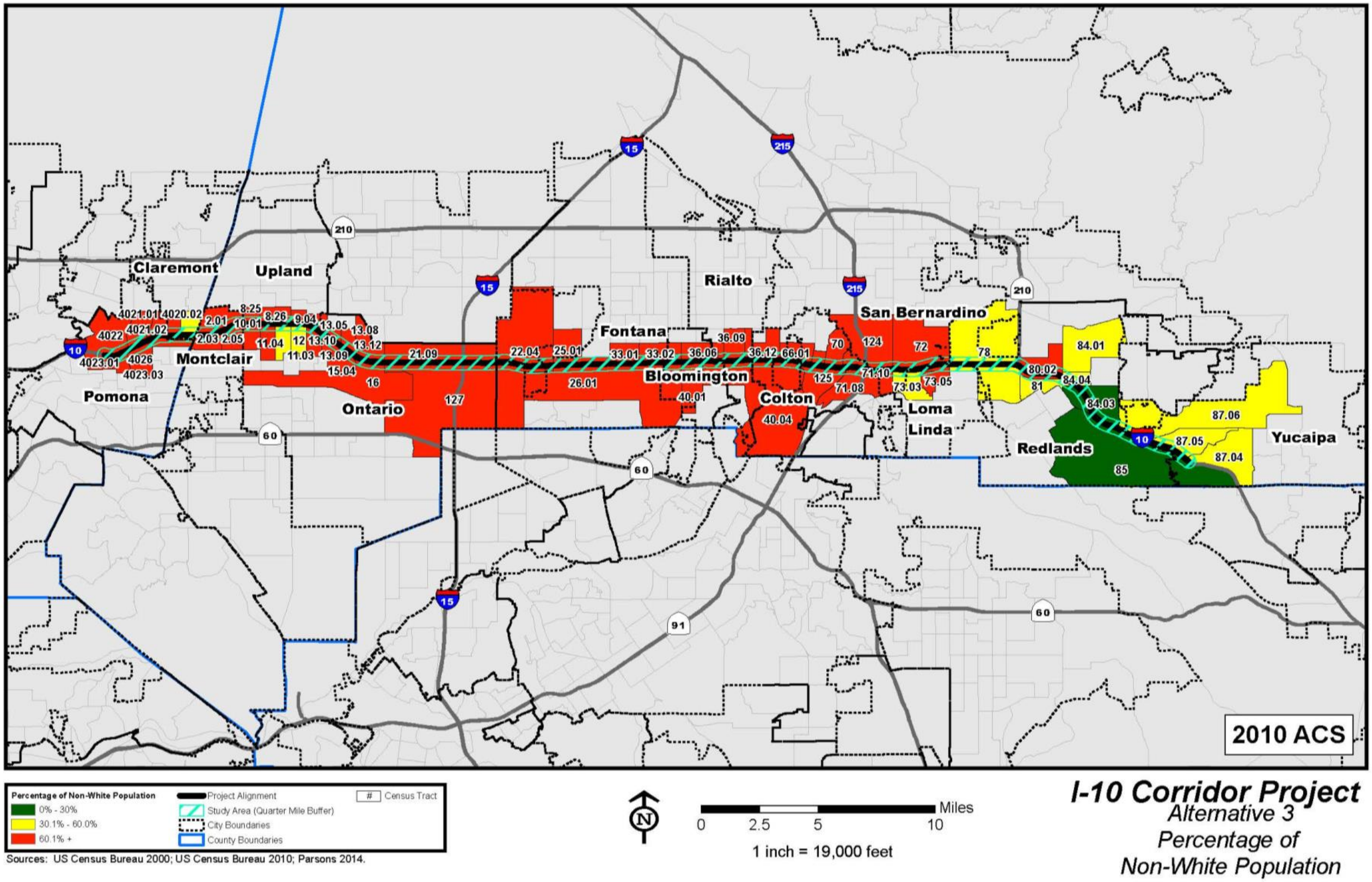


Figure 3.1.4-6 Percentage of Non-White Population (Alternative 3 [Preferred Alternative])

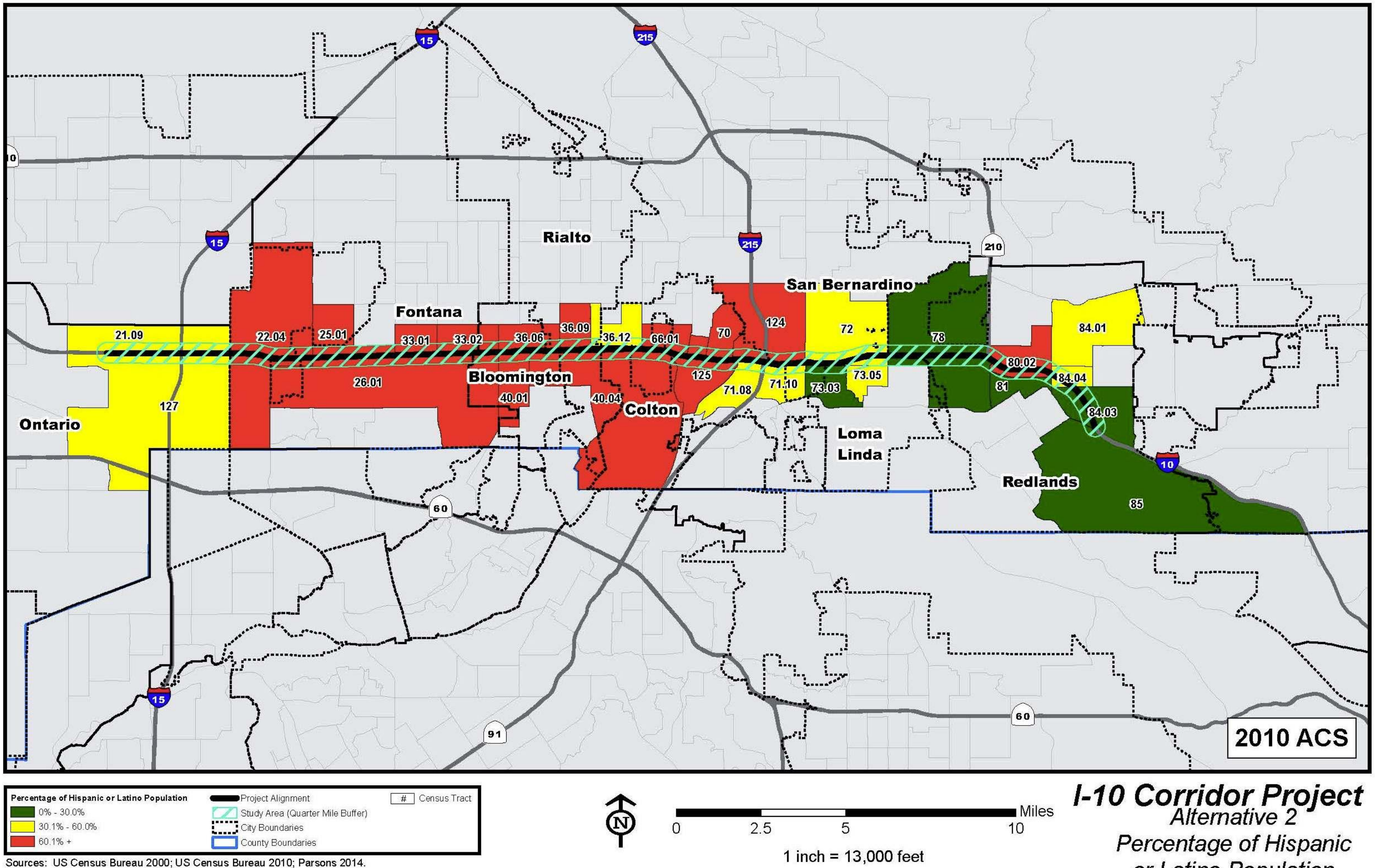


Figure 3.1.4-7 Percentage of Hispanic or Latino Population (Alternative 2)

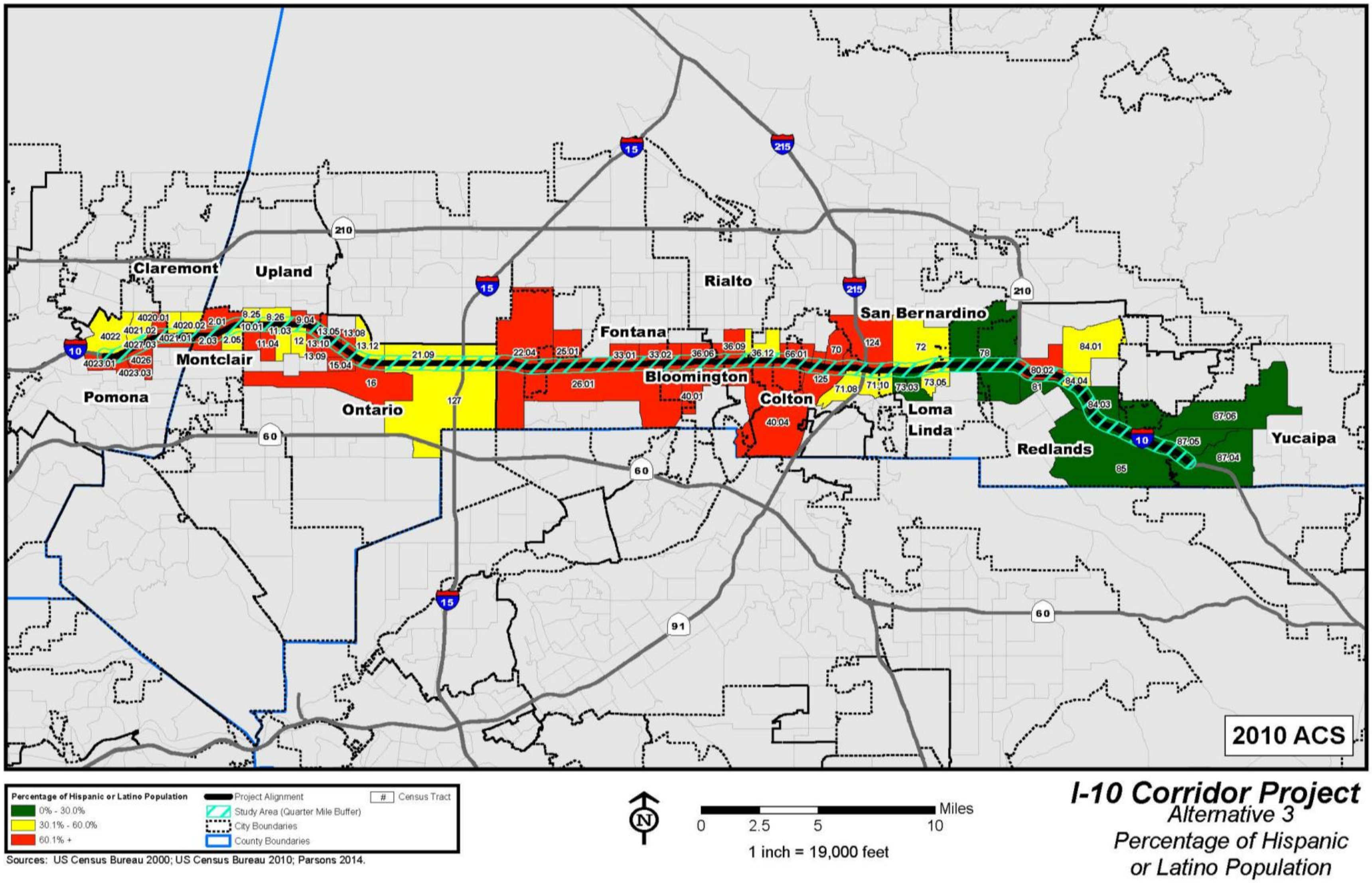


Figure 3.1.4-8 Percentage of Hispanic or Latino Population (Alternative 3 [Preferred Alternative])

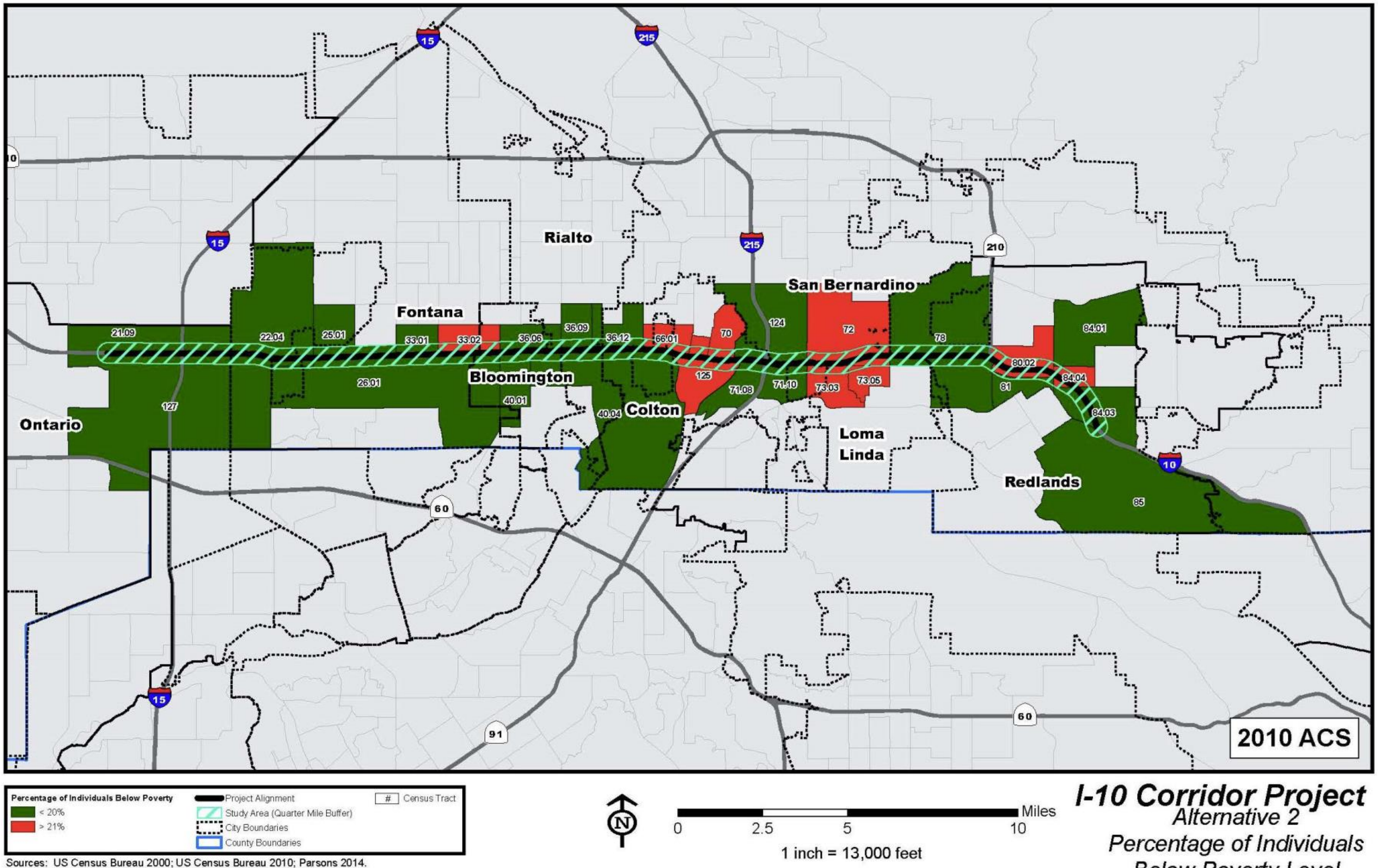


Figure 3.1.4-9 Percentage of Individuals below Poverty Level (Alternative 2)

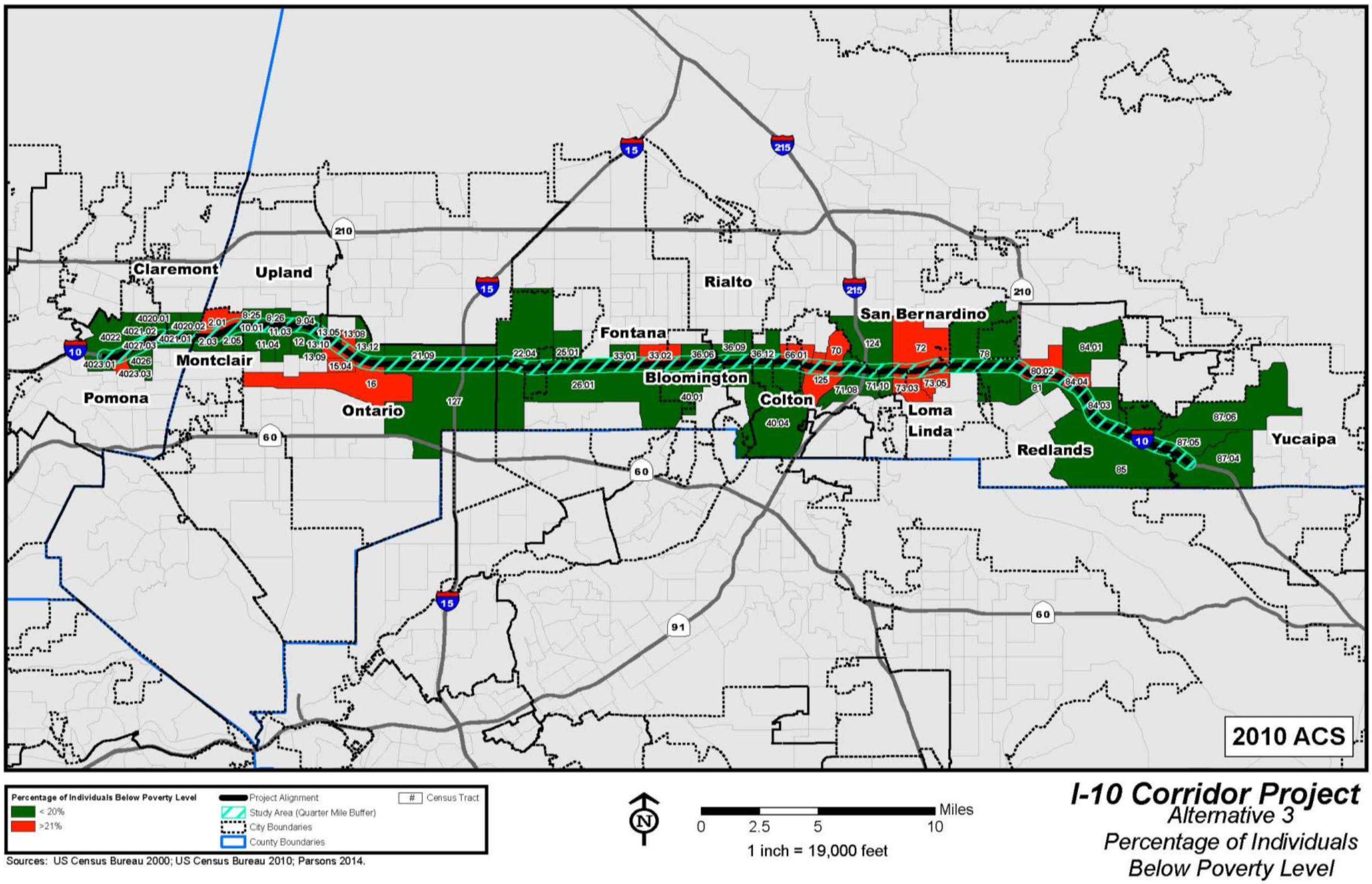


Figure 3.1.4-10 Percentage of Individuals below Poverty Level (Alternative 3 [Preferred Alternative])

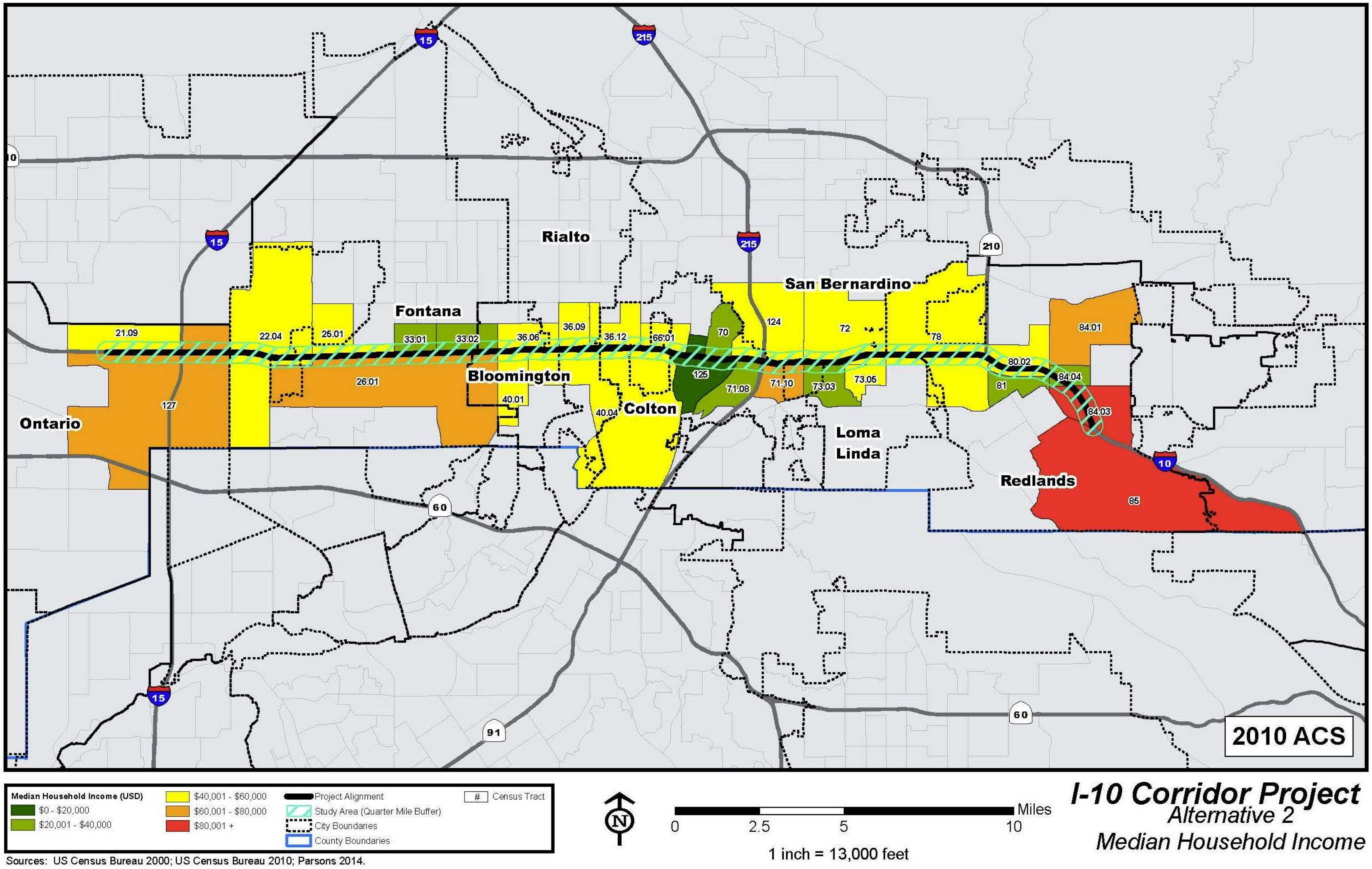


Figure 3.1.4-11 Median Household Income (Alternative 2)

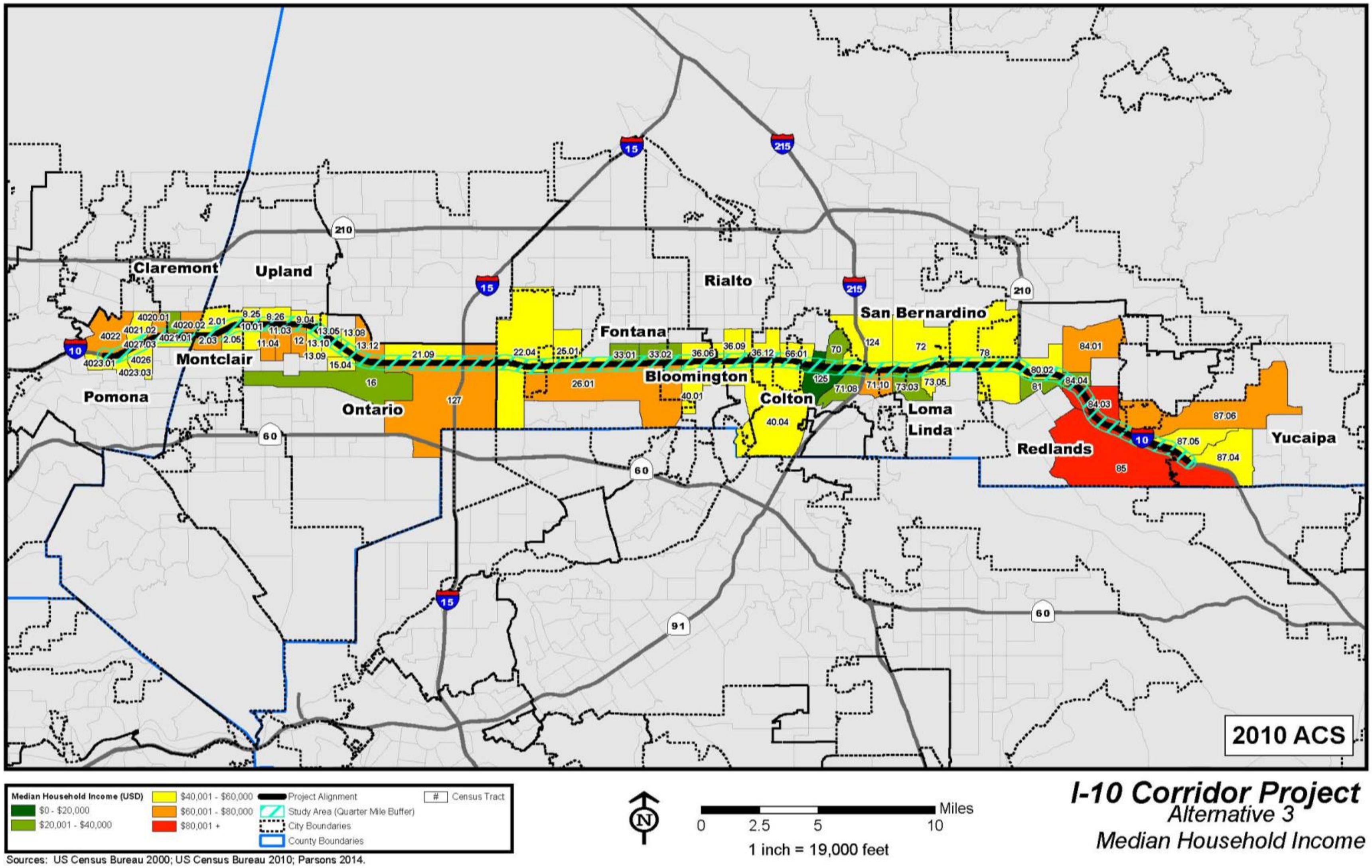


Figure 3.1.4-12 Median Household Income (Alternative 3 [Preferred Alternative])

Environmental Consequences

No Build Alternative

The No Build Alternative would maintain the current configuration of I-10 in the study area. Under the No Build Alternative, the project would not be constructed, and congestion would continue to worsen for environmental justice populations and non-environmental justice populations without the proposed improvements.

Common to Both Build Alternatives

Title VI requires that no person, because of race, color, religion, national origin, sex, age, or handicap, be excluded from participation in, be denied benefits of, or be subjected to discrimination by any federal aid activity. EO 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, issued in February 1994, requires that disproportionately high and adverse health or environmental impacts to minority and low-income populations be avoided or minimized to the extent feasible.

Minority and low-income populations could potentially be affected in several ways. The most obvious potential effect of the proposed project is that residents' homes and businesses could be directly displaced or portions of property affected that would require relocation. However, the project could also provide benefits to minority and low-income populations if transportation efficiency improves or if transit services are made more accessible or convenient. The Express Lanes would be free for vehicles carrying three or more passengers, motorcycles, public transit vehicles (this includes individuals without licenses or access to automobiles and the elderly), CHP vehicles, Caltrans vehicles, and emergency vehicles responding to an emergency.

Two general issues are weighed for environmental justice analysis for transportation projects:

- Whether the adverse impact(s) of the proposed project will be predominantly borne by a minority or low-income population group; or
- Whether the adverse impact(s) of the proposed project will be appreciably more severe or greater in magnitude than the adverse impacts to nonminority and/or non-low-income population groups even after mitigation measures and offsetting project benefits are considered.

"Low-income" and "minority populations" are defined as any readily identifiable group of low-income or minority persons who live in geographically adjacent areas, or groups of geographically dispersed or transient persons who would be similarly affected by a proposed FHWA program, policy, or activity. Transportation agencies such as Caltrans and SBCTA must collect and evaluate data on minority and income characteristics, increase public participation in decision making, and provide mitigation measures to avoid or minimize the adverse effects of the federal action.

The following four measures are used as the basis to evaluate environmental justice:

- Percentage of non-white residents
- Percentage of Hispanic or Latino residents
- Percentage of population below poverty level
- Median household income

For the purposes of this analysis, the approach for identifying environmental justice communities published in *Promising Practices for EJ Methodologies in NEPA* Reviews (NEPA Committee, 2016) was adopted to identify minority and low-income populations within the study area. To identify minority populations, the first step was to analyze and identify census tracts with minority populations that meet or exceed 50 percent of the total tract population for heightened focus. Step two determined whether the percentage of minority residents in those tracts identified in step one were "meaningfully greater" than the minority population percentage of the municipality within which most of the tract is encompassed, the reference community. Though what constitutes "meaningfully greater" varies by agency, it has become acceptable in planning studies that "meaningfully greater" is represented by 10 percent or greater. To identify low-income populations, the Department of Health and Human Services (HHS) discloses the poverty threshold for identifying low-income populations in the affected environment. For 2016, this is $24,300 for a family of four.

After conducting the "meaningfully greater" analysis described above, two census tracts within the Alternative 2 footprint and seven census tracts within the Alternative 3 footprint were identified as having a meaningfully greater minority non-white population compared to its reference municipality. One tract in the cities of Colton/ San Bernardino (Census Tract 124) and one in the city of Redlands (Census Tract 80.02) were identified for Alternative 2. Under Alternative 3, two of the tracts are in the city of Upland (Census Tracts 8.25 and 9.04), one in the city of Ontario (Census Tract 16), one in the city of Redlands (Census Tract 80.02), one in the city of Colton/ San Bernardino (Census Tract 124), and two in the city of Claremont (Census Tracts 4020.01 and 4020.02). The median household income for each of the reference municipalities and individual census tracts studied are above the HHS poverty threshold for an average family size of four of $24,300, which indicates the study area as a whole and each individual census tract studied is not considered to be a low-income population; therefore, no census tracts were identified as environmental justice communities based on income. None of the relocations identified in the FRIS (Caltrans, 2016) for Alternative 3 would take place in any of the environmental justice communities identified above. Figures 3.1.4-13 and 3.1.4-14 show the environmental justice communities for Alternatives 2 and 3, respectively.

Both build alternatives would benefit most study area residents, including minority and low-income populations, by improving mobility and circulation throughout the study area; however, the build alternatives would affect communities that have a higher number of non-white persons, a larger Hispanic or Latino population, a higher number of persons below the poverty line, and lower median incomes than the counties and cities within the study area. Because the proposed project serves both intraregional and interregional traffic, the transportation benefits would be available to all residents of the county. For example, all users (including transit users, pedestrians, and bicyclists) would benefit from less congested streets. Private vehicles and public transportation would benefit from the continuous east-west route.

Community outreach and participation have been integrated into the project development process from the outset, including public scoping, alternatives development, and extensive public and agency stakeholder involvement. Special outreach efforts have included ongoing Community Advisory Group (CAG) meetings, public briefings, town hall meetings, educational forums, workshops, mailers, and flier distribution, as well as through electronic and social media. Future public involvement includes the circulation of the draft and final environmental document and a public hearing.

Based on the above analysis, both build alternatives would affect minority and low-income populations, as well as non-minority and higher-income populations, resulting primarily from residential acquisitions and temporary impacts.

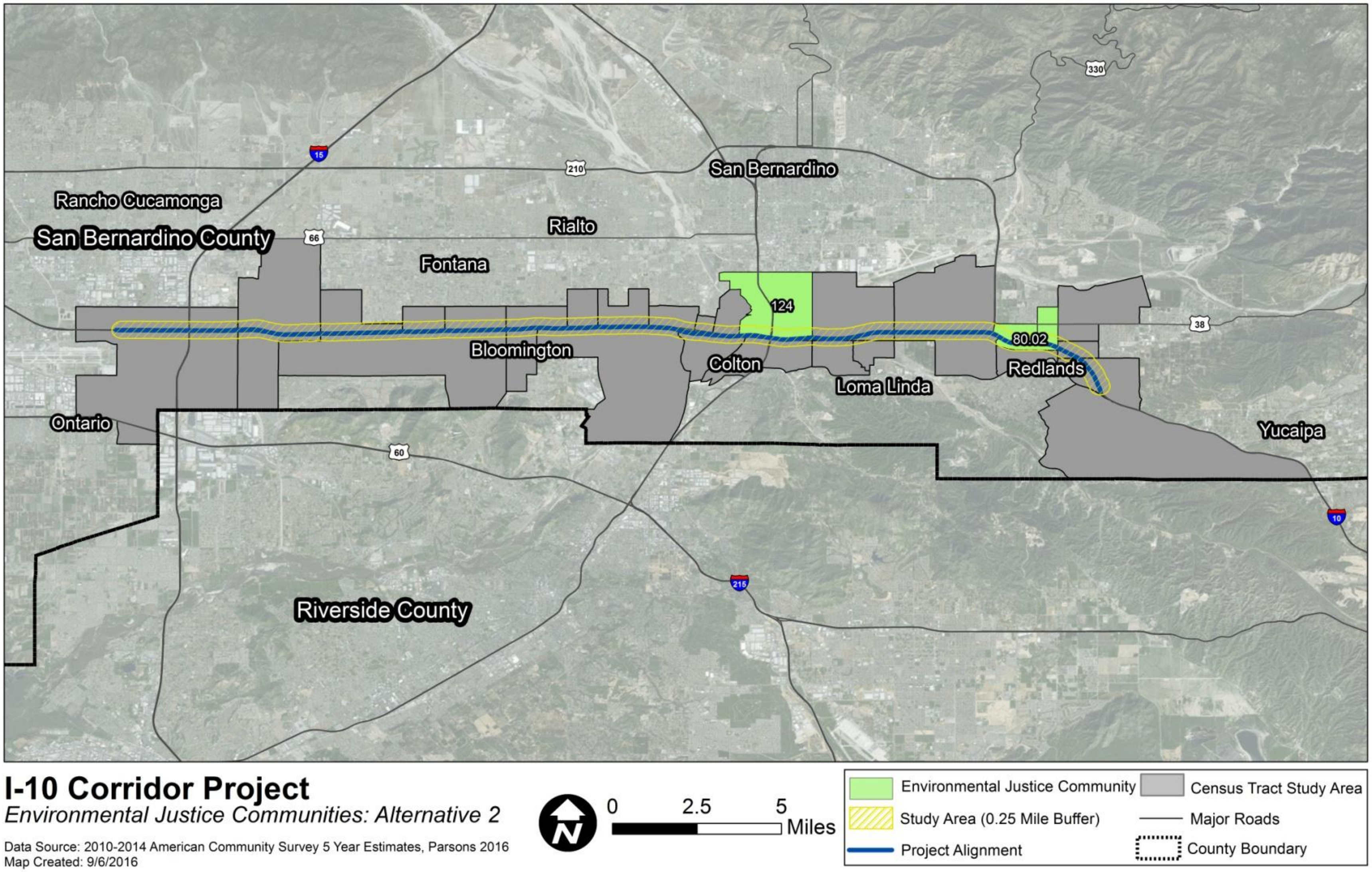


Figure 3.1.4-13 Environmental Justice Communities, Alternative 2

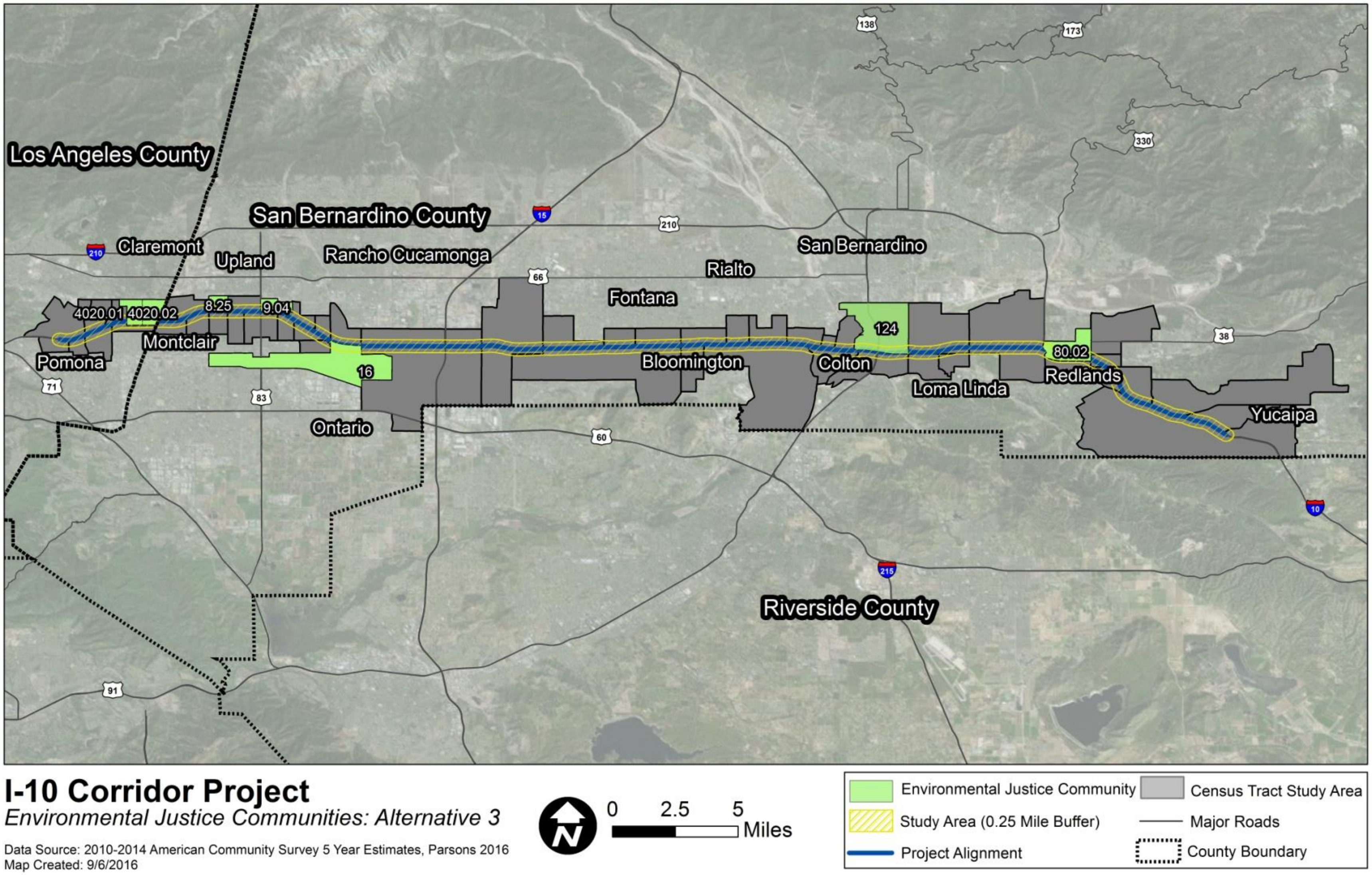


Figure 3.1.4-14 Environmental Justice Communities, Alternative 3 (Preferred Alternative)

The build alternatives would not have disproportionately high or adverse impacts per EO 12898 to minority or low-income populations within the referenced populations because they would not result in adverse impacts being predominantly borne by a minority or low-income population, nor would adverse impacts be appreciably more severe to these populations.

Alternative 2

Based on the above discussion and analysis, Alternative 2 would not cause disproportionately high and adverse effects on any minority or low-income populations as per EO 12898 regarding environmental justice. No minority or low-income populations that would be adversely affected by Alternative 2 have been identified as determined above; therefore, this project is not subject to the provisions of EO 12898.

Alternative 3 (Preferred Alternative)

The proposed project would result in a large number of residential acquisitions in Fontana, and although there are a higher percentage of minority non-white residents in the city, none of the relocation areas have meaningfully greater minority non-white populations than the rest of the city. No minority or low-income populations that would be adversely affected by Alternative 3 have been identified as determined above; therefore, this project is not subject to the provisions of EO 12898.

Equity Assessment

In addition to the standard environmental justice analysis that is performed for Caltrans projects, SBCTA prepared an Equity Assessment for I-10 and Interstate 15 (I-15) in San Bernardino County (Network Public Affairs, 2013). The Equity Assessment was produced to address concerns that Express Lanes would create an access barrier and be unfair for individuals with lower incomes. The proposed project would allow for Express Lanes that would be price-managed lanes such that vehicles not meeting the minimum occupancy requirement would pay a toll. West of Haven Avenue, a single new lane would be constructed and combined with the existing high-occupancy vehicle (HOV) lane to provide two Express Lanes in each direction; east of Haven Avenue, all Express Lanes would be constructed by the project. Literature reviews, as well as poverty and income data analysis, were used to evaluate these effects in the Equity Assessment.

The assessment found that the Express Lanes are projected to have several benefits for low-income drivers. Notably, the traffic study models indicated that travel times in the general purpose lanes would improve on both I-10 and I-15 if Express Lanes are implemented compared with other project alternatives, which would also benefit those not utilizing the Express Lanes by improving the overall traffic flow. Like the HOV option, the Express Lanes provide a new travel option for drivers, which they do not enjoy today. Analysis of potential toll prices indicated that there could be times when a low-income driver would find the Express Lanes time savings attractive. For example, a low-income driver may find time-savings beneficial when running late for work, or for other reasons, such as a toll might be less expensive than per-minute late fees at a day care center.

At the same time, low-income drivers might find toll account requirements burdensome, particularly account maintenance fees. In addition, the Express Lanes may not improve mobility for low-income drivers, who may have limitations on mobility, because there are limited transit alternatives to the Express Lane corridors. However, transit benefits would include improved community connectivity to the Metrolink stations along the corridor, providing trip reliability and improved access to and from stations. For Omnitrans, the Express Lanes would increase capacity for bus service and would improve trip reliability and allow potential for new express bus lines to be added for greater service connecting primary transit hubs. Alternative 3 would also benefit vanpools by providing additional capacity and sustainable trip reliability in the Express Lanes for the long term. The Express Lanes would be free for transit vehicles. These public transit enhancements would provide direct benefits to lower income individuals.

Equity concerns also relate to who pays for the facility compared with who benefits and how toll revenues would be used. The Express Lanes would be equitable because the user would pay for the benefit to use those lanes. Research identified in the Equity Study found that tolls, which are paid by users for the direct benefit of an uncongested trip, are even more equitable than sales taxes, which have found broad support in San Bernardino County. The I-10 and I-15 projects would be funded by a combination of toll revenues, sales tax revenues, and gas tax revenues.

Temporary/Construction Impacts

The proposed project would have a prolonged period of construction for all of the build alternatives. Area residents would endure greater impacts resulting from construction activities compared to the surrounding population. Once construction is complete, traffic circulation would soon return to normal.

Avoidance, Minimization, and/or Mitigation Measures

Based on the above discussion and analysis, the build alternatives would not cause disproportionately high and adverse effects on any minority or low-income populations as per EO 12898 regarding environmental justice. Implementation of minimization measures outlined elsewhere in this and other sections would help minimize impacts on all of the local communities, including low-income and minority neighborhoods. In particular, avoidance, minimization, and/or mitigation measures identified in Section 3.1.1, Land Use; Section 3.1.7, Visual/Aesthetics; Section 3.2.5, Hazardous Waste/Materials; Section 3.2.6, Air Quality; and Section 3.2.7, Noise, would help minimize impacts on all community members, including those identified in this section as low-income or minority.

In addition, based on the Equity Assessment findings discussed above, the following measures would make Express Lanes for Alternative 3 more equitable:

COM-16: A Low-Income Equity Program will be created, which will include policies to enable low-income households to utilize the proposed project improvements, such as waiving account maintenance fees or allowing the use of cash to open and replenish toll accounts and/or implementing video license plate recognition as an alternative to toll-collection technology.

Account maintenance fees often apply to toll road or Express Lane transponders that do not incur a minimum amount in tolls in a stated period of time. Waiving these fees would allow low-income and minority communities to utilize the Express Lanes without being required to spend a minimum amount per month. This, in addition to allowing the use of cash to open and replenish toll accounts and/or implementing video license plate recognition, would make the Express Lanes more accessible for these communities.

COM-17: To minimize impacts to surrounding low-income or minority communities, outreach activities targeted to low-income residents will continue to be conducted during the design-build process. Community outreach will include providing timely information about anticipated construction activities to affected citizens and adjacent property owners. Notification methods could include, but are not limited to, website, fliers, mailers, e-mail notifications, and electronic messaging on the freeway.

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3.1.5 Utilities/Emergency Services

Many public utilities are located within the project area (i.e., the area disturbed during construction or within the proposed right-of-way [ROW] of each build alternative). These include communication, electrical, natural gas/petroleum, water, and solid waste/sewer lines. Most of the existing utility lines are located within public ROW. Local jurisdictions along the project corridor provide public services. Additionally, there are also private service providers. Descriptions of utilities, emergency service providers, and the project's potential operational effects are described below.

3.1.5.1 Affected Environment

This section is based on a review of the existing utility and emergency service providers and facilities in the study area, the *Project Report* (April 2016), and the *Community Impact Assessment* (CIA) (October 2015).

Utilities

This subsection summarizes major utilities found within the project area. There are approximately 907 utilities within the project area, including overhead and underground electrical, natural gas, oil and gasoline pipelines, liquid oxygen line, hydrogen gas line, nitrogen gas line, telephone and communication, cable television lines, water, and sewer. Most of the utilities run perpendicular to Interstate 10 (I-10) or along the local streets, while approximately 24 facilities run parallel to I-10. The following service providers have utility facilities within or adjacent to the project limits:

Power

- Atchison, Topeka and Santa Fe Railway
- City of Colton
- Southern California Edison (SCE)

Telephone/Cable Television/Fiber Optic

- American Cablevision
- AT&T
- Charter
- Comcast
- Crown Castle
- Frontier
- Level 3 Communications
- Sprint

- SUNESYS
- Time Warner Cable
- Verizon
- Western Union Telegraph
- WILCON
- Zayo

Water/Wastewater

- Chino Basin Municipal Water District
- City of Chino Hills
- City of Colton
- City of Fontana
- City of Montclair
- City of Ontario
- City of Riverside
- City of San Bernardino
- City of Upland
- County Sanitation District – San Gabriel
- Cucamonga Valley Water District (CVWD)
- Fontana Water Company
- Golden State Water Company
- Inland Empire Utilities Agency
- Marygold Mutual Water Company
- Metropolitan Water District (MWD)
- Monte Vista Water District
- Riverside Highland Water Company
- San Antonio Water Company
- San Gabriel Valley Water Company
- Santa Ana Watershed Project Authority
- Southern California Water
- Southern Pacific Transportation Company/UPRR
- Water Facilities Authority
- West San Bernardino Water District
- West Valley Water District

Sewer

- Chino Basin Municipal Water District
- City of Colton
- City of Fontana
- City of Loma Linda
- City of Montclair
- City of Ontario
- City of Rialto
- City of San Bernardino
- City of Upland
- Western Pacific Sanitation Company

Oil/Fuel/Petroleum/Gasoline Pipelines

- California-Nevada Pipeline
- Kinder Morgan
- Plains All American Pipeline
- Southern California Gas
- Union Carbide Company

Hydrogen Gas/Liquid Oxygen Gas/Nitrogen Gas

- Praxair
- Union Carbide Company

The following discussion highlights the major utilities within the I-10 Corridor Project (I-10 CP) study area.

Electrical Power

SCE provides most of the distribution power supply to the project area. Most of the arterials, along with some local streets in the project area, accommodate either aerial overhead or underground electrical lines.

SCE Towers

Two bulk transmission lines, owned by SCE, currently cross I-10 east of Etiwanda Avenue, with lattice steel towers situated in the I-10 median area.

Westerly Line (No. 1 Etiwanda-Highgrove). The No. 1 Etiwanda-Highgrove transmission line crosses I-10 approximately 285 feet east of Etiwanda Avenue. This facility is a single-circuit 220-kilovolt (kV) transmission line with three conductors. The support structures in the immediate vicinity of I-10 consist of a lattice steel tower

(M13-T4) in the I-10 median, a lattice steel tower approximately 470 feet north of the State ROW, and two lattice steel towers south of I-10 (one just outside the State ROW and another approximately 300 feet south of the State ROW).

The tower (M13-T4) was installed in the I-10 median (previously Route 26) in 1952 under a Caltrans Encroachment Permit B88131 dated December 31, 1951. The facility was installed after the freeway resolution in 1948 but prior to the freeway route adoption in 1958. During the I-10 freeway construction in 1966, Tower M13-T4 was relocated at SCE's cost approximately 40 feet north from its original location to line up with the center of I-10 under Utilities Agreement 11748.

Easterly Line (North Boulder-Chino & No. 2 Etiwanda-Highgrove). The North Boulder-Chino & No. 2 Etiwanda-Highgrove transmission line crosses I-10 approximately 470 feet east of Etiwanda Avenue. This facility is a double-circuit 220-kV transmission line with six conductors. The support structures in the immediate vicinity of I-10 consist of a lattice steel tower (M222-T1N or M1-T4) in the I-10 median, a lattice steel tower approximately 550 feet north of the State ROW, and another lattice steel tower approximately 75 feet south of the State ROW.

The tower (M1-T4) was installed in 1940 by an easement prior to the freeway resolution in 1948 and route adoption in 1958. This facility has prior rights under the Consent to Common Use Agreement (CCUA) 11748(1).

Natural Gas/Petroleum

Natural gas and petroleum within the project area is provided by SCG, Union Carbide, California-Nevada Pipeline, and Southern Pacific Railroad.

Water Distribution

Water pipelines owned by the entities listed above provide water to many businesses and residences within the study area. Most cities in the study area provide water services via the water resources division of each jurisdiction's public works department. Water lines are located within most of the streets crossing I-10 and other freeways within the project area.

MWD Waterline

MWD's precast concrete Upper Feeder 140-inch-diameter pipeline exists at three locations of the I-10 corridor. The pipeline was installed circa 1940s before I-10 became a freeway.

MWD Crossing West of Monte Vista Avenue in Montclair. At this location, the MWD Upper Feeder is a 140-inch-diameter precast concrete pipe that runs diagonally across I-10 in a northwest to southeast trend at approximately 28 degrees from normal before it turns and runs easterly between Palo Verde Street and the Monte Vista Avenue eastbound (EB) off-ramp. The facility is approximately 6 feet deep under I-10 inside a protection structure, approximately 5 feet deep where it crosses under the San Antonio Channel, and 6 to 35 feet deep between Palo Verde Street and the Monte Vista Avenue EB off-ramp. There is one service connection to Chino Basin MWD @ STA 1011+15 and one service connection to Pomona Valley MWD @ STA 1018+41, which are accessible from Palo Verde Street.

MWD Crossing East of Sixth Street in Ontario. At this location, the MWD Upper Feeder is a 140-inch-diameter precast concrete pipe that runs diagonally across I-10 in a southwest to northeast trend at approximately 57 degrees from normal. The facility is approximately 7 feet deep under I-10. The portion of the pipe under the existing freeway pavement is encased with concrete.

MWD Crossing East of Cherry Avenue in Fontana. At this location, the MWD Upper Feeder is a 140-inch-diameter precast concrete pipe that runs diagonally across I-10 in a northwest to southeast trend at approximately 44 degrees from normal. The facility is approximately 8 feet deep under I-10. The MWD facility is not encased under I-10, but it is protected by a structure under the UPRR main tracks and a structure under a spur track, which are outside the State ROW.

Wastewater and Stormwater

For most cities within the project area, the utilities division of their respective public works department maintains sewer utilities. In addition to wastewater, some sewerage systems also handle stormwater runoff. These facilities are also managed and maintained by the cities where they are located.

Solid Waste Disposal and Recycling

Solid waste collection, recycling, and yard waste disposal within the project area is either provided by the city or company, as follows:

- Pomona – City
- Claremont – City
- Montclair – City
- Upland – City/Burrtec
- Ontario – City/Municipal Utilities Company

- Fontana – Burrtec
- Bloomington – EDCO Disposal Services
- Rialto – City/Burrtec
- Colton – Republic Services
- San Bernardino – City
- Loma Linda – City
- Redlands – City
- Yucaipa – City/Burrtec

In Los Angeles County, the nearest landfill is almost 20 miles from the project area. The County of San Bernardino Solid Waste Management Department owns and operates two landfills in the Valley Region of San Bernardino County: The San Timoteo Landfill and the Mid-Valley Landfill. The San Timoteo Landfill is located at 31 Refuse Road in Redlands. This Class III landfill has a permitted capacity of 2,000 tons per day and has a remaining capacity of 13,605,488 cubic yards. The estimated closure year is 2043. Mid-Valley Landfill is located at 2390 N. Alder Avenue in Rialto. This Class III landfill has a permitted capacity of 7,500 tons per day and has a remaining capacity of 67,520,000 cubic yards. The estimated closure year is 2033.

Telephone, Cable, and Fiber Optics

American Cablevision, Comcast, Level 3 Communications, Sprint, Time Warner Cable, Western Union Telegraph, AT&T, and Verizon provide telecommunication services within the project area. Most of these facilities are located within street ROW, with some facilities located in easements along the ROW line and behind single-family residences and businesses.

Law Enforcement Services

Law enforcement services in the project study area are provided by the Cities of Pomona, Claremont, Montclair, Upland, Ontario, Fontana, Rialto, Colton, San Bernardino, Loma Linda, Redlands, and Yucaipa Police Departments. The San Bernardino County Sheriff’s Department (SBCSD) provides law enforcement services for unincorporated areas in San Bernardino County. The police and sheriff’s stations near the project study area are listed in Table 3.1.5-1.

Table 3.1.5-1 Police and Sheriff's Stations in the Study Area

Police Department	Service Area	Station and Address
Upland Police Department	City of Upland	1499 West 13th Street
Ontario Police Department	City of Ontario	2500 South Archibald Avenue
Colton Police Department	City of Colton	650 North La Cadena Drive
San Bernardino Police Department	City of San Bernardino	710 North D Street
Redlands Police Department	City of Redlands	1270 West Park Avenue
Redlands Police Department East	City of Redlands	East Citrus Avenue/North Grove Street

Source: Community Impact Assessment (October 2015).

California Highway Patrol (CHP)

The project segments of the I-10 CP are in the jurisdictions of the CHP Inland and Los Angeles Divisions. The study area is served by the CHP San Bernardino and Los Angeles offices.

CHP enforcement refuge areas are located in the median and within the ROW of the I-10 CP in the study area in Los Angeles and San Bernardino counties. A refuge area is a space within the roadway ROW where vehicles can safely stop outside travel lanes in response to law enforcement directions or if a vehicle must leave the travel lanes. The following discussion provides information on the existing CHP enforcement areas.

Mainline

Currently, there are two bidirectional CHP enforcement areas along I-10 within the project limits. These CHP enforcement areas are located in the median of I-10 at the following general locations:

- Between Mountain Avenue and Euclid Avenue in Ontario (approximate Sta 1126+72 and 1142+72)
- Between Grove Avenue and Fourth Street in Ontario (approximate Sta 1263+56 and 1290+12)

Interchange areas

CHP enforcement areas are at most of the existing interchange on-ramps throughout the project area.

Fire Protection and Emergency Medical Services

Fire protection and emergency medical services in the project study area are provided by the Cities of Pomona, Claremont, Montclair, Upland, Ontario, Fontana, Rialto, Colton, San Bernardino, Loma Linda, and Redlands Fire Departments. San Bernardino County provides fire and emergency medical services for the Community of Bloomington. The City of Yucaipa Fire Department and the California Department of Forestry and Fire Protection (CAL FIRE) provide fire services to the City of Yucaipa. The fire stations in the study area are listed in Table 3.1.5-2.

Table 3.1.5-2 Local Fire Stations in the Study Area

Fire Department and Service Area	Station Number and Address
Fontana Fire Department, City of Fontana	Station No. 77, 17459 Slover Avenue, Fontana, CA 92337
San Bernardino County Fire Department, Community of Bloomington	Station No. 76, 10174 Magnolia Street, Bloomington, CA 92316
Colton Fire Department, City of Colton	Station No. 211 303 E. E Street, Colton, CA 92324
Redlands Fire Department, City of Redlands	Station No. 261, 525 E. Citrus Avenue, Redlands, CA 92373 Station No. 264, 1270 W. Park Avenue, Redlands, CA 92373

Sources: Community Impact Assessment (October 2015) and www.fire.ca.gov, accessed January 2015.

CAL FIRE is an emergency response and resource protection department. CAL FIRE protects people, property, and natural resources from fire, responds to emergencies of all types, and protects and preserves timberlands, wildlands, and urban forests. The CAL FIRE Inyo-Mono-San Bernardino Unit provides services in the study area from local fire stations. CAL FIRE has a Cooperative Fire Protection Agreement with San Bernardino County and a Wildland Fire Protection Agreement with the Cities of Loma Linda and Redlands.

Emergency Medical Facilities

Table 3.1.5-3 summarizes the hospital and medical centers in the study area.

Table 3.1.5-3 Hospitals and Medical Facilities in the Study Area

Hospitals and Medical Facilities	Address
Pomona Valley Podiatry Group	1900 Royalty Drive, Pomona, CA
R&B Lewis Cancer Care Center	1910 Royalty Drive, Pomona, CA
Doctors Hospital Medical Center of Montclair	5000 San Bernardino Street, Montclair, CA
Community Extended Care Hospital	9620 Fremont Avenue, Montclair, CA
Nations Surgery Center	W. 6th Street/N. Elderberry Avenue, Ontario, CA
Kaiser Hospital	9961 Sierra Avenue, Fontana, CA
Crestview Convalescent Hospital	1471 S. Riverside Avenue, Rialto, CA
Arrowhead Regional Medical Center	400 N. Pepper Avenue, Colton, CA
Planned Parenthood San Bernardino Health Center	1873 S. Commercenter Drive, San Bernardino, CA
Totally Kids Specialty Health Care	1720 Sterling Avenue, Loma Linda, CA
Advanced Ambulatory Surgery Center	1901 W. Lugonia Avenue, Redlands, CA
Redlands Family Clinic	802 W. Colton Avenue, Redlands, CA

Source: Community Impact Assessment (October 2015).

3.1.5.2 Environmental Consequences

Summary of Impacts

Utilities

There will be no adverse impacts to utilities under the No Build Alternative; however, the proposed improvements under Alternatives 2 and 3 would result in the relocation of some major electrical and water utilities, but they would not adversely affect the long-term operations of these utilities.

Up to 281 of the 907 utilities within the project area, including cable television lines, fiber-optic lines, gas lines, gasoline lines, petroleum line, power/ electrical lines, power transformer, sewer lines, telephone lines, wastewater lines, and water lines have the potential to be impacted by the proposed improvements. Up to 117 of these potentially impacted utilities would require minor to moderate work, such as extending the utility, constructing a structure or encasement around the utility, pouring a slurry mixture over the utility, or requiring a hand digging method when performing excavation around the utility. The remaining 164 utilities are anticipated to require removal or relocation due to conflict with the proposed project improvements.

The No Build Alternative would not require any land for the use of temporary construction easements (TCEs). Alternatives 2 and 3 may require the use of TCEs for relocations of utilities.

Law Enforcement, Fire, and Emergency Medical Services

None of the proposed alternatives would result in adverse impacts to emergency service providers; however, Alternatives 2 and 3 may temporarily impact response times from service providers due to the proposed construction, road closures, and lane closures.

During construction of Alternatives 2 and 3, the ability of emergency service providers to meet response times could be impaired as a result of temporary traffic delays; road, lane, and/or ramp closures; or detours. Project construction activities along the project area could potentially delay or affect the response time for CHP and emergency services providers.

The build alternatives do not include construction of any residential or nonresidential uses and were determined not to influence growth; therefore, Alternatives 2 and 3 would not increase the population or increase the demand for public services or utilities in the study area in the long term.

Permanent Impacts

Utilities

Utilities are allowed in the Caltrans ROW with an encroachment permit. Utility facilities (e.g., water lines, sewer laterals, electrical connections/lines/poles, natural gas service lines, streetlights, fire hydrants, and cable television lines and utility boxes) in the ROW would be subject to abandonment, removal, and relocation or replacement as a result of project construction. Utility companies would be given enough notice to relocate their facilities before construction or at a later stage of construction, as appropriate.

Such coordination is standard during the design phase of the project. Utility relocations would be done using standard engineering practices, so substantial service disruption is not expected and impacts are minimized.

No Build Alternative

The No Build Alternative would maintain the current configurations of I-10 in the study area. Under the No Build Alternative, the project would not be constructed, and no impacts to utilities would occur.

Alternative 2

In general, no adverse impacts are anticipated with Alternative 2, as the project will protect in place or relocate any utilities that are in conflict with this alternative. All utility work will be completed within the project footprint. Utilities are allowed in the Caltrans ROW with an encroachment permit. Utility facilities (e.g., water lines, sewer laterals, electrical connections/lines/poles, natural gas service lines, streetlights, fire hydrants, and cable television lines and utility boxes) in the ROW would be subject to abandonment, removal, and relocation or replacement as a result of project construction.

While the relocations described above are not anticipated to result in significant adverse impacts, a Utility Relocation Plan will be developed to avoid and minimize potential impacts to the identified utilities. The Utility Relocation Plan would be prepared during the design phase. As part of that effort, the design team would work with the utility provider to identify the relocation area that would minimize impacts to various resources. Generally, utilities would be relocated within the existing ROW. These areas are already disturbed, so adverse impacts are not expected and implementation of standard engineering practices would ensure that no substantial interruptions would occur. Should relocation of the utilities result in impacts to resources not analyzed in this environmental document, additional environmental documentation would be required.

The following provides a discussion of the major utilities that would be affected as part of Alternative 2.

SCE Transmission Tower Relocation – Westerly Line (No. 1 Etiwanda-Highgrove). The project proposes to relocate this facility to remove the towers outside of the I-10 median. Removal of Tower M13-T4 requires rearrangement of three lattice steel towers and wire reinstallation of approximately 1,950 feet across I-10 and 790 feet along the UPRR on the south side of I-10. The existing tower in the I-10 median would be removed and replaced with a new structure just north of the State ROW. Both towers on the south side would also be removed and replaced with new structures in the same proximity. The existing tower at 470 feet north of the State ROW would remain in place. It is anticipated that tubular steel poles will be used as new support structures for the westerly line; however, it may be determined during the design-build phase that lattice steel towers are preferred to accommodate reinstallation of the conductors in a horizontal configuration. The maximum span over I-10 is approximately 1,200 feet.

SCE Transmission Tower Relocation – Easterly Line (North Boulder-Chino & No. 2 Etiwanda-Highgrove). The project proposes to relocate this facility to remove the towers outside of the I-10 median. Removal of Tower M1-14 requires rearrangement of two towers and approximately 1,465 feet of wire reinstallation across I-10. The existing tower in the I-10 median would be removed and replaced with a new structure just north of the State ROW. The tower south of the State ROW would also be removed and replaced with a new structure in the same proximity. The existing tower at 550 feet of the State ROW would remain in place. Tubular steel poles are anticipated to replace the two lattice towers on the easterly line. Reinstallation of the conductors in a vertical configuration is not foreseen as an issue at this location. The maximum span over I-10 is approximately 930 feet.

Construction of Both Transmission Lines. No new ROW or easement is anticipated to be required for the new structures. SCE owns parcels or has easement along the entire path of the subject transmission lines; therefore, it does not foresee constraints for pole placement location.

There are three wireless communication facilities (e.g., dishes, antenna) on three towers south of I-10 that would be impacted. These existing cellular facilities cannot be attached to the tubular steel poles; therefore, they will need to be removed if tubular steel poles are used as the new support structures. SCE has an agreement with each of the three cellular facility owners requiring the cellular facility owners to relocate at their cost. A lead time of 18 months is required for the cellular site owners to remove their facilities before relocation of the towers.

Transference of the conductors from existing towers to new support structures is not anticipated to result in any outage/service disruption because there is some redundancy in the power grid; however, the work should be staged for cooler weather to avoid potential impact to the power grid. If the relocation takes place during the summer months or during hot weather, line outages will be at the discretion of the SCE Grid Control Center (GCC). During hot weather, line outages can be granted and subsequently cancelled with short notice.

A lead time of 18 to 24 months from the date of SCE's approved relocation design is required for fabrication of tubular steel poles.

MWD Waterline – MWD Crossing West of Monte Vista Avenue in Montclair. This facility is outside the limits of Alternative 2; therefore, it would not be impacted.

MWD Waterline – MWD Crossing East of Sixth Street in Ontario. This facility is outside the limits of Alternative 2; therefore, it would not be impacted.

MWD Waterline – MWD Crossing East of Cherry Avenue in Fontana. Alternative 2 would widen the north side of I-10 at this location. Because the existing MWD facility is not protected by encasement under I-10, concrete encasement would not be proposed under the widened pavement.

Alternative 3 (Preferred Alternative)

In general, no adverse impacts are anticipated with Alternative 3, as the project will protect in place or relocate any utilities that are in conflict with this alternative. All utility work will be completed within the project footprint. All relocations would be relocated in compliance with applicable California Public Utilities Commission (CPUC) regulations. Utilities are allowed in the Caltrans ROW with an encroachment permit. Utility facilities (e.g., water lines, sewer laterals, electrical connections/ lines/poles, natural gas service lines, streetlights, fire hydrants, and cable television lines and utility boxes) in the ROW would be subject to abandonment, removal, and relocation or replacement as a result of project construction.

While the relocations described above are not anticipated to result in significant adverse impacts, a Utility Relocation Plan will be developed to avoid and minimize potential impacts to the identified utilities. The Utility Relocation Plan would be prepared during the design phase. As part of that effort, the design team would work with the utility provider to identify the relocation area that would minimize impacts to various resources. Generally, utilities would be relocated within the existing ROW. These areas are already disturbed, so adverse impacts are not expected and implementation of standard engineering practices would ensure that no substantial interruptions would occur. Should relocation of the utilities result in impacts to resources, additional environmental documentation would be required.

Impacts to major utilities would be similar to those described for Alternative 2, with the exception of the following:

MWD Crossing West of Monte Vista Avenue in Montclair. Under Alternative 3, I-10 is proposed to be widened on both sides with a retaining wall along the EB freeway edge of shoulder. The proposed retaining wall would be on top of the MWD facility and present a conflict between wall footing and the MWD facility for standard retaining wall design. In addition, MWD requested unobstructed access to existing service connection structures to Chino Basin MWD and Pomona Valley MWD from Palo Verde Street. As such, the design has been proposed to extend the existing MWD Upper Feeder protection structure and build a modified retaining wall, whose footing would sit on top of the protection structure and connect to the protection structure with dowels in the same way as the existing wall footing connecting to the existing protection structure.

Law Enforcement, Fire, and Emergency Medical Services

No Build Alternative

The No Build Alternative does not propose any project improvements; therefore, it would not provide benefits to police, fire, and emergency services. Continued congestion on the project segments of I-10 under the No Build Alternative would potentially result in increased delays and increased response times for emergency service providers in the future.

Alternative 2

Alternative 2 would improve traffic throughput and travel times, and reduce delays for travelers on the project segments of I-10. These improvements would have beneficial effects for law enforcement, fire protection, and emergency service providers. In addition, emergency service providers would be able to use the high-occupancy vehicle (HOV) lanes in Alternative 2 when the other travel lanes are experiencing heavy traffic volumes and slow travel speeds.

The new HOV lane configuration under Alternative 2 would include a continuous shoulder that would provide emergency refuge.

Within the limits of the proposed I-10 improvements, a CHP enforcement area is proposed at entrance ramps where there is available space within the existing or proposed ROW to accommodate the enforcement area pavement. The additional CHP enforcement areas would provide a safe and secure location for CHP to stop and manage traffic along the I-10 corridor.

Alternative 3 (Preferred Alternative)

The beneficial effects on emergency services under Alternative 3 would be greater than Alternative 2; emergency service providers would be able to use the Express Lanes in Alternative 3 when the other travel lanes are experiencing heavy traffic volumes and slow travel speeds. There would be long-term sustainable free-flow conditions in the Express Lanes for emergency vehicles to better serve the communities. The existing median refuge areas for CHP enforcement would be reconfigured under Alternative 3.

The new Express Lane configuration under Alternative 3 would include a continuous shoulder that would provide emergency refuge.

Within the limits of the proposed I-10 improvements, a CHP enforcement area is proposed at entrance ramps where there is available space within the existing or proposed ROW to accommodate the enforcement area pavement. The reconfigured and additional CHP enforcement areas would provide a safe and secure location for CHP to stop and manage traffic activities along the I-10 corridor.

Temporary/Construction Impacts

Utilities

No Build Alternative

The No Build Alternative would maintain the current configurations of I-10 in the study area. Under the No Build Alternative, the project would not be constructed, and no impacts to utilities would occur.

Build Alternatives

Impacts to utility facilities would occur within or adjacent to the State ROW for I-10. Utility facility relocations, removals, and/or protection in-place would be necessary in areas where project construction would occur. As a result, utility services could be temporarily interrupted or facilities damaged. The decision on relocation, removal, and/or protection in-place would be made during the design-build phase in consultation with the owner of each affected utility.

Caltrans has mandatory standards and procedures for the placement and protection of underground utility facilities within the State ROW. Several of the utilities along the project area have been identified as "high risk" under the Policy on High and Low Risk Underground Facilities within the Highway Right-of-Way (*Caltrans Right-of-Way Manual*, January 1997). This policy provides for a safe environment for Caltrans employees, construction contractors and workers, and traveling public. The Policy states that facilities transporting the following, whether encased or not, are considered high-risk facilities:

- Petroleum
- Oxygen
- Chlorine
- Toxic or flammable gases

The proposed project would have a prolonged period of construction for all of the build alternatives, and effects to utilities would require some disruption to traffic circulation. Once construction is complete, traffic circulation would soon return to normal. A Transportation Management Plan (TMP) would be implemented to ensure any potential temporary effects to utilities are minimized during construction of the proposed project.

Digging, potholing, or other acceptable methods would be used to locate existing utility facilities that cross the freeway segments or that are in the freeway and local street ROWs under the build alternatives. The only acceptable method of locating high-risk utilities is hand excavation, and it would only be allowed once permission to access those high-risk facilities has been received from the utility owners. As part of efforts to locate the presence of utility lines or features under the pavement, utility potholes and manhole dips would be necessary. Excavation is not required for manhole dips, and all pothole locations would be restored to pre-project conditions.

Law Enforcement, Fire, and Emergency Medical Services

No Build Alternative

The No Build Alternative would not result in the construction of project improvements on I-10; therefore, it would not result in temporary impacts to law enforcement, CHP, fire protection, or emergency service providers. No delays to emergency service providers due to detours or closures would occur under the No Build Alternative.

Build Alternatives

Construction of the build alternatives could result in temporary traffic delays, road closures, lane closures, or detours that may impair the ability of law enforcement, fire, and other emergency service providers to meet response time goals.

Non-fire-related medical emergencies could temporarily increase with the presence of construction workers and heavy machinery in the construction area during construction of the build alternatives.

Construction of the build alternatives is anticipated to require temporary weekend, nighttime, and extended daily closures of the I-10 EB and westbound (WB) auxiliary lanes, connectors, and on- and off-ramps. Improvements to these features would be scheduled in phases to minimize temporary impacts to freeway users, which would include emergency service providers.

During construction of the build alternatives, motorists and emergency service providers can expect to experience typical construction-related temporary changes in access, with intermittent delays on I-10 and adjacent local roadways; however, as stated in Measure COM-8 in Section 3.1.4, Community Impacts, implementation of a TMP will be required. During the design-build phase, a TMP will be developed for implementation during project construction. The Final TMP will be prepared for the project as required by Caltrans and Measure T-1 (see Section 3.1.6, Traffic and Transportation/Pedestrian and Bicycle Facilities of the CIA). Known temporary and long-term closures for each alternative are discussed in detail in Section 3.1.4, and preliminary detour routes are provided in Appendix I.

As described in the Draft TMP, alternate emergency service routes and traffic handling plans must be coordinated with local jurisdictions and emergency service providers (e.g., CHP, local police, fire, paramedics) during the design-build phase. The TMP will include emergency service routes that serve hospitals, fire/police stations, emergency shelters, emergency command centers, and other facilities that provide essential services in times of emergencies within the study area. These emergency service routes would be maintained during construction or alternate routes would be provided. Construction contract documents would require that emergency service providers be notified in advance prior to any lane closures, interruptions on emergency service routes, or changes in traffic control. In addition, no two consecutive/adjacent off-ramps or two consecutive/adjacent on-ramps in the same direction will be closed concurrently, per Measure COM-1, Section 3.1.4.

Although construction-related delays and detours may temporarily affect the response times of emergency service providers, measures identified in Section 3.1.4, Community Impacts, and Section 3.1.6, Traffic and Transportation/Pedestrian and Bicycle Facilities, would minimize project effects on emergency service providers. The build alternatives would not result in any substantial effects on emergency service providers and/or response times.

3.1.5.3 Avoidance, Minimization, and/or Mitigation Measures

No measures are required for operation of the proposed project. The following measures were identified for impacts to emergency services and utilities during construction of the proposed project. Additional avoidance, minimization, and/or mitigation measures for impacts to utilities and emergency services will be considered upon completion of coordination with utility companies and emergency service providers during design-build. Measures will be implemented under San Bernardino County Transportation Authority (SBCTA) and Caltrans oversight. Any changes would require Caltrans and SBCTA approvals.

UT-1: Utility relocation plans will be prepared in consultation with the affected utility providers/owners for those utility facilities that will need to be relocated, removed, or protected in-place. If relocation is necessary, the final design will focus on relocating utilities within the State ROW or other existing public ROWs and/or easements. If relocation outside of existing or the additional public ROWs and/or easements required for the project is necessary, the final design will focus on relocating those facilities to minimize environmental impacts as a result of project construction and ongoing maintenance and repair activities.

UT-2: **Protection of MWD Upper Feeder Pipeline.** To protect the integrity of the MWD pipeline, geotechnical exploration and analysis will be coordinated with Caltrans and SBCTA before the start of construction, including:

- Stress analysis to determine the increased load imposed on the affected reach of the pipeline.

- Settlement/rebound analysis to determine potential settlement and lateral displacement.
- Slope stability analysis to determine potential induced instability of the affected reach of the pipeline.

UT-3: To minimize risk of fire prior to and during any construction activities, Caltrans and SBCTA will require implementation of the following to minimize the risk of fires during construction:

- Coordinate with the applicable local fire department to identify and maintain defensible spaces around active construction areas.
- Coordinate with the applicable local fire department to identify and maintain firefighting equipment (e.g., extinguishers, shovels, water tankers) in active construction areas.
- Post emergency services phone numbers (i.e., fire, emergency medical, police) in visible locations in all active construction areas.

3.1.6 Traffic and Transportation/Pedestrian and Bicycle Facilities

This section addresses the potential effects to traffic and circulation associated with construction of the proposed project and compares the relative benefits of each alternative. The traffic circulation analysis is based on the results of the *I-10 Corridor Project Traffic Study* (August 2014) (Traffic Study). The Traffic Study evaluates the existing and future traffic flow conditions within the traffic study area within San Bernardino County and Los Angeles County (defined below in Section 3.1.6.2, Affected Environment).

The Traffic Study evaluations include demand, capacity, and level of service (LOS) for the mainline freeway segments and ramp-freeway junctions, weaving areas, ramp/arterial street intersections, and arterial/arterial street intersections affecting interchange operations. LOS analysis was conducted for the morning (AM) and evening (PM) peak hours based on the Highway Capacity Manual (HCM) 2000, which states:

> Level of service (LOS) is a quality of measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Six LOS are defined for each type of facility that has analysis procedures available. Letters designate each level, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each level of service represents a range of operating conditions and the driver's perception of those conditions. (HCM, page 2-2)

The methodologies from the most recent version, HCM 2010, are not used due to unreliable results discovered through conducting intersection analysis. Detailed discussion of the problems that were discovered is provided in the Traffic Study in Chapter 3.0.

The HCM does not provide a method to measure LOS for intersections without a stop sign or traffic signal, such as where a freeway entrance ramp merges into or diverges from an arterial street. A volume-to-capacity (v/c) ratio analysis is provided for such locations. A v/c ratio is a comparison of an amount of traffic on a road with the capacity of the road. A v/c ratio is expressed as a decimal, with less than 1.00 indicating that volume is less than capacity and values more than 1.00 indicating that volume exceeds capacity. As values approach 1.00, congestion becomes more severe, with values more than 1.00 indicating severe congestion. Because much of Interstate 10 (I-10) within the project area operates and is expected in the future to operate at LOS F conditions, v/c ratios are provided as an indicator of the severity of congestion. For future conditions, the v/c ratio is the demand-to-capacity (d/c) ratio, where the demand volume is used.

Analysis of vehicle queues (i.e., lines of stopped vehicles waiting to proceed) was conducted for AM and PM peak hours at four types of locations for the reasons described below:

1. Left- and right-turn pockets were analyzed to determine if the pockets were of adequate length to contain the anticipated queues.
2. Queuing analysis was conducted for all lanes between closely spaced intersections to determine if traffic would back up from one intersection across an upstream intersection.
3. Anticipated vehicle queuing for AM and PM peak hours at every freeway off-ramp was analyzed to determine if queues might back up onto the freeway mainline.
4. Vehicle storage at freeway on-ramp meters was evaluated to determine if there is adequate storage on the ramp. The evaluation utilized the Caltrans Ramp Meter Design Manual method with a range of potential metering rates.

The analyses were conducted for the following traffic conditions:

- Existing (California Environmental Quality Act [CEQA] Baseline) – Year 2012
- Opening Year Alternative 1 (No Build) – Year 2025
- Opening Year Alternative 2 (High-Occupancy Vehicle [HOV] Lanes) – Year 2025
- Opening Year Alternative 3 (Express Lanes) – Year 2025
- Design Year Alternative 1 (No Build) – Year 2045
- Design Year Alternative 2 (HOV Lanes) – Year 2045
- Design Year Alternative 3 (Express Lanes) – Year 2045

To simplify the comparison of future conditions and alternatives, the entire study area has been divided into three segments (referred to as “study segments” hereafter): Los Angeles/San Bernardino (LA/SB) county line to Haven Avenue, Haven Avenue to California Street, and California Street to Ford Street. This segmentation is generally based on the similarity of cross-sectional features by segment in both the existing condition and the proposed alternatives. For each segment, the worst (highest) link’s v/c ratios (d/c ratio for future conditions) within a segment represent the v/c ratio for the entire segment.

3.1.6.1 Regulatory Setting

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 *Code of Federal Regulations* [CFR] 652). It further directs that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, the U.S. Department of Transportation (USDOT) issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally assisted programs is governed by USDOT regulations (49 CFR Part 27) implementing Section 504 of the Rehabilitation Act (29 United States Code [U.S.C.] 794). FHWA has enacted regulations for implementing the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to federal-aid projects, including Transportation Enhancement Activities.

3.1.6.2 Affected Environment

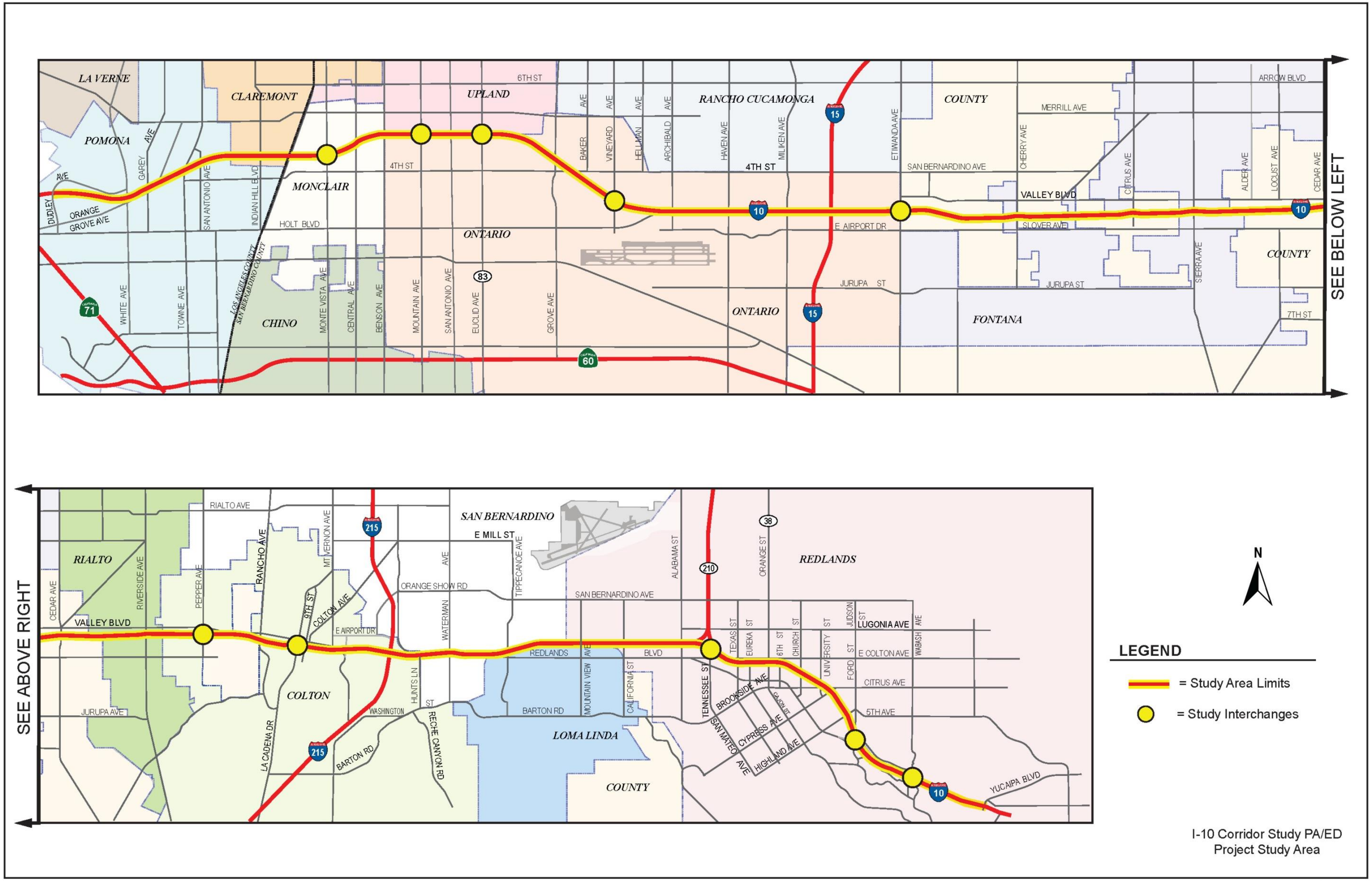
The existing lane configuration, traffic volumes, LOS, and other operational characteristics within the traffic study area are presented in this subsection.

Traffic Study Area

The traffic study area, shown in Figure 3.1.6-1, focuses on traffic operations of the I-10 corridor between White Avenue and Yucaipa Boulevard and at some interchanges, including freeway ramps at their intersections with arterials and other arterial intersections that are in the immediate vicinity. The proposed project covers a distance of approximately 40 miles along I-10 from White Avenue in Pomona to Live Oak Canyon Road in Yucaipa. The Traffic Study does not include analysis of areas near the project limits that do not include permanent physical improvements, such as the area between Yucaipa Boulevard and Live Oak Canyon Road, where only temporary signing and striping for stage construction would occur. Within the traffic study area, 39 freeway segments have been analyzed. These are shown in Figure 3.1.6-1 and include:

1. Dudley Street to White Avenue

2. White Avenue to Garey Avenue
3. Garey Avenue to Orange Grove Avenue
4. Orange Grove Avenue to Towne Avenue
5. Towne Avenue to Indian Hill Boulevard
6. Indian Hill Boulevard to Monte Vista Avenue
7. Monte Vista Avenue to Central Avenue
8. Central Avenue to Mountain Avenue
9. Mountain Avenue to State Route (SR) 83 (Euclid Avenue)
10. SR-83 (Euclid Avenue) to 4th Street
11. 4th Street to Vineyard Avenue
12. Vineyard Avenue to Archibald Avenue
13. Archibald Avenue to Haven Avenue
14. Haven Avenue to Milliken Avenue
15. Milliken Avenue to I-15
16. I-15 to Etiwanda Avenue
17. Etiwanda Avenue to Cherry Avenue
18. Cherry Avenue to Citrus Avenue
19. Citrus Avenue to Sierra Avenue
20. Sierra Avenue to Cedar Avenue
21. Cedar Avenue to Riverside Avenue
22. Riverside Avenue to Pepper Avenue
23. Pepper Avenue to Rancho Avenue
24. Rancho Avenue to La Cadena Drive/9th Street
25. La Cadena Drive/9th Street to Mt. Vernon Avenue
26. Mt. Vernon Avenue to I-215
27. I-215 to Redlands Boulevard
28. Redlands Boulevard to Waterman Avenue
29. Waterman Avenue to Tippecanoe Avenue
30. Tippecanoe Avenue to Mountain View Avenue
31. Mountain View Avenue to California Street
32. California Street to Alabama Street
33. Alabama Street to SR-210
34. Tennessee Street to SR-210
35. SR-210 to Eureka Street/Orange Avenue/6th Street
36. Eureka Street/Orange Avenue/6th Street to University Street/Cypress Avenue
37. University Street/Cypress Avenue to Ford Street
38. Ford Street to Wabash Avenue
39. Wabash Avenue to Yucaipa Boulevard



Source: Traffic Study, 2014.

Figure 3.1.6-1 Project Traffic Study Area

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Mainline segments within interchanges are also analyzed when single-lane off-ramps are accompanied by a lane drop and the segment upstream of the lane drop is not a weaving section or when single-lane on-ramps are accompanied by a lane add and the segment of the lane add is not a weaving section.

There are 33 local interchanges within the limits of the I-10 Corridor Project (I-10 CP). However, the project does not require local interchange improvements to meet the project purpose and need; therefore, it does not include traffic operations analysis for all of the interchanges. Within the traffic study area, the following local interchange areas have been analyzed:

- Monte Vista Avenue interchange
- Mountain Avenue interchange
- SR-83 (Euclid Avenue) interchange
- Vineyard Avenue interchange
- Etiwanda Avenue interchange
- Pepper Avenue interchange
- La Cadena Drive/9th Street interchange
- Tennessee Street interchange
- Ford Street interchange
- Wabash Avenue interchange

Additionally, traffic operations at the I-10/Interstate 15 (I-15), I-10/Interstate 215 (I-215), and I-10/SR-210 system interchanges were also evaluated. A list of study intersections, grouped by freeway interchange area, is shown in Table 3.1.6-1. Intersections identified for evaluation include those controlled with traffic signals, as well as stop-controlled intersections within the study area.

Existing (Year 2012) Lane Configuration

Existing (year 2012) lane configurations for the I-10 mainline and all interchange ramps within the project limits are illustrated in the Traffic Study (Figure 2.3.1). Existing lane configurations for the study intersections are illustrated in the Traffic Study (Figure 3.3.2).

I-10 Mainline

Within the project limits, I-10 is an eight-lane divided controlled-access freeway generally oriented in an east-west direction. There are two HOV lanes between the LA/SB county line and Haven Avenue and auxiliary lanes along selected portions of the route. The HOV lanes are generally separated from the general purpose lanes via a striped buffer. The existing lane width varies between 11 and 12 feet. The outside shoulder generally has the standard width of 10 feet, while the inside shoulder varies from 8 feet west of I-15 and 17 feet east of I-15.

Monte Vista Avenue Interchange

The Monte Vista Avenue interchange is a diamond interchange with one tangent ramp location on Palo Verde Street. The three ramp intersections are signalized, and Monte Vista Avenue between the eastbound (EB) on-/off-ramp and westbound (WB) off-ramp has four through lanes.

Mountain Avenue Interchange

The Mountain Avenue interchange is a diamond interchange. The ramp intersections and adjacent intersections are signalized. Between the two signalized ramp intersections, Mountain Avenue is an eight-lane roadway.

SR-83 (Euclid Avenue) Interchange

SR-83 (also known as Euclid Avenue) is a north-south highway with all of its 11 miles in San Bernardino County, extending from SR-71 to 7th Street just north of I-10. In the vicinity of I-10, SR-83 is a six-lane divided arterial roadway. SR-83 is listed as a historic property in the National Register of Historic Places (NRHP) for its wide landscaped median, landscaped parkways along both sides of the street, and cobblestone curbs and gutters.

Vineyard Avenue Interchange

The Vineyard Avenue interchange is a partial-cloverleaf interchange with one loop on-ramp in the northeast quadrant. The ramp intersections and adjacent intersections are signalized. The WB loop on-ramp is not signalized and provides a continuous right turn. Between the two signalized ramp intersections, Vineyard Avenue has four through lanes with a continuous right-turn lane onto the WB loop on-ramp.

Etiwanda Avenue Interchange

The Etiwanda Avenue interchange is a partial-cloverleaf interchange with loop on-ramps located in the northeast and southwest quadrant. The interchange also consists of a WB on-ramp and EB off-ramp on Valley Boulevard. The WB and EB off-ramp intersections along Etiwanda Avenue and the intersection of Etiwanda Avenue and Valley View Boulevard are signalized. Both the WB and EB loop on-ramps are not signalized and provide continuous right turns. Between the two signalized ramp intersections, Etiwanda Avenue has four through lanes.

Table 3.1.6-1 Years 2025 and 2045 Alternative 2 (HOV) – Peak-Hour Intersection LOS Adverse Effect Determination for the Build Alternatives

Interchange Location	Intersection #	Intersection Location: East/ West Street	Intersection Location: North/ South Street	Traffic Control	Year 2012 Existing Traffic AM Peak Hour V/C	Avg Delay (sec)	LOS	Year 2012 Existing Traffic PM Peak Hour V/C	Avg Delay (sec)	LOS	Year 2025 Alternative 1 (No Build) Traffic on No Build Geometry AM Peak Hour D/C	Avg Delay (sec)	LOS	PM Peak Hour D/C	Avg Delay (sec)	LOS	Year 2025 Alternative 2 (HOV) Traffic on Build Geometry AM Peak Hour D/C	Avg Delay (sec)	LOS	PM Peak Hour D/C	Avg Delay (sec)	LOS	Adverse Effect	Year 2045 Alternative 1 (No Build) Traffic on No Build Geometry AM Peak Hour D/C	Avg Delay (sec)	LOS	PM Peak Hour D/C	Avg Delay (sec)	LOS	Year 2045 Alternative 2 (HOV) Traffic on Build Geometry AM Peak Hour D/C	Avg Delay (sec)	LOS	PM Peak Hour D/C	Avg Delay (sec)	LOS	Adverse Effect
Monte Vista Avenue	71	I-10 WB Ramp	Monte Vista Ave	Sig	0.83	25.3	C	0.77	22.3	C	0.90	28.6	C	1.02	38.2	D	0.93	31.2	C	0.92	34.7	C	N	0.99	39.6	D	**1.19**	**57.7**	**E**	1.00	46.4	D	1.09	49.8	D	N
	72	I-10 EB Off-Ramp/ Palo Verde St	Monte Vista Ave	Sig	0.83	31.7	C	1.00	45.8	D	0.93	36.1	D	**1.18**	**57.4**	**E**	0.94	33.8	C	1.01	50.5	D	N	1.01	46.1	D	**1.29**	**74.6**	**E**	1.07	49.5	D	**1.19**	**69.9**	**E**	N
	73	Palo Verde St	I-10 EB On-Ramp	Sig	0.36	10.7	B	0.37	13.0	B	0.38	9.8	A	0.41	11.6	B	0.38	10.2	B	0.40	14.5	B	N	0.43	10.3	B	0.46	13.1	B	0.42	10.6	B	0.46	13.5	B	N
Mountain Avenue	241	7th St/ Shopping Center	Mountain Ave	Sig	0.56	16.5	B	0.79	26.4	C	0.67	17.2	B	0.96	35.1	D	0.71	17.0	B	1.02	38.7	D	N	0.84	19.6	B	1.01	40.3	D	0.78	21.3	C	1.03	46.1	D	N
	242	I-10 WB On-/Off-Ramp	Mountain Ave	Sig	0.70	20.0	C	0.79	25.3	C	0.85	32.2	C	0.99	35.2	D	0.88	35.1	D	1.04	43.1	D	N	0.98	40.9	D	1.11	52.0	D	0.99	45.7	D	**1.14**	**59.4**	**E**	N
	243	I-10 EB On-/Off-Ramp	Mountain Ave	Sig	0.57	16.2	B	0.78	29.1	C	0.59	16.7	B	0.85	32.8	C	0.60	17.5	B	0.83	32.8	C	N	0.68	25.7	C	0.87	34.6	C	0.67	21.5	C	0.82	35.9	D	N
	244	6th St	Mountain Ave	Sig	0.65	18.7	B	0.71	21.7	C	0.48	16.7	B	0.74	22.8	C	0.48	16.7	B	0.73	23.2	C	N	0.57	18.5	B	0.77	23.3	C	0.54	18.2	B	0.72	24.0	C	N
SR-83 (Euclid Avenue)	351	7th St	SB Euclid Ave	Sig	0.74	18.1	B	0.73	20.6	C	0.79	22.8	C	0.78	21.8	C	0.79	21.3	C	0.77	21.1	C	N	0.95	32.8	C	0.89	29.6	C	0.94	32.0	C	0.88	28.1	C	N
	352	7th St	NB Euclid Ave	Sig	0.52	10.3	B	0.66	13.8	B	0.60	12.9	B	0.83	17.8	B	0.62	12.9	B	0.85	18.5	B	N	0.69	13.6	B	0.95	20.4	C	0.71	14.9	B	0.97	21.5	C	N
	354	I-10 WB On-Ramp	SB Euclid Ave	UC	0.43	--	--	0.37	--	--	0.45	--	--	0.39	--	--	0.45	--	--	0.39	--	--	N	0.50	--	--	0.43	--	--	0.50	--	--	0.42	--	--	--
	355	I-10 WB On-Ramp	NB Euclid Ave	UC	0.27	--	--	0.31	--	--	0.29	--	--	0.32	--	--	0.29	--	--	0.32	--	--	N	0.31	--	--	0.35	--	--	0.31	--	--	0.35	--	--	--
	356	I-10 EB Ramp	Euclid Ave	Sig	0.97	45.3	D	1.00	52.0	D	1.00	53.6	D	**1.14**	**92.1**	**F**	1.01	53.3	D	**1.15**	**95.9**	**F**	N	**1.23**	**92.5**	**F**	**1.39**	**156.7**	**F**	**1.24**	**93.9**	**F**	**1.42**	**166.5**	**F**	N
	353	7th St	I-10 WB Off-Ramp/ 2nd Ave	AWS	0.43	13.7	B	0.57	20.9	C	0.55	21.1	C	**0.70**	**50.1**	**F**	0.58	25.3	D	**0.71**	**55.2**	**F**	N	**0.63**	**35.2**	**E**	**0.78**	**98.1**	**F**	**0.66**	**46.2**	**E**	**0.79**	**105.7**	**F**	N
Vineyard Avenue	611	Inland Empire Blvd	Vineyard Ave	Sig	0.52	8.3	A	0.55	9.2	A	0.63	8.9	A	0.82	12.0	B	0.64	9.1	A	0.82	12.5	B	N	0.57	7.5	A	0.67	12.9	B	0.72	8.4	A	0.62	8.8	A	N
	612	I-10 WB Ramp	Vineyard Ave	Sig	0.59	10.0	A	0.64	11.9	B	0.83	14.5	B	1.05	36.8	D	0.90	18.1	B	1.08	45.2	D	N	1.02	34.7	C	**1.16**	**58.6**	**E**	0.96	28.2	C	1.07	41.5	D	N
	613	I-10 EB Ramp	Vineyard Ave	Sig	0.71	16.6	B	0.65	12.1	B	0.95	29.7	C	0.89	18.7	B	0.94	26.7	C	0.89	21.8	C	N	**1.12**	**60.6**	**E**	1.09	45.6	D	**1.11**	**58.7**	**E**	1.10	49.8	D	N
	614	E G St	Vineyard Ave	Sig	0.44	9.8	A	0.43	8.9	A	0.65	12.2	B	0.54	9.8	A	0.65	12.0	B	0.51	11.4	B	N	0.87	18.3	B	0.71	13.2	B	0.83	16.8	B	0.72	10.4	B	N
	615	E D St	Vineyard Ave	Sig	0.40	15.0	B	0.55	18.3	B	0.63	16.1	B	0.71	23.7	C	0.63	16.1	B	0.70	27.3	C	N	0.73	20.1	C	0.90	32.4	C	0.75	19.5	B	0.92	35.8	D	N
Etiwanda Avenue/ Commerce Drive	1112	Valley Blvd	Commerce Dr	Sig	0.36	31.6	C	0.44	32.5	C	0.30	34.0	C	0.39	31.7	C	0.32	33.2	C	0.36	33.1	C	N	0.36	33.6	C	0.48	36.2	D	0.39	32.7	C	0.45	32.8	C	N
	1111	Valley Blvd/ Ontario Mills Pkwy	Etiwanda Ave	Sig	0.38	16.5	B	0.47	20.3	C	0.44	18.7	B	0.56	22.6	C	0.40	19.4	B	0.68	23.7	C	N	0.45	18.6	B	0.63	26.2	C	0.48	18.0	B	0.67	21.9	C	N
	1113	I-10 WB On-Ramp	SB Etiwanda Ave	UC	0.12	--	--	0.19	--	--	0.24	--	--	0.41	--	--	0.29	--	--	0.53	--	--	N	0.29	--	--	0.39	--	--	0.32	--	--	0.53	--	--	--
Etiwanda Avenue/ Commerce Drive	1114	I-10 WB Off-Ramp	Etiwanda Ave	Sig	0.55	17.8	B	0.42	12.9	B	0.50	15.2	B	0.52	12.7	B	0.54	15.5	B	0.59	15.0	B	N	0.53	16.0	B	0.58	15.3	B	0.57	17.0	B	0.67	18.9	B	N
	1115	I-10 WB On-Ramp	NB Etiwanda Ave	UC	0.23	--	--	0.38	--	--	0.23	--	--	0.40	--	--	0.25	--	--	0.42	--	--	N	0.26	--	--	0.44	--	--	0.26	--	--	0.44	--	--	--
	1116	I-10 EB On-Ramp	SB Etiwanda Ave	UC	0.06	--	--	0.19	--	--	0.06	--	--	0.17	--	--	0.06	--	--	0.18	--	--	N	0.06	--	--	0.18	--	--	0.06	--	--	0.19	--	--	--
	1117	I-10 EB Off-Ramp	Etiwanda Ave	Sig	0.77	24.5	C	0.44	13.3	B	0.62	17.4	B	0.46	10.4	B	0.63	17.6	B	0.47	10.0	B	N	0.68	18.6	B	0.51	12.1	B	0.72	20.1	C	0.51	12.1	B	N
	1118	I-10 EB On-Ramp	NB Etiwanda Ave	UC	0.14	--	--	0.41	--	--	0.15	--	--	0.45	--	--	0.15	--	--	0.45	--	--	N	0.18	--	--	0.52	--	--	0.19	--	--	0.57	--	--	--
Pepper Avenue	2101	Valley Blvd	Pepper Ave	Sig	0.64	30.9	C	0.62	31.3	C	0.62	38.6	D	0.60	28.1	C	0.60	30.7	C	0.57	28.0	C	N	0.60	31.0	C	0.58	30.6	C	0.71	32.8	C	0.75	32.2	C	N
	2102	I-10 WB Ramp	Pepper Ave	Sig	0.65	24.3	C	0.52	14.9	B	0.50	24.9	C	0.42	21.3	C	0.50	19.2	B	0.39	18.8	B	N	0.64	28.8	C	0.61	23.2	C	0.71	30.1	C	0.61	20.8	C	N
	2103	I-10 EB Ramp	Pepper Ave	Sig	0.98	53.1	D	0.89	49.6	D	0.59	28.6	C	0.52	34.1	C	0.56	26.9	C	0.50	34.1	C	N	0.64	25.0	C	0.65	30.2	C	0.71	27.9	C	0.68	34.0	C	N
La Cadena Drive/ 9th Street	2261	I-10 WB On-Ramp	La Cadena Dr	UC	0.09	4.0	A	0.17	5.3	A	0.11	4.5	A	0.20	5.7	A	0.12	4.6	A	0.21	5.9	A	N	0.14	4.8	A	0.24	6.4	A	0.16	5.7	A	0.26	7.2	A	N
	2262	I-10 WB Off-Ramp	9th St	SC	0.49	12.9	B	0.46	12.9	B	0.43	12.5	B	0.65	16.9	C	0.40	11.6	B	0.51	13.7	B	N	0.49	13.3	B	0.80	24.8	C	0.51	14.0	B	0.64	18.3	C	N
	2263	I-10 EB Ramp	9th St	AWS	0.38	11.3	B	0.44	11.9	B	0.23	10.0	B	0.35	11.1	B	0.20	9.5	A	0.34	10.9	B	N	0.26	10.9	B	0.38	11.7	B	0.27	10.7	B	0.41	12.2	B	N

Table 3.1.6-1 Years 2025 and 2045 Alternative 2 (HOV) – Peak-Hour Intersection LOS Adverse Effect Determination for the Build Alternatives

Interchange Location	Intersection #	Intersection Location		Traffic Control	Year 2012						Year 2025													Year 2045												
					Existing Traffic						Alternative 1 (No Build) Traffic on No Build Geometry						Alternative 2 (HOV) Traffic on Build Geometry						Adverse Effect	Alternative 1 (No Build) Traffic on No Build Geometry						Alternative 2 (HOV) Traffic on Build Geometry						Adverse Effect
					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			
		East/ West Street	North/ South Street		V/C	Avg Delay (sec)	LOS	V/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS		D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	
Tennessee Street	2981	I-10 WB Ramp	Tennessee St	Sig	0.74	20.5	C	0.57	16.9	B	0.61	18.0	B	0.51	19.8	B	0.47	15.7	B	0.52	11.3	B	N	0.62	15.9	B	0.70	18.0	B	0.48	14.9	B	0.57	13.9	B	N
	2982	I-10 EB Ramp	Tennessee St	Sig	0.52	14.7	B	0.90	37.2	D	0.55	15.8	B	0.98	52.9	D	0.44	13.5	B	0.80	23.8	C	N	0.68	23.8	C	**1.07**	**81.0**	**F**	0.52	15.1	B	0.86	28.5	C	N
Ford Street	3311	Reservoir Rd/ I-10 WB On-Ramp	Ford St	SC	**1.25**	**253.2**	**F**	**0.60**	**45.6**	**E**	0.89	32.9	C	0.75	20.6	C	0.88	37.2	D	0.73	20.0	C	N	0.55	20.9	C	0.50	22.0	C	0.59	19.1	B	0.66	17.8	B	N
	3312	I-10 EB Off-Ramp	Ford St	SC	0.50	13.9	B	0.86	29.5	D	0.71	19.1	C	**1.09**	**85.3**	**F**	0.67	22.5	C	0.87	29.2	D	N	0.72	17.4	C	**1.07**	**76.3**	**F**	0.67	17.1	C	0.81	27.3	D	N
	3313	Parkford Dr	Ford St	SC	0.40	21.9	C	0.65	31.8	D	0.47	27.9	D	**0.79**	**48.8**	**E**	0.53	33.3	D	**0.83**	**57.0**	**F**	N	0.45	24.9	C	**1.18**	**162.3**	**F**	0.51	30.0	D	**0.97**	**89.6**	**F**	N
	3314	Redlands Blvd/I-10 EB On-Ramp/ WB Off-Ramp	Ford St	Sig	0.62	19.8	B	0.52	32.8	C	0.62	23.3	C	0.48	18.1	B	0.66	23.2	C	0.55	18.8	B	N	0.84	35.1	D	1.01	44.0	D	0.87	31.7	C	0.89	28.6	C	N
	3315	Oak St	Ford St	SC	0.27	19.2	C	0.10	12.5	B	0.25	19.1	C	0.12	14.0	B	0.25	19.2	C	0.12	14.1	B	N	0.27	20.6	C	0.12	14.6	B	0.26	20.1	C	0.12	14.2	B	N
Wabash Avenue	3431	I-10 WB Off-Ramp/ Reservoir Rd	Wabash Ave	SC	0.12	12.7	B	0.08	10.7	B	0.19	12.4	B	0.18	11.1	B	0.19	12.2	B	0.17	10.9	B	N	--	--	--	--	--	--	--	--	--	--	--	--	--
	3432	I-10 EB On-Ramp	Wabash Ave	None	0.02	1.4	A	0.01	1.2	A	0.03	2.4	A	0.05	2.7	A	0.03	2.2	A	0.04	2.5	A	N	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

Sig – Signalized; SC – Stop-Control; AWS – All Way Stop; None – No Traffic Control.

LOS – Level of Service; V/C – Volume-to-Capacity Ratio; D/C – Demand Volume-to-Capacity Ratio; Bold indicates an intersection forecast to operate at LOS E or F.

Source: Traffic Study, 2014.

Pepper Avenue Interchange

The Pepper Avenue interchange is a diamond interchange. The ramp intersections and the intersection of Pepper Avenue and Valley Boulevard are signalized. Between the two signalized ramp intersections, Pepper Avenue has two through lanes.

La Cadena Drive/9th Street Interchange

The La Cadena Drive/9th Street interchange is a partial diamond interchange at 9th Street with a WB on-ramp on La Cadena Drive. The ramp intersections are not signalized. In the vicinity of I-10, La Cadena Drive is a four-lane roadway, and 9th Street is a two-lane roadway.

Tennessee Street Interchange

The Tennessee Street interchange is a modified split diamond interchange with Alabama Street. The interchange also consists of an EB off-ramp on the collector-distributor road to access Tennessee Street. The two ramp intersections are signalized. Between the two signalized ramp intersections, Tennessee Street has four through lanes.

Ford Street Interchange

The Ford Street interchange is a partial diamond interchange with the WB off-ramp and EB on-ramp located along Ford Street aligned with Redlands Boulevard south of I-10. The intersection of Ford Street and Redlands Boulevard/I-10 WB off-ramp/I-10 EB on-ramp is signalized. All other ramps/arterial intersections are not signalized. In the vicinity of I-10, Ford Street is a four-lane roadway.

Wabash Avenue Interchange

The Wabash Avenue interchange is a partial interchange, and both ramp intersections are not signalized. Between the two ramp intersections, Wabash Avenue is a two-lane roadway.

Existing Traffic Conditions

Existing traffic data for the traffic study area are for the year 2012. Existing condition traffic data and the results of operational analysis are presented below for both the freeway mainline and the interchange areas.

Freeway Mainline

An existing traffic profile has been developed to represent year 2012 traffic volume conditions along I-10 between the White Avenue interchange in Los Angeles County and Yucaipa Boulevard in San Bernardino County. Ramp and intersection turning count volumes were collected in year 2010 (Tuesday through Thursday, November 16 through 18, 2010). Mainline and interchange connector volumes were collected in February and March 2012, and peak-hour and daily traffic volume information was extracted from the Caltrans Performance Monitoring System (PeMS). System interchange counts were performed over a 7-day period in February and March 2013. Existing traffic volumes for the mainline and interchange connector were extracted from the Caltrans PeMS. Ramp volumes were collected in year 2010. Based on PeMS data extracted from October of each year between 2008 and 2012 for several count locations, there was no discernible trend. Consequently, the 2010 ramp counts were assumed to represent 2012 traffic condition. Existing AM and PM peak-hour traffic volumes for the I-10 mainline and all interchange ramps within the project limits are illustrated in the Traffic Study (Figure 2.3.1).

The existing average daily traffic (ADT) along the I-10 mainline freeway ranges from 151,000 in the eastern portion of the corridor to 230,000 vehicles per day (vpd) in the western portion of the corridor. Existing ADT volumes in the three study segments are included in Table 3.1.6-2. Existing weekday vehicle miles of travel (VMT) on I-10 within the study area is 7.1 million vehicle miles, as shown in Table 3.1.6-3.

Table 3.1.6-2 I-10 Mainline Average Daily Traffic

Segment	2012	2025			2045		
		Alt 1	Alt 2	Alt 3	Alt 1	Alt 2	Alt 3
LA/SB County Line and Haven Avenue	230,000	288,000	302,000	336,000	313,000	322,000	369,000
Haven Avenue and California Street	181,000	221,000	247,000	265,000	257,000	283,000	300,000
California Street and Ford Street	151,000	191,000	214,000	223,000	241,000	254,000	260,000

Source: Traffic Study, 2014.

Table 3.1.6-3 I-10 Mainline Estimated Daily Vehicle Miles of Travel

Segment	2012	2025			2045		
		Alt 1	Alt 2	Alt 3	Alt 1	Alt 2	Alt 3
LA/SB County Line and Haven Avenue	2,258,000	2,736,000	2,858,000	3,056,000	3,067,000	3,163,000	3,402,000
Haven Avenue and California Street	3,875,000	4,313,000	4,442,000	4,693,000	5,303,000	5,424,000	5,793,000
California Street and Ford Street	988,000	1,146,000	1,151,000	1,188,000	1,376,000	1,426,000	1,541,000
Total	**7,121,000**	**8,195,000**	**8,451,000**	**8,937,000**	**9,746,000**	**10,013,000**	**10,736,000**

Source: Traffic Study, 2014.

V/C Ratio and LOS. Table 3.1.6-4 presents the LOS and v/c ratios for peak hours of the existing year (2012) in the general purpose lanes of the EB and WB I-10. Under existing conditions, the freeway mainline operates at LOS B to F in the AM peak hour in the EB direction and LOS F in the WB direction. In the PM peak hour, the freeway mainline is LOS F in the EB direction and C to F in the WB direction. The range of v/c ratios in the freeway's general purpose lanes during the AM peak hour is 0.52 to 1.17 and 0.64 to 1.16 during the PM peak hour. The LOS and v/c data reported in Table 3.1.6-4 is for the interchange-to-interchange link within each study segment with the highest v/c ratio. A more-detailed link-by-link presentation of the existing freeway mainline LOS under 2012 traffic conditions for general purpose lanes is included in the Traffic Study (Table 2.3.2).

Table 3.1.6-5 presents the LOS and v/c ratios for peak hours of the existing year (2012) in the HOV (carpool) lanes. Under existing conditions, the HOV lane terminates at Haven Avenue, and HOV traffic is served by the existing general purpose lanes east of Haven Avenue. The HOV lanes operate at LOS B in the EB direction and LOS D in the WB direction during the AM peak hour; they operate at LOS F in the EB direction and LOS C in the WB direction during the PM peak hour. The v/c ratios in the HOV lanes during the AM peak hour are 0.36 in the EB direction and 0.81 in the WB direction. During the PM peak hour, the v/c ratio is 0.73 EB and 0.63 WB. A more-detailed link-by-link presentation of the existing freeway mainline LOS under 2012 traffic conditions for HOV lanes is included in the Traffic Study (Table 2.3.2).

Peak-Period Performance. Table 3.1.6-6 shows speed data for years 2012 (existing condition) and 2015 along I-10 between the LA/SB county line and Ford Street during the peak hours in each direction by lane type (general purpose and HOV). A speed survey on the general purpose lanes along I-10 within the project limits was conducted as part of the *I-10 and I-15 Express Lanes Traffic and Revenue Study* developed by CDM Smith in October 2015. Year 2015 HOV lane speeds along I-10 were extracted from the Caltrans Freeway Performance Management System (PeMS). Year 2015 speeds are provided as supplemental data to year 2012 existing conditions speeds. The year 2015 speeds do not replace the year 2012 speeds. The speed data provide supplemental and more current information than the year 2012 existing condition data.

In year 2012, segment speeds in the general purpose lanes in the EB direction on I-10 range from 57 to 65 miles-per-hour (mph) during the AM peak hour and 42 to 56 mph during the PM peak hour. In the WB direction, the general purpose segment speeds range from 32 to 59 mph during the AM peak hour and 46 to 65 mph during the PM peak hour. Speeds in the HOV lanes west of Haven Avenue during the peak hours are in excess of 60 mph. For an entire corridor trip between the LA/SB county line and the Ford Street interchange (a distance of approximately 33 miles), speeds range from 48 to 60 mph in the general purpose lanes during the peak hours. Because HOV lanes only exist west of Haven Avenue, HOV speeds for a trip between the LA/SB county line and Ford Street is a combination of HOV lane speeds west of Haven Avenue and general purpose lane speeds east of Haven Avenue. Speeds of HOVs for an entire corridor trip range from 52 to 61 mph during the peak hours.

In year 2015, the segment speeds in the general purpose lanes in the EB direction on I-10 range from 54 to 63 mph during the AM peak hour and 28 to 45 mph during the PM peak hour. In the WB direction, the general purpose segment speeds range from 30 to 56 mph during the AM peak hour and 38 to 64 mph during the PM peak hour. Speeds in the HOV lanes west of Haven Avenue during the peak hours range from 41 to 56 mph. For an entire corridor trip between the LA/SB county line and the Ford Street interchange speeds range from 48 to 60 mph in the general purpose lanes during the peak hours. HOV speeds for a trip between the LA/SB county line and Ford Street is a combination of HOV lane speeds west of Haven Avenue and general purpose lane speeds east of Haven Avenue. Speeds of the HOVs for an entire corridor trip range from 37 to 58 mph during the peak hours.

Corridor Travel Time. Table 3.1.6-7 shows years 2012 (existing condition) and 2015 corridor travel time along I-10 between the LA/SB county line and Ford Street during the peak hours in each direction by lane type (general purpose and HOV).

In year 2012, segment travel times in the general purpose lanes in the EB direction on I-10 range from 2 to 13 minutes during the AM peak hour and 3 to 14 minutes during the PM peak hour. In the WB direction, the general purpose segment travel times range from 4 to 14 minutes during the AM peak hour and 2 to 14 minutes during the PM peak hour. Travel times in the HOV lanes west of Haven Avenue during the peak hours range from 7 to 8 minutes. For an entire corridor trip between the LA/SB county line and the Ford Street interchange (a distance of approximately 33 miles) travel time ranges from 29 to 37 minutes in the general purpose lanes during the peak hours. Because HOV lanes only exist west of Haven Avenue, HOV travel times for HOVs for a trip between the LA/SB county line and Ford Street are a combination of HOV lane travel times west of Haven Avenue and general purpose lane travel times east of Haven Avenue. Travel time of HOVs for an entire corridor trip range from 28 to 34 minutes during the peak hours.

Table 3.1.6-4 I-10 Mainline General Purpose Lane Density, LOS, and Volume-to-Capacity Ratio for Existing and Year 2025

Segment	EB or WB	Existing 2012						Alternative 1 – 2025						Alternative 2 – 2025						Alternative 3 - 2025					
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
		Den	LOS	V/C	Den	LOS	V/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C
Los Angeles/San Bernardino County Line to Haven Avenue	EB	29.4	D	1.00	*	F	0.99	28.6	D	0.94	*	F	1.03	*	F	1.08	*	F	1.08	*	F	1.01	*	F	1.13
	WB	*	F	1.05	*	F	1.01	*	F	1.18	*	F	1.32	*	F	1.19	*	F	1.37	*	F	1.13	*	F	1.32
Haven Avenue to California Street	EB	*	F	1.06	*	F	1.16	*	F	1.27	*	F	1.39	*	F	1.17	*	F	1.23	*	F	1.10	*	F	1.21
	WB	*	F	1.17	35.4	E	0.99	*	F	1.29	*	F	1.25	*	F	1.22	*	F	1.14	*	F	1.18	*	F	1.14
California Street to Ford Street	EB	19.4	B	0.52	*	F	1.02	21.7	C	0.58	*	F	1.23	23.0	C	0.62	*	F	1.11	26.4	C	0.72	*	F	1.18
	WB	*	F	1.08	19.9	C	0.64	*	F	1.31	23.0	C	0.73	*	F	1.22	20.8	C	0.65	*	F	1.16	23.1	C	0.74

EB – Eastbound; WB – Westbound; Den – Density; LOS – Level of Service; V/C – Volume-to-Capacity Ratio; D/C – Demand Volume-to-Capacity Ratio
* Density not calculated under HCM because volume exceeds the range of the density algorithm or there is no related methodology.
Source: Traffic Study, 2014.

Table 3.1.6-5 I-10 Mainline HOV Lane Density, LOS, and Volume-to-Capacity Ratio for Existing and Year 2025

Segment	EB or WB	Existing 2012						Alternative 1 – 2025						Alternative 2 – 2025						Alternative 3 - 2025					
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
		Den	LOS	V/C	Den	LOS	V/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C
Los Angeles/San Bernardino County Line to Haven Avenue	EB	**	B	0.36	**	F	0.73	**	C	0.68	**	F	1.02	**	C	0.71	**	F	1.05	22.30	C	0.65	24.40	C	0.71
	WB	**	D	0.81	**	C	0.63	**	E	0.92	**	F	1.31	**	F	1.23	**	F	1.42	28.20	D	0.82	29.40	D	0.85
Haven Avenue to California Street	EB	--	--	--	--	--	--	--	--	--	--	--	--	**	B	0.42	**	D	0.82	19.60	C	0.59	20.60	C	0.74
	WB	--	--	--	--	--	--	--	--	--	--	--	--	**	F	1.38	**	F	1.39	25.80	D	0.82	27.20	D	0.85
California Street to Ford Street	EB	--	--	--	--	--	--	--	--	--	--	--	--	**	C	0.62	**	F	1.01	--	A	0.22	--	D	0.84
	WB	--	--	--	--	--	--	--	--	--	--	--	--	**	C	0.71	**	D	0.83	--	D	0.85	--	A	0.30

EB – Eastbound; WB – Westbound; Den – Density; LOS – Level of Service; V/C – Volume-to-Capacity Ratio; D/C – Demand Volume-to-Capacity Ratio
-- HOV lanes exist only west of Haven Avenue.
** Since HCM 2000 does not have an explicit methodology to evaluate single-lane HOV operations, v/c ratios (or d/c ratios) are calculated for HOV lanes to determine LOS.
Source: Traffic Study, 2014.

Table 3.1.6-6: Corridor Speed in the Area of Proposed Improvements[1]

Location	Year 2012				Year 2015[2]				Year 2025												Year 2045											
									Alternative 1				Alternative 2				Alternative 3				Alternative 1				Alternative 2				Alternative 3			
	GP		HOV[3]		GP		HOV[3]		GP		HOV[3]		GP		HOV		GP		Express		GP		HOV[3]		GP		HOV		GP		Express	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
EASTBOUND																																
Segment 1 (County Line to I-15)	57	54	65	63	54	34	56	41	52	41	65	52	42	41	65	43	51	36	65	64	28	33	57	44	21	30	44	28	32	26	61	60
Segment 2 (I-15 to I-215)	60	56	--	--	58	36	--	--	46	31	--	--	44	42	65	65	52	44	65	65	14	16	--	--	19	28	65	62	38	27	62	62
Segment 3 (I-215 to SR-210)	63	42	--	--	63	28	--	--	58	16	--	--	55	22	65	59	56	22	65	63	40	10	--	--	46	18	62	21	49	10	65	62
Segment 4 (SR-210 to Ford)	65	42	--	--	60	45	--	--	65	21	---	--	65	36	65	36	64	27	65	60	63	10	--	--	64	18	60	10	61	10	65	58
Entire Corridor	**60**	**53**	**61**	**56**	**59**	**36**	**58**	**37**	**52**	**33**	**55**	**38**	**48**	**40**	**65**	**54**	**54**	**38**	**65**	**63**	**29**	**21**	**36**	**27**	**30**	**29**	**57**	**38**	**42**	**25**	**62**	**61**
WESTBOUND																																
Segment 1 (County Line to I-15)	48	46	62	65	30	38	49	51	20	13	53	13	20	12	37	10	29	18	60	55	15	10	43	10	15	10	16	10	22	10	57	54
Segment 2 (I-15 to I-215)	59	59	--	--	56	60	--	--	46	39	--	--	51	45	65	63	61	55	64	64	29	15	--	--	33	22	60	49	48	31	60	59
Segment 3 (I-215 to SR-210)	32	62	--	--	49	62	--	--	20	55	--	--	28	61	64	53	32	54	65	65	10	42	--	--	15	50	12	27	16	44	61	65
Segment 4 (SR-210 to Ford)	34	65	--	--	38	64	--	--	13	64	--	--	22	65	64	64	29	64	65	65	10	56	--	--	10	63	10	54	10	55	54	65
Entire Corridor	**48**	**57**	**52**	**59**	**43**	**56**	**45**	**55**	**32**	**38**	**37**	**32**	**36**	**41**	**56**	**43**	**44**	**46**	**63**	**62**	**21**	**24**	**27**	**21**	**24**	**30**	**32**	**29**	**31**	**31**	**58**	**60**

1 The average peak hour travel speed is calculated based on the demand-to-capacity (d/c) ratios and Modified Bureau of Public Roads (Modified BPR) Curve. This curve calculates the speed relative to the d/c ratios. The data used for the calculation is based on the SBTAM post-processed forecast data. Speeds are shown in miles-per-hour.

2 Year 2015 travel speeds are provided as supplemental data to year 2012 travel speeds and do not replace the year 2012 travel speeds. The 2015 travel speeds provide supplemental and more current information than the year 2012 travel speeds. Year 2015 GP travel speeds are based on a speed survey conducted in October 2015 on the I-10 corridor for the *I-10 and I-15 Express Lanes Traffic Revenue Study* developed by CDM Smith. Year 2015 HOV travel speeds are based on speed data from the Caltrans Freeway Performance Management System (PeMS).

3 The entire corridor HOV travel speeds for year 2012, year 2015 and Alternative 1 (years 2025 and 2045) are a combination of HOV lane speeds west of Haven Avenue and general purpose lane speeds east of Haven Avenue, weighted for the distance of each.

-- HOV lanes exist only west of Haven Avenue.

GP – general purpose

Source: I-10 Traffic Study Addendum, 2016.

Table 3.1.6-7: Corridor Travel Time in the Area of Proposed Improvements[1]

Location	Year 2012				Year 2015[2]				Year 2025												Year 2045											
									Alternative 1				Alternative 2				Alternative 3				Alternative 1				Alternative 2				Alternative 3			
	GP		HOV[3]		GP		HOV[3]		GP		HOV[3]		GP		HOV		GP		Express		GP		HOV[3]		GP		HOV		GP		Express	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
EASTBOUND																																
Segment 1 (County Line to I-15)	8	9	7	8	9	14	8	12	9	12	7	9	11	12	7	11	9	13	7	7	17	14	8	11	23	16	11	17	15	18	8	8
Segment 2 (I-15 to I-215)	13	14	--	--	14	22	--	--	17	26	--	--	18	19	12	12	15	18	12	12	57	50	--	--	42	29	12	13	21	30	13	13
Segment 3 (I-215 to SR-210)	5	7	--	--	5	11	--	--	5	19	--	--	6	14	5	5	6	14	5	5	8	31	--	--	7	17	5	15	6	31	5	5
Segment 4 (SR-210 to Ford)	2	3	--	--	2	3	--	--	2	6	--	--	2	3	2	3	2	5	2	2	2	12	--	--	2	7	2	12	2	12	2	2
Entire Corridor	**29**	**33**	**28**	**31**	**29**	**48**	**29**	**46**	**33**	**52**	**31**	**46**	**36**	**43**	**26**	**31**	**31**	**45**	**26**	**27**	**59**	**80**	**47**	**63**	**56**	**59**	**30**	**45**	**41**	**70**	**27**	**28**
WESTBOUND																																
Segment 1 (County Line to I-15)	10	11	8	7	16	13	10	10	24	37	9	37	24	41	13	49	17	27	8	9	32	49	11	49	32	49	30	49	22	49	9	9
Segment 2 (I-15 to I-215)	14	14	--	--	15	14	--	--	18	21	--	--	16	19	13	13	14	15	13	13	29	56	--	--	25	38	14	17	17	27	14	14
Segment 3 (I-215 to SR-210)	9	5	--	--	6	5	--	--	14	5	--	--	10	5	4	5	9	5	4	4	28	7	--	--	19	6	24	10	18	6	5	4
Segment 4 (SR-210 to Ford)	4	2	--	--	4	2	--	--	12	2	--	--	7	2	2	2	5	2	2	2	15	3	--	--	15	2	15	3	15	3	3	2
Entire Corridor	**37**	**31**	**34**	**30**	**41**	**31**	**39**	**32**	**56**	**46**	**47**	**55**	**49**	**42**	**26**	**33**	**40**	**38**	**28**	**29**	**85**	**72**	**66**	**84**	**72**	**59**	**55**	**60**	**57**	**57**	**30**	**29**

1 Corridor travel time is calculated using speeds shown in Table 3.1.6-6 and the length of the corridor within the project limits. Travel times are shown in minutes.
2 Year 2015 travel times are provided as supplemental data to year 2012 travel times and do not replace the year 2012 travel times.
3 The entire corridor HOV travel times for year 2012, year 2015 and Alternative 1 (years 2025 and 2045) are a combination of travel times for the HOV lane west of Haven Avenue and general purpose lanes east of Haven Avenue, weighted for the distance of each.
-- HOV lanes exist only west of Haven Avenue.
GP – general purpose
Source: I-10 Traffic Study Addendum, 2016.

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Based on the year 2015 speed data (provided as supplemental and more current information), segment travel times in the general purpose lanes in the EB direction on I-10 range from 2 to 14 minutes during the AM peak hour and 3 to 22 minutes during the PM peak hour. In the WB direction, the general purpose segment travel times range from 4 to 16 minutes during the AM peak hour and 2 to 14 minutes during the PM peak hour. Travel times in the HOV lanes west of Haven Avenue during the peak hours range from 8 to 12 minutes. For an entire corridor trip between the LA/SB county line and the Ford Street interchange travel times range from 29 to 48 minutes in the general purpose lanes during the peak hours. HOV travel times for a trip between the LA/SB county line and Ford Street are a combination of HOV lane travel times west of Haven Avenue and general purpose lane travel times east of Haven Avenue. Travel times of the HOVs for an entire corridor trip range from 29 to 46 mph during the peak hours.

Vehicle Hours of Delay. Table 3.1.6-8 presents the daily and annual vehicle hours of delay (VHD) occurring on I-10 on weekdays. VHD is based on the number of additional hours of vehicle travel required within the corridor due to speeds lower than 65 mph on weekdays and during the peak periods when congestion reduces speeds and increases corridor travel times. Under the existing condition (2012), there are approximately 19,295 daily and 4.8 million annual VHD on I-10.

Traffic Accident Data. Traffic accident data for I-10 within the project limits were obtained from Caltrans Traffic Accident Surveillance and Analysis Systems (TASAS) Table B for a 3-year period between January 1, 2012, and December 31, 2014. During this 3-year period between Towne Avenue and the LA/SB county line within Los Angeles County, there were 133 accidents on EB I-10 and 121 accidents on WB I-10, including 78 injury accidents, and none are reported to involve fatalities. Between the LA/SB county line and Wabash Avenue within San Bernardino County, there were 2,901 accidents on EB I-10 and 2,406 accidents on WB I-10, including 1,836 injury accidents and 36 accidents involving fatalities.

The actual accident rates in both directions of the entire length of I-10 between Towne Avenue and Wabash Avenue are lower than the statewide average for similar facilities. The total accident rate for the I-10 study area within Los Angeles County was 0.54 accidents per million vehicle miles (a/mvm) in the EB direction and 0.50 a/mvm in the WB direction, while the statewide average is 1.08 a/mvm. The total accident rate for the I-10 study area within San Bernardino County was 0.75 a/mvm in the EB direction and 0.62 a/mvm in the WB direction, while the statewide average is 0.94 a/mvm.

Freeway Connector Volumes. Table 3.1.6-9 provides the existing branch connector volumes on ramps between freeways within the study area. Branch connectors are the ramps connecting one freeway to another. Branch connectors are located at I-15, I-215, and SR-210. Branch connectors operate with v/c ratios ranging from 0.25 to 1.81 under existing conditions.

Arterials, Intersections and Interchanges

To establish existing traffic conditions for arterial and interchange study locations, AM and PM peak-hour turning movement counts were collected. Existing AM and PM peak-hour intersection traffic volumes are illustrated in the Traffic Study (Figure 3.3.1). Existing ADT volumes for arterial roadways between ramp intersections are summarized in Table 3.1.6-10.

A summary of the LOS analysis and v/c ratios for AM and PM peak hours for existing conditions is provided in Table 3.1.6-1 for all study intersections. The study intersections are currently operating at LOS D or better, except for one intersection that is operating at LOS F during the AM peak hour.

Table 3.1.6-1 shows that the study intersections are currently operating under capacity (v/c equal to or less than 1.00) during the peak hours, except for one intersection that is currently operating over-capacity during the AM peak hour.

A comparison of existing vehicle queuing (higher of AM or PM peak-hour 95th percentile queues) with available storage (in feet) was conducted at all arterial interchange study intersections and is summarized in Table 3.1.6-11. The table shows that 84 percent of off-ramps with traffic control at their arterial intersections have adequate turning lane storage under existing conditions. Table 3.1.6-11 also shows that 43 percent of arterials have adequate turning lane storage at ramp intersections and 67 percent of turning lanes at arterial/arterial intersections have adequate storage. No ramp metering analysis was conducted under existing conditions.

Pedestrian and Bicycle Facilities

The primary components of the pedestrian circulation system are sidewalks and crosswalks. Under existing conditions, most of the developed properties adjacent to the study area are improved with sidewalks.

The San Bernardino County Transportation Authority (SBCTA) Non-Motorized Transportation Plan (2014) identifies bikeways that run above, below, or adjacent to the proposed project area, as shown in Figure 3.1.6-2.

Table 3.1.6-8 Vehicle Hours of Delay – Existing and Years 2025 and 2045 on Weekdays in the Area of Proposed Improvements

Year	Alternative	Daily	Annual
2012	Existing	19,295	4,823,646
2025	Alternative 1	21,705	5,426,194
	Alternative 2	20,349	5,087,245
	Alternative 3	19,766	4,941,483
2045	Alternative 1	31,871	7,967,850
	Alternative 2	27,281	6,820,185
	Alternative 3	24,165	6,041,366

Source: Traffic Study, 2014.

Table 3.1.6-9 2025 Branch Connector Volumes and Volume-to-Capacity Ratios

Branch Connector	Existing 2012				Alternative 1 – 2025				Alternative 2 – 2025				Alternative 3 - 2025			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Volume	V/C	Volume	V/C	Volume	D/C	Volume	D/C	Volume	D/C	Volume	D/C	Volume	D/C	Volume	D/C
EB Off Direct (NB I-15)	1,350	0.45	2,420	0.81	1,410	0.47	2,520	0.84	1,410	0.47	2,520	0.84	1,430	0.48	2,560	0.85
EB Off Direct (SB I-15)	1,810	1.21	1,780	1.19	2,060	1.37	1,850	1.23	2,020	1.35	1,850	1.23	2,090	1.39	1,880	1.25
EB On Direct (NB I-15)	1,790	1.19	1,770	1.18	2,050	1.37	2,060	1.37	2,030	1.35	2,130	1.42	2,040	1.36	2,080	1.39
EB On Direct (SB I-15)	1,110	0.74	970	0.65	1,150	0.77	1,010	0.67	1,150	0.77	1,010	0.67	1,150	0.77	1,040	0.69
WB Off Direct (NB/SB I-15)	2,800	0.93	2,590	0.86	2,750	0.92	2,430	0.81	2,600	0.87	2,380	0.79	2,720	0.91	2,490	0.83
WB On Direct (SB I-15)	2,710	1.81	1,840	1.23	2,970	1.98	2,300	1.53	2,950	1.97	2,360	1.57	3,010	2.01	2,480	1.65
WB On Direct (NB I-15)	2,570	0.86	2,030	0.68	2,670	0.89	2,110	0.70	2,670	0.89	2,110	0.70	2,670	0.89	2,110	0.70
EB Off Direct (NB/SB I-215)	2,370	0.53	2,420	0.54	2,700	0.60	2,930	0.65	2,600	0.58	2,840	0.63	2,820	0.63	3,090	0.69
EB On Direct (NB I-215)	2,420	1.61	2,590	1.73	2,640	1.76	2,880	1.92	2,610	1.74	2,910	1.94	2,810	1.87	3,040	2.03
EB On Direct (SB I-215)	1,200	0.80	1,760	1.17	1,640	1.09	1,840	1.23	1,610	1.07	2,010	1.34	1,240	0.83	1,830	1.22
WB Off Direct (NB/SB I-215)	3,860	1.29	3,470	1.16	4,380	1.46	4,330	1.44	4,550	1.52	4,400	1.47	4,920	1.64	4,730	1.58
WB On Loop (NB I-215)	790	0.53	1,270	0.85	820	0.55	1,320	0.88	820	0.55	1,320	0.88	820	0.55	1,320	0.88
WB On Direct (SB I-215)	1,280	0.85	1,550	1.03	1,850	1.23	2,240	1.49	1,850	1.23	2,220	1.48	1,590	1.06	2,050	1.37
EB Off Direct (NB SR-210)	760	0.25	1,540	0.51	970	0.32	1,970	0.66	860	0.29	2,050	0.68	1,080	0.36	2,230	0.74
EB On Direct (SB SR-210)	1,620	1.08	2,130	1.42	1,740	1.16	2,250	1.50	1,810	1.21	2,230	1.49	1,760	1.17	2,220	1.48
WB Off Direct (NB SR-210)	2,050	0.68	1,800	0.60	2,530	0.84	2,030	0.68	2,400	0.80	1,870	0.62	2,150	0.72	1,870	0.62
WB On Direct (SB SR-210)	1,610	1.07	930	0.62	1,670	1.11	970	0.65	1,720	1.15	1,020	0.68	1,990	1.33	1,250	0.83

EB – eastbound; NB – northbound; SB – southbound; WB – westbound

V/C – Volume-to-Capacity Ratio (D/C – Demand Volume-to-Capacity Ratio) is based on branch connector capacity of 1,500 per lane for each freeway ramp connector lanes.

Source: Traffic Study, 2014.

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Table 3.1.6-10 Arterial Average Daily Traffic Volumes

Arterial	2012 ADT	2025 Alternative 1 ADT	2025 Alternative 2 ADT	2025 Alternative 3 ADT	2045 Alternative 1 ADT	2045 Alternative 2 ADT	2045 Alternative 3 ADT
Monte Vista Avenue	21,931	27,682	27,245	27,265	31,119	29,888	29,702
Mountain Avenue	41,677	45,076	46,465	46,553	50,884	51,364	52,038
SR-83 (Euclid Avenue)	47,017	54,847	55,626	56,217	65,104	64,473	66,062
Vineyard Avenue	29,049	38,798	39,493	39,712	46,716	47,811	48,128
Etiwanda Avenue/ Commerce Drive	22,863	27,540	29,566	29,561	28,325	28,944	30,967
Pepper Avenue	12,776	16,365	13,609	13,925	21,910	23,388	24,838
La Cadena Drive/ 9th Street	15,422	21,319	21,633	22,127	24,599	24,226	24,884
Tennessee Street	14,546	16,832	16,646	16,590	19,758	19,854	20,250
Ford Street	6,706	8,695	9,496	9,209	9,138	10,354	9,305
Wabash Avenue	7,062	8,339	8,790	8,806	9,644	9,880	9,804

Source: SBTAM Raw Data.

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Table 3.1.6-11 Number of Locations with Adequate Vehicle Storage[1] in 2012 and 2045

Location	2012 Existing			2045 Alternative 1 (No Build)			2045 Alternative 2 (HOV)[2]			2045 Alternative 3 (Express)[3]		
	Number of Locations with Adequate Storage	Number of Locations	% with Adequate Storage	Number of Locations with Adequate Storage	Number of Locations	% with Adequate Storage	Number of Locations with Adequate Storage	Number of Locations	% with Adequate Storage	Number of Locations with Adequate Storage	Number of Locations	% with Adequate Storage
Off-Ramp at Arterials	16	19	84	8	18	44	10	18	56	16	19	79
Arterials at Ramps	9	21	43	5	19	26	6	19	32	10	20	50
Arterial/Arterial Intersections	8	12	67	4	12	33	4	12	33	4	12	33
On-Ramps at Ramp Meters[4]	--	--	--	--	--	--	8	11	73	15	21	71

[1] Storage is considered adequate if it will contain the 95th percentile queue.

[2] Under the year 2045 Alternative 2 (HOV) condition, there are eight locations where off-ramp queues are expected to exceed the available storage. Six of the eight locations are located west of Haven Avenue and two are located east of Haven Avenue. The six located west of Haven Avenue are beyond the physical improvement limits for Alternative 2 (HOV). The two located east of Haven Avenue are Pepper Avenue WB off-ramp and Alabama Street EB off-ramp. Both of these locations are expected to exceed the available storage but are not expected to back onto the I-10 mainline. These two locations are also expected to exceed the available storage under Alternative 1 (No Build), so neither is caused by the proposed project.

[3] Under the year 2045 Alternative 3 (Express) condition, there are three locations where off-ramp queues are expected to exceed the available storage. The three locations are Mountain Avenue EB off-ramp, Vineyard Avenue WB off-ramp, and Alabama Street EB off-ramp. All three of these locations are expected to exceed the available storage but are not expected to back onto the I-10 mainline. These locations are also expected to exceed the available storage under Alternative 1 (No Build), so neither is caused by the proposed project.

[4] Under Alternative 2 (HOV) conditions, the EB on-ramp from Etiwanda Avenue, WB on-ramp from Pepper Avenue, and EB on-ramp from Tennessee Street do not provide sufficient storage for the maximum queue expected in year 2045. Under Alternative 3 (Express) conditions, the EB on-ramp from Monte Vista Avenue, EB/WB on-ramps from Mountain Avenue, EB on-ramp from SR-83 (Euclid Avenue), EB on-ramp from Vineyard Avenue, and EB on-ramp from Tennessee Street do not provide sufficient storage for the maximum queue expected in year 2045. No ramp metering analysis was conducted under existing and Alternative 1 (No Build) conditions.

Source: Traffic Study, 2014.

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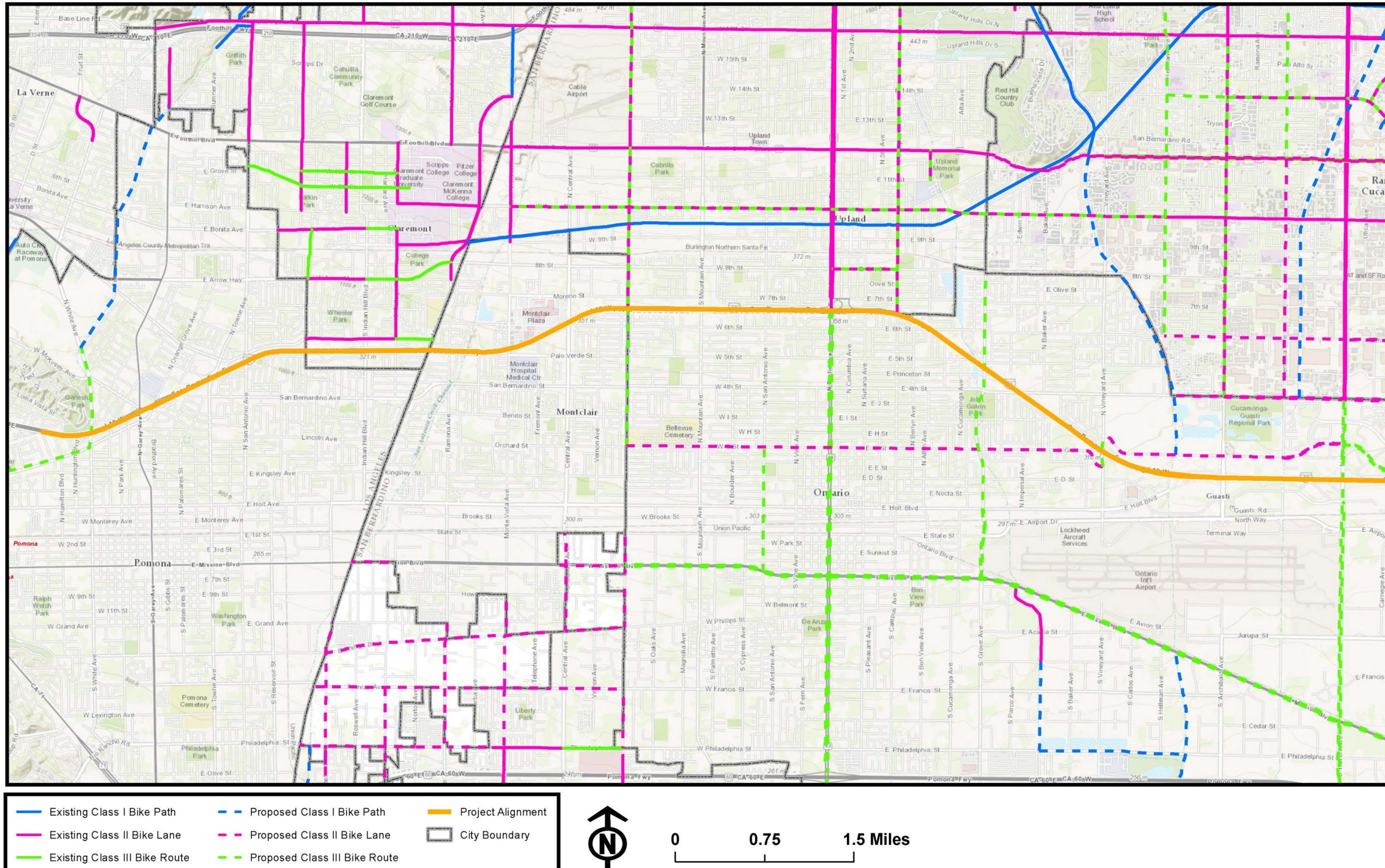

Sources: GeoEye Aerial Imagery (2012); Cal-Atlas (2011); Parsons (2015).

Figure 3.1.6-2 San Bernardino County Bikeways (Page 1 of 4)

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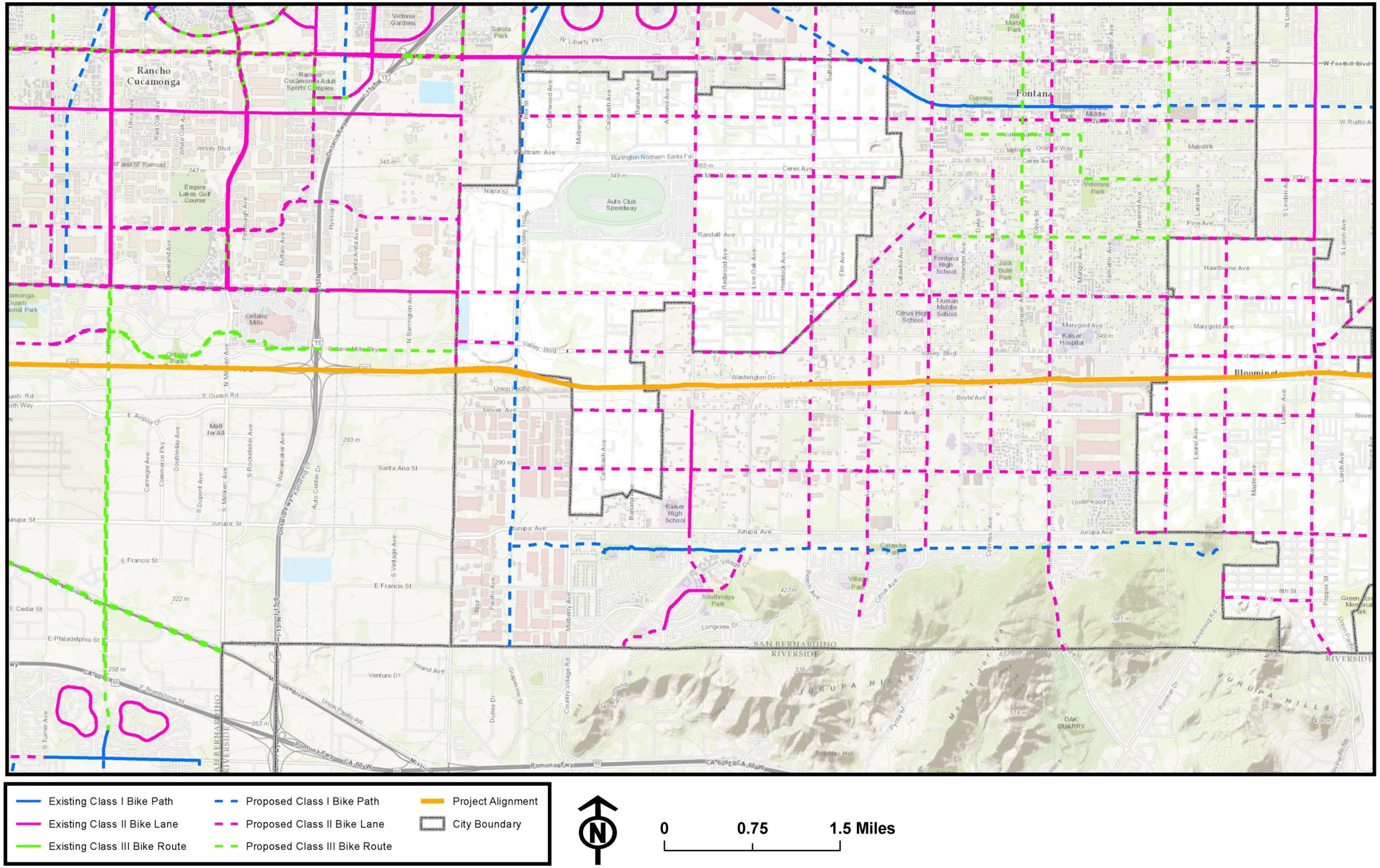

Sources: GeoEye Aerial Imagery (2012); Cal-Atlas (2011); Parsons (2015).

Figure 3.1.6-2 San Bernardino County Bikeways (Page 2 of 4)

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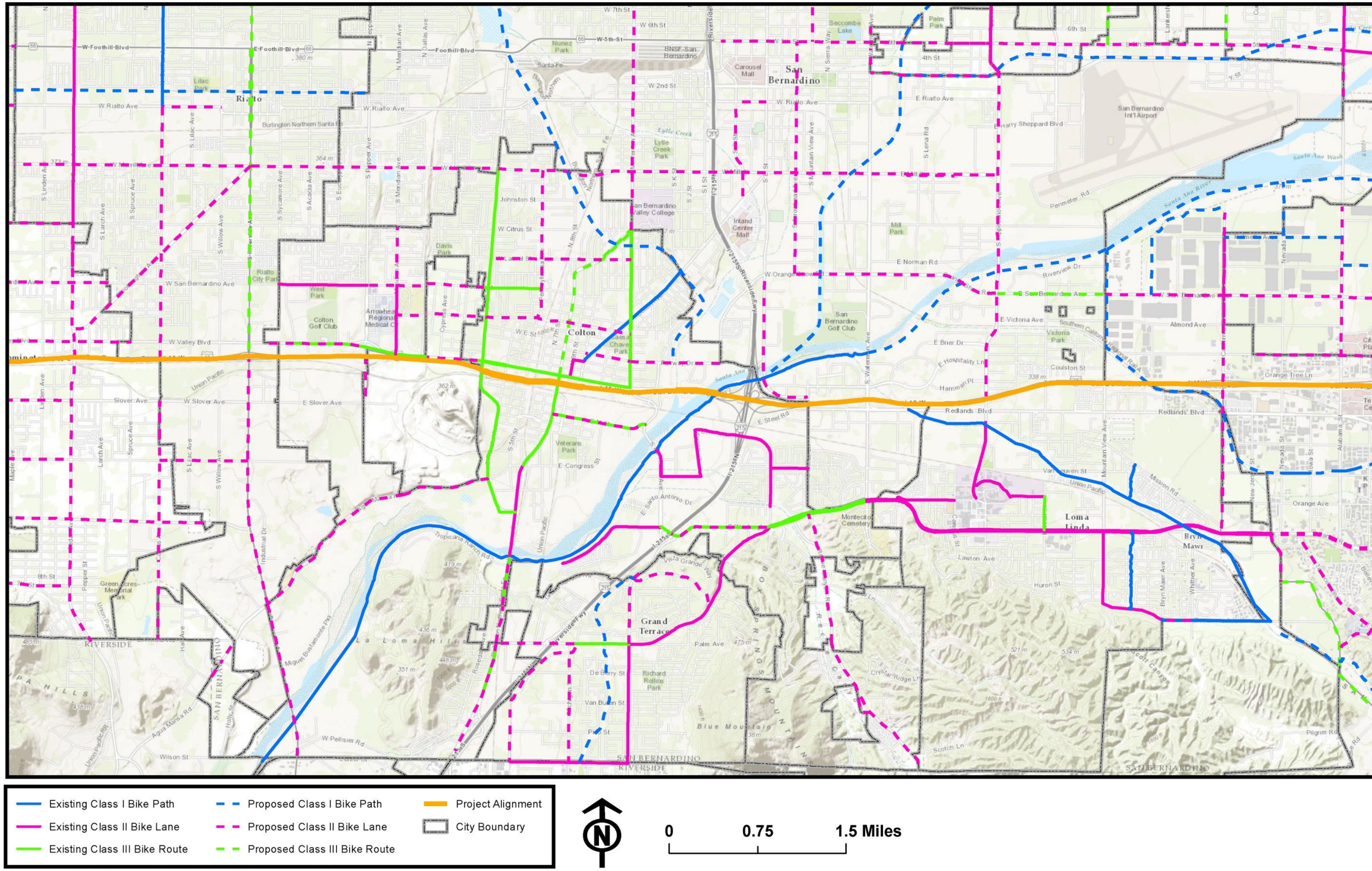

Sources: GeoEye Aerial Imagery (2012); Cal-Atlas (2011); Parsons (2015).

Figure 3.1.6-2 San Bernardino County Bikeways (Page 3 of 4)

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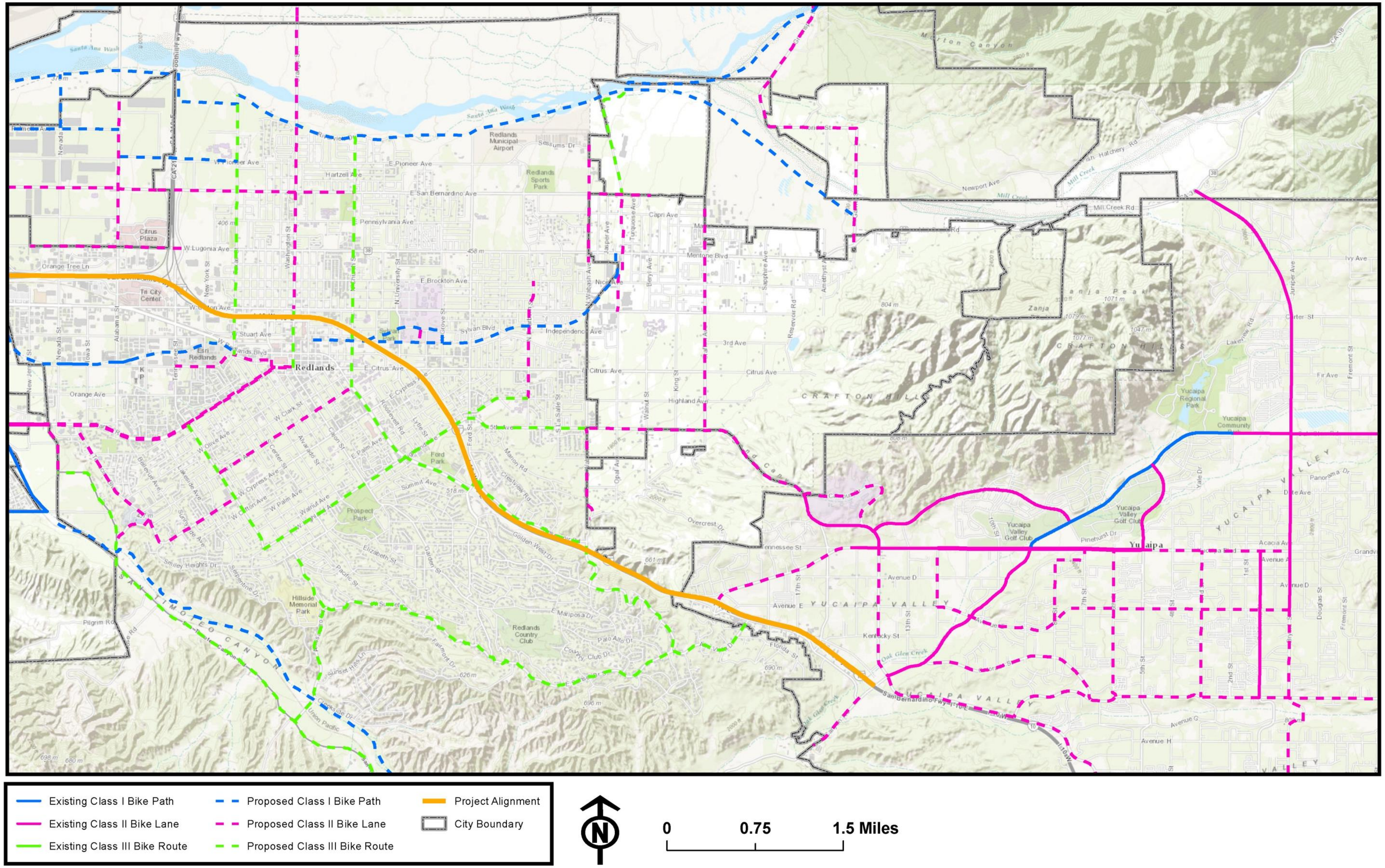

Sources: GeoEye Aerial Imagery (2012); Cal-Atlas (2011); Parsons (2015).

Figure 3.1.6-2 San Bernardino County Bikeways (Page 4 of 4)

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3.1.6.3 Environmental Consequences

Permanent Impacts

Year 2025 is the year in which the proposed project is scheduled to be open to traffic if one of the build alternatives is implemented. Year 2045 is the design horizon year for the proposed project build alternatives. Therefore, traffic analyses were conducted for the following six future conditions:

- Opening Year Alternative 1 (No Build) – Year 2025
- Opening Year Alternative 2 (One HOV Lane in Each Direction) – Year 2025
- Opening Year Alternative 3 (Two Express Lanes in Each Direction) – Year 2025
- Design Year Alternative 1 (No Build) – Year 2045
- Design Year Alternative 2 (One HOV Lane in Each Direction) – Year 2045
- Design Year Alternative 3 (Two Express Lanes in Each Direction) – Year 2045

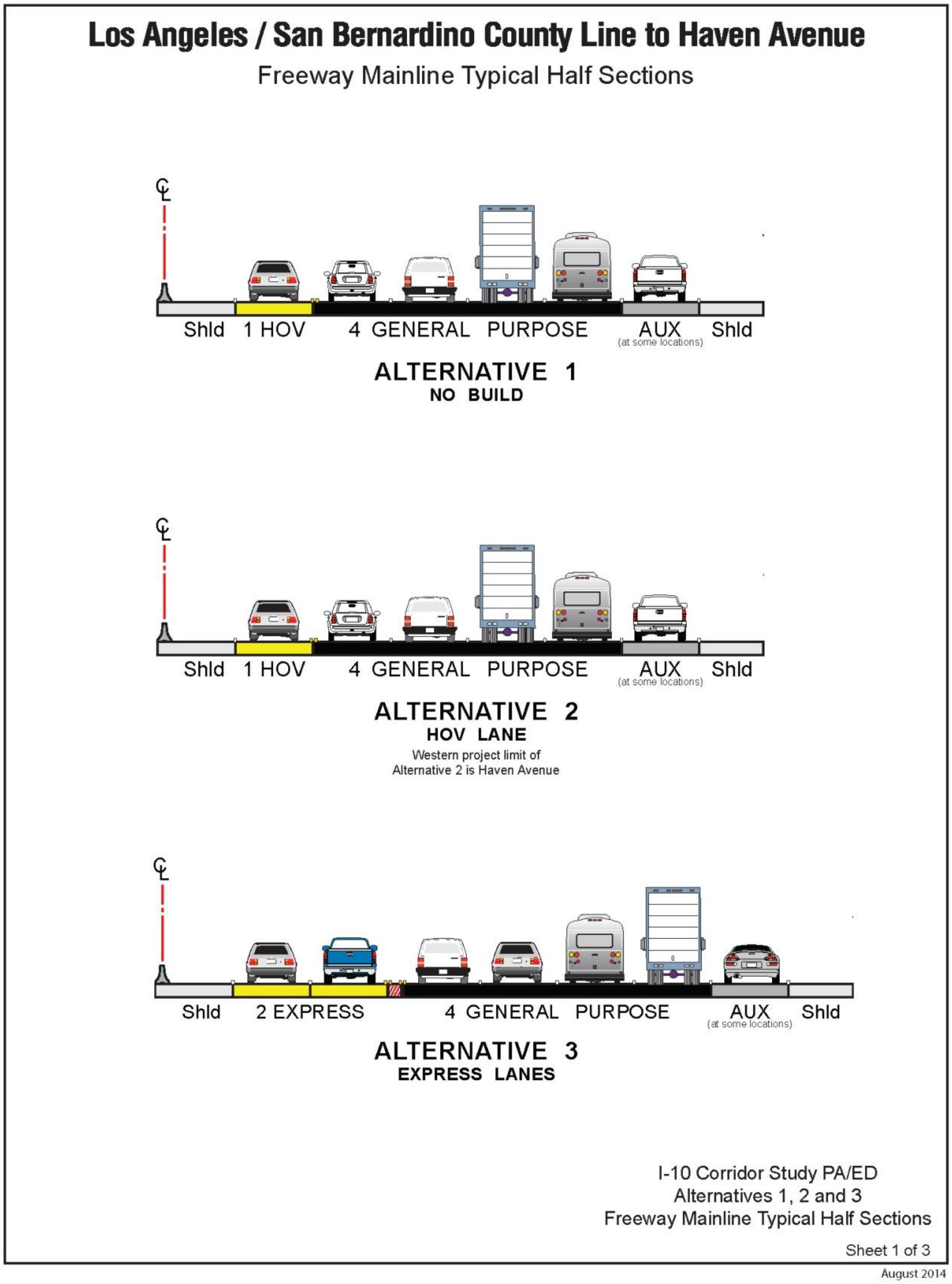
The three alternatives are generally described as follows:

Alternative 1 (No Build). This alternative is the No Build Alternative and would maintain the existing lane configuration of I-10 within the project limits with no additional mainline lanes or associated improvements to be provided. The freeway mainline typical half sections for Alternative 1 are illustrated in Figure 3.1.6-3.

Alternative 2 (One HOV Lane in Each Direction). This alternative would extend the existing HOV lane in each direction of I-10 from the current HOV terminus near Haven Avenue in Ontario to Ford Street in Redlands, a distance of approximately 25 miles. The freeway mainline typical half sections for Alternative 2 are illustrated in Figure 3.1.6-3.

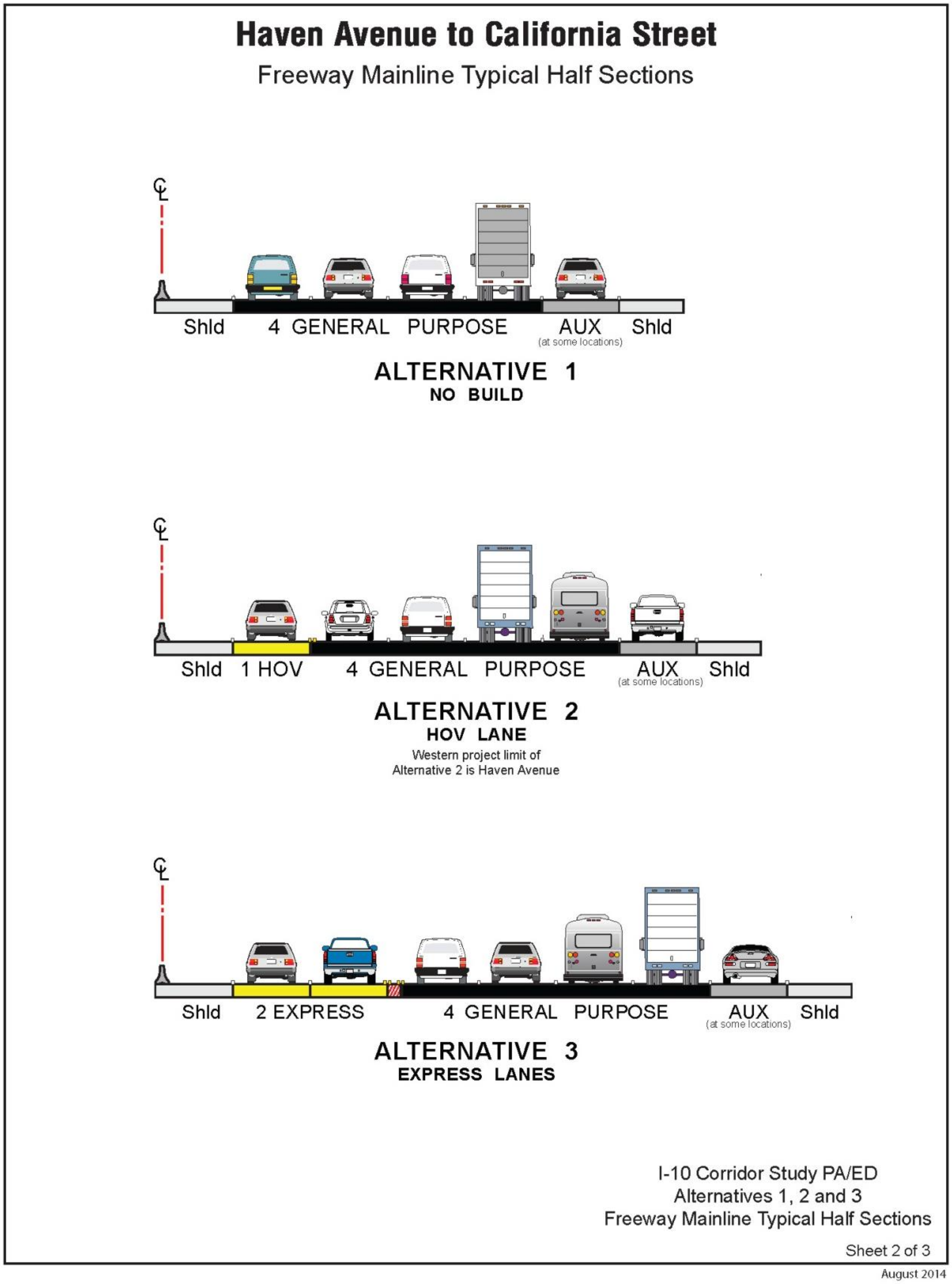
In addition to the extension of the current HOV lane, Alternative 2 would provide the following improvements:

- Construct WB auxiliary lane between Rancho Avenue and La Cadena Drive.
- Modify one-lane off-ramps to two-lane off-ramp at Waterman Avenue/Carnegie Drive WB off-ramp
- Improvements at the Tennessee Street Interchange



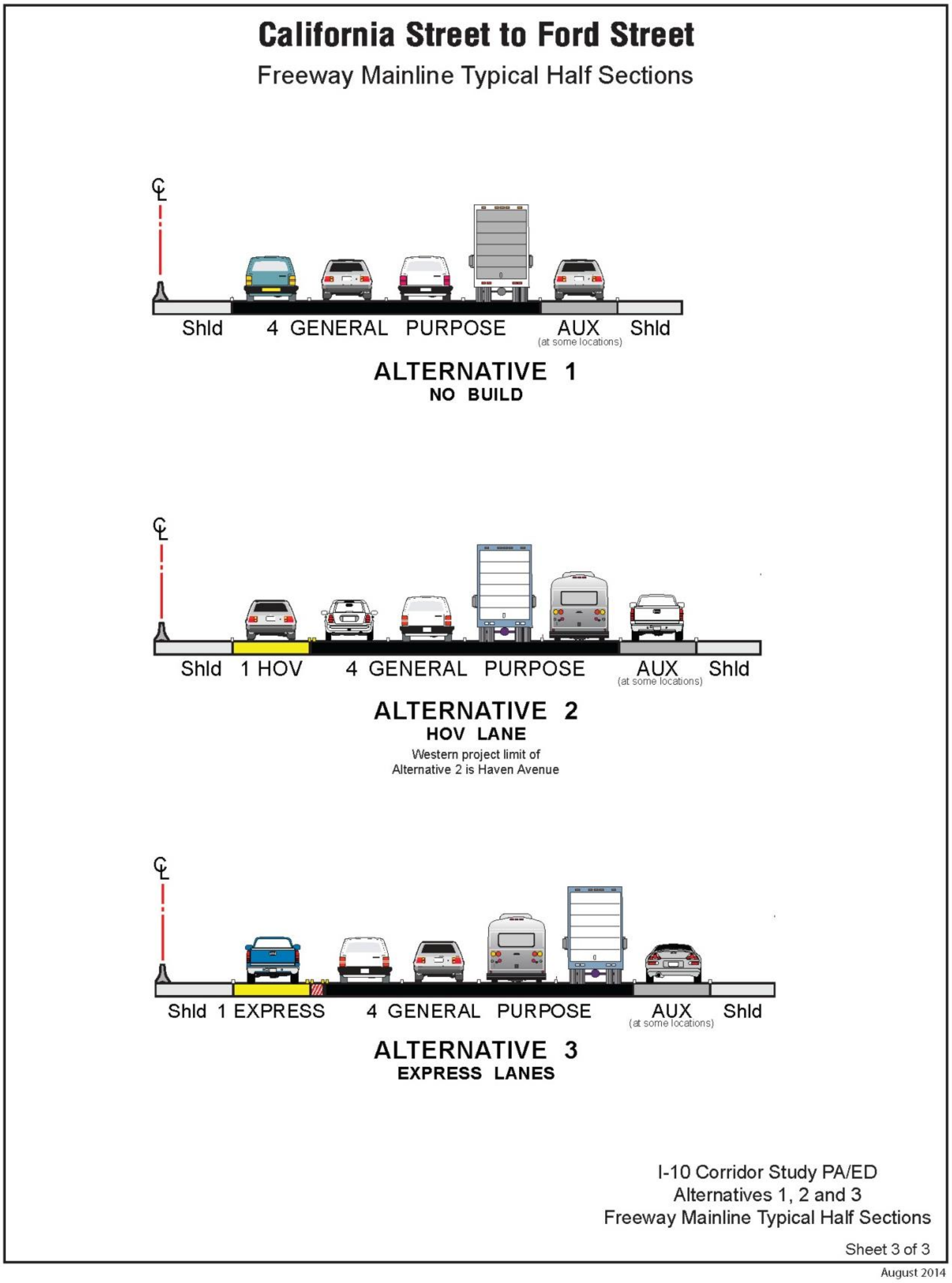
Source: Traffic Study, 2014.

Figure 3.1.6-3 Alternatives 1, 2, and 3 Typical Half Sections (Page 1 of 3)



Source: Traffic Study, 2014.

Figure 3.1.6-3 Alternatives 1, 2, and 3 Typical Half Sections (Page 2 of 3)



Source: Traffic Study, 2014.

Figure 3.1.6-3 Alternatives 1, 2, and 3 Typical Half Sections (Page 3 of 3)

Alternative 3 [Preferred Alternative] (Two Express Lanes in Each Direction). This alternative would provide two Express Lanes in each direction of I-10 from the LA/SB county line to California Street (near SR-210) in Redlands and one Express Lane in each direction from California Street to Ford Street in Redlands, a total of 33 miles. The Express Lanes would be price managed lanes in which vehicles not meeting the minimum occupancy requirement would pay a toll. West of Haven Avenue, a single new lane would be constructed and combined with the existing HOV lane to provide two Express Lanes in each direction; east of Haven Avenue, all Express Lanes would be constructed by the project. The freeway mainline typical half sections for Alternative 3 are illustrated in Figure 3.1.6-3.

Transition areas would be provided where the Express Lanes begin and end. Transition areas near the beginning of the Express Lanes would allow for traffic in HOV and general purpose lanes to change lanes to access the general purpose and Express Lanes within the project limits of Alternative 3. Transition areas at the end of the Express Lanes would allow traffic in the Express and general purpose lanes to change lanes to access the general purpose and HOV lanes downstream of the end of the Express Lanes facility. Transition areas may add new lanes and/or redesignate lanes from Express to HOV or general purpose.

Express Lanes would begin and end near the LA/SB county line and in the vicinity of the Ford Street interchange. Two transition areas (one in each direction) would be required for each location, for a total of four transition areas. In addition to the beginning and end near the LA/SB county line and Ford Street, access to the Express Lanes and from the general purpose Lanes or vice-versa would be provided in each direction at the following 10 locations:

1. Mountain Avenue interchange area
2. Between the SR-83 (Euclid Avenue) and Grove Avenue interchanges
3. Haven Avenue interchange area
4. Between the Etiwanda Avenue and Cherry Avenue interchanges
5. Citrus Avenue interchange area
6. Cedar Avenue interchange area
7. Pepper Avenue interchange area
8. Tippecanoe Avenue interchange area
9. California Street interchange area
10. Orange Avenue/6th Street interchange area

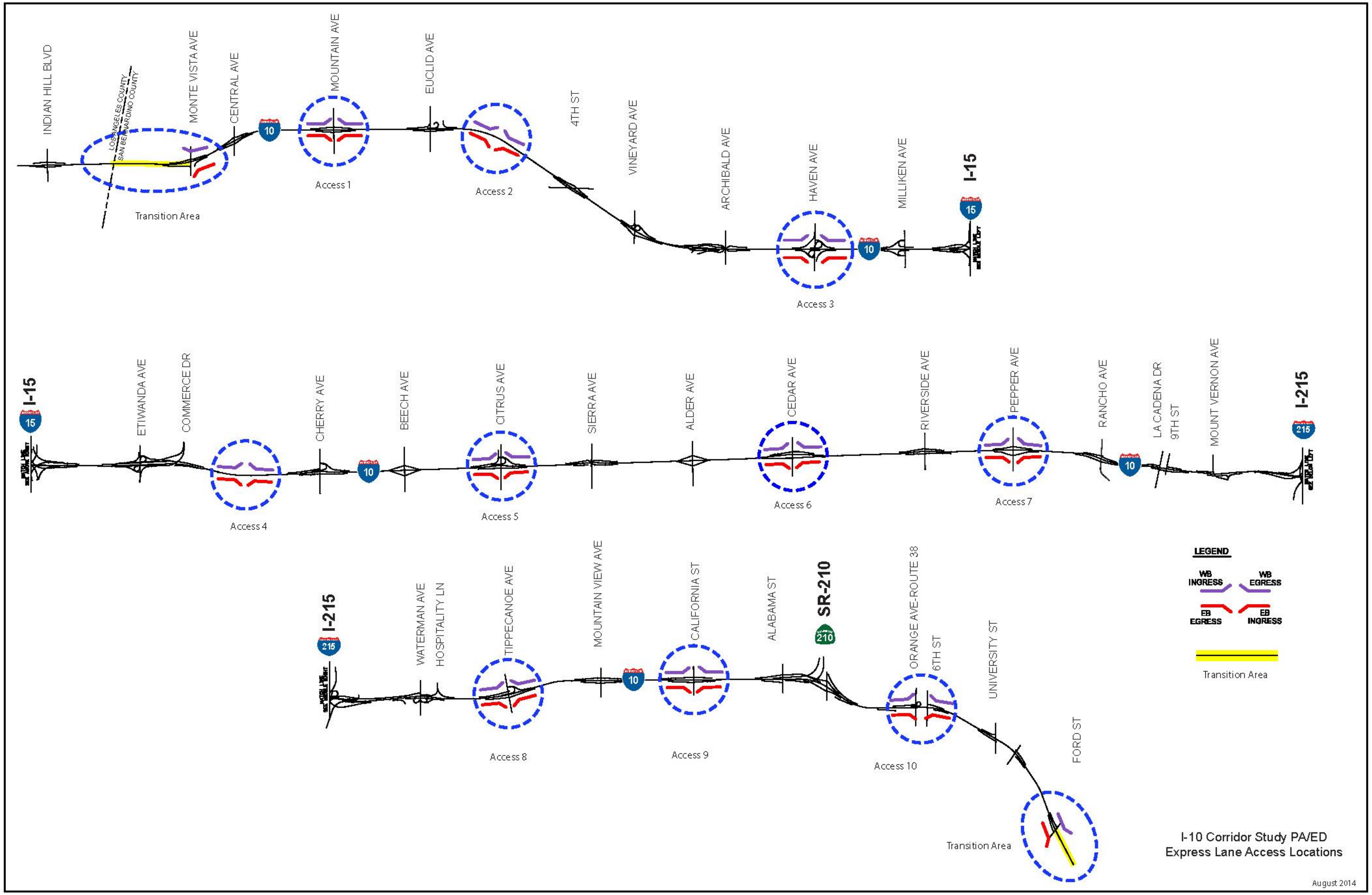
Figure 3.1.6-4 illustrates the proposed access points to the Express Lane.

In addition to the Express Lanes, Alternative 3 would provide the following improvements:

- Construct EB auxiliary lane between Mountain Avenue and SR-83 (Euclid Avenue)
- Construct WB auxiliary lane between Rancho Avenue and La Cadena Drive
- Extend WB auxiliary lane between Pepper Avenue and Riverside Avenue
- Modify one-lane off-ramps to two-lane off-ramps at the following locations:
  - Monte Vista Avenue WB off-ramp
  - Mountain Avenue WB off-ramp
  - SR-83 (Euclid Avenue) EB off-ramp
  - Holt Boulevard WB off-ramp
  - Waterman Avenue/Carnegie Drive WB off-ramp
- Improvements at the Monte Vista Avenue interchange
- Improvements at the SR-83 (Euclid Avenue) interchange
- Improvements at the Tennessee Street interchange

Traffic Forecasting Model

The traffic forecasts for the project were developed using the San Bernardino County Transportation Analysis Model (SBTAM), which is based on the Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP) model. SBTAM assigns traffic for six vehicle types: drive alone, HOV 2, HOV 3+, light truck, medium-duty truck, and heavy-duty truck. SBTAM considers passenger car equivalents (PCE) for the three truck classes when performing the highway assignment. Toll facility activity was forecast assuming tolling of single-occupant passenger vehicles only. The forecast volumes were then post-processed to reflect a smooth and logical balance between the mainline freeway and Express Lanes. SBTAM, consistent with traditional travel demand models, often produces forecasts for facilities that exceed available capacity; however, the toll policy for the Express Lane scenario will ensure an efficient LOS and minimum travel speed. It is anticipated that the maximum capacity of the I-10 Express Lanes to maintain a minimum speed of 60 mph would be approximately 1,700 vehicles per hour per lane (vphpl). As a result, the capacity of the Express Lanes has been capped at 1,700 vphpl, with vehicles forecast in excess of this capacity shifted into the general purpose lanes for analysis purposes.



Source: Traffic Study, 2014.

Figure 3.1.6-4 Express Lane Access Locations

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SBTAM has a horizon year of 2035, but forecasts beyond 2035 are required for the I-10 Project Approval/Environmental Document (PA/ED) study. A post-2035 scenario was not developed for SBTAM; rather, 2035 forecast volumes were post-processed as necessary to 2045 conditions. The methodology for post-processing I-10 corridor forecast volumes was to evaluate annual growth on the corridor between 2010 and 2035 and apply the forecast annual growth rate in daily forecast volumes to 2035 forecast volumes to generate 2045 forecasts. The annual growth factor for the I-10 corridor used to develop the 2045 forecast was calculated to be 0.95 percent or 9.7 percent for 10 years. This growth factor is the weighted average growth throughout the corridor for both EB and WB directions and was calculated by comparing the existing and 2035 model volumes on the I-10 corridor. Forecast AM and PM peak-hour traffic volumes on the freeway mainline and ramps are shown for each alternative for years 2025 and 2045 in the Traffic Study (Figures 2.4.1, 2.4.2, 2.5.1, 2.5.2, 2.6.1, and 2.6.2).

Peak-hour future forecast traffic volumes for the study intersections were developed using the output volumes from the SBTAM. The AM and PM peak-period forecast traffic volumes were converted to peak-hour volumes by applying peak-hour conversion factors (0.372 for 3 hours in the AM and 0.272 for 4 hours in the PM peak periods). After the peak-hour traffic volumes were calculated, intersection turning movements were developed using the "iterative" methodology as described in the "National Cooperative Highway Research Program (NCHRP) Report 255: Highway Traffic Data for Urbanized Area Project Planning and Design," Chapter 8. The method uses the base year turning volume percentages (from the traffic counts) and the projected growth (difference) in the intersection's approach/departure volumes between the existing and future models, then proceeds through an iterative computational technique to produce a balanced, final set of adjusted future year peak-hour turning volumes. Graphics showing the forecast 2025 and 2045 peak-hour intersection traffic volumes at each interchange are presented in the Traffic Study (Figures 3.4.1, 3.4.3, 3.5.1, 3.5.3, 3.6.1, and 3.6.3). Future ADT volumes for arterial roadways between ramp intersections are summarized in Table 3.1.6-10.

Alternative 1 (No Build)

Alternative 1 (No Build) lane configurations for the I-10 mainline and all interchange ramps within the project limits for Opening Year (2025) and Design Year (2045) are illustrated in the Traffic Study (Figures 2.4.1 and 2.4.2). Alternative 1 (No Build) lane configurations for the study intersections for Opening Year (2025) and Design Year (2045) are illustrated in the Traffic Study (Figures 3.4.2 and 3.4.4).

Freeway Mainline

The Opening Year (2025) and Design Year (2045) Alternative 1 (No Build) AM/PM peak-hour traffic volumes, along with lane configurations for the I-10 mainline and all interchange ramps within the project limits, are presented in the Traffic Study (Figures 2.4.1 and 2.4.2).

Alternative 1 (No Build) ADT along the I-10 mainline freeway in 2025 and 2045 is presented in Table 3.1.6-2. ADTs in 2025 range from 191,000 to 288,000 vpd and from 241,000 to 313,000 vpd in 2045, compared to the range of 151,000 to 230,000 vpd under the existing condition. As shown in Table 3.1.6-3, Alternative 1 (No Build) VMT in the study corridor is forecast to be 8.2 million vehicle miles in 2025 and 9.7 million vehicle miles in 2045, compared to 7.1 million vehicle miles under existing conditions.

V/C Ratio and LOS. Table 3.1.6-4 presents the LOS and v/c ratios for peak hours of Alternative 1 (No Build) in 2025 for the general purpose lanes of the EB and WB I-10. Under Alternative 1 conditions in year 2025, the freeway mainline is anticipated to operate at LOS C to F during the AM peak hour in the EB direction and LOS F in the WB direction. In the PM peak hour, the freeway mainline is anticipated to operate at LOS F in the EB direction and LOS C to F in the WB direction. The range of v/c ratios in the freeway's general purpose lanes during the AM peak hour in 2025 under Alternative 1 is 0.58 to 1.31 and 0.73 to 1.39 during the PM peak hour. Based on subtracting the existing conditions v/c ratio (as shown in Table 3.1.6-4) from the expected 2025 Alternative 1 (No Build) v/c ratio (as shown in Table 3.1.6-4), the 2025 Alternative 1 (No Build) v/c ratio decrease by 0.06 to 0.23 greater during the AM peak hour and 0.04 to 0.31 greater than during the PM peak hour compared to existing conditions. A more-detailed link-by-link presentation of the freeway mainline LOS under Alternative 1 traffic condition for general purpose lanes is included in the Traffic Study (Table 2.4.2).

Table 3.1.6-5 presents the LOS and v/c ratios for peak hours of Alternative 1 (No Build) in the HOV (carpool) lanes. Under Alternative 1 (No Build) the HOV lane terminates at Haven Avenue and HOV traffic would be served by the existing general purpose lanes east of Haven Avenue. The HOV lanes operate at LOS C in the EB direction and LOS E in the WB direction during the AM peak hour; they operate at LOS F in both directions during the PM peak hour.

The v/c ratios in the HOV lanes during the AM peak hour are 0.68 in the EB direction and 0.92 in the WB direction and during the PM peak hour are 1.02 in the EB direction and 1.31 in the WB direction. Based on subtracting the existing conditions v/c ratio (as shown in Table 3.1.6-5) from the expected 2025 Alternative 1 (No Build) v/c ratio (as shown in Table 3.1.6-5), the 2025 Alternative 1 (No Build) v/c ratio is greater by 0.11 to 0.32 during the AM peak hour and 0.29 to 0.68 during the PM peak hour compared to existing conditions. A more-detailed link-by-link presentation of the existing freeway mainline LOS under 2012 traffic conditions for HOV lanes is included in the Traffic Study (Table 2.3.2).

Table 3.1.6-12 presents the LOS and v/c ratios for peak hours of Alternative 1 (No Build) in 2045 for the general purpose lanes of the EB and WB I-10. Under Alternative 1 (No Build) in year 2045, the freeway mainline is anticipated to operate at LOS F during both the AM and PM peak hours in both directions, except for LOS D in the EB direction between California Street and Ford Street during the AM peak hour. The range of v/c ratios in the freeway's general purpose lane during the AM peak hour in 2045 is 0.78 to 1.54 and 0.91 to 1.49 during the PM peak hour. Based on subtracting the existing conditions v/c ratio (as shown in Table 3.1.6-12) from the expected 2045 Alternative 1 (No Build) v/c ratio (as shown in Table 3.1.6-12), the 2045 Alternative 1 (No Build) v/c ratio increases from 0.17 to 0.46 for the AM peak hour and 0.10 to 0.48 for the PM peak hour compared to existing conditions.

Table 3.1.6-13 presents the LOS and v/c ratios for peak hours of Alternative 1 (No Build) in 2045 for the HOV lanes of the EB and WB I-10. Under Alternative 1 (No Build) conditions in year 2045, the HOV lanes are anticipated to operate at LOS F during both the AM and PM peak hours in both directions, except for LOS E in the EB direction during the AM peak hour. The range of v/c ratios in the freeway's HOV lanes during the AM peak hour in 2045 is 0.95 to 1.04 and 1.12 to 1.46 during the PM peak hour. Based on subtracting the existing conditions v/c ratio (as shown in Table 3.1.6-13) from the expected 2045 Alternative 1 (No Build) v/c ratio (as shown in Table 3.1.6-13), the 2045 Alternative 1 (No Build) v/c ratio increases by 0.23 to 0.59 in the AM peak hour and 0.39 to 0.83 in the PM peak hour compared to existing conditions.

Peak-Period Performance. Table 3.1.6-6 shows forecast Alternative 1 (No Build) speeds for 2025 and 2045 along I-10 between the LA/SB county line and Ford Street during peak hours in each direction by lane type (general purpose and HOV).

In 2025 under Alternative 1 (No Build), segment speeds in the general purpose lanes in the EB direction on I-10 range from 46 to 65 mph during the AM peak hour and 16 to 41 mph during the PM peak hour, compared to existing condition speeds of 57 to 65 mph during the AM peak hour and 42 to 54 mph during the PM peak hour. In the WB direction, the general purpose segment speeds range from 13 to 46 mph during the AM peak hour and 13 to 64 mph during the PM peak hour, compared to existing conditions speeds of 32 to 59 mph during the AM peak hour and 46 to 65 mph during the PM peak hour. Speeds in the HOV lanes west of Haven Avenue during the peak hours range from 13 to 65 mph, compared to existing condition speeds of 62 to 65 mph during the peak hours. For an entire corridor trip between the LA/SB county line and the Ford Street interchange, speeds range from 32 to 52 mph in the general purpose lanes during the peak hours, compared to existing condition speeds of 48 to 60 mph during the peak hours. HOV speeds for a trip between the LA/SB county line and Ford Street is a combination of HOV lane speeds west of Haven Avenue and general purpose lane speeds east of Haven Avenue. Speeds of HOVs for an entire corridor trip range from 32 to 55 mph during the peak hours, compared to existing condition speeds of 52 to 61 mph during the peak hours.

In 2045 under Alternative 1 (No Build), segment speeds in the general purpose lanes in the EB direction on I-10 range from 14 to 63 mph during the AM peak hour and 10 to 33 mph during the PM peak hour, compared to existing condition speeds of 57 to 65 mph during the AM peak hour and 42 to 54 mph during the PM peak hour. In the WB direction, the general purpose segment speeds range from 10 to 29 mph during the AM peak hour and 10 to 56 mph during the PM peak hour, compared to existing conditions speeds of 32 to 59 mph during the AM peak hour and 46 to 65 mph during the PM peak hour. Speeds in the HOV lanes west of Haven Avenue during the peak hours range from 10 to 57 mph, compared to existing condition speeds of 62 to 65 mph during the peak hours. For an entire corridor trip between the LA/SB county line and the Ford Street interchange, speeds range from 21 to 29 mph in the general purpose lanes during the peak hours, compared to existing condition speeds of 48 to 60 mph during the peak hours. HOV speeds for a trip between the LA/SB county line and Ford Street are a combination of HOV lane speeds west of Haven Avenue and general purpose lane speeds east of Haven Avenue. Speeds of HOVs for an entire corridor trip range from 21 to 36 mph during the peak hours, compared to existing condition speeds of 52 to 61 mph during the peak hours.

Corridor Travel Time. Table 3.1.6-7 shows forecast Alternative 1 (No Build) corridor travel time for 2025 and 2045 along I-10 between the LA/SB county line and Ford Street during peak hours in each direction by lane type (general purpose and HOV).

Table 3.1.6-12 I-10 Mainline General Purpose Lane Density, LOS, and Volume-to-Capacity Ratio for Year 2045

Segment	EB or WB	Existing 2012						Alternative 1 – 2045						Alternative 2 – 2045						Alternative 3 - 2045					
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
		Den	LOS	V/C	Den	LOS	V/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C
Los Angeles/San Bernardino County Line to Haven Avenue	EB	29.4	D	1.00	*	F	0.99	*	F	1.17	*	F	1.09	*	F	1.25	*	F	1.16	*	F	1.20	*	F	1.20
	WB	*	F	1.11	*	F	1.01	*	F	1.23	*	F	1.49	*	F	1.27	*	F	1.53	*	F	1.29	*	F	1.59
Haven Avenue to California Street	EB	*	F	1.06	*	F	1.16	*	F	1.37	*	F	1.41	*	F	1.27	*	F	1.28	*	F	1.21	*	F	1.33
	WB	*	F	1.17	35.4	E	0.99	*	F	1.44	*	F	1.39	*	F	1.31	*	F	1.28	*	F	1.27	*	F	1.27
California Street to Ford Street	EB	19.4	B	0.52	*	F	1.02	33.8	D	0.78	*	F	1.42	31.9	D	0.73	*	F	1.25	32.1	D	0.85	*	F	1.35
	WB	*	F	1.08	19.9	C	0.64	*	F	1.54	46.9	F	0.91	*	F	1.37	27.1	C	0.77	*	F	1.49	29.5	D	0.93

EB – Eastbound; WB – Westbound; Den – Density; LOS – Level of Service; V/C – Volume-to-Capacity Ratio; D/C – Demand Volume-to-Capacity Ratio
* Density not calculated under HCM because volume exceeds the range of the density algorithm or there is no related methodology.

Source: Traffic Study, 2014.

Table 3.1.6-13 I-10 Mainline HOV Lane Density, LOS, and Volume-to-Capacity Ratio for Year 2045

Segment	EB or WB	Existing 2012						Alternative 1 – 2045						Alternative 2 – 2045						Alternative 3 - 2045					
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
		Den	LOS	V/C	Den	LOS	V/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C	Den	LOS	D/C
Los Angeles/San Bernardino County Line to Haven Avenue	EB	**	C	0.72	**	F	0.78	**	E	0.95	**	F	1.12	**	F	1.20	**	F	1.18	26.3	D	0.77	26.8	D	0.78
	WB	**	D	0.81	**	C	0.63	**	F	1.04	**	F	1.46	**	F	1.36	**	F	1.55	29.4	D	0.85	29.4	D	0.85
Haven Avenue to California Street	EB	--	--	--	--	--	--	--	--	--	--	--	--	**	D	0.87	**	F	1.21	27.0	D	0.80	27.5	D	0.82
	WB	--	--	--	--	--	--	--	--	--	--	--	--	**	F	1.54	**	F	1.54	29.3	D	0.85	29.4	D	0.85
California Street to Ford Street	EB	--	--	--	--	--	--	--	--	--	--	--	--	**	D	0.81	**	F	1.25	--	A	0.26	--	D	0.85
	WB	--	--	--	--	--	--	--	--	--	--	--	--	**	F	1.46	**	E	0.97	--	D	0.86	--	A	0.38

EB – Eastbound; WB – Westbound; Den – Density; LOS – Level of Service; V/C – Volume-to-Capacity Ratio; D/C – Demand Volume-to-Capacity Ratio; * - Density not calculated under HCM because volume exceeds the range of the density algorithm or there is no related methodology.
-- HOV lanes exist only west of Haven Avenue.
** Since HCM 2000 does not have an explicit methodology to evaluate single-lane HOV operations, v/c ratios (or d/c ratios) are calculated for HOV lanes to determine LOS.

Source: Traffic Study, 2014.

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In 2025 under Alternative 1 (No Build), segment travel times in the general purpose lanes in the EB direction on I-10 range from 2 to 17 minutes during the AM peak hour and 6 to 26 minutes during the PM peak hour, compared to existing condition travel times of 2 to 13 minutes during the AM peak hour and 3 to 14 minutes during the PM peak hour. In the WB direction, the general purpose segment travel times range from 12 to 24 minutes during the AM peak hour and 2 to 37 minutes during the PM peak hour, compared to existing condition travel times of 4 to 14 minutes during the AM peak hour and 2 to 14 minutes during the PM peak hour. Travel times in the HOV lanes west of Haven Avenue during the peak hours range from 7 to 37 minutes, compared to existing condition travel times of 7 to 8 minutes during the peak hours. For an entire corridor trip between the LA/SB county line and the Ford Street interchange, travel times range from 33 to 56 mph in the general purpose lanes during the peak hours, compared to existing condition travel times of 29 to 37 minutes during the peak hours. HOV travel times for a trip between the LA/SB county line and Ford Street are a combination of HOV lane travel times west of Haven Avenue and general purpose lane travel times east of Haven Avenue. Travel times of HOVs for an entire corridor trip range from 31 to 55 minutes during the peak hours, compared to existing condition travel times of 28 to 34 minutes during the peak hours.

In year 2045 under Alternative 1 (No Build), segment travel times in the general purpose lanes in the EB direction on I-10 range from 2 to 57 minutes during the AM peak hour and 12 to 50 minutes during the PM peak hour, compared to existing condition travel times of 2 to 13 minutes during the AM peak hour and 3 to 14 minutes during the PM peak hour. In the WB direction, the general purpose segment travel times range from 15 to 32 minutes during the AM peak hour and 3 to 56 minutes during the PM peak hour, compared to existing condition travel times of 4 to 14 minutes during the AM peak hour and 2 to 14 minutes during the PM peak hour. Travel times in the HOV lanes west of Haven Avenue during the peak hours range from 8 to 49 minutes, compared to 7 to 8 minutes during the peak hours. For an entire corridor trip between the LA/SB county line and the Ford Street interchange, travel times range from 59 to 85 mph in the general purpose lanes during the peak hours, compared to existing condition travel times of 29 to 37 minutes during the peak hours. HOV travel times for a trip between the LA/SB county line and Ford Street are a combination of HOV lane travel times west of Haven Avenue and general purpose lane travel times east of Haven Avenue. Travel times of HOVs for an entire corridor trip range from 47 to 84 minutes during the peak hours, compared to existing condition travel times of 28 to 34 minutes.

Vehicle Hours of Delay. Table 3.1.6-8 presents the daily and annual VHD forecast to occur on I-10 on weekdays in 2025 and 2045. VHD is based on the number of additional hours of vehicle travel required within the corridor due to speeds lower than 65 mph on weekdays during peak periods when congestion reduces speeds and increases corridor travel times. Under the Alternative 1 (No Build) condition in 2025, approximately 21,705 daily and 5.4 million annual VHD are anticipated on I-10; in 2045 under the Alternative 1 (No Build) condition, approximately 31,871 daily and 8.0 million annual VHD are anticipated, compared to 19,295 daily and 4.8 million annual VHD under the existing condition.

Freeway Connector Volumes. Tables 3.1.6-9 and 3.1.6-14 provide the 2025 and 2045 forecast, respectively, of branch connector volumes and v/c ratios on ramps between freeways within the project limits. The branch connectors are located at I-15, I-215, and SR-210. Branch connectors are forecast to operate with v/c ratios ranging from 0.32 to 1.98 in 2025 and 0.40 to 2.13 in 2045 under the Alternative 1 (No Build) condition, compared to 0.25 to 1.81 under existing conditions.

Arterials, Intersections, and Interchanges

A summary of the LOS analysis and v/c ratios for AM and PM peak hours for 2025 Alternative 1 (No Build) conditions is provided in Table 3.1.6-1 for all study intersections. In 2025 under Alternative 1 (No Build) conditions, the study intersections are anticipated to operate at LOS D or better, except for five intersections that are anticipated to operate at LOS E or F during the PM peak hour, compared to one intersection in the existing condition.

Table 3.1.6-1 shows that the study intersections are anticipated to operate under capacity (v/c equal to or less than 1.00) in 2025 under the Alternative 1 (No Build) conditions during peak hours, except for five intersections that are anticipated to operate over capacity during the PM peak hour. This compares to one intersection that is anticipated to operate over capacity under existing conditions.

A summary of the LOS analysis and v/c ratios for AM and PM peak hours for 2045 Alternative 1 (No Build) conditions is provided in Table 3.1.6-1 for all study intersections. In 2045 under Alternative 1 (No Build) conditions, the study intersections are anticipated to operate at LOS D or better, except for nine intersections that are anticipated to operate at LOS E or F during either the AM or PM peak hour or both, compared to 1 intersection in the existing condition.

Table 3.1.6-14 2045 Branch Connector Volumes and Volume-to-Capacity Ratios

Branch Connector	Existing 2012				Alternative 1 – 2045				Alternative 2 – 2045				Alternative 3 - 2045			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Volume	V/C	Volume	V/C	Volume	D/C	Volume	D/C	Volume	D/C	Volume	D/C	Volume	D/C	Volume	D/C
EB Off Direct (NB I-15)	1,350	0.45	2,420	0.81	1,580	0.53	2,790	0.93	1,560	0.52	2,790	0.93	1,610	0.54	2,790	0.93
EB Off Direct (SB I-15)	1,810	1.21	1,780	1.19	2,350	1.57	2,050	1.37	2,340	1.56	2,050	1.37	2,390	1.59	2,060	1.37
EB On Direct (NB I-15)	1,790	1.19	1,770	1.18	2,620	1.75	2,580	1.72	2,590	1.73	2,600	1.73	2,620	1.75	2,640	1.76
EB On Direct (SB I-15)	1,110	0.74	970	0.65	1,270	0.85	1,120	0.75	1,270	0.85	1,120	0.75	1,270	0.85	1,120	0.75
WB Off Direct (NB/SB I-15)	2,800	0.93	2,590	0.86	3,020	1.01	2,820	0.94	3,090	1.03	2,880	0.96	3,230	1.08	2,900	0.97
WB On Direct (SB I-15)	2,710	1.81	1,840	1.23	3,200	2.13	2,410	1.61	3,180	2.12	2,470	1.65	3,200	2.13	2,550	1.70
WB On Direct (NB I-15)	2,570	0.86	2,030	0.68	2,960	0.99	2,340	0.78	2,960	0.99	2,340	0.78	2,960	0.99	2,340	0.78
EB Off Direct (NB/SB I-215)	2,370	0.53	2,420	0.54	3,120	0.69	3,210	0.71	3,080	0.68	3,260	0.72	3,220	0.72	3,530	0.78
EB On Direct (NB I-215)	2,420	1.61	2,590	1.73	3,080	2.05	3,190	2.13	3,040	2.03	3,270	2.18	3,080	2.05	3,380	2.25
EB On Direct (SB I-215)	1,200	0.80	1,760	1.17	1,990	1.33	2,030	1.35	2,040	1.36	2,380	1.59	2,000	1.33	2,610	1.74
WB Off Direct (NB/SB I-215)	3,860	1.29	3,470	1.16	5,000	1.67	4,940	1.65	5,420	1.81	5,280	1.76	5,460	1.82	5,070	1.69
WB On Loop (NB I-215)	790	0.53	1,270	0.85	910	0.61	1,460	0.97	910	0.61	1,460	0.97	910	0.61	1,460	0.97
WB On Direct (SB I-215)	1,280	0.85	1,550	1.03	2,140	1.43	2,520	1.68	2,170	1.45	2,600	1.73	2,280	1.52	2,760	1.84
EB Off Direct (NB SR-210)	760	0.25	1,540	0.51	1,210	0.40	2,250	0.75	1,130	0.38	2,400	0.80	1,290	0.43	2,710	0.90
EB On Direct (SB SR-210)	1,620	1.08	2,130	1.42	2,440	1.63	3,130	2.09	2,390	1.59	2,940	1.96	2,340	1.56	2,670	1.78
WB Off Direct (NB SR-210)	2,050	0.68	1,800	0.60	3,610	1.20	3,030	1.01	3,360	1.12	2,650	0.88	3,290	1.10	2,820	0.94
WB On Direct (SB SR-210)	1,610	1.07	930	0.62	2,050	1.37	1,380	0.92	2,110	1.41	1,390	0.93	2,270	1.51	1,570	1.05

V/C – Volume-to-Capacity Ratio (D/C – Demand Volume-to-Capacity Ratio) is based on branch connector capacity of 1,500 per lane for each freeway ramp connector lane.

Source: Traffic Study, 2014.

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Table 3.1.6-1 shows that the study intersections are anticipated to operate under capacity (v/c equal to or less than 1.00) in 2045 under Alternative 1 (No Build) conditions during peak hours, except for 11 intersections that are anticipated to operate over capacity during either the AM or PM peak hour or both. This compares to 1 intersection that is anticipated to operate over capacity under existing conditions.

A comparison of vehicle queuing (higher of AM or PM peak-hour 95th percentile queues) in year 2045 with available storage (in feet) was conducted at all arterial interchange study intersections and is summarized in Table 3.1.6-11. Table 3.1.6-11 shows that 44 percent of off-ramps with traffic control at their arterial intersections are anticipated to have adequate turning lane storage under Alternative 1 (No Build) conditions in 2045, compared to 84 percent under existing conditions.

Table 3.1.6-11 also shows that 26 percent of arterials are anticipated to have adequate turning lane storage at ramp intersections under Alternative 1 (No Build) conditions in 2045, compared to 43 percent under existing conditions. Additionally, Table 3.1.6-11 shows that 33 percent of turning lanes at arterial/arterial intersections are anticipated to have adequate storage under Alternative 1 (No Build) conditions in 2045, compared to 67 percent under existing conditions. No ramp metering analysis was conducted under Alternative 1 (No Build) conditions.

Alternative 2 (HOV Lanes)Alternative 2 (HOV) lane configurations for the I-10 mainline and all interchange ramps within the project limits for Opening Year (2025) and Design Year (2045) are illustrated in the Traffic Study (Figures 2.5.1 and 2.5.2). Alternative 2 (HOV) lane configurations for the study intersections for Opening Year (2025) and Design Year (2045) are illustrated in the Traffic Study (Figures 3.5.2 and 3.5.4).

Freeway Mainline

The Opening Year (2025) and Design Year (2045) Alternative 2 (HOV) AM/PM peak-hour traffic volumes, along with lane configurations for the I-10 mainline and all interchange ramps within the project limits, are presented in the Traffic Study (Figures 2.5.1 and 2.5.2).

The Alternative 1 ADT along the I-10 mainline freeway in 2025 and 2045 is presented in Table 3.1.6-2. ADT in 2025 for Alternative 2 ranges from 214,000 to 302,000 vpd, compared to the range of 191,000 to 288,000 vpd for Alternative 1 (No Build). ADT in 2045 for Alternative 2 ranges from 254,000 to 322,000 compared to the range of 241,000 to 313,000 vpd for Alternative 1 (No Build). As shown in Table 3.1.6-3, Alternative 2 daily VMT in the study corridor is forecast to be 8,451,000 in

2025 and 10,013,000 in 2045, compared to 8,195,000 in 2025 and 9,746,000 in 2045 under Alternative 1 (No Build). The increase in ADT and VMT anticipated along the I-10 mainline results from reductions in congestion diversion from I-10. Currently, motorists avoid I-10 and use local streets because I-10 is heavily congested. As traffic demand grows, this condition is expected to intensify under Alternative 1 (No Build). VMT can be expected to increase on I-10 under the build alternatives because freeway congestion would be reduced with a consequential reduction in diversion from I-10 to local streets.

V/C Ratio and LOS. Table 3.1.6-4 presents the LOS and v/c ratios for peak hours of Alternative 2 in 2025 for the general purpose lanes of the EB and WB I-10. Under Alternative 2 in year 2025, the freeway mainline is anticipated to operate at LOS F during both the AM and PM peak hours in both directions, except for LOS C between California Street and Ford Street in the EB direction during the AM peak hour and the WB direction during the PM peak hour. Under Alternative 1 (No Build), LOS F is also anticipated during both the AM and PM peak hour in both directions, except for LOS D during the AM peak hour in the EB direction between the LA/SB county line and Haven Avenue, LOS C between California Street and Ford Street in the EB direction during the AM peak hour, and LOS C between California Street and Ford Street in the WB direction during the PM peak hour.

The range of v/c ratios in the freeway's general purpose lanes during the AM peak hour in 2025 under Alternative 2 is 0.62 to 1.22 and 0.65 to 1.37 during the PM peak hour. Alternative 2 v/c ratios range from 0.16 less than to 0.14 greater than v/c ratios in the general purpose lanes under Alternative 1 (No Build). A more-detailed link-by-link presentation of the freeway mainline LOS under Alternative 2 Opening Year (2025) and Design Year (2045) traffic conditions for general purpose lanes is included in the Traffic Study (Tables 2.5.2 and 2.5.4).

Table 3.1.6-5 presents the LOS and v/c ratios for peak hours of Alternative 2 in 2025 for the HOV lanes of the EB and WB I-10. Under Alternative 2, the HOV lane extends from the current HOV terminus near Haven Avenue to Ford Street. In year 2025 Alternative 2, the HOV lanes between the LA/SB county line and Haven Avenue are anticipated to operate at LOS F during both the AM and PM peak hour, except for LOS C during the AM peak hour in the EB direction. Under Alternative 1 (No Build), LOS F is also anticipated during the PM peak hour in both directions and LOS C in the EB direction and LOS E in the WB direction during the AM peak hour. For the extended HOV lane between Haven Avenue and Ford Street under Alternative 2, the HOV lane is anticipated to operate at LOS B to F during the AM peak hour in both directions and LOS D to F during the PM peak hour in both directions. Under Alternative 1 (No Build) between Haven Avenue and Ford Street, LOS F in the general purpose lane is anticipated during both the AM and PM peak hour in both directions, except for LOS C between California Street and Ford Street in the EB direction during the AM peak hour and LOS C between California Street and Ford Street in the WB direction during the PM peak hour.

The range of v/c ratios in the freeway's HOV lanes between the LA/SB county line and Haven Avenue during the AM peak hour in 2025 is 0.71 to 1.23 and 1.05 to 1.42 during the PM peak hour; Alternative 2 v/c ratios are higher than Alternative 1 (No Build) by 0.03 to 0.31 for the AM peak hour and 0.03 to 0.11 for the PM peak hour. For the extended HOV lanes between Haven Avenue and Ford Street, the range of v/c ratios during the AM peak hour in 2025 is 0.42 to 1.38 and 0.82 to 1.39 for the PM peak hour; Alternative 2 v/c ratios for the HOV lane are lower by 0.85 to higher by 0.09 during the AM peak hour and lower by 0.57 to higher by 0.14 during the PM peak hour than the v/c ratios for the general purpose lane in Alternative 1 (No Build).

Table 3.1.6-12 presents the LOS and v/c ratios for peak hours of Alternative 2 in 2045 for the general purpose lanes of the EB and WB I-10. Under Alternative 2 in year 2045, the freeway mainline is anticipated to operate at LOS F during both the AM and PM peak hours in both directions, except for LOS D during the AM peak hour in the EB direction and LOS C during the PM peak hour in the WB direction between California Street and Ford Street. Under Alternative 1 (No Build), LOS F is also anticipated during both the AM and PM peak hour in both directions, except for LOS D during the AM peak hour in the EB direction between California Street and Ford Street.

The range of v/c ratios in the freeway's general purpose lanes during the AM peak hour in 2045 under Alternative 2 is 0.73 to 1.37 and 0.77 to 1.53 during the PM peak hour. Alternative 2 v/c ratios range from 0.17 less than to 0.08 greater than v/c ratios in the HOV lanes under Alternative 1 (No Build).

Table 3.1.6-13 presents the LOS and v/c ratios for peak hours of Alternative 2 in 2045 for the HOV lanes of the EB and WB I-10. Under Alternative 2, the HOV lane extends from the current HOV terminus near Haven Avenue to Ford Street. In year 2045 Alternative 2, the HOV lanes between the LA/SB county line and Haven Avenue are anticipated to operate at LOS F during both the AM and PM peak hour in both directions. Under Alternative 1 (No Build), LOS F is also anticipated during both the AM and PM peak hour in both directions, except LOS E in the EB direction during the AM peak hour. Under Alternative 2 for the extended HOV lane between Haven Avenue and Ford Street, the HOV lane is anticipated to operate at LOS F during both the AM and PM peak hour in both directions, except for LOS D in the EB direction between Haven Avenue and Ford Street during the AM peak hour and LOS E in the WB direction between California Street and Ford Street during the PM peak hour. Under Alternative 1 (No Build) as shown in Table 3.1.6-12, LOS F on the general purpose lane is anticipated during both the AM and PM peak hour in both directions, except for LOS D during the AM peak hour in the EB direction between California Street and Ford Street.

The range of v/c ratios in the freeway's HOV lanes between the LA/SB county line and Haven Avenue during the AM peak hour for Alternative 2 in 2045 is 1.20 to 1.36 and 1.18 to 1.55 during the PM peak hour; the Alternative 2 v/c ratios are higher than Alternative 1 (No Build) by 0.25 to 0.32 for the AM peak hour and 0.06 to 0.09 for the PM peak hour. For the extended HOV lanes between Haven Avenue and Ford Street, the range of v/c ratios for Alternative 2 during the AM peak hour in 2045 is 0.81 to 1.54 and 0.97 to 1.54 for the PM peak hour; the Alternative 2 v/c ratios for the HOV lane are lower than the v/c ratios for the general purpose lane in Alternative 1 (No Build) by 0.50 to higher by 0.10 during the AM peak hour and lower by 0.20 to higher by 0.15 during the PM peak hour.

The Transportation System Management (TSM) and Transportation Demand Management (TDM) measures included in Alternative 2 (identified in Section 2.2.1.1, Common Design Features of the Build Alternatives) are expected to reduce system demand by promoting carpooling and transit uses. Specifically, the project would support Omnitrans' current plan to add express bus lines along I-10 between Ontario and San Bernardino. With implementation of Alternative 2, the proposed Omnitrans express routes would be able to use approximately 24 miles of the HOV lanes on I-10. In addition, bus stops would be incorporated at the on-ramps at the Sierra Avenue interchanges along with associated intersection, pedestrian access, and traffic signal improvements to accommodate the Omnitrans express bus services.

In addition, several Intelligent Transportation Systems (ITS) elements are also anticipated to be incorporated into the project improvements, which may include fiber-optic and other communication systems, changeable message signs (CMS), closed-circuit television (CCTV), ramp metering, and vehicle detection systems. At locations of interchange improvements, upgraded traffic signals would be installed to be interconnected and/or coordinated with adjacent signals and ramp meters.

Peak-Period Performance. Table 3.1.6-6 shows forecast Alternative 2 speeds for 2025 and 2045 along I-10 between the LA/SB county line and I-10 during peak hours in each direction by lane type (general purpose and HOV).

In 2025 under Alternative 2, segment speeds in the general purpose lanes in the EB direction on I-10 range from 42 to 65 mph during the AM peak hour and 22 to 42 mph during the PM peak hour, compared to Alternative 1 (No Build) speeds of 46 to 65 mph during the AM peak hour and 21 to 41 mph during the PM peak hour. In the WB direction, the general purpose segment speeds range from 20 to 51 mph during the AM peak hour and 12 to 65 mph during the PM peak hour, compared to Alternative 1 (No Build) speeds of 13 to 46 mph during the AM peak hour and 13 to 64 mph during the PM peak hour. Segment speeds in the HOV lanes during the peak hours range from 36 to 65 mph in the EB direction and 10 to 65 mph in the WB direction. For an entire corridor trip between the LA/SB county line and the Ford Street interchange, speeds range from 36 to 48 mph in the general purpose lanes during the peak hours, compared to Alternative 1 (No Build) speeds of 32 to 52 mph during the peak hours. Speeds of HOVs for an entire corridor trip range from 43 to 65 mph during the peak hours, compared to Alternative 1 (No Build) speeds of 32 to 55 mph during the peak hours.

In year 2045 under Alternative 2, segment speeds in the general purpose lanes in the EB direction on I-10 range from 21 to 64 mph during the AM peak hour and 18 to 30 mph during the PM peak hour, compared to Alternative 1 (No Build) speeds of 14 to 63 mph during the AM peak hour and 10 to 33 mph during the PM peak hour. In the WB direction, the general purpose segment speeds range from 10 to 33 mph during the AM peak hour and 10 to 63 mph during the PM peak hour, compared to Alternative 1 (No Build) speeds of 10 to 29 mph during the AM peak hour and 10 to 56 mph during the PM peak hour. Segment speeds in the HOV lanes during the peak hours range from 10 to 65 mph in the EB direction and 10 to 60 mph in the WB direction. For an entire corridor trip between the LA/SB county line and the Ford Street interchange speeds range from 24 to 30 mph in the general purpose lanes during the peak hours, compared to Alternative 1 (No Build) speeds of 21 to 29 mph during the peak hours. Speeds for HOVs for an entire corridor trip range from 29 to 57 mph during the peak hours, compared to Alternative 1 (No Build) speeds of 21 to 36 mph during the peak hours.

Corridor Travel Time. Table 3.1.6-7 shows forecast Alternative 2 corridor travel time for 2025 and 2045 along I-10 between the LA/SB county line and Ford Street during peak hours in each direction by lane type (general purpose and HOV).

In 2025 under Alternative 2, segment travel times in the general purpose lanes in the EB direction on I-10 range from 2 to 18 minutes during the AM peak hour and 3 to 19 minutes during the PM peak hour, compared to Alternative 1 (No Build) travel times of 2 to 17 minutes during the AM peak hour and 6 to 26 minutes during the PM peak hour. In the WB direction, the general purpose segment travel times range from 7 to 24 minutes during the AM peak hour and 2 to 41 minutes during the PM peak hour, compared to Alternative 1 (No Build) travel times of 12 to 24 minutes during the AM peak hour and 2 to 37 minutes during the PM peak hour. Segment travel times in the HOV lanes in the EB direction range from 2 to 12 minutes during the AM peak hour and 3 to 12 minutes during the PM peak hour. In the WB direction, the HOV segment travel times range from 2 to 13 minutes during the AM peak hour and 2 to 49 minutes during the PM peak hour. For an entire corridor trip between the LA/SB county line and the Ford Street interchange, travel times range from 36 to 49 minutes in the general purpose lanes during the peak hours, compared to Alternative 1 (No Build) travel times of 33 to 56 minutes during the peak hours. Travel times of HOVs for an entire corridor trip range from 26 to 33 minutes during the peak hours, compared to Alternative 1 (No Build) travel times of 31 to 55 minutes during the peak hours.

In year 2045 under Alternative 2, segment travel times in the general purpose lanes in the EB direction on I-10 range from 2 to 42 minutes during the AM peak hour and 7 to 29 minutes during the PM peak hour, compared to Alternative 1 (No Build) travel times of 2 to 57 minutes during the AM peak hour and 12 to 50 minutes during the PM peak hour. In the WB direction, the general purpose segment travel times range from 15 to 32 minutes during the AM peak hour and 2 to 49 minutes during the PM peak hour, compared to Alternative 1 (No Build) travel speeds of 15 to 32 minutes during the AM peak hour and 3 to 56 minutes during the PM peak hour. Segment travel times in the HOV lanes in the EB direction range from 2 to 12 minutes during the AM peak hour and 12 to 17 minutes during the PM peak hour. In the WB direction, the HOV segment travel times range from 14 to 30 minutes during the AM peak hour and 3 to 49 minutes during the PM peak hour. For an entire corridor trip between the LA/SB county line and the Ford Street interchange travel time range from 56 to 72 minutes in the general purpose lanes during the peak hours, compared to Alternative 1 (No Build) travel times of 59 to 85 minutes during the peak hours. Travel times of HOVs for an entire corridor trip range from 30 to 60 minutes during the peak hours, compared to Alternative 1 (No Build) travel times of 47 to 84 minutes during the peak hours.

Vehicle Hours of Delay. Table 3.1.6-8 presents the daily and annual VHD forecast to occur on I-10 on weekdays in 2025 and 2045. VHD is based on the number of additional hours of vehicle travel required within the corridor due to speeds lower than 65 mph on weekdays during peak periods when congestion reduces speeds and increases corridor travel times. Under Alternative 2 in 2025, approximately 20,349 daily and 5.1 million annual VHD are anticipated on I-10, compared to 19,295 daily and 4.8 million annual VHD under Alternative 1 (No Build) conditions. In 2045 under Alternative 2, approximately 27,281 daily and 6.8 million annual VHD are anticipated, compared to 31,871 daily and 8.0 million annual VHD under Alternative 1 (No Build) condition.

Freeway Connector Volumes. Tables 3.1.6-9 and 3.1.6-14 provide the 2025 and 2045 forecast, respectively, of branch connector volumes and v/c ratios on ramps between freeways within the project limits. The branch connectors are located at I-15, I-215, and SR-210. Branch connectors are forecast to operate with v/c ratios ranging from 0.29 to 1.97 in 2025 and from 0.38 to 2.18 in 2045 under Alternative 2 conditions, compared to 0.32 to 1.98 in 2025 and 0.40 to 2.13 in 2045 under Alternative 1 (No Build) conditions.

Arterials, Intersections, and Interchanges

A summary of the LOS analysis and v/c ratios for AM and PM peak hours for 2025 Alternative 2 conditions is provided in Table 3.1.6-1 for all study intersections. In 2025 under Alternative 2, the study intersections are anticipated to operate at LOS D or better, except for three intersections that are anticipated to operate at F during the PM peak hour. This compares to the five intersections, including three of the intersections under Alternative 2 that are anticipated to operate at LOS E or F under Alternative 1 (No Build) conditions in 2025.

Table 3.1.6-1 shows that the study intersections are anticipated to operate under capacity (v/c equal to or less than 1.00) in 2025 under Alternative 2 during peak hours, except for four intersections that are anticipated to operate over capacity during either the AM or PM peak hour or both. This compares to five intersections that are anticipated to operate over capacity under Alternative 1 (No Build) conditions in 2025.

A summary of the LOS analysis and v/c ratios for AM and PM peak hours for 2045 Alternative 2 conditions is provided in Table 3.1.6-1 for all study intersections. In 2045 under Alternative 2, the study intersections are anticipated to operate at LOS D or better, except for five intersections that are anticipated to operate at LOS E or F during either the AM or PM peak hour or both, compared to nine intersections under Alternative 1 (No Build) conditions in 2045.

Table 3.1.6-1 shows that the study intersections are anticipated to operate under capacity (v/c equal to or less than 1.00) in 2045 under Alternative 2 during peak hours, except for seven intersections that are anticipated to operate over capacity during either the AM or PM peak hour or both. This compares to 11 intersections, including the seven intersections under Alternative 2 that are anticipated to operate over capacity under Alternative 1 (No Build) conditions in 2045.

Table 3.1.6-1 compares the Opening Year (2025) and Design Year (2045) overall v/c ratios for study intersections under Alternative 1 (No Build) with Alternative 2 (HOV). Table 3.1.6-1 shows that the project does not have an adverse effect on any of the study intersections under Alternative 2. Intersection improvements have been incorporated as part of the proposed project.

A comparison of vehicle queuing (higher of AM or PM peak-hour 95th percentile queues) in year 2045 with available storage (in feet) was conducted at all arterial interchange study intersections and is summarized in Table 3.1.6-11. Table 3.1.6-11 shows that 56 percent of off-ramps with traffic control at their arterial intersections are anticipated to have adequate turning lane storage under Alternative 2 in 2045, compared to 44 percent under Alternative 1 (No Build) conditions. Under the year 2045 Alternative 2 (HOV) condition, 8 off-ramp locations have queues that exceed the available storage, compared to 10 off-ramp locations under Alternative 1 (No Build).

Table 3.1.6-11 also shows that 32 percent of arterials are anticipated to have adequate turning lane storage at ramp intersections under Alternative 2 in 2045, compared to 26 percent under Alternative 1 (No Build) conditions. Additionally, Table 3.1.6-11 shows that 33 percent of turning lanes at arterial/arterial intersections are anticipated to have adequate storage under Alternative 2 in 2045, which is the same percentage expected under Alternative 1 (No Build) conditions. Finally, Table 3.1.6-11 shows that 73 percent of the on-ramps with ramp meters are anticipated to have sufficient storage to avoid queuing onto adjacent arterials under Alternative 2 in 2045. No ramp metering analysis was conducted for Alternative 1 (No Build) conditions.

Alternative 3 (Preferred Alternative) (Express Lanes)

Alternative 3 (Express) lane configurations for the I-10 mainline and all interchange ramps within the project limits for Opening Year (2025) and Design Year (2045) are illustrated in the Traffic Study (Figures 2.6.1 and 2.6.2). Alternative 3 (Express) lane configurations for the study intersections for Opening Year (2025) and Design Year (2045) are illustrated in the Traffic Study (Figures 3.6.2 and 3.6.4).

Freeway Mainline

The Opening Year (2025) and Design Year (2045) Alternative 3 (Express) AM/PM peak-hour traffic volumes, along with lane configurations for the I-10 mainline and all interchange ramps within the project limits, are presented in the Traffic Study (Figures 2.6.1 and 2.6.2).

The Alternative 3 ADT along the I-10 mainline freeway in 2025 and 2045 is presented in Table 3.1.6-2. ADTs in 2025 for Alternative 3 range from 223,000 to 336,000 vpd, compared to the range of 191,000 to 288,000 vpd for Alternative 1 (No Build). ADTs in 2045 for Alternative 3 range from 260,000 to 369,000 vpd compared to the range of 241,000 to 313,000 vpd for Alternative 1 (No Build). As shown in Table 3.1.6-3, Alternative 3 daily VMT in the study corridor is forecast to be 8,937,000 in 2025 and 10,736,000 in 2045, compared to 8,195,000 in 2025 and 9,746,000 in 2045 under Alternative 1 (No Build). The reason for the increase in ADT and VMT anticipated along the I-10 mainline is the same under this alternative as under Alternative 1.

V/C Ratio and LOS. Table 3.1.6-4 presents the LOS and v/c ratios for peak hours of Alternative 3 in 2025 for the general purpose lanes of the EB and WB I-10. Under Alternative 3 in year 2025, the freeway mainline is anticipated to operate at LOS F during both the AM and PM peak hours in both directions, except for the EB direction during the AM peak hour and WB segment during the PM peak hour from California Street to Ford Street when LOS C is anticipated. Under Alternative 1 (No Build), LOS F is also anticipated during both the AM and PM peak hour in both directions, except for LOS D during the AM peak hour in the EB direction between the LA/SB county line and Haven Avenue and LOS C between California Street and Ford Street in the EB direction during the AM peak hour and the WB direction during the PM peak hour.

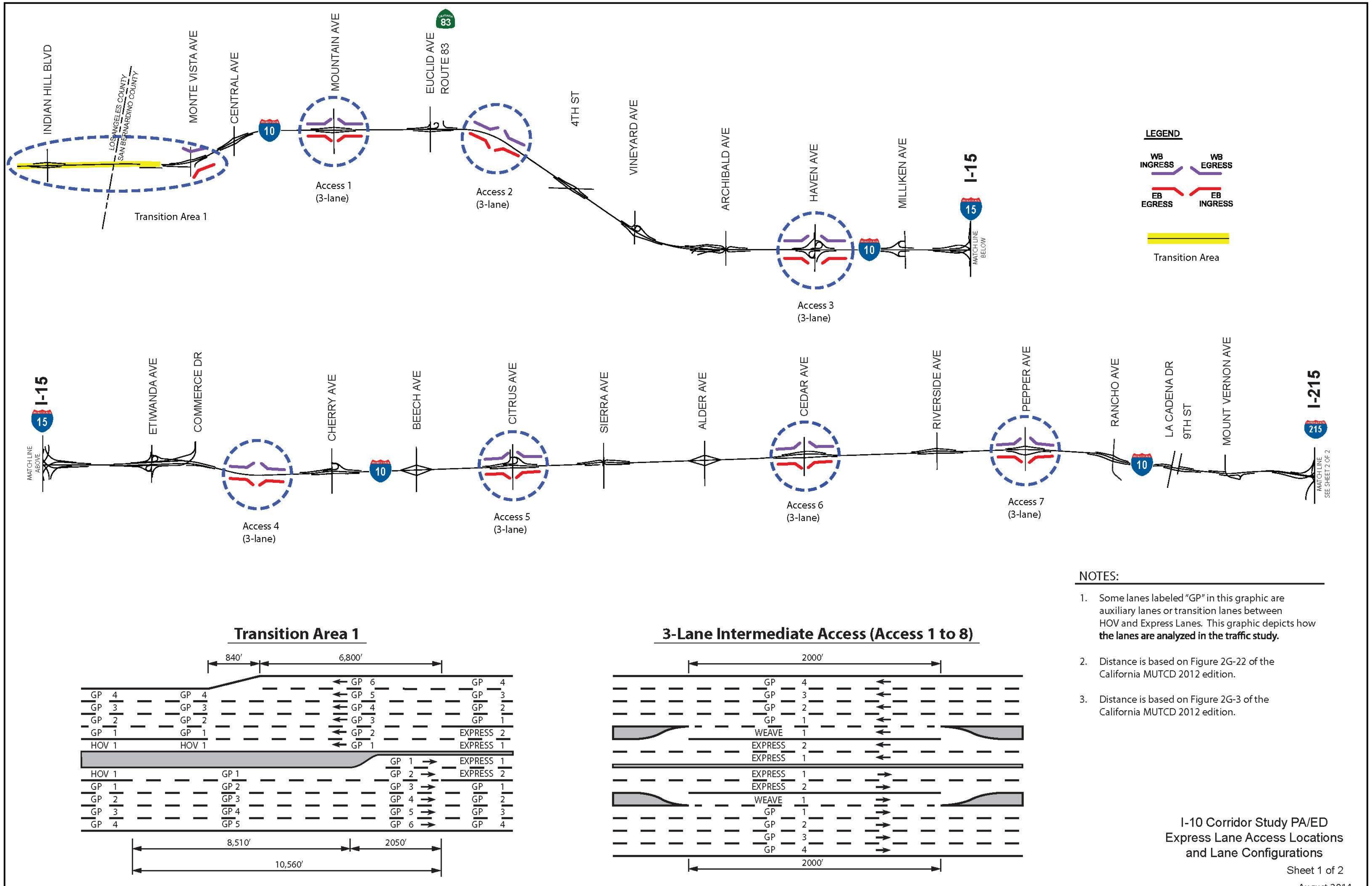
The range of v/c ratios in the freeway's general purpose lanes during the AM peak hour in 2025 under Alternative 3 is 0.72 to 1.18 and 0.74 to 1.32 during the PM peak hour. Alternative 3 v/c ratios range from 0.18 less than to 0.14 greater than v/c ratios in the general purpose lanes under Alternative 1 (No Build). A more-detailed link-by-link presentation of the freeway mainline LOS under Alternative 3 Opening Year (2025) and Design Year (2045) traffic conditions for general purpose lanes is included in the Traffic Study (Tables 2.6.2 and 2.6.4).

Table 3.1.6-5 presents the LOS and v/c ratios for peak hours of Alternative 3 in 2025 for the Express Lanes of the EB and WB I-10. Under Alternative 3 in year 2025, the Express Lanes are expected to operate at LOS D or better during both the AM and PM peak hours in both directions. Under Alternative 1 (No Build), LOS F is anticipated in the HOV lanes between the LA/SB county line and Haven Avenue. The range of v/c ratios in the Express Lanes between the LA/SB county line and Ford Street in both directions during the AM and PM peak hours in 2025 is 0.22 to 0.85. Under Alternative 1 (No Build), the range of v/c ratios in the HOV lane between the LA/SB county line and Haven Avenue is 0.68 to 1.31 during the AM and PM peak hours, and the range of v/c ratios in the general purpose lane between Haven Avenue and Ford Street is 0.58 to 1.39. A more-detailed link-by-link presentation of the freeway mainline LOS under Alternative 3 Opening Year (2025) and Design Year (2045) traffic conditions for HOV lanes is included in the Traffic Study (Tables 2.6.2 and 2.6.4).

The volume of traffic in the Express Lanes would be actively managed to maintain high-speed operations with maximum hourly volumes of 1,700 vphpl. Tolls would be used to control the volume of traffic in the Express Lanes and minimize the potential for congestion, thereby avoiding speed degradation. As demand for the Express Lanes increases, tolls would be increased to limit the volume of traffic in the Express Lanes to no more than 1,700 vphpl to limit congestion and maintain high speeds. Similarly, as demand for the Express Lanes decreases, tolls would be decreased to increase the volume of traffic in the Express Lanes, attract traffic from the general purpose lanes, and improve general purpose lane operations. Independent toll adjustments would be necessary on each of the Express Lane segments between access points.

Transition areas would be provided where the Express Lanes begin and end. Transition areas near the beginning of the Express Lanes would allow traffic in HOV and general purpose lanes to change lanes to access the general purpose and Express Lanes within the project limits of Alternative 3. Transition areas at the end of the Express Lanes would allow traffic in the Express and general purpose lanes to change lanes to access the general purpose and HOV lanes downstream of the end of the Express Lanes facility. Transition areas may add new lanes and/or redesignate lanes from Express to HOV or general purpose. For analytical purposes, all lanes are treated as general purpose lanes, even though some are transition lanes linking HOV to Express Lanes (and vice versa). Transition areas for transitioning from Express Lanes to HOV lanes are approximately 1 mile long, and they are 2 miles long for transitioning from HOV lanes to Express Lanes.

Express Lanes would begin and end near the LA/SB county line and in the vicinity of the Ford Street interchange. Two transition areas (one in each direction) would be required for each location, for a total of four transition areas. Transition area locations and schematic designs are shown in Figure 3.1.6-5.



Source: Traffic Study, 2014.

Figure 3.1.6-5 Alternative 3 (Preferred Alternative) Express Lane Access Locations and Lane Configuration (Page 1 of 2)

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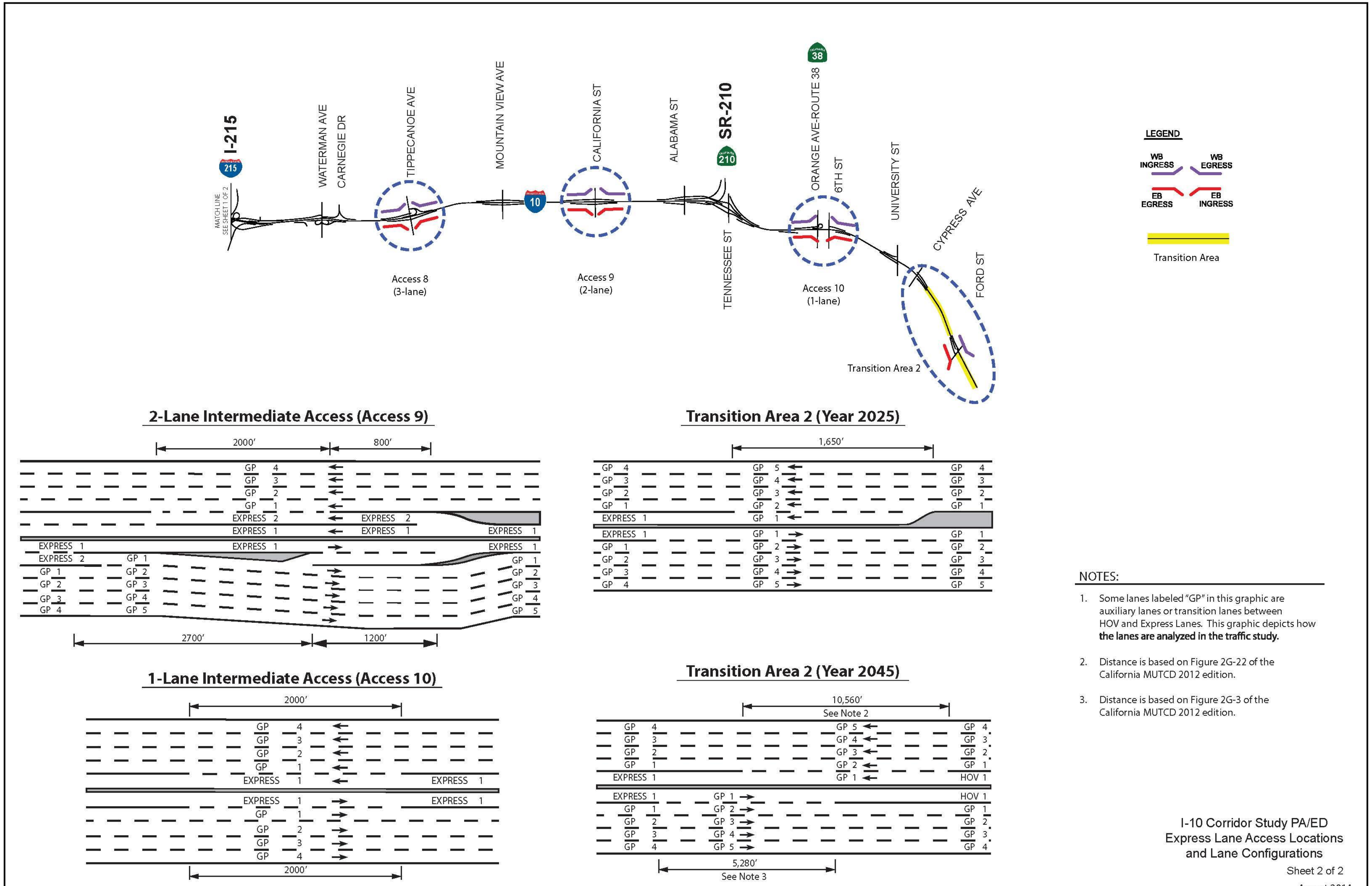

Source: Traffic Study, 2014.

Figure 3.1.6-5 Alternative 3 (Preferred Alternative) Express Lane Access Locations and Lane Configuration (Page 2 of 2)

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Table 3.1.6-15 summarizes the LOS in each of the transition areas anticipated in 2025 and 2045. The transition area near the LA/SB county line area under Alternative 3 in 2025 is expected to operate at LOS C to D during the AM and PM peak hours in both directions. The transition area in the vicinity of the Ford Street interchange is expected to operate at LOS D or better during the AM and PM peak hour, except LOS F in the EB direction during the PM peak hour and in the WB direction during the AM peak hour. The LOS F anticipated at the Ford Street transition area is a result of the traffic demand volume exceeding the capacity of the lanes in the transition area.

The transition area near the LA/SB county line area under Alternative 3 in 2045 is expected to operate at LOS D during the AM and PM peak hours in both directions, except LOS F in the WB direction during the PM peak hour. The transition area in the vicinity of the Ford Street interchange is expected to operate at LOS C and F during the AM and PM peak hour in both directions. The LOS F conditions anticipated in the transition areas in 2045 result from the traffic demand volume exceeding the capacity of the lanes in the transition areas.

In addition to the beginning and end near the LA/SB county line and Ford Street, access to the Express Lanes and from the general purpose lanes or vice versa would be provided in each direction at the following 10 locations.

1. Mountain Avenue interchange area
2. Between the SR-83 (Euclid Avenue) and Grove Avenue interchanges
3. Haven Avenue interchange area
4. Between the Etiwanda Avenue and Cherry Avenue interchanges
5. Citrus Avenue interchange area
6. Cedar Avenue interchange area
7. Pepper Avenue interchange area
8. Tippecanoe Avenue interchange area
9. California Street interchange area
10. Orange Avenue/6th Street interchange area

Table 3.1.6-15 Year 2025 and 2045 Alternative 3 (Preferred Alternative) Condition Express Lane Transition Area Peak-Hour Level of Service[1]

Transition Area Locations	Year 2025						Year 2045					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
	D/C	Density[4]	LOS[5]	D/C	Density[4]	LOS[5]	D/C	Density[4]	LOS[5]	D/C	Density[4]	LOS[5]
Eastbound												
Near LA/SB County Line	0.81	24.2	C	0.92	27.1	D	0.93	27.7	D	0.97	28.7	D
Vicinity of Ford Street	0.52	15.7	B	1.01	*	F	0.63	19.5	C	1.16	*	F
Westbound												
Vicinity of Ford Street	**1.12**	*****	**F**	0.68	21.6	C	**1.21**	*****	**F**	0.74	22.6	C
Near LA/SB County Line	0.97	29.2	D	0.98	29.7	D	0.99	29.6	D	**1.10**	*****	**F**

Notes:
1. The transition areas were analyzed based on the Highway Capacity Manual (HCM) 2000 basic freeway segment analysis.
2. Peak-hour capacity for each general purpose freeway lane is 1,850 vph.
3. Peak-hour traffic volumes are shown in vph.
4. Density is shown in passenger cars per mile per lane (pc/mi/ln).
5. Level of Service (LOS): Based on density, except when traffic demand volume-to-capacity (D/C) ratio is greater than 1.00, which is LOS F (indicated with an asterisk (*) in the density column).

Source: Traffic Study, 2014.

Intermediate access area locations and schematic designs are shown in Figure 3.1.6-5. All intermediate access points, except at the California Street and Orange Avenue/6th Street interchange areas, would provide a "weave lane" to facilitate traffic movements between the Express Lanes and general purpose lanes. A "weave zone" is provided for the intermediate access at the California Street interchange area in the WB direction and Orange Avenue/6th Street interchange area in both directions. Intermediate access at California Street in the EB direction provides a modified "merge lane." A "weave zone" combines ingress and egress created by short breaks in the buffer striping. A modified "merge lane" access separates the Express Lane ingress and egress, utilizing a dedicated merge lane for ingress and a dedicated general purpose receiving lane for the egress. The peak-hour ingress and egress volumes are illustrated in the Traffic Study (Figures 2.61 and 2.62).

Table 3.1.6-16 summarizes the LOS in each of the intermediate access areas anticipated in 2025 and 2045. As shown in Table 3.1.6-16, under Alternative 3 in 2025 and 2045, the merge and diverge areas into and out of the Express Lanes into the "weave lane" at Intermediate Access Locations 1 through 8 are anticipated to operate at LOS D or better. At these same locations, weaving between the "weave lane" and the general purpose lanes is anticipated to operate at LOS F in most of the locations due to the over-capacity condition anticipated in the general purpose lanes. The poor operations in the weaving area between the "weave lane" and the general purpose lanes are not anticipated to disrupt operations in the Express Lanes.

Table 3.1.6-12 presents the LOS and v/c ratios for peak hours of Alternative 3 in 2045 for the general purpose lanes of the EB and WB I-10. Under Alternative 3 in year 2045, the freeway mainline is anticipated to operate at LOS F during both the AM and PM peak hours in both directions, except for the EB direction during the AM peak hour and WB segment during the PM peak hour from California Street to Ford Street when LOS D is anticipated. Under Alternative 1 (No Build), LOS F is also anticipated during both the AM and PM peak hour in both directions, except for LOS D during the AM peak hour in the EB direction between the LA/SB county line and Haven Avenue.

The range of v/c ratios in the freeway's general purpose lanes during the AM peak hour in 2045 under Alternative 3 is 0.85 to 1.49 and 0.93 to 1.59 during the PM peak hour. Alternative 3 v/c ratios range from 0.17 less than to 0.11 greater than v/c ratios in the HOV lanes under Alternative 1 (No Build).

Table 3.1.6-13 presents the LOS and v/c ratios for peak hours of Alternative 3 in 2045 for the Express Lanes of the EB and WB I-10. Under Alternative 3 in year 2045, the Express Lanes are expected to operate at LOS D or better during both the AM and PM peak hours in both directions. Under Alternative 1 (No Build), LOS F is anticipated in the HOV lanes between the LA/SB county line and Haven Avenue.

The range of v/c ratios in the Express Lanes between the LA/SB county line and Ford Street in both directions during the AM and PM peak hours in 2045 is 0.26 to 0.86. Under Alternative 1 (No Build), the range of v/c ratios in the HOV lane between the LA/SB county line and Haven Avenue is 0.95 to 1.46, and the range of v/c ratios in the general purpose lane between Haven Avenue and Ford Street is 0.78 to 1.54.

The TSM and TDM measures included in Alternative 3 (identified in Section 2.2.1.1, Common Design Features of the Build Alternatives) are the same as those in Alternative 2 and are expected to provide the same benefits.

Peak-Period Performance. Table 3.1.6-6 shows forecast Alternative 3 speeds for 2025 and 2045 along I-10 between the LA/SB county line and Ford Street during peak hours in each direction by lane type (general purpose and Express).

In 2025 under Alternative 3, the segment speeds in the general purpose lanes in the EB direction on I-10 range from 51 to 64 mph during the AM peak hour and 22 to 36 mph during the PM peak hour, compared to Alternative 1 (No Build) speeds of 46 to 65 mph during the AM peak hour and 21 to 41 mph during the PM peak hour. In the WB direction, the general purpose segment speeds range from 29 to 61 mph during the AM peak hour and 18 to 64 mph during the PM peak hour, compared to Alternative 1 (No Build) speeds of 13 to 46 mph during the AM peak hour and 13 to 64 mph during the PM peak hour. Speeds in the Express Lanes during the peak hours range from 55 to 65 mph in both directions. For an entire corridor trip between the LA/SB county line and the Ford Street interchange speeds range from 38 to 54 mph in the general purpose lanes during the peak hours, compared to Alternative 1 (No Build) speeds of 32 to 52 mph during the peak hours. Speeds in the Express Lanes for an entire corridor trip range from 62 to 65 mph during the peak hours, compared to Alternative 1 HOV speeds of 32 to 55 mph during the peak hours.

Table 3.1.6-16 Year 2025 and 2045 Alternative 3 (Preferred Alternative) Condition Express Lane Intermediate Access Peak-Hour Level of Service[1]

Intermediate Access Locations[2]	Year 2025												Year 2045											
	Weaving[5]				Diverge[5,6]				Merge[5,6]				Weaving[5]				Diverge[5,6]				Merge[5,6]			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS
Access 1	23.0	C	*	F	24.0	C	27.7	C	21.7	C	23.6	C	*	F	*	F	25.8	C	29.6	D	25.3	C	25.2	C
	*	F	*	F	27.6	C	32.7	D	23.7	C	28.2	D	*	F	*	F	29.8	D	33.1	D	24.6	C	28.3	D
Access 2	*	F	*	F	25.8	C	28.0	C	19.6	B	22.6	C	*	F	*	F	30.0	D	29.8	D	25.5	C	25.9	C
	*	F	*	F	32.0	D	32.9	D	23.6	C	28.0	C	*	F	*	F	33.1	D	33.1	D	25.5	C	28.3	D
Access 3	22.5	C	*	F	23.3	C	26.8	C	18.6	B	19.6	B	*	F	*	F	30.0	D	30.5	D	26.2	C	26.5	C
	*	F	*	F	29.5	D	31.0	D	27.2	C	28.1	D	*	F	*	F	33.0	D	33.1	D	28.3	D	28.3	D
Access 4	22.8	C	27.6	C	22.0	C	23.2	C	19.3	B	20.2	C	25.7	C	*	F	30.5	D	31.1	D	26.2	C	26.6	C
	*	F	25.2	C	23.8	C	23.1	C	24.5	C	25.7	C	*	F	*	F	31.8	D	31.1	D	27.8	C	27.8	C
Access 5	22.8	C	24.0	C	23.6	C	24.7	C	18.9	B	19.5	B	*	F	*	F	31.2	D	31.8	D	25.5	C	25.5	C
	19.1	B	20.8	C	21.8	C	22.6	C	19.7	B	19.1	B	24.5	C	*	F	29.3	D	31.2	D	26.9	C	26.3	C
Access 6	20.0	B	21.4	C	22.4	C	23.0	C	16.5	B	16.4	B	24.2	C	24.7	C	29.6	D	29.7	D	22.4	C	21.7	C
	16.2	B	18.4	B	19.8	B	22.0	C	17.9	B	18.6	B	20.9	C	24.3	C	26.7	C	31.4	D	24.6	C	26.5	C
Access 7	22.9	C	*	F	20.2	C	20.0	C	15.8	B	18.0	B	*	F	*	F	26.7	C	25.9	C	22.0	C	21.3	C
	15.3	B	24.6	C	22.0	C	14.8	B	16.3	B	17.8	B	20.1	C	*	F	27.8	C	22.2	C	22.4	C	26.2	C
Access 8	22.0	C	*	F	19.7	B	22.2	C	9.7	A	19.4	B	23.1	C	*	F	26.5	C	25.8	C	16.4	B	23.9	C
	*	F	23.6	C	19.6	B	12.2	B	18.4	B	11.9	B	*	F	*	F	28.3	D	16.8	B	23.8	C	18.4	B
Access 9	19.1[7]	C[7]	28.8[7]	D[7]	23.7[8]	C[8]	37.4[8]	E[8]	16.1[9]	B[9]	26.3[9]	C[9]	21.5[7]	C[7]	*[7]	F[7]	24.1[8]	C[8]	*[8]	F[8]	16.9[9]	B[9]	26.2[9]	C[9]
	*	F	18.7	B	No Weave Lane so No Merge or Diverge Analysis								*	F	22.6	C	No Weave Lane so No Merge or Diverge Analysis							
Access 10	16.8	B	*	F	No Weave Lane so No Merge or Diverge Analysis								20.9	C	*	F	No Weave Lane so No Merge or Diverge Analysis							
	*	F	17.2	B									*	F	22.1	C								

Notes:
1. The Express Lane intermediate access (EB and WB) areas were analyzed based on the Highway Capacity Manual (HCM) 2000 ramp junction analysis method and/or weaving analysis method, depending on the lane configuration.
2. Locations of the access areas are illustrated in Figure 2.6-3.
3. Peak hour capacities for freeway lanes include:
   - 1,850 vph for each general purpose lane and 2,000 vph for each Express Lane.
   - 1,850 vph for an auxiliary or weave lane if the length exceeds 1 mile.
   - 1,000 vph for an auxiliary or weave lane if the length is greater than 0.5 mile and less than 1 mile.
   - 0 vph for an auxiliary or weave lane if the length is less than 0.5 mile.
4. Peak-hour traffic volumes are shown in vph.
5. Level of Service (LOS): LOS is based on density, except when traffic demand volume-to-capacity (d/c) ratio is greater than 1.00, which is LOS F (indicated with an asterisk (*) in the density column. Density is shown in passenger cars/mile/lane (pc/mi/ln).
6. The merge and diverge analysis was conducted for the areas into and out of the Express Lanes into the "weave lane."
7. A basic segment analysis was conducted for EB Access 9 because the proposed design separates the ingress and egress and the distance between the two areas is greater than 2,500 feet.
8. The diverge analysis for EB Access 9 was conducted for the exit from the freeway mainline number one general purpose lane to the Express Lane merge lane.
9. The merge analysis for EB Access 9 was conducted for the merge from the merge lane into the Express Lane.

Source: Traffic Study, 2014.

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In year 2045 under Alternative 3, the segment speeds in the general purpose lanes in the EB direction on I-10 range from 32 to 61 mph during the AM peak hour and 10 to 27 mph during the PM peak hour, compared to Alternative 1 (No Build) speeds of 14 to 63 mph during the AM peak hour and 10 to 33 mph during the PM peak hour. In the WB direction, the general purpose segment speeds range from 10 to 48 mph during the AM peak hour and 10 to 55 mph during the PM peak hour, compared to Alternative 1 (No Build) speeds of 10 to 29 mph during the AM peak hour and 10 to 56 mph during the PM peak hour. Speeds in the Express Lanes during the peak hours range from 58 to 65 mph in the EB direction and 54 to 65 mph in the WB direction. For an entire corridor trip between the LA/SB county line and the Ford Street interchange, speeds range from 31 to 42 mph in the general purpose lanes during the peak hours, compared to Alternative 1 (No Build) speeds of 21 to 29 mph during the peak hours. Speeds in the Express Lanes for an entire corridor trip range from 58 to 62 mph during the peak hours, compared to Alternative 1 HOV speeds of 21 to 36 mph during the peak hours.

Corridor Travel Time. Table 3.1.6-7 shows forecast Alternative 3 corridor travel time for 2045 along I-10 between the LA/SB county line and Ford Street during peak hours in each direction by lane type (general purpose and Express). Table 3.1.6-7 also shows the average travel time across both lane types. Forecast year 2045 Alternative 3 travel time in the general purpose lanes during peak hours ranges from 41 to 70 minutes. Forecast year 2045 Alternative 3 travel time in the Express Lanes during peak hours is expected to be 27 to 30 minutes. For both lane types combined, average travel time under Alternative 3 in year 2045, weighted for the volumes using each lane type, ranges from 38 to 61 minutes, compared to 57 to 83 minutes under Alternative 1 (No Build) conditions. A corridor travel time comparison between Alternative 2 and Alternative 1 (No Build) is not provided for each lane type because the two alternatives do not consist of the same lane type for the entire length.

Vehicle Hours of Delay. Table 3.1.6-8 presents the daily and annual VHD forecast to occur on I-10 on weekdays in 2025 and 2045. VHD is based on the number of additional hours of vehicle travel required within the corridor due to speeds lower than 65 mph on weekdays during peak periods when congestion reduces speeds and increases corridor travel times. Under Alternative 3 in 2025, approximately 19,766 daily and 4.9 million annual VHD are anticipated on I-10, compared to 21,705 daily and 5.4 million annual VHD under Alternative 1 (No Build) condition. In 2045 under Alternative 3, approximately 24,165 daily and 6.0 million annual VHD are anticipated, compared to 31,871 daily and 8.0 million annual VHD under Alternative 1 (No Build) condition.

<u>*Freeway Connector Volumes.*</u> Tables 3.1.6-9 and 3.1.6-14 provide the 2025 and 2045 forecast, respectively, of branch connector volumes and v/c ratios on ramps between freeways within the project limits. The branch connectors are located at I-15, I-215, and SR-210. Branch connectors are forecast to operate with v/c ratios ranging from 0.36 to 2.03 in 2025 and from 0.43 to 2.25 in 2045 under Alternative 3 conditions, compared to 0.32 to 1.98 in 2025 and 0.40 to 2.13 in 2045 under Alternative 1 (No Build) conditions.

Arterials, Intersections, and Interchanges

A summary of the LOS analysis and v/c ratios for AM and PM peak hours for 2025 Alternative 3 conditions is provided in Table 3.1.6-17 for all study intersections. In 2025 under Alternative 3, the study intersections are anticipated to operate at LOS D or better, except for one intersection that is anticipated to operate at LOS E during the PM peak hour. This compares to the five intersections, including the one intersection under Alternative 3 that are anticipated to operate at LOS E or F under Alternative 1 (No Build) conditions in 2025.

Table 3.1.6-17 shows that the study intersections are anticipated to operate under capacity (v/c equal to or less than 1.00) in 2025 under Alternative 3 during peak hours, except for one intersection that is anticipated to operate over capacity during the PM peak hour. This compares to five intersections that are anticipated to operate over capacity under Alternative 1 (No Build) conditions in 2025.

A summary of the LOS analysis and v/c ratios for AM and PM peak hours for 2045 Alternative 3 conditions is provided in Table 3.1.6-17 for all study intersections. In 2045 under Alternative 3, the study intersections are anticipated to operate at LOS D or better, except for one intersection that is anticipated to operate at LOS F during the peak hours, compared to nine intersections under Alternative 1 (No Build) conditions in 2045.

Table 3.1.6-17 shows that the study intersections are anticipated to operate under capacity (v/c equal to or less than 1.00) in 2045 under Alternative 3 during peak hours, except for eight intersections that are anticipated to operate over capacity during the peak hours. This compares to 11 intersections, including the eight intersections under Alternative 3 that are anticipated to operate over capacity under Alternative 1 (No Build) conditions in 2045.

Table 3.1.6-17 Years 2025 and 2045 Alternative 3 [Preferred Alternative] (Express) – Peak Hour Intersection LOS and Adverse Effect Determination

Interchange Location	Intersection #	Intersection Location		Traffic Control	Year 2012						Year 2025													Year 2045												
					Existing Traffic						Alternative 1 (No Build) Traffic on No Build Geometry						Alternative 3 (Express) Traffic on Build Geometry						Adverse Effect	Alternative 1 (No Build) Traffic on No Build Geometry						Alternative 3 (Express) Traffic on Build Geometry						Adverse Effect
					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			
		East/West Street	North/South Street		V/C	Avg Delay (sec)	LOS	V/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS		D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	
Monte Vista Avenue	71	I-10 WB Ramp	Monte Vista Ave	Sig	0.83	25.3	C	0.77	22.3	C	0.90	28.6	C	1.02	38.2	D	0.62	17.8	B	0.61	20.9	C	N	0.99	39.6	D	**1.19**	**57.7**	**E**	0.67	20.5	C	0.70	28.2	C	N
	72	I-10 EB Off-Ramp/ Palo Verde St	Monte Vista Ave	Sig	0.83	31.7	C	1.00	45.8	D	0.93	36.1	D	**1.18**	**57.4**	**E**	0.77	25.1	C	0.91	36.2	D	N	1.01	46.1	D	**1.29**	**74.6**	**E**	0.86	31.8	C	1.03	42.3	D	N
	73	Palo Verde St	I-10 EB On-Ramp	Sig	0.36	10.7	B	0.37	13.0	B	0.38	9.8	A	0.41	11.6	B	0.41	7.5	A	0.47	8.4	A	N	0.43	10.3	B	0.46	13.1	B	0.45	7.0	A	0.53	10.2	B	N
Mountain Avenue	241	7th St/Shopping Center	Mountain Ave	Sig	0.56	16.5	B	0.79	26.4	C	0.67	17.2	B	0.96	35.1	D	0.70	17.6	B	0.94	36.2	D	N	0.84	19.6	B	1.01	40.3	D	0.78	21.2	C	0.99	42.7	D	N
	242	I-10 WB On-/ Off-Ramp	Mountain Ave	Sig	0.70	20.0	C	0.79	25.3	C	0.85	32.2	C	0.99	35.2	D	0.89	33.3	C	1.03	40.0	D	N	0.98	40.9	D	1.11	52.0	D	0.99	46.2	D	1.11	54.2	D	N
	243	I-10 EB On-/ Off-Ramp	Mountain Ave	Sig	0.57	16.2	B	0.78	29.1	C	0.59	16.7	B	0.85	32.8	C	0.62	17.8	B	0.83	32.3	C	N	0.68	25.7	C	0.87	34.6	C	0.69	19.0	B	0.84	36.9	D	N
	244	6th St	Mountain Ave	Sig	0.65	18.7	B	0.71	21.7	C	0.48	16.7	B	0.74	22.8	C	0.48	16.9	B	0.74	23.0	C	N	0.57	18.5	B	0.77	23.3	C	0.55	19.2	B	0.74	24.2	C	N
SR-83 (Euclid Avenue)	351	7th St	SB Euclid Ave	Sig	0.74	18.1	B	0.73	20.6	C	0.79	22.8	C	0.78	21.8	C	0.88	22.6	C	0.91	28.3	C	N	0.95	32.8	C	0.90	29.6	C	1.04	46.5	D	1.00	40.1	D	N
	352	7th St	NB Euclid Ave	Sig	0.52	10.3	B	0.66	13.8	B	0.60	12.9	B	0.83	17.8	B	0.70	11.1	B	0.92	28.9	C	N	0.69	13.6	B	0.95	20.4	C	0.79	12.9	B	1.02	38.7	D	N
	353	7th St	I-10 WB Off-Ramp/ 2nd Ave	AWS/ Sig*	0.43	13.7	B	0.57	20.9	C	0.55	21.1	C	**0.70**	**50.1**	**F**	0.49	17.4	B	0.67	15.6	B	N	**0.63**	**35.2**	**E**	**0.78**	**98.1**	**F**	0.56	15.9	B	0.74	16.7	B	N
	354	I-10 WB On-Ramp	SB Euclid Ave	UC	0.43	--	--	0.37	--	--	0.45	--	--	0.39	--	--	0.50	--	--	0.46	--	--	N	0.50	--	--	0.43	--	--	0.55	--	--	0.49	--	--	--
	355	I-10 WB On-Ramp	NB Euclid Ave	UC	0.27	--	--	0.31	--	--	0.29	--	--	0.32	--	--	0.23	--	--	0.25	--	--	N	0.31	--	--	0.35	--	--	0.27	--	--	0.29	--	--	--
	356	I-10 EB Ramp	Euclid Ave	Sig	0.97	45.3	D	1.00	52.0	D	1.00	53.6	D	**1.14**	**92.1**	**F**	0.58	20.7	C	0.69	28.6	C	N	**1.23**	**92.5**	**F**	**1.39**	**156.7**	**F**	0.86	24.9	C	1.02	49.1	D	N
Vineyard Avenue	611	Inland Empire Blvd	Vineyard Ave	Sig	0.52	8.3	A	0.55	9.2	A	0.63	8.9	A	0.82	12.0	B	0.64	9.2	A	0.83	11.5	B	N	0.57	7.5	A	0.67	12.9	B	0.72	8.3	A	0.62	9.4	A	N
	612	I-10 WB Ramp	Vineyard Ave	Sig	0.59	10.0	A	0.64	11.9	B	0.83	14.5	B	1.05	36.8	D	0.71	11.9	B	0.83	17.6	B	N	1.02	34.7	C	**1.16**	**58.6**	**E**	0.97	29.2	C	0.92	23.4	C	N
	613	I-10 EB Ramp	Vineyard Ave	Sig	0.71	16.6	B	0.65	12.1	B	0.95	29.7	C	0.89	18.7	B	0.88	25.1	C	0.82	14.9	B	N	**1.12**	**60.6**	**E**	1.09	45.6	D	1.05	41.2	D	0.96	20.5	C	N
	614	E G St	Vineyard Ave	Sig	0.44	9.8	A	0.43	8.9	A	0.65	12.2	B	0.54	9.8	A	0.73	12.0	B	0.63	8.7	A	N	0.87	18.3	B	0.71	13.2	B	0.94	24.1	C	0.74	10.2	B	N
	615	E D St	Vineyard Ave	Sig	0.40	15.0	B	0.55	18.3	B	0.63	16.1	B	0.71	23.7	C	0.63	15.7	B	0.79	22.3	C	N	0.73	20.1	C	0.90	32.4	C	0.78	17.3	B	0.99	40.4	D	N
Etiwanda Avenue/ Commerce Drive	1111	Valley Blvd/ Ontario Mills Pkwy	Etiwanda Ave	Sig	0.38	16.5	B	0.47	20.3	C	0.44	18.7	B	0.56	22.6	C	0.45	17.7	B	0.67	23.5	C	N	0.45	18.6	B	0.63	26.2	C	0.46	17.0	B	0.63	21.6	C	N
	1112	Valley Blvd	Commerce Dr	Sig	0.36	31.6	C	0.44	32.5	C	0.30	34.0	C	0.39	31.7	C	0.32	35.2	D	0.38	33.5	C	N	0.36	33.6	C	0.48	36.2	D	0.34	34.7	C	0.45	31.6	C	N
	1113	I-10 WB On-Ramp	SB Etiwanda Ave	UC	0.12	--	--	0.19	--	--	0.24	--	--	0.41	--	--	0.27	--	--	0.41	--	--	N	0.29	--	--	0.39	--	--	0.25	--	--	0.41	--	--	--

Table 3.1.6-17 Years 2025 and 2045 Alternative 3 [Preferred Alternative] (Express) – Peak Hour Intersection LOS and Adverse Effect Determination

Interchange Location	Intersection #	Intersection Location		Traffic Control	Year 2012						Year 2025													Year 2045												
					Existing Traffic						Alternative 1 (No Build) Traffic on No Build Geometry						Alternative 3 (Express) Traffic on Build Geometry						Adverse Effect	Alternative 1 (No Build) Traffic on No Build Geometry						Alternative 3 (Express) Traffic on Build Geometry						Adverse Effect
					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			
		East/West Street	North/South Street		V/C	Avg Delay (sec)	LOS	V/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS		D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	
Etiwanda Avenue/ Commerce Drive	1114	I-10 WB Off-Ramp	Etiwanda Ave	Sig	0.55	17.8	B	0.42	12.9	B	0.50	15.2	B	0.52	12.7	B	0.55	14.8	B	0.53	12.6	B	N	0.53	16.0	B	0.58	15.3	B	0.59	16.7	B	0.62	13.0	B	N
	1115	I-10 WB On-Ramp	NB Etiwanda Ave	UC	0.23	--	--	0.38	--	--	0.23	--	--	0.40	--	--	0.29	--	--	0.46	--	--	N	0.26	--	--	0.44	--	--	0.26	--	--	0.47	--	--	--
	1116	I-10 EB On-Ramp	SB Etiwanda Ave	UC	0.06	--	--	0.19	--	--	0.06	--	--	0.17	--	--	0.06	--	--	0.18	--	--	N	0.06	--	--	0.18	--	--	0.06	--	--	0.20	--	--	--
	1117	I-10 EB Off-Ramp	Etiwanda Ave	Sig	0.77	24.5	C	0.44	13.3	B	0.62	17.4	B	0.46	10.4	B	0.63	17.6	B	0.49	10.3	B	N	0.68	18.6	B	0.51	12.1	B	0.72	19.6	B	0.57	12.4	B	N
	1118	I-10 EB On-Ramp	NB Etiwanda Ave	UC	0.14	--	--	0.41	--	--	0.15	--	--	0.45	--	--	0.15	--	--	0.44	--	--	N	0.18	--	--	0.52	--	--	0.19	--	--	0.54	--	--	--
Pepper Avenue	2101	Valley Blvd	Pepper Ave	Sig	0.64	30.9	C	0.62	31.3	C	0.62	38.6	D	0.60	28.1	C	0.58	29.9	C	0.55	29.4	C	N	0.60	31.0	C	0.58	30.6	C	0.65	52.3	D	0.75	33.8	C	N
	2102	I-10 WB Ramp	Pepper Ave	Sig	0.65	24.3	C	0.52	14.9	B	0.50	24.9	C	0.42	21.3	C	0.51	19.0	B	0.43	17.4	B	N	0.64	28.8	C	0.61	23.2	C	0.79	32.4	C	0.63	22.9	C	N
	2103	I-10 EB Ramp	Pepper Ave	Sig	0.98	53.1	D	0.89	49.6	D	0.59	28.6	C	0.52	34.1	C	0.59	27.0	C	0.50	29.4	C	N	0.64	25.0	C	0.65	30.2	C	0.77	26.7	C	0.68	34.6	C	N
La Cadena Drive/ 9th Street	2261	I-10 WB On-Ramp	La Cadena Dr	UC	0.09	4.0	A	0.17	5.3	A	0.11	4.5	A	0.20	5.7	A	0.13	4.6	A	0.23	6.6	A	N	0.14	4.8	A	0.24	6.4	A	0.15	5.2	A	0.24	6.6	A	N
	2262	I-10 WB Off-Ramp	9th St	SC	0.49	12.9	B	0.46	12.9	B	0.43	12.5	B	0.65	16.9	C	0.41	11.7	B	0.70	19.0	C	N	0.49	13.3	B	0.80	24.8	C	0.53	14.6	B	0.80	26.4	D	N
	2263	I-10 EB Ramp	9th St	AWS	0.38	11.3	B	0.44	11.9	B	0.23	10.0	B	0.35	11.1	B	0.27	9.7	A	0.26	11.2	B	N	0.26	10.9	B	0.28	11.7	B	0.29	11.2	B	0.32	12.1	B	N
Tennessee Street	2981	I-10 WB Ramp	Tennessee St	Sig	0.74	20.5	C	0.57	16.9	B	0.61	18.0	B	0.51	19.8	B	0.46	15.9	B	0.49	13.0	B	N	0.62	15.9	B	0.70	18.0	B	0.47	14.6	B	0.56	14.9	B	N
	2982	I-10 EB Ramp	Tennessee St	Sig	0.52	14.7	B	0.90	37.2	D	0.55	15.8	B	0.98	52.9	D	0.45	14.1	B	0.75	24.0	C	N	0.68	23.8	C	**1.07**	**81.0**	**F**	0.55	15.4	B	0.84	29.1	C	N
Ford Street	3311	Reservoir Rd/ I-10 WB On-Ramp	Ford St	SC	**1.25**	**253.2**	**F**	**0.60**	**45.6**	**E**	0.89	32.9	C	0.75	20.6	C	0.73	23.2	C	0.64	14.1	B	N	0.55	20.9	C	0.50	22.0	C	0.51	10.2	B	0.50	9.6	A	N
	3312	I-10 EB Off-Ramp	Ford St	SC	0.50	13.9	B	0.86	29.5	D	0.71	19.1	C	**1.09**	**85.3**	**F**	0.59	19.3	C	0.93	34.8	D	N	0.72	17.4	C	**1.07**	**76.3**	**F**	0.58	15.7	C	0.90	33.2	D	N
	3313	Parkford Dr	Ford St	SC	0.40	21.9	C	0.65	31.8	D	0.47	27.9	D	**0.79**	**48.8**	**E**	0.49	28.9	D	**0.76**	**44.6**	**E**	N	0.45	24.9	C	**1.18**	**162.3**	**F**	0.47	25.9	D	**1.26**	**197.6**	**F**	N
	3314	Redlands Blvd/I-10 EB On-Ramp/ WB Off-Ramp	Ford St	Sig	0.62	19.8	B	0.52	32.8	C	0.62	23.3	C	0.48	18.1	B	0.86	23.7	C	0.55	24.9	C	N	0.84	35.1	D	1.01	44.0	D	0.84	32.4	C	1.04	42.6	D	N
	3315	Oak St	Ford St	SC	0.27	19.2	C	0.10	12.5	B	0.25	19.1	C	0.12	14.0	B	0.25	19.4	C	0.12	14.5	B	N	0.27	20.6	C	0.12	14.6	B	0.27	21.2	C	0.12	14.6	B	N
Wabash Avenue	3431	I-10 WB Off-Ramp/Reservoir Rd	Wabash Ave	SC	0.12	12.7	B	0.08	10.7	B	0.19	12.4	B	0.18	11.1	B	0.17	12.1	B	0.15	10.8	B	N	--	--	--	--	--	--	--	--	--	--	--	--	--
	3432	I-10 EB On-Ramp	Wabash Ave	UC	0.02	1.4	A	0.01	1.2	A	0.03	2.4	A	0.05	2.7	A	0.03	2.1	A	0.03	2.0	A	N	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

Sig – Signalized; SC – Stop-Control; AWS – All Way Stop; None – No Traffic Control.

LOS – Level of Service; V/C – Volume-to-Capacity Ratio; D/C – Demand Volume-to-Capacity Ratio; Bold indicates an intersection forecast to operate at LOS E or F.

* - The intersection of 7th Street and I-10 WB Ramps/2nd Avenue at the SR-83 (Euclid Avenue) interchange is analyzed with a traffic signal under the proposed Alternative 3.

Source: Traffic Study, 2014.

Table 3.1.6-17 compares the Opening Year (2025) and Design Year (2045) overall v/c ratios for study intersections under Alternative 1 (No Build) with Alternative 3. Table 3.1.6-17 shows that the project does not have an adverse effect on any of the study intersections under Alternative 3. Intersection improvements have been incorporated as part of the proposed project.

A comparison of vehicle queuing (higher of AM or PM peak-hour 95th percentile queues) in year 2045 with available storage (in feet) was conducted at all arterial interchange study intersections and is summarized in Table 3.1.6-11. Table 3.1.6-11 shows that 79 percent of the off-ramps with traffic control at their arterial intersections are anticipated to have adequate turning lane storage under Alternative 3 in 2045, compared to 44 percent under Alternative 1 (No Build) conditions. Under the year 2045 Alternative 3 (Express) condition, 3 off-ramp locations have queues that exceed the available storage, compared to 10 off-ramp locations under Alternative 1 (No Build). No off-ramps are anticipated to back onto the freeway mainline.

Table 3.1.6-11 also shows that 50 percent of arterials are anticipated to have adequate turning lane storage at ramp intersections under Alternative 3 in 2045, compared to 26 percent under Alternative 1 (No Build) conditions. Additionally, Table 3.1.6-11 shows that 33 percent of turning lanes at arterial/arterial intersections are anticipated to have adequate storage under Alternative 3 in 2045, which is the same percentage expected under Alternative 1 (No Build) conditions.

Finally, Table 3.1.6-11 shows that 71 percent of the on-ramps with ramp meters are anticipated to have sufficient storage to avoid queuing onto adjacent arterials under Alternative 3 in 2045. No ramp metering analysis was conducted for Alternative 1 (No Build).

Pedestrian and Bicycle Facilities

Existing bike lanes and trails within the project limits would be maintained. In addition, new bike lanes (Class II or Class III) would be incorporated in the design of the proposed arterial improvements at Tennessee Avenue in Alternative 2 and at Monte Vista Avenue, Euclid Avenue, Vineyard Avenue, and Tennessee Avenue in Alternative 3. These streets have been identified in their respective local circulation plans as having a bicycle facility.

Existing sidewalks within the project limits would be maintained. Under Alternative 2, the project includes reconstruction of Richardson Street, which has one sidewalk along the west side of the roadway, and Tennessee Street, which has one sidewalk along the east side of the roadway. Because of low pedestrian volume, the project would replace the existing sidewalk in kind except two sidewalks that would be provided on the replacement bridges. Under Alternative 3, sidewalks would be provided on both sides of proposed arterial improvement locations, including Monte Vista Avenue, Sultana Avenue, Campus Avenue, Euclid Avenue, and Vineyard Avenue. Because of low pedestrian volume, proposed reconstruction of Richardson Street and Tennessee Street in Alternative 3 would maintain one continuous sidewalk on these streets. Two sidewalks would be installed on the replacement bridges for Richardson Street and Tennessee Street. Pedestrian facilities on arterials being improved would meet current ADA standards. In addition, there is a project currently in planning to retrofit existing curb ramps on various cross streets along the I-10 corridor (EA 1C490).

Temporary/Construction Impacts

No Build Alternative

There are no improvements proposed under the No Build Alternative; therefore, there are no temporary impacts.

Build Alternatives

Potential construction-related traffic and circulation/pedestrian and bicycle impacts would be minimized through implementation of a comprehensive Transportation Management Plan (TMP). A Draft TMP for the project has been prepared in accordance with the Caltrans Guidelines Deputy Directive 60 (DD-60) to minimize motorist delays when performing work activities on the State Highway System. The TMP is designed to minimize traffic delays that may result from lane restrictions or closures during construction operations and move motorists, pedestrians, and bicyclists through work zones quickly and safely.

A *Ramp Closure Study* (RCS), which is an appendix to the *Community Impact Assessment* (CIA), was prepared for the project. The RCS identifies potential ramp closures during construction, as well as detour routes for ramp closures.

Construction Staging

The project may be implemented in segments and procured under one or more contracts. The construction staging concept will be developed during the design-build phase. The project construction is envisioned to be carried out in several construction stages, with construction progressing from west to east and some overlap between stages.

Construction of interchange improvements (i.e., consisting of freeway ramp reconstruction, local arterial improvements, and overcrossing structure replacement) is envisioned to be staggered throughout the corridor to minimize impacting two consecutive interchanges or closing two consecutive on- or off-ramps at the same time. If feasible, arterials and overcrossing improvements that add capacity over the existing condition would be constructed in the earlier stages in efforts to ease traffic congestion during subsequent construction stages.

Closures and Lane Restrictions

During construction, construction-related delays are anticipated along I-10, I-15, I-215, and SR-210 and at interchanges, as well as on the surrounding arterials, including SR-83 and SR-38. There will be numerous different closures of the freeway mainline, branch connectors, interchange ramps, and local arterials required to accommodate various construction activities. Temporary and short-term closures will occur intermittently throughout the construction duration. Full freeway lane, ramp, and arterial street closures will also be required during nighttime and on weekends (55-hour closure) during various roadway and structure construction activities.

Long-term closure lasting up to 12 months may be employed during construction of certain streets and overcrossing structures to facilitate faster construction time, thus allowing quicker return of the public usage of the facility. Although impacts to local commuters, residents, and local businesses would be more severe during the closure, the impacts would end sooner because the improvements would be completed more quickly, allowing the roadway to reopen to the public faster. Potential locations for long-term closures include the following arterial improvements and structure replacements:

- Alternative 2 (HOV) – Potential Long-Term Arterial Closure
  - Richardson Street Overcrossing (OC) – 8 to 12 months
- Alternative 3 (Express Lanes) – Potential Long-Term Arterial Closure
  - San Antonio Avenue OC – 8 to 12 months
  - Sultana Avenue OC – 8 to 12 months
  - Campus Avenue OC – 8 to 12 months
  - 6th Street OC – 8 to 12 months
  - Richardson Street OC – 8 to 12 months

Most interchange ramps are expected to be open for traffic during construction with periodic closure at night, during the weekend (55-hour closure), or for a period less than 10 days. Periodic temporary closure of these ramps is not expected to cause excessive inconvenience to the traveling public because the interchanges along I-10 are spaced approximately 1 mile apart, such that there are nearby alternate accesses to and from I-10. No two consecutive off-ramps or two consecutive on-ramps in the same direction would be concurrently closed.

There are 4 ramps in Alternative 2 and 14 ramps in Alternative 3 that may require prolonged closure for a period up to 30 days during reconstruction because the new ramp alignments are proposed over the existing alignments and there is limited space and right-of-way (ROW) to accommodate a detour pavement. Interchange ramps that are expected to require up to 30 days of closure are identified below:

- Alternative 2 (HOV) – Potential Prolonged Ramp Closure
  - La Cadena Drive EB off-ramp
  - E Street/Sunwest Lane WB on-ramp
  - Waterman Avenue EB on-ramp
  - Tennessee Street EB off-ramp
- Alternative 3 (Express Lanes) – Potential Prolonged Ramp Closure
  - Monte Vista Avenue WB off-ramp
  - Monte Vista Avenue WB on-ramp
  - Monte Vista Avenue EB off-ramp
  - Monte Vista Avenue EB on-ramp
  - Central Avenue EB on-ramp
  - Central Avenue WB off-ramp
  - 4^{th} Street EB off-ramp
  - Etiwanda Avenue EB loop on-ramp
  - Etiwanda Avenue EB on-ramp
  - 9^{th} Street EB off-ramp
  - E Street/Sunwest Lane WB on-ramp
  - Waterman Avenue EB on-ramp
  - Alabama Street EB off-ramp
  - Tennessee Street EB off-ramp

Further evaluation and studies would be needed during the design-build phase to determine the locations and feasibility of arterial and long-term ramp closures.

Existing pedestrian and bicycle facilities within the project limits are anticipated to be maintained during construction, except where the arterial roadways are closed to traffic during construction. In either of the build alternatives, the project may require periodic or temporary closure of the Santa Ana River Trail and the Class I bicycle facility along the river during widening of the Santa Ana River bridges. During construction, the trail on at least one riverbank would remain open at all times. The Final TMP would identify methods to minimize impacts to pedestrian and bicycle traffic.

The Final TMP, which would be prepared during the design-build phase, would require minimization of construction-related effects on traffic and circulation/pedestrian and bicyclists by applying a variety of techniques, including public information, motorist information, incident management, construction strategies, demand management, and alternate route strategies. During the course of project construction, the Traffic Management Team would observe traffic conditions and make recommendations to the Resident Engineer concerning any changes that need to be made with respect to traffic management. The TMP Coordinator would work closely with the Traffic Management Team to develop timely recommendations to address traffic-related effects on traffic and circulation/ pedestrians and bicyclists. The Final TMP would be prepared prior to project construction and would address traffic detours for roadway closures during construction. The Final TMP would also avoid and minimize construction-related traffic and circulation effects of the proposed project.

3.1.6.4 Avoidance, Minimization, and/or Mitigation Measures

No permanent adverse effects to traffic and circulation are anticipated due to the project. Temporary adverse effects due to construction-related activities are anticipated.

Detour Routes during Project Construction

T-1 A Final TMP will be prepared prior to project construction that identifies methods to avoid and minimize construction-related traffic and circulation effects and minimize impacts to pedestrian and bicycle access, including ADA-compliant features, as a result of the proposed project. During construction, the contractor shall implement the methods identified in the Final TMP.

TSM and TDM Measures

T-2 Every effort will be made to incorporate the following TSM and TDM elements:

- Improved ramp metering hardware and software and CCTV systems for viewing ramps and nearby arterials
- At locations of interchange improvements, upgraded traffic signals interconnected and coordinated with adjacent signals and ramp meters
- Additional way-finding signs on freeways and arterials
- Design of on- and off-ramps to limit impacts to nonmotorized travel and preserve access to bike lanes and trails
- ITS elements, including fiber-optic and other communication systems for improved connectivity and remote management; CMS; CCTV coverage of the entire freeway mainline, ramps, and adjacent arterials; video detection systems; and vehicle detection system (VDS) for volume, speed, and vehicle classification
- Traveler Information Management System improvements to enhance dissemination of real-time information on roadway conditions
- Vanpool initiatives
- Carpooling programs
- Promote and integrate public transit design features
- CCTV with Pan-Tilt-Zoom (PTZ) capability
- Ramp Metering System (RMS)
- VDS

Additional measures during project construction are presented in Section 3.1.4.1.4, Community Character and Cohesion (Avoidance, Minimization, and/or Mitigation Measures).

3.1.7 Visual/Aesthetics

3.1.7.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969, as amended, establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 United States Code [U.S.C.] 4331[b][2]). To further emphasize this point, the Federal Highway Administration (FHWA) in its implementation of NEPA (23 U.S.C. 109[h]) directs that final decisions on projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

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

3.1.7.2 Affected Environment

This section describes the aesthetic and visual resource conditions within the project limits. The section also discusses potential aesthetic impacts that could result from implementation of the proposed project build alternatives. A program of minimization measures is also included. Information in this section is based on the *Visual Impact Assessment* (VIA) completed for this project (March 2015). The VIA uses a quantitative methodology and has tables for each key view to show impact ratings; conclusions in the text below for each key view is summarized from the VIA and these tables.

The visual impacts of the proposed project were determined by assessing the existing visual resources, the visual resource change due to the project, and predicting viewer response to that change. The degree of visual quality in a view was evaluated using the following FHWA descriptive terms:

Vividness: Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns (e.g., Niagara Falls is a highly vivid landscape component).

Intactness: Intactness is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements. This factor can be present in well-kept urban and rural landscapes and natural settings (e.g., a two-lane road that meanders through the countryside).

Unity: Unity is the visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the landscape (e.g., an English or Japanese garden).

The degree of visual character in a view was evaluated using the following FHWA descriptive terms:

- *Scale:* Visual scale is the apparent size relationship between landscape components or features and their surroundings.
- *Diversity:* Diversity is the number of pattern elements, as well as the variety among them and edge relationships between them.
- *Continuity:* Continuity is the uninterrupted flow of pattern elements and the maintenance of visual relationships between immediately connected or related landscape components or features.
- *Dominance:* Dominance is components or specific features in a scene that may be dominant because of prominent positioning, contrast, extent, or importance of pattern elements.

For projects that do not create a significant impact on existing visual character or quality, a more nuanced approach categorizes impact levels as low, moderately low, moderate, moderately high, and high based on the following descriptions:

- *Low (L):* Low negative change to existing visual resources and low viewer response to that change. May or may not require mitigation.
- *Moderately Low (ML):* Low negative change to the visual resource with a moderate viewer response or moderate negative change to the resource with a low viewer response. Impact can be mitigated using conventional methods.
- *Moderate (M):* Moderate negative change to the visual resource with moderate viewer response. Impact can be mitigated within 5 years using conventional practices.
- *Moderately High (MH):* Moderate negative change in the visual resource with high viewer response or high negative change with a moderate viewer response. Extraordinary mitigation practices may be required. Landscape treatment required will generally take longer than 5 years to mitigate.

- *High (H):* High level of negative change in character or a high level of viewer response to the change such that extraordinary architectural design and landscape treatments may not mitigate impacts below a high level. An alternative project design may be required to avoid high negative impacts.

Visual Environment

A regional landscape defines those elements of the natural and built environment that together form a unique visual identity of a place or corridor. This regional landscape establishes the general visual environment of the project, but the specific visual environment upon which this assessment is focused is determined by defining the landscape units and project viewshed, which are discussed below in greater depth.

The regional landscape of the project corridor is characterized by two identifying elements: the flat appearance of the foreground landscape and the steep San Bernardino and San Gabriel mountains, which form a dramatic backdrop. Along the existing corridor in many locations are rows of mature eucalyptus *(Eucalyptus camaldulensis)* trees that provide a signature visual element to the existing corridor. The trees are very large and striking; many are taller than 80 feet with trunk diameters larger than 2 feet. They were planted as windrows years ago to beautify the corridor and add a valuable visual identity to the corridor; however, many are also close to the existing roadway in a proximity that would not be allowed under today's design standards.

One additional element to be considered in the regional landscape is the haze that frequently develops in the area that obscures the views of the mountains and influences the overall appearance of the regional landscape.

Project Viewshed

A viewshed is the area normally visible from an observer's viewpoint of location and is limited by the screening/obstruction effects of any vegetation or structures. A viewshed can include views from within the project outward or from outside of the area into the project corridor. While viewpoints represent specific locations within the project area, a viewshed describes what is seen from that viewpoint, including the limits of what can be seen. When these individual points are strung together, the viewsheds create an overall project viewshed that can be used to describe the project area. The viewshed includes the locations of viewers within the project area that are likely to be affected by visual changes brought about by the project features.

For the I-10 Corridor Project (I-10 CP), views into the corridor are associated with the cross streets and are generally located near (approximately 0.25 mile) the corridor due to the relatively flat nature of the project area. Areas in which high-rise buildings are located may have views farther out from the corridor. From within the corridor, views out are also generally limited to a short distance due to the flat groundplane and the proximity of buildings. In addition, the rows of eucalyptus help to screen views into and out of the corridor.

The Redlands portion of the corridor is different in that it was recently widened and reconstructed. The proposed construction will add many soundwalls to this portion of the corridor, which would limit the views and the associated viewshed into and out from the corridor.

Landscape Unit

Landscape units are defined as that portion of the regional landscape that can be thought of as containing a distinct visual character. Another way to look at a landscape unit would be to consider it an outdoor room. A landscape unit will often correspond to a place or district that is commonly known among the community.

The I-10 CP area was divided into eight landscape units: five that cover the area for Alternative 2 and an additional three that cover additional areas included in Alternative 3. These units are distinct, but not necessarily homogenous, in character. The landscape units are described in detail below, along with each unit’s existing visual character and existing visual quality.

Los Angeles County Landscape Unit

As the name implies, this landscape unit covers the portions of the corridor within Los Angeles County, at the very west end of the study area, and covers the area from Town Avenue to the county line at Mills Avenue. The area falls within the cities of Claremont and Pomona. Typical views for this portion of the corridor can be seen in Figure 3.1.7-1.

Existing Visual Character: Development in this landscape unit consists of primarily residential development, including single-family and multi-family units. Commercial properties are also found within the unit, especially near Indian Hill Boulevard. The Interstate 10 (I-10) corridor within this unit is very confined and frequently includes a soundwall right at the edge of the shoulder. Landscaping within the I-10 corridor is limited to the interchange areas only.

Figure 3.1.7-1 Los Angeles County Landscape Unit

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Existing Visual Quality: The overall visual quality for the unit is moderate, with moderate vividness, intactness, and unity. Corridor areas, by in large, have a moderately low visual quality due to the confined views found in the corridor and the lack of elements, such as landscaping, that might soften the appearance of the highway.

County Gateway Landscape Unit

This landscape unit extends from the county line at Mills Avenue to the eastern edge of the Mountain Avenue interchange. It covers portions of the cities of Montclair, Upland, and Ontario. Typical views for the County Gateway Landscape Unit can be seen in Figure 3.1.7-2.

Existing Visual Character: The landscape unit appears evenly divided between residential and commercial properties within the study area. Significant commercial properties (including Montclair Plaza) exist on both sides of I-10 between Monte Vista Avenue and Central Avenue, and along the north side of I-10 through Mountain Avenue. Residential properties are generally found along the south side of I-10 in the unit.

Existing Visual Quality: As with the previous landscape unit, the corridor is tight, and soundwalls can be found along the edge of the shoulder along long stretches of the eastbound (EB) lanes, limiting the views out from the corridor. The general existing visual quality is moderately low.

Residential Landscape Unit

The Residential Landscape Unit extends from the eastern end of the Mountain Avenue interchange to just east of Vineyard Avenue. Portions of the cities of Upland (north of I-10) and Ontario are covered in the unit. Typical views for the Residential Landscape Unit can be seen in Figure 3.1.7-3.

Existing Visual Character: Unlike the previous two units, this landscape unit is primarily residential in character, although commercial areas are sprinkled within the unit, particularly at Grove Avenue and in the Guasti area from Vineyard Avenue east. Due to its residential nature, there are many soundwalls within the landscape unit. In addition, portions of the western side of the unit sit below the surrounding neighborhoods with retaining walls adjacent to the highway; however, unlike the previous two units, landscaping is located above the retaining walls and the soundwalls sit at the right-of-way (ROW) line, so the views from the corridor are less constrained than previously noted. Another key feature of this landscape unit is the North Euclid Avenue Historic Corridor that crosses the I-10 corridor. See Section 3.1.7.3 for a discussion.

Existing Visual Quality: The existing visual quality of the landscape unit is moderate with moderately high vividness and moderate intactness and unity. The visual quality of the corridor is helped by the views available to travelers – the existing landscaping along the corridor, which softens the highway elements.

Commercial-Warehouse Landscape Unit

The Commercial-Warehouse Landscape Unit is the westernmost of the landscape units and centers on the Interstate 15 (I-15)/I-10 interchange. It is located in the cities of Ontario and Fontana. The landscape unit was identified by Ontario Mills Mall in the northwest quadrant of the I-15/I-10 interchange and by the large warehouses of newer construction found along this portion of I-10. Typical views for this landscape unit can be seen in Figure 3.1.7-4.

Existing Visual Character: The development of this portion of the corridor is relatively new, compared to other portions, and includes Ontario Mills Mall, big box retail stores, and office buildings west of the I-15/I-10 interchange. West of the interchange, the development is in large, newer warehouse buildings. Within the I-10 corridor, there is limited landscaping, mostly associated with the interchanges. In addition, a row of mature eucalyptus trees stands west of the Etiwanda Avenue interchange along the north side of I-10.

Existing Visual Quality: The overall visual quality of the project corridor in the Commercial-Warehouse Landscape Unit is moderate, with moderate vividness, intactness, and unity. Areas west of the I-15 interchange tend to have a higher visual quality, while the areas east, around Etiwanda Avenue, tend to have a lower visual quality.

Industrial Landscape Unit

The Industrial Landscape Unit is immediately east of the Commercial-Warehouse Landscape Unit, beginning at Mulberry Avenue and ending at Sierra Avenue to the east. It is located almost entirely within Fontana, although the corridor does pass through portions of unincorporated San Bernardino County. This unit was identified based on the older industrial nature of the surrounding land uses and that the railroad, which is offset from the I-10 corridor in the previous landscape unit, is situated immediately south of I-10, beginning at Mulberry Avenue and continuing through this landscape unit. Typical views within the Industrial Landscape Unit are shown in Figure 3.1.7-5.

Figure 3.1.7-2 County Gateway Landscape Unit

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Figure 3.1.7-3 Residential Landscape Unit

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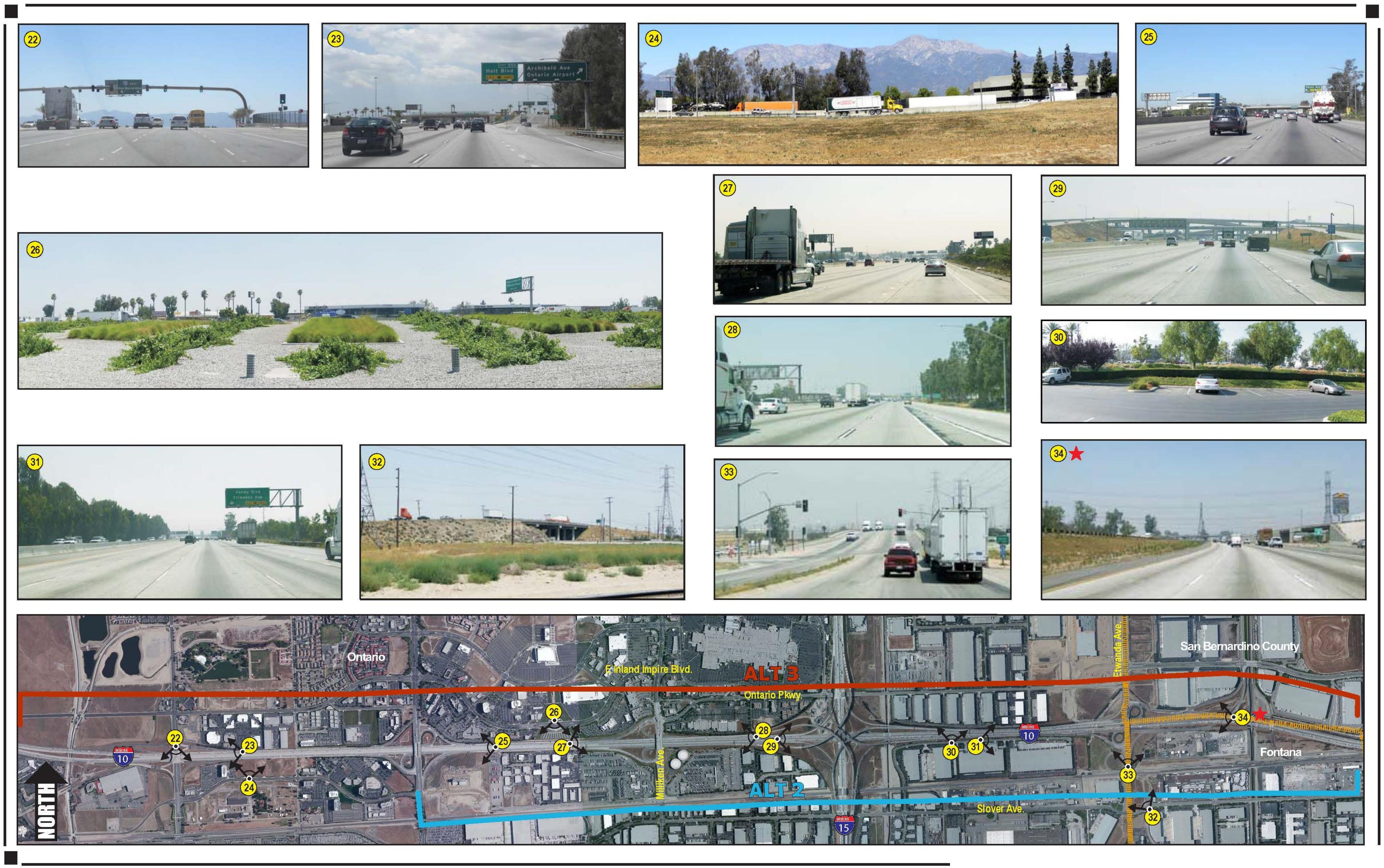

Figure 3.1.7-4 Commercial-Warehouse Landscape Unit

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Figure 3.1.7-5 Industrial Landscape Unit

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Existing Visual Character: The development that borders on the north of the I-10 corridor within this unit, and to the south of the railroad tracks that parallel the south side of I-10, consists primarily of small industrial sites that are intermixed with commercial and residential land uses. These industrial sites are oriented towards truck and semitrailer traffic. Residential areas consist of smaller homes and trailer parks. A large commercial development has been constructed at the Sierra Avenue interchange, including large retail stores and an office complex for Kaiser Hospitals.

Within the I-10 corridor, the two most visually prominent elements are the rows of eucalyptus trees and numerous billboards. These can be found on the north and south sides of I-10. At approximately the midpoint of this landscape unit, near Elm Avenue, is an old California Department of Transportation (Caltrans) Rest Area site that has been taken out of service; however, the trees associated with this site provide a large landscape presence in the otherwise narrow corridor. Paralleling the I-10 corridor to the south are the railroad tracks. These tracks have a large presence in the landscape, particularly from the land uses south of the tracks. The railroad tracks generally sit slightly higher in the landscape than the land uses to the south.

Existing Visual Quality: The overall existing visual quality of the Industrial Landscape Unit is low, with low vividness, intactness, and unity. The older, industrial nature of the surrounding land uses combine with the railroad corridor, billboards, and freeway paving to lower the overall visual quality; the rows of mature eucalyptus trees work to increase the visual quality.

Rail Yard Landscape Unit

The visual environment of the Rail Yard Landscape Unit is dominated by two elements: the large rail yard between Cedar and Pepper avenues and the Colton Cement Works Quarry between Pepper and Rancho avenues. This landscape unit begins at Sierra Avenue, extends to the east to the Santa Ana River crossing, and falls within Rialto and Colton, with a significant portion falling within unincorporated San Bernardino County. Typical views within the Rail Yard Landscape Unit are shown in Figures 3.1.7-6 and 3.1.7-7.

Existing Visual Character: Much of the development that surrounds the I-10 corridor within the Rail Yard Landscape Unit is similar in character to the development in the Industrial Landscape Unit (i.e., older industrial development associated with truck/semitrailer traffic interspersed with residential and commercial developments). This is particularly true of the areas west of Rancho Avenue. East of

Rancho Avenue, the development becomes more residential. A large retail/ commercial development is situated on the north and south sides of I-10 at the Sierra Avenue interchange.

As in the Industrial Landscape Unit, many rows of mature eucalyptus trees line the I-10 corridor. Additional landscaping is found at several of the interchanges within the corridor, including Riverside and Rancho avenues. Many are also found on the north and south sides of I-10, but most of them are on the south side along the railroad tracks.

Existing Visual Quality: The overall visual quality of this landscape unit is low, with low vividness, intactness, and unity. As in the Industrial Landscape Unit, the older industrial developments in the area, combined with the rail corridor and billboards, lower the visual quality. The quarry also lowers the visual quality of this portion of the corridor. The primarily residential areas west of Rancho Avenue generally have a higher overall visual quality than the areas to the east. The mature trees within the corridor raise the visual quality.

Commercial-Agricultural Landscape Unit

The boundaries for the Commercial-Agricultural Landscape Unit are the Santa Ana River crossing to the west and Nevada Street to the east. This unit includes the Interstate 215 (I-215)/I-10 interchange and falls within the cities of Colton, San Bernardino, and Loma Linda. The development patterns surrounding the I-10 corridor include large commercial and office developments in the western half of the unit, with agricultural fields still present in the eastern half. Between these two are many residential neighborhoods. Typical views for the Commercial-Agricultural Landscape Unit are shown in Figure 3.1.7-8.

Existing Visual Character: The railroad corridor has a less visually prominent role within the Commercial-Agricultural Landscape Unit because the tracks move south, away from the I-10 corridor, beginning near the Santa Ana River. In addition, the corridor changes character by being elevated in the landscape with the cross streets crossing under I-10. Fewer billboards are located in this landscape unit.

The rows of eucalyptus trees in the previous landscape units are not present in this landscape unit; however, median plantings of olive trees are present near the Waterman Avenue interchange. The I-215/I-10 interchange has a substantial landscape within the ROW.

Figure 3.1.7-6 Rail Yard Landscape Unit (Page 1 of 2)

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Figure 3.1.7-7 Rail Yard Landscape Unit (Page 2 of 2)

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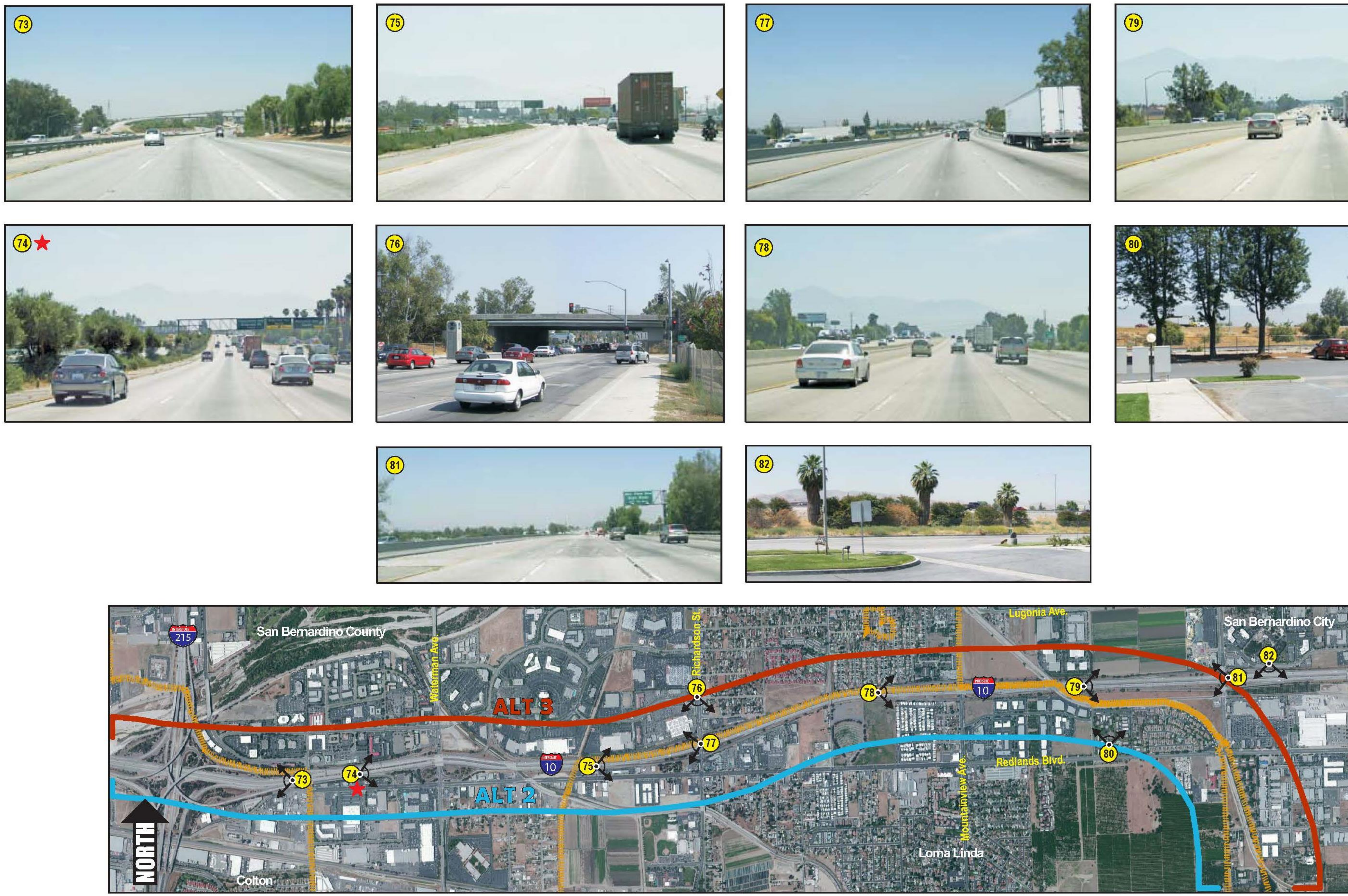

Figure 3.1.7-8 Commercial-Agricultural Landscape Unit

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Existing Visual Quality: The overall existing visual quality of the Commercial-Agricultural Landscape Unit is moderate, with moderate vividness and intactness and moderately low unity. Overall, removal of the railroad corridor as a visual element in the landscape and the associated reduction of billboards combine with the additional landscaping found in the corridor and the agricultural fields to give this portion of the corridor its rating. Detracting or encroaching elements are generally much less in this landscape unit.

Redlands Landscape Unit

The Redlands Landscape Unit stretches from Nevada Street on the west through to the end of the project near Ford Street. This landscape unit is situated almost entirely within Redlands. It is identified by the elevated character of I-10 combined with the predominantly residential development of the adjacent land uses. Typical views within the Redlands Unit are shown in Figure 3.1.7-9.

Existing Visual Character: The two features that tend to dominate the visual character of this landscape unit are the State Route (SR) 210/I-10 interchange on the western end of the landscape unit and the existing soundwalls on the eastern end. These soundwalls limit the views into and out of the corridor, leaving only skyline trees (mostly eucalyptus and fan palms) to be seen over the walls. The interchange area has been landscaped by Caltrans.

As in the previous landscape unit (Commercial-Agricultural), I-10 is elevated in the landscape, with the cross streets crossing under I-10. Some landscaping is associated with the slopes along I-10, which takes on a naturalistic appearance and may be volunteer plantings of eucalyptus and palm. Cross street interchanges within this unit are generally landscaped.

Existing Visual Quality: The existing visual quality of the Redlands Landscape Unit is moderate, with moderate to moderately high vividness and moderate intactness and unity. Because the existing soundwalls limit the views into or out of the corridor, they generally have lower visual quality. In some locations, vine plantings have been introduced, which help to soften the appearance of these walls.

Key Viewpoints

The project is assessed from stationary locations, as well as from dynamic viewpoints such as vehicles, pedestrians, and bicyclists; however, because it is not possible to analyze every possible view within the project area, the FHWA analysis methodology recommends selecting many key viewpoints that represent the potential visual effects of the project and the viewers' experience. A key viewpoint is a representative, typical, characteristic, and clear perception of project elements to the primary viewer group. Key viewpoints also need to represent the landscape units and include all of the project elements. Additionally, key viewpoints are areas seen to and from the roadway, viewpoints that clearly display the visual effects of the proposed project. The key viewpoints include a representation of all critical visual elements of the proposed project and viewer group types. Key viewpoints are denoted with a red star in applicable figures. Descriptions of the key viewpoints are provided below.

The postconstruction simulations shown for the key viewpoints on the following pages include application of Best Management Practices (BMPs) and avoidance and minimization measures as described in Section 3.1.7.4 for each particular view. The most noticeable measures shown in the simulations are listed below:

- Applying architectural detailing to the retaining walls and soundwalls, including textures, colors, and patterns
- Coloring and staining of bridge elements
- Installing vinyl-coated chain-link fencing along pedestrian areas
- Saving and protecting as much existing vegetation as feasible
- Including new landscaping where feasible
- Including skyline trees in the new plantings

Aesthetic treatments shown on structures and specific plant types in the simulations are representative only. Actual types of treatments and landscaping would be based on community input. The key views within the project area are described below:

- **Viewpoint #14, Residential Landscape Unit:** This view was taken from the San Antonio Avenue Overcrossing (OC) looking EB into the I-10 corridor. The view was selected because it shows the improvements to the corridor from Alternative 3 from the perspective of the pedestrians on the overcrossing.
- **Viewpoint #15, Residential Landscape Unit:** This photo was taken on the existing Euclid Avenue OC looking west across the bridge. It was selected to show the potential changes to the visual environment along the historic corridor from the viewpoint of the bridge user.
- **Viewpoint #18, Residential Landscape Unit:** This viewpoint looks west from the existing E. Alvarado Street, which parallels the corridor. Because the street is residential in nature, this viewpoint was selected to show the proposed improvements from the perspective of residents looking into the corridor.

Figure 3.1.7-9 Redlands Landscape Unit

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- **Viewpoint #21, Residential Landscape Unit:** This photo is taken from the westbound (WB) lanes looking at the Vineyard Avenue crossing. The photo is from the vantage point of the freeway user and was selected to show any changes associated with the proposed improvements to this user group.
- **Viewpoint #34, Commercial-Warehouse Landscape Unit:** This view, from unincorporated San Bernardino County looking toward Ontario, is taken from WB I-10 looking west toward the Etiwanda Avenue OC in the distance. To the right is the on-ramp from southbound (SB) Etiwanda Avenue to WB I-10. The view was selected because it shows what will occur on the I-10 corridor, as well as to the existing median on I-10. This is currently one of the few areas in the corridor with a median.
- **Viewpoint #40, Industrial Landscape Unit:** This view, within unincorporated San Bernardino County adjacent to Fontana, is taken from the first lane of WB I-10 looking west along the freeway edge towards the existing row of eucalyptus and the existing I-10 Channel, which parallels I-10 along the north edge of the freeway. The view was selected because it shows the impacts to the existing row of eucalyptus.
- **Viewpoint #43, Industrial Landscape Unit:** This photo is taken off the corridor in a neighborhood within Fontana. The view is to the south and was selected to show the impact of a soundwall in the vicinity of these homes.
- **Viewpoint #50, Rail Yard Landscape Unit:** This view is within San Bernardino County within the Fontana area and looks east along EB I-10. This view was selected to show the changes to the row of eucalyptus along the south side of I-10 (between I-10 and the railroad tracks).
- **Viewpoint #65, Rail Yard Landscape Unit:** This view is from the perspective of the pedestrian and is taken from the midpoint of the Rancho Avenue OC looking east. This view is in Colton and was selected to show the changes to the visual environment from the perspective of pedestrians.
- **Viewpoint #72, Commercial-Agricultural Landscape Unit:** This view is taken from the existing Santa Ana River Trail southwest to the existing I-10 crossing over the Santa Ana River. The viewpoint was selected as a key viewpoint because it shows changes that would be seen by trail users. (The Viewpoint #72 photo was taken from a Commercial-Agricultural Landscape Unit, but it is looking into a Rail Yard Unit. The Santa Ana River forms the break between these adjacent landscape units.)
- **Viewpoint #74, Commercial-Agricultural Landscape Unit:** This view looks east from the EB lanes and shows the proposed impacts to the existing median

plantings. The viewpoint is in the City of San Bernardino. It was selected to show the changes to the visual environment associated with removal of the existing median vegetation.

- **Viewpoint #86, Redlands Landscape Unit:** This photo looks east from the EB lanes, near Texas Street in Loma Linda. This view was selected to show the potential impacts on corridor impacts within this unit.

Methodology

For each key viewpoint that is rendered, there is descriptive text of the orientation, existing visual character/quality, proposed project features, anticipated changes to the visual environment, anticipated viewer response, and the resulting visual impact anticipated in each view. This is followed by the rendered simulations.

Within the VIA, a numeric value between 0 (low) and 5 (high) was assigned to each of the three visual quality traits (i.e., vividness, intactness, and unity) and each of the four visual character traits (i.e., scale, diversity, continuity, and dominance) for the existing and proposed views. The ratings in each category were added up and divided by the number of traits in each category. There is no weighting of any category over any other. For example:

> (Vividness + Intactness + Unity)/3 = Visual Quality Rating
> (Scale + Diversity + Continuity + Dominance)/4 = Visual Character Rating

From these calculations, the percentage of change anticipated in the view was then calculated by finding the difference between the existing and proposed views and then dividing that number by the initial rating figure. For example:

> (Existing Visual Quality Rating – Proposed Visual Quality Rating)/Existing Visual Quality Rating = Percent Change

For the analysis of viewer responses, the existing and proposed would be the same because the viewers themselves do not change; only the stimulus changes. The anticipated changes to character and quality, along with the anticipated viewer response and sensitivity, follow the Low – Moderate – High rating designations from above and are included in the analysis below. These are averaged between each category, with the higher rating prevailing to determine the resource change and overall anticipated visual impact within the key viewpoint.

Graffiti

Graffiti is frequently an issue on publicly owned structures such as fences, retaining walls, bridge supports/columns, soundwalls, and other similar structures, as well as privately owned buildings, fences, etc. Graffiti may also occur on traffic control devices such as stop signs, stop lights, other traffic directional and safety signs, and posts/poles. Public agencies frequently have dedicated maintenance programs for the control and removal of graffiti. Caltrans has graffiti control and removal programs.

3.1.7.3 Environmental Consequences

The visual impact of project alternatives is determined by assessing the visual resource change resulting from the project and predicting viewer response to that change. Visual resource change is the total change in visual character and visual quality. The first step in determining visual resource change is to assess the compatibility of the proposed project with the existing visual character of the landscape. The second step is to compare the visual quality of the existing resources with the projected visual quality after the project is constructed. Next, viewer response to the changes is the sum of viewer exposure and viewer sensitivity to the project. The resulting level of visual impact is determined by combining the severity of resource change with the degree to which people are likely to oppose the change.

Permanent Impacts

No Build Alternative – Summary

Activities that would occur under the No Build Alternative include routine maintenance of the project corridor area. The roadway would not be expanded for high-occupancy vehicle (HOV) lanes. The large number of projects already being developed in the project corridor exclusive of the I-10 CP indicates that the visual environment of the project corridor will, over time, change from the existing views to views that are more urban in appearance. These changes include new bridges, retaining walls, and anticipated soundwalls, in addition to widened pavement sections, such as in the area of the auxiliary lanes.

Build Alternatives – Summary

Without the application of mitigation, minimization, and/or avoidance measures, the two build alternatives would result in a substantial effect on the existing visual quality or character of the corridor. The construction of substantial amounts of hardscape (i.e., walls, bridges, and paving) would add to the scale and urbanity of the corridor from its present condition.

Changes in the visual environment for travelers on I-10 would primarily consist of views to areas with wider pavement widths, replacement bridges, and retaining walls and soundwalls. Given the number of existing soundwalls in the corridor, many of the views into or out of the corridor are restricted to areas that are generally adjacent commercial land uses where there are no soundwalls, or to the bridge crossings. As shown in Tables 3.1.7-1 through 3.1.7-36, construction of the build alternatives would result in changes to the visual quality and/or character associated with vegetation removal, construction activities, and the introduction of new and modified permanent structures.

For the build alternatives, removal of the rows of eucalyptus trees and other vegetation within the interchange areas would likely have the greatest impact on the visual quality; however, this effect would remain until any replanted (from the proposed mitigation measures) trees grow back to existing conditions, which would take approximately 15 to 20 years to reach similar scale and proportions. Replacement plantings are possible within the project corridor. These plantings would be primarily associated within the local street interchanges and in select locations between the interchanges where sufficient ROW exists between the edge of pavement and the edge of the ROW. Caltrans standard setbacks for the planting of trees require that most trees be located a minimum of 34 feet from the outside edge of the lanes (i.e., edge of travelway); therefore, the areas where trees can be planted within the corridor must be a minimum of 24 feet wide, between edge of paving and the ROW, assuming a 10-foot-wide shoulder on the roadway. This occurs in select locations along the mainline throughout the project corridor and at most interchanges.

Other elements, such as replacement structures, new retaining walls, and soundwalls, would be a permanent change to the elements within the existing viewsheds along the corridor, including some areas where visual impacts were determined to be Moderately High, as described for Viewpoints 17A and 17B. With the implementation of Mitigation Measures VA-1 to VA-38, the potential adverse effects of the build alternatives on the visual character and quality of the project surroundings would be minimized.

The summary below describes the anticipated changes to the visual environment by each project element.

Overcrossings/Bridges: Construction of the project would require the following improvements to overcrossings/bridges:

- Alternative 2
  - 3 structure replacements
  - 43 structure widening/modifications

- Alternative 3 (Preferred Alternative)
  - 13 structure replacements
  - 61 structure widening/modifications

The bridge replacements would be longer than the existing and may be wider depending on the local requirements for the street, such as adding a lane to an existing arterial crossing. Given that the existing bridges were generally constructed without the design and aesthetic considerations that usually apply to new projects, the design of the replacement and widened bridges would be constructed to include aesthetics elements of the Corridor Aesthetics Master Plan. From a visual standpoint, the current structures lack many of the unifying aesthetic elements; therefore, it is anticipated that the replacement and modified bridges would improve the overall corridor aesthetics, despite their longer appearance.

Graffiti: As discussed earlier, public structures are often targets of graffiti. The permanent structures proposed under the build alternatives, including bridges, overcrossings, structural supports, retaining walls and soundwalls, traffic control devices, and signing, may be attractive targets for graffiti. The build alternatives would include treatments on many of the structures and project features that may deter taggers. Those may include anti-graffiti coatings, wall texturing, aesthetic surface treatments, and landscaping/plantings. Nonetheless, the new/modified structures under the build alternatives may be attractive targets for taggers; therefore, the build alternatives could result in increased graffiti within the project corridor, including along local streets at their crossings of the freeway.

As discussed earlier, Caltrans has existing ongoing maintenance programs for the control and removal of graffiti. Those programs would apply to all structures and project features in the build alternatives, on public and private property, as appropriate.

Alternative 2 (HOV Alternative)

The discussion below outlines the anticipated effects by category. This is followed by a discussion that outlines the effects by landscape unit.

Vegetation Removal: While not listed as a contributing historic feature in the corridor, the mature rows of eucalyptus provide a striking accent to the corridor.

Originally, these were planted as a colonnade of trees along the corridor. Over the years, many of these trees were removed by projects, either along the I-10 corridor or at a street crossing. In addition, many have succumbed to old age, drought, or other natural causes; therefore, the remaining rows are sporadic and concentrated primarily between I-15 and Rancho Avenue. Throughout the project area, Alternative 2 is expected to require the removal of approximately 374 eucalyptus trees within the corridor. Approximately 253 more trees could be impacted, depending on the final alignment of the roadway and the proximity of retaining walls that would be required. In some locations, the walls might have to be placed too close to the trees, and removing too many roots would kill the trees. See Appendix A of the VIA for a set of aerial maps showing the effects of Alternative 2 on these corridor elements.

In addition to removal of the eucalyptus, existing plantings within interchanges would be affected by the proposed alternative. Vegetation along the mainline, which occurs mostly in the eastern half of the corridor, east of the Santa Ana River, would also be affected by the wider paving required by the alternative. Most of this disturbance would occur where walls (retaining or sound) and bridge construction would be scheduled to occur.

Freeway Paving: A new lane would be added in each direction within the current median of I-10. The addition of this lane would also require widening to the outside to accommodate a full 10-foot-wide shoulder in the median, as well as the 4-foot-wide HOV lane buffer. The result would be a wider pavement section throughout the corridor. The widened pavement would be a noticeable feature for drivers in the corridor; the added concrete would impact the overall visual quality of the corridor.

Local Streets: The minor impacts associated with the local street interface (i.e., where ramp and local streets meet) are not expected to alter the existing visual quality along the streets. Three new overcrossings would be constructed as part of the project. In these locations, the local street would potentially see a wider section to the road. In addition, six undercrossings would be widened, extending the length of the local street that is in shadow under I-10. Other areas where the local streets might see effects from the project are associated with the ramps where they interface with the local street. Changes to the ramp configurations, such as widened sections and improved radiuses at the curb returns, may cause changes to the local street.

Retaining Walls: Approximately 67,000 linear feet of retaining walls may be constructed along the corridor under this alternative. The retaining walls associated with

Alternative 2 are primarily located within the interchange areas and are associated with the outside edge of the ramps; therefore, they would face outward from the corridor. In addition, some walls would be located along the mainline, some would be associated with interchanges and the reconfiguration of the ramp areas, while others would be located along the edge of the ROW. In general, those along the edge of the shoulder would face inward to the corridor and would be visible to travelers on I-10; those at the edge of the ROW would face outward and would be visible to the adjacent community.

Soundwalls: Alternative 2 would construct or rebuild 56 soundwalls within the I-10 corridor, with a total linear footage of approximately 54,500 linear feet. The largest number of new soundwalls is found in the eastern two landscape units (Commercial-Agricultural and Redlands landscape units), with additional walls located in the Rail Yard and Industrial landscape units. Under this alternative, there are no walls located in the Commercial-Warehouse unit. Wall heights range from 8 to 16 feet, with the typical wall being 14 feet in height; however, there is a proposed 20-foot-high wall along the edge of the I-10 ROW in the area of Willow Avenue and an 18-foot-high wall along the edge of the ROW in the area of Acacia Avenue; both of these fall within the Rail Yard Landscape Unit. The proposed soundwalls along I-10 and its ROW would limit views from the surrounding areas into the corridor and from the corridor out to the surrounding areas.

Specific impacts associated with this alternative within each landscape unit are discussed below.

Commercial-Warehouse Landscape Unit: Within the Commercial-Warehouse Landscape Unit, Alternative 2 would require the removal of 25 eucalyptus trees along I-10, with the possible addition of 90 others, depending on the design-build configurations. With the protection of short retaining walls or roadway barriers, the remaining trees could be protected in place.

The widened roadway would cause a small increase in the perceived paving within the I-10 corridor; however, much of the existing area in which the lanes would be located is already paved. No soundwalls are anticipated within this landscape unit, but four retaining walls would be constructed. These have an average height in the range of 4 to 9 feet, with a maximum height of 14 feet, for a wall located in the Milliken Avenue interchange.

While no bridges would be replaced within this unit, many existing crossings, primarily associated with the creeks/drainage or railroads, would be widened. The requirements for aesthetics for bridges and other structures outlined in the Corridor Aesthetics and Landscape Master Plan would be applied to any new bridge widening.

Given the large presence of warehouses and other businesses found within this unit, many without windows, it is anticipated that viewer sensitivity is expected to be moderately low. The potential effects of the proposed alternative, as described above, are anticipated to create a moderate degree of change within the corridor. Without mitigation, the overall visual quality within the landscape unit would likely decrease to moderately low, with moderately low vividness and intactness, and moderate unity. With mitigation, the existing overall visual quality of moderate would remain the same or increase slightly. With the addition of aesthetics and landscape elements currently not found in the corridor, the vividness would remain at moderate, with moderate intactness and unity.

Industrial Landscape Unit: The Industrial Landscape Unit has the largest number of existing eucalyptus trees that might be affected by the project. Approximately 345 trees, primarily along the northern edge of I-10, would be removed under Alternative 2. In addition, approximately 14 trees along the northern edge, paralleling the I-10 Channel, might have to be removed, depending on a final determination of the proximity of the protection elements versus the root zone required to maintain the health of the trees. Another 373 trees would be protected in place.

Sufficient ROW exists in portions of the corridor to allow new tree plantings in some locations within this landscape unit. In these cases, the new trees would be located along the north side of I-10 between the back edge of the I-10 Channel and the edge of ROW. Other replacement plantings could be located within the Cherry Avenue and Citrus Avenue interchanges. Many billboards are situated along I-10, particularly along its south side. Removing the trees would likely make these billboards even more prominent within the viewscape of the corridor.

As in the Commercial-Warehouse Landscape Unit, the additional paving associated with the alternative would likely cause a small increase in the perceived paving area, particularly to the outside edge. Within this unit, no retaining walls are proposed, and no bridges would be replaced or widened by this alternative.

Four soundwalls are proposed for this landscape unit, totaling 7,440 linear feet and with heights ranging between 12 to 16 feet. The average height is 14 feet. The walls are expected to block views into the corridor for residents adjacent to I-10 that currently have these views and to block views out of the corridor for freeway travelers. Plantings associated with the walls, such as vines, could help soften the presence of the wall in the corridor for both viewers. At locations where proposed new trees are planted in conjunction with the soundwalls, additional screen could be expected as the trees mature over time.

Viewer sensitivity within this unit is anticipated to be moderate, given its mix of residential and industrial businesses. The effects created by Alternative 2 would likely also be moderate within the unit, primarily related to the removal of many eucalyptus trees and the addition of soundwalls along the corridor. Without mitigation, the low overall visual quality rating for the landscape unit would likely drop to very low, with very low vividness, intactness, and unity. Much of this drop is due to the removal of trees, combined with the older industrial and railroad areas that would become more visible after the trees are removed. With mitigation, the landscape unit could have an increased overall visual quality rating of moderately low, with moderately low vividness and intactness, and moderate unity.

Rail Yard Landscape Unit: Within the Rail Yard Landscape Unit, only 3 of the eucalyptus trees would be removed by the project, and another 149 are potentially in the path of the planned improvements and might require removal, depending on the final configuration of the roadway; however, as currently designed, it is anticipated that 383 of these trees would likely remain in place. In addition to the trees removed as part of the I-10 CP, the future planed improvements at the Cedar Avenue interchange would likely cause further removals. Similar to many of the landscape units, tree removal would likely make the existing billboards more visually prominent.

Within this unit, the I-10 CP would add new lanes in the median area of I-10 and would widen the outside edge of I-10 to accommodate the required shoulders, similar to the proposed construction in the other units. Forty-three (43) retaining walls are proposed within this landscape unit for Alternative 2. One of the walls associated with the 9th Avenue/La Cadena Drive interchange has a maximum height of 26 feet, which is the tallest wall proposed as part of this alternative. This wall would face out from the corridor into the railroad corridor. Most of the proposed retaining walls have an average height of 8 to 10 feet, with maximum heights in the range of 12 to 16 feet.

The existing Slover Mountain Railroad Bridge, which is over I-10 east of Pepper Avenue, would be replaced, as would the Mt. Vernon Avenue OC. In addition, many existing bridges would be widened, including the bridge for the Colton Railroad line under I-10, the La Cadena Drive Undercrossing (UC), the 9th Street UC, and the Pavilion Spur line under I-10, all of which would be widened to the outside of the existing bridge; and the Warm Creek and Santa Ana River crossings, which would be widened to the inside. With incorporation of the aesthetic designs that are part of the approved Aesthetics and Landscape Master Plan for the I-10 corridor (as part of the mitigation and minimization requirements), the design of the new bridges would likely place a greater emphasis on the aesthetics of the corridor than do the current bridges, which were designed and constructed decades ago. These aesthetic treatments would likely improve the overall aesthetics in the corridor.

For Alternative 2, eight soundwalls would be constructed in several locations within this landscape unit. The total length of anticipated wall is 12,620 linear feet, with heights generally between 12 and 16 feet; however two taller soundwalls are proposed in this unit, one at 20 feet high along the WB ROW near Willow Avenue and one that is proposed at 18 feet along the WB ROW in the area of Acacia Avenue. As described for the Industrial Landscape Unit, these walls would be expected to block views for residents along the walls and for travelers on I-10. Where feasible, plantings associated with the walls would soften the presence of the walls.

Viewer sensitivity within this unit is likely to be moderately low, with the residences and businesses located along the north side of I-10 having a higher sensitivity. Any viewers along the railroad track that parallels the south side of I-10 would likely have a very low sensitivity, and for residents farther south, the views are more distant with a corresponding lower sensitivity. The effects of the project would be moderately high for the landscape unit, given the reduction in the mature trees that provide partial screening, the addition of a large number of walls, plus soundwalls. For the Rail Yard Landscape Unit, the project without mitigation would be expected to lower the overall visual quality of the landscape unit from low to very low. This drop is primarily based on removal of the existing trees and the opening of views into areas with very low visual quality, such as the rail yard area. With mitigation, the overall visual quality would be moderately low, with moderately low vividness and intactness, and moderate unity.

Commercial-Agricultural Landscape Unit: There are no eucalyptus trees within the Commercial-Agricultural Landscape Unit; however, most of the interchanges within this landscape unit, including the large I-215/I-10 interchange and the Waterman, Richardson, and Mountain View Avenue interchanges, are well landscaped. Plantings are also present along the freeway embankments, some of which appear to be planted and some that are volunteer species (i.e., fan palms).

There are planted olive trees (*Olea* sp.) in the median between the I-215/I-10 interchange and Waterman Avenue. All of these trees would be removed with this alternative.

Within this unit, the Richardson Bridge would be replaced, and many other bridges would be widened (see Appendix J-2 for the full list). The bridges would be widened approximately 10 feet from the outside face to accommodate the necessary lanes and shoulders for this alternative. Widening to the outside would allow for corridor aesthetic elements that are currently being developed in the corridor master plan process to be incorporated into the bridge design.

Ten soundwalls are proposed within this landscape unit, totaling 10,460 linear feet. Heights for these walls range from 12 to 14 feet, with most walls at 14 feet. One 10-foot-tall wall is proposed in the area along the WB lanes between Elm and Mountain View avenues.

Viewer sensitivity within this unit is anticipated to be moderate, based on community preferences and the location of some residences within this unit. The overall effects of the project to the unit are anticipated to be moderate as well. The primary effects would be associated with the removal of vegetation and the added presence of retaining walls that face out into the community. Without mitigation, the net effect of the alternative on this landscape unit is to slightly decrease the overall visual quality from moderate to moderately low. With mitigation, this landscape unit would likely maintain its moderate visual quality, with moderate vividness, intactness, and unity.

Redlands Landscape Unit: Under Alternative 2, there are fewer anticipated changes to the visual environment within the Redlands Unit compared to the other units in the corridor. This is due to fewer project elements needing to be included in this unit compared to the other units. Most of the improvements anticipated under this alternative within the Redlands unit are on the unit's western half, except for retaining walls associated with the Ford Street interchange. Other retaining walls are proposed for areas west of the Texas Street UC. These are anticipated to have a height in the 4- to 12-foot range. See Appendix J-2 for the wall information. Most existing bridges in the unit would be maintained; however the 6th Street, Citrus Street, Cypress Street, and Highland Avenue UCs would be reconstructed in the median areas only, and the Ford Street and Redlands Boulevard off-ramp would be widened to the outside.

Existing vegetation along the western half of I-10 would be removed by construction activities, as would the existing vegetation within the Ford Street interchange;

however, the existing vegetation within the central area of Redlands (from east of Texas Street to west of Ford Street) would remain, as would the existing soundwalls in this area that are currently covered with vines.

Thirty-four (34) new soundwalls would be constructed in the Redlands Landscape Unit as part of this alternative; however, many of these walls are considered extensions of existing soundwalls in the corridor. The total length of these walls would be 23,980 linear feet with heights between 14 and 16 feet. Because much of I-10 is elevated in this landscape unit, the views out of the corridor are anticipated to be more affected than those in the surrounding community.

Viewer sensitivity within this unit is anticipated to be moderately high due to the closeness of the community to I-10 and the established preferences of the communities; however, because the improvements in this area are limited, the effects of the alternative are likely to be low for the unit as a whole. Because fewer project elements will be constructed in this area, the anticipated construction in this unit is more limited; thus, the corresponding effect to the visual environment is anticipated to be minor. The existing overall visual quality should remain moderate, as should the moderately high vividness and moderate intactness and unity.

Key Viewpoints – Alternative 2

Viewpoints identified as key for identifying the changes to the visual environment anticipated with Alternative 2 are viewpoints #34, #40, #43, #50, #65, #72, #74, and #86. These are described and evaluated below.

The post-construction simulations shown for the key views on the following pages include mitigation measures described at the end of this section to the extent feasible for each particular view. The most noticeable mitigation measures shown in the simulations are listed below:

- Applying architectural detailing to the retaining walls and soundwalls, including textures, colors, and patterns
- Coloring and staining of bridge elements
- Installing decorative fencing on the overcrossing bridges
- Saving and protecting as much existing vegetation as feasible
- Including new landscaping where feasible
- Including skyline trees in the new plantings
- Plantings are shown at approximately 10 years after planting

Aesthetic treatments shown on structures and specific plant types in the simulations are representative only. Actual types of treatments and landscaping would be based on community and Caltrans input during the design phase of the work.

Viewpoint #34 Analysis

Orientation: Figure 3.1.7-10 shows the location of Viewpoint #34. Figure 3.1.7-11 shows a photosimulation for Viewpoint #34 and depicts the pre- and post-construction views. The photograph is taken from the WB lanes of I-10 looking west. The Etiwanda Avenue interchange can be seen in the distance.

Figure 3.1.7-10
Location of Key Viewpoint #34

Existing Visual Character/Quality: The existing visual character is typical for a highway view. The view includes the highway paving, the ramp OC bridge, and slope paving. The power lines add an additional industrial element to the view. The median area is unique to the corridor. Given the size of the highway, the scale in the view tends towards the monumental; diversity is low, as is the rating for dominance. The view also tends towards the dissonant because of the starkness of the highway and the lack of softening elements. The overall visual quality of the view is moderately low, with moderately low vividness, intactness, and unity.

Proposed Project Features: The project would add a new inside lane to the view, reducing the open median area. The existing W-beam guardrail on the other side of the median for the EB traffic would be replaced with a concrete barrier. The existing ramp and bridge would not be changed; however, color would be applied to the walls and slope paving to mitigate their appearance. Plantings, to the extent possible, and/or gravel and hardscape treatments would be included in the median area.

Figure 3.1.7-11
Viewpoint #34, Commercial-Warehouse Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect.

Changes to Visual Character: For drivers on I-10, the new lane, combined with plantings in the median area, would be the most noticeable new elements in this view. The paving would appear wider than the existing and would continue to dominate the view. The mitigation measures, particularly in the median area, would also be a noticeable fore- to mid-ground addition to the view.

Anticipated Viewer Response: Freeway viewers are likely to be very aware of the changes in the I-10 corridor, but their sensitivity would be moderately low because the view to the new I-10 corridor would be similar in nature to the existing highway view, with many of the same elements. For these viewers, the wider pavement section is not expected to create any substantial changes to the visual environment.

Resulting Visual Impact: The moderately high impact to the visual environment is expected to increase the overall visual quality of the view to moderately high with moderately high vividness, intactness, and unity. This is due in large part to the addition of the planted median, which adds to the memorability of the view by softening the appearance of the hard surfaces of the corridor.

Viewpoint #40 Analysis

Orientation: Figure 3.1.7-12 shows the location of Viewpoint #40. Figure 3.1.7-13 shows a photosimulation for Viewpoint #40 and depicts the pre- and post-construction views. The photograph looks to the west-northwest towards the row of existing eucalyptus trees that parallels this stretch of I-10.

Figure 3.1.7-12
Location of Key Viewpoint #40

Existing Visual Character/Quality: The existing visual character of this view is dominated by the eucalyptus trees. The trees are mature, with some in good health and others in decline. Behind the trees is the I-10 Channel, which parallels the north side of I-10 from the San Sevaine Creek outfall to just east of Sierra Avenue. The other main visual element in the view is the paving associated with the shoulder. The placement of the eucalyptus trees helps to provide a sense of scale and balance to the highway and adds some complexity to the diversity of the view. The existing visual quality of the view is moderate overall, with moderate vividness, intactness, and unity.

Figure 3.1.7-13
Viewpoint #40, Alternative 2, Industrial Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect.

Proposed Project Features: The proposed project features within this portion of the corridor include a widened pavement section that pushes the roadway into the area currently occupied by the row of eucalyptus trees, necessitating their removal. The existing channel would remain, but due to its proximity to the roadway, it would require a concrete barrier to protect motorists from the hazard; however, sufficient ground is available on the other side of the channel to include new plantings of trees. It is also anticipated that a soundwall would be constructed along the edge of the existing ROW to protect adjacent homes.

Changes to Visual Character: Removal of the mature trees along the corridor would substantially alter the visual character of the corridor. With replanting, as shown in the photosimulation, the character would still change, but this change would be softened by the new plantings, which would continue to grow and would eventually approach a mature size in 15 to 20 years.

Anticipated Viewer Response: Removal of the trees would be very noticeable to travelers on I-10, who would likely be very sensitive to the removal. The new tree plantings would, over time, replace the existing trees in stature and presence in the landscape and would soften the roadway and bring a sense of scale to the corridor. It is anticipated that viewer exposure and sensitivity would be moderate to the changes in the corridor.

Resulting Visual Impact: Although the anticipated impact to the visual quality is expected to be low, the anticipated impact to the view is expected to be moderate, due mostly to removal of the existing vegetation. Removal of the existing trees and planting of newer, smaller plantings would greatly affect the view and the ability of the plantings to bring scale and diversity to the corridor. This, however, would be temporary, because as the trees grow, their presence and ability to provide scale and a softening element to the corridor would increase over time.

Viewpoint #43 Analysis

Orientation: Figure 3.1.7-14 shows the location of Viewpoint #43. Figure 3.1.7-15 shows a photosimulation for Viewpoint #43 and depicts the pre- and post-construction views. The photograph looks south towards the I-10 corridor from a residential area north of I-10.

Figure 3.1.7-14
Location of Key Viewpoint #43

Existing Visual Character/Quality: The existing visual character of the view is typical of the residential areas near I-10, with smaller homes on small- to medium-sized lots. In the interior of the neighborhoods, the residents' views to I-10 are partially blocked by homes and associated vegetation that back onto the I-10 corridor. Within this view, the power poles and lines, billboards, and dead eucalyptus trees, as well as the freeway corridor itself, detract from the overall visual quality of the view. The existing visual quality in this view is moderately low, with moderately low vividness, intactness, and unity; however, because the view is residential in nature, the scale is much more intimate than the previous key viewpoints on I-10, the diversity of the view is greater and the dominance is more balanced.

Proposed Project Features: It is very likely that a soundwall would be constructed along this neighborhood area. Because Oleander Avenue dead-ends at the I-10 ROW, this soundwall would be a prominent visual feature. In addition, sufficient ROW likely exists in this stretch of the project to allow tree plantings between I-10 and the wall.

Changes to Visual Character: The soundwall would block the residents' existing views into the I-10 corridor. The other changes within the I-10 corridor would not be visible to the residents, except that the tops of the existing eucalyptus trees in the view, which would be visible if the trees were to remain, would no longer be visible due to the removal of the trees. However, mitigation in the form of new plantings along the wall, primarily vines, would soften the wall face.

Figure 3.1.7-15 Viewpoint #43, Alternative 2, Industrial Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect.

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Anticipated Viewer Response: Residents are expected to have a high degree of sensitivity to the changes to the visual character of their neighborhood. These viewers have long duration views and are very familiar with the existing views. Visitors to the neighborhood are likely to be less sensitive to the changes.

Resulting Visual Impact: The overall change to the view is expected to be moderate. The change would result in a more urban appearance to the neighborhood, given the height of the walls and the size of the nearby homes. Appropriate architectural treatments on the wall would help minimize the urbanizing effect of the wall. The anticipated visual quality is anticipated to be slightly higher than the existing, due in large part to the screening of I-10 by the new soundwall. New plantings would soften the appearance of the wall, and, in combination with other planting and architectural treatments, would lead to a moderate visual quality with moderate vividness, intactness, and unity.

Viewpoint #50 Analysis

Orientation: Figure 3.1.7-16 shows the location of Viewpoint #50. Figure 3.1.7-17 shows a photosimulation for Viewpoint #50 and depicts the pre- and post-construction views. The photograph was taken from the EB lanes of I-10 looking east-southeast towards the railroad corridor and the row of eucalyptus trees that parallels the south side of I-10.

Figure 3.1.7-16
Location of Key Viewpoint #50

Existing Visual Character/Quality: The existing visual character of the view is dominated by the railroad corridor; however, the trees in the foreground help to break up the views into the rail corridor. The row of trees along the south side of I-10 is much more sporadic than on the north, and the trees are in a greater state of decline, so the quality of the screening is less than found elsewhere in the corridor where the trees are in better condition. The trees do help provide a sense of scale and diversity to the roadside corridor and add to the balance of the view. The overall visual quality of the view is moderately low, with moderately low vividness, intactness, and unity.

Proposed Project Features: The addition of the new EB HOV lane in the median area of I-10 would require widening the lanes slightly to the south toward the row of eucalyptus trees. A roadside barrier would be needed along the edge of the shoulder, and a ROW fence would be attached to the top of the barrier.

Changes to Visual Character: The corridor would appear wider to those traveling on I-10 with the addition of the HOV lane in each direction; however, by preserving the existing trees, the view is not substantially changed from the existing.

Anticipated Viewer Response: For those traveling on the I-10 corridor, the change would not be very noticeable. The wider pavement and the addition of a road barrier would add some additional hard surfaces to the view, but overall, the anticipated change is not highly noticeable.

Resulting Visual Impact: The overall changes to the view are expected to be moderately low. The resulting visual impact would be to maintain the overall existing moderately low visual quality of the view with moderately low vividness, intactness, and unity.

Figure 3.1.7-17

Viewpoint #50, Alternative 2, Rail Yard Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect.

Viewpoint #65 Analysis

Figure 3.1.7-18
Location of Key Viewpoint #65

Orientation: Figure 3.1.7-18 shows the location of Viewpoint #65. Figure 3.1.7-19 shows a photosimulation for Viewpoint #65 and depicts the pre- and post-construction views. The photograph looks east from the Rancho Avenue OC. The view is from the perspective of the pedestrian on the sidewalk looking into the corridor.

Existing Visual Character/ Quality: The existing eight lanes of freeway dominate this view, with the center barrier and the weeds growing under it providing a focal point to the view. Landscaping associated with the interchange provides a green counterpoint to the large areas of paving. The scale of the view tends toward the monumental given the number of lanes of the freeway, but the plantings associated with the ramps help add to the diversity and harmoniousness of the view. The overall visual quality of the view is moderately low, with moderately low vividness, intactness, and unity.

Proposed Project Features: For pedestrians on the bridge, the new fence that would be included as part of the improvements to the interchange would be prominent. Looking into the I-10 corridor, the two new HOV lanes and median shoulder associated with the widened paving of the corridor would be seen. The inclusion of the new lanes would push the outside edge of I-10 into the landscape areas along the ramps and would require a retaining wall to address the existing slopes along the ramps, which would also be seen from this vantage point.

Changes to Visual Character: In general, I-10 would appear wider to viewers on the bridge, and the new lanes and the retaining walls would increase the area of hard surfaces in the view. The improvements to the corridor would, in effect, clean up much of the existing view, removing weeds from the median area and adding plantings to the ramps. The effect of this would be to increase the diversity of the view and provide better scale to the freeway; however, the view is still into a freeway corridor and would be similar in appearance to the existing, equating to a low level of change.

Figure 3.1.7-19
Viewpoint #65, Alternative 2, Rail Yard Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect.

Anticipated Viewer Response: From the perspective of the pedestrian, the viewer is likely to have a moderate degree of sensitivity to the changes in the visual environment. Pedestrians, while much fewer in number than freeway travelers, have a much longer viewing period than a driver would over a similar distance due to the difference in speed between the two modes of transportation.

Resulting Visual Impact: The overall impact to the view is anticipated to be moderately low. The extra pavement width is somewhat compensated for by the addition of plantings in the interchange, and the removal of weeds and other distracting elements helps slightly increase the overall visual quality; however, the resulting impact to the visual environment is not expected to appreciably alter the existing visual quality for this view. The overall visual quality is expected to increase slightly to moderate, with moderate vividness, intactness, and unity.

Viewpoint #72 Analysis

Orientation: Figure 3.1.7-20 shows the location of Viewpoint #72. Figure 3.1.7-21 shows a photosimulation for Viewpoint #72 and depicts the pre- and post-construction views. The view is from the Santa Ana bike trail, looking southwesterly towards the I-10 corridor.

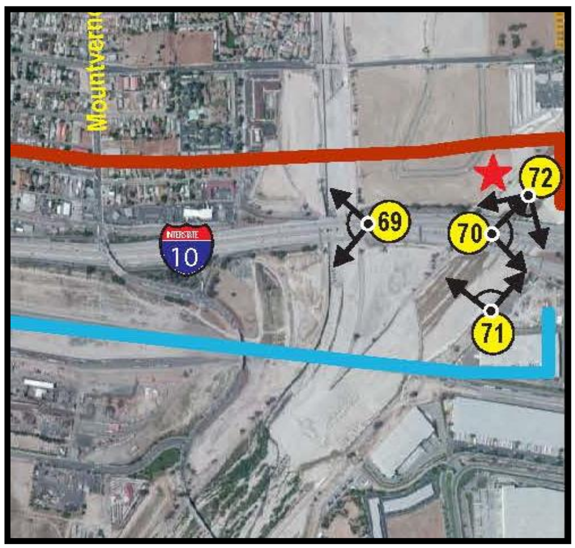


Figure 3.1.7-20
Location of Key Viewpoint #72

Existing Visual Character/Quality: The existing visual character of the view is dominated by the I-10 Bridge over the river. The river is generally dry for large portions of the year, and many weedy plant species can be found in the river bottom. The width of the river, combined with the long bridge, creates a somewhat monumental scale to the elements of the view. Overall, the view has a moderately low visual quality, with moderately low vividness, intactness, and unity.

Proposed Project Features: The project would widen the existing highway bridge to the outside by approximately a lane width, which would bring the bridge that much closer to the viewer on the trail.

Figure 3.1.7-21

Viewpoint #72, Alternative 2, Commercial-Agricultural Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect. (The Viewpoint #72 photo was taken from a Commercial-Agricultural Landscape Unit, but it is looking into a Rail Yard Unit. The Santa Ana River forms the break between these adjacent landscape units.)

Changes to Visual Character: Anticipated changes to the visual environment associated with the project features shown in the view are expected to be minor. Moving the edge of the bridge closer to the viewer is not substantial enough to alter the existing views to any considerable degree.

Anticipated Viewer Response: The bike trail is only open to bicyclists; pedestrians are not allowed on the trail, so the users of the trail are more limited than might be expected on a multi-use trail. Viewers would have views to the bridge area that last 1 to 2 minutes as they approach the bridge. Viewer exposure is anticipated to be moderately low based on the speed of travel, while the sensitivity is anticipated to be moderate.

Resulting Visual Impact: The resulting impact to the visual environment is expected to be minor and would likely maintain the existing moderately low visual quality of the view.

Viewpoint #74 Analysis

Orientation: Figure 3.1.7-22 shows the location of Viewpoint #74. Figure 3.1.7-23 shows a photosimulation for Viewpoint #74 and depicts the pre- and post-construction views. The view is from the EB lanes of I-10 looking east near the Waterman Avenue exit within San Bernardino County area, near Loma Linda.

Figure 3.1.7-22
Location of Key Viewpoint #74

Existing Visual Character/Quality: The existing visual character of the view is dominated by the freeway paving and signage. The median olive trees and fan palm trees to the right provide a counterpoint to the hard surfaces of the highway paving. The plant material helps bring a sense of scale to the view and reduces the overall monumentality of the freeway paving. The overall visual quality of the view is moderate, with moderate vividness, intactness, and moderately low unity.

Proposed Project Features: The project would add the HOV lane to the center of I-10 and concrete median barrier in this view. The existing sign bridge in the mid-ground would have to be lengthened to accommodate the wider roadway as well. The existing olive trees in the median would be removed, although the plantings on the outside are expected to remain.

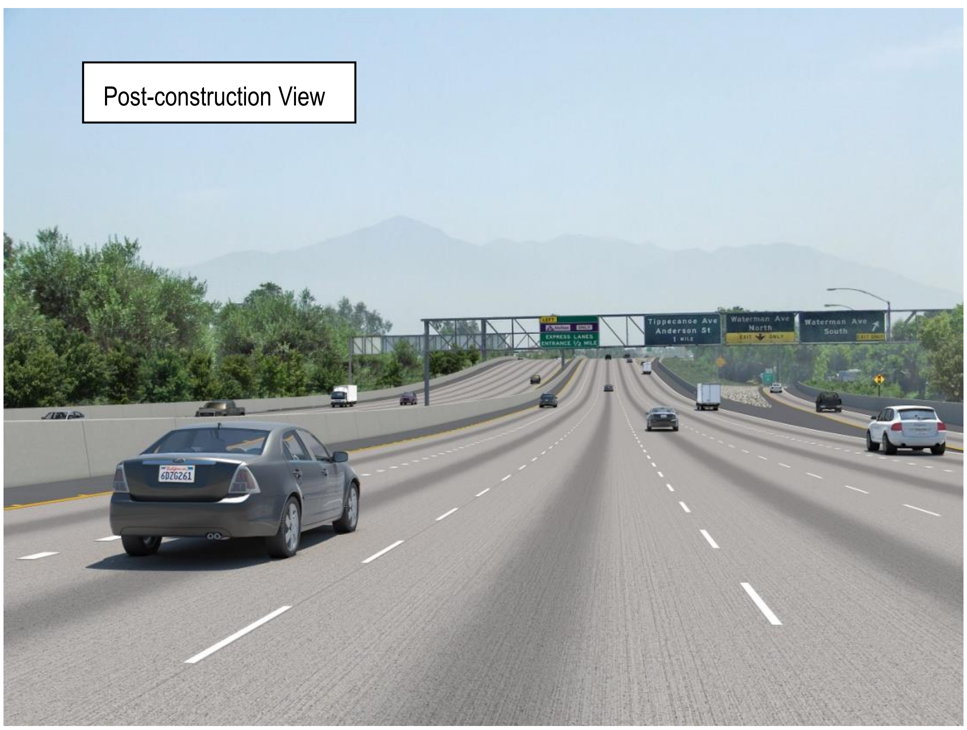


Figure 3.1.7-23
Viewpoint #74, Alternative 2, Commercial-Agricultural Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect.

Changes to Visual Character: The biggest change in this view would be the increase in hard surfaces within the view and removal of the vegetation in the median that helps to screen the other half of I-10 from the viewer. The result is a corridor that appears much more open and much larger.

Anticipated Viewer Response: For those traveling on the I-10 corridor, the change would be very noticeable. The change to the median, with the removal of the trees, which helps to provide scale and diversity to the view, would be most notable. It is anticipated that the viewer sensitivity for this group would be moderate, as would their exposure.

Resulting Visual Impact: The overall resulting impact to the visual environment in this view is anticipated to be moderate, with moderate vividness, and moderately low intactness and unity. Removal of the median plantings creates a more monumental appearance to the freeway paving that is only partially compensated for by the roadside plantings in the Waterman Avenue interchange.

Viewpoint #86 Analysis

Orientation: Figure 3.1.7-24 shows the location of Viewpoint #86. Figure 3.1.7-25 shows a photosimulation for Viewpoint #86 and depicts the pre- and post-construction views. The photograph is taken from the EB lanes of I-10, approaching the University Street interchange, looking east.

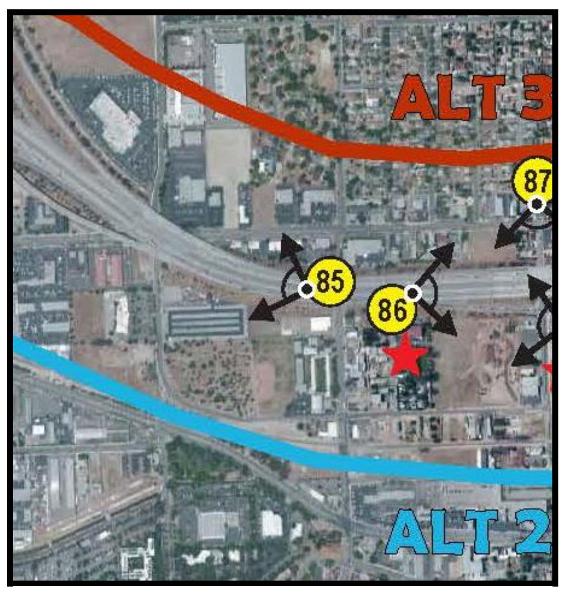


Figure 3.1.7-24
Location of Key Viewpoint #86

Existing Visual Character/Quality: The freeway paving is the dominant feature in this view. The mature plantings on either side of I-10 help to soften the overall feel of I-10; however, given its width, the freeway paving tends towards monumentality in the view and dominates the perceived landscape. The overall visual quality of the view is moderately low, with moderately low vividness and intactness, and moderate unity.

Proposed Project Features: The primary feature for the project would be the addition of the new lane with a full shoulder along the median. The existing median barrier would be replaced with a slightly taller barrier.

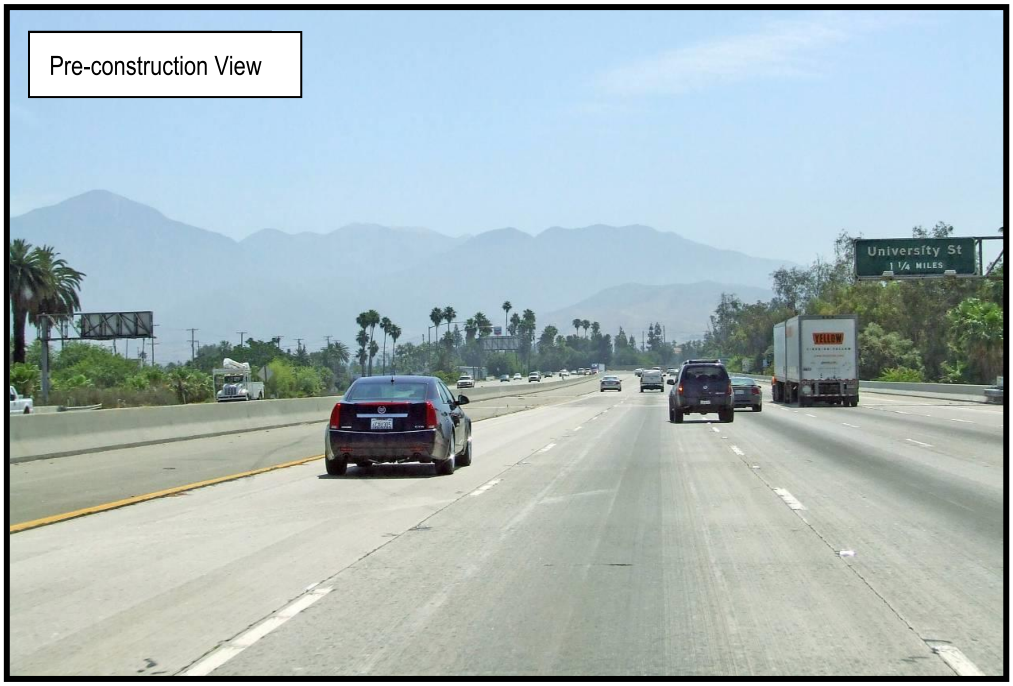


Figure 3.1.7-25

Viewpoint #86, Alternative 2, Redlands Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect.

Changes to Visual Character: The addition of the new lane would add some paving into the view; however, the existing median shoulder is paved, so the addition of the lane does not appear to greatly alter the amount of paving in the view. Existing mature plantings along the outside edge of I-10 should remain.

Anticipated Viewer Response: Frequent travelers on I-10 would likely have the greatest sensitivity to changes within the corridor; however, within this view, the changes are not expected to be appreciable, so the overall sensitivity is expected to be moderate, as would be the exposure.

Resulting Visual Impact: The resulting impact to the overall visual environment of the view is anticipated to be moderately low. The new visual quality would likely maintain the existing quality of this portion of the corridor. Vividness and intactness would remain at moderately low, while unity would remain at moderate.

Alternative 3 – Express Lanes (Preferred Alternative)

Alternative 3 extends from approximately Towne Avenue in Pomona to Ford Street in Redlands, a distance of 36 miles, although the Express Lanes only cover 33 miles from the Los Angeles county line to Ford Street. Because of its longer distance, the effects of the project cover a wider area. The discussion below outlines the anticipated effects by category. This is followed by a discussion that outlines the effects by landscape unit.

Vegetation Removal: Because the cross section is generally wider for Alternative 3, there is a substantial amount of existing vegetation along I-10 that would be potentially disturbed by the project. The rows of eucalyptus trees, which generally fall between the I-15 interchange and the Santa Ana River, would also have greater impacts than in Alternative 2. A total of 1,148 of the trees are potentially impacted by the project, while another 295 are anticipated to remain. See Appendix A of the VIA for a set of aerial maps showing the effects of Alternative 3 on these corridor elements.

Freeway Paving: Alternative 3 adds two new 11-foot-wide lanes of paving in each direction for most of the corridor, between the Los Angeles/San Bernardino (LA/SB) county line to approximately California Street in Redlands. This substantially widens the existing I-10 corridor's appearance for drivers on the corridor and for pedestrians and others who might look into the corridor. Existing medians at Etiwanda Avenue and east of I-215 would be paved as part of this alternative.

Local Streets: Many local streets would be affected by the project, especially where they cross over or under the I-10 corridor. Within interchanges, where the ramps interface with the local street, additional minor impacts are anticipated that are associated with the improvements to various ramps. The cross section of Monte Vista Avenue would be widened as part of the project. The existing roadway would be widened to accommodate additional left-turn lanes and other safety improvements. The widened section would be limited to the interchange area only, and the changes would extend approximately one to two blocks north and south of the interchange to bring the roadway back to its existing configuration.

Retaining Walls: Approximately 180,000 linear feet of retaining walls would be constructed as part of Alternative 3. These walls would be constructed throughout the project corridor along the mainline and along interchange ramps. The walls within the County Gateway and Residential landscape units would generally face outward to the community in the Community Gateway Landscape Unit and into the I-10 corridor for the Residential Unit, which is similar to the existing condition in both units. Those in the Community Gateway Landscape Unit are very tall, with maximum heights of 30 feet in some locations (near the Monte Vista Avenue and Indian Hill Boulevard interchanges). East of these two units, the walls are generally associated either between an interchange ramp and the mainline facing into the I-10 corridor or are associated with the mainline facing out into the community. These walls generally have average heights of 10 feet or less, although in a few locations the walls have a maximum height of 14 feet.

Euclid Avenue: Unique among the cross streets within the project area, Euclid Avenue has been listed in the National Register of Historic Places (NRHP) within Upland and Ontario, and it has been designated as a historic district within Ontario. The existing bridge (Bridge No. 54 0445) is not included in the designation, and the current design, with its red stamped brick and small palm tree species, is not in keeping with the rest of the Euclid Avenue corridor. Under Alternative 3, the existing Euclid Avenue Bridge would be replaced and the existing interchange associated with the area reconfigured with removal of the existing loop ramp in the northeast quadrant of the interchange. The new bridge would be longer and slightly wider than the existing bridge. There is a potential that the median of the bridge would be narrower than the existing to accommodate a double turn lane, rather than the existing single turn lane, depending on the final design of the interchange.

Soundwalls: A total of 26 new soundwalls would be built as part of this alternative, with a total length of 27,163 linear feet. The proposed heights range from 8 to 20 feet, but most walls fall within the 12- to 16-foot range and, of these, most would have a height of 14 feet. There are many existing soundwalls in the corridor, particularly in the western third of the corridor (west of Vineyard Avenue). These walls would be replaced with new walls as part of the project and would likely be approximately the same height or slightly taller than the existing. In the eastern portions within Redlands, there are also existing soundwalls, however, these walls are anticipated to remain under this alternative, but many of them would likely be extended as part of the construction.

San Bernardino County Gateway Wall: Part of the existing soundwall within the County Gateway Landscape Unit includes a graphic gateway element near Mountain Avenue that was created by Caltrans and the local community to serve as an entrance feature to the county. Under Alternative 3, the work would require removal of the existing soundwall associated with this gateway element. A new soundwall would be constructed approximately 10 feet farther out than the existing.

Specific impacts associated with this alternative within each landscape unit are discussed below.

Los Angeles County Landscape Unit: West of the Indian Hills Boulevard interchange, the proposed project elements within the Los Angeles County Landscape Unit are limited to new signage and restriping of the existing pavement. The Indian Hills Boulevard UC and nearby College Avenue UC would be widened on the WB side and the WB ramp at Indian Hills Boulevard reconfigured. Along the EB lanes, a new retaining wall would replace the existing on the approach to the county line and the Mills Avenue UC.

New soundwalls would be constructed in this unit, totaling approximately 16,600 linear feet. All walls, with the exception of one 450-foot-long wall along the EB mainline between Bucknell Avenue and Indian Hills Boulevard, would be 12 to 16 feet tall. The exception would be between 16 and 20 feet tall.

Due to its high residential component, viewer sensitivity within the Los Angeles County Landscape Unit is likely to be moderately high, but because of the limited nature of the changes within this landscape unit, the effects of the alternative are anticipated to be low. The existing visual quality is expected to be maintained; therefore, the moderate visual quality for the landscape unit as a whole, with moderate vividness, intactness, and unity, would remain.

County Gateway Landscape Unit: The County Gateway Landscape Unit includes the Monte Vista Avenue interchange, which would be widened on the local level, as well as the freeway. No other local streets would be widened within this unit. I-10 would be widened to the north and south by 1 to 10 feet. This would cause the existing retaining walls along the corridor mainline to be removed and a new wall located at the new edge of I-10. Existing undercrossings – Mills, Central, Benson, and Mountain avenues – would be widened along with I-10, making the area of the local streets covered by I-10 longer. Soundwalls associated with these retaining walls would also have to be replaced. Existing on- and off-ramps have some minor realignments associated with them; with the exception of a small acquisition for the WB off-ramp at Monte Vista Avenue, these would fall within the current ROW.

Freeway landscaping within this unit is generally associated with the interchanges at Monte Vista, Central, and Mountain avenues. Because of the widening of the freeway mainline and the ramps, the existing landscaping would likely be removed. In some locations, vine plantings are found associated with the soundwalls, but if these walls are moved out, the vines would also be removed.

Soundwalls, including the San Bernardino County Gateway Wall, currently associated with retaining walls would be replaced in a new location, along with the new retaining wall. Alternative 3 would construct approximately 11,901 linear feet of new or replacement soundwall within this landscape unit. Most of these walls would fall between 12 and 16 feet in height, with one 334-linear-foot-long wall in the area of Central Avenue proposed at only 10 feet in height.

Viewer sensitivity for the unit is anticipated to be moderately high given its residential and commercial makeup. With the exception of the Monte Vista Avenue interchange area, the effects of the alternative on the landscape unit are anticipated to be moderately low due to the limited improvements proposed within the unit. It is anticipated that with mitigation the visual quality of the landscape unit would maintain the existing moderately low visual quality. Without mitigation, the visual quality would likely drop to an overall moderately low. I-10 would appear wider with more and larger paved surfaces; however, the existing views in the corridor are limited by the soundwalls through much of the unit, limiting the visual effects of the proposed changes.

Residential Landscape Unit: I-10 within the Residential Landscape Unit would be widened up to 12 feet to the north and south of I-10 (or more in spot locations) to add two new Express Lanes in each direction. In many instances, this widening occurs into areas currently covered by existing freeway landscaping. The current configuration of retaining walls along the edge of I-10 holding back landscape slopes would be maintained under this alternative; however, the landscape areas would be much smaller. In addition, many ramps would be reconfigured. The most substantial reconfiguration is removal of the existing loop ramp from northbound (NB) Euclid to WB I-10 and reconfiguration of the WB on- and off-ramp at Vineyard Avenue.

Existing landscaping along the mainline and within interchanges would likely be disturbed by construction activities for the alternative. In some interchange locations where the ramp realignments are minor, such as a portion of the EB Vineyard Avenue interchange, some of the existing vegetation may remain, but this is likely to be limited.

Many bridges over I-10 would need to be replaced by this alternative – San Antonio, Euclid, Sultana, Campus, Grove, and Vineyard avenues, as well as the 4th and 6th Street OCs. In addition, bridges associated with the Holt Boulevard ramps and Cucamonga Wash would be widened. Retaining walls in excess of 20 feet would be anticipated near the Euclid Avenue and 4th Street interchanges. In total, 41 retaining walls would be placed within this landscape unit, primarily at the edge of the shoulder.

In many locations, there are existing soundwalls within this unit. Any soundwalls currently associated with retaining walls would be replaced as the retaining wall is moved. Alternative 3 would place approximately 28,150 linear feet of soundwall within the Residential Landscape Unit. Most of these would fall within the 12- to 16-foot-tall range, with a few walls in the San Antonio and Euclid area in the shorter 8- to 12-foot-high range.

Because of the primarily residential makeup of this unit, viewer sensitivity is expected to be moderately high. Changes to visual environment caused by the alternative are also anticipated to be moderately high, given the number of bridge replacements and retaining walls proposed, all with the accompanying removal of vegetation. Without mitigation, the visual quality would likely drop to moderately low; however, it is anticipated that with mitigation the existing overall moderate visual quality would remain, but due primarily to the reduction in vegetation and the addition of soundwalls, the existing moderately high visual quality would drop to moderate, while intactness and unity would remain with the existing moderate visual quality.

Commercial-Warehouse Landscape Unit: Within the Commercial-Warehouse Landscape Unit, the wider cross section of I-10 for the Express Lanes would require the realignment of many on- and off-ramps, including those associated with Haven, Milliken, and Etiwanda avenues and some of the ramps associated with the I-10/I-15 interchange. No local streets are proposed for widening.

No bridges would be replaced by this alternative; however, bridges associated with drainageways within the unit (Day Canyon, Etiwanda Wash, and San Sevaine Flood Control Channel), along with those associated with Valley Boulevard on- and off-ramps, would be widened. A total of 21 retaining walls would be located within this landscape unit, with average heights of 4 to 13 feet. The tallest walls, at 19 and 22 feet, are located in the Archibald Avenue and I-15/I-10 interchanges, respectively.

Approximately 164 eucalyptus trees along I-10 would be removed by Alternative 3 and approximately 25 would be saved in place within this landscape unit. Other existing landscaping that could be impacted by the project includes the area within the two loop ramps at Haven Avenue and potentially Milliken Avenue due to ramp realignment. The existing median area between the EB and WB lands near Etiwanda Avenue would be removed, and in its place would be paving and a retaining wall. There would be no soundwalls constructed as part of this alternative within this unit.

Because the unit is dominated with commercial warehouses and other businesses with few windows that look into the corridor, viewer sensitivity is expected to be moderately low. The potential effects of the proposed alternative, as described above, are anticipated to create a moderate degree of change within the corridor. This is primarily associated with the removal of vegetation along I-10. Without mitigation, the overall visual quality within the landscape unit would likely decrease to moderately low, with moderately low vividness and intactness, and moderate unity. With mitigation, the existing overall visual quality of moderate would remain the same or increase slightly with the addition of aesthetic elements outlined in the corridor master plan that are not currently found within the unit. With the addition of aesthetics and landscape elements currently not found in the corridor, the vividness would remain at moderate, with moderate intactness and unity.

Industrial Landscape Unit: Approximately 642 of the existing eucalyptus trees would be removed by this alternative, with another 173 likely to be preserved in place. Existing landscaping within the Cherry Avenue and Citrus Avenue interchanges would also likely be affected by the project.

As with the adjacent landscape units, I-10 would be widened to accommodate two new Express Lanes in each direction. The wider pavement cross section would add more hard surfaces to the views in the unity. None of the existing bridges within the unit would be replaced or widened, and only six retaining walls would be constructed.

The average height for these walls would range from 5 to 8 feet, and the tallest wall, associated with the Citrus Avenue interchange, would be 10 feet.

Three new soundwalls would be added within this unit as part of the construction. These walls would total approximately 5,300 linear feet. All of the walls would fall along the ROW on the WB side of I-10. Anticipated heights range from 12 to 16 feet.

Viewer sensitivity within this unit is anticipated to be moderate, given its mix of residential and industrial businesses. The effects created by this alternative would likely also be moderate within the unit, primarily related to the removal of a large number of eucalyptus trees and the addition of soundwalls along the corridor. Without mitigation, the low overall visual quality rating for the landscape unit would likely drop to very low, with very low vividness, intactness, and unity. Much of this drop is due to the removal of many trees from the corridor, combined with the older industrial and railroad areas that would become more visible after the trees are removed. With mitigation, the landscape unit could have an increased overall visual quality rating of moderately low, with moderately low vividness and intactness, and moderate unity.

Rail Yard Landscape Unit: The wider freeway cross section to accommodate two new Express Lanes in each direction would lead to widening of 12 to 20 feet on the north and south sides of I-10. Due to the widening, the Slover Mountain Railroad Bridge and the La Cadena Drive EB off-ramp UC would be replaced. In addition, the Colton Railroad OC and the 9th Street UC, as well as the bridges associated with the Santa Ana River, Warm Creek, and Rialto Channel, would be widened.

Fifty-one (51) retaining walls would be constructed within this landscape unit under this alternative. The average height for these walls ranges from 6 to 19 feet, with the tallest walls located primarily in the Sierra Avenue, Cedar Avenue, Riverside Avenue, Pepper Avenue, Rancho Avenue, and La Cadena Drive/9th Street interchanges. In each of these interchanges, a retaining wall with a maximum height of 20 feet tall is proposed.

Soundwalls would be included within the Rail Yard Landscape Unit as part of the construction. There would be 15 new walls, ranging in height from 12 to 16 feet, built under this alternative. The total approximate length of the anticipated soundwalls to be built is 18,800 linear feet. Two taller walls would be constructed in the area of Willow Avenue and the area of Acacia Avenue at 20 and 18 feet, respectively.

Of the eucalyptus trees, 426 of the total 535 would be removed by Alternative 3, leaving 109 protected in place. In addition, vegetation within the interchanges – Sierra Avenue, Cedar Avenue, Riverside Avenue, and Ranch Avenue, in particular – would be removed to accommodate the widened freeway and its associated walls within these interchanges.

Similar to Alternative 2, the viewer sensitivity within this unit is likely to be moderately low, while the effects of the project would be moderately high for the landscape unit, given the reduction in the mature trees that provide partial screening, the addition of many retaining walls, plus soundwalls that would be constructed. For the Rail Yard Landscape Unit, Alternative 3, without mitigation, would be expected to lower the overall visual quality of the landscape unit from low to very low. This drop is primarily based on the removal of the existing trees and the opening of views into areas with very low visual quality, such as the rail yard area. With mitigation, the overall visual quality would be moderately low, with moderately low vividness and intactness, and moderate unity.

Commercial-Agricultural Landscape Unit: Within the Commercial-Agricultural Landscape Unit, the row of olive trees currently situated in the median between the I-215/I-10 interchange and Waterman Avenue would be removed as in Alternative 2. In addition, this alternative would remove vegetation along I-10 throughout the landscape unit, particularly in the existing interchanges where retaining walls and ramp realignments would affect the landscape areas.

The Richardson Avenue OCs would be replaced in Alternative 3, and the Hunts Lane, Waterman Avenue, Tippecanoe Avenue, Mountain View Avenue, California Street, and Nevada Street UCs would be widened to the outside. The West Redlands Railroad Bridge, along with San Timoteo Creek, would also be widened.

A total of 36 retaining walls would be constructed in this landscape unit. Because I-10 is elevated through much of this landscape unit, most of the walls would face outward from the I-10 corridor into the adjacent properties. Most of the walls proposed in this area are in the range of 4 to 8 feet. The tallest proposed wall, at 20 feet, occurs in the Waterman Avenue interchange at the Carnegie Drive WB I-10 ramp.

Approximately 9,800 linear feet of soundwall would be constructed in the Commercial-Agricultural Landscape Unit under this alternative. All of the walls would fall within the 12- to 16-foot height range.

Viewer sensitivity within this unit is anticipated to be moderate, based on community preferences and the location of some residential within this unit. The overall effects of the project are anticipated to be moderately high. The primary effects would be associated with the removal of vegetation and the added presence of retaining walls that face out into the community. The wider cross section and associated retaining walls and other new elements of the freeway, coupled with the removal of existing mature vegetation, would be expected to reduce the overall visual quality of the unit to moderately low. With mitigation, the alternative would reduce the visual quality slightly, but not enough to change its moderate overall visual quality and its moderate vividness, intactness, and unity.

Redlands Landscape Unit: Only the Tennessee Street OC would be replaced with this alternative. The 6th Street, Citrus Avenue, Cypress Avenue, and Palm Avenue bridges would be reconstructed in the median. Lastly, of the bridges, the Ford Street Bridge would be widened. All other bridges would remain in their current configuration. A total of 13 retaining walls would be constructed within this unit, with 8 planned for the Ford Street interchange. All of the proposed retaining walls are less than 12 feet in height. Average heights are 4 to 8 feet tall.

Thirty-five (35) soundwalls, totaling approximately 26,250 linear feet, would be constructed in the Redlands Landscape Unit as part of Alternative 3. The anticipated height for these walls is in the 12- to 14-foot-range, with a few exceptions of 10- to 12-foot-tall walls in the western half of this landscape unit. In many cases, the length of individually proposed walls is between 200 and 400 feet and represents an extension of an existing wall.

This alternative would have fewer impacts to the landscape than other landscape units. This is mostly due to the reduced amount of proposed changes. Viewer sensitivity within this unit is anticipated to be moderately high due to the closeness of the community to I-10 and the established preferences of the communities; however, because of the limited nature of the improvements, the effects of the alternative are likely to be low for the unit as a whole. The existing moderate overall visual quality should remain, as should the moderately high vividness and moderate intactness and unity.

Key Viewpoints

Viewpoints identified as key for identifying the changes to the visual environment anticipated with Alternative 3 are viewpoints #14, #15, #18, #21, #34, #40, #50, #65, #74, and #86. Viewpoints #43 and #72, shown under Alternative 2, are anticipated to be the same for Alternative 3. The key viewpoints and simulations for Alternative 3 are described and evaluated below. Mitigation measures are depicted in the post-construction views that match the approach described for Alternative 2.

Viewpoint #14 Analysis

Orientation: Figure 3.1.7-26 shows the location of Viewpoint #14. Figure 3.1.7-27 shows a photosimulation for Viewpoint #14 and depicts the pre- and post-construction views. The image is taken from the S. San Antonio Avenue OC over I-10, looking east. The perspective of the image is from that of the pedestrian on the bridge looking into the highway corridor.

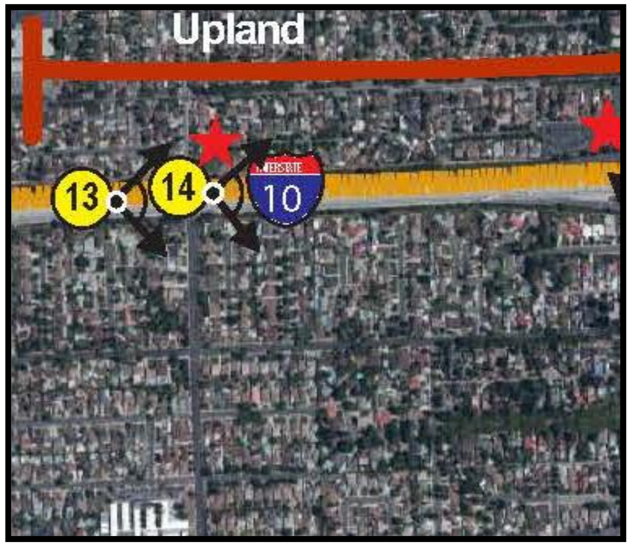


Figure 3.1.7-26
Location of Key Viewpoint #14

Existing Visual Character/ Quality: The existing visual character is typical for a highway view. The view includes highway paving and retaining walls and soundwalls with mature highway plantings above the slope. The width of the existing pavement is monumental in its scale and dominates the view. The overall visual quality of the view is moderate, with moderate vividness, intactness, and unity.

Proposed Project Features: The project would add two new inside lanes to the view, creating a wider highway cross section. The existing San Antonio Avenue Bridge would be replaced with a longer structure to accommodate the wider highway below it. As part of this replacement, the existing fence would be upgraded to the decorative fence shown in the corridor master plan. New retaining walls and soundwalls would be constructed, and new highway plantings would be included in the reduced areas above the new retaining wall locations.

Changes to Visual Character: For pedestrians on the bridge, changes to the visual environment would be associated with the wider freeway and new bridge fence, which would appear as the most noticeable elements. For drivers on I-10, the new lanes would be the most noticeable new element in this view, along with the new walls along the outside edge of I-10. The paving would appear wider than the existing and would continue to dominate the view.

Figure 3.1.7-27
Viewpoint #14, Alternative 3 (Preferred Alternative),
Residential Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect.

Anticipated Viewer Response: Viewer response and exposure are both anticipated to be moderate for this view due to the number of viewers and the length of view associated with pedestrians on the bridge. In general, I-10 would appear wider to viewers on the bridge, and the new lanes and the retaining walls would increase the area of hard surfaces in the view. The improvements to the corridor would, in effect, clean up much of the existing view, removing weeds from the median area and adding plantings to the ramps. The effect of this would be to increase the diversity of the view and provide better scale to the freeway.

Resulting Visual Impact: The overall impact on this view is anticipated to be moderately low. The visual quality is expected to remain approximately the same, with a moderate overall visual quality and moderate vividness, intactness, and unity. This is due to the proposed keeping of vegetation above the retaining walls. While the highway is wider and the planting areas smaller, the percentage changes of these two cover types is small compared to the existing.

Viewpoint #15 Analysis

Orientation: Figure 3.1.7-28 shows the location of Viewpoint #15. Figure 3.1.7-29 shows a photosimulation for Viewpoint #15 and depicts the pre- and post-construction views. The photograph is taken on the Euclid Avenue OC, looking to the northeast across the bridge, from the SB lanes of Euclid Avenue to the NB lanes. The perspective of the view is from that of the pedestrian on the bridge.

Figure 3.1.7-28
Location of Key Viewpoint #15

Existing Visual Character/Quality: The view is dominated by the red, raised median planters on the bridge. These appear out of character with medians immediately north and south of the bridge. The overall visual quality of the view is moderate, with moderate vividness and moderately low intactness and unity, primarily based on the starkness of median treatments.

Figure 3.17-29
Viewpoint #15, Alternative 3 (Preferred Alternative),
Residential Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect.

Proposed Project Features: The Euclid Avenue Bridge would be replaced as part of Alternative 3. This would provide an opportunity to make the bridge area visually compatible with the historic median treatments to the north and south of the bridge. The final design of the bridge elements (e.g., median treatments, barrier fencing along the outside of the bridge) would be determined during the design-build phase of the project in consultation with Caltrans and the cities of Ontario and Upland. The elements shown in the simulation are based on the Caltrans Corridor Master Plan.

Changes to Visual Character: The most likely anticipated change to the existing view would be to the median area of the bridge, bringing the design closer in line with the historic nature of the Euclid Avenue corridor. In addition, pedestrians would have a revised fence along the parapet of the bridge that is upgraded to at least the corridor standard.

Anticipated Viewer Response: The anticipated viewer response and sensitivity are both anticipated to be moderate. In general, the appearance would contain many of the same elements as the existing, but these would be newer and a better fit with the aesthetics of the corridor. The addition of more median plantings would help bring scale to the bridge and add diversity to the view.

Resulting Visual Impact: The impact to the visual environment is expected to be moderate. The visual quality of the view would increase slightly with moderate vividness, intactness, and unity.

Viewpoint #18 Analysis

Orientation: Figure 3.1.7-30 shows the location of Viewpoint #18. Figure 3.1.7-31 shows a photosimulation for Viewpoint #18 and depicts the pre- and post-construction views. This view is taken in a residential area that fronts the I-10 corridor along East Alvarado Street. The view is looking east.

Figure 3.1.7-30
Location of Key Viewpoint #18

Figure 3.1.7-31
Viewpoint #18, Alternative 3 (Preferred Alternative),
Residential Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect.

Existing Visual Character/Quality: The existing view shows a dichotomy along the streetscape, with typical residential on one side of the street and what appears, without hearing the noise of the freeway, to be open space on the other. In addition to the screening they provide, the row of California pepper trees along the edge of the street provides scale and diversity to the view. The overall visual quality of the view is considered to be moderate, with moderate vividness, intactness, and unity.

Proposed Project Features: From this vantage point, the project would include removal of the existing trees and construction of a new soundwall along the back of the existing curb. It is assumed that plantings, including vines, would be included on the freeway side of the new soundwall and that these vines would eventually grow over the wall and provide some softening of the wall.

Changes to Visual Character: For residents along this street, removal of the mature pepper trees and the addition of the new soundwall would provide a stark difference to the views from their homes. While the views into the I-10 corridor would still be screened, the element providing the screening would be more urban in nature and lack, at least for the period of time necessary for the freeway plantings to grow and over top the wall, any visual relief.

Anticipated Viewer Response: Because the view is from the front of a row of residential homes, with their associated foreground views and longer view times, the viewer exposure is anticipated to be overall moderate, but with moderately high numbers for these two categories. Sensitivity is also anticipated to be moderate, given the location of the viewer in relationship to the changes.

Resulting Visual Impact: The overall impact to the view is expected to be moderate. The impact to the visual environment is expected to decrease the overall visual quality of the view to moderately low, with moderately low vividness, intactness, and unity.

Viewpoint #21 Analysis

Orientation: Figure 3.1.7-32 shows the location of Viewpoint #21. Figure 3.1.7-33 shows a photosimulation for Viewpoint #21 and depicts the pre- and post-construction views. The photograph is taken from the WB lanes of I-10 looking west towards the Vineyard Avenue interchange OC.

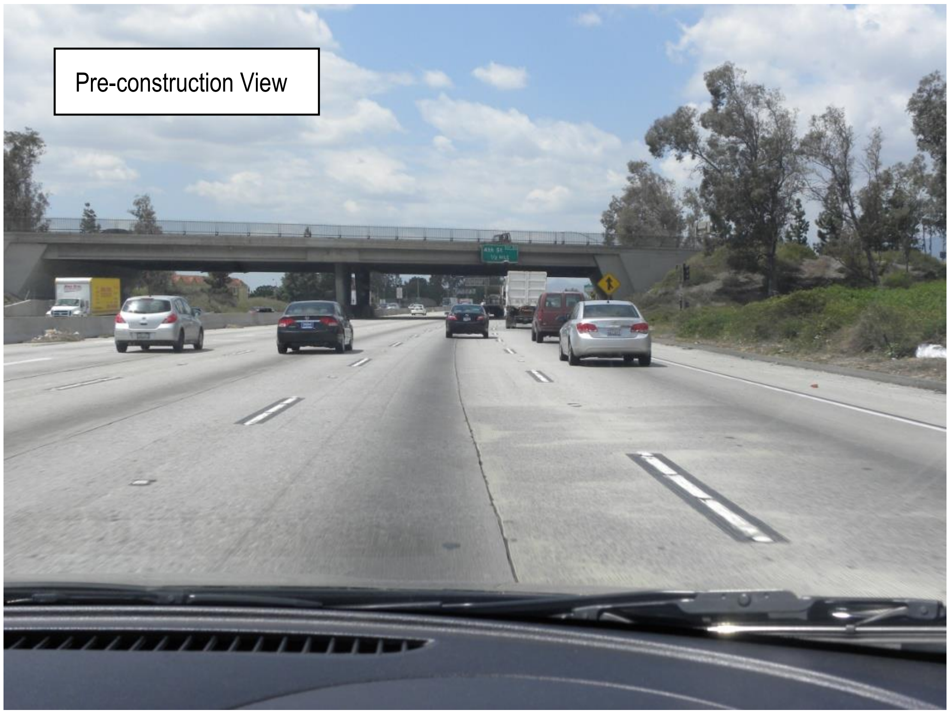
Figure 3.1.7-32
Location of Key Viewpoint #21

Existing Visual Character/ Quality: The existing view, though somewhat monumental in scale due to the size and scale of the freeway elements, has a moderate visual quality. This is partially due to the presence of trees in the interchange, which bring down the scale of the bridge and add diversity to the view. The overall visual quality of the existing view is rated at moderate, with moderate vividness and unity and moderately low intactness.

Proposed Project Features: Construction of the HOV lane to I-10 would necessitate removal and reconstruction of the existing Vineyard Avenue OC. The trees in the existing view would be removed due to this construction. Reconstruction of the area would include designs from the corridor master plan, including a decorative fence on the bridge and new plantings in the interchange.

Changes to Visual Character: For drivers on I-10, the new lane and bridge, together with removal of the existing vegetation, would be the most noticeable changes to the view. The freeway paving would appear wider and, at least initially, there would be no counterbalancing of mature vegetation to help lend scale to the larger paved surfaces. Over time, the replacement plantings, included in the project, would grow and eventually provide a similar element provided by the existing vegetation.

Anticipated Viewer Response: It is anticipated that the viewer exposure and sensitivity would be moderate, with the number of viewers being high but the length of time for the views being brief.



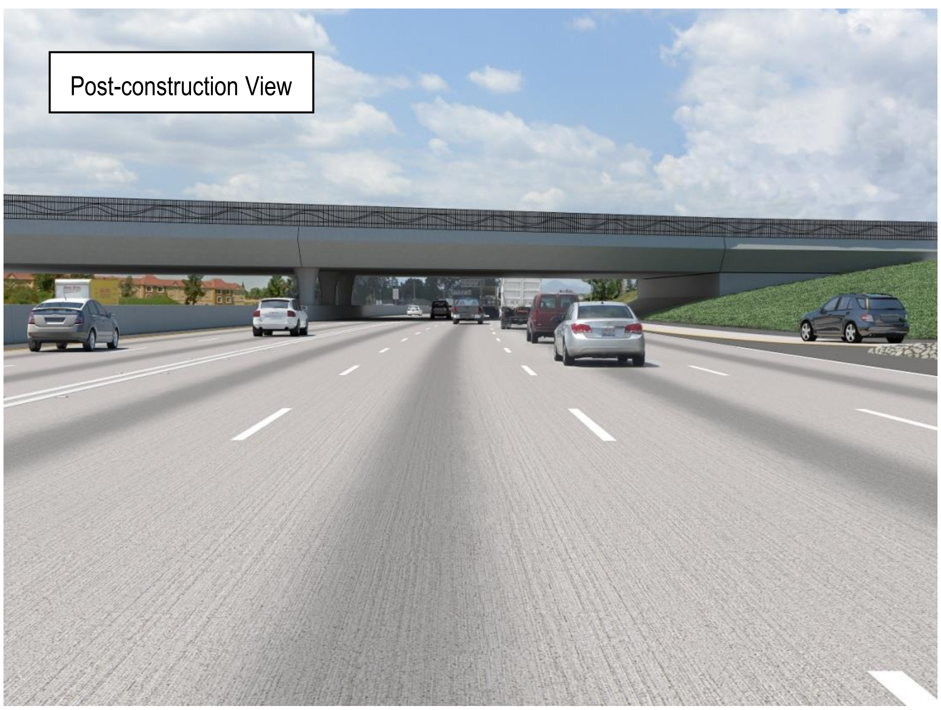


Figure 3.1.7-33
Viewpoint #21, Alternative 3 (Preferred Alternative), Residential Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect.

Resulting Visual Impact: The overall visual impact to the view is expected to be moderate, with the visual quality dropping slightly to moderately low from moderate, with moderate vividness and moderately low intactness and unity. It is anticipated that as the replacement plantings mature, the visual quality of the view would eventually equal or exceed the existing.

Viewpoint #34 Analysis

Orientation: Figure 3.1.7-34 shows the location of Viewpoint #34. Figure 3.1.7-35 shows a photosimulation for Viewpoint #34 and depicts the pre- and post-construction views. The photograph is taken from the WB lanes of I-10 looking west. The Etiwanda Avenue interchange can be seen in the distance.

Figure 3.1.7-34
Location of Key Viewpoint #34

Existing Visual Character/Quality: The existing visual character is typical for a highway view. The view includes the highway paving, the ramp OC bridge, and slope paving. The power lines add an additional industrial element to the view. The median area is unique to the corridor. Given the size of the highway, the scale in the view tends towards the monumental; diversity is low, as is the rating for dominance. The view also tends towards the dissonant because of the starkness of the highway and the lack of softening elements. The overall visual quality of the view is moderately low, with moderately low vividness, intactness, and unity.

Proposed Project Features: The project would add two new inside lanes to the view, removing the existing median area and placing a retaining wall between the WB and EB lanes. In addition to the roadway elements, the existing towers for the power lines, currently located in the median, would also need to be moved to the outside edges of I-10. As in Alternative 2, the existing ramp and bridge would not be changed; however, color would be applied to the walls and slope paving to mitigate their appearance.

Changes to Visual Character: For drivers on I-10, the new lanes, combined with the retaining wall where the median existed, would be the most noticeable new elements in this view. The paving would appear much wider than the existing and would continue to dominate the view.

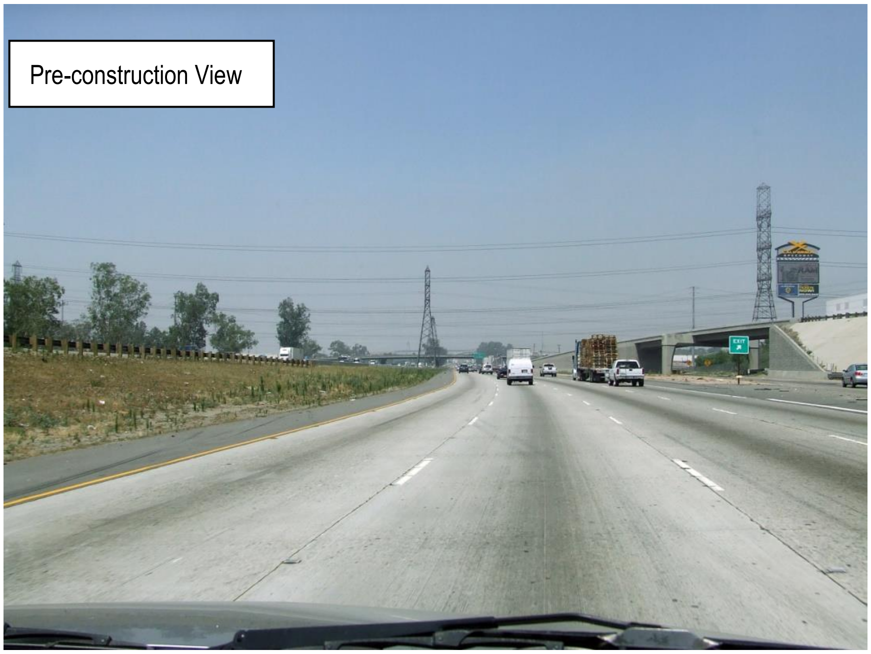


Figure 3.1.7-35
Viewpoint #34, Alternative 3 (Preferred Alternative),
Commercial-Warehouse Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect.

Anticipated Viewer Response: Freeway viewers are likely to be very aware of the changes in the I-10 corridor, but their sensitivity would be moderately low because the view to the new highway corridor would be similar in nature to the existing highway view, with many of the same elements. For these viewers, the wider pavement section is not expected to create any substantial changes to the visual environment.

Resulting Visual Impact: It is anticipated that for the overall visual quality of the view, the additional paving width, typically viewed as a negative, would be counter balanced by moving the power line towers to a less prominent location outside of the freeway corridor, as well as removal of the weedy, unkempt appearance of the median. The overall visual impact to the view is anticipated to be moderately low, with vividness, intactness, and unity remaining moderately low.

Viewpoint #40 Analysis

Orientation: Figure 3.1.7-36 shows the location of Viewpoint #40. Figure 3.1.7-37 shows a photosimulation for Viewpoint #40 and depicts the pre- and post-construction views. The photograph looks to the west-northwest towards the row of existing eucalyptus trees that parallels this stretch of I-10.

Figure 3.1.7-36
Location of Key Viewpoint #40

Existing Visual Character/Quality: The existing visual character of this view is dominated by the eucalyptus trees. The trees are mature, with some in good health and others in decline. Behind the trees is the I-10 Channel, which parallels the north side of I-10 from the San Sevaine Creek outfall to just east of Sierra Avenue. The other main visual element in the view is the paving associated with the shoulder. The placement of the eucalyptus trees helps to provide a sense of scale and balance to the highway and adds some complexity to the diversity of the view. The existing visual quality of the view is moderate overall, with moderate vividness, intactness, and unity.

Figure 3.1.7-37
Viewpoint #40, Alternative 3 (Preferred Alternative),
Commercial-Warehouse Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect.

Proposed Project Features: The proposed project features within this portion of the corridor include a widened pavement section that pushes the roadway into the area currently occupied by the row of eucalyptus trees, necessitating their removal. The existing channel would remain, but due to its proximity to the roadway, it would require a concrete barrier to protect motorists from the hazard; however, as in Alternative 2, sufficient ground is available on the other side of the channel to include new plantings of trees. It is also anticipated that a soundwall would be constructed along the edge of the existing ROW to protect adjacent homes.

Changes to Visual Character: Removal of the mature trees along the corridor would substantially alter the visual character of the corridor. With replanting, as shown in the photosimulation, the character would still change, but this change would be softened by the new plantings, which would continue to grow and would eventually approach a mature size in 15 to 20 years.

Anticipated Viewer Response: Removal of the trees would be very noticeable to travelers on I-10, who would likely be very sensitive to the removal. The new tree plantings would, over time, replace the existing trees in stature and presence in the landscape and would soften the roadway and bring a sense of scale to the corridor. It is anticipated that viewer exposure and sensitivity would be moderate to the changes in the corridor.

Resulting Visual Impact: Although the anticipated impact to the visual quality is expected to be low, the anticipated impact to the view is expected to be moderate, mostly due to removal of the existing vegetation. Removal of the existing trees and planting of newer, smaller plantings would greatly affect the view and the ability of the plantings to bring scale and diversity to the corridor. This, however, would be temporary, because as the trees grow, their presence and ability to provide scale and a softening element to the corridor would increase over time.

Viewpoint #50 Analysis

Orientation: Figure 3.1.7-38 shows the location of Viewpoint #50. Figure 3.1.7-39 shows a photosimulation for Viewpoint #50 and depicts the pre- and post-construction views. The photograph was taken from the EB lanes of I-10 looking east-southeast towards the railroad corridor and the row of eucalyptus trees that parallels the south side of I-10.

Figure 3.1.7-38
Location of Key Viewpoint #50

Existing Visual Character/Quality: The existing visual character of the view is dominated by the railroad corridor; however, the trees in the foreground help break up the views into the rail corridor. The row of trees along the south side of I-10 is more sporadic than on the north, and the trees are in a greater state of decline, so the quality of the screening is less than found elsewhere in the corridor where the trees are in better condition. The trees do help provide a sense of scale and diversity to the roadside corridor and add to the balance of the view. The overall visual quality of the view is moderately low, with moderately low vividness, intactness, and unity.

Proposed Project Features: The addition of the two new EB Express Lanes in the center area of the highway would require widening the lanes into the area currently occupied by the row of eucalyptus trees. A roadside barrier would be needed along the edge of the shoulder, and a ROW fence would be attached to the top of the barrier.

Changes to Visual Character: Removal of the mature trees would change the visual character of the corridor by leaving the railroad corridor fully exposed to view without the softening/screen effects provided by the vegetation. In addition, the corridor would appear wider to those traveling on I-10 with the addition of the Express Lanes.

Figure 3.1.7-39
Viewpoint #50, Alternative 3 (Preferred Alternative),
Rail Yard Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect.

Anticipated Viewer Response: For those traveling on the I-10 corridor, the change would be very noticeable. Depending on the viewer (whether local resident, frequent commuter, or tourist), the degree of sensitivity to the change would depend in part on the frequency of travel and familiarity with the corridor. Those more familiar with the corridor (e.g., local residents) would be very sensitive to the change; infrequent travelers or tourists would likely not be aware of it.

Resulting Visual Impact: The overall changes to the view are expected to be moderate. It is unlikely that there would be sufficient ROW for new plantings that might screen I-10 from the rail corridor. The resulting visual impact would be to maintain the overall existing moderately low visual quality of the view, with moderately low vividness, intactness, and unity.

Viewpoint #65 Analysis

Orientation: Figure 3.1.7-40 shows the location of Viewpoint #65. Figure 3.1.7-41 shows a photosimulation for Viewpoint #65 and depicts the pre- and post-construction views. The photograph looks east from the Rancho Avenue OC. The view is from the perspective of the pedestrian on the sidewalk looking into the corridor.

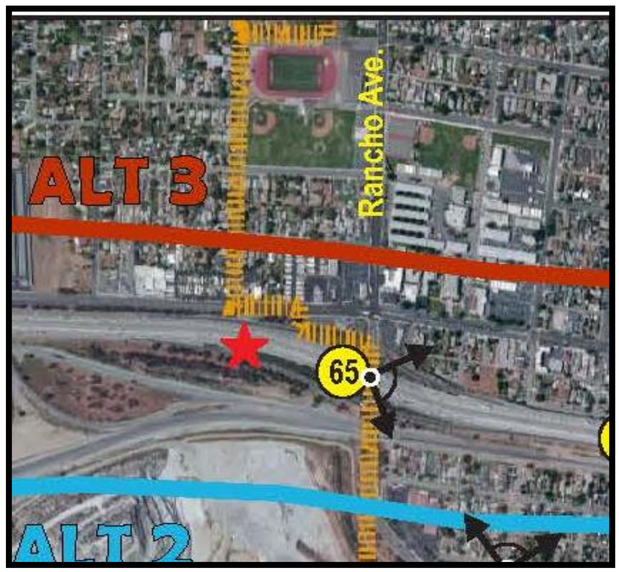


Figure 3.1.7-40
Location of Key Viewpoint #65

Existing Visual Character/ Quality: The existing eight lanes of freeway dominate this view, with the center barrier and the weeds growing under it providing a focal point to the view. Landscaping associated with the interchange provides a green counterpoint to the large areas of paving. The scale of the view tends toward the monumental given the number of lanes of I-10, but the plantings associated with the ramps help add to the diversity and harmoniousness of the view. The overall visual quality of the view is moderately low, with moderately low vividness, intactness, and unity.

Figure 3.1.7-41
Viewpoint #65, Alternative 3 (Preferred Alternative),
Rail Yard Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect.

Proposed Project Features: For pedestrians on the bridge, the new fence that would be included as part of the improvements to the interchange would be prominent. Looking into the I-10 corridor, the four new Express Lanes and median shoulder associated with the widened paving of the corridor would be seen. The inclusion of the new lanes would push the outside edge of I-10 into the landscape areas along the ramps and would require retaining walls on each side of I-10 to address the existing slopes along the ramps, which would also be seen from this vantage point. These walls would be larger than those anticipated in Alternative 2.

Changes to Visual Character: In general, I-10 would appear wider to viewers on the bridge, and the new lanes and retaining walls would increase the area of hard surfaces in the view. The improvements to the corridor would, in effect, clean up much of the existing view, removing weeds from the median area and adding plantings to the ramps. The effect of this would be to increase the diversity of the view and provide better scale to I-10; however, the view is still into a freeway corridor and would be similar in appearance to the existing, equating to a low level of change.

Anticipated Viewer Response: From the perspective of the pedestrian, the viewer is likely to have a moderately low degree of sensitivity to the changes in the visual environment. Pedestrians, while much fewer in number than freeway travelers, have a much longer viewing period than a driver would over a similar distance due to the difference in speed between the two modes of transportation.

Resulting Visual Impact: The overall impact to the view is anticipated to be moderately low. The extra pavement width is somewhat compensated for by the addition of plantings in the interchange, and the removal of weeds and other distracting elements helps slightly increase the overall visual quality; however, the resulting impact to the visual environment is not expected to appreciably alter the existing visual quality for this view. The overall visual quality is expected to increase slightly to moderate, with moderate vividness, intactness, and unity.

Figure 3.1.7-42
Location of Key Viewpoint #74

Viewpoint #74 Analysis

Orientation: Figure 3.1.7-42 shows the location of Viewpoint #74. Figure 3.1.7-43 shows a photosimulation for Viewpoint #74 and depicts the pre- and post-construction views. The view is from the EB lanes of I-10 looking east near the Waterman Avenue exit within San Bernardino County area, near Loma Linda.

Existing Visual Character/Quality: The existing visual character of the view is dominated by the freeway paving and signage. The median olive trees and fan palm trees to the right provide a counterpoint to the hard surfaces of the highway paving. The plant material helps bring a sense of scale to the view and reduce the overall monumentality of the freeway paving. The overall visual quality of the view is moderate, with moderate vividness, intactness, and moderately low unity.

Proposed Project Features: The project would add two center Express Lanes on each side of I-10 and a concrete median barrier in this view. The widening would require some reconfiguration of the off-ramp to Waterman Avenue, necessitating removal of vegetation. The existing sign bridge in the mid-ground would have to be lengthened to accommodate the wider roadway as well. The existing olive trees in the median would be removed, although the plantings on the outside are expected to remain.

Changes to Visual Character: The biggest change in this view would be the addition of the Express Lanes associated with the corresponding increase in hard surfaces within the view and the removal of vegetation in the median that helps to screen the other half of I-10 from the viewer. In addition, the widening requires reconfiguration of the Waterman Avenue ramps, which equates to the removal of additional mature vegetation within the view. The result is a corridor that appears more open and much larger.

Figure 3.1.7-43
Viewpoint #74, Alternative 3 (Preferred Alternative),
Commercial-Agricultural Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect.

Anticipated Viewer Response: For those traveling on the I-10 corridor, the change would be very noticeable. The addition of two lanes of paving on each side of I-10, coupled with removal of the median trees, would be most notable. It is anticipated that the viewer sensitivity for this group would be moderate, as would their exposure.

Resulting Visual Impact: The overall resulting impact to the visual environment in this view is anticipated to be moderately high, with moderate vividness, and moderately low intactness and unity. Removal of the median plantings and the addition of two lanes on each side of I-10 create a much more monumental appearance to the freeway paving. In addition, removal of the mature plantings at Waterman Avenue further reduces the elements that would add scale and diversity to the view. New plantings, included as part of the work, would eventually bring back some of this, but given the limited space available, the plantings would likely not be to the size and scale of the existing.

Viewpoint #86 Analysis

Orientation: Figure 3.1.7-44 shows the location of Viewpoint #86. Figure 3.1.7-45 shows a photosimulation for Viewpoint #86 and depicts the pre- and post-construction views. The image is taken from the EB lanes of I-10, approaching the University Street interchange, looking east.

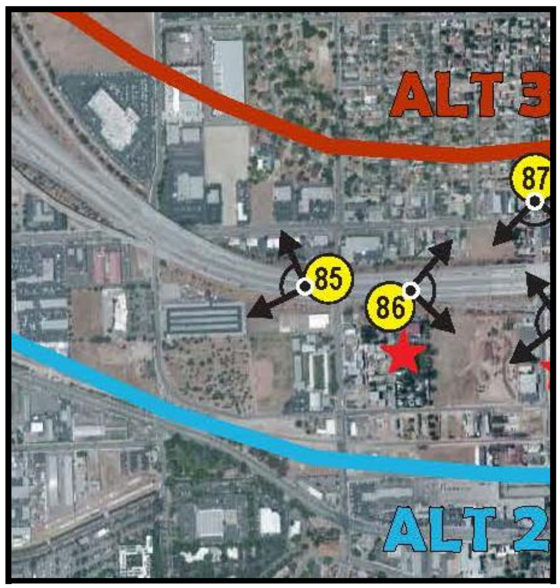


Figure 3.1.7-44
Location of Key Viewpoint #86

Existing Visual Character/Quality: The freeway paving is the dominant feature in this view. The mature plantings on either side of I-10 help soften the overall feel of the freeway; however, given its width, the freeway paving tends towards monumentality in the view and dominates the perceived landscape. The overall visual quality of the view is moderately low, with moderately low vividness and intactness, and moderate unity.

Proposed Project Features: The primary feature for the project would be the addition of the new lane with a full shoulder along the median. The existing median barrier would be replaced with a slightly taller barrier.

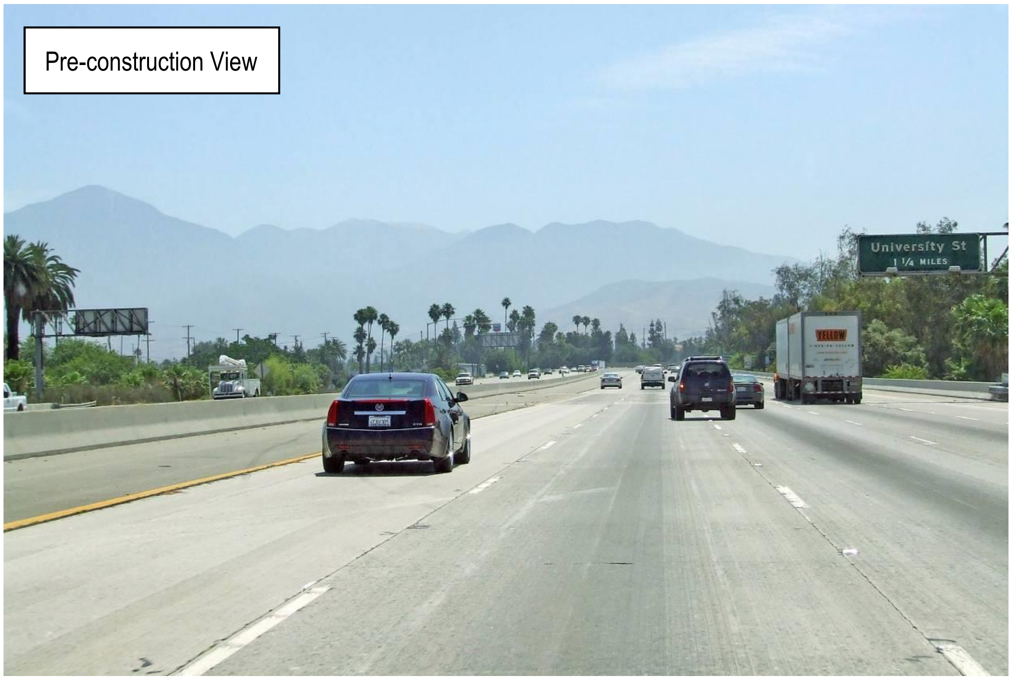


Figure 3.1.7-45
Viewpoint #86, Alternative 3 (Preferred Alternative), Redlands Landscape Unit

Minimization measures depicted in the simulation include wall texture and new landscaping of disturbed areas. Aesthetic treatments to structures and specific plant types are representative only. Actual types of treatments and landscaping would be designed in collaboration with Caltrans' District Landscape Architect.

Changes to Visual Character: The addition of one new Express Lane would add some paving into the view; however, the existing median shoulder is paved, so the addition of the lane does not appear to greatly alter the amount of paving in the view. Existing mature plantings along the outside edge of I-10 would likely remain.

Anticipated Viewer Response: Frequent travelers on I-10 would likely have the greatest sensitivity to changes within the corridor; however, within this view, the changes are not expected to be appreciable, so the overall sensitivity is expected to be moderate, as would the exposure.

Resulting Visual Impact: The resulting impact to the overall visual environment of the view is anticipated to be moderately low. The new visual quality would likely maintain the existing quality of this portion of the corridor. Vividness and intactness would remain at moderately low, while unity would remain at moderate.

Table 3.1.7-1 provides a summary of findings from the analysis for each key viewpoint for the anticipated change to the visual resource, the anticipated viewer response to that change, and the overall anticipated visual impact for each alternative.

Table 3.1.7-1 Summary of Anticipated Visual Impacts by Key Viewpoint and Alternative

Key Viewpoint	Anticipated Change to Visual Resource	Anticipated Viewer Response	Anticipated Visual Impact
Alternative 2 – HOV Lanes			
Key Viewpoint #34	High	Moderate	Moderately High
Key Viewpoint #40	Moderate	Moderate	Moderate
Key Viewpoint #43*	Moderate	Moderate	Moderate
Key Viewpoint #50	Low	Moderate	Moderately Low
Key Viewpoint #65	Low	Moderate	Moderately Low
Key Viewpoint #72*	Low	Moderate	Moderately Low
Key Viewpoint #74	Moderate	Moderate	Moderate
Key Viewpoint #86	Low	Moderate	Moderately Low
Alternative 3 – Express Lanes (Preferred Alternative)			
Key Viewpoint #14	Low	Moderate	Moderately Low
Key Viewpoint #15	Moderately Low	Moderate	Moderate
Key Viewpoint #18	Moderate	Moderate	Moderate
Key Viewpoint #21	Moderate	Moderate	Moderate

Table 3.1.7-1 Summary of Anticipated Visual Impacts by Key Viewpoint and Alternative

Key Viewpoint	Anticipated Change to Visual Resource	Anticipated Viewer Response	Anticipated Visual Impact
Key Viewpoint #34	Low	Moderate	Moderately Low
Key Viewpoint #40	Moderately Low	Moderate	Moderate
Key Viewpoint #50	Moderate	Moderate	Moderate
Key Viewpoint #65	Moderately Low	Moderate	Moderate
Key Viewpoint #74	Moderately High	Moderate	Moderately High
Key Viewpoint #86	Low	Moderate	Moderately Low

*The image and analysis results for these key viewpoints are the same for both build alternatives.

Temporary/Construction Impacts

No Build Alternative

Under the no-build conditions, there would be no improvements to the corridor or alterations to lane configurations; besides routine maintenance of the project corridor, there would be no actions that would impact the visual quality of the project corridor in the short term. Therefore, there would be no temporary impacts.

Build Alternatives

Temporary or short-term impacts are of relatively short duration (e.g., the visual presence of construction equipment or the time for establishment of new plants). For the I-10 project area, removal of the eucalyptus trees and other vegetation within the interchange areas would likely have the greatest impact on the visual quality; however, this would be a temporary effect in most areas because, as the replacement vegetation grows over the years, the overall impact would be expected to diminish. In general, it is anticipated that it would take 15 to 25 years for any replacement trees planted as part of the project to reach maturity, depending on the species selected. The replacement plants, as depicted in the key views, are shown at approximately 10 years post-replacement.

Graffiti is not expected to be an issue during construction of the build alternatives because all of the construction, staging, and equipment storage areas would be fenced. As a result, structures, walls, and other features in the fenced areas would be protected from graffiti during the construction period; therefore, construction of any of the build alternatives is not expected to result in temporary impacts related to graffiti.

3.1.7.4 Avoidance, Minimization, and/or Mitigation Measures

To address the potential adverse visual impacts to the project area and to address anticipated community concerns over the change of scale of the highway corridor visually within the community, the following actions are required. Measures will be implemented under San Bernardino County Transportation Authority (SBCTA) and Caltrans oversight. Any changes would require Caltrans and SBCTA approvals. With implementation of these measures, the visual impacts of this project would be reduced and would not result in a substantial change in overall visual quality for the area.

VA-1: For the corridor aesthetics and landscaping, the Caltrans I-10 Corridor Master Plan (dated November 2011) will be used as the basis for the designs. During the design review and approval process, coordination will continue to occur with all corridor stakeholders for decisions on specific design elements.

VA-2: Beginning with preliminary design and continuing through the design-build phase, as much existing vegetation in the corridor as feasible will be saved and protected, especially eucalyptus and other skyline trees. It is anticipated that approximately 295 eucalyptus trees will be protected-in-place during construction. Trees to be protected-in-place will be identified in project design plans.

VA-3: Under SBCTA oversight, exact locations, species, and conditions for all existing trees within the project impact area over 2 caliper inches (as measured 6 inches above grade) and, in particular, the eucalyptus windrows/colonnades included in the plan set will be surveyed. A Tree Removal and Replacement Plan will be prepared, which will include locations of trees to be removed, diameter of trees at breast height, trees to be protected-in-place, and replacement locations to be reviewed and approved by the Caltrans District Landscape Architect prior to clearing and grubbing.

VA-4: Preserved trees within the project impact area will be identified, and the drip zone of preserved trees will be protected during construction with temporary fencing.

VA-5: As determined by SBCTA and Caltrans, large infield areas of existing plantings to be preserved through the construction period with temporary fencing will be identified.

VA-6: Construction plans will be developed that apply aesthetic treatments, including color, textures, and patterns, to the soundwalls that follow the guidelines in the I-10 Corridor Master Plan.

VA-7: As part of the project, the existing San Bernardino Gateway, soundwall at the county line will be redesigned.

VA-8: Vine plantings on one or both faces of soundwalls will be included wherever feasible (given Caltrans setback and maintenance requirements). If vines are only planted on one side of the wall, vine portals will be included in the design of the wall to accommodate vine access to both sides of the wall.

VA-9: Construction plans will be developed that apply aesthetic treatments to the retaining walls that follow the guidelines for color, patterns, and textures, as outlined in the I-10 Corridor Master Plan.

VA-10: Construction plans will be developed that apply aesthetic treatments, including color, texture, and patterns, to the proposed bridges in the corridor that follow the guidelines in the I-10 Corridor Master Plan.

VA-11: The Euclid Avenue Bridge over I-10 will be designed to be consistent with the requirements of the local communities, including plantings on the bridge, decorative fencing, and replacement/ reconstruction of existing historically contributing elements.

VA-12: Aesthetic treatment will be included on concrete median barriers, including color, texture, and patterns, that are consistent with the I-10 Corridor Master Plan.

VA-13: Fencing will be designed to match the ornamental fencing shown in the I-10 Corridor Master Plan for all pedestrian fencing on all overcrossings, pedestrian bridges, or other elements associated with pedestrian traffic.

VA-14: Plans will be developed and implemented to landscape and revegetate disturbed areas to the greatest extent feasible, as directed by the Caltrans District Landscape Architect. Coordination between various construction stages will be facilitated to ensure that planting is not completed until construction in that area is complete and no further disturbance will occur.

VA-15: Replacement plants will be provided at the rate determined by the Caltrans District Landscape Architect. At a minimum, a tree replacement ratio of 2:1 will be used, unless a higher ratio is required by the District Landscape Architect, to address the large number of removals that have occurred in the corridor.

VA-16: Skyline trees will be included in the planting palette, where feasible and acceptable to local agencies, to soften the new freeway elements and recreate a sense of the existing tree colonnades. The District Landscape Architect will approve locations of proposed tree plantings during the design-build phase.

VA-17: Plant material will be comprised of drought-tolerant and native species of trees and shrubs to the extent feasible. The District Landscape Architect will approve the location(s) and amount of plantings.

VA-18: All replanting will be prioritized within the project ROW. Where insufficient space, locations, or water limits the plantings, then every effort will be made to find other locations in Caltrans ROW at other highways in the area. Consideration will also be given to planting in public space within adjacent communities, beyond the ROW, if other agencies commit to maintenance of these plantings (refer to PDPM 29-17). Final replanting concepts will be concurred by SBCTA with approval of Caltrans.

VA-19: Trees will be planted to the maximum extent feasible, given space constraints, to provide screening of the facility and structures.

VA-20: Replanting the corridor will not be delayed and will commence prior to the end of each construction period.

VA-21: Close coordination with the District Landscape Architect will occur for approval of the number and location for the installation of trees in a variety of sizes from 36-inch box, 24-inch box, and 15-gallon containers, with 24-inch box trees being the dominant size at installation.

VA-22: Close coordination with the District Landscape Architect and Caltrans Maintenance will occur to develop and implement plans that include Caltrans Maintenance access roads through the landscape so that these elements are integral to the overall design.

VA-23: With approval of the District Landscape Architect, permanent irrigation system to all plantings will be developed and implemented. All irrigation should follow the latest requirements for design and installation, including any requirements associated with drought, water restrictions, recycled water use, and water conservation as required by Caltrans.

VA-24: With approval of the District Landscape Architect, reclaimed/recycled water will be used as sources for all irrigation systems, where feasible, including any recycled/reclaimed water supply within 250 feet of the project corridor.

VA-25: A 3-year plant and irrigation establishment period or equivalent 1-year plant establishment plus 2-year Establish Existing Planting (EEP) period will be included as part of the construction period to provide a single source of maintenance through the establishment period.

VA-26: With approval of the District Landscape Architect, drainage and water quality elements will be used, where required, that maximize the allowable landscape.

VA-27: Design plans will be developed and implemented that locate basins so that they are at least 10 feet from the edge of the Caltrans plant setback to allow landscape screening to be installed.

VA-28: Infiltration/detention basins will be designed so that they appear to be a natural landscape feature, such as a dry streambed or a riparian pool.

These elements will be shaped in an informal, curvilinear manner to the greatest extent possible.

VA-29: Plans will be developed and implemented that incorporate slope rounding, variable gradients, and similar techniques to the surrounding topography of any basin slope to de-emphasize the edge. If a wall or hard feature is necessary, its design must appear integral to the overall design concept.

VA-30: Plans will be designed and implemented that locate maintenance access drives in unobtrusive areas away from local streets. Such drives must consist of inert materials or herbaceous groundcover that is visually compatible with the surrounding landscape.

VA-31: Basins will be designed so that chain-link perimeter fencing is not required.

VA-32: All visible concrete structures and surfaces will be designed to visually blend with the adjacent landscaping and natural plantings.

VA-33: Rock slope protection will be designed to consist of aesthetically pleasing whole material with a variety of sizes.

VA-34: Plans will be developed and implemented that limit the use of bioswales within corridor landscape areas. If they must be used, they will be located in nonobtrusive areas, and designed to appear natural to the greatest extent possible.

VA-35: Side slopes of detention and/or stormwater basins, as well as any bioswales, will be revegetated with container planting. These plantings must be integral to the other replacement plantings in the corridor.

VA-36: To deter graffiti, textures will be included on walls and surfaces and/or anti-graffiti coatings on all walls, barriers, and bridges. Where feasible, vine plantings will be included on walls to also deter graffiti.

VA-37: For all new or relocated light fixtures and other sources of glare, shielded fixtures will be provided that prevent light trespass onto adjacent properties.

VA-38: For portions of the freeway designated as a "Classified Landscaped Freeway" and where landscaping/trees will be removed, every effort will be made to keep this designation by creating areas for replacement landscaping.

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3.1.8 Cultural Resources

This section discusses impacts related to cultural resources that may result from the proposed project. This section is primarily focused on the Section 106 historic property impacts, while Chapter 4 of this document provides a complete California Environmental Quality Act (CEQA) analysis of historical resource impacts associated with the proposed project.

3.1.8.1 Regulatory Setting

The term "cultural resources" as used in this document refers to all "built environment" resources (e.g., structures, bridges, railroads, water conveyance systems), culturally important resources, and archaeological resources (both prehistoric and historic), regardless of significance. Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act

The National Historic Preservation Act of 1966 (NHPA), as amended, sets forth national policy and procedures for historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for listing in the National Register of Historic Places (NRHP). Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on those undertakings, following regulations issued by the ACHP (36 *Code of Federal Regulations* [CFR] 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the ACHP, Federal Highway Administration (FHWA), State Historic Preservation Officer (SHPO), and the California Department of Transportation (Caltrans) went into effect for Caltrans projects, both state and local, with FHWA involvement. In January 2014, the first amended Section 106 PA went into effect. The PA implements the ACHP's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to Caltrans. FHWA's responsibilities under the PA have been assigned to Caltrans as part of the Surface Transportation Project Delivery Program (23 United States Code [U.S.C.] 327).

Section 4(f)

Historic properties may also be covered under Section 4(f) of the U.S. Department of Transportation Act, which regulates the "use" of land from historic properties. See Appendix B in Volume 2 for specific information about Section 4(f).

California Public Resources Code Section 5024.1

Historical resources are also considered under CEQA, as well as California Public Resources Code (PRC) Section 5024.1, which established the California Register of Historical Resources (CRHR). California PRC Section 5024 requires State agencies to identify and protect State-owned resources that meet NRHP listing criteria. It further requires Caltrans to inventory State-owned structures in its right-of-way (ROW).

3.1.8.2 Affected Environment

Studies and Methodologies

A *Historic Property Survey Report* (HPSR) (April 2015), a *Historical Resources Evaluation Report* (HRER) (April 2015), an *Archaeological Survey Report* (ASR) (April 2015), and a *Finding of No Adverse Effect with Non-Standard Conditions* (FNAE) (May 2015) were prepared for this project. The HPSR, HRER, and ASR documents discuss the pre-field literature and record searches conducted for the project, consulting party identification and consultation efforts, development of the Area of Potential Effect (APE), cultural resource survey of the APE, and NRHP and CRHR evaluation efforts for both Section 106 and CEQA. The FNAE document assesses the project effects on Section 106 historic properties, and impacts to CEQA historical resources are discussed in Chapter 4. Because the cultural resources inventory and evaluation documents and methodology (HPSR, HRER, and ASR) apply to both NHPA and CEQA, the results are presented here (Affected Environment). The FNAE and SHPO consultation relates to NHPA only and is presented in the Environmental Consequences section, and the CEQA impacts are in Chapter 4 because they differ from the NHPA findings.

Area of Potential Effects

The APE was established in consultation with Andrew Walters, Principal Architectural Historian, Caltrans Professional Qualified Staff (PQS); and Raghuram Radhakrishnan, Caltrans Project Manager, on February 4, 2015. The APE includes all areas where potential direct and indirect impacts to cultural resources could occur as a result of project construction, operation, and maintenance.

Consistent with Caltrans policies and general cultural resource practices, the APE for potential direct impacts was established as the project footprint plus a 50-foot buffer. The direct project footprint includes all construction easements, access routes, staging, and construction areas. This Area of Direct Impact (ADI) became the study area used for archaeological studies. The APE for potential indirect impacts used for built environment surveys was generally established as the legal parcel adjacent to where potential direct impacts would occur or within a 500-foot buffer zone on large parcels. Where large properties were encountered, such as the Euclid Avenue Historic District, an assessment was made regarding the project's potential to affect the property, and only the area that was potentially affected was included within the APE. Emphasis was given to inclusion of properties that front on or face Interstate 10 (I-10). The APE was extended where bridges are due to be modified as part of this project and also includes areas of U.S. Army Corps of Engineers (USACE) jurisdictional areas.

In terms of the vertical APE, construction of the high-occupancy vehicle (HOV) or Express Lanes would generally be confined to previously disturbed sediments that resulted from the original construction and subsequent modification and maintenance of I-10, as well as commercial, residential, and other infrastructure developments. The exceptions may include areas associated with the proposed widening and reconstruction of some of the bridge overcrossings, which have potential for undisturbed native sediments. Proposed bridge reconstructions are not expected to exceed 30 feet in height. Permanent overhead signage, which is also not expected to exceed 30 feet in height, would be installed in the eastern end of the project. Proposed soundwalls and additional vertical elements would be constructed well under this 30-foot threshold.

Record Searches

Various sources were consulted as part of the project's cultural resource investigation, including cultural resource records and literature housed at the San Bernardino Archaeological Information Center (SBAIC) and the South Central Coastal Information Center (SCCIC). A records search was conducted by staff at the SBAIC on May 7, 2008. An updated records search was conducted by Carrie Chasteen, Æ, in October 2012 and March 2013. An additional records search was conducted at SCCIC by Ms. Chasteen in March 2013. The updated records search identified 97 area-specific cultural resource surveys or evaluation investigations and 10 general area overview studies that have been conducted within the project study area.

Of the 97 area-specific investigations, 48 studies bisect the project APE. These 97 area-specific studies resulted in the identification and documentation of 75 known historic-period resources and 2 prehistoric resources within a 0.5-mile radius of the project APE, 44 of which were reported within the project APE. Notable resources reported within the project APE include the following:

- **Former site of Kaiser Steel (CA-SBR-4131H).** Designated California Point of Historical Interest. Originally located in the APE but has been demolished.
- **Union Pacific Railroad (CA-SBR-6101H).** Previously found to appear eligible for listing in the NRHP under Criterion A in June 1999. The SHPO did not concur or comment on this finding. Subsequently, numerous sections along this corridor have been previously evaluated and found to be not eligible or exempted from review. The section(s) within the APE were exempted from review for this project due to lack of integrity.
- **Old Kite Railroad Route (CA-SBR-6847H).** The Old Kite Railroad Route was previously recorded as an archaeological site, and portions of the Old Kite Railroad Route cross the APE in Redlands. The Old Kite Railroad Route in the vicinity of I-10 was exempted from review for this project due to loss of integrity.
- **Mill Creek *Zanja* (CA-SBR-8092H).** Listed in the NRHP in March 1976. The Mill Creek *Zanja* is located within the APE, and this finding was revalidated with this study. No project-related activities would occur within the vicinity of this resource; therefore, the project has minimal potential to affect this resource.
- **Bloomington Garage and LaGue Residence (CA-SBR-8542H).** Designated California Point of Historical Interest. The Bloomington Garage and LaGue Residence are located within the APE and were evaluated for inclusion in the NRHP and the CRHR for this study. The Bloomington Garage and LaGue Residence were found to not meet Criterion Consideration B for moved properties as a result of this study.
- **East Redlands Canal (CA-SBR-8546H).** Documented as an archaeological resource and not previously evaluated for NRHP eligibility. The East Redlands Canal is located within the APE but is exempted from review due to loss of integrity.
- **San Bernardino-Sonora Road (P-36-016417).** Designated California Point of Historical Interest. The San Bernardino-Sonora Road was originally located in the APE but has been demolished at this location.
- **The Peppers/El Carmelo (P-36-016795).** Found to appear eligible for listing in the NRHP in May 1977. The Peppers/El Carmelo is located within the APE, and the previous finding for this resource was revalidated.

In addition to the resources listed above, the Old Spanish Trail, a well-known early transportation route into southern California between 1829 and 1848, has been historically mapped as crossing the APE. The Old Spanish National Historic Trail (OSNHT) was designated by Congress in 2002 as part of the National Trails System under the National Trails System Act (NTSA) as an approximately 2,700-mile-long trail extending from Santa Fe, New Mexico, to Los Angeles, California, that is intended to include the general routing of the Old Spanish Trail between various sites located along the trail. Subsequently (2016), the Bureau of Land Management (BLM) and National Park Service (NPS) have developed a Comprehensive Administrative Strategy (CAS) that has proposed a more clearly defined routing of the OSNHT.

The routing of the historic OSNHT crosses the APE in two locations: (1) in the City of Colton near the intersection of I-10/Interstate 215 (I-215), and (2) near the Los Angeles/San Bernardino (LA/SB) county line in the cities of Pomona, Claremont, Upland, and Montclair. However, the Old Spanish Trail did not come up in the SBAIC record search conducted for the project in the vicinity of the APE as a previously recorded cultural resource. The area where the OSNHT crosses the APE has been extensively developed over the past 50+ years, and given the existence of a continually developed transportation corridor consisting of I-10 and the Union Pacific Railroad (UPRR) along the route, no physical manifestation of the historic trail nor its historic landscape remain within or in proximity to the APE.

Historic trails are difficult at best to accurately map due to natural and man-made changes to the landscape over time. In general terms, however, the route of OSNHT as a whole should be considered as one single linear cultural resource consisting of contributing and noncontributing elements. Such elements may include, but not be limited to, physical trace; prominent landscape features that were critical during period of significance (e.g., springs, wayfinding landforms); campsites; and settlements. As such, it is the extant sites and trail segments along the route that should be considered as potential historic properties. During background research conducted on the ONSHT, no evidence was found indicating that segments or sites associated with the OSNHT in San Bernardino County have been determined NRHP eligible or listed on the NRHP; however, the BLM/NPS-sponsored CAS has identified 7 high-potential OSNHT route segments and 10 high-potential historic sites in San Bernardino County. These high-potential segments and sites would be the most likely contributing features to any larger historic property. The closest high-potential route segment is located in the Cajon Pass (approximately 10 miles north of the APE), and the closest historic site is Agua Mansa Cemetery located in Colton (approximately 1.5 miles south of the APE). In the vicinity of the LA/SB county line in the cities of Pomona, Claremont, Upland, and Montclair where the OSNHT is mapped in proximity to the APE, there are also no high-potential sites or segments in the vicinity (see https://www.nps.gov/olsp/planyourvisit/upload/OLSP_FederalLand Manager MapSeries_CA.pdf).

Given that there is no physical manifestation of the OSNHT or its broader historical landscape in or in proximity to the APE, it was determined that the OSNHT and any potential historic property that may be associated with the OSNHT are considered outside the APE, and further study of the OSNHT is beyond the scope of the current undertaking.

Local Government Agencies

In accordance with Section 106 of the NHPA, in 2008, letters were sent to local government agencies requesting information regarding any cultural resources that may be of significance within the project APE. No historic properties were identified within the APE as a result of those consultation efforts. Because the project footprint changed since the previous iteration of the project, additional letters were sent in 2014 to the following local governmental agencies:

- City of Redlands, Planning Division/Historic Preservation
- City of Loma Linda, Planning Division
- City of San Bernardino, Community Development Department
- County of San Bernardino, Planning Department
- City of Colton, Planning Division
- City of Rialto, Planning Department
- City of Fontana, Planning Department
- City of Rancho Cucamonga, Planning Department
- City of Ontario, Planning Department
- City of Upland, Development Services Department
- City of Montclair, Community Development Department
- City of Pomona, Community Development Department
- City of Claremont, Community Development Department

Because historic properties located within or adjacent to the APE were identified in the cities of Upland, Ontario, and Redlands, additional efforts to consult with local government agencies were made throughout 2014 and 2015. Focus meetings were held with the cities of Upland and Ontario to address historic preservation concerns related to Euclid Avenue, which is a historic property. Through implementation of the Environmental Commitments Record (ECR), consultation with the cities of Upland

and Ontario regarding the proposed improvements at Euclid Avenue/State Route (SR) 83 will continue through completion of the project.

Native American Consultation

In accordance with Section 106 of the NHPA, efforts were made to determine if any known Native American cultural properties are present within or adjacent to the project APE. The Native American Heritage Commission (NAHC) was first contacted regarding the project in February 2008 and again in November 2014 as a result of expansion of the proposed project, concerning their Sacred Lands File (SLF). The NAHC responded that the SLF failed to indicate the presence of Native American cultural resources within the project vicinity. The NAHC provided a contact list of Native American groups and individuals who might have knowledge of Native American cultural resources in the project area. Those individuals identified by the NAHC were contacted by mail, and follow-up phones calls were made. Caltrans conducted formal government-to-government Native American consultation with the tribes that requested consultation. Copies of the Draft ASR were submitted to those tribes prior to Caltrans approval, and copies of the Final ASR were also provided.

Chapter 5 (Section 5.3) lists the Native American individuals/organizations that were contacted in 2008 and 2014, and discusses their comments and subsequent responses from Caltrans. Additionally, Appendix G of this document contains all letters to and from the aforementioned Native American Tribes/Representatives.

Local Historical Society/Historic Preservation Groups Consultation

In accordance with Section 106 of the NHPA, letters were sent to local historical societies in 2008 requesting information regarding any cultural resources that may be of significance within the project APE. No historic properties were identified within the APE as a result of those consultation efforts. Because the project footprint changed since the previous iteration of the project, additional letters were sent in 2014 to the following local historical societies:

- Redlands Area Historical Society
- Redlands Conservancy
- San Bernardino Historical Society
- Colton Area Museum
- Rialto Historical Society
- Fontana Historical Society

- Chaffey-Garcia House/Museum (Rancho Cucamonga)
- Ontario Heritage
- Cooper Regional History Museum (Upland)
- The Historical Society of Pomona Valley
- Claremont Heritage

An additional letter was also sent to the Redlands Conservancy in 2014. The Redlands Conservancy responded with concerns regarding the Mill Creek *Zanja*, the site of Crystal Springs, and previously identified archaeological resources that may be present in the APE. A focused meeting was held in August 2014 with the Redlands Conservancy to present the project and discuss their concerns. No additional comments were received after this meeting.

Field Surveys

Historic Architectural Resources. A field survey of all properties developed with buildings, groups of buildings, or structures within the APE was undertaken June through August 2008, September 2009, and December 2013 through February 2014. Each parcel was observed from the public ROW. In accordance with standard Caltrans guidance and procedures, attempts were made to relocate previously identified cultural resources within the APE, and all properties containing buildings and/or structures that are 50 years of age or older (were constructed in or before 1965) were evaluated for eligibility for listing in the NRHP and the CRHR or exempted from review under Attachment 4 of the Section 106 PA. Because the APE contained many post-war residential tracts, tract maps were reviewed to assess these properties to determine the developers of the tracts, research was conducted regarding both the developers and the neighborhoods, and an assessment was made of the integrity of the tracts located within the APE.

A total of 2,227 parcels containing buildings, groups of buildings, and structures were identified within the APE; of these, only 67 properties contained historic period resources that required evaluation. These included 66 historic architectural properties and 1 historic archaeological site. The remaining parcels within the APE were either vacant, contained buildings or structures constructed after 1965, or contained buildings or structures exempt from evaluation in accordance with Attachment 4 of the PA.

Archaeological Resources. The primary purpose of the archaeological survey and identification effort was to re-identify known archaeological resources within the project area, identify previously undocumented archaeological resources, and assess their current condition.

Archaeological reconnaissance and pedestrian surveys or windshield surveys were conducted in December 2008 and September 2009 in accordance with standard Caltrans guidelines and procedures. Expansion of the project ADI prompted a second round of reconnaissance surveys in January 2014. This work focused on identifying areas within the expanded project ADI (2,537.2 acres) that were not extensively disturbed by construction or maintenance of the existing I-10 or by urban development. Parcels that were extensively disturbed by prior earth-moving activities or native ground surfaces that were not visible were deemed to have little potential to encounter intact cultural resources and were exempted from review for the purposes of this study. Portions of 70 parcels, totaling 81.63 acres, were identified within the project ADI that contained exposed native sediments that exhibited relatively low levels of ground disturbance. In July and August 2014, intensive pedestrian surveys were conducted on these parcels. Two of the 70 parcels (Assessor Parcel Numbers [APNs] 013221111 and 013219115) could not be examined because these properties were fenced and inaccessible; an additional parcel (APN 016924434) had recently been sold and the new property owners could not be identified; thus, permission to enter was not obtained. For each of these 3 parcels, an attempt was made to examine the ground surface from the public ROW to assess the cultural sensitivity of the area. The portions of the 3 parcels that were not intensively inspected in the Phase I survey totaled 1.20 acres, which reduced the pedestrian survey area of the expanded project ADI to 80.43 acres.

No previously recorded prehistoric archaeological sites are located within the APE. Results of the field survey indicate that three of the four known historical archaeological sites reported within the project APE have been destroyed (the Kaiser Steel Mill [CA-SBR-4313H], the Old Kite Railroad Route [CA-SBR-6847H], and the East Redlands Canal [CA-SBR-8546H]). The results of the survey effort identified the Curtis Homestead Site (CA-SBR-12989H) in the project APE.

Study Findings

As mentioned above, 67 properties within the APE required formal NRHP evaluation. Two of these properties, Euclid Avenue/SR-83 and the Mill Creek *Zanja*, were previously listed in the NRHP and are considered historic properties. Caltrans consulted with SHPO regarding NRHP eligibility of properties located within the project APE. In a letter dated May 12, 2015, SHPO concurred that there are 62 properties that are not individually eligible for the NRHP. In addition, SHPO recommended that Caltrans consider 2 properties in Redlands (1055 E. Highland Avenue and 926 E. Highland Avenue) eligible for the NRHP for the purposes of the project. Finally, SHPO concurred that the Curtis Homestead in Loma Linda (CA-SBR-12989H) can be assumed eligible for the NRHP for the purposes of the project. Thus, there are five historic properties within the APE, as shown in Table 3.1.8-1.

Table 3.1.8-1 Historic Properties

Name	Address/Location	Community	Office of Historic Preservation Status Codes
Euclid Avenue/SR-83	N/A	Upland/Ontario	1S
Curtis Homestead	N/A	Loma Linda	7R
Mill Creek *Zanja*	N/A	Redlands	1S
1055 E. Highland Avenue	1055 E. Highland Avenue	Redlands	2S2
The Peppers/El Carmelo	926 E. Highland Avenue	Redlands	2S2

Source: HRER, 2015.

Properties listed or formally determined eligible for listing in the NRHP are automatically listed in the CRHR and are historical resources for the purposes of CEQA. Thus, the historic properties in Table 3.1.8-2 are also historic resources for the purposes of CEQA. In addition, properties listed in the CRHR and/or local designations are also considered historical resources under CEQA. The City of Ontario designated Euclid Avenue and fronting properties as a local historic district named the Euclid Avenue Historic District. Three frontage properties (1531 N. Euclid Avenue, 1540 N. Euclid Avenue, and 1524 N. Euclid Avenue) are contributors to the locally designated Euclid Avenue Historic District and are eligible for individual local designation. These four resources are historical resources for the purposes of CEQA. Terrace Park, located between Colton and Terrace avenues and Church and Sixth streets, Redlands, has been designated a City of Redlands local “Historic Property” (Historic and Scenic Resource No. 115) and is a historical resource for the purposes of CEQA. This survey concurs with a previous survey-level evaluation of the B.W. Cave Residence/322 The Terrace, Redlands, and finds the property may be eligible for local designation and is considered a historical resource for the purposes of CEQA. Thus, there are 11 CEQA historical resources within the APE.

Table 3.1.8-2 Historical Resources

Name	Address/Location	Community	Office of Historic Preservation Status Codes
Euclid Avenue/SR-83	N/A	Upland/Ontario	1S
Euclid Avenue Historic District	N/A	Ontario	5D1
1531 N. Euclid Avenue The Metcalfe & Bundgard House	1531 N. Euclid Avenue	Ontario	5B
1540 N. Euclid Avenue The Arthur E. Wilson House	1540 N. Euclid Avenue	Ontario	5B
1524 N. Euclid Avenue The James B. Martz House	1524 N. Euclid Avenue	Ontario	5B
Curtis Homestead	N/A	Loma Linda	
Terrace Park	The strip of land between Colton and Terrace avenues, and Church and Sixth streets	Redlands	5S1
B.W. Cave Residence 322 The Terrace	322 The Terrace	Redlands	5S3
Mill Creek *Zanja*	N/A	Redlands	1S
1055 E. Highland Avenue	1055 E. Highland Avenue	Redlands	2S2
The Peppers/El Carmelo	926 E. Highland Avenue	Redlands	2S2

Euclid Avenue/SR-83

Euclid Avenue/SR-83 (36-015982), listed in the NRHP as a single structural resource, is located in Upland and Ontario, and it is also a locally designated historic district within Ontario. Euclid Avenue/SR-83 was listed in the NRHP under Criterion A for its community planning and development significance and under Criterion C for its landscape architecture significance. The period of significance for the NRHP-listed Euclid Avenue/SR-83 is 1882 to 1940, and it is significant on the state level. The NRHP-listed property boundary consists of the 200-foot-wide public ROW of Euclid Avenue between 24th Street in Upland and Philadelphia (Ely) Street in Ontario. Of the 8.4-mile-long resource, approximately 1.6 miles are located within the project APE. Contributing features of the NRHP-listed property within this segment of the resource include the 64-foot-wide medians, historic stone and concrete curbs and gutters, and historic sidewalks. Contributing landscape features include California pepper trees *(Schinus molle)*, silk oak trees *(Grevillea robusta)*, and other mature vegetation such as southern magnolia *(Magnolia grandiflora)*. Noncontributing features include the bridge, which crosses I-10 (Bridge No. 54 0445), and other modifications to the historic property that resulted from construction of this bridge, such as modern sidewalks and curbs.

Mill Creek Zanja

Mill Creek *Zanja* (CA-SBR-8092H) was previously listed in the NRHP under Criterion A for its association with early agricultural improvements in Redlands, Criterion B for its association with Pedro Alvarez, Criterion C as a significant engineering structure, and Criterion D for its information potential. Mill Creek *Zanja* was also designated California Historical Landmark No. 43 and Engineering Landmark No. 21 by the Los Angeles Section of the American Society of Civil Engineers. The period of significance is 1819-1820, the year it was constructed. It is significant on the state level. The boundary of the Mill Creek *Zanja* is limited to the footprint of the structure itself. Approximately 0.2 mile of this linear resource is located within the project APE. Contributing elements of the resource adjacent to the project area include an open ditch ranging from 5 to 8 feet in width and approximately 4 feet in depth. Portions of the Mill Creek *Zanja* have been improved with stonework; however, stonework is not evident in the section of the canal that crosses the APE. Although portions of the Mill Creek *Zanja* (CA-SBR-8092H) have previously been recorded as a historical archaeological resource, the segment that intersects the project APE continues to convey water and meets the definition of a "structure." Therefore, for the current study, the Mill Creek *Zanja* is discussed as a historic built-environment resource in the HRER.

1055 E. Highland Avenue

1055 E. Highland Avenue, Redlands, appears eligible for listing in the NRHP at the local level for its architectural quality (Criterion C). 1055 E. Highland Avenue is representative of the Foursquare style of architecture. The period of significance is 1917, the year the building was constructed. The boundary is limited to the legal parcel boundary. Contributing features include the siting, mass, and scale of the building. Other contributing features include the hipped roof, with flared eaves, clad in composition shingles; eaves of the main roofline accented with dentil molding and brackets; a brick chimney centrally located on the north face of the roof; the exterior walls clad in coursed wood shingles; the windows on the upper floors of the primary façade, which are one-over-one wood sash; and the primary entrance, which is raised and accessed via a covered porch with trios of Doric columns that support the porch roof and scrolled bas relief detailing accents the front gable of the porch roof. At least two ancillary buildings, which appear to date to when this building functioned as a farm, are located in the rear of the parcel and are contributing elements of this property. The glass block windows, metal awnings, and concrete block perimeter wall are not contributing features of this property. Contributing landscape includes mature trees.

The Peppers/El Carmelo

The Peppers/El Carmelo (36-016795) is located at 926 E. Highland Avenue, Redlands, and appears eligible for listing in the NRHP at the local level. The Peppers/El Carmelo was previously identified as eligible for listing in the NRHP for its associations with W.N. Moore (Criterion B) and for its Italian villa style architecture (Criterion C), and the resource has a 3S CRHR Status Code or “appears eligible for the NRHP as an individual property through survey evaluation.” The Peppers/El Carmelo was also identified by the Redlands Historical Society as a Redlands Historic Structure in 1981. The period of significance is 1903, the year the building was constructed. The boundary consists of the Assessor’s parcel boundaries, which comprise the functioning property, and generally consists of I-10 to the east, Highland Avenue to the north, modern residential development and a park to the west, and Marshal Street and additional residential development to the south. Contributing features include the siting of the building, which stood alone on top of a hill. Exterior contributing features include stucco; the multi-gable roofline with turrets, which was constructed with wood shingles; the eaves with brackets; slip-sill two-sash and flat with plain molding windows; and the primary entry door, consisting of two large plain wood doors with surrounding detail of plain molding with a small window on top of each door. Contributing landscape features include an unprotected cement patio in front with a brick sidewalk leading to it and citrus groves. Noncontributing features include numerous buildings and structures that were constructed between 1952 and 1969 when the property was converted to a Catholic retreat.

Terrace Park

Terrace Park was previously listed as a locally designated “Historic Property” and is a historical resource for the purposes of CEQA. Terrace Park is located between Colton and Terrace avenues and Church and Sixth streets, being a portion of Lots 29, 30, and 31 of Block 77, Rancho San Bernardino. The park is locally significant because it contributes to the historic or scenic properties of the city and because the park has a unique location and singular physical characteristics representing an established and familiar visual feature of a neighborhood, surrounding community, and the city. The period of significance is 1870, the year the neighborhood was established. The boundary is the established codified legal boundary of the open space as defined in

City of Redlands Resolution No. 7366. Contributing features include mature vegetation, central walkway, and landscape design. Noncontributing features include modern park benches.

B.W. Cave Residence/322 The Terrace

The B.W. Cave Residence/322 The Terrace, Redlands, was previously identified through survey evaluation as eligible for local designation as a City of Redlands Historic Property, and this survey confirms that finding. The period of significance is 1890, the year the building was constructed. The boundary is limited to the legal parcel boundary. The property is locally significant for its association with B.W. Cave and its architectural style. The period of significance is 1890, the year the building was constructed. The boundary is limited to the legal parcel boundary. Contributing features include its massing, setback, and siting on the parcel. Other contributing features include the irregular roof, which is clad in composition shingles; the exterior walls, which are clad in clapboard, and the front-facing gable, which is clad in fish-scale shingles; the fenestration of wood one-over-one sash, two-light fixed-pane, and six-light French doors; a canted bay centrally located on the primary façade, the top of which creates a second floor porch; the second floor porch enclosed with a simple wood railing; and the primary entrance is raised, recessed, and accessed via cast concrete stairs. Contributing landscape includes mature trees, and a wood fence separates the front and rear yards.

Curtis Homestead

The Curtis Homestead (CA-SBR-12989H) was found eligible for inclusion in the NRHP under Criterion D without formal evaluation for the purposes of this project only. The Curtis Homestead is assumed eligible under Criterion D for data potential. The Curtis Homestead consists of a historic homestead/farmstead site containing a razed cobble-and-mortar house foundation (Feature 1), a second razed cobble-and-mortar foundation (Feature 2) of a much smaller structure situated adjacent to the main house foundation, and a sparse-to-moderate density scatter of domestic refuse (e.g., bottle glass, ceramic items), and construction debris. Landscape trees (pepper trees [both dead and alive], one scrub oak, and one large unidentified shrub) are situated around the periphery of the site area. The depth of the cultural deposits at the Curtis Homestead is unknown; however, hollow subsurface features (i.e., privies, cisterns) may be present. Most cultural materials appear to date to circa 1920s to circa 1940s or later; however, some materials observed suggest that the site area may have been occupied as early as the late 1800s or around the turn of the century. The proposed span of site use/occupation coincides well with historical archival information gathered during this investigation, which indicates that the farmstead and surrounding parcel were occupied and farmed by the pioneer Curtis family as early as 1895 and as late as circa 1955, which is the period of significance of the site. The site boundaries are limited to the area surrounding the foundations and the dense area of domestic refuse.

Euclid Avenue Historic District

Euclid Avenue/SR-83 (36-015982) is located in Ontario and Upland, and it was formally determined eligible for listing in the NRHP in 1977. Supplemental documentation for Euclid Avenue was prepared in 2000 (Caltrans), and Euclid Avenue was listed in the NRHP in 2005. Resources listed in the NRHP are automatically listed in the CRHR, and the street is a historical resource for the purposes of CEQA.

The portion of Euclid Avenue/SR-83 located within Ontario (south of I-10) was recorded by the City of Ontario and listed as a historic district under local ordinance in 2013. Between I-10 and G Street, Euclid Avenue and three fronting properties were also identified as contributors to a locally designated Euclid Avenue, which was established by the City of Ontario. This historic district comprises approximately half of the NRHP-listed property in length, but it also includes all properties that front Euclid Avenue. This historic district is also a historical resource for the purposes of CEQA only. The contributing features of the locally designated historic district also include the median and street trees, consisting of silk oak and coast live oak trees. Other contributing features include the abutting properties, the scored sidewalks, stone and concrete curbs, King Standard lampposts, and front yard setbacks and open space in the residential areas of the district. Three properties within the project APE were identified as contributors to this district and are individually evaluated below for inclusion in the NRHP for this study. All of these resources are addressed in the HRER (Exhibit 3 of the HPSR, April 2015).

1531 N. Euclid Avenue/The Metcalfe & Bundgard House

The Metcalfe & Bundgard House, located at 1531 N. Euclid Avenue, Ontario, is a historical resource for the purposes of CEQA because it was identified as the contributor to the locally designated Euclid Avenue Historic District, and it was also identified as eligible for individual local landmark designation. The period of significance is 1951, the year the building was constructed. The property is locally significant because it fronts Euclid Avenue. The boundary is limited to the Assessor's parcel boundary. Contributing features include its massing, setback, and siting on the parcel. Other contributing features include the pebble-clad hipped roof with boxed eaves; a chimney clad in flag stone; smooth textured stucco; aluminum sash and fixed-pane windows; and the primary entrance is raised and accessed via a cast concrete slab on grade entry porch. The metal awnings are a noncontributing feature of the building.

1540 N. Euclid Avenue/The Arthur E. Wilson House

The Arthur E. Wilson House, located at 1540 N. Euclid Avenue, Ontario, is a historical resource for the purposes of CEQA because it was identified as a contributor to the locally designated Euclid Avenue Historic District, and it was also identified as eligible for individual local landmark designation. The period of significance is 1954, the year the building was constructed. The property is locally significant because it fronts Euclid Avenue. The boundary is limited to the Assessor's parcel boundary. Contributing features include its massing, setback, and siting on the parcel. Other contributing features include the gable-on-hip roof with exposed rafter tails; the dove cote in the front-facing gable; a brick chimney; the vertical board and batten wood siding; the wavy clapboard with brick veneer to the water line; the wood casement, one-over-one sash, six-over-six sash, and diamond-paned sash windows; the two canted bays accented with corbels; and the primary entrance is recessed and at grade. Contributing landscaping includes mature trees.

1524 N. Euclid Avenue/The James B. Martz House

The James B. Martz House, located at 1524 N. Euclid Avenue, Ontario, is a historical resource for the purposes of CEQA because it was identified as a contributor to the locally designated Euclid Avenue Historic District, and it was also identified as eligible for individual landmark designation. The period of significance is 1948, the year the building was constructed. The property is locally significant because it fronts Euclid Avenue. The boundary is limited to the Assessor's parcel boundary. Contributing features include its massing, setback, and siting on the parcel. Other contributing features include the cross-hipped roof with the boxed eaves; the brick chimney; the smooth textured stucco with horizontal clapboard siding to the water line; the six-over-six wood sash windows with wood surrounds; the canted bay; and the primary entrance is raised, recessed, and accessed via cast concrete steps. Contributing landscaping includes mature trees.

Standard Cultural Resources Measures for Unanticipated Discoveries

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

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to CA PRC Section 5097.98, if the remains are thought to be Native American, the coroner would notify the NAHC, which would then notify the Most Likely Descendent (MLD). At this time, the person who discovers the remains would contact the Caltrans District 8 Native American Coordinator so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

3.1.8.3 Environmental Consequences

In the *Finding of No Adverse Effect with Non-Standard Conditions* report prepared for the project, Caltrans determined that Alternatives 1, 2, and 3 would result in a finding of No Adverse Effect on the Mill Creek *Zanja*, The Peppers/El Carmelo, 1055 E. Highland Avenue, and the Curtis Homestead; Alternatives 1 and 2 would have No Adverse Effect on Euclid Avenue/SR-83; and Alternative 3 would have No Adverse Effect with Non-Standard Conditions on Euclid Avenue/SR-83. Therefore, Caltrans has determined that a finding of No Adverse Effect with Non-Standard Conditions is appropriate for the undertaking as a whole. SHPO concurred with these determinations by letter dated July 23, 2015.

CEQA impact findings on the 11 historical resources within the APE are discussed in Chapter 4.

Permanent Impacts

Because the Section 106 analysis looks at the level of effect in totality and does not differentiate between permanent and temporary effects, both permanent and temporary impacts can lead to an adverse effect and are discussed together.

No Build Alternative

Under the No Build Alternative, there would be no changes to the highway configuration and no improvements made; therefore, there would be no permanent impacts to resources or properties of historic significance.

Build Alternatives

Mill Creek *Zanja.* The Redlands Overhead Bridge passes 24.5 feet above the Mill Creek *Zanja* at this location. Soundwalls, which reduce noise, visual, and setting intrusions to the historic property and to a neighboring park and residences, flank both sides of this bridge. Because no construction activities beyond restriping would occur at this location, the project would not result in a direct impact on this historic property. Potential indirect effects consist of visual, audible, or atmospheric elements, which could result from increased traffic. Potential visual, atmospheric, or audible elements that may result from this project would be reduced by existing soundwalls, and no discernible indirect adverse effect would result because of the dampening qualities of the existing soundwalls.

Generally speaking, the property's physical attributes are what makes it an historic property. The project impact is considered minor because there is no direct physical impact to the property. The property has existed for decades along an existing transportation corridor. Minor changes to that corridor from the current project that result in potential indirect impacts (i.e. visual, noise) to the property would be minor in nature and do not rise to the level of being considered an adverse effect.

1055 E. Highland Avenue. Under Alternatives 2 and 3, the proposed project would reconstruct the median of the Highland Avenue Bridge (Bridge No. 54-0587), which would require partial reconstruction of the bridge located adjacent to the eastern boundary of the historic property. The Highland Avenue Bridge was constructed in 1962, altered in 2008, and is rated as a Category 5 (not eligible for NRHP) in the Caltrans Historic Bridge Inventory. Additionally, soundwalls flank both sides of the bridge, and modification to these walls is not anticipated. No improvements would occur at 1055 E. Highland Avenue; therefore, there would be no direct project effects on this historic property. Potential indirect effects consist of visual, audible, or atmospheric elements that could result from increased traffic. Because the bridge would only be partially reconstructed in a similar manner of design and materials and the extant soundwalls would remain intact, the proposed project would not result in a change of character of the property's use of or physical features within the property's setting that contribute to its historic significance, and it would not introduce new visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features. Potential visual, atmospheric, or audible elements that may result from this project would be reduced by existing soundwalls, and no discernible indirect adverse effect would result because of the dampening qualities of the existing soundwalls; therefore, the proposed project would not adversely affect this historic property as defined in 36 CFR 800.5(a)(2).

Generally speaking, the property's physical attributes are what makes it an historic property. The project impact is considered minor because there is no direct physical impact to the property. The property has existed for decades along an existing transportation corridor. Minor changes to that corridor from the current project that result in potential indirect impacts (i.e., visual, noise) to the property would be minor in nature and do not rise to the level of being considered an adverse effect.

The Peppers/El Carmelo. An existing soundwall located just south of Highland Avenue, which provides noise abatement for the residential buildings lining Highland Avenue, would be replaced as part of this project, and an existing chain-link fence, which encloses the Caltrans ROW from The Peppers/El Carmelo, would be replaced with a soundwall. The proposed project would also result in the construction of a soundwall within the Caltrans ROW, adjacent to the eastern/northern boundary of The Peppers/El Carmelo. The proposed soundwall would not result in the physical destruction or alteration to all or part of the property because it would be located within Caltrans ROW and is located outside of the historic property boundary.

Construction of the proposed soundwall would not change the character of the property's use because the property would continue to function as a residence secluded by productive citrus groves. Furthermore, the proposed soundwall would be located within Caltrans ROW; therefore, it would not alter the physical features within the property's setting that contribute to its significance. The proposed soundwall would be physically and visually separated from The Peppers/El Carmelo by intervening noncontributing buildings, structures, and landscape features such as paved surface parking lots; therefore, the proposed soundwall would not result in a change of character of the property's use nor of physical features within the property's setting that contribute to its historic significance (Criterion [iv]). Furthermore, construction of the soundwall would be a benefit for the isolated residential property because it would reduce noise levels such that the tranquility of the property would be increased in a positive manner. A eucalyptus windrow is located along the eastern/northern boundary within The Peppers/El Carmelo site. The noncontributing eucalyptus windrow would also physically and visually separate the proposed soundwall from the terraced citrus groves, which are a character-defining feature of the site. Therefore, the proposed soundwall would not introduce visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features, and it would result in a benefit to the historic property.

Curtis Homestead Site (CA-SBR-12989H). The proposed project would not result in an adverse effect on this historic property because it would be protected in place with the establishment of an environmentally sensitive area (ESA), as discussed in the mitigation section. All impacts to the site during construction would be avoided.

Euclid Avenue/SR-83. No improvements would occur at this location under Alternative 2; therefore, there would be no impact on this historic property.

Under Alternative 3, the project has the potential to have a permanent adverse effect on Euclid Avenue/SR-83; however, most of the project improvements on Euclid Avenue would occur between 7th Street and the vicinity of Caroline Court, which is an area that was previously modified from its historic condition on several occasions due to its proximity to I-10. This section is generally not considered a contributing segment of the historic property because very little historic fabric remains. Because Alternative 3 has the potential to adversely affect Euclid Avenue, which is a resource listed in the NRHP, four design options were developed to facilitate traffic flow and reduce historic preservation concerns. Options 1 through 3 were eliminated from further consideration.

Alternative 3 would construct improvements to Euclid Avenue between 7th Street in Upland and the vicinity of 6th Street in Ontario, and it would replace the Freeway Interchange Bridge (Bridge No. 54 0445). The Freeway Interchange Bridge was constructed when I-10 was constructed in the 1950s to carry Euclid Avenue over the new freeway. The bridge was reconstructed in 1970. The Freeway Interchange Bridge was not identified as a character-defining feature of the historic property (Caltrans, 2000) and is listed as a Category 5, "Not NRHP eligible" in the Caltrans historic bridge inventory (see Appendix I); therefore, replacement of this bridge would not result in an adverse effect to the historic property, although construction of the replacement structure could result in indirect impacts to the historic property. However, the project would include sympathetic design elements to maintain the continuity of the Euclid Avenue corridor over I-10 as outlined in the Project Conditions (see Section 3.1.8.4, Avoidance, Minimization, and/or Mitigation Measures), and adverse effects would be avoided.

Also under Alternative 3, the medians located between 7th Street and Caroline Court would be altered by further reducing their width. Alternative 3 would require approximately 0.48 acre of permanent impacts to medians (0.21 acre and 0.27 acre of median impacts in Upland and Ontario, respectively). These medians have previously been substantially altered and were not previously identified to be character-defining features of this historic property. Recognizing that change is expected on a principal arterial highway in an urban setting, the overall historic character, driving experience, and integrity would not be diminished. Minimal alteration to the medians would allow the historic property to continue to be used for its historic purpose, which is that of an arterial roadway. Additionally, the existing landscaping would be retained or replaced to the extent feasible. Therefore, the proposed modification of the medians would not alter in an adverse manner the physical features within the property's setting that contribute to its historic significance. The proposed project would improve vehicular circulation patterns, which would improve any potential visual, atmospheric, or audible elements that may result from queuing traffic and is considered a benefit.

A small portion of historic cobblestone curb would be removed under Alternative 3 on the east side of the Euclid Avenue median. Alternative 3 would require removal of approximately 470 linear feet of historic cobblestone curb (109 feet in Upland, located north of 7th Street, and 361 feet in Ontario, located south of E. Deodar Street). For the same reasons discussed above for the replacement structure and medians, removal of the historic curb would not result in an adverse effect. In addition, the curbs would be replaced in-kind as part of the project in accordance with the Project Conditions. Therefore, impacts to the historic stone curbs would not result in an adverse effect.

Construction of Alternative 3 would result in the removal of 26 trees, 9 of which are character-defining features of the historic property. The current total number of contributing trees within the historic property is unknown, but it is assumed to be almost 2,100. Removal of nine trees could be considered physical destruction to part of the property; however, compared to the totality of the extant of this character-defining feature, removal of such a small number of trees should not be considered as rising to the level of being considered adverse. In addition, all trees to be removed from the Euclid Avenue parkway and median would be replaced within the parkway or median in accordance with the Project Conditions. Therefore, impacts to character-defining trees would not rise to the level of being considered adverse.

In sum, project impacts to the small segment of Euclid Avenue within the APE are relatively small compared to the totality of the more than 8-mile-long historic property. While Alternative 3 would affect Euclid Avenue, the conditions imposed on the project would avoid adverse effects by replacing character-defining features in-kind (i.e., stone curbs and trees) and ensuring that the overall continuity of the Euclid Avenue corridor would be maintained.

Temporary/Construction Impacts

Because Section 106 of the NHPA analysis looks at the level of effect in totality and does not differentiate between permanent and temporary effects, both permanent and temporary impacts can lead to an adverse effect and are discussed together in the Permanent Impacts section above.

Resources Evaluated Relative to the Requirements of Section 4(f)

Only historic properties eligible for listing in the NRHP are subject to Section 4(f) determination. Table 3.1.8-3 provides a list of the five historic properties located within the project APE. Based on the Section 4(f) findings in Appendix B, Alternative 2 would not result in a Section 4(f) use of any of the historic properties within the APE. Alternative 3 would result in a *de minimis* finding for Euclid Avenue and no use to the remaining three historic architectural properties.

Table 3.1.8-3 Properties Listed in or Determined Eligible for Listing in the National Register of Historic Places

Property Name	Address/Location	Listed in the National Register of Historic Places?	Details
Euclid Avenue Historic District	From 24th Street in Upland to Philadelphia Street in Ontario, CA	Yes	Recorded as National Register Item #05000843 on August 10, 2005
The Curtis Homestead/ CA-SBR-12989(H)	Near Redlands Boulevard and Richardson Street Loma Linda, CA	Presumed Eligible	Assumed eligible for the National Register under Criterion D at a local level of significance
Mill Creek *Zanja*	Sylvan Boulevard E. to Mill Creek Road, Redlands, CA	Yes	Recorded as National Register Item #77000329 on May 12, 1977
1055 East Highland Avenue	1055 East Highland Avenue, Redlands, CA	Presumed Eligible	Assumed eligible for the National Register under Criterion C at a local level of significance
The Peppers/ El Carmelo	926 East Highland Avenue, Redlands, CA	Presumed Eligible	Assumed eligible for the National Register under Criterion C at a local level of significance

One historic archaeological site, The Curtis Homestead, is eligible for inclusion in the NRHP under Criterion D only. It does not warrant preservation in place; therefore, it is not considered a Section 4(f) historic site.

Note that the National Trail Systems Act (NTSA) specifically states that National Historic Trail components are exempt from Section 4(f) review *unless* there are elements within the APE for a given project that have been designated as high-potential sites or segments. As discussed above, there are no high-potential sites or segments within the APE for this project; therefore, for purposes of the current project, the OSNHT is not considered a Section 4(f) historic site.

3.1.8.4 Avoidance, Minimization, and/or Mitigation Measures

Pursuant to Section 106 of the NHPA, a finding of No Adverse Effect with Non-Standard Conditions is appropriate for the undertaking as a whole. Implementation of the following measures will avoid adverse effects to these historic properties:

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

CUL-2: If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to California PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the NAHC, which will then notify the MLD. At this time, the person who discovers the remains will contact the Caltrans District 8 Native American Coordinator so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

CUL-3: Design plans will be prepared and implemented for replacement of the Euclid Avenue/I-10 structure so that:

- The deck of the replacement structure will be landscaped in a manner consistent with the historic landscape design of Euclid Avenue to the north and the south of this bridge.
- The existing median width will be maintained to the extent feasible.

- Single or double tree line(s) will be recreated as feasible.
- Cobblestone curbs will be recreated on raised median planters
- Raised median walls with shallow-rooted trees depicted in Figure 5 in Appendix G of the FNAE will be constructed.
- The replacement structure shall be reviewed by the Caltrans PQS Architectural Historian to ensure compliance with Condition 1 during the design-build phase. If the minimum criteria established herein are not met, SHPO consultation will be required.

CUL-4: Plans for contributing tree replacement (Euclid Avenue) will be developed and implemented:

- All contributing trees required to be removed from the Euclid Avenue parkway and median will be replaced within the parkway or median. Trees to be removed and replaced are depicted in Figure 5 in Appendix G of the FNAE. Any additional contributing trees that are subsequently identified for removal during planning or construction will also be subject to this condition.
- Replacement locations of contributing trees will be decided on by the Caltrans PQS Architectural Historian in consultation with the Caltrans Landscape Design, San Bernardino County Transportation Authority (SBCTA), and the appropriate city (Ontario or Upland).
- The Euclid Avenue median between 6th Street and the new I-10 bridge structure, where most of the contributing trees are to be removed, will be replanted with a double row of California pepper trees to recreate the historic planting scheme of the median. Where space does not allow for a double row of trees (i.e., areas of reduced median width), a single row of trees will be planted. Decisions regarding the planting of median trees will be overseen by the Caltrans PQS Architectural Historian in consultation with Caltrans Landscape Design, SBCTA, and the appropriate city (Ontario or Upland).
- Planting activities shall be spot monitored by the Caltrans PQS architectural historian.

CUL-5: Final design plans that include replacement of stone curbs (Euclid Avenue) will be developed and implemented:

- All sections of contributing cobblestone curbs along Euclid Avenue/SR-83 removed by this undertaking will be replaced in-kind using the Secretary of the Interior's Standards (SOIS) for Rehabilitation based on plans provided and approved by the cities.
- Existing concrete median curbs that will be removed and replaced as part of this undertaking between 6th Street and the I-10 Overcrossing (OC) will be replaced/restored with cobblestone curb using the SOIS for Rehabilitation based on plans provided by the cities to recreate a continuous cobblestone curb along the entire section of median affected.
- Reconstruction of the stone curbs shall be spot monitored by the Caltrans PQS Architectural Historian.

CUL-6: Final design plans for replacement of streetlights (Euclid Avenue) will be developed and implemented:

- Historic period streetlights that are removed to enable construction will be replaced in-kind per the SOIS for Rehabilitation.

CUL-7: Final design plans for signs (Euclid Avenue) will be developed and implemented:

- National Register signs will be installed on Euclid Avenue.
- The Euclid Avenue Historic District rock monument sign will be installed to match other historic districts.

CUL-8: Monitoring

- A cultural resources monitoring plan will be developed, and it will be approved by the Caltrans PQS Architectural Historian prior to commencement of any construction-related activities at Euclid Avenue. The monitoring plan will, at a minimum, specify timeframes, locations, and durations of monitoring and specify requirements for monitoring logs.
- Upon completion of all construction related to the conditions in the FNAE, a Monitoring Report will be prepared to document that all conditions have been met. The monitoring report will be approved by the Caltrans PQS Architectural Historian and submitted to SHPO to document compliance with the FNAE conditions.
- Construction plans and activities in the vicinity of the remaining historic properties in the APE (Euclid Avenue/SR-83, the Mill

Creek *Zanja*, 1055 E. Highland Avenue, and the Peppers/El Carmelo) will be spot monitored by the Caltrans PQS.

CUL-9: Plans that designate and enforce ESA (Curtis Homestead) in accordance with the ESA Action Plan will be developed and implemented.

- Establishment of the ESA shall be executed by a qualified archaeologist.
- Enforcement of the ESA shall be spot monitored by a qualified archaeologist.

3.2 Physical Environment

3.2.1 Hydrology and Floodplains

This section describes the regulatory setting associated with hydrology and floodplains, the affected environment, the environmental consequences on hydrology and floodplains that would result from the project, and the minimization and/or mitigation measures that would reduce any potential impact.

3.2.1.1 Regulatory Setting

Executive Order (EO) 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. The Federal Highway Administration (FHWA) requirements for compliance are outlined in 23 *Code of Federal Regulations* (CFR) 650 Subpart A.

To comply, the following must be analyzed:

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

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

3.2.1.2 Affected Environment

This section is based on the *Location Hydraulic Study* (LHS) (December 2014) and the *Floodplain Evaluation Report* (December 2014). The study area includes the construction footprint, as described in Section 1.1, Introduction, and the Federal Emergency Management Agency (FEMA)-designated flood hazard areas located within the proposed project’s physical ground-disturbance footprint, as well as any areas where flood frequency, extent, and duration could be affected by the project. The proposed project traverses nine hydrologic subareas (HSAs) (i.e., Pomona [HSA 405.52], San Jose [HSA 405.51], Chino Split [HSA 481.21], Chino Split [HSA

801.21], Colton [HSA 801.44], Bunker Hill [HSA 801.52], Redlands [HSA 801.53], Reservoir [HSA 801.55], and Yucaipa [HSA 801.61]), which are described in Section 3.2.2, Water Quality and Stormwater Runoff.

In accordance with FEMA Flood Insurance Rate Maps (FIRMs), the following water bodies have been designated as flood hazard areas of varying degrees with San Sevaine Channel and Santa Ana River mapped as a floodway and the others mapped as floodplains. FEMA maps, located in Appendix A of the *Floodplain Evaluation Report*, display areas within the project that may have impact to some of the higher flood hazard zones such as A and AE. These flood hazards are described below.

West Cucamonga Creek – FIRM No. 06071C8609H

The existing West Cucamonga Creek carries flows from Ontario. The upstream end of the channel is located north of Church Street, from where it continues in a southerly direction to the infiltration basins north of State Route (SR) 60. The basin's outfall is Cucamonga Creek. A Zone AO flood hazard designation is shown adjacent to the westbound (WB) roadbed. The floodplain spreads to the N. Grove Avenue underpass, where it joins the Zone A designation south of Interstate 10 (I-10). There are no natural and beneficial uses for this floodplain, except for drainage conveyance.

Cucamonga Creek – FIRM No. 06071C8628H

The Cucamonga Creek watershed is located in San Bernardino County and Riverside County, and it includes portions of the cities of Chino, Ontario, Rancho Cucamonga, and Upland. The upstream reach of the Cucamonga Creek Channel originates at the Cucamonga Debris Basin, from where it continues in a southeasterly direction, having a confluence with a channel that brings flows from Thorpe Canyon Dam. From this confluence, the channel crosses SR-210, continuing for approximately 5 miles to the project area. The Deer Creek Channel is the largest tributary of Cucamonga Creek, where the confluence is located just south of the eastbound (EB) (right) I-10 bridge. From the confluence with the Deer Creek Channel, the Cucamonga Creek Channel continues to the south under LA/Ontario International Airport to the confluence with Lower Deer Creek, approximately 3.4 miles downstream. Downstream of this confluence, the channel continues south for approximately 3.8 miles where it discharges into Prado Basin. Adjacent to the I-10 crossing, the channel is designated as Zone A, with the 100-year discharge contained in the channel. There are no natural and beneficial uses for this floodplain, except for drainage conveyance.

Lower Deer Creek – FIRM No. 06071C8629H

Lower Deer Creek is located mainly in Ontario. The upstream reach begins at Turner Basins at the historical Deer Creek alignment. South of SR-60, the channel travels in a southwesterly direction. The open channel transitions to an underground system and back to an open channel several times before finally discharging to Cucamonga Creek near Schaefer Avenue. FEMA designates the channel and culvert as a Zone A flood hazard, and it appears the flows are contained in the channel. There are no natural and beneficial uses for this floodplain, except for drainage conveyance.

Cal Commerce Center Storm Drain – FIRM No. 06071C8629H

There is a strip of Zone AH floodplain just east of the Haven Avenue interchange along the WB roadway. The flooding is primarily due to the inadequate carrying capacity of the ditch that parallels I-10 and backwater effects by the culvert that conveys flows across the freeway. There are no natural and beneficial uses for this floodplain, except for drainage conveyance.

East Etiwanda Creek – FIRM No. 06071C8634H

The channel north and south of I-10 is designated as flood hazard Zone A. Much of the historical flow has now been diverted to San Sevaine Channel north of Foothill Boulevard. The remaining East Etiwanda Creek flow comes from a smaller tributary from Foothill Boulevard to the I-10 crossing. Beneficial uses for East Etiwanda Creek include groundwater recharge, industrial process supply, water contact recreation, non-contact water recreation, municipal and domestic water supply, wildlife habitat, and rare, threatened, or endangered species.

San Sevaine Channel – FIRM No. 06071C8634J

San Sevaine Channel conveys storm runoff from Rancho Cucamonga and Fontana and unincorporated areas of San Bernardino County. The channel discharges to the Santa Ana River in the City of Corona. The channels under I-10 consist of the San Sevaine Channel and I-10 Channel, with the confluence occurring just downstream of the Etiwanda Avenue EB on-ramp. The FIRM map indicates the channel is a designated floodway and flood hazard Zone AE, with the 100-year storm event contained in the channel. A preliminary revised FIRM map was issued February 1, 2014, to reflect current changes. Intermittent beneficial uses for San Sevaine Channel include municipal and domestic water supply, groundwater recharge, non-contact water recreation, cold freshwater habitat, and wildlife habitat.

I-10 Channel – FIRM No. 06071C8653H, 06071C8654H, and 06071C8658H

The I-10 Channel parallels I-10 on the north side. The high point of the channel is located approximately 300 feet east of Sierra Avenue and flows westerly, discharging into San Sevaine Channel. The channel conveys storm runoff from Rialto, Bloomington, and Fontana and unincorporated areas of San Bernardino County. The concrete trapezoidal channel varies in width from 12 to 50 feet and in depth from 3 to 9 feet. The City of Fontana's I-10 Channel Capacity Study Report determined the channel to be deficient to convey the 100-year peak discharges and recommends widening the channel. A portion of the channel has been improved recently as part of the Cherry Avenue interchange improvement project. There are two Zone A flood hazard designations for the I-10 Channel. The first area is located at the California Department of Transportation (Caltrans) maintenance property (old rest area) between Beech Avenue and Poplar Avenue. A field visit and topographic mapping indicate a sump area between the elevated section of I-10 and the I-10 Channel. Flows that overtop the channel would pond in the sump area. The second floodplain area is located between Sierra Avenue and the upstream end of the channel. The source of flooding appears to be runoff from an area north of I-10 and the backwater effect of the I-10 Channel. There are no natural and/or beneficial uses for the I-10 Channel and floodplain, except for drainage conveyance.

Colton Southwest Storm Drain – FIRM No. 06071C8679H

The area northwest of I-10 and the Burlington Northern Santa Fe (BNSF) Railroad is designated as Zone AH. The existing storm drain system under 5th Street (Pennsylvania Avenue) does not have the capacity to convey the 100-year storm event, causing shallow flooding induced by backwater effect and concentrated street flow. The FEMA floodplain delineation shows several single-family residences and businesses impacted by the floodplain. There are no natural and/or beneficial uses for this floodplain. It is determined that the proposed improvement would not significantly alter the floodplain.

11th Street Storm Drain – FIRM No. 06071C8679H

The floodplain is located along the 11th Street alignment south of I-10. There is a double pipe culvert crossing I-10 that outlets into an open channel. The open channel is designated as a floodway and Zone AE floodplain. There are no natural and/or beneficial uses for this floodplain, except for drainage conveyance.

Warm (Lytle) Creek – FIRM No. 06071C8683H (LOMR Effective November 15, 2010)

Warm Creek crosses I-10 just west of the Interstate 215 (I-215) interchange. Major tributaries, such as Lytle Creek and Cajon Creek, discharge to Warm Creek upstream of the project. Warm Creek confluences with the Santa Ana River approximately 0.25 mile downstream of I-10. Warm Creek is designated as Zone AE flood hazard with base flood elevation (BFE) determination. A Letter of Map Revision (LOMR) was published in November 2010 that revises the floodplain for Warm Creek and Lytle Creek. It also decreased the BFE from the previously published FIRM Map (August 28, 2008). Note that the FEMA map refers to Warm Creek as Lytle Creek at the I-10 crossing. The revised FIRM map shows some channel overflow upstream and downstream of the I-10 crossing; however, the 100-year event appears to be contained in the channel several miles upstream of I-10. This major river provides many beneficial uses for the area, such as water suppliers that draw from Lytle Creek and hydroelectric generation.

Santa Ana River – FIRM No. 06071C8683H

The Santa Ana River Bridge crossing is located west of the I-10/I-215 interchange. The Santa Ana River headwater originates at the base of the San Bernardino Mountains east of Highland, and the 96-mile-long journey ends in the Pacific Ocean at Huntington Beach. The river accepts flows from other large tributaries, including runoff from several cities, before crossing the project site. The Santa Ana River is a critical water resource for southern California, with many beneficial uses, such as water consumption, natural habitat for many species, and a major flood control conveyance. The Santa Ana River is designated as a floodway and Zone AE with BFE determination. The 100-year discharge is contained in the channel. Beneficial floodplain values for Santa Ana River, Reach 4, include groundwater recharge, water contact recreation, non-contact water recreation, warm freshwater habitat, and wildlife habitat.

San Timoteo Creek – FIRM No. 06071C8684H

The existing channel carries flow from a tributary area within Riverside and San Bernardino counties southeast of the project. The total drainage area of San Timoteo Creek at the Santa Ana River outfall is approximately 126 square miles. The creek begins at the confluence of Noble Creek and Little San Gorgonio Creek in Beaumont. The channel meanders through San Timoteo Canyon and Redlands and Loma Linda. The creek outlets into the Santa Ana River approximately 10 miles northwest of the I-10 crossing. Several streams discharge to San Timoteo Creek, including Yucaipa

Creek, the largest tributary. FEMA designates San Timoteo Creek as Zone A, with 100-year flows contained in concrete rectangular channel. Intermittent beneficial uses for San Timoteo Creek include groundwater recharge and wildlife habitat.

Mission Zanja Channel – FIRM No. 06071C8703H

FEMA designates the Mission Zanja Channel as Zone A downstream of I-10 and Zone AO adjacent to the channel and I-10, with the 100-year storm event flow overtopping the channel upstream of I-10, as shown in the FIRM. The flooding area extends upstream of the West Redlands Bridge (where the channel approaches I-10, turns west in a wide curve, and runs parallel to I-10 for approximately 1,500 feet) beyond Redlands Boulevard. The floodplain does not appear to encroach on the mainline roadbed, but the eastbound off-ramp embankment at Mountain View Avenue may be affected. There are no natural and/or beneficial uses for this floodplain, except for drainage conveyance.

The Zanja – FIRM No. 06071C8716H

The Zanja is a historical irrigation canal, which over several decades became a drainage conveyance. The Zanja's floodplain spreads throughout downtown Redlands and joins the Mission Zanja Channel east of California Street. The floodplain is bounded by the I-10 freeway embankments with a designation of Zone A along the main channel and Zone AO (depths of 1 to 2 feet) at the overbanks adjacent to I-10. The I-10 roadbed is elevated adjacent to the floodplain; therefore, flood inundation is concentrated along the toe of freeway embankment. There are no natural and/or beneficial uses for this floodplain, except for drainage conveyance.

3.2.1.3 Environmental Consequences

Permanent Impacts

No Build Alternative

Implementation of the No Build Alternative would not result in any floodplain encroachment.

Build Alternatives

The build alternatives would have similar potential impacts; therefore, they are combined here for analysis related to hydrology and floodplains.

The proposed project would impact several channels and drains and their floodplain at varying degrees; however, review of the National Flood Insurance Program (NFIP) maps, the field investigation, topographic mapping, and tributary drainages indicate that the proposed freeway widening would have very small to no significant impact on:

- Life and property;
- Interruption or termination of a transportation facility; or
- Natural and beneficial floodplain values.

The following sections discuss potential consequences in the context of 23 CFR 600.

The Practicability of Alternatives to any Longitudinal Encroachments

Table 3.2.1-1 identifies anticipated encroachments to floodplain areas. A portion of West Cucamonga Creek, Cucamonga Creek, Lower Deer Creek, East Etiwanda Creek, I-10 Channel, San Timoteo Creek, a portion of Mission Zanja Channel, and a portion of The Zanja fall within FEMA Flood Zone A. Zone A is described as areas with a 1 percent annual chance of flooding and a 26 percent chance of flooding over the life of a 30-year mortgage and corresponds to the 100-year floodplains that are determined in the Flood Insurance Study (FIS) by approximate methods. No BFEs or depths have been determined. San Sevaine Channel, 11th Street Storm Drain, Warm Creek, and Santa Ana River fall within Zone AE. Zone AE corresponds to the areas of 100-year floodplains that are determined in the FIS by detailed methods. In most instances, BFEs have been derived from detailed hydraulic analyses and are shown within this zone. Cal Commerce Center Storm Drain and the Colton Southwest Storm Drain fall within Zone AH. Zone AH corresponds to the areas of 100-year shallow flooding with a constant water surface elevation. Flood depths are 1 to 3 feet (usually areas of ponding); BFEs are derived from detailed hydraulic analyses and are shown at selected intervals within this zone. Portions of West Cucamonga Creek, Mission Zanja Channel, and The Zanja fall within Zone AO. Zone AO corresponds to the areas of 100-year shallow flooding. Average flood depths determined are 1 to 3 feet (usually sheet flow on sloping terrain). For areas of alluvial fan flooding, velocities are also determined.

Table 3.2.1-1 Potential Floodplain Encroachment Summary

Affected Floodplain/ Location	FIRM Zone	Type of Encroachment	Proposed Improvements
West Cucamonga Creek	AO/A	Transverse	No impacts are anticipated for Alternative 2. For Alternative 3, roadway widening, grading and construction of retaining walls; existing culvert crossings under I-10 would be protected in place.
Cucamonga Creek/Deer Creek	A	Transverse	No impacts are anticipated for Alternative 2. For Alternative 3, the existing bridges over Cucamonga Creek/Deer Creek would be widened. The existing pier wall in the channel would be removed and replaced to support the proposed superstructure.
Lower Deer Creek	A	Transverse	No impacts are anticipated for Alternative 2. For Alternative 3, the roadway would be widened to the north and south, which would require extension of the existing 14- by 5-foot reinforced concrete box (RCB) within the designated floodplain.
California Commerce Center Storm Drain	AH	Transverse	Both build alternatives propose to widen the roadway, which would require some grading within the floodplain. The storm drain would be protected in place.
East Etiwanda Creek	AH	Longitudinal and Transverse	Both build alternatives include roadway widening and grading of the embankments. Structural improvements include closure of the median gap between the EB and WB bridges and widening the Etiwanda Avenue EB off-ramp bridge to the south. The bridge widening would require extension of the rectangular reinforced concrete channel cross section into the natural channel, along with possible modifications to the upstream transition structure.
San Sevaine Channel	A	Transverse	Both build alternatives propose to widen the mainline and Etiwanda Avenue EB on-ramp bridges over the channel. The bridge widening would not impact the two rectangular reinforced concrete channel cross sections, except for removal and replacement of the existing walls that separate them.
I-10 Channel	A	Longitudinal	The build alternatives would require a portion of the existing channel be replaced with a box or pipe system to accommodate realignment of the Sierra Avenue WB on-ramp.
Colton Southwest Storm Drain	AH	Longitudinal and Transverse	Roadway widening, retaining wall construction, and bridge widening under both of the build alternatives.
11^{th} Street Storm Drain	AE	Transverse	For both build alternatives, widening of the existing EB roadway and realignment of the 9^{th} Street EB on-ramp would be required.
Warm Creek	AE	Longitudinal and Transverse	Widen the existing bridge over Warm Creek to accommodate additional lanes. For Alternative 3, pierwalls inside the channel would be extended by approximately 22 feet upstream and 20 feet downstream; seismic retrofit would also require thickening of the pier walls.

Table 3.2.1-1 Potential Floodplain Encroachment Summary

Affected Floodplain/ Location	FIRM Zone	Type of Encroachment	Proposed Improvements
Santa Ana River	AE	Transverse	Both build alternatives would require widening the I-10 bridges over the Santa Ana River to accommodate the additional lanes. For Alternative 3, pier walls would have to be extended approximately 26 feet upstream of the WB bridge, and the EB bridge would be widened 15 feet upstream and 7 feet downstream.
San Timoteo Creek	A	Transverse	Both build alternatives would require widening the existing mainline and Carnegie Drive WB on-ramp bridge; the center pier of the mainline bridge would be lengthened to accommodate the additional lanes. The pier nose would be removed and replaced on the south side (upstream). The WB on-ramp bridge widening would not impact the existing channel.
Mission Zanja	A/AO	Transverse	Widen the existing bridge by extending the abutments and adding pier walls at the top of channel for both build alternatives.
The Zanja	A/AO	Longitudinal and Transverse	Both build alternatives would require widening of the existing roadway.

Five of the 14 floodplain locations associated with the proposed project would result in longitudinal encroachments: East Etiwanda Creek, I-10 Channel, Colton Southwest Storm Drain, Warm Creek, and The Zanja. Overall, these longitudinal encroachments would mostly involve improvements within the existing freeway right-of-way (ROW) in an area already predominantly occupied by an active freeway facility. Table 3.2.1-1 identifies anticipated encroachments to floodplain areas. Proposed project improvements are not anticipated to impact the floodplain at West Cucamonga Creek, Cucamonga Creek, Lower Deer Creek, Cal Commerce Center Storm Drain, East Etiwanda Creek, San Sevaine Channel, I-10 Channel, Colton Southwest Storm Drain, 11th Street Storm Drain, or San Timoteo Creek. The *Preliminary Hydraulic Reports* for the Santa Ana River Bridge and Warm Creek Bridge indicate a negligible increase in water surface elevation upstream and downstream of the I-10 crossing; however, the proposed improvements will not significantly alter the floodplain and BFE. As such, the project would not result in a significant encroachment in the base floodplain areas at the aforementioned locations.

Risks of the Action

Table 3.2.1-2 summarizes the risks associated with implementation of the proposed project under Alternatives 2 and 3. Implementation of the proposed project would not create a high-risk condition. Risks of the actions associated with the build alternatives are low.

Table 3.2.1-2 Risks of the Action

Affected Floodplain/Location	Risk	
	Alternative 2	Alternative 3 (Preferred Alternative)
West Cucamonga Creek	Low	Low
Cucamonga Creek/Deer Creek	Low	Low
Lower Deer Creek	Low	Low
California Commerce Center Storm Drain	Low	Low
East Etiwanda Creek	Low	Low
San Sevaine Channel	Low	Low
I-10 Channel	Low	Low
Colton Southwest Storm Drain	Low	Low
11th Street Storm Drain	Low	Low
Warm Creek	Low	Low
Santa Ana River	Low	Low
San Timoteo Creek	Low	Low
Mission Zanja	Low	Low
The Zanja	Low	Low

Impacts on Natural and Beneficial Floodplain Values

According to the Santa Ana Regional Water Quality Control Board's (RWQCB) Basin Plan, only East Etiwanda Creek, San Sevaine Channel, Santa Ana River, and San Timoteo Creek have beneficial uses. Beneficial uses for East Etiwanda Creek include groundwater recharge, industrial process supply, water contact recreation, non-contact water recreation, municipal and domestic water supply, wildlife habitat, and rare, threatened, or endangered species. Intermittent beneficial uses for San Sevaine Channel include municipal and domestic water supply, groundwater recharge, non-contact water recreation, cold freshwater habitat, and wildlife habitat. Beneficial floodplain values for Santa Ana River, Reach 4, include groundwater recharge, water contact recreation, non-contact water recreation, warm freshwater habitat, and wildlife habitat. Intermittent beneficial uses for San Timoteo Creek include groundwater recharge and wildlife habitat. Implementation of the proposed project would have no material effect on natural and beneficial floodplain values.

Support of Incompatible Floodplain Development

The I-10 Corridor Project (I-10 CP) does not involve new highways that would foster incompatible developments within floodplains. Furthermore, it was determined that floodplain encroachments would not adversely affect the BFEs. Because the 100-year flood would still be contained within the existing floodplain boundaries at each location, there would be no increased risk to life or property associated with the proposed improvements. No additional roadways would flood upstream of the proposed project improvements; therefore, no transportation routes would be interrupted or terminated beyond existing conditions. The *Preliminary Hydraulic Report for Santa Ana River Bridge* indicates a negligible increase in water surface elevation upstream and downstream of the I-10 crossing. The proposed improvements would not significantly alter the floodplain and BFE.

Temporary/Construction Impacts

No Build Alternative

The No Build Alternative would not change the existing physical environment; therefore, the No Build Alternative would result in no temporary impacts to hydrology and floodplains.

Build Alternatives

During construction for any of the build alternatives, temporary impacts to hydrology and floodplains are not anticipated with inclusion of the measures described below.

3.2.1.4 Avoidance, Minimization, and/or Mitigation Measures

No Build Alternative

The No Build Alternative would not change the existing physical environment; therefore, no avoidance, minimization, and/or mitigation measures are necessary under the No Build Alternative.

Build Alternatives

The proposed project has been designed to minimize impacts, where possible, by taking reduced amounts of ROW and limiting the grading footprint to minimize impacts to existing structures while still meeting project objectives. The I-10 CP would discharge to lined channels. All transitions between culvert outlets, headwalls, wingwalls, and channels would be smoothed to reduce turbulence and scour. Where appropriate, energy dissipation devices would be utilized. Offsite runoff would be handled by allowing flows to pass under or around the proposed facility. Offsite flows would be managed using the existing drainage network and not inundate the roadway surface or overburden the existing drainage system. Measures will be implemented under the San Bernardino County Transportation Authority (SBCTA) and Caltrans oversight. Any changes would require SBCTA and Caltrans approvals. Measures for floodplain impacts include:

HYD-1: Positive drainage will be provided during construction, and the project will refrain from filling designated floodplains.

HYD-2: Recommended BMPs as identified in the Caltrans Storm Water Quality Handbooks, will be implemented during construction.

HYD-3: Erosion control and water quality protection will be implemented during in-river construction and post-construction as identified in the Caltrans Storm Water Quality Handbooks.

HYD-4: A contingency plan for unforeseen discovery of underground contaminants will be developed by the Contractor in the Stormwater Pollution Prevention Plan (SWPPP).

HYD-5: Construction activities will be limited between October and May to those actions that can adequately withstand high flows and entrainment of construction materials. The Contractor shall prepare a Rain Event Action Plan (REAP) and discuss high flows mitigation.

HYD-6: Adequate conveyance capacity at bridge crossings will be provided to ensure no net increase in velocity. A hydraulic analysis will be completed to assess existing and post hydraulic conditions.

3.2.2 Water Quality and Storm Water Runoff

This section describes the regulatory setting associated with water quality and storm water runoff; the affected environment for water quality and storm water runoff; the environmental consequences of the Interstate 10 Corridor Project (I-10 CP) on water quality that would result from the project; and the water quality control measures (i.e., Best Management Practices [BMPs]) that would minimize potential impacts. This section includes a range of topics related to water resources, including the regulatory setting, receiving water bodies, and water quality. Surface water resources are important for fish and wildlife habitat, urban and agricultural water supply, and conveying floodwaters. Groundwater is also an important source of urban and agricultural water supply.

3.2.2.1 Regulatory Setting

Federal Requirements: Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the U.S. from any point source[5] unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. This act and its amendments are known today as the Clean Water Act (CWA). Congress has amended the act 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. The following are important CWA sections:

- Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the U.S. to obtain certification from the state that the discharge would 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).

[5] A point source is any discrete conveyance such as a pipe or a man-made ditch.

- 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 goal 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: General and Standard 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 allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide permit may be permitted under one of USACE's Standard permits. There are two types of Standard permits: Individual permits and Letters of Permission. 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 (EPA *Code of Federal Regulations* [CFR] 40 Part 230), and whether the permit approval is in the public interest. The Section 404(b)(1) Guidelines (Guidelines) were developed by 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 that 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 lesser 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 has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent[6] 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 USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4. A discussion of the LEDPA determination, if any, for this document is included in Section 3.3.2, Wetlands and Other Waters.

[6] EPA defines "effluent" as "wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall."

State Requirements: 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 about water quality standards in a project area are included 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. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters 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-point source controls (NPDES permits or WDRs), 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.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers 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.

The I-10 CP spans multiple Hydrologic Units under the jurisdiction of the Los Angeles and Santa Ana RWQCBs. As such, it would be subject to water quality controls that pertain to the receiving water bodies and tributaries of those water bodies. Many beneficial uses have been identified in the Los Angeles RWQCB Basin Plan (1994) and the Santa Ana RWQCB Basin Plan (1995).

National Pollution Discharge Elimination System Program

Municipal Separate Storm Sewer Systems. Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of storm water discharges, including MS4s. An MS4 is defined 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 is designed or used for collecting or conveying storm water." The SWRCB has identified the California Department of Transportation (Caltrans) as an owner/operator of an MS4 under federal regulations. The Caltrans MS4 permit covers all Caltrans rights-of-way (ROW), properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for 5 years, and permit requirements remain active until a new permit has been adopted.

The Caltrans MS4 Permit (Order No, 2012-0011-DWQ) was adopted on September 19, 2012, and it became effective on July 1, 2013. The permit has three basic requirements:

1. Caltrans must comply with the requirements of the Construction General Permit (see below);
2. Caltrans must implement a year-round program in all parts of the state to effectively control storm water and non-storm water discharges; and
3. Caltrans storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) BMPs, to the Maximum Extent Practicable (MEP), and other measures as the SWRCB determines to be necessary to meet the water quality standards.

To comply with the permit, Caltrans 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 Caltrans 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 Caltrans 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.

The Los Angeles RWQCB and the Santa Ana RWQCB have issued NPDES permits to the County of Los Angeles and the County of San Bernardino to prohibit non-storm water discharges and to reduce pollutants in discharges to the MEP to maintain and/or attain water quality objectives (WQOs) that are protective of beneficial uses or receiving waters (Order No. R4-2012-0175, NPDES No. CAS004001 and R8-2010-0036, NPDES No. CAS618036). Provisions of these permits require the implementation of SWMPs to address storm water runoff quality. The SWMP provides guidance to Caltrans divisions of Construction, Maintenance, and Traffic Operations staff on how to comply with the requirements of NPDES Permits. In general, the SWMP outlines the procedures and practices used to reduce or eliminate the discharge of pollutants to storm drain systems and receiving waters by implementing BMPs.

Construction General Permit. Construction General Permit (Order No. 2009-009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ), which was adopted on September 2, 2009, became effective on July 1, 2010. The permit regulates storm water discharges from construction sites that result in a Disturbed Soil Area (DSA) of 1 acre 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 result in soil disturbance of at least 1 acre must comply with the provisions of the Construction General Permit. Construction activity that results in soil disturbances of less than 1 acre 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 (SWPPPs); to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and they 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 before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective SWPPP. In accordance with Caltrans' Standard Specifications, a Water Pollution Control Program (WPCP) is necessary for projects with DSA less than 1 acre.

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 U.S. must obtain a 401 Water Quality Certification, which certifies that the project would be in compliance with state water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits 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 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.

California Department of Fish and Wildlife Section 1602 Streambed Alteration Agreement

Section 1602 of the California Department of Fish and Wildlife (CDFW) Code requires a Streambed Alteration Agreement for any alteration to the bank or bed of a stream or lake or for any activity that substantially diverts or obstructs the natural flow of any river, stream, or lake. Further coordination with CDFW regarding potential project impacts is required, and a Section 1602 Streambed Alteration Agreement may be necessary for this project. As applicable, a Section 1602 Streambed Alteration Agreement would be obtained for the project prior to construction.

3.2.2.2 Affected Environment

Analysis in this section is based on the *Water Quality Assessment Report* (May 2015) technical study prepared for the project.

General Setting

The project is located within the San Gabriel River and Santa Ana River (SAR) hydrologic units, and in the hydrologic subareas (HSAs) identified in Table 3.2.2-1 as identified by the Caltrans Water Quality Planning Tool. These HSAs cover approximately 377,084 acres or 589 square miles. Receiving water bodies within the project limits are identified in Table 3.2.2-2.

Table 3.2.2-1 I-10 Corridor Project Receiving Hydrologic Units Hydrologic Subareas

Hydrologic Unit	Hydrologic Area	Hydrologic Subarea #	Hydrologic Subarea Name
San Gabriel River	Spadra	405.52	Pomona
San Gabriel River	Spadra	405.51	San Jose
Santa Ana River	Middle Santa Ana River	481.21	Chino (Split)
Santa Ana River	Middle Santa Ana River	801.21	Chino (Split)
Santa Ana River	Colton-Rialto	801.44	Colton
Santa Ana River	Upper Santa Ana River	801.52	Bunker Hill
Santa Ana River	Upper Santa Ana River	801.53	Redlands
Santa Ana River	Upper Santa Ana River	801.55	Reservoir
Santa Ana River	San Timoteo	801.61	Yucaipa

Table 3.2.2-2 I-10 Corridor Project Receiving Water Bodies

Project Receiving Water Body	
Day Creek Channel	San Jose Creek Reach 2 (Temple to I-10 at White Avenue)
Etiwanda Wash	Montclair Storm Drain
Etiwanda Channel	West Cucamonga Channel
San Sevaine Channel	Cucamonga Channel
I-10 Channel	Deer Creek Channel
Rialto Channel	Speedway Storm Drain
Warm Creek	Marigold Storm Drain
Santa Ana River (SAR, Reach 4)	Randall Storm Drain
San Timoteo Creek	Rancho Avenue Storm Drain
Gage Canal	Colton Northwest Storm Drain
Mission Channel	Warm Creek Levee
Zanja Creek	Wilson Creek
Cucamonga Creek Reach 1 (Valley Reach)	Wildwood Creek
San Antonio Creek	

As required by the Porter-Cologne Act, the Los Angeles and Santa Ana RWQCBs have established WQOs for waters within their jurisdiction to protect the beneficial uses of those waters and published them in their Basin Plan. The designated beneficial uses for receiving waters within the project corridor are displayed in Table 3.2.2-3.

Table 3.2.2-3 Beneficial Uses of Receiving Waters within Project Corridor

RWQCB	Inland Surface Stream	MUN	AGR	GWR	IND	PROC	REC1	REC2	WARM	LWRM	COLD	WILD	RARE
Los Angeles	San Jose Creek Reach 2 (Temple Avenue to Thompson Wash)	•		I					I			•	
Santa Ana	Etiwanda Wash (East Etiwanda Creek)	•		•		•	•	•			•	•	•
	Day Creek (Day Creek Channel)	•		•		•	•	•			•	•	
	Deer Creek Channel (Deer)	I		I			I	I			I	I	
	San Sevaine Channel (San Sevaine)	I		I			I	I			I	I	
	Santa Ana River, Reach 4	+		•			•*	•	•			•	
	San Timoteo Creek (Reach 1A – Santa Ana River Confluence to Barton Road)	+	I**				I*	I	I			I	
	San Timoteo Creek (Reach 1B – Barton Road to Gage at San Timoteo Canyon)	+	I**	I			I*	I	I			I	
	Cucamonga Creek Reach 1 - Confluence with Mill Creek to 23rd Street in Upland	+			•		•*	•	•			•	
	San Antonio Creek	•	•	•	•	•	•	•			•	•	

• Present or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from Municipal and Domestic Supply
* Access prohibited in some portions by San Bernardino County Flood Control District
** Intermittent Beneficial Use
Beneficial Use Definitions: MUN (Municipal and Domestic Supply); AGR (Agricultural Supply); IND (Industrial Service Supply); PROC (Industrial Process Supply); GWR (Groundwater Recharge); REC1 (Water Contact Recreation); REC2 (Non-Contact Water Recreation); WARM (Warm Freshwater Habitat); LWRM (Limited Warm Freshwater Habitat); COLD (Cold Freshwater Habitat); WILD (Wildlife Habitat); RARE (Rare, Threatened or Endangered Species).

To protect water quality, the Los Angeles RWQCB and Santa Ana RWQCB have established WQOs for inland surface waters. Water bodies that do not meet the WQOs are considered "impaired" under Section 303(d) of the CWA. Table 3.2.2-4 summarizes these water bodies by watershed and lists the impairments and established TMDLs per the 2010 Integrated Report (CWA Section 303[d] List/305[b] Report) and the Caltrans Water Quality Planning Tool[7].

Table 3.2.2-4 Impaired Waters

Watershed	Water Body	Impairment	Source	Size (miles)	TMDL Status
Upper Santa Ana River	Santa Ana River Reach 4	Pathogens	Nonpoint	14.8	Required
Chino Creek	San Antonio Creek	pH	Unknown	23.29	Required
San Jose Creek	San Jose Creek Reach 2 (Temple to I-10 at White Avenue)	Coliform Bacteria	Point and Nonpoint Source	17.27	Required
Chino Creek	Cucamonga Creek Reach 1	Cadmium	Unknown	9.57	Required
		Coliform Bacteria	Unknown Point Source	9.57	Being addressed by an EPA-approved TMDL
		Copper	Unknown	9.57	Required
		Lead	Unknown	9.57	Required
		Zinc	Unknown	9.57	Required

The project area rests above the Upper Santa Ana Valley groundwater basin and crosses the Chino, Riverside Arlington, Rialto-Colton, Bunker Hill, Yucaipa, and San Timoteo sub-basins. Depth to groundwater for some of the areas within the project corridor ranges from 50 to 100 feet below ground surface. Variations in groundwater depth may be due to seasonal groundwater fluctuations, weather conditions, surface runoff, and other factors.

Groundwater is a source of domestic water supply in Los Angeles and San Bernardino counties. For example, Los Angeles County relies on groundwater and water imported through the State Water Project and the Colorado River Aqueduct. San Bernardino County relies on a combination of groundwater resources, local streams, reservoirs, and imported water from the State Water Project. Contributions to local groundwater recharge are accomplished by spreading grounds and spreading

[7] http://svctenvims.dot.ca.gov/wqpt/wqpt.aspx.

basins located within the San Bernardino Basin Area, the Rialto-Colton Sub-basin, and the Bunker Hill Sub-basin.

Groundwater is generally deep along the project corridor. Regional studies[8] indicate groundwater is approximately 500 feet deep in the western segment of the project area. The groundwater becomes more shallow, ranging from approximately 100 to 200 feet, in the Pepper-Rancho area and reaches depths as shallow as approximately 10 feet at the Santa Ana River wash. During the winter and spring rainy seasons, the Santa Ana River wash and other waterways in the project study area may be filled with flowing water. The depth to groundwater remains shallow eastward to approximately the Waterman Avenue area, and then it gradually deepens to 75 to 100 feet from Richardson Street to the Redlands area. At the eastern end of the project, the water becomes shallower again and is approximately 50 feet deep at Highland Avenue.

The Santa Ana RWQCB and Los Angeles RWQCB have established WQOs for groundwater in terms of bacteria, chemical constituents, pH, radioactivity, taste and odor, and toxicity. Beneficial uses for groundwater for the Los Angeles and Santa Ana RWQCBs jurisdictions are designated in their Basin Plans. Beneficial uses for groundwater in the groundwater management zones within the Los Angeles RWQCB and Santa Ana RWQCB areas are (1) Municipal and Domestic Supply; (2) Agriculture Supply; (3) Industrial Service Supply; and (4) Industrial Process Supply.

Existing Water Quality

Regional Water Quality

The following sections summarize SWRCB's Surface Water Ambient Monitoring Program (SWAMP) activities conducted within the hydrologic units applicable to the I-10 CP.

The Santa Ana RWQCB conducted a 6-year study (2006 – 2011) of the waterways within the SAR watershed (Surface Water Ambient Monitoring Program 2014). The purpose of the study was to determine the integrity of surface waters by sampling the biological (i.e., benthic macroinvertebrates), physical (i.e., in-stream habitat, surrounding riparian habitats), and chemical attributes. During the 2011

[8] Regional studies include: *Fife, D.L., D.A. Rodgers, G.W. Chase, R.H. Chapman, and E.C. Sprotte, 1976, Geologic Hazards in Southwestern San Bernardino County, California: California Division of Mines and Geology, Special Report 113, 40 p.* and *Matti, J.E. and S.E. Carson, 1991, Liquefaction Hazards in the San Bernardino Valley and Vicinity, Southern California – a Regional Evaluation: U.S. Geological Survey, Bulletin 1898, 53 p.*

bioassessment sampling events, benthic macroinvertebrates were identified from 45 locations. Of the 45 locations, 2 are close to the I-10 corridor, as indicated in Table 3.2.2-5.

Table 3.2.2-5 Santa Ana River Watershed Sampling Sites

SWAMP Code	Stream Name	RWQCB Juris-diction	Latitude NAD 83	Longitude NAD 83	Distance from I-10 Corridor	Elevation (meters)	Collection Date
801RB8566	Cucamonga Creek	Santa Ana	33.99743	-117.59924	5 miles south	216	6/15/11
801RB8629	San Timoteo	Santa Ana	33.95681	-117.0647	2 miles southwest	650	7/14/11

Biological assessments provide a more familiar representation of the ecological health of a particular location. Locations can then be ranked by values and classified into qualitative categories of “very good,” “good,” “fair,” “poor,” and “very poor.” This system of ranking and categorizing biological conditions is referred to as an Index of Biotic Integrity (IBI). Water chemistry, IBI metrics, and the overall rating for the two locations within the SAR Watershed are provided in the *Water Quality Assessment Report* developed for the I-10 CP. To summarize, the overall rating for Cucamonga Creek and San Timoteo Creek was “Poor.”

The Los Angeles County Department of Public Works monitors the water quality of all watersheds within its jurisdiction in accordance with the Municipal Storm Water Permit. All available data and monitoring locations were reviewed to determine if any monitoring data was available near the project limits. The closest monitoring station is approximately 20 miles west of the project and is displayed in Table 3.2.2-6.

Table 3.2.2-6 Los Angeles County Department of Public Works Monitoring Station

Watershed Management Area	Monitoring Station	RWQCB Jurisdiction
San Gabriel River	S14	Los Angeles

A summary of constituents that did not meet applicable WQOs at the San Gabriel River mass emission station during the 2012-2013 Wet Weather Monitoring Season are presented in Appendix F of the *Water Quality Assessment Report* developed for this project and are summarized in a narrative form in the following sections.

Water Quality Constituents

E. coli concentrations were above the WQOs during all five storm events monitored for bacteria. During wet weather high-flow periods, the San Gabriel River is subject to a suspension of the REC-1 beneficial use (i.e., water contact recreation – full immersion). As a result of this suspension, two of the five wet weather events during the 2012-2013 Wet Weather Monitoring Season did not meet the *E. coli* WQO. Cyanide concentrations were above the WQO during one storm event at the San Gabriel River during the 2012-2013 Monitoring Season. pH was not within the WQO range for one of the five wet weather samples collected at the San Gabriel River. The water sample collected during one event during the same 2012-2013 monitoring season had a pH value slightly above the upper limit of the WQO range. The dissolved copper concentration was above the hardness-based WQO for two of the five wet weather samples from the San Gabriel River. The dissolved zinc concentration was above the hardness-based WQO for one of the five wet weather samples from the San Gabriel River. All other applicable WQOs in the San Gabriel River were met during the 2012-2013 wet weather monitoring season.

Characterization of Storm Water Runoff

Water column toxicity monitoring was performed at the San Gabriel mass emission station. Two wet weather samples were analyzed for toxicity; dry weather samples could not be collected due to absence of flow. At the San Gabriel River, the toxicity unit (TU) was greater than one. A TU value greater than or equal to one is considered substantially toxic and requires a Phase I Toxicity Identification Evaluation (TIE). The TIE includes a set of site-specific procedures used to identify the specific chemical(s) causing the toxicity. It was determined that the initial toxicity may have been caused by volatile compounds that dissipated to nontoxic levels prior to the baseline TIE; therefore, the TIE was not initiated.

Caltrans has conducted runoff monitoring and characterization studies from a range of transportation facilities throughout California. As part of their runoff and characterization monitoring studies, Caltrans identified pollutants that were discharged from Caltrans facilities with a load or concentration that commonly exceeded allowable standards and were still considered treatable by currently available Caltrans-approved Treatment BMPs. These pollutants, designated as targeted design constituents (TDCs), include sediment; metals (i.e., total and dissolved fractions of zinc, lead, and copper); nitrogen (e.g., ammonia); phosphorus; and general metals. Of the chemical impairments and established TMDLs associated with receiving water bodies within the proposed project's corridor, cadmium, copper, lead, and zinc are considered TDCs; therefore, they are treatable by Caltrans-approved Treatment BMPs.[9] During the construction phase, Temporary Construction Site BMPs would be implemented to treat storm water and non-storm water discharges to the MEP standard; therefore, runoff from the construction area would not likely create any surface water quality impacts. During the operational phase, runoff from the proposed project corridor would be conveyed to Caltrans-approved Treatment BMPs, would be treated to the MEP, and would not likely create any surface water quality impacts. Caltrans-approved Treatment BMPs[13] and Temporary Construction Site BMPs are considered project design features and are discussed in the *Water Quality Assessment Report* prepared for this project.

3.2.2.3 Environmental Consequences

Common to All Build Alternatives

Under the build alternatives, the project would increase the impervious surface area and potentially increase storm water runoff by construction of the 33-mile-long segment of I-10 in San Bernardino County from the Los Angeles/San Bernardino (LA/SB) county line to Ford Street in Redlands (see Table 3.2.2-7). Alternative 2 increases the total impervious surface area by 6.9 percent compared to Alternative 3 at 14.4 percent.

Table 3.2.2-7 Changes in Impervious Surface Area

Build Alternative	Existing Impervious Area (acres)	Disturbed Soil Area (DSA) (acres)	Increase in Impervious Area (acres)/Percent Increase	Total Proposed Impervious Area (acres)
Alternative 2	741	346	51/6.9	792
Alternative 3 (Preferred Alternative)	971	661	140/14.4	1,111

Source: Developed from the Water Quality Assessment Report, 2014.

Temporary Surface Water Impacts (Short-Term Impacts during Construction)

The total DSA for the proposed project is estimated to be 346 acres for Alternative 2 and 661 acres for Alternative 3 (Table 3.2.2-7). Runoff generated during construction activities could contribute pollutants to receiving water if appropriate construction

9 Caltrans-approved Treatment BMPs include biofiltration systems, infiltration devices, detention devices, dry weather flow diversions, gross solid removal devices, multi-chambered treatment trains, wet basins, traction sand traps, and media filters.

BMPs are **not** implemented. Pollutants that could be generated by construction activities include vehicle fluids (i.e., oils, grease, and coolant), concrete and masonry products, landscaping-related products, and excavation materials. Some pollutants can lead to turbidity (i.e., cloudiness), which blocks light transmission and penetration, reduces oxygen levels, affects the food chain, and creates changes in water temperature. During construction, soil-disturbance activities include earth-moving activities such as excavation, trenching, soil compaction and moving, cut and fill activities, and grading. Disturbed soils are susceptible to high rates of erosion from wind and rain and can result in sediment transport via storm water runoff. Pollutants in storm water could also cause chemical degradation and aquatic toxicity in the receiving waters, adversely affecting the survival of plant and animal species, their populations, and the ecosystem structure.

By following guidelines and regulations established by the NPDES for the proposed project, which includes the Caltrans statewide permit (Order No, 2012-0011-DWQ, NPDES No. CAS000003) and compliance with WDRs for storm water discharges under orders R4-2012-0175, NPDES No. CAS004001 and R8-2010-0036, NPDES No. CAS618036 administered by the Los Angeles RWQCB (Los Angeles County) and Santa Ana RWQCB (San Bernardino County), and with implementation of Temporary Construction Site BMPs, the effects to water quality from construction of the proposed project would be minimized to the MEP. A SWPPP would be prepared and implemented under the State's NPDES General Permit for Discharges Associated with Construction Site Activities (Order No. 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ). The SWPPP would identify Temporary Construction Site BMPs to minimize erosion and sedimentation, and ensure the proper handling and storage of materials that may have the potential to affect water quality. Examples of typical Temporary Construction Site BMPs include hydroseeding, fiber rolls, drain inlet protection, construction entrances, and waterproof storage containers.

A Risk Level Determination was performed for each of the planning watersheds that the project crosses and was calculated using the project's Erosivity Factor (R-Factor), Soils K-Factor, Length Slope Factor, and Receiving Water Risk Factor. The analysis showed that the combined risk level for each planning watershed was Risk Level 2, which requires the discharger to comply with the requirements included in Attachment D of the Construction General Permit.

With implementation of the minimization measures listed in Section 3.2.2.4, water quality and storm runoff construction impacts would be minimized to the MEP.

Permanent Surface Water Impacts (Long-Term Impacts during Operation)

Operation of the I-10 CP has the potential to affect water quality. Potential pollutant sources associated with operation of the proposed project include motor vehicles, highway maintenance, illegal dumping, spills, and landscaping care. Table 3.2.2-8 displays potential pollutant sources, along with their associated pollutant, associated with transportation infrastructure operations.

Table 3.2.2-8 Infrastructure Operation and Associated Pollutants

Pollutant Source	Pollutants
Motor Vehicles	Oil Grease Petroleum Coolants Nitrite Metals
Highway Maintenance	Asphalt Sediment Mineralized Organic Matter Thermoplastics Treated Wood Tree/Shrub Clippings
Landscaping	Aluminum Sulfate Sulfur-elemental Fertilizers – Inorganic and Organic Natural Earth (sand, gravel and topsoil) Herbicide Pesticide Lime
Illegal Dumping	Trash Oil/Grease
Spills	Hazardous and non-hazardous chemicals

Source: Developed from the Water Quality Assessment Report, 2014.

During the preliminary design phase of the project, Treatment BMPs would be assessed to determine their applicability to the proposed project based on identified site-specific pollutants, project design features, and site conditions, including available ROW. The applicability of all nine Caltrans-approved Treatment BMPs (i.e., infiltration devices, biofiltration devices, dry weather diversion, detention devices, gross solids removal devices, traction sand traps, media filters, multi-chambered treatment trains, and wet basins) would be finalized at various locations throughout the alignment during the design-build phase. With the implementation of Treatment BMPs, Design Pollution Prevention BMPs, and Maintenance BMPs, the effects to water quality associated with operation of the proposed project would be minimized to the MEP.

Pollutants generated from transportation facilities that commonly exceed standards and are considered treatable by one or more of the nine Caltrans-approved Treatment BMPs listed above are identified as “TDCs.” Such constituents include sediment, metals (e.g., total and dissolved fractions of zinc, lead, and copper), nitrogen (including ammonia), phosphorus, and general metals. Pollutants generated by the I-10 CP may exceed the WQOs for the surface water bodies within the project area. Implementing Caltrans-approved Treatment BMPs would help reduce runoff, pollutants and reduce potential adverse impacts to surface waters and groundwater.

Temporary Groundwater Impacts (Short-Term Impacts during Construction)

Pile driving, dewatering, and construction activities could encounter groundwater. While piles and foundations may reduce the storage capacity of the underlying groundwater, the displaced volume would not be great compared to the total volume of the groundwater basin. The volume of water used for construction, dust control, and other uses would be minimal; therefore, construction activities would not deplete groundwater supplies, nor would they interfere with groundwater recharge. If construction activities require dewatering, the project would comply with the Los Angeles RWQCB’s Dewatering Permit, which is identified as Order No. R4-2013-0095 (NPDES No. CAG994004), and/or the Santa Ana RWQCB’s Dewatering Permit, which is identified as Order No. R8-2005-0041 (NPDES No. CAG998001).

Permanent Groundwater Impacts (Long-Term Impacts during Operation)

During the operational phase, the addition of impervious surfaces as a result of implementation of the build alternatives would not interfere with groundwater recharge because the proposed project area is not located in an area used by local water districts for aquifer recharge. Recharge to the sub-basins is predominantly accomplished at spreading grounds located outside of the proposed project area. The use of infiltration BMPs would contribute to the recharge of the affected sub-basins.

3.2.2.4 Avoidance, Minimization, and/or Mitigation Measures

Measures will be implemented under San Bernardino County Transportation Authority (SBCTA) and Caltrans oversight. Any changes would require SBCTA and Caltrans approvals.

WQ-1: **Implement Storm Water BMPs.** The project will comply with the requirements of the NPDES Permit for Construction Activities, Order No. 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ, NPDES No. CAS000002, as well as implementation of the BMPs specified in the Caltrans SWMP.

WQ-2: **Discharge of Construction Water.** If dewatering is expected, the Contractor shall fully conform to the requirements specified in the Los Angeles RWQCB Order R4-2013-0095 (NPDES No. CAG994004) (if dewatering occurs in Los Angeles) or the Santa Ana RWQCB's dewatering permit Order R8-2005-0041 (NPDES No. CAG998001).

WQ-3: **Implement Treatment BMPs.** The project will conform to the requirements of the Caltrans Statewide NPDES Storm Water Permit, Order No. 2012-0011-DWQ, NPDES No. CAS000003, adopted by the SWRCB on September 19, 2012, and any subsequent permit in effect at the time of project operation.

WQ-4: **Comply with Local Jurisdiction Requirements.** The project will comply with Los Angeles County and San Bernardino County conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution associated with street and road construction, as appropriate. These conditions and approvals are referenced in the WDRs associated with the MS4 permits per Order No. R4-2012-0175 for the coastal watersheds of Los Angeles County (NPDES Permit No. CAS004001) and Order No. R8-2010-0036 (NPDES No. CAS618036) for the County of San Bernardino and the incorporated cities of the County of San Bernardino.

WQ-5: **Implement Erosion Control Plan.** Slopes steeper than 4:1 require an Erosion Control Plan that will need to be approved by the Caltrans District Landscape Architect.

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3.2.3 Geology/Soils/Seismic/Topography

This section of the environmental document references findings from the California Department of Transportation (Caltrans) *Preliminary Geotechnical Report* (April 2015).

3.2.3.1 Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects “outstanding examples of major geological features.” Topographic and geologic features are also protected under the California Environmental Quality Act (CEQA).

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Caltrans’ Office of Earthquake Engineering is responsible for assessing the seismic hazard for Caltrans projects. Structures are designed using the Caltrans’ Seismic Design Criteria (SDC). The SDC provides the minimum seismic requirements for highway bridges designed in California. A bridge’s category and classification will determine its seismic performance level and which methods are used for estimating the seismic demands and structural capabilities. For more information, please see the Caltrans Division of Engineering Services, Office of Earthquake Engineering, SDC.

3.2.3.2 Affected Environment

Topography

The I-10 Corridor Project (I-10 CP) area traverses the central part of the Upper Santa Ana River plain. The native ground surface along the corridor is flat to very gently undulating. The freeway roadway across this terrain is a mixture of shallow excavated cuts and low embankment fills constructed to form a relatively flat roadway. Elevations in the western end of the corridor are approximately 1,000 feet, and these elevations are maintained from the west end to approximately Riverside Avenue, where a series of rounded, linear, north-south trending ridges and swales cross the corridor. These ridges are present to approximately the Warm Creek Bridge. Warm Creek and the adjacent Santa Ana River pass under Interstate 10 (I-10) in channels that are approximately 20 to 30 feet below the general level of the plain. East of the Santa Ana River, in the Colton area, elevations rise gently to the Redlands area, where elevations culminate at approximately 1,400 feet. As the I-10 corridor turns southeast through Redlands, elevations raise more abruptly, and at Ford Avenue, the eastern end of the project, elevations are approximately 1,700 feet.

Physiography

The project corridor traverses the Upper Santa Ana River Valley from the Ontario area to the Redlands area. The Upper Santa Ana River Valley is a relatively flat plain that slopes gently southerly from the San Gabriel Mountains within the Western Transverse Ranges physiographic province in the north, to the Perris Highlands (Perris Block) and the Crafton Hills of the Peninsular Ranges physiographic province on the south. The Upper Santa Ana River Valley is bounded by the Puente/Chino Hills and San Jose Hills on the west and by the San Bernardino Mountains on the east. There are a few hills scattered across the Upper Santa Ana River plain; these include Red Hill in the northwest, the Norco Hills in the southwest, and the Jurupa Hills in the south-central area. The nearest hill to the project is Slover Mountain, just south of the corridor between Pepper and Rancho streets. The natural height of Slover Mountain has been reduced substantially due to mining.

The major river in the province is the Santa Ana River, which flows westerly from the San Bernardino Mountains along the southern margin of the Upper Santa Ana River Valley. Major tributaries to the Santa Ana River are Lytle Creek and Cajon Wash, which flow from the north; Warm Creek, which flows from the San Bernardino Mountains in the east; San Antonio Creek, which flows south from the San Gabriel Mountains; and San Timoteo Creek, which flows from the south. Other smaller intermittent creeks flow into the Upper Santa Ana River from all of the surrounding hills and mountains. Most of the natural stream and river channels have been modified to confine flow within concrete and rip-lined aqueducts.

Stratigraphy

The surficial materials along the I-10 CP consist of Quaternary alluvial sediments. In the west, the sediments consist of predominantly alluvial fan deposits of sand and gravel, with some areas of wind-blown sands that form a veneer over alluvial deposits. Just east of the Interstate 15 (I-15) interchange, the sediments comprise alluvial fan deposits with local patches of older alluvium that form a series of north-south trending linear ridges. The deposits in the channels of Warm Creek and the Santa Ana River are generally loose sands and gravels deposited on a broad floodplain. East of the Santa Ana River, the surficial deposits are young stream-channel and fan alluvium. At Redlands, the surficial materials are generally dense, old alluvium that has been strongly oxidized to reddish-brown colors, hence the name Redlands.

In general, the alluvial deposits along the project corridor consist of loose to compact sand and gravel, except for the old alluvium in the Redlands area, which comprises dense to slightly indurated, clay-rich sands with gravel stringers.

The alluvium is underlain by crystalline igneous and metamorphic rocks generally assumed to be Mesozoic age. The alluvium is approximately 1,100 feet thick in the west near Haven Avenue and gradually thins to approximately 900 feet at Sierra Avenue. Alluvium thins easterly from there to approximately 200 feet thick between Pepper Avenue and Rancho Avenue near Slover Mountain in the Colton area. Near the Rancho Avenue overcrossing, the alluvium abruptly thickens to 500 to 600 feet at a groundwater barrier. The thickness of alluvium increases to more than 800 feet at the Interstate 215 (I-215) interchange, where it crosses several groundwater barriers and increases to 1,000 feet at Richardson Street. The Quaternary alluvium east of I-215 may be underlain by Pliocene-age deposits of the San Timoteo Formation. The thickness remains approximately 1,000 feet to California Street, and then it thins gradually to 600 feet at the Interstate 210 (I-210) (State Route [SR] 30) interchange. The thickness then varies from 600 to 800 feet to the end of the project corridor at Ford Street.

The thickness of alluvium and depth to basement rocks increases considerably east of the I-215 interchange. In contrast to the basement rocks to the west, which are primarily igneous rocks, the basement rock in the area to the east is generally Mesozoic metamorphic rocks of Pelona Schist.

Geologic Structure

The major earthquake fault crossing the project corridor is the San Jacinto Fault, which trends northwest-southeast across the corridor near the I-215 interchange (see Figure 3.2.3-1). Geophysical data indicate a broad rupture zone extending from west of the Santa Ana River to the Loma Linda area. This faulted zone includes the Rialto-Colton Fault, the San Jacinto Fault, and the Loma Linda Fault, as well as several branches and splays of these faults. The Rialto-Colton Fault trends northwesterly away from the San Jacinto Fault and crosses the project corridor near Mt. Vernon Avenue (see Figure 3.2.3-1). Geophysical data indicate that it is a major basement fault, but there is little surface evidence for the feature to indicate that it has been highly active in late Quaternary time.

The geophysical investigations indicate that there are other faults in the area, but the data are not adequate to allow reliable correlations between geophysical lines. Lineaments associated with active surface faults were discovered to the north near the Shandin Hills that project to the southeast and coincide with the geophysical faults and has suggested the possibility of a significant fault in the central San Bernardino Valley that would cross the project corridor near Waterman Avenue.

No geologic structures are known to be associated with the Fontana seismic zone, but the area has not been investigated in detail.

A major zone of east-west trending faults, the Crafton Hills fault zone, occurs at the eastern part of the project area (see Figure 3.2.3-1). The Crafton Hills fault zone comprises several normal type faults. These include from north to south, the Redlands Fault, Reservoir Canyon Fault, Yucaipa Fault, and Chicken Hill Fault. The Redlands Fault crosses the project area near Highland Avenue, but the others are south of the project.

Geologic Hazards

The shallow groundwater, along with the abundance of young cohesionless alluvium within the Santa Ana River Wash, led to classification of the area as having a high to moderately high susceptibility for liquefaction during a large earthquake. The susceptibility is low along most of the rest of the project corridor, except perhaps near the small drainages that cross the corridor (e.g., Day Creek, Etiwanda Creek, San Antonio Creek).

Seismicity

The site is in seismically active southern California, and the project area is near the boundary between the Pacific and the North American tectonic plates. The principal faults of the plate boundary are the San Andreas and San Jacinto fault zones. Seismicity maps indicate several dense clusters of earthquakes in the Urban Search and Rescue (USAR) Valley region, as well as more widely distributed events throughout the region. The main clusters occur: (1) along the southern margin of the San Gabriel Mountains; (2) along the San Jacinto Fault in the southern end of the Upper Santa Ana River Valley; (3) near the Shandin Hills; (4) in the Fontana Plain; and (5) in the Crafton Hills area.

A seismicity map of instrumentally recorded earthquakes within the project region is provided in Figure 3.2.3-2. The approximate locations of pre-instrumentally located events that occurred in the years of 1923 and 1899 are included on this seismicity map. It should be noted that the report erroneously gave the date of the 1899 event as 1918. An instrumentally located event that occurred in 1998 near the junction of the San Jacinto Fault and the Crafton Hills Fault is also shown on this seismicity map.

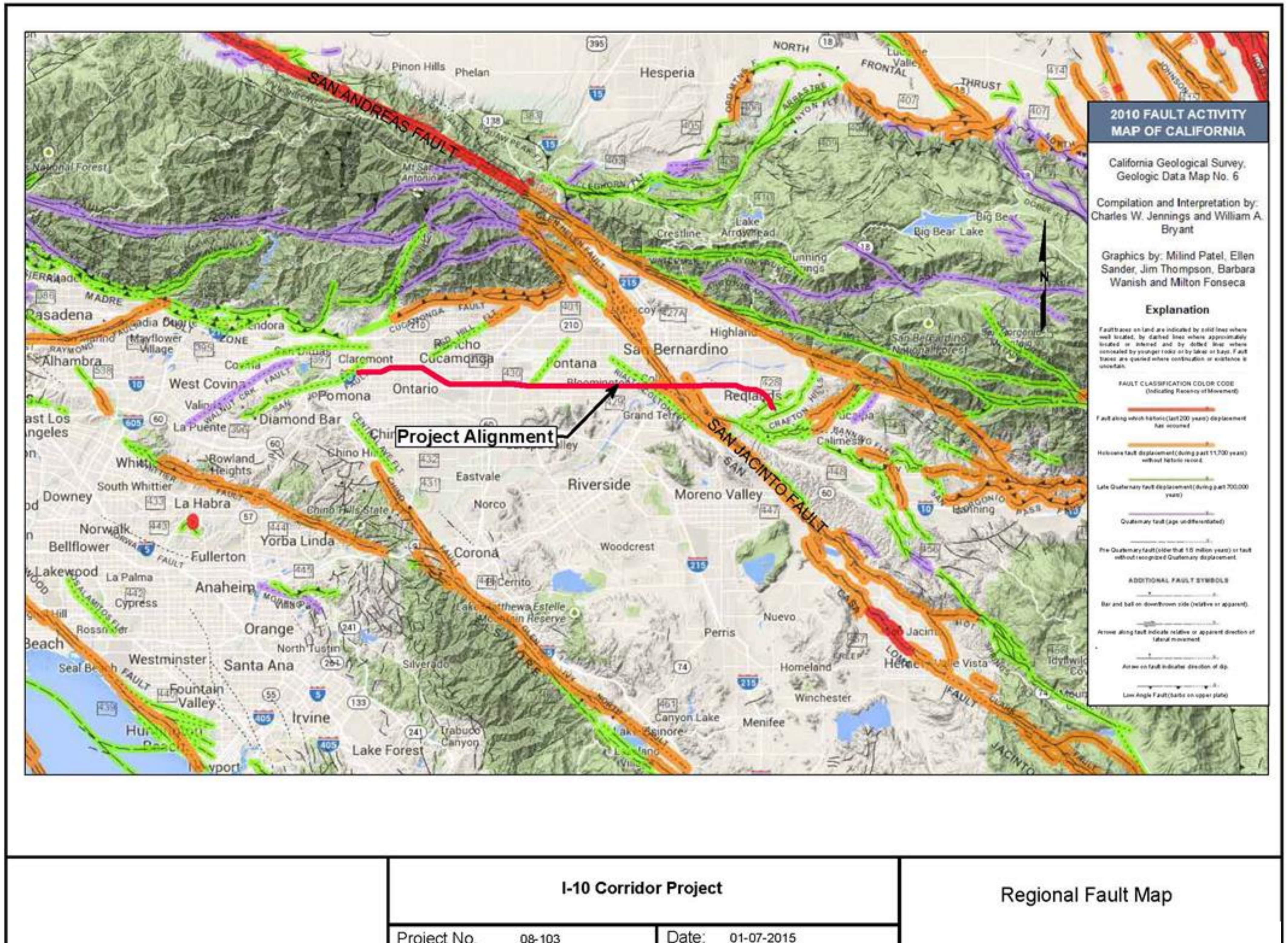

Figure 3.2.3-1 Regional Fault Map

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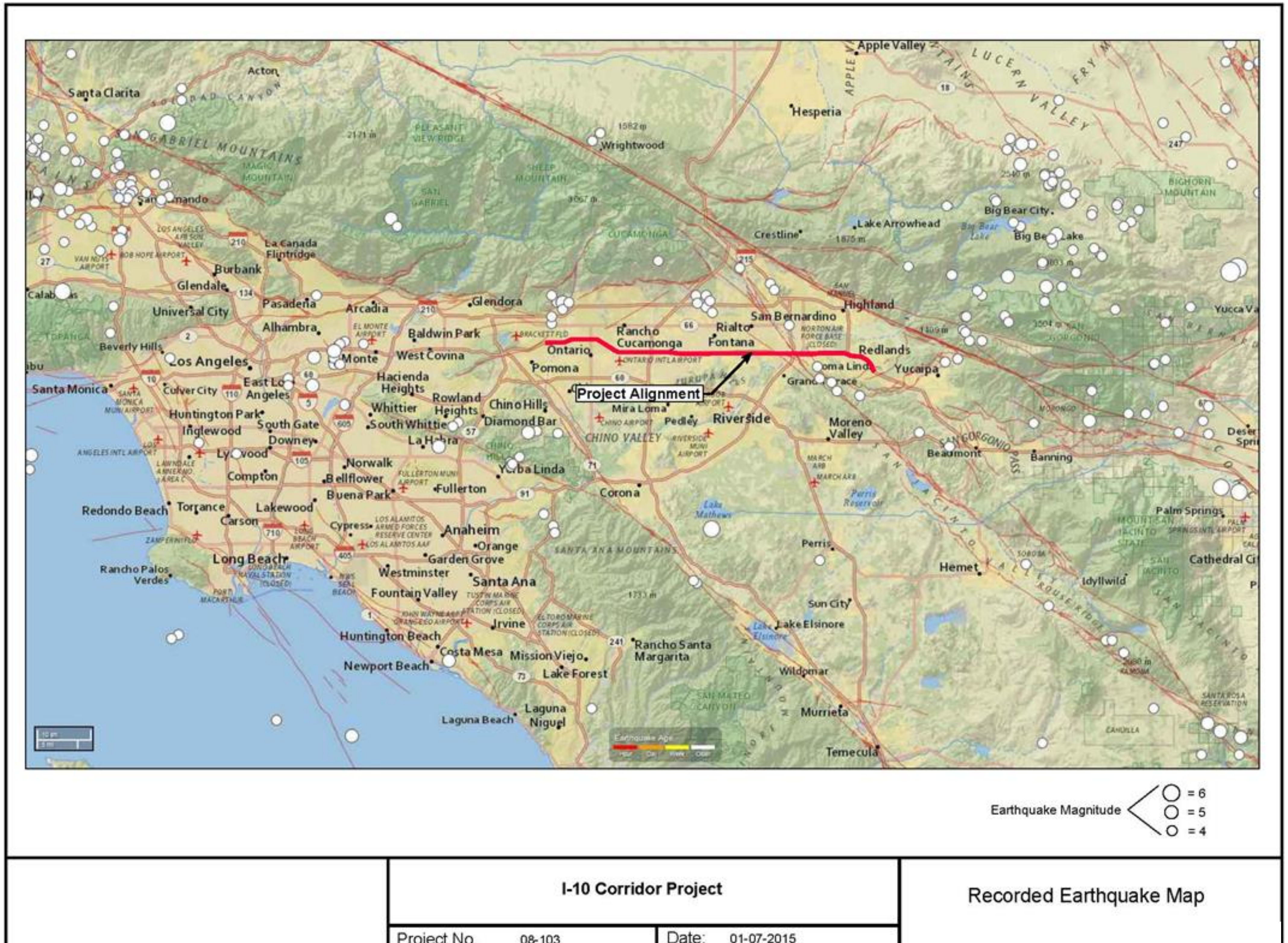

Figure 3.2.3-2: Recorded Earthquake Map

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The largest historical earthquakes in the region have occurred along the San Jacinto Fault. During historical times, the San Jacinto Fault system may have produced more earthquakes than any other fault in southern California. Since about 1890, as many as 11 earthquakes in the magnitude 6 to 7 range have occurred on the San Jacinto Fault. One of the largest earthquakes appears to have been the 1918 event on the San Bernardino Valley segment that had a magnitude of approximately M ~ 6.8. An earthquake of similar magnitude (M = 6.3) occurred in 1923 at the southern end of the valley.

A small earthquake (M = 4.5) occurred near the eastern end of the project area in 1998. Although the event was small, it is notable because it yielded a normal-fault focal mechanism, and it may have been associated with the Crafton Hills Fault system where it intersects the San Jacinto Fault.

The Fontana seismic zone crosses the project corridor between approximately Etiwanda Avenue and Citrus Avenue. This zone comprises a dense cluster of earthquakes, but they are small events (M less than 5). Many of the events are shallow (2 to 3 miles), but there are many deep events (greater than 10 miles) suggesting that the seismic zone is related to basement-involved tectonic activity.

Ground Motions

Several nearby faults are capable of generating relatively significant ground motions within the project area. These faults are listed in Table 3.2.3-1.

Table 3.2.3-1 Summary of Nearby Faults

Fault Name	Style of Fault [1]	Maximum Magnitude (M)
San Jose Fault	SS	6.6
Redhill-Etiwanda Avenue Fault	Rev	6.2
Fontana Fault (Seismicity)	SS	6.5
San Jacinto Fault (San Bernardino)	SS	7.7
San Jacinto Fault (San Bernardino Valley Section)	SS	7.7
Crafton Hills Fault	N	6.4
San Andreas Fault (San Bernardino S)	SS	7.9
[1] XX : Unknown; SS: Strike-Slip; Rev: Reverse; N: Normal		

To calculate Peak Ground Acceleration (PGA) for liquefaction evaluation and slope stability analysis, acceleration response spectrum (ARS) curves were developed using

Caltrans ARS online in accordance with the 2013 SDC and Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations procedures. The design PGA is the ground acceleration at a spectral period of zero second.

The following response spectra were considered. The design ARS curve is the envelope of the following spectra:

- Deterministic Spectrum based on late-Quaternary faults in the 2012 fault database (Caltrans, 2012b; Merriam, 2012).
- Probabilistic Spectrum based on 5 percent in 50 years probability of exceedance ground motion.
- Minimum Deterministic Spectrum based on an Mw = 6.5 strike-slip event occurring at a distance of 7.5 miles from the site.

Results generated by Caltrans ARS Online were verified using the Caltrans Deterministic Response Spectrum Spreadsheet and Probabilistic Response Spectrum Spreadsheet. These spreadsheets were used following the procedures outlined in Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations.

Results obtained from the deterministic spreadsheet and the Caltrans ARS Online were compared, and the discrepancy was found to be less than 10 percent; therefore, in accordance with Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations, the deterministic ARS curve developed using the Caltrans ARS Online is acceptable for design.

Spectral acceleration values for the probabilistic response spectrum were calculated using the United States Geological Survey (USGS) Interactive Deaggregation Tool (USGS, 2008) for the periods of 0, 0.3, 1.0, and 3.0 seconds. Results obtained from the Caltrans ARS Online and USGS Interactive Deaggregation Tool were compared in the Caltrans Probabilistic Response Spectrum Spreadsheet, and the discrepancy was found to be less than 10 percent; therefore, in accordance with Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations, the probabilistic ARS curve developed using the Caltrans ARS Online is acceptable for design.

Using the subsurface information obtained from the available as-built Log of Test Boring (LOTB) sheets, small-strain shear wave velocities (Vs^{30}) were calculated for each structure listed in Section 5.1 using the SPT correlations (Caltrans, 2012c). Preliminary design ARS curves were developed for the calculated Vs^{30} values. The design PGA is the ground acceleration at a spectral period of zero second. The calculated PGA for the bridge locations within this project limit are provided in Table 3.2.3-2. The maximum and minimum estimated PGA values are 0.899 and 0.632g. The estimated higher PGA values are for structures located at the eastern part of the project corridor (between Rialto Channel RCB Bridge and Redlands Boulevard Westbound [WB] Off-Ramp Undercrossing [UC]), and they ranged from 0.780 to 0.899g.

Table 3.2.3-2 Summary of PGA Estimates

Post Mile	Structure Name	Bridge No.	Calculated PGA
0	Mills Ave UC	54-0453	0.741
0.32	San Antonio Wash Bridge	54-0451	0.738
0.68	Monte Vista Ave UC	54-0450	0.735
1.23	Central Ave UC	54-1186	0.725
1.75	Benson Ave UC	54-0448	0.719
2.37	Mountain Ave UC	54-1187	0.737
2.92	San Antonio Ave OC	54-0446	0.724
3.47	Euclid Ave OC (Route 83/10 Sep)	54-0445	0.703
3.75	Sultana Ave OC	54-0444	0.699
4.02	Campus Ave OC	54-0443	0.704
4.33	6th St OC	54-0442	0.693
4.7	West Cucamonga Channel	54-1117	0.683
4.88	Grove Ave UC	54-0441	0.680
5.24	4th St UC	54-0440	0.653
6.1	Vineyard Ave OC	54-0439	0.637
6.7	Cucamonga Wash Bridge (L/R)	54-0438L/R	0.644
6.8	Holt Blvd Off-Ramp UC (Lt)	54-0437L	0.641
8.16	Haven Ave OC (L/R)	54-1201L/R	0.649
8.16	Haven Ave OC (Rt)	54-0560R	0.649
9.17	Milliken Ave OC	54-0539	0.632
9.98	W10-S15 Bridge over Day Canyon	54-0914F	0.632
10.12	W10-N15 Bridge over Day Canyon	54-0927F	0.642
10.13	Day Canyon Channel Bridge	54-0351	0.643
10.99	Etiwanda Wash Bridge (L/R)	54-0378L/R	0.649

Table 3.2.3-2 Summary of PGA Estimates

Post Mile	Structure Name	Bridge No.	Calculated PGA
10.99	Etiwanda Wash Bridge (EB Off-Ramp)	54-0378S	0.649
11.5	Valley Blvd EB Off-Ramp UC (Lt)	54-0030L/R	0.661
11.64	Etiwanda-San Sevaine Channel (L/R)	54-0454L/R	0.661
11.64	Etiwanda-San Sevaine Channel (EB On-Ramp)	54-0454S	0.661
11.74	Kaiser Spur OH	54-0416	0.661
19.9	Rialto Channel RCB Bridge	54-1116	0.780
21.46	Slover Mountain UP	54-0835	0.782
21.96	Rancho Ave OC	54-0817	0.826
22.36	Colton OH (R/L)	54-0464R/L	0.835
22.62	La Cadena Dr UC	54-0462	0.864
22.62	La Cadena Dr EB Off-Ramp UC	54-0462S	0.864
22.71	9th St UC	54-0461	0.866
23.6	Warm Creek Bridge (L/R)	54-0830L/R	0.845
23.82	Santa Ana River Bridge (R/L)	54-0292R/L	0.888
24.76	Hunts Ln UC	54-0601	0.896
25.26	Waterman Ave UC	54-0600	0.852
25.54	San Timoteo Creek	54-0599	0.855
26.27	Tippecanoe Ave UC	54-0598	0.899
26.81	Richardson St OC	54-0597	0.847
27.3	Mountain View Ave UC	54-0596	0.870
27.64	West Redlands OH/Mission Channel	54-0570	0.870
28.3	California St UC	54-0595	0.860
28.8	Nevada St UC	54-0594	0.835
29.82	Tennessee St OC	54-0592	0.860
30.38	Texas St UC	54-0583	0.892
33.13	Ford St UC	54-0588	0.856
33.29	Redlands Blvd WB Off-Ramp UC	54-0589	0.821

Ground Rupture

There have been no ground ruptures related to faulting in the project area in historical time. Trenching studies in the Santa Ana River wash near Hunts Lane found evidence of young (Holocene) faulting along the San Jacinto Fault, indicating a potential for surface ruptures. Aerial photographs indicate that the latest surface ruptures of the San Jacinto Fault extend under the embankment fill of the northbound connector to

I-215 from westbound I-10. The California Geological Survey has established an Alquist-Priolo Earthquake Fault Zone along the surface trace of the latest rupture of the San Jacinto Fault, but this zone does not include much of the deformed area indicated by the geophysical data.

A large, east-west trending, surface escarpment represents the Redlands Fault near Highland Avenue in Redlands. The height of the feature (more than 100 feet) indicates a long history of multiple surface ruptures in Quaternary time, but actual ages of that faulting have never been determined. The fault is believed to be a normal fault with the north side faulted down relative to the south side.

Subsurface Soil Conditions

In general, the upper subsurface materials along the project corridor consist of loose to medium dense sand, sand with silt, and silty sand. The consistency usually increases with depth, and occasional interbedded silt and clay layers and scattered gravel were also encountered. Materials at deeper depths along the project corridor are generally dense to very dense sand, sand with silt, and silty sand with trace to significant amounts of gravel. In addition, some pebbles and cobbles were also encountered within the depths explored.

The above soil descriptions are general and are intended to describe the subsurface in very broad terms. The soil descriptions above should not be construed to indicate that the subsurface profile is uniform and that soil is homogeneous within the project corridor. Soil type and consistency at locations of proposed improvements will be verified by performing additional site-specific exploratory borings during the design-build phase of the project.

Groundwater

Groundwater is generally deep along the project corridor. Regional studies indicate groundwater is approximately 500 feet deep in the western part of the project area. The groundwater becomes shallower to approximately 100 to 200 feet in the Pepper-Rancho area and reaches depths as shallow as approximately 10 feet at the Santa Ana River wash. During the winter and spring rainy seasons, the river bed may be filled with flowing water. The depth to groundwater remains shallow eastward to approximately the Waterman Avenue area, and then gradually deepens to 75 to 100 feet from Richardson Street to the Redlands area. At the eastern end of the project, the water becomes shallower again and is approximately 50 feet deep at Highland Avenue.

Soil Corrosivity

Corrosion test results are not available; therefore, the corrosion potential of onsite soils is not known. A site-specific corrosion study will be performed later during the design-build phase, and mitigation measures will be recommended if the site soils are found to be corrosive to concrete or steel. Clay soils have a higher tendency to be corrosive, whereas sands and silts tend to be noncorrosive.

According to the Caltrans Corrosion Guidelines (2012d), soils are considered corrosive if the pH is 5.5 or less, or chloride content is 500 parts per million (ppm) or greater, or sulfate content is 2,000 ppm or greater.

3.2.3.3 Environmental Consequences

Permanent Impacts

No Build Alternative

Under the No Build Alternative, there would be no change to the freeway configuration and no improvements to interchanges; therefore, there would be no permanent impacts as a result.

Build Alternatives

Liquefaction Potential and Seismically Induced Settlement

Liquefaction occurs when a saturated or semisaturated soil loses strength and stiffness due to seismic activity or a sudden change in stress condition, causing soil to behave like a liquid. Structures built on these soils are susceptible to settlement or damage during seismic activity, such as earthquakes. Primary factors influencing liquefaction potential include groundwater elevation, soil type and grain-size distribution, relative density of soil, initial confining pressure, and intensity and duration of ground shaking.

Based on the Preliminary Geotechnical Report, five bridges (Warm Creek Bridge, Santa Ana River Bridge, Waterman Avenue UC, San Timoteo Creek, and San Timoteo Creek On-Ramp Bridges) are founded on a potentially liquefiable site, which could potentially lead to seismic-induced settlement. For these five bridges, seismic-induced settlement was calculated, and the maximum extent of settlement was determined to be approximately 3 inches.

The liquefaction potential and resulting seismically induced settlement should be confirmed during the design-build phase using site-specific subsurface data. Areas with a potential for high liquefaction during a seismic event would be designed to meet current design standards for both Caltrans and the cities adjacent to the project corridor to minimize liquefaction hazards. The current risks associated with liquefaction at the interchange area would remain the same as existing conditions if any of the proposed build alternatives were constructed; therefore, the proposed build alternatives would not have the potential to introduce new liquefaction-related hazards.

Seismicity

Although the proposed project site is located in seismically active southern California, it is within an existing transportation corridor. The project would be designed to meet current corridor cities' and Caltrans' design standards to minimize geologic and seismic hazards. No structures would be constructed that would increase the current risk of loss, injury, or death as a result of ground shaking or other seismically induced effects. The proposed project would not increase the risk of exposing people or structures to potential substantial adverse effects because of seismic activities or seismic-related ground failure beyond the existing level already present with the current freeway configuration.

Measures GEO-1 through GEO-14, as well as best management practices (BMPs) related to erosion control identified in Section 3.2.2, Water Quality and Storm Water Runoff, have been incorporated to ensure that the project is designed to minimize any potential long-term operational hazards due to ground motion, liquefaction, and load-bearing concerns related to seismic activities.

Embankment Settlement

The project involves constructing new earthen embankments for median lanes and widening existing embankments to create new alignments and configurations. The proposed embankments are anticipated to be up to approximately 30 feet high.

Because the subsurface soils are predominantly granular, the soils are not expected to undergo large consolidation settlement (i.e., settlement over long periods of time); however, the soils can undergo "immediate" elastic settlement, which usually occurs during earthwork activities and shortly thereafter. For new embankments and the proposed widening of existing embankments, total settlement estimates are summarized in Table 3.2.3-3. Linear interpolation can be used for settlements of other embankment heights within the tabulated range.

Table 3.2.3-3 Summary of Total Settlement Estimates

Embankment Height (feet)	Approximate Total Settlement (inches)
3	0.75
5	1.1
10	1.8
15	2.3
20	2.8
25	3.2
30	3.6

Earth Retaining Structures

Cantilevered retaining walls are proposed at various locations throughout the project, including along the on- and off-ramps. Retaining walls are proposed to be standard Caltrans retaining walls, such as Type 1 and Type 7 retaining wall types per Caltrans Standard Plans, or other special-design types, such as mechanically stabilized earth (MSE) walls, soil nail walls, and ground anchor walls (i.e., tie-back walls). Final wall types will be investigated during the design-build phase. Based on the subsurface information shown on the available as-built LOTB sheets, spread footings are suitable for supporting standard Caltrans retaining walls with heights equal to or less than 20 feet. Pile foundation might be required to support taller retaining walls. Remedial earthwork below the proposed spreading footings to remove loose near-surface soils should be anticipated; remedial overexcavations will most likely be less than 3 feet. To understand the underlying geologic formations of these sites, geotechnical borings will be conducted prior to construction.

Alternative 2

Ground Rupture

A fault rupture investigation, including aerial photos interpretation and field verification using geophysical survey and/or trenching, was conducted in 2009 as part of the I-10 High-Occupancy Vehicle (HOV) Lane Addition Project. The study area covered in the 2009 fault rupture investigation is consistent with the I-10 CP Build Alternative 2 project limits. The results of this fault rupture investigation were provided in a separate report, which was reviewed and approved by Caltrans (2010). As indicated in this report, fault rupture investigation was originally recommended at the following locations to evaluate the presence of active faulting:

- Rancho Avenue Overcrossing (OC) (54-0817)
- Warm Creek Bridge (54-830R/L)
- Santa Ana River Bridge (54-0929R/L)
- Santa Ana River (55-0292G)
- Richardson Street OC (54-0597)
- Highland Avenue UC (54-0587R/L).

Later, Caltrans concluded that only Warm Creek Bridge and Highland Avenue UC require a special study, and no further work is warranted for the remaining four structures.[13] Based on the detailed geophysical investigations conducted at the Highland Avenue structure, it was concluded that although there were some possible geophysical anomalies at the Highland Avenue site, these features did not project through the overcrossing or its abutments, so no further investigations were done at the site. Geophysical data and trenching study at the Warm Creek site indicated that the fault projects well south of the Warm Creek Bridge; therefore, it was concluded that there is little potential for fault rupture at the Warm Creek Bridge.

Alternative 3 (Preferred Alternative)

Ground Rupture

For Alternative 3, where the western limit of the I-10 HOV Project was extended from near Haven Avenue to the Los Angeles/San Bernardino (LA/SB) county line, the proposed structures located within this western extension portion do not fall within an Alquist-Priolo Earthquake Fault Zone or within 1,000 feet of an unzoned fault that is Holocene or younger in age. As a result, further fault studies are not needed per Caltrans Memo to Designer 20-10.

Temporary/Construction Impacts

No Build Alternative

There would be no change to the existing conditions under the No Build Alternative; therefore, there would be no temporary impacts as a result.

Build Alternatives

Liquefaction Potential and Seismically Induced Settlement

Liquefaction potential of subsurface soils is low, and seismically induced settlement is expected to be negligible based on the absence of shallow groundwater in this project area and the dense to very dense nature of the onsite soils at deeper depths.

[13] Memorandum to Mahmoud Khojasteh, Office of Geotechnical Design South 2, from Martha Merriam, P.G. C.E.G., Geotechnical Support, Caltrans. June 9, 2008.

Seismicity

The native ground surface along the corridor is flat to very gently undulating. There are no natural slopes in the project area, and the site is not in a mapped landslide hazard zone. Potential for seismic-induced slope failures in the project area is not anticipated.

Groundwater

As previously noted, groundwater is generally deep along the project corridor. Excavation activities near the Santa Ana River wash, where groundwater reaches depths as shallow as approximately 10 feet, are likely to encounter soft soils and the permanent groundwater table. Deeper open excavations in this area may require dewatering.

Soil Expansion

Onsite soils are expected to have an expansion potential varying from nonexpansive to very low; however, there may be localized, discontinuous clayey sand and sandy lean clay soils, which can exhibit expansion potential ranging from low to medium.

Soil Erosion

In general, the erosion potential of soils is expected to be minor to moderate considering the provisions for site drainage, slope planting, and other measures required by Caltrans. To minimize potential erosion, all finish slopes should be planted as soon as practical after grading.

Material Disposal

According to the civil designer, import material will most likely be required to achieve proposed grades; therefore, disposal of onsite soils is not anticipated (from a geotechnical standpoint).

3.2.3.4 Avoidance, Minimization, and/or Mitigation Measures

GEO-1: In accordance with standard Caltrans requirements, detailed geotechnical studies shall be conducted during the design-build phase. If results of these studies find high potential for seismic slope instability or lateral spreading, additional measures will be incorporated for new structures associated with the project, including bridges, embankments, and retaining walls. Resulting recommendations from the detailed studies shall be incorporated into the project plans during the PS&E phase to address seismic safety, liquefaction, and load-bearing concerns present in the project area.

GEO-2: Selection of earth-retaining system types will be based on consideration of foundation bearing capacity, anticipated settlement and ability of the system to tolerate settlements, overall slope stability, constructability, and cost.

GEO-3: Corrosion mitigation for steel and concrete structures will generally follow Caltrans Corrosion Guidelines (2003 or latest). The latest Caltrans Highway Design Manual (HDM) (Section 855) provides corrosion requirements for roadway structures (e.g., culverts, signs) for a 50-year design life.

GEO-4: A Materials Report will be developed in the early stage of the design-build phase. The report shall include the results of field tests and sampling for corrosion for use in recommending culvert materials and concrete mix designs. Sampling and testing shall be performed in accordance with Caltrans Corrosion Guidelines (2003 or latest).

GEO-5: If corrosive soils are found near foundations of bridges and walls, reinforced concrete (including piles) will include corrosion mitigation in accordance with Bridge Design Specifications, Article 8.22; when steel piles are specified, sacrificial corrosion allowance is required per Caltrans Corrosion Guidelines.

GEO-6: Earthwork shall be conducted in accordance with Sections 6 and 19 of the latest Caltrans Standard Specifications:

- Consideration of existing utilities in the area must be incorporated into project plans.
- In areas where compacted fill will be placed, removal of compressible surficial materials, including topsoil, loose or soft alluvium or fill soil, dry or saturated soil, and unsuitable fill, is required prior to fill placement.
- A minimum overexcavation of 2 feet is recommended within areas to receive fill; the overexcavation shall extend horizontally a minimum distance of 2 feet from edges of new fills or structures.
- Fill placed on sloping ground shall be properly keyed and benched into existing ground and placed as specified in Section 19-6 of the Caltrans Standard Specifications.

- Overexcavations shall be observed by qualified geotechnical personnel to verify that firm and unyielding bottoms are exposed.
- Overexcavated areas shall be cleaned of loose soils and debris and should be observed to be firm and unyielding before receiving fill.
- These onsite materials can be excavated using conventional heavy-duty earth-moving equipment, and the materials are not expected to pose a rippability problem.

GEO-7: Monitoring during construction shall be done by a licensed geologist and engineer to ensure that the construction site was properly characterized by the geotechnical studies and that the project design is in compliance with geotechnical and seismic safety standards and practices included in the design-build packages.

GEO-8: Standard Caltrans BMPs shall be followed to minimize soil loss and erosion during construction. To minimize potential soil erosion, all finish slopes shall be planted as soon as practical after grading.

GEO-9: The liquefaction potential and resulting seismically induced settlement of structures located in the shallow ground area, including Mt. Vernon Avenue OC, Warm Creek Bridge, Santa Ana River Bridge, I-10/I-215 Interchange, Waterman Avenue UC, and San Timoteo Creek Bridge, shall be confirmed during the design-build phase using site-specific subsurface data.

GEO-10: Before ground-disturbance activities in an area where hazardous or toxic materials are present, a specialist in hazardous waste or materials will be consulted for proper characterization, handling and disposal.

GEO-11: Exploratory borings throughout the project area shall be performed during the design-build phase of the project to investigate site-specific soils and conditions and to collect samples of subsurface soils for laboratory testing.

- The locations and depths of the borings will be selected once locations of proposed improvements have been finalized.
- Because groundwater is anticipated to be deep for most locations, a truck-mounted drilling rig equipped with hollow-stem augers will be adequate; however, for the area adjacent to the Santa Ana River,

a mud-rotary drilling rig is recommended due to the shallow groundwater table.

- Soil samples recovered during the supplemental field investigation shall be tested to determine soil type, soil shear strength, compressibility characteristics, and corrosion potential.

GEO-12: Per Topic 304 of Caltrans HDM, 4H:1V side slopes or flatter will be used in the design-build plans, where possible. These side slopes will be globally and surficially stable. Caltrans design exception and approval process will be required for side slopes with gradients steeper than 4H:1V. However, proper maintenance with erosion protection and drainage control in accordance with Section 21 of Caltrans Standard Specifications (2015) will still be implemented throughout the project area for long-term performance.

GEO-13: If earthen embankments are constructed using compacted fill having a minimum friction angle of 32 degrees and minimum cohesion of 200 pounds per square foot (psf), slopes up to 30 feet high and with inclinations of 2H:1V or flatter will be globally stable (i.e., minimum factor-of-safety is 1.5 and 1.1 under static and pseudo-static conditions, respectively).

GEO-14: Use of minimum friction angles of 32 degrees and minimum cohesion of 200 psf, slopes with inclinations of 2H:1V or flatter will be surficially stable based on the infinite slope method. Shear strength parameters or fines content and plasticity of soils that will be used to construct the earthen embankments will need to be verified during construction.

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3.2.4 Paleontology

3.2.4.1 Regulatory Setting

Paleontology is a natural science focused on the study of ancient animal and plant life as it is preserved in the geologic record as fossils. A number of federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized or funded projects. The following laws and regulations are applicable to this project: Antiquities Act of 1906 (16 United States Code [U.S.C.] 431-433) prohibits appropriating, excavating, injuring, or destroying any object of antiquity situated on federal land without the permission of the Secretary of the department of government having jurisdiction over the land; 23 U.S.C. 1.9(a) requires that the use of federal-aid funds must be in conformity with federal and state law; and Federal-Aid Highway Act of 1960 (23 U.S.C. 305) authorizes funds be appropriated and used for archaeological and paleontological salvage as necessary by the highway department of any state, in compliance with 16 U.S.C. 431-433. Under California law, paleontological resources are protected by the California Environmental Quality Act (CEQA).

3.2.4.2 Affected Environment

The information from this section was synthesized from the *Final Paleontological Identification Report and Paleontological Evaluation Report* (PIR/PER) prepared for the project (December 2014).

The Interstate 10 Corridor Project (I-10 CP) area traverses the central part of the Upper Santa Ana River plain. The native ground surface along the corridor is flat to very gently undulating. To the north of the project, the San Andreas Fault travels up Cajon Pass where it is the boundary between the Pacific Plate and the North American Plate. The Transverse Ranges are a result of these two plates grinding past each other and “catching” along the bend in the San Andreas. The Pacific Plate is composed of numerous blocks that can move independently. The Transverse Range Province is an east-west trending series of steep mountain ranges and valleys, oblique to the normal northwest trend of coastal California. The province extends offshore to include San Miguel, Santa Rosa, and Santa Cruz islands. Its eastern extension, the San Bernardino Mountains, has been displaced to the south along the San Andreas Fault.

Research and mapping has shown that the project area is underlain by various types of Quaternary alluvium, including valley fill, eolian deposits, and river deposits. These deposits are between early Pleistocene and latest Holocene (less than

2.6 million years old) in age. The Pleistocene sediments of the project area consist of San Timoteo Formation, old alluvial fan deposit, very old alluvial fan deposit, old eolian deposit, and very old axial channel deposit. The sediment from late Pleistocene to Holocene consists of young eolian deposit and young alluvial fan deposit. The Holocene sediments consist of young axial channel deposit, very young axial channel deposit, very young alluvial fan deposit, very young wash deposit, and artificial fill. In the eastern portion of the project, the alluvium is underlain by crystalline igneous and metamorphic rocks generally assumed to be Mesozoic age between 252 and 66 million years old. Figure 3.2.4-1 displays the geology of the area. The project excavation parameters refer to the limits of project-related subsurface disturbance.

Among these formations, the San Timoteo Formation that formed during the Pleistocene has been highly sensitive for paleontological resources, following the California Department of Transportation's (Caltrans) tripartite paleontological sensitivity ranking. Fossils previously recovered from this formation include fossil mammals such as mammoth, mastodon, horse, and camel remains. Three other formations considered highly sensitive are old alluvial fan deposit, very old alluvial fan deposit, and very old axial channel deposit. The following seven formations have low sensitivity: young alluvial fan deposit, young eolian deposit, old eolian deposit, very young wash deposits, very young alluvial fan deposit, very young axial channel deposit, and young axial channel deposit. Artificial fill and Mesozoic formations are not considered sensitive. Figure 3.2.4-2 displays the paleontological sensitive areas throughout the proposed project. The Potential Fossil Yield Classification (PFYC) system, which classifies geologic units based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts, was developed.

3.2.4.3 Records Search and Field Reconnaissance

A search for paleontological records within the project area was completed using online databases and published materials, as discussed in more detail in the PIR/PER. These listings are not comprehensive due to the incomplete and limited number of databases present online. The research yielded no fossil localities that have been previously collected from the project study area; however, several localities are recorded near the vicinity of the proposed project alignment, particularly towards the west. Fossils recovered from these localities include extinct mammoth, mastodon, bison, and camel.

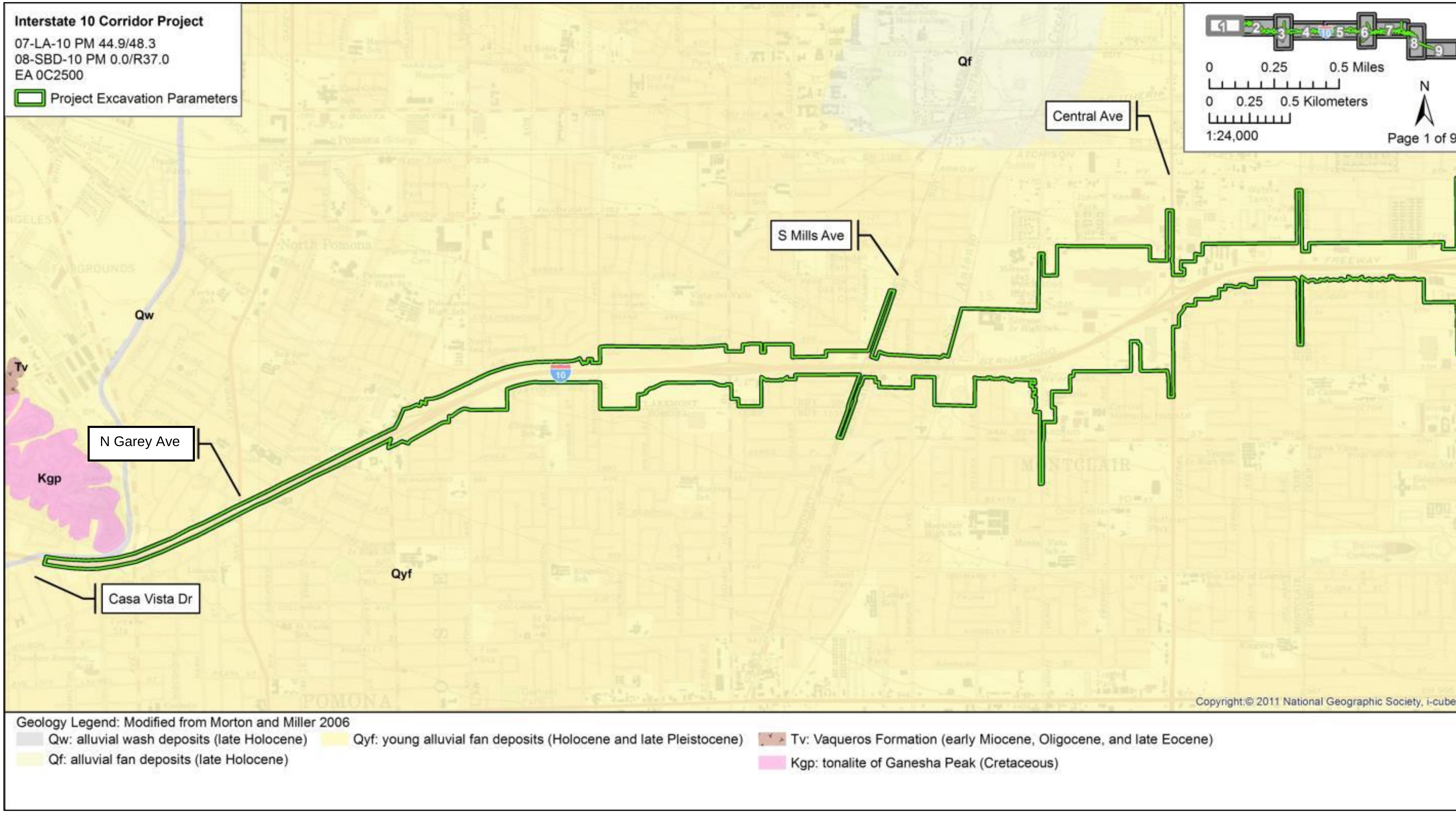

Figure 3.2.4-1 Geology Map (Page 1 of 9)

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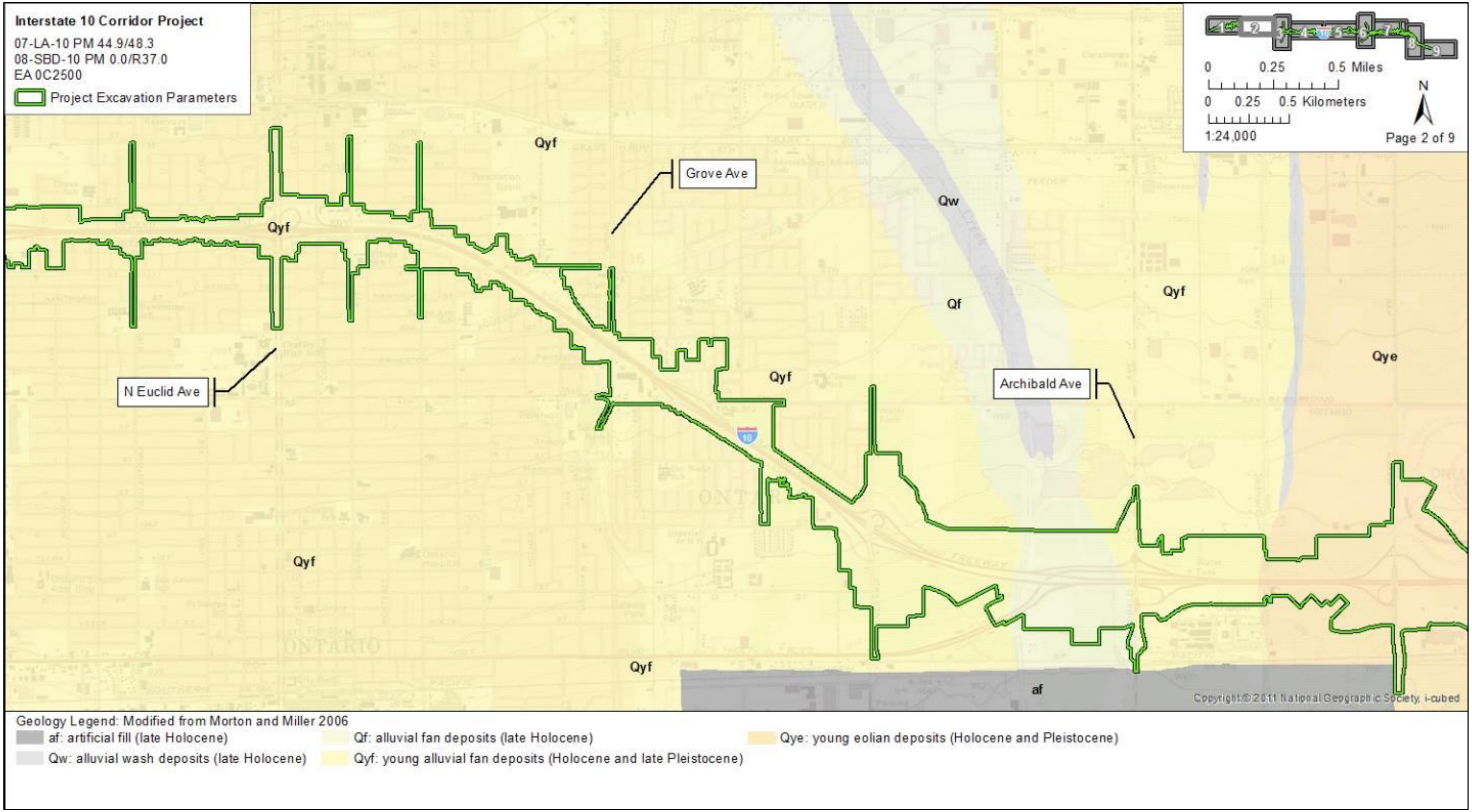

Figure 3.2.4-1 Geology Map (Page 2 of 9)

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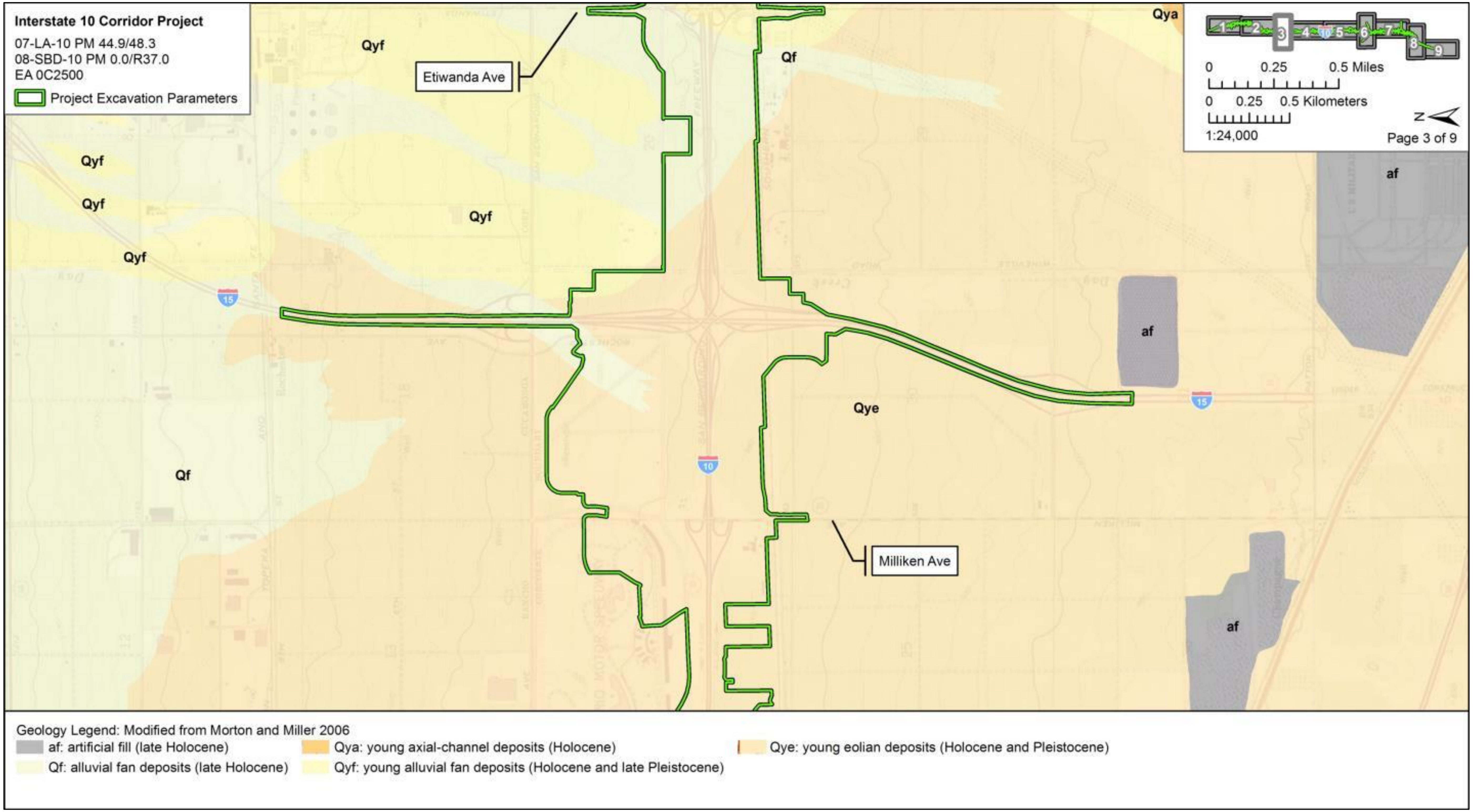

Figure 3.2.4-1 Geology Map (Page 3 of 9)

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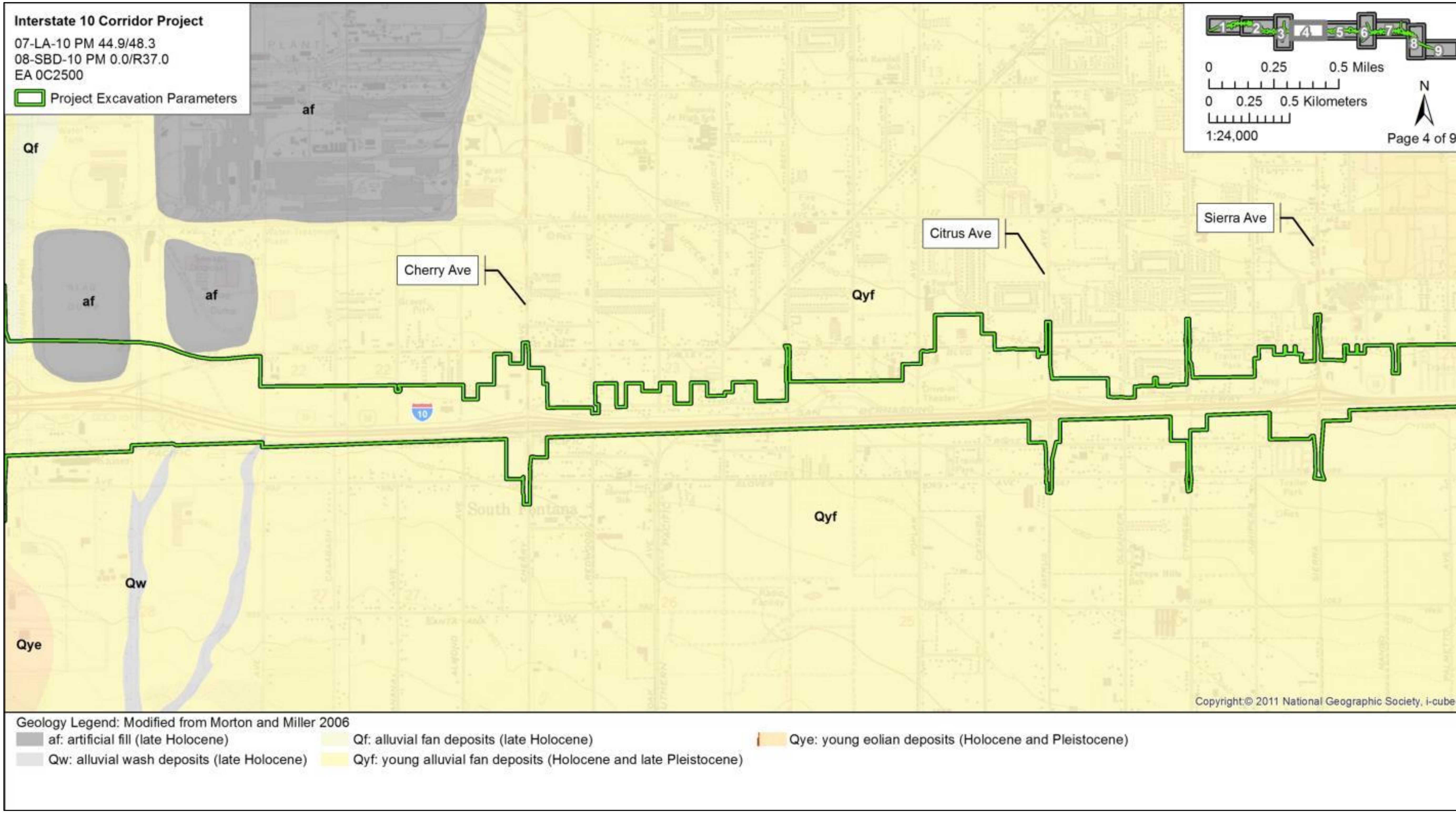

Figure 3.2.4-1 Geology Map (Page 4 of 9)

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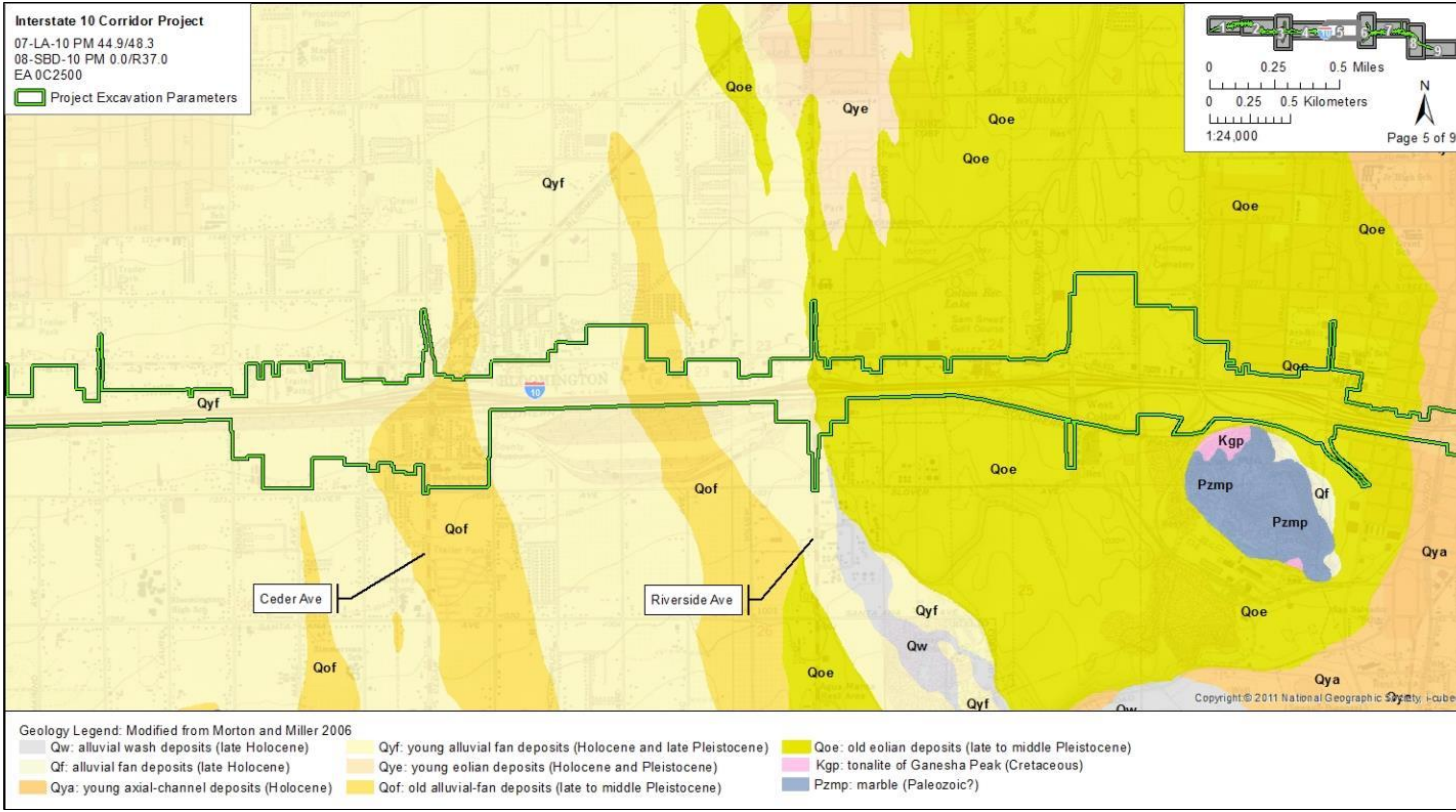

Figure 3.2.4-1 Geology Map (Page 5 of 9)

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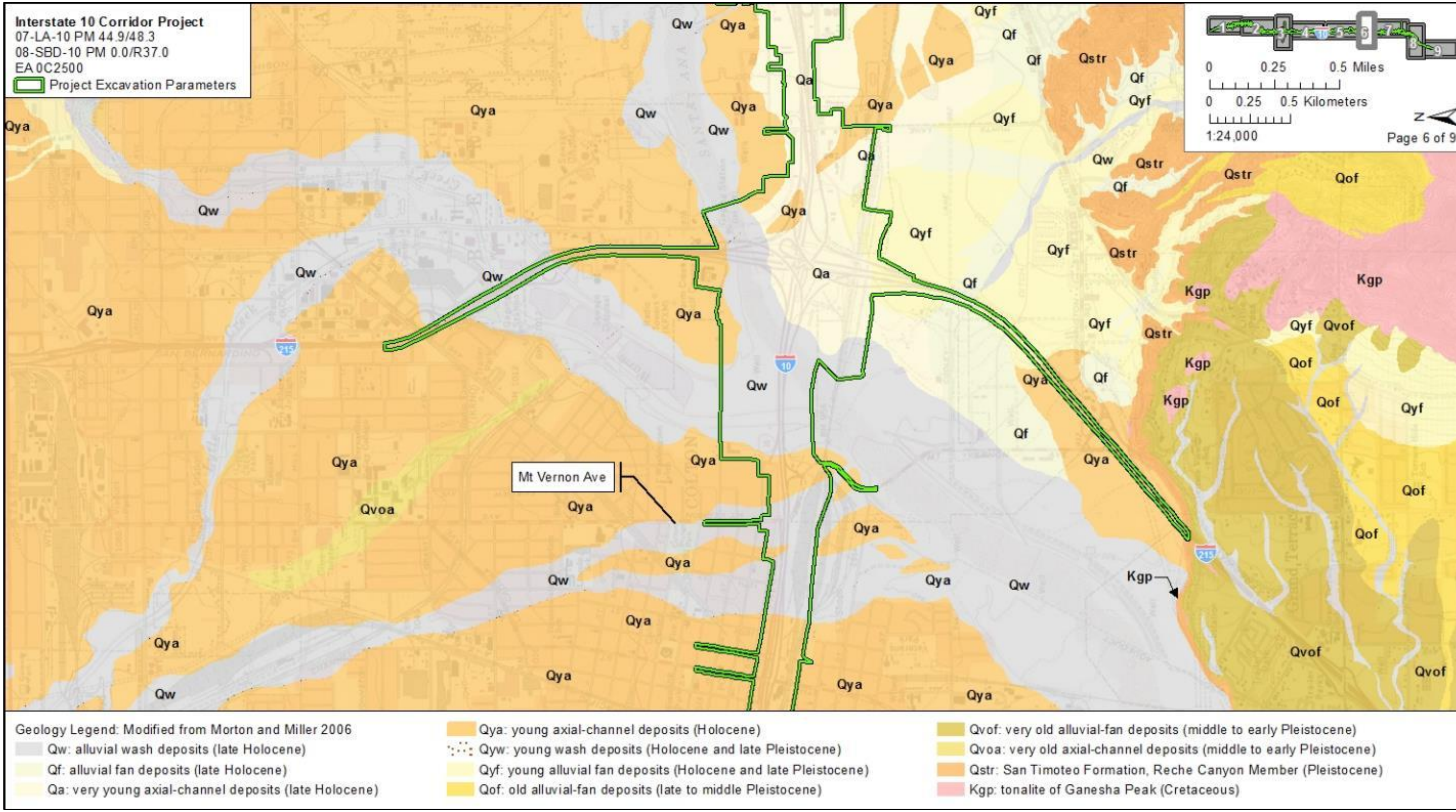

Figure 3.2.4-1 Geology Map (Page 6 of 9)

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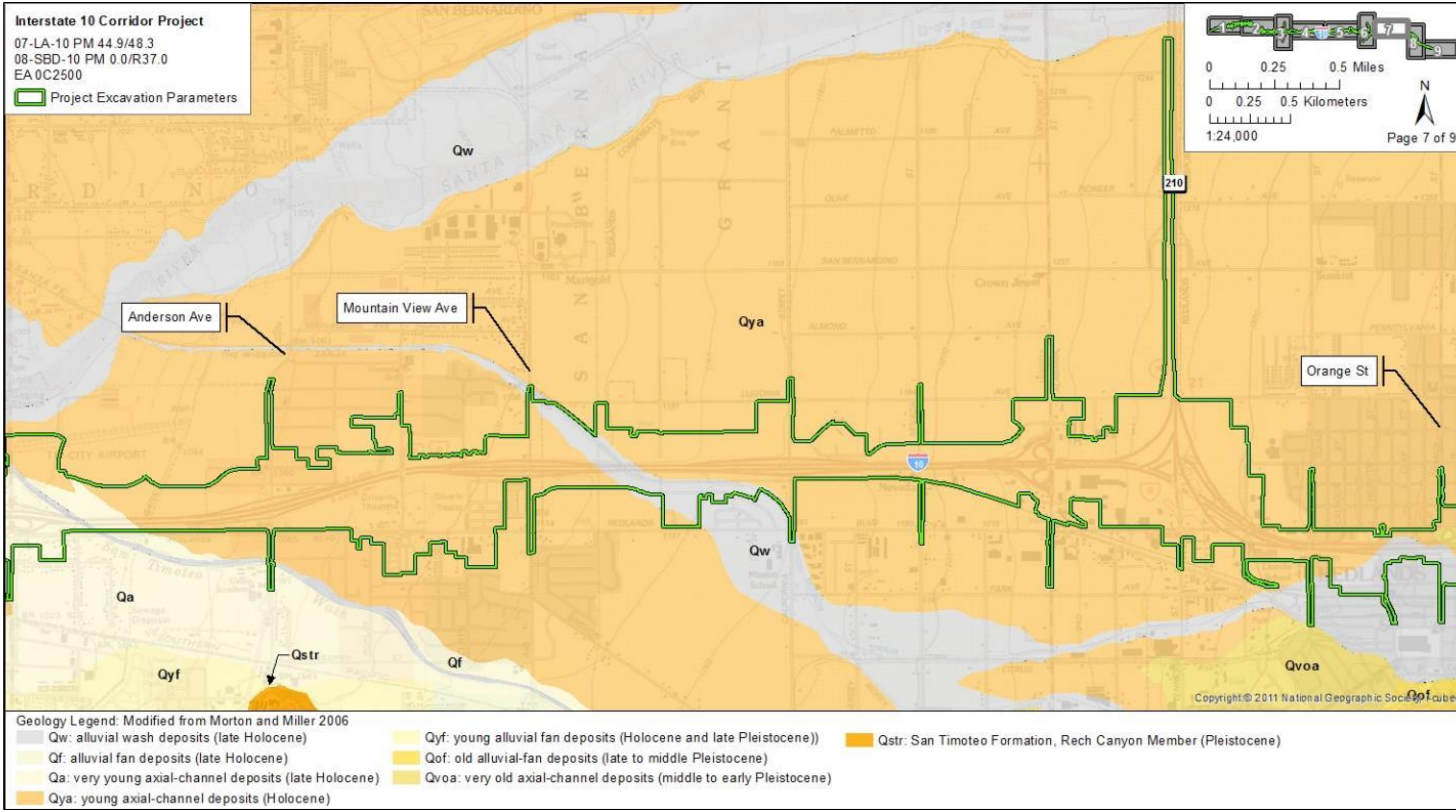

Figure 3.2.4-1 Geology Map (Page 7 of 9)

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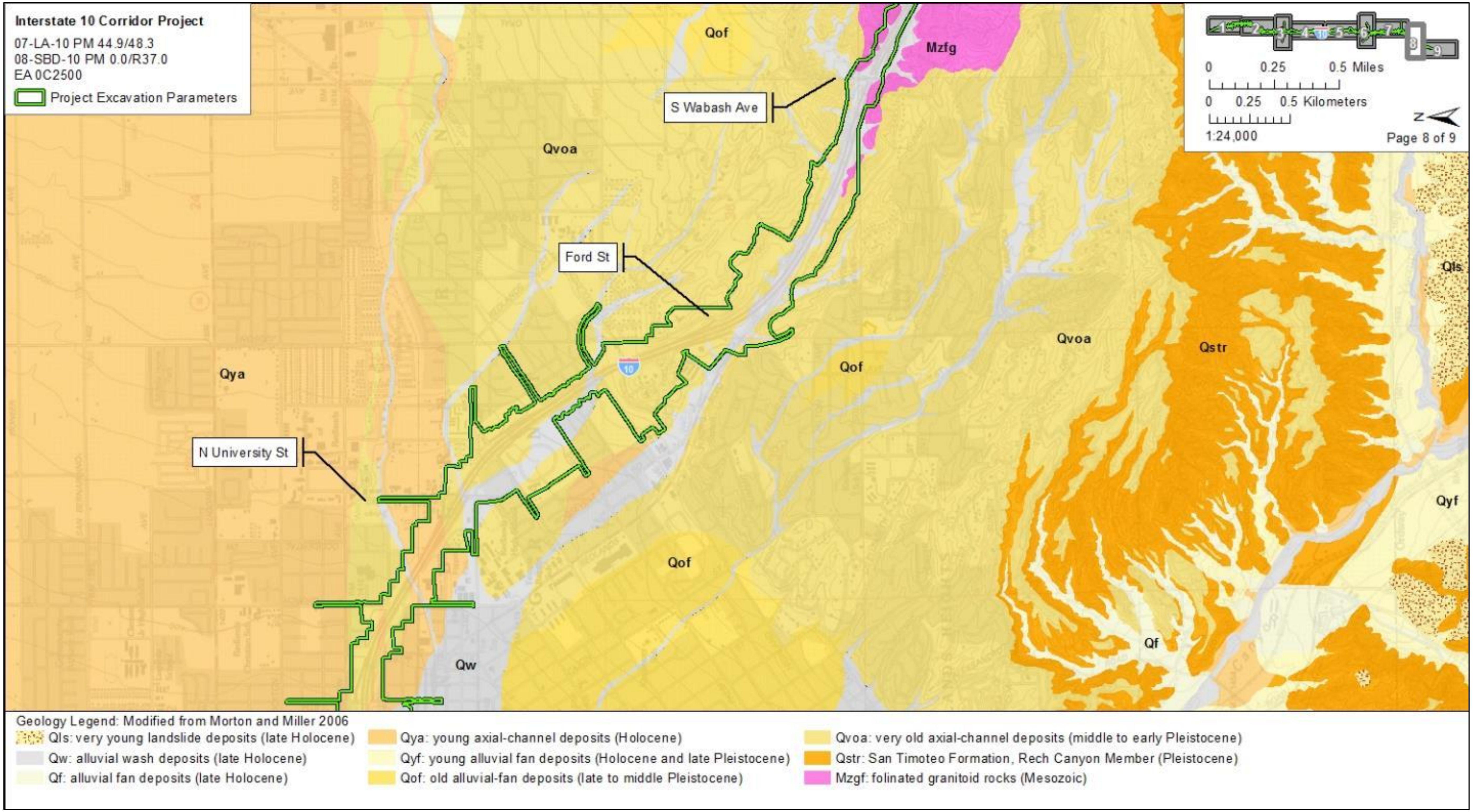

Figure 3.2.4-1 Geology Map (Page 8 of 9)

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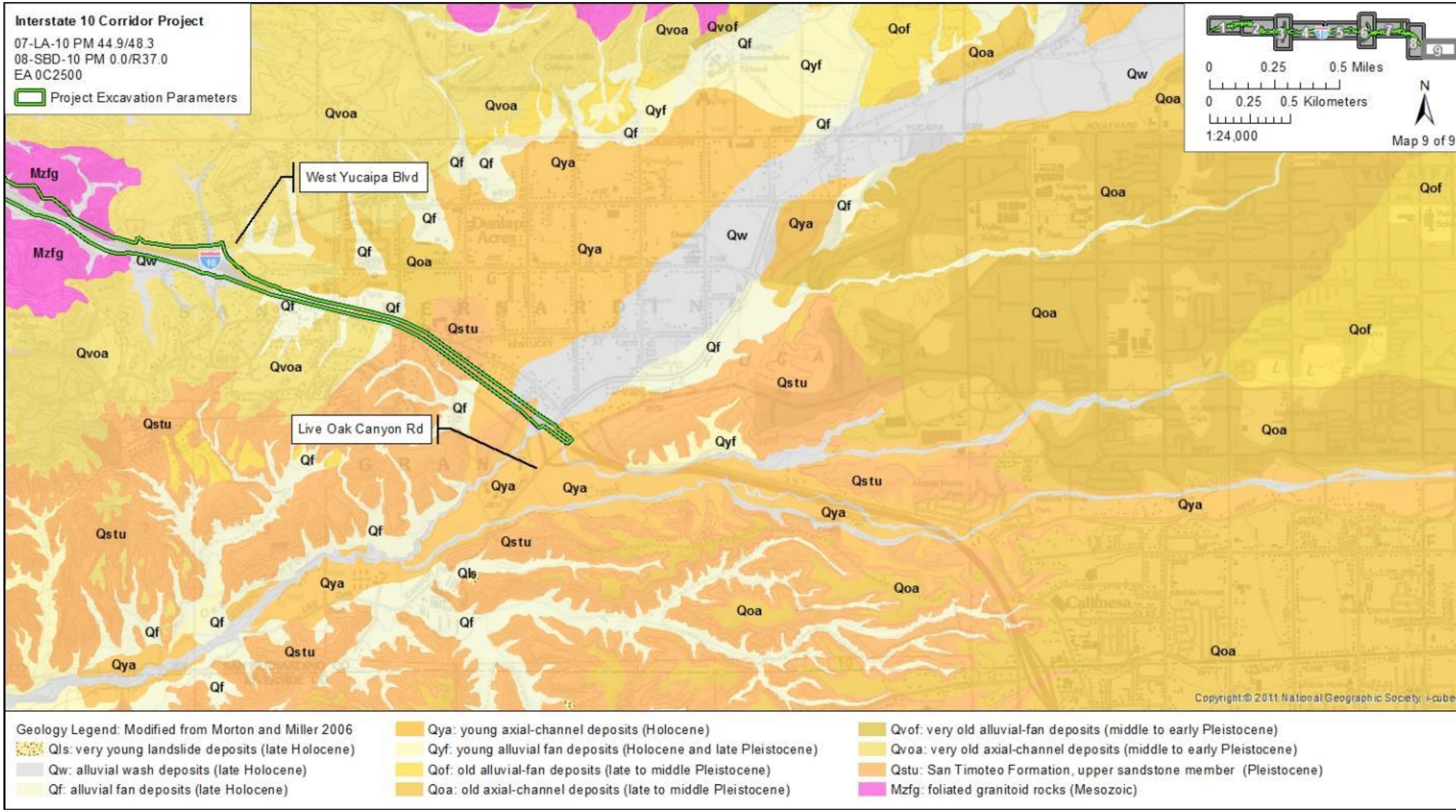

Figure 3.2.4-1 Geology Map (Page 9 of 9)

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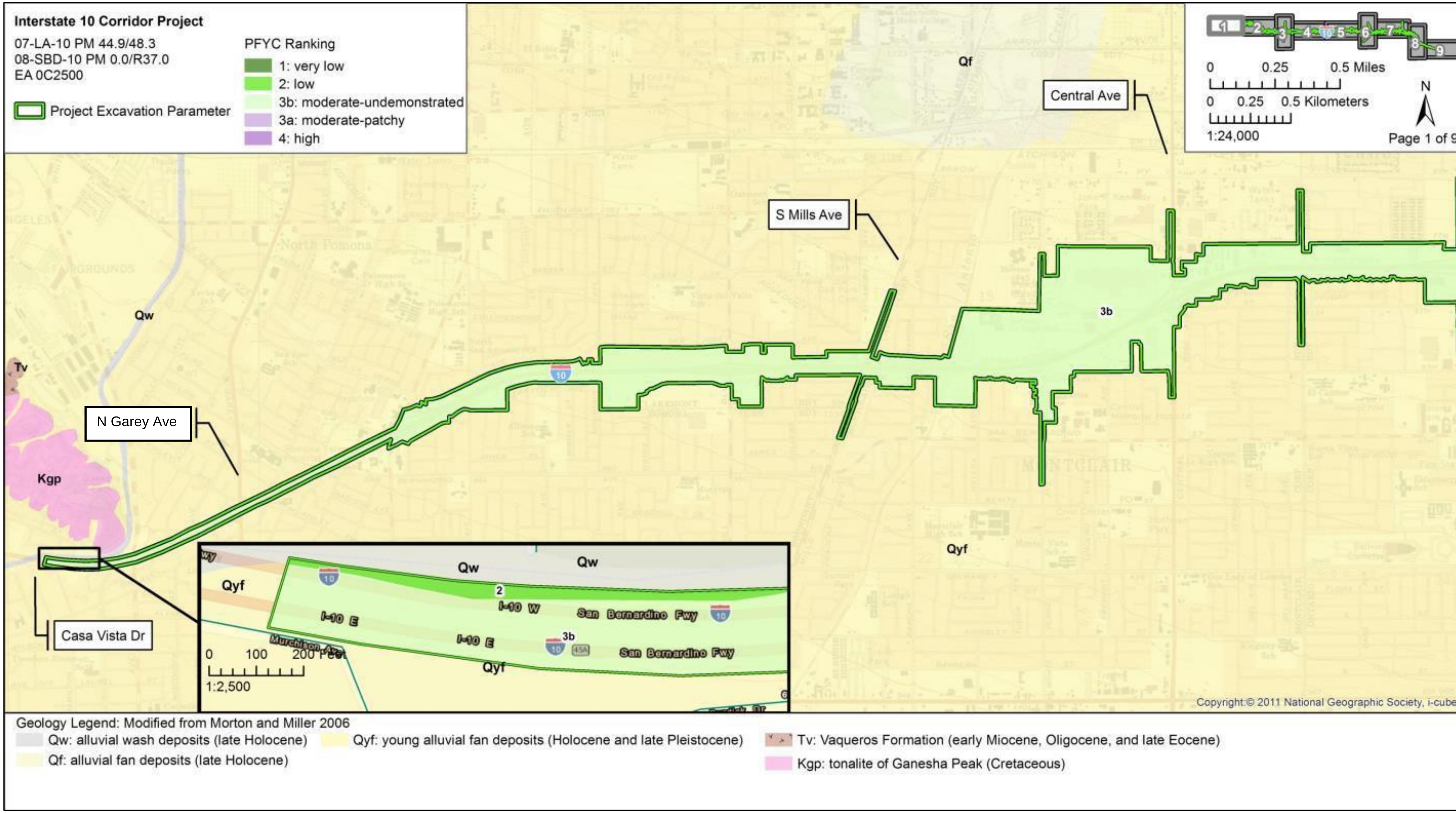

Figure 3.2.4-2 Paleontological Sensitivity Map (Page 1 of 9)

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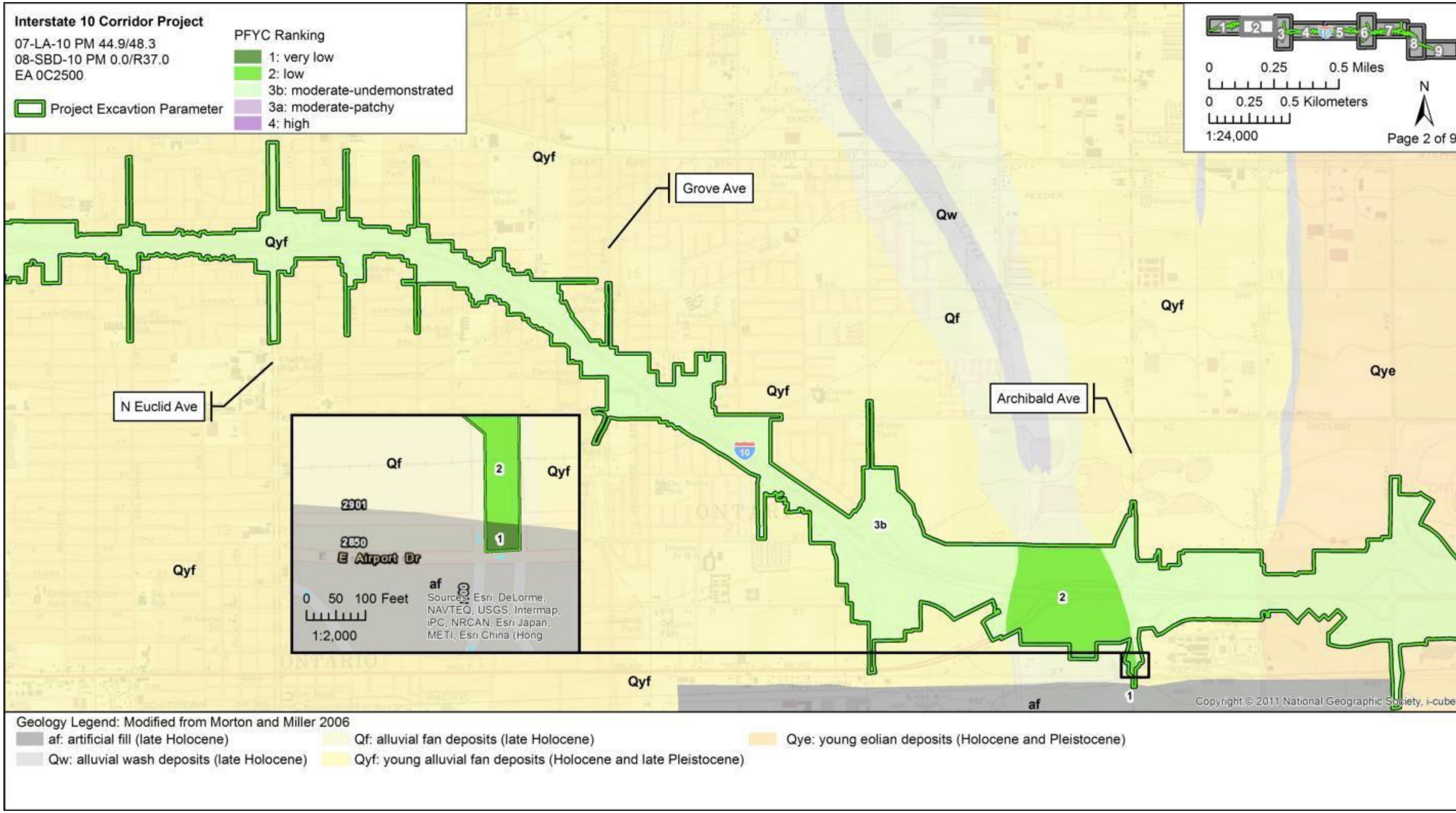

Figure 3.2.4-2 Paleontological Sensitivity Map (Page 2 of 9)

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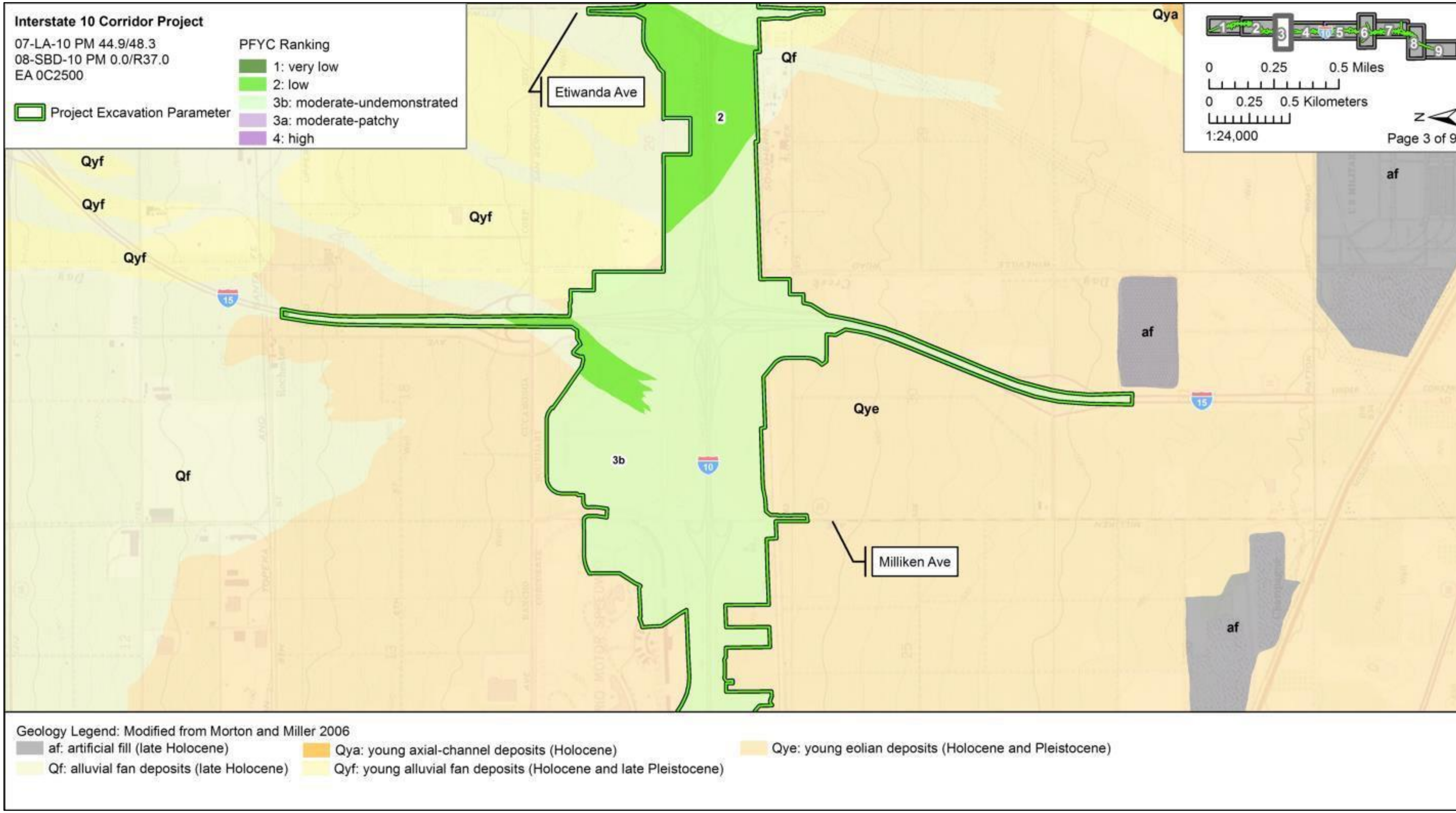

Figure 3.2.4-2 Paleontological Sensitivity Map (Page 3 of 9)

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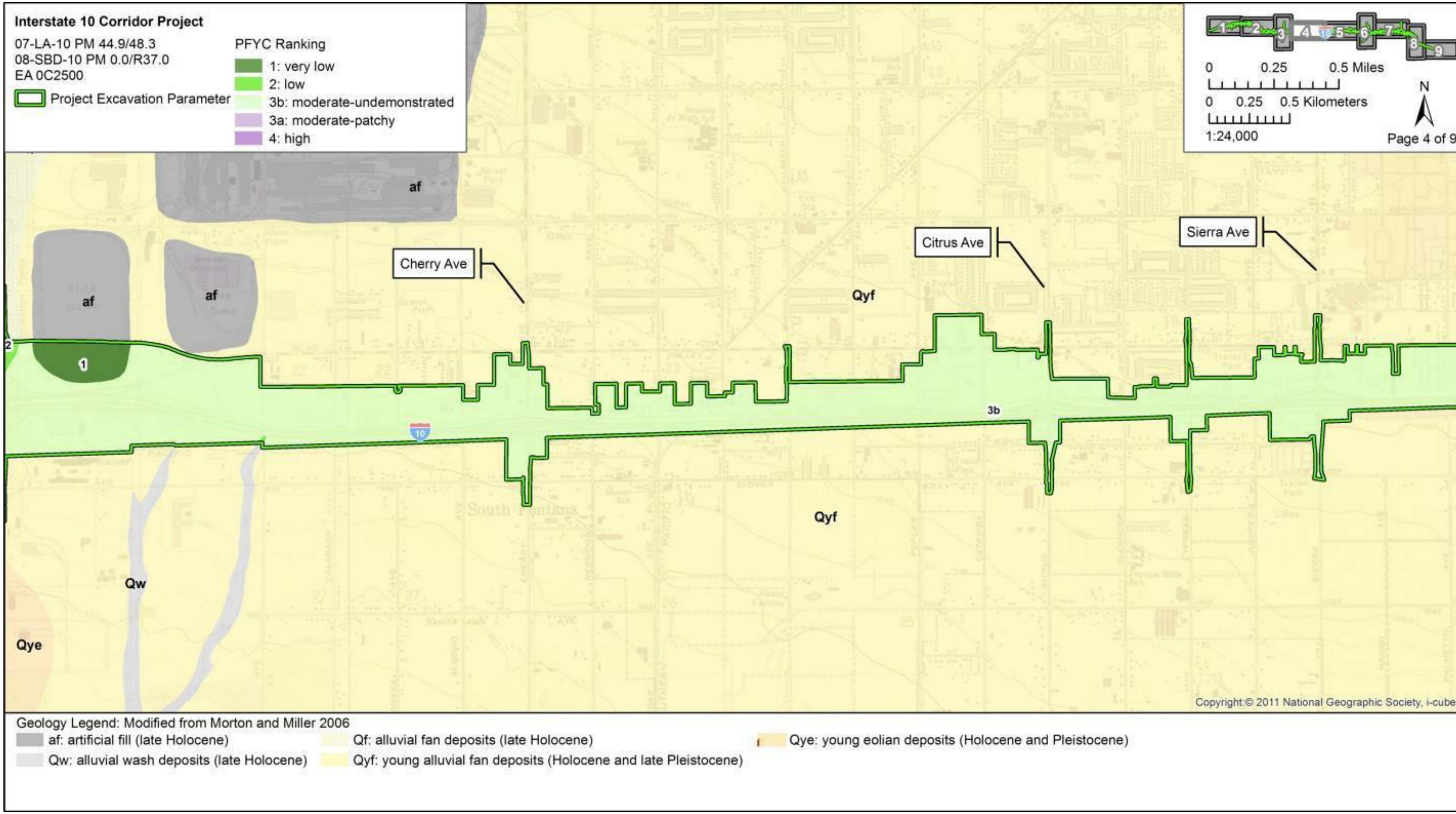

Figure 3.2.4-2 Paleontological Sensitivity Map (Page 4 of 9)

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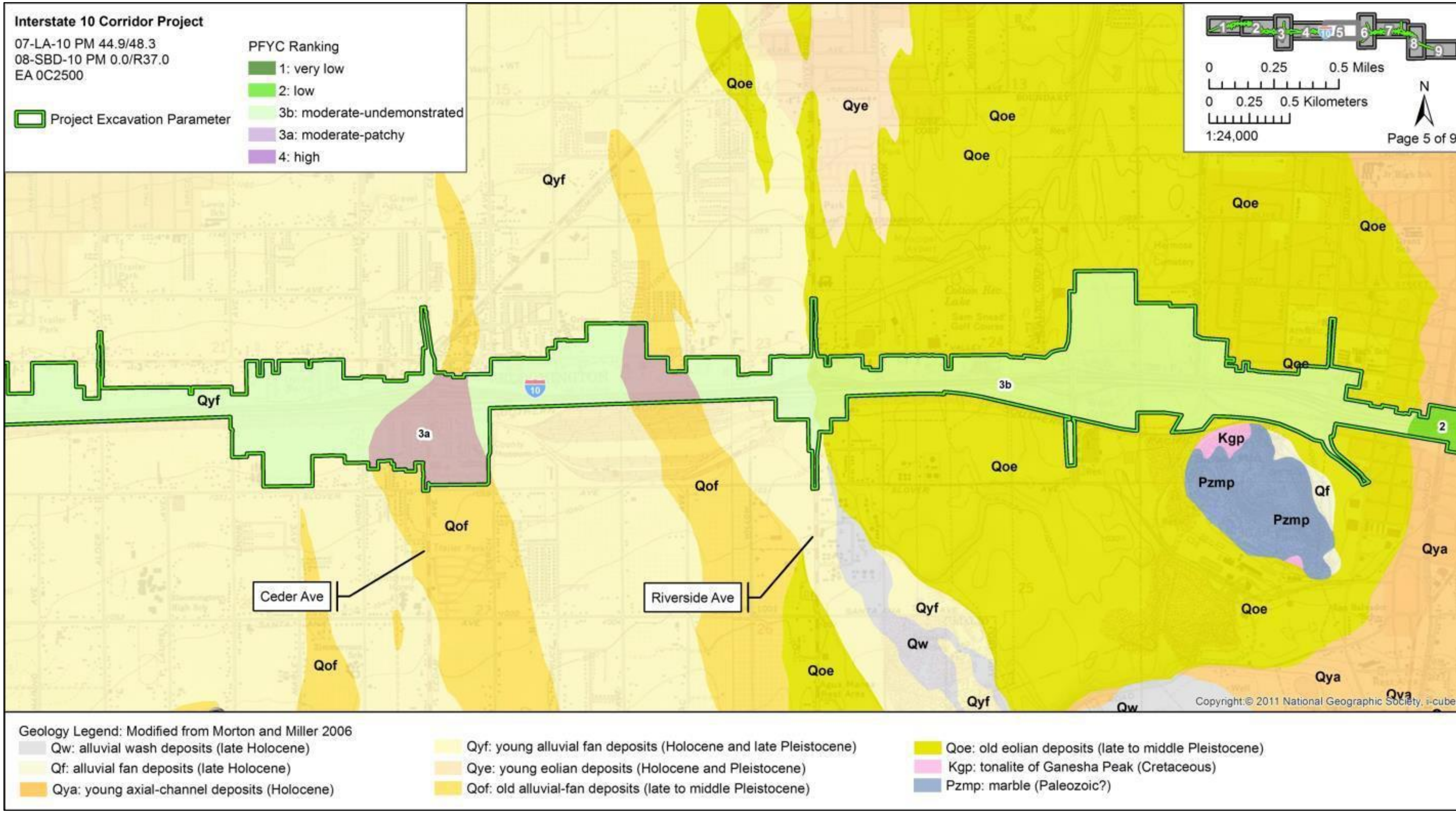

Figure 3.2.4-2 Paleontological Sensitivity Map (Page 5 of 9)

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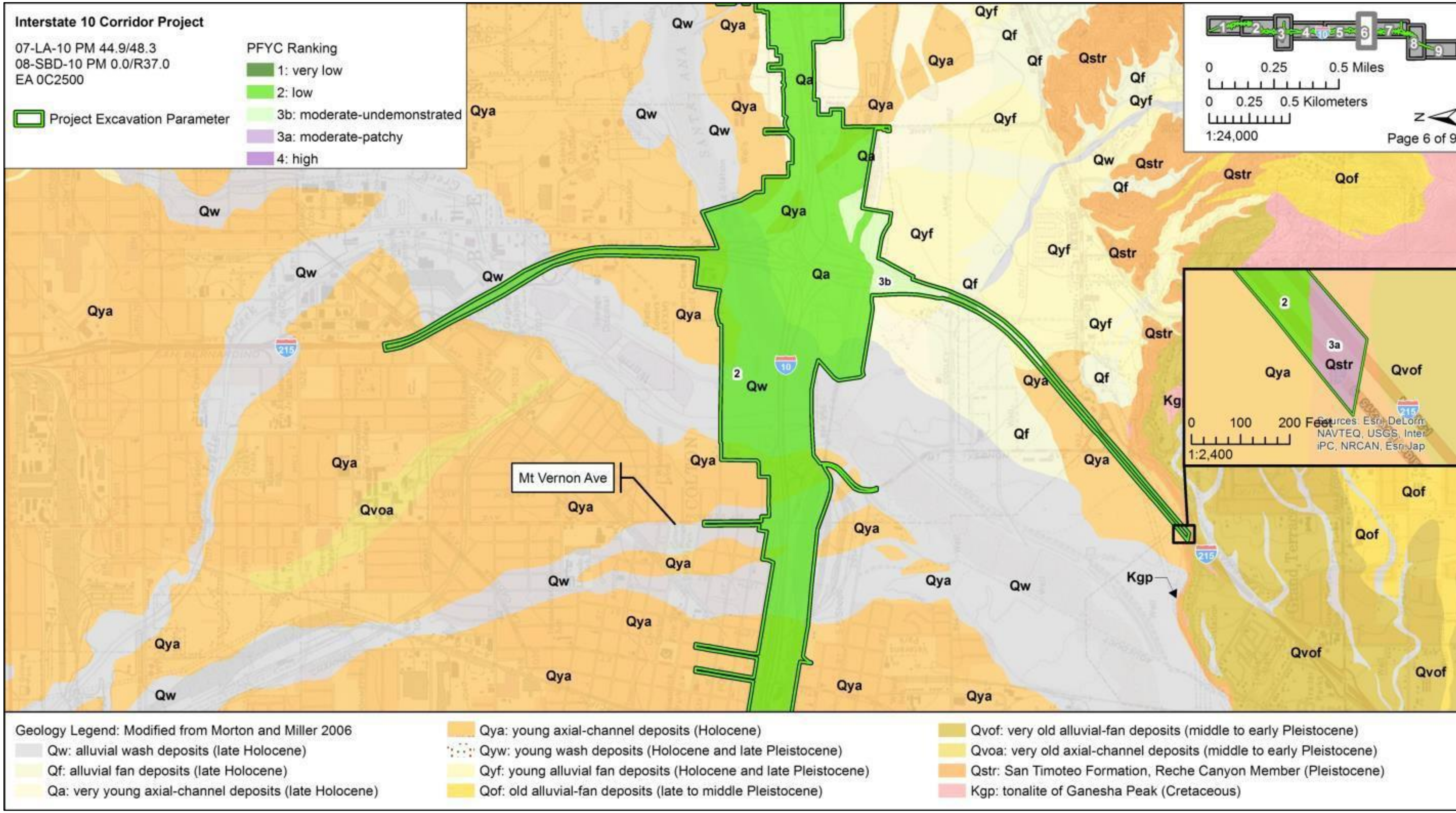

Figure 3.2.4-2 Paleontological Sensitivity Map (Page 6 of 9)

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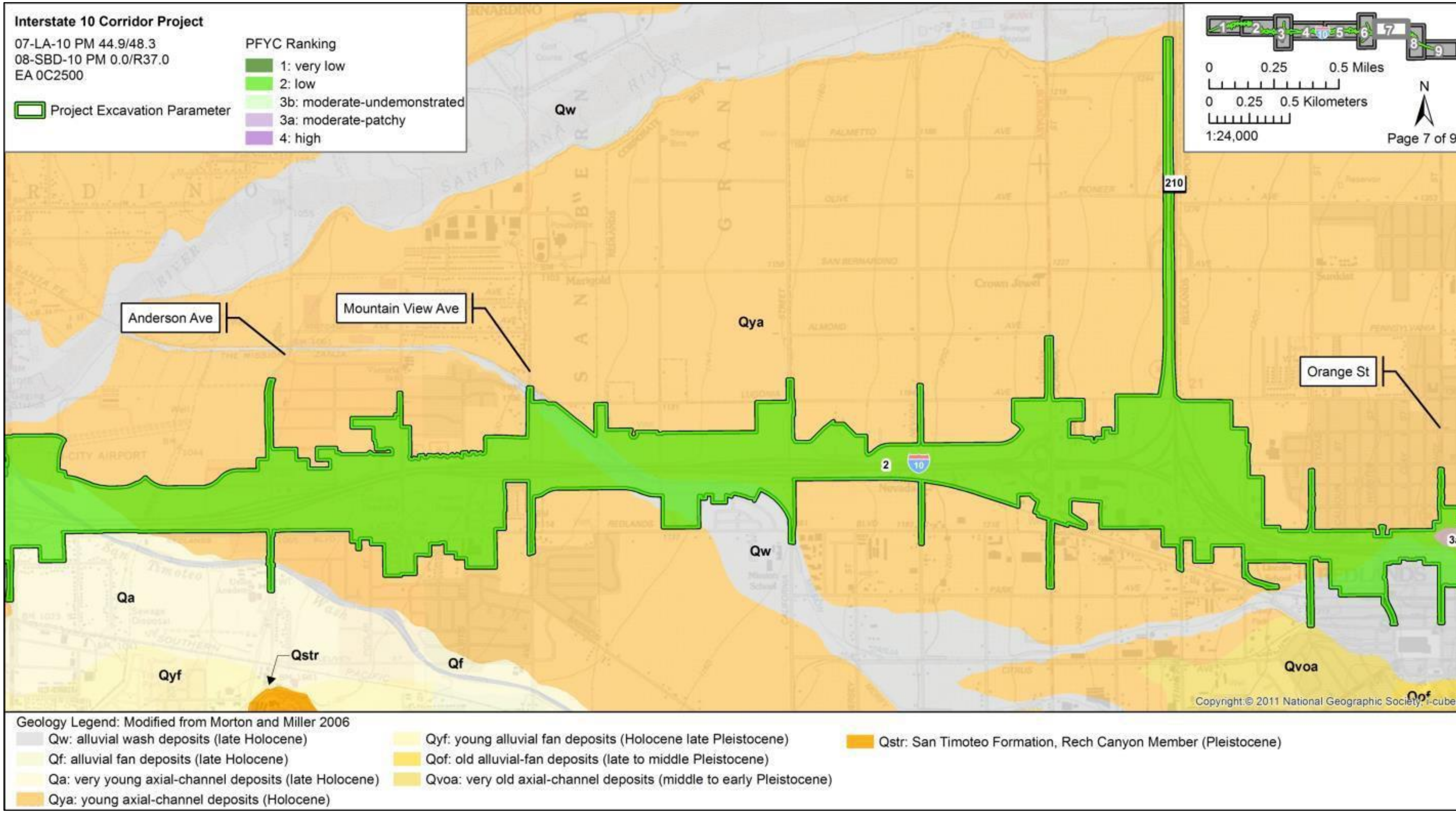

Figure 3.2.4-2 Paleontological Sensitivity Map (Page 7 of 9)

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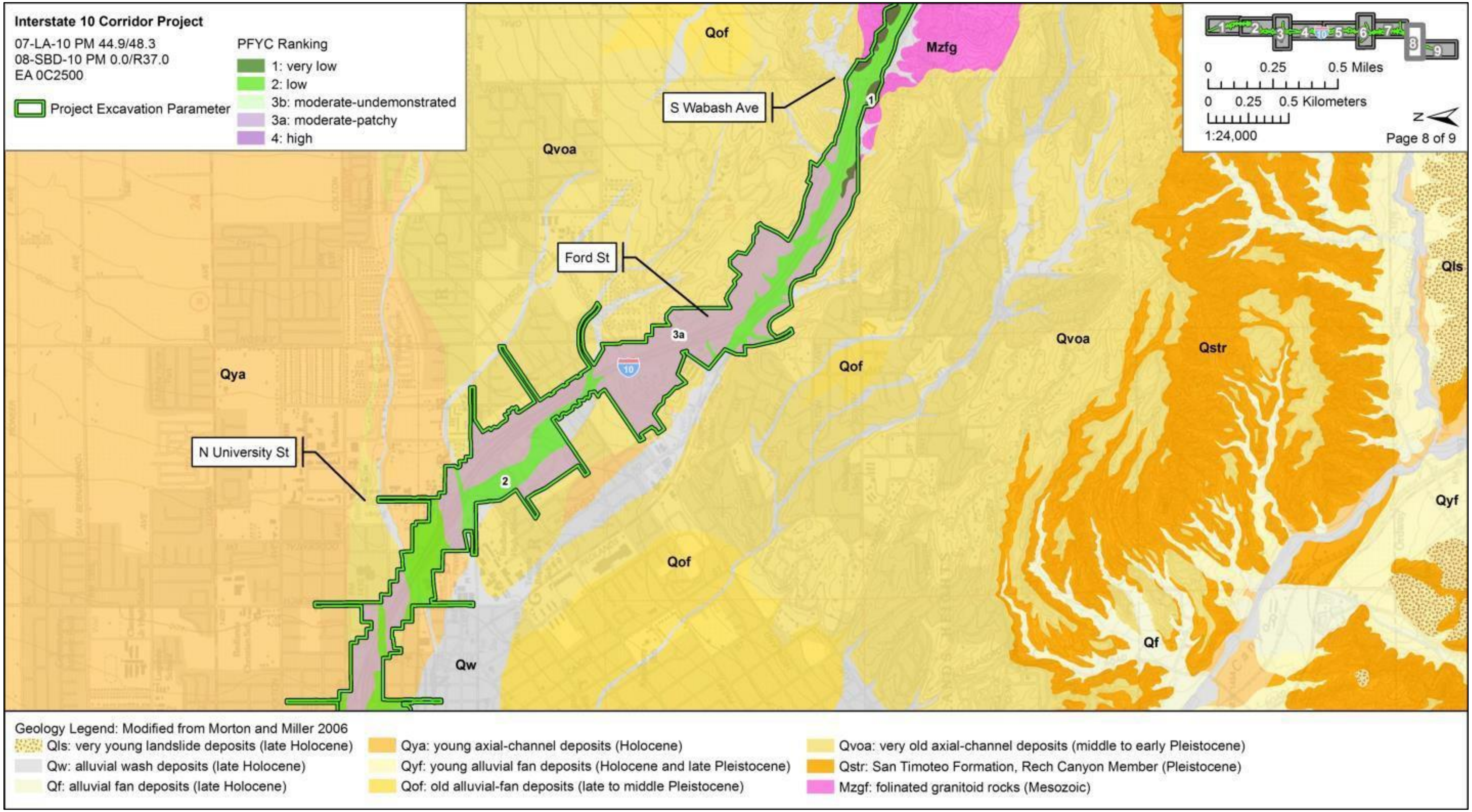

Figure 3.2.4-2 Paleontological Sensitivity Map (Page 8 of 9)

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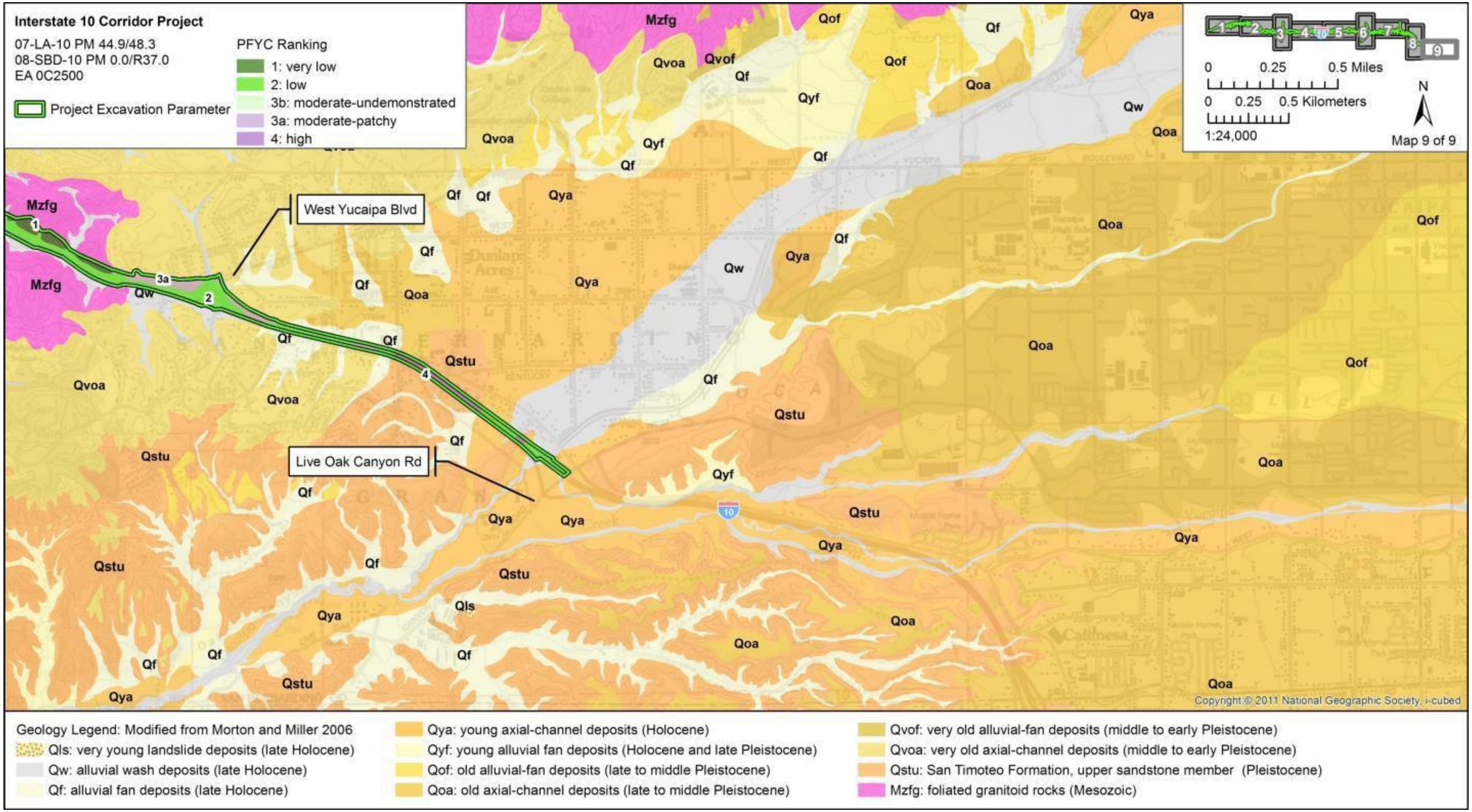

Figure 3.2.4-2 Paleontological Sensitivity Map (Page 9 of 9)

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A paleontological reconnaissance of the project study area was conducted on February 9, 2009, and the newly added portions were surveyed July 6, 2014. The surveys consisted of a windshield survey with intensive pedestrian inspection of open ground surface areas of high-sensitivity formations and lithologies. Formations of minimal sensitivity were given only a cursory inspection. The project location and some detailed features were photographed to document the condition of the project study area and can be found in the PIR/PER. Potentially sensitive units within the project study area included the San Timoteo Formation from the Pleistocene. No fossils were observed during the survey in any of the formations examined.

3.2.4.4 Environmental Consequences

Paleontological resources are considered to be significant if they provide new data on fossil animals, distribution, evolution, or other scientifically important information as previously stated. Caltrans uses a tripartite scale to characterize paleontological sensitivity of an area as no potential, low potential, or high potential for paleontological resources because the actual presence of paleontological resources is not known until the project is underway.

High Potential: Rock units that, based on previous studies, contain or are likely to contain significant vertebrate, significant invertebrate, or significant plant fossils. These units include sedimentary formations that contain significant nonrenewable resources anywhere within the geographic extent.

Low Potential: Rock units that are not known to have produced significant fossils in the past but possess a potential to contain fossils or those that yield common fossil invertebrates.

No Potential: Rock units with no potential to contain fossils. This includes most rocks of igneous origin or metamorphosed transformation.

Permanent Impact

No Build Alternative

The No Build Alternative would not result in permanent impacts to paleontological resources.

Build Alternatives

Paleontological sensitivity analysis determined that the San Timoteo Formation is highly sensitive for paleontological resources. Quaternary old alluvial fan, very old alluvial fan, very old axial channel deposits, and San Timoteo Formation sediments all have potential to produce significant vertebrate fossils. The Quaternary old eolian, young alluvial fan, and young eolian deposits have an undemonstrated potential for containing fossils even though the sediments are old enough. These units have the potential to be paleontologically sensitive sediments within the Project Excavation Parameters that may be affected by project activities. Young axial channel deposits and all of the very young deposits are too young to contain fossils; however, they do overlie older deposits, which are fossiliferous.

The fact that no fossils were observed during the paleontological reconnaissance is typical because most fossils are subsurface. Existing fossil localities nearby in the same rock units present within the project study area have produced significant vertebrate paleontological resources.

Grading, excavation, and other surface and subsurface excavation in defined areas of the proposed project have the potential to impact significant nonrenewable fossil resources of Pleistocene age. All excavations in areas mapped as San Timoteo Formation have the potential to encounter significant paleontological resources and should be monitored full time. Excavations deeper than 5 feet in the Quaternary old alluvial fan, very old alluvial fan, very old axial channel deposits, and old eolian deposits should be monitored full time. Excavations more than 10 feet in depth into young alluvial fan, young eolian, young axial channel, and very young deposits should be spot checked periodically for the presence of older, paleontologically sensitive sediments. Should sediments conducive to fossil preservation be encountered, monitoring should be implemented in those areas. Areas mapped as Mesozoic foliated granitoid rocks do not require monitoring. Drilling activities are also exempt from monitoring because recovered fossil fragments would not meet significance criteria. This sensitivity increases with increasing depth below the ground surface. Therefore, mitigation will be necessary to reduce impacts on paleontological resources to less than substantial for any of the build alternatives. A Paleontological Mitigation Plan (PMP) would be required and shall be completed prior to project construction.

Temporary/Construction Impacts

No Build Alternative

The No Build Alternative would not result in temporary impacts to paleontological resources.

Build Alternatives

Any impacts to paleontological resources are permanent and irreparable; therefore, there would be no temporary impact for any of the build alternatives.

3.2.4.5 Avoidance, Minimization, and/or Mitigation Measures

PA-1: A Paleontological Mitigation Plan (PMP) will be prepared by a qualified paleontologist, prior to construction of this project. All elements of the PMP will follow the PMP format published in the Caltrans Standard Environmental Reference (Caltrans 2003). The PMP will detail the paleontological monitoring to be implemented during construction and shall include, at a minimum, a description of the following elements:

- Content to be presented during the required 1-hour preconstruction paleontological awareness training for earth-moving personnel, including the method that will be used for documenting training, such as sign-in sheets and hardhat stickers, to establish communications protocols between construction personnel and the Principal Paleontologist.
- A signed repository agreement with a qualified institution to establish a curation process in the event of sample collection.
- Requirements for monitoring of the following locations:
  - The San Timoteo Formation
  - Excavations deeper than 5 feet in Quaternary old alluvial fan very old alluvial fan, very old axial channel deposits, and old eolian deposits
  - Excavations deeper than 10 feet into young alluvial fan, young eolian, young axial channel, and very young deposits should be spot checked periodically for the presence of older, paleontologically sensitive sediments
- Field and laboratory methods will be implemented for monitoring, reporting, collection, and curation of collected specimens.
- The required Paleontological Mitigation Report (PMR) upon completion of project earthmoving.

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3.2.5 Hazardous Waste/Materials

3.2.5.1 Regulatory Setting

Hazardous materials, including hazardous substances and wastes, are regulated by many state and federal laws. Statutes govern the generation, treatment, storage, and disposal of hazardous materials, substances, and waste, and also the investigation and mitigation of waste releases, air and water quality, human health, and land use.

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

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

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

California regulates hazardous materials, waste, and substances under the authority of the CA Health and Safety Code and is also authorized by the federal government to implement RCRA in the state. California law also addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning of hazardous waste. The Porter-Cologne Water Quality Control Act also restricts disposal of wastes and requires clean up of wastes that are below hazardous waste concentrations but could impact ground and surface water quality. California regulations that address waste management and prevention and clean up of contamination include Title 22 Division 4.5 Environmental Health Standards for the Management of Hazardous Waste, Title 23 Waters, and Title 27 Environmental Protection.

Worker, public health, and safety are key issues when addressing hazardous materials that may affect human health and the environment. Proper management and disposal of hazardous material is vital if it is found, disturbed, or generated during project construction.

3.2.5.2 Affected Environment

An *Initial Site Assessment* (ISA) (September 2014) was completed for the project and is summarized in this section of the Final Environmental Impact Report (EIR)/ Environmental Impact Statement (EIS). After public review of the draft environmental document, Alternative 3 was identified as the Preferred Alternative, and additional hazardous waste/materials investigations were conducted for Alternative 3. These additional studies, conducted by Group Delta Consultants, Inc, include *Phase II Environmental Site Assessment* (October 2016), *Hazardous Materials Survey* (October 2016), *Underground Storage Tank (UST) and Aboveground Storage Tank (AST) Location Research Technical Memoranda* (December 2016), and *Aerially Deposited Lead (ADL) Site Investigation* (October 2016).

Records Review

Available current and historical documents pertinent to environmental activities conducted in or near the site were reviewed. Topics of interest include chemical usage or inventories, waste management records, and RCRA or CERCLA activities.

Site Reconnaissance and Interviews

Site reconnaissance to visually and physically observe and document conditions on the property was performed. Interviews were conducted in keeping with the requirements of ASTM Standard Practice E 1527-05, § 7.1 – 7.2.

File Search and Records Review

A search of federal, State, and local regulatory agency electronic databases was performed. This database search identifies locations that are regulated under various environmental laws, notably CERCLA, RCRA, and TSCA. It also identifies locations where a release of hazardous substances has occurred or is suspected.

Historical Records Review

Available historical aerial photographs were reviewed to identify all obvious uses from the present back to the first developed use or 1950, whichever is earlier.

- Copies of aerial photographs of the subject site and surrounding areas were obtained for the years 1928, 1938, 1949, 1953, 1960, 1966, 1968, 1976, 1977, 1980, 1989, 1994, and 2002. Appendix D of the ISA presents these photographs. Most of the project site is situated in the urban areas of Pomona, Claremont, Upland, Montclair, Ontario, Fontana, Rialto, Colton, San Bernardino, Loma Linda, and Redlands.
- Copies of topographic maps for the project site and surrounding area were obtained from the California Quadrangle maps:

  1901 Southern California; Ontario, California; San Bernardino, California; Redlands, California
  1903 Cucamonga, California
  1928 Claremont, California
  1941 Guasti, California
  1942 Ontario and Vicinity, California
  1944 Cucamonga, California
  1953 Guasti, California
  1954 Ontario, California; San Bernardino, California; Redlands, California
  1966 Guasti, California
  1967 Ontario, California; Fontana, California; San Bernardino South, California; Redlands, California
  1973 Guasti, California; Ontario, California
  1976 Ontario, California
  1980 Fontana, California; San Bernardino South, California; Redlands, California
  1981 Guasti, California; Ontario, California
- From 1867 through 1970, Sanborn Fire Insurance Maps™ documented American cities by providing block-by-block detail of building structures and types of businesses. Most of the project site is situated in the urban areas of Pomona, Claremont, Upland, Montclair, Ontario, Fontana, Rialto, Colton, San Bernardino, Loma Linda, and Redlands. Copies of available Sanborn® fire insurance maps of the subject site and surrounding areas were obtained for the following years: Colton – 1885, 1887, 1888, 1891, 1894, 1907, 1911, 1928, 1930, 1950, and 1960; Redlands – 1888, 1891, 1892, 1894, 1900, 1908, 1915, 1928, 1949, and 1955; Fontana – 1926, 1929, and 1938; and Loma Linda – 1928 and 1931.

- Zoning and land use records were also reviewed in the cities of Pomona, Claremont, Montclair, Upland, Ontario, Fontana, Rialto, Colton, San Bernardino, Loma Linda, and Redlands. Most of the land use adjacent to the project alignment was found to be commercial and industrial.

Significant findings from the above-stated tasks were summarized, recognized environmental conditions (RECs) were identified, and recommendations were made for additional site assessment activities, if needed.

Limitations and Exceptions of Assessment

To achieve the study objectives stated in the ISA, conclusions were based on the best information available during the period of the investigation and within the limits prescribed by the ASTM Standard. While no investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information, it should be noted that professional judgment was exercised in gathering and evaluating the information obtained.

Limiting Conditions and Methodology Used

The ISA investigations were limited to a records review (i.e., federal/State environmental databases, historic topographic maps, and historic aerial photographs) and a site reconnaissance. The Phase I ISA investigations were completed in accordance with ASTM Standard Practice E 1527-05. The Phase II site investigations were completed in accordance with ASTM Standard Practice E 1903-11. The ADL Study was prepared in accordance with the *Department of Toxic Substances Control Soil Management Agreement for Aerially Deposited Lead-Contaminated Soils* (June 2016).

Physical Setting

Geology

The project location geography generally slopes southward along the western end of the project alignment. Towards the eastern end of the alignment (from Loma Linda to Redlands), the general geography slopes westward. The ground surface elevations vary from approximately 970 feet on the western end in Pomona and gradually slope upward to an approximate elevation of 1,700 feet in Redlands.

Several fault zones are located within the project area including, but not limited to, the Whittier Fault, Chino Fault, San Jacinto Fault, San Andreas Fault, and Banning Fault.

Hydrogeology

The project location hydrogeology can be generally described as Cenozoic nonmarine (continental) sedimentary rocks and alluvial deposits. There are smaller areas of Pre-Cenozoic metamorphic rocks of unknown age and Precambrian rocks of all types, including coarse-grained intrusives.

At the 1915 East Tippecanoe Avenue site in San Bernardino, groundwater is approximately 30 feet below ground surface and generally flows in a southwesterly direction; however, groundwater levels typically rise and fall depending on rainfall levels in the area.

Meteorology

The project site is located between Pomona and Redlands. This area is located in southern California with an arid to semi-arid climate. Meteorological studies and investigations from weather stations located in Fontana, San Bernardino, and Redlands have indicated that the average high of 93.8 degrees Fahrenheit (°F) occurs during the summer months and a low of 41.3°F occurs in the winter months. The average annual temperature is 65.5°F, as measured at LA/Ontario International Airport. Very little or no rainfall occurs during the summer months. Rainfall typically occurs from December through March, providing an average annual rainfall of 10.92 inches of rain, as measured at LA/Ontario International Airport.

Surrounding Land Uses

There are several different categories of zoning along the proposed project alignment. The alignment is primarily adjacent to general commercial zoning, but it is also adjacent to large general industrial stretches and small pockets of residential zoning. Most of the adjacent general industrial zoning can be found in Bloomington, Rialto, and Colton, with some industrial zoning in Ontario, Fontana, and Redlands. Multi-family residential zoning can be found in Colton, San Bernardino, and Loma Linda. Single-family residential zoning can be found in Fontana, Loma Linda, and Redlands. Other zoning categories surrounding the proposed project include public institutional, regional mixed-use, regional commercial, light industrial, and public facilities.

According to the General Plans of the surrounding cities, there are several land uses immediately adjacent to the proposed project. Most of the land use surrounding the proposed project is general commercial and general industrial. Other land uses surrounding the proposed project include multi-family residential, single-family residential, light industrial, public institutional, regional commercial, service commercial, and community industrial.

Hazardous Materials Setting

The ISA was conducted to determine apparent and potential sources of contamination within the study area for the project that, by their association or proximity to the project site, could represent an REC. It was not the purpose of the ISA to determine the degree or extent of contamination, if any, but rather the potential for contamination or environmental concern. No sampling of soils or groundwater was performed as part of the original assessment. The ISA was conducted in general accordance with ASTM E-1527-05 and California Department of Transportation (Caltrans) District 8 ISA guidelines.

The work effort of the ISA included a review of regulatory search information prepared by Parsons. The search radii equaled or exceeded the criteria specified in ASTM E-1527-05. A regulatory records search of this nature is based on information published by the State and federal agencies and is used to evaluate whether the project site or nearby properties are listed as having a past or present records of actual or potential environmental impact.

The following database searches, research, and reconnaissance were conducted as part of the ISA:

- Search of regulatory records regarding possible hazardous material handling, spills, storage, or production at the project site or in its vicinity.
- Review of available information to describe the general geology and hydrogeology at the project site and adjacent areas.
- Review of historic aerial photographs and topographic maps.
- Reconnaissance of the project site and the immediate surrounding area.
- Development of conclusions and findings.
- Preparation of a report describing the assessment and presentation of the results and findings.
- A statement of interpretive limitations.

As a result of the ISA, the RECs discussed below were found at the project site and immediate adjacent areas.

Acquisition Properties

Several properties have been preliminarily identified for acquisition as part of the proposed project. A total of 47 partial and 15 full acquisition properties were identified as potentially being RECs within the ISA study area. All preliminarily identified properties, locations, current land uses, and potential RECs associated with each property are presented in Table 3.2.5-1. Please refer to Appendix I in the ISA for locations of properties.

The term REC, as defined in ASTM Standard Practice E 1527-05, means the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with applicable laws. The term is not intended to include *de minimis* conditions that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

Results of the record review and a list of all potential right-of-way (ROW) acquisition REC properties are presented in Table 3.2.5-1, and a map showing the locations of these properties is provided in Appendix I in the ISA.

Lastly, herbicides and pesticides may be present along the project location where historic and current agricultural activities occur. The ISA recommends that soil samples be collected and analyzed for herbicides and pesticides to determine proper handling and disposal requirements. Phase II site investigations were conducted to determine the presence of these hazardous materials.

After public review of the draft environmental document, Alternative 3 was identified as the Preferred Alternative, and additional hazardous waste/materials investigations were conducted for Alternative 3. A Phase II investigation was conducted in September 2016 for six properties associated with railroad use and one property associated with former agricultural use. The investigation consisted of the collection and analysis of soil samples from two borings at each of the seven parcels identified to determine the presence of hazardous materials. The purpose of this investigation was to obtain soil contamination data to be used to address potential health and safety issues and develop a soil management plan for implementation during construction.

Table 3.2.5-1 Preliminarily Identified Properties for Acquisition that may be RECs

APN	Address	Use	Partial/Full Acquisition	Potential RECs
Alternative 2 (HOV)				
023601110	None	Railroad	Partial	Located within 25 feet of rail lines. Soils should be sampled for pesticides containing arsenic.
023603114	None	Railroad	Partial	Located within 25 feet of rail lines. Soils should be sampled for pesticides containing arsenic.
023603115	None	Railroad	Partial	Located within 25 feet of rail lines. Soils should be sampled for pesticides containing arsenic.
023604125	None	Railroad	Partial	Located within 25 feet of rail lines. Soils should be sampled for pesticides containing arsenic.
023522153*	16005 Valley Boulevard, Fontana	Commercial	Partial	At least one aboveground storage tank (AST) has been identified as being located on the property. AST may be located within the portion identified for acquisition.
025424114*	None	Railroad	Partial	Located within 25 feet of rail lines. Soils should be sampled for pesticides containing arsenic.
025424103	None	Railroad	Partial	Located within 25 feet of rail lines. Soils should be sampled for pesticides containing arsenic.
013221104	None	Railroad	Partial	Located within 25 feet of rail lines. Soils should be sampled for pesticides containing arsenic.
025416101	None	Railroad	Partial	Located within 25 feet of rail lines. Soils should be sampled for pesticides containing arsenic.
016304132	500 E. Valley Boulevard, Colton	Commercial	Partial	At least one underground storage tank (UST) has been identified as being located on the property. UST may be located within the portion identified for acquisition.
029203247	None	Railroad	Partial	Located within 25 feet of rail lines. Soils should be sampled for pesticides containing arsenic.
Alternative 3 (Express Lanes) [Preferred Alternative]				
100914201	Unknown	Commercial	Partial	Structures to be demolished should be sampled for ACM and LBP.
100831101	9222 Vernon Avenue, Montclair	Residential	Full	Structures to be demolished should be sampled for ACM and LBP.

Table 3.2.5-1 Preliminarily Identified Properties for Acquisition that may be RECs

APN	Address	Use	Partial/Full Acquisition	Potential RECs
100830135	9211 Vernon Avenue, Montclair	Residential	Full	Structures to be demolished should be sampled for ACM and LBP.
100830127	5544 Caroline Street, Montclair	Residential	Full	Structures to be demolished should be sampled for ACM and LBP.
100830126	5554 Caroline Street, Montclair	Residential	Full	Structures to be demolished should be sampled for ACM and LBP.
104742401	950 E. 6th Street, Ontario	Residential	Full	Structures to be demolished should be sampled for ACM and LBP.
104742304	1422 Orchard Lane, Ontario	Residential	Full	Structures to be demolished should be sampled for ACM and LBP.
104741113	1340 N. Holmes Court, Ontario	Residential	Partial	Structures to be demolished should be sampled for ACM and LBP.
104744405	1329 N. La Paloma Court, Ontario	Residential	Full	Structures to be demolished should be sampled for ACM and LBP.
011032112	540 N. Vineyard Avenue, Ontario	Commercial	Partial	At least one UST has been identified as being located on the property. Further investigation was conducted (see below).
021055109	3401 Centre Lake Drive, Ontario	Industrial	Partial	At least one UST has been identified as being located on the property. Further investigation was conducted (see below).
021021220	3801 E. Guasti Road, Ontario	Industrial	Partial	At least one UST has been identified as being located on the property. Further investigation was conducted (see below).
02341611	10288 Calabash Avenue, Fontana	Commercial	Partial	At least one AST has been identified as being located on the property. Further investigation was conducted (see below).
023418112	10251 Calabash Avenue, Fontana	Industrial	Partial	At least one UST has been identified as being located on the property. Further investigation was conducted (see below).
023420113	10268 Almond Avenue, Fontana	Commercial	Partial	At least one UST has been identified as being located on the property. Further investigation was conducted (see below).
023420101	Unknown	Commercial	Partial	Structures to be demolished should be sampled for ACM and LBP.
023421122	10238 Cherry Avenue, Fontana	Commercial	Partial	At least one UST has been identified as being located on the property. Further investigation was conducted (see below).
023423228	14667 Washington Drive, Fontana	Residential	Partial	Structures to be demolished should be sampled for ACM and LBP.
023423238	10286 Redwood Avenue, Fontana	Residential	Partial	Structures to be demolished should be sampled for ACM and LBP.
023425218	Unknown	Residential	Full	Structures to be demolished should be sampled for ACM and LBP.
023425204	14747 Washington Drive, Fontana	Residential	Partial	Structures to be demolished should be sampled for ACM and LBP.

Table 3.2.5-1 Preliminarily Identified Properties for Acquisition that may be RECs

APN	Address	Use	Partial/Full Acquisition	Potential RECs
023425207	14795 Washington Drive, Fontana	Residential	Partial	Structures to be demolished should be sampled for ACM and LBP.
023425208	14811 Washington Drive, Fontana	Residential	Partial	Structures to be demolished should be sampled for ACM and LBP.
023425209	14833 Washington Drive, Fontana	Residential	Partial	Structures to be demolished should be sampled for ACM and LBP.
023425210	14843 Washington Drive, Fontana	Residential	Partial	Structures to be demolished should be sampled for ACM and LBP.
023425214	14855 Washington Drive, Fontana	Residential	Partial	Structures to be demolished should be sampled for ACM and LBP.
023425213	14875 Washington Drive, Fontana	Residential	Partial	Structures to be demolished should be sampled for ACM and LBP.
023517226	14915 Washington Drive, Fontana	Residential	Partial	Structures to be demolished should be sampled for ACM and LBP.
023517217	14925 Washington Drive, Fontana	Residential	Partial	Structures to be demolished should be sampled for ACM and LBP.
023517219	14945 Washington Drive, Fontana	Residential	Full	Structures to be demolished should be sampled for ACM and LBP.
023517214	14997 Washington Drive, Fontana	Residential	Full	Structures to be demolished should be sampled for ACM and LBP.
023517209	15057 Washington Drive, Fontana	Residential	Full	Structures to be demolished should be sampled for ACM and LBP.
023517208	15067 Washington Drive, Fontana	Residential	Partial	Structures to be demolished should be sampled for ACM and LBP.
023517201	15087 Washington Drive, Fontana	Residential	Full	Structures to be demolished should be sampled for ACM and LBP.
023518215	15131 Washington Drive, Fontana	Residential	Partial	Structures to be demolished should be sampled for ACM and LBP.
023518210	15141 Washington Drive, Fontana	Residential	Partial	Structures to be demolished should be sampled for ACM and LBP.
023518206	14915 Washington Drive, Fontana	Residential	Full	Structures to be demolished should be sampled for ACM and LBP.
023518205	14915 Washington Drive, Fontana	Residential	Partial	Structures to be demolished should be sampled for ACM and LBP.
023518204	15243 Washington Drive, Fontana	Residential	Full	Structures to be demolished should be sampled for ACM and LBP.
023518213	10290 Beech Avenue, Fontana	Residential	Full	Structures to be demolished should be sampled for ACM and LBP.
023522153*	16005 Valley Boulevard, Fontana	Commercial	Partial	At least one AST has been identified as being located on the property. Further investigation was conducted (see below).
025424114*	None	Railroad	Partial	Located within 25 feet of rail lines. Soils should be sampled for pesticides containing arsenic.

Table 3.2.5-1 Preliminarily Identified Properties for Acquisition that may be RECs

APN	Address	Use	Partial/Full Acquisition	Potential RECs
025424106	None	Railroad	Partial	Located within 25 feet of rail lines. Soils should be sampled for pesticides containing arsenic.
025424107	None	Railroad	Partial	Located within 25 feet of rail lines. Soils should be sampled for pesticides containing arsenic.
013213228	161 E. Valley Boulevard, Rialto	Commercial	Partial	At least one UST has been identified as being located on the property. Further investigation was conducted (see below).
013213229	195 E. Valley Boulevard, Rialto	Commercial	Partial	At least one UST has been identified as being located on the property. Further investigation was conducted (see below).
013221111	1762 Sycamore Avenue, Rialto	Agricultural	Partial	At least one UST has been identified as being located on the property. UST may be located within the portion identified for acquisition. Further investigation was conducted (see below).
013221108	Unknown	Residential	Partial	Structures to be demolished should be sampled for ACM and LBP.
016301134	None	Railroad	Partial	Located within 25 feet of rail lines. Soils should be sampled for pesticides containing arsenic.
016303116	None	Railroad	Partial	Located within 25 feet of rail lines. Soils should be sampled for pesticides containing arsenic.
028124311	1880 Mountain View Avenue, Loma Linda	Commercial	Partial	At least one UST has been identified as being located on the property. Further investigation was conducted (see below).
029203247	Unknown	Vacant	Partial	Located within 25 feet of rail lines. Soils should be sampled for pesticides containing arsenic.
029206402	Unknown	Agricultural	Partial	Soils should be sampled for herbicides and pesticides.
*These properties are proposed for partial acquisition for both Alternatives 2 and 3.				

Further investigations were conducted concerning USTs and ASTs located adjacent to existing or proposed ROW or properties proposed for acquisition. A record search was conducted at the San Bernardino County Fire Department, Office of the Fire Marshall (OFM), and the State Water Resources Control Board's (SWRCB) online database known as GeoTracker, to determine the location of the USTs and ASTs associated with the parcels identified in the ISA. Files reviewed included contingency plan maps, UST diagrams, site diagrams, plot plans, and soil sample location diagrams. The purpose of the record search of USTs and ASTs was to determine whether construction of Alternative 3 will require acquisition or relocation of USTs/ASTs.

Other Site Concerns

One leaking underground storage tank (LUST) incident previously underwent remedial activities. The site, known as the Former M&M Smog and Muffler site, is located at 1915 Tippecanoe in San Bernardino. Soil samples indicated that the soil is contaminated with gasoline-related contaminants above regulatory limits. Remedial activities are continuing at the site. A request for No Further Action was submitted in May 2014 and was approved November 19, 2014.

Another LUST site was identified at 10251 Calabash Avenue in Fontana in November 1991. The site is owned and operated by a freight and transport business, Werner Enterprises, Inc. Remediation was conducted immediately after the report of the LUST, and this case was closed in December 1991. This UST has been reported as "tank closure."

Wooden utility poles along the roadside and railroad ties in the rail yard in Colton may be coated with creosote. These wooden poles and rail ties would need to be properly managed if removed and disposed; however, removal of rail ties is not anticipated at this time. No other hazardous substances were identified during the site reconnaissance.

Asbestos-Containing Materials and Lead-Based Paint

During the site reconnaissance, possible ACM was observed at the site. An estimated 54 bridges would be affected during construction of the proposed project. These structures possibly containing ACM constitute an REC for the project alignment. During the site reconnaissance, paint used for lane striping was observed along the roadways. Lane striping paint may contain LBP or other hazardous materials and may exceed hazardous waste criteria under California Code of Regulations (CCR) Title 22 and require disposal in a Class I disposal site. This constitutes an REC for the project location.

A subsequent site investigation for asbestos and LBP was conducted to determine the presence of concentrations of ACM and LBP for the structures subject to demolition or improvements within the construction footprint of Alternative 3. Of the 54 bridges, the proposed construction on 10 of the bridges consists exclusively of tie-back walls or box culverts that would not have the potential to disturb hazardous building materials. Hazardous building material surveys for ACM and LBP were conducted for the remaining 44 bridges that would be likely to disturb hazardous materials during construction of the project. ACM and LBP surveys were conducted in July and August 2016 by Group Delta Consultants, Inc.

Aerially Deposited Lead

ADL is common in the immediate vicinity of freeways and highways due to lead from gasoline engine emissions. Previous ADL sampling was conducted along the proposed project corridor. As discussed in more detail within the project's ISA, four past reports covering approximately 18.7 miles of the proposed project corridor have indicated that soils sampled along the corridor contain some amounts of lead and have the potential to be classified as hazardous waste if not reused at the site. The probability that ADL may be present at similar concentrations along the shoulders of the remaining untested portions of the proposed corridor is likely.

Additional ADL soil sampling was conducted by Group Delta Consultants, Inc., at freeway shoulders and interchange areas along Interstate 10 (I-10) to include the entire 33-mile-long project limits. Soil sampling was performed in July and August 2016 in unpaved areas within the zone of future soil disturbance. Sampling locations were positioned at approximately 1,500- to 2,500-foot intervals along the shoulders and in the median along I-10 within the project's limits where no recent soil disturbances had occurred. Boring locations were also proposed at closer intervals near select bridges and along freeway on-/off-ramps proposed for improvements. Soil samples were collected at approximate depths of 0.5, 1.5, and 3.0 feet below ground surface (bgs) at each location. These depth intervals are based on the expected depths of soil disturbance of construction activities. Soil samples were collected at an additional depth of 4 feet bgs near bridges or where existing slopes are above cut soundwalls.

3.2.5.3 Environmental Consequences

Permanent Impacts

No Build Alternative

The No Build Alternative would not change the existing physical environment; therefore, no permanent impacts related to hazardous waste materials would occur. As with the build alternatives, routine maintenance activities would continue and would be required to follow applicable regulations with respect to the handling and disposal of potentially hazardous materials.

Build Alternatives

Routine maintenance activities during operation of the proposed project would be required to follow applicable regulations with respect to the use, storage, handling, transport, and disposal of potentially hazardous materials; therefore, operation of the proposed project would not introduce new hazardous waste materials.

Temporary/Construction Impacts

No Build Alternative

The No Build Alternative would not involve ground or structure disturbance; therefore, no temporary impacts related to hazardous waste materials would occur.

Common to Build Alternatives

The build alternatives would involve disturbance of existing soils and structures; therefore, hazardous soil and groundwater contaminants and structural materials may be encountered during project construction. Standard provisions and requirements that would apply during project construction for treatment and handling of these materials are noted, where applicable. The implementation of standard provisions and requirements would minimize any direct or indirect adverse temporary impacts. Based on these conclusions and in addition to any coordination with regulatory agencies for approvals, permits, or site closures, additional investigation or monitoring efforts would be required. The procedures for hazardous materials investigation for the project are presented in Section 3.2.5.4. All of the build alternatives are anticipated to have a less than substantial temporary hazardous waste impact.

Alternative 2

Eleven (11) potential REC parcels have been preliminarily identified for acquisition in the Alternative 2 project area. All acquisition properties identified for Alternative 2 are partial acquisitions. The potential environmental concerns for Alternative 2 are described below:

Acquisition Properties

- Nine of the 11 properties are located within 25 feet of rail lines and will be sampled for pesticides containing arsenic if Alternative 2 is selected; however, Alternative 2 was not identified as the Preferred Alternative, and these parcels will not be acquired.
- One parcel contains at least one AST, which may or may not be within the portion identified for acquisition (APN 02352215). Further investigation determined that the parcel is not an REC.
- One parcel identified for partial acquisition has at least one UST on the property (APN 016304132); however, Alternative 2 was not identified as the Preferred Alternative, and this parcel will not be acquired.

If Alternative 2 is selected, these 11 parcels will be surveyed to determine whether any USTs, ASTs, or arsenic-contaminated soils are located within an area identified for acquisition. If any hazardous materials are located within the area to be acquired, proper removal procedures in accordance with standard provisions and requirements would minimize any direct or indirect adverse temporary impacts. After public review of the draft environmental document, Alternative 3 was identified as the Preferred Alternative; hence, the 11 parcels identified for acquisition under Alternative 2 will not be acquired.

Alternative 3 (Preferred Alternative)

Fifty-three (53) potential REC parcels have been preliminarily identified for acquisition in the Alternative 3 project area; 38 of these parcels are partial acquisitions and 15 are full acquisitions. The potential environmental concerns for Alternative 3 are described below:

Asbestos-Containing Materials and Lead-Based Paint

- Forty-four (44) structures to be demolished were sampled for ACM and LBP. An ACM and LBP Survey Report (September 2016) was completed by Group Delta Consultants, Inc., for ACMs, LBPs, and lead-containing paints (LCPs) in 44 bridges located along the project alignment. Based on the findings of this investigation, some of the bridges contain ACM and LBP. Handling of these materials will be addressed during the design phase by preparation of an appropriate Special Provision. The results of the surveys are summarized in Table 3.2.5-2.

Table 3.2.5-2 ACM and LBP Survey Results

Bridge Number/Name	Asbestos Determination	Lead Determination
54-0453 Mills Ave UC	Non-asbestos containing	CA Non-RCRA Hazardous
54-0451 San Antonio Wash Bridge	Non-asbestos containing	CA Non-RCRA Hazardous
54-0450 Monte Vista Ave UC	Non-asbestos containing	CA Non-RCRA Hazardous
54-1186 Central Ave UC	Non-asbestos containing	LCP/CA Non-RCRA Hazardous
54-0448 Benson Ave UC	Non-asbestos containing	Non-Hazardous
54-1187 Mountain Ave UC	Non-asbestos containing	Non-Hazardous
54-0446 San Antonio Ave OC	Non-asbestos containing	CA Non-RCRA Hazardous
54-0445 Euclid Ave OC (Route 83/10 Sep)	ACM	CA Non-RCRA Hazardous
54-0444 Sultana Ave OC	Non-asbestos containing	Non-Hazardous
54-0443 Campus Ave OC	ACM	Non-Hazardous
54-0442 6th St OC	ACM	Non-Hazardous
54-0441 Grove Ave UC	Existing Data - Survey Unnecessary	
54-0440 4th St UC	Existing Data - Survey Unnecessary	
54-1117 West Cucamonga Channel	Box Only - Survey Unnecessary	
54-0439 Vineyard Ave OC	ACM	CA Non-RCRA Hazardous
54-0438 Cucamonga Wash Bridge	Non-asbestos containing	Non-Hazardous
54-0437 Holt Blvd Off-Ramp UC	ACM	Non-Hazardous
54-1201L/0560R Haven Ave OC	Tieback Only - Survey Unnecessary	
54-0539 Milliken Ave OC	Tieback Only - Survey Unnecessary	
54-0351 Day Canyon Channel Bridge	Non-asbestos containing	Non-Hazardous
54-0378 Etiwanda Wash Bridge	Non-asbestos containing	Non-Hazardous
54-0378S Etiwanda Wash Bridge (EB Off-Ramp)	ACM	Non-Hazardous
54-0030 Valley Blvd EB Off-Ramp U	ACM	CA Non-RCRA Hazardous
54-0454 Etiwanda - San Sevaine Channel	ACM	Non-Hazardous
54-0454S Etiwanda - San Sevaine Channel (EB On-Ramp)	ACM	Non-Hazardous
54-0416 Kaiser Spur OH	Non-asbestos containing	N/A
54-0434 San Sevaine Creek Channel	Box Only - Survey Unnecessary	
54-0425M Mulberry Creek Channel	Box Only - Survey Unnecessary	
54-0035 Cedar Ave OC	Tieback Only - Survey Unnecessary	
54-0835 Slover Mountain UP	Non-asbestos containing	LBP/RCRA Hazardous
54-0817 Rancho Ave OC	Tieback Only - Survey Unnecessary	
54-0464 Colton OH	ACM	LBP/RCRA Hazardous
54-0462 La Cadena Dr UC	ACM	CA Non-RCRA Hazardous

Table 3.2.5-2 ACM and LBP Survey Results

Bridge Number/Name	Asbestos Determination	Lead Determination
54-0462S La Cadena Dr EB Off-Ramp UC	ACM	CA Non-RCRA Hazardous
54-0461 9th St UC	Non-asbestos containing	N/A
54-0460 Pavillion Spur OH	ACM	N/A
54-0459 Mt. Vernon Ave OC	Tieback Only - Survey Unnecessary	
54-0830 Warm Creek Bridge	ACM	Non-Hazardous
54-0292 Santa Ana River Bridge	ACM	Non-Hazardous
54-0601 Hunts Ln UC	ACM	Non-Hazardous
54-0600 Waterman Ave UC	Non-asbestos containing	N/A
54-1105K San Timoteo Creek (Carnegie Dr WB hook on-ramp)	Non-asbestos containing	Non-Hazardous
54-0599 San Timoteo Creek	Non-asbestos containing	Non-Hazardous
54-0598 Tippecanoe Ave UC	Non-asbestos containing	N/A
54-0597 Richardson St OC	ACM	Non-Hazardous
54-0596 Mountain View Ave UC	ACM	N/A
54-0570 West Redlands OH/ Mission-Zanja Channel	ACM	Non-Hazardous
54-0595 California St UC	ACM	N/A
54-0594 Nevada St UC	Non-asbestos containing	N/A
54-0592 Tennessee St OC	Non-asbestos containing	N/A
54-0583 Texas St UC	Non-asbestos containing	N/A
54-0580 Eureka St UC	Non-asbestos containing	Non-Hazardous
54-0588 Ford St UC	Non-asbestos containing	N/A
54-0589 Redlands Blvd WB Off-Ramp UC	Non-asbestos containing	N/A

Acquisition Properties

Based on the analytical results, soils associated with four samples from acquisition parcels 025424106, 01603116, and 029203247 exhibited lead concentrations that meet the criteria for non-RCRA California hazardous waste. In consideration of proximity to the Caltrans ROW and I-10, it is probable that the source of the elevated lead concentrations is ADL and should be handled as non-RCRA California hazardous waste. The results of the Phase II site investigation are summarized in Table 3.2.5-3.

Table 3.2.5-3 Phase II Site Investigation Results

APN	Use	Potential RECs	Findings
025424114*	Railroad	No	No remediation action needed
025424106	Railroad	Likely	Manage soil in accordance with project ADL specifications for the eastbound (EB) Interstate 15 (I-15) to Ford Street segment
025424107	Railroad	No	No remediation action needed
016301134	Railroad	No	No remediation action needed
016303116	Railroad	Likely	Manage soil in accordance with project ADL specifications for the EB I-15 to Ford Street segment
029203247	Railroad	Likely	Manage soil in accordance with project ADL specifications for the EB I-15 to Ford Street segment
029206402	Agricultural	No	No remediation action needed

Based on the findings of the ISA, further UST/AST location research was conducted for 11 parcels and for 1 additional parcel potentially containing a UST that was identified by Caltrans. Partial acquisition and/or temporary construction easements (TCEs) would be required of these 12 parcels. The results of the UST/AST research are summarized in Table 3.2.5-4. Five parcels were identified to be areas of concern or requiring further investigation and are described below.

- APN 011032112 – The property at 540 N. Vineyard Avenue in Ontario is a gasoline station that operates dispensers immediately adjacent to the location of a proposed TCE; no release has been documented at the station. The proximity of the proposed TCE to the dispenser islands is considered an area of concern.
- APN 028124311 – The property at 1880 Mountain View Avenue in Loma Linda reported an LUST that affected soil only. The extent of residual contaminated soil is not known, but it is reportedly limited to the area of the dispenser islands. The LUST case was closed in 2005. The proximity of the proposed partial acquisition and TCE to the dispenser islands is considered an area of concern; however, it is unlikely that shallow construction, including sidewalk and street reconstruction adjacent to the site, would be impacted.
- APN 013221111 – Additional information is needed to determine the status of the USTs for 1762 Sycamore Avenue in Rialto. It is unlikely a UST is located on the area of the proposed partial acquisition or TCE; however, further investigation on the location of the UST will be conducted after approval of the Final EIR/EIS.

- APN 023418122 – Environmental Data Resources records indicate that 10251 Calabash Avenue in Fontana is the location of a closed LUST site, which is located approximately 380 feet from the proposed ROW; however, further supplemental review is recommended to confirm the whereabouts of the LUST.
- APN 021055109 – Additional records review or interviews with property owners will be needed to confirm the location and status of the reported USTs/ASTs at an office building at 3401 Centre Lake Drive, Ontario. The presence of USTs is not likely at this site; however, interviews with property owners or knowledgeable individuals are needed to confirm this determination.

Table 3.2.5-4 UST/AST Research Results

APN	Address	Findings	Conclusions
011032112	540 N. Vineyard Avenue, Ontario	Active - UST	Area of Concern. Dispenser islands located adjacent to proposed TCE.
021055109	3401 Centre Lake Drive, Ontario	No UST Records	UST likely does not exist.
021021220	3801 E. Guasti Road, Ontario	Removed - UST	Not REC.
02341611	10288 Calabash Avenue, Fontana	No AST records – AST not visible	Not REC.
023420113	10268 Almond Avenue, Fontana	Removed – No impacts near ROW	Not REC.
023421122	10238 Cherry Avenue, Fontana	Removed – Closed LUST case	Not REC.
023522153	16005 Valley Boulevard, Fontana	No AST records – AST not visible	Not REC.
013213228	161 E. Valley Boulevard, Rialto	Active - UST	Not REC.
013213229	195 E. Valley Boulevard, Rialto	Removed – Closed LUST case	Not REC.
013221111	1762 Sycamore Avenue, Rialto	Location not on file	More information/site investigation needed.
028124311	1880 Mountain View Avenue, Loma Linda	Removed – Closed LUST case	Area of Concern. Residual soil contamination reportedly located in the area of the dispenser islands. The project would require shallow excavation for sidewalk and street reconstruction adjacent to the dispenser islands; however, it is unlikely any residual soil contamination would impact the project.
023418122	10251 Calabash Avenue, Fontana	Likely removed – Closed LUST case	More information/site investigation needed.

Hazardous materials located within the areas to be acquired or demolished will be removed via proper procedures in accordance with standard provisions and requirements that would minimize any direct or indirect adverse temporary impacts.

Aerially Deposited Lead

Based on the analytical results of the ADL study, excavated soil along the project corridor is generally classified as non-hazardous for onsite use based on the *Department of Toxic Substances Control Soil Management Agreement for Aerially Deposited Lead-Contaminated Soils* (June 2016).

Construction of the I-10 Corridor Project (I-10 CP) will be separated into two design-build contracts: Los Angeles/San Bernardino (LA/SB) county line to Interstate 15 (I-15) and I-15 to Ford Street. Table 3.2.5-5 provides a general overview of soil within each of these segments that has been statistically determined to be California non-Resource Conservation and Recovery Act (non-RCRA) hazardous waste and should be managed as Caltrans soil type 'R1' material if reused or Caltrans soil type 'Z2' if disposed offsite. This determination is based on a statistical exceedance of the California Soluble Threshold Limit Concentration (STLC) (5 milligrams per liter [mg/L]) using a 95 percent Upper Confidence Limit calculation for soluble lead analytical results. All soil underlying the depths provided in Table 3.2.5-5 is considered non-hazardous and unregulated if reused or disposed offsite.

Table 3.2.5-5 Results of ADL Site Investigation

Location	Hazardous ADL Soil Depth (feet)	Soluble Lead Concentration (mg/L)	Recommendation
LA/SB County Line to I-15			
Westbound	0.0-0.5	7.75	Reuse soil per Department of Toxic Substances Control (DTSC) Agreement beneath 1 foot of clean soil or pavement structure as Caltrans soil type 'R1.'
Eastbound	N/A	4.43	Onsite reuse of soil is unregulated.
Median	0.0-3.0	11.72	Reuse soil per DTSC Agreement beneath 1 foot of clean soil or pavement structure as Caltrans soil type 'R1.'
I-15 to Ford Street			
Westbound	0.0-0.5	10.68	Reuse soil per DTSC Agreement beneath 1 foot of clean soil or pavement structure as Caltrans soil type 'R1.'

Table 3.2.5-5 Results of ADL Site Investigation

Location	Hazardous ADL Soil Depth (feet)	Soluble Lead Concentration (mg/L)	Recommendation
Eastbound	0.0–0.5	7.60	Reuse soil per DTSC Agreement beneath 1 foot of clean soil or pavement structure as Caltrans soil type 'R1.'
Median	0.0-4.0	13.78	Reuse soil per DTSC Agreement beneath 1 foot of clean soil or pavement structure as Caltrans soil type 'R1.'

3.2.5.4 Avoidance, Minimization, and/or Mitigation Measures

Measures will be implemented under San Bernardino County Transportation Authority (SBCTA) and Caltrans oversight. Any changes would require Caltrans and SBCTA approvals.

HAZ-1: If additional properties and/or structures are identified to be removed and/or altered beyond those identified in this Final EIR/EIS, surveys for hazardous building materials, including ACM, LBP, and polychlorinated biphenyls (PCBs) will be conducted for the residential and commercial structures and bridge structures that will be removed as part of the proposed project.

HAZ-2: Parcels beyond those analyzed in this Final EIR/EIS that are required for partial or full acquisition will be surveyed to determine whether any USTs, ASTs, or arsenic-contaminated soils are located within an area identified for acquisition. If any hazardous materials are located within the area to be acquired, proper removal procedures in accordance with standard provisions and requirements would minimize any direct or indirect adverse temporary impacts.

HAZ-3: Prior to construction, Caltrans will require utility owners to inspect for potential PCBs in utility pole-mounted transformers that will be relocated or removed as part of the project. The pole-mounted transformers will be inspected for leaks, and any leaking transformers will be considered a PCB hazard unless tested and confirmed otherwise, and will be handled accordingly.

HAZ-4: Prior to construction, testing of yellow traffic stripes and pavement marking material will be performed.

HAZ-5: If additional disturbance within unpaved areas are required beyond those identified in the Final EIR/EIS, sampling for ADL shall be conducted. A Site Assessment for ADL will be prepared and will include the following:

- A detailed description of where the ADL is located on the project site, including the length, width, and depth of the contamination;
- A determination of the Caltrans "soil type" (Unregulated, C, R1, R2, Z0, Z2, or Z3) that is found during the survey;
- A discussion of how the soil will be reused on the project in accordance with the Department of Toxic Substances Control (DTSC) issued variance or if the soil will require offsite disposal; and
- A discussion of the Caltrans Special Provisions that must be followed.

HAZ-6: Based on preliminary design plans, USTs and ASTs would not be removed at any of the proposed partial acquisition parcels. If design plans change and require any of the USTs and ASTs to be removed, additional site investigation(s) will be necessary. Removal of USTs and ASTs will be conducted in accordance with Section 2672 (for USTs) of Title 23 of the CCR as implemented by the local Regional Water Quality Control Board (RWQCB) will be followed. Minimum requirements for AST removal include removal of tank contents (including material in associated piping, rinsate, and decontamination products) to be managed as hazardous waste; and tank atmosphere to be rendered vapor free (for tanks that held flammable/combustible products). If the USTs or ASTs contain hazardous materials, soils surrounding the tanks will be collected and analyzed for said hazardous materials after removal of the tanks to determine proper handling and disposal requirements.

HAZ-7: Herbicides and pesticides may be present along the project location where historic and current agricultural activities occur. If additional soil disturbance is required within historic and current agricultural uses beyond those identified in the Final EIR/EIS, soil samples will be collected and analyzed for herbicides and pesticides to determine proper handling and disposal requirements.

HAZ-8: If additional site investigations are necessary and hazardous waste/ materials are found, coordination with all appropriate regulatory agencies will be required for the removal, disposal, and/or handling of potentially hazardous materials.

HAZ-9: If signs of potential impacts (e.g., odors, discolored soil) are observed during construction activity, construction shall cease and Caltrans' Unknown Hazards Procedures for construction shall be followed. If groundwater is encountered during construction activities, or if construction dewatering is necessary, then sampling and analysis of groundwater shall be conducted to identify the appropriate management and disposal of the groundwater.

HAZ-10: A Health and Safety Plan will be developed to guide all construction activities. A certified industrial hygienist will prepare this plan based on evaluations of proposed construction activities, the potential hazards identified in this Final EIR/EIS, and any future assessment prepared for the project. This plan will contain specific procedures for encountering expected and unexpected contaminants. It will prescribe safe work practices, contaminant monitoring, personal protective equipment, emergency response procedures, and safety training requirements to protect construction workers and third parties. The plan will meet the requirements of 29 CFR 1910 and 1926 and all other applicable federal, State, and local regulations and requirements.

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3.2.6 Air Quality

3.2.6.1 Regulatory Setting

The Federal Clean Air Act (CAA), as amended, is the primary federal law that governs air quality, while the California CAA is its companion state law. These laws, and related regulations by the U.S. Environmental Protection Agency (EPA) and California Air Resources Board (ARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and California Ambient Air Quality Standards (CAAQS) have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO); nitrogen dioxide (NO_2); ozone (O_3); particulate matter (PM), which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$); and sulfur dioxide (SO_2). In addition, national and state standards exist for lead (Pb), and state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (TACs) (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under the National Environmental Policy Act (NEPA). In addition to this environmental analysis, a parallel “Conformity” requirement under the Federal CAA also applies.

Conformity

The conformity requirement is based on Federal CAA Section 176(c), which prohibits the U.S. Department of Transportation (USDOT) and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to the State Implementation Plan (SIP) for attaining the NAAQS. “Transportation Conformity” applies to highway and transit projects and takes place on two levels: the regional—or planning and programming—level and the project level. The proposed project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and “maintenance” (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. EPA regulations at 40 *Code of Federal Regulations* (CFR) 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/

attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for CO, NO_2, O_3, PM (PM_{10} and $PM_{2.5}$), and in some areas (although not in California), SO_2. California has nonattainment or maintenance areas for all of these transportation-related "criteria pollutants" except SO_2, and it also has a nonattainment area for Pb; however, Pb is not currently required by the Federal CAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years for the RTP and 4 years for the FTIP. RTP and FTIP conformity uses travel demand and emission models to determine whether the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the CAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA) make determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the CAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept, scope, and "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and FTIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis.

Conformity analysis at the project level includes verification that the project is included in the regional conformity analysis and a "hot-spot" analysis if an area is "nonattainment" or "maintenance" for CO and/or PM (PM_{10} or $PM_{2.5}$). A region is "nonattainment" if one or more of the monitoring stations in the region measures a violation of the relevant standard and EPA officially designates the area nonattainment. Areas that were previously designated as nonattainment areas but subsequently meet the standard may be officially redesignated to attainment by EPA and are then called "maintenance" areas. "Hot-spot" analysis is essentially the same, for technical purposes, as CO or PM analysis performed for NEPA purposes. Conformity does include some specific procedural and documentation standards for projects that require a hot-spot analysis. In general, projects must not cause the "hot-spot"-related standard to be violated and must not cause any increase in the number and severity of violations in nonattainment areas. If a known CO or PM violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

3.2.6.2 Affected Environment

An *Air Quality Technical Study* (March 2016) was prepared as part of the proposed project to assess the impacts of the project on air quality locally and regionally. The information presented in this section is based on the results of the report.

Environmental Setting

The proposed project is located within the South Coast Air Basin (SCAB), which is a 6,600-square-mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. Air quality regulation in the SCAB is administered by the South Coast Air Quality Management District (SCAQMD). The SCAB includes Orange County and the non-desert parts of Los Angeles, Riverside, and San Bernardino counties, in addition to the San Gorgonio Pass area of Riverside County. Its terrain and geographical location determine the distinctive climate of the SCAB, as it is a coastal plain with connecting broad valleys and low hills.

The SCAB is characterized as having a Mediterranean climate (i.e., a semiarid environment with mild winters, warm summers, and moderate rainfall). The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild and tempered by cool sea breezes. The extent and severity of the air pollution problem in the SCAB is a function of the area’s natural physical characteristics (i.e., weather and topography), as well as manmade influences (i.e., development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of pollutants throughout the SCAB.

Climate

The SCAB is in an area of high air pollution potential due to its climate and topography (Figure 3.2.6-1). The general region lies in the semi-permanent high pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. The SCAB experiences warm summers, mild winters, infrequent rainfall, light winds, and moderate humidity. This usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The SCAB is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the west and high mountains around the rest of its perimeter. The mountains and hills within the area contribute to the variation of rainfall, temperature, and winds throughout the region.

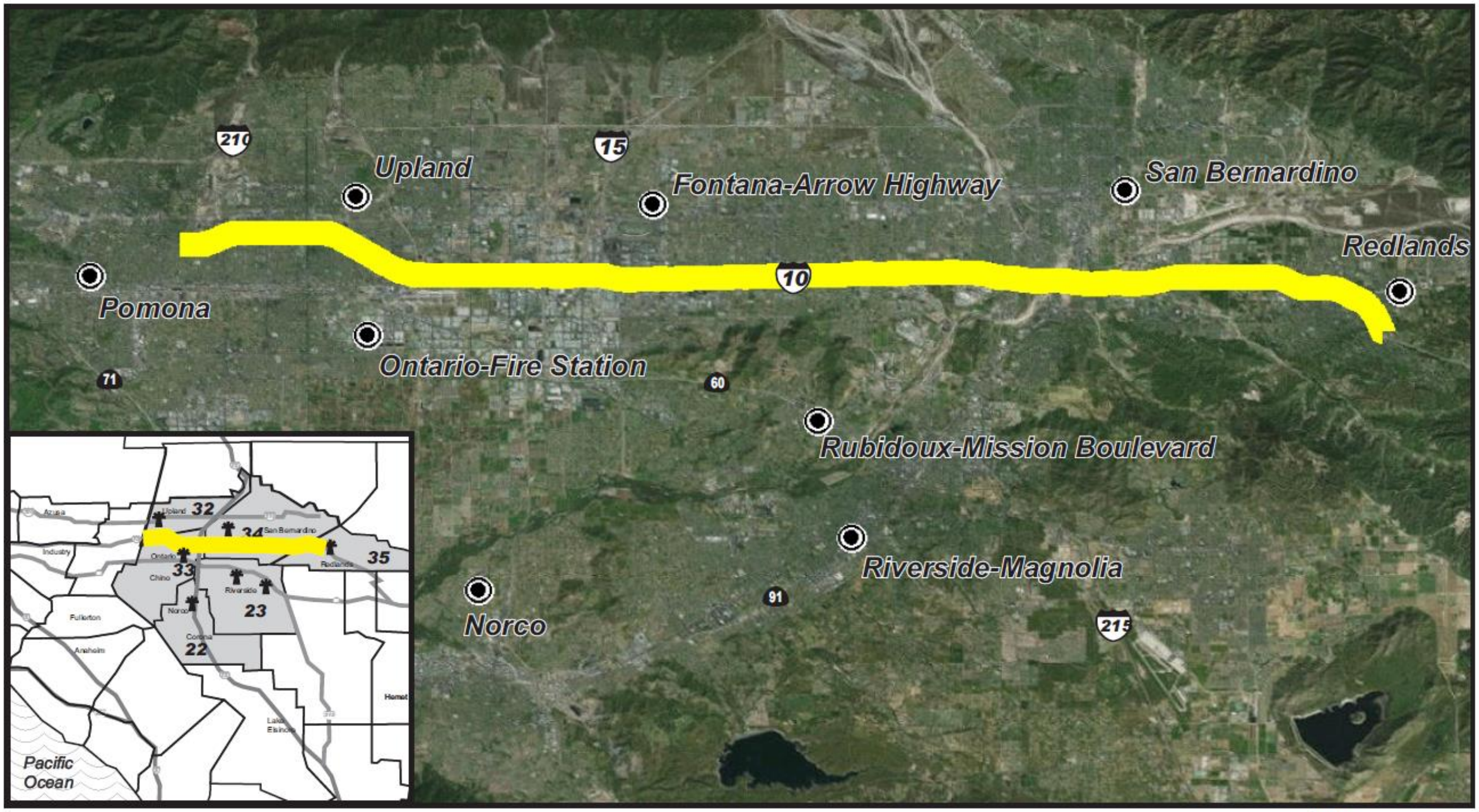
Figure 3.2.6-1 South Coast Air Basin

The SCAB experiences frequent temperature inversions. Temperature typically decreases with height; however, under inversion conditions, temperature increases as altitude increases, thereby preventing air close to the ground from mixing with the air above it. As a result, air pollutants are trapped near the ground. During the summer, air quality problems are created due to the interaction between the ocean surface and the lower layer of the atmosphere. This interaction creates a moist marine layer. An upper layer of warm air mass forms over the cool marine layer, preventing air pollutants from dispersing upward. Additionally, hydrocarbons and NO_2 react under strong sunlight, creating smog. Light, daytime winds, predominantly from the west, further aggravate the condition by driving air pollutants inland, toward the mountains. During the fall and winter, air quality problems are created due to CO and NO_2 emissions. CO concentrations are generally worse in the morning and late evening (around 10:00 p.m.). In the morning, CO levels are relatively high due to cold temperatures and the large number of cars traveling. High CO levels during the late evenings are a result of stagnant atmospheric conditions trapping CO in the area. Because CO emissions are produced almost entirely from automobiles, the highest CO concentrations in the SCAB are associated with heavy traffic. NO_2 concentrations are also generally higher during fall and winter days.

The mountains and hills within the SCAB contribute to the variation of rainfall, temperature, and winds throughout the region. Within the project area, wind in the cities of Upland, Fontana, and San Bernardino blows mostly from the southwest. The portion of the alignment between these cities constitutes approximately 80 percent of the length of the corridor. Going towards the east, in Redlands, wind changes direction due to the contour of the lands and blows equally northwesterly/ southeasterly parallel to the direction of Interstate 10 (I-10) outside of the project limits towards the east. The average wind speed, as recorded by the aforementioned wind monitoring stations, is approximately 1.7 ± 0.5 miles per hour (mph), with calm winds occurring approximately 2 to 8 percent of the time. Wind in the project area predominantly blows from the southwest.

Existing Air Quality – Monitored Data

The ARB and SCAQMD maintain a network of air quality monitoring stations located throughout the SCAB to characterize the air quality environment by measuring and recording pollutant concentrations in the local ambient air (Figure 3.2.6-2). The SCAB is divided into 38 source/receptor areas (SRAs). The proposed project corridor extends along 33 miles of I-10, which passes through SRAs 32 (Upland), 33 (Ontario), 34 (San Bernardino, Fontana), and 35 (Redlands) and along the border of SRAs 23 (Riverside, Rubidoux) and 24 (Perris). The monitoring stations near the project corridor include Pomona, Upland, Fontana, San Bernardino, and Redlands.



LEGEND:

Project Alignment

Air Monitoring Station

APPROX. SCALE

0 2 4 MILES

SOURCE: California Air Resources Board, State and Local Air Monitoring Network Plan, May 2008.

Figure 3.2.6-2 Location of Nearest Air Monitoring Stations

Table 3.2.6-1 includes pollutant levels, State and federal standards, and the number of exceedances recorded at monitoring stations along the alignment. The historical data from these monitoring stations were used to characterize most of the existing conditions in the vicinity of the project area. CO, NO_2, and SO_2 standards did not exceed the State or federal standards in the project area. O_3 concentrations exceeded the State and federal standards at multiple monitoring stations. PM_{10} concentrations exceeded the State standards at multiple monitoring stations, although the federal standard was only exceeded three times at the San Bernardino Monitoring Station from 2011 to 2015. State $PM_{2.5}$ standards were also exceeded multiple times in the project area.

Table 3.2.6-1 2011-2015 Ambient Air Quality Data in Project Vicinity

Pollutant	Pollutant Concentration & Standards	Calendar Year 2011	2012	2013	2014	2015
Pomona Air Monitoring Station[a]						
CO	Maximum Federal 8-hr concentration (ppm) Days > 9.0 ppm (Federal 8-hr standard) Maximum State 8-hr concentration (ppm) Days > 9.0 ppm (State 8-hr standard)	1.60 0 1.72 0	1.47 0 1.47 0	n/a n/a n/a n/a	n/a n/a n/a n/a	n/a n/a n/a n/a
O_3	Maximum 1-hr Concentration (ppm) Days > 0.09 ppm (State 1-hr standard) Days above Federal revoked 1-hr standard Maximum State 8-hr Concentration (ppm) Days > 0.070 ppm (State 8-hr standard) Maximum Federal 8-hr Concentration (ppm) Days > 0.070 ppm (Federal 8-hr standard)	0.119 15 0 0.096 24 0.096 16	0.117 21 0 0.093 30 0.092 15	0.125 12 1 0.100 22 0.099 15	0.123 22 0 0.100 56 0.099 33	0.136 30 2 0.099 55 0.098 53
NO_2	Maximum 1-hr Concentration (ppm) Days > 0.18 ppm (State 1-hr standard) Days > 0.100 ppm (Federal 1-hr standard)	0.0873 0 0	0.0816 0 0	0.0788 0 0	0.0889 0 0	72.3 0 0
SO_2	Maximum 24-hr Concentration (ppm) Days > 0.04 ppm (State 24-hr standard)	n/a n/a	n/a n/a	n/a n/a	n/a n/a	n/a n/a

Table 3.2.6-1 2011-2015 Ambient Air Quality Data in Project Vicinity

Pollu-tant	Pollutant Concentration & Standards	Calendar Year				
		2011	2012	2013	2014	2015
PM_{10}	Maximum 24-hr concentration (µg/m^3) Days > 50 µg/m3 (State 24-hr standard) Days > 150 µg/m3 (Federal 24-hr standard)	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a
$PM_{2.5}$	Maximum 24-hr concentration (µg/m^3) Days > 35 µg/m^3 (Federal 24-hr standard) Annual Arithmetic Mean (µg/m^3) Exceed State Standard (12 µg/m^3) Exceed Federal Standard (12.0 µg/m^3)	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a
Upland Air Monitoring Station[a]						
CO	Maximum Federal 8-hr concentration (ppm) Days > 9.0 ppm (Federal 8-hr standard) Maximum State 8-hr concentration (ppm) Days > 9.0 ppm (State 8-hr standard)	1.27 0 1.27 0	0.93 0 0.93 0	n/a n/a n/a n/a	n/a n/a n/a n/a	n/a n/a n/a n/a
O_3	Maximum 1-hr Concentration (ppm) Days > 0.09 ppm (State 1-hr standard) Days above Federal revoked 1-hr standard Maximum State 8-hr Concentration (ppm) Days > 0.070 ppm (State 8-hr standard) Maximum Federal 8-hr Concentration (ppm) Days > 0.070 ppm (Federal 8-hr standard)	0.145 36 5 0.122 45 0.122 36	0.136 42 4 0.112 66 0.111 45	0.143 25 3 0.112 44 0.111 27	0.126 34 1 0.101 60 0.101 42	0.136 49 2 0.106 69 0.106 66
NO_2	Maximum 1-hr Concentration (ppm) Days > 0.18 ppm (State 1-hr standard) Days > 0.100 ppm (Federal 1-hr standard)	0.0685 0 0	0.0667 0 0	0.0621 0 0	0.0741 0 0	71.6 0 0
SO_2	Maximum 24-hr Concentration (ppm) Days > 0.04 ppm (State 24-hr standard)	n/a n/a	n/a n/a	n/a n/a	n/a n/a	n/a n/a

Table 3.2.6-1 2011-2015 Ambient Air Quality Data in Project Vicinity

Pollu-tant	Pollutant Concentration & Standards	Calendar Year				
		2011	2012	2013	2014	2015
PM_{10}	Maximum 24-hr concentration (µg/m^3) Days > 50 µg/m3 (State 24-hr standard) Days > 150 µg/m3 (Federal 24-hr standard)	72.4 n/a 0	92.7 n/a 0	96.8 n/a 0	80.8 n/a 0	77.7 n/a 0
$PM_{2.5}$	Maximum 24-hr concentration (µg/m^3) Days > 35 µg/m^3 (Federal 24-hr standard) Annual Arithmetic Mean (µg/m^3) Exceed State Standard (12 µg/m^3) Exceed Federal Standard (12.0 µg/m^3)	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a
Ontario Fire Station Air Monitoring Station[b]						
CO	Maximum Federal 8-hr concentration (ppm) Days > 9.0 ppm (Federal 8-hr standard) Maximum State 8-hr concentration (ppm) Days > 9.0 ppm (State 8-hr standard)	n/a n/a n/a n/a	n/a n/a n/a n/a	n/a n/a n/a n/a	n/a n/a n/a n/a	n/a n/a n/a n/a
O_3	Maximum 1-hr Concentration (ppm) Days > 0.09 ppm (State 1-hr standard) Days above Federal revoked 1-hr standard Maximum State 8-hr Concentration (ppm) Days > 0.070 ppm (State 8-hr standard) Maximum Federal 8-hr Concentration (ppm) Days > 0.070 ppm (Federal 8-hr standard)	n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a
NO_2	Maximum 1-hr Concentration (ppm) Days > 0.18 ppm (State 1-hr standard) Days > 0.100 ppm (Federal 1-hr standard)	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a
SO_2	Maximum 24-hr Concentration (ppm) Days > 0.04 ppm (State 24-hr standard)	n/a n/a	n/a n/a	n/a n/a	n/a n/a	n/a n/a

Table 3.2.6-1 2011-2015 Ambient Air Quality Data in Project Vicinity

Pollu-tant	Pollutant Concentration & Standards	Calendar Year				
		2011	2012	2013	2014	2015
PM_{10}	Maximum 24-hr concentration (µg/m^3) Days > 50 µg/m3 (State 24-hr standard) Days > 150 µg/m3 (Federal 24-hr standard)	71.0 3 0	59.0 4 0	117.0 3 0	67.0 3 0	n/a n/a n/a
$PM_{2.5}$	Maximum 24-hr concentration (µg/m^3) Days > 35 µg/m^3 (Federal 24-hr standard) Annual Arithmetic Mean (µg/m^3) Exceed State Standard (12 µg/m^3) Exceed Federal Standard (12.0 µg/m^3)	52.9 2 13.2 Yes No	35.2 0 12.4 No No	49.3 1 n/a n/a n/a	38.4 1 n/a n/a n/a	n/a n/a n/a n/a n/a
Fontana Arrow Highway Air Monitoring Station[a]						
CO	Maximum Federal 8-hr concentration (ppm) Days > 9.0 ppm (Federal 8-hr standard) Maximum State 8-hr concentration (ppm) Days > 9.0 ppm (State 8-hr standard)	1.15 0 1.16 0	1.76 0 1.76 0	n/a n/a n/a n/a	n/a n/a n/a n/a	n/a n/a n/a n/a
O_3	Maximum 1-hr Concentration (ppm) Days > 0.09 ppm (State 1-hr standard) Days above Federal revoked 1-hr standard Maximum State 8-hr Concentration (ppm) Days > 0.070 ppm (State 8-hr standard) Maximum Federal 8-hr Concentration (ppm) Days > 0.070 ppm (Federal 8-hr standard)	0.144 39 5 0.124 53 0.124 39	0.142 60 5 0.110 88 0.110 62	0.151 34 2 0.122 68 0.123 42	0.127 31 1 0.105 52 0.106 37	0.133 36 3 0.111 59 0.111 57
NO_2	Maximum 1-hr Concentration (ppm) Days > 0.18 ppm (State 1-hr standard) Days > 0.100 ppm (Federal 1-hr standard)	0.0764 0 0	0.0691 0 0	0.0817 0 0	0.0704 0 0	89.1 0 0
SO_2	Maximum 24-hr Concentration (ppm) Days > 0.04 ppm (State 24-hr standard)	0.003 0	0.004 0	0.001 n/a	n/a n/a	n/a n/a

Table 3.2.6-1 2011-2015 Ambient Air Quality Data in Project Vicinity

Pollu-tant	Pollutant Concentration & Standards	Calendar Year				
		2011	2012	2013	2014	2015
PM_{10}	Maximum 24-hr concentration (µg/m^3) Days > 50 µg/m3 (State 24-hr standard) Days > 150 µg/m3 (Federal 24-hr standard)	84.0 4 0	67.0 5 0	90.0 15 0	68.0 10 0	96.0 13 0
$PM_{2.5}$	Maximum 24-hr concentration (µg/m^3) Days > 35 µg/m^3 (Federal 24-hr standard) Annual Arithmetic Mean (µg/m^3) Exceed State Standard (12 µg/m^3) Exceed Federal Standard (12.0 µg/m^3)	60.1 2 12.5 Yes No	39.9 3 12.8 Yes No	43.6 1 12.2 Yes No	34.9 0 n/a n/a n/a	50.5 3 11.0 No No
San Bernardino Air Monitoring Station[a]						
CO	Maximum Federal 8-hr concentration (ppm) Days > 9.0 ppm (Federal 8-hr standard) Maximum State 8-hr concentration (ppm) Days > 9.0 ppm (State 8-hr standard)	1.74 0 1.74 0	1.64 0 1.64 0	n/a n/a n/a n/a	n/a n/a n/a n/a	n/a n/a n/a n/a
O_3	Maximum 1-hr Concentration (ppm) Days > 0.09 ppm (State 1-hr standard) Days above Federal revoked 1-hr standard Maximum State 8-hr Concentration (ppm) Days > 0.070 ppm (State 8-hr standard) Maximum Federal 8-hr Concentration (ppm) Days > 0.070 ppm (Federal 8-hr standard)	0.135 40 2 0.121 60 0.121 39	0.124 41 0 0.109 77 0.109 54	0.139 22 2 0.113 53 0.112 36	0.121 38 0 0.100 76 0.099 51	0.134 52 6 0.118 79 0.117 78
NO_2	Maximum 1-hr Concentration (ppm) Days > 0.18 ppm (State 1-hr standard) Days > 0.100 ppm (Federal 1-hr standard)	0.0619 0 0	0.0670 0 0	0.0721 0 0	0.0726 0 0	71.4 0 0
SO_2	Maximum 24-hr Concentration (ppm) Days > 0.04 ppm (State 24-hr standard)	n/a n/a	n/a n/a	n/a n/a	n/a n/a	n/a n/a

Table 3.2.6-1 2011-2015 Ambient Air Quality Data in Project Vicinity

Pollu-tant	Pollutant Concentration & Standards	Calendar Year				
		2011	2012	2013	2014	2015
PM_{10}	Maximum 24-hr concentration (µg/m^3) Days > 50 µg/m3 (State 24-hr standard) Days > 150 µg/m3 (Federal 24-hr standard)	128.4 2 0	68.1 1 0	177.3 2 1	157.2 2 1	187.0 3 1
$PM_{2.5}$	Maximum 24-hr concentration (µg/m3) Days > 35 µg/m3 (Federal 24-hr standard) Annual Arithmetic Mean (µg/m^3) Exceed State Standard (12 µg/m^3) Exceed Federal Standard (12.0 µg/m^3)	65.0 2 n/a n/a n/a	34.8 0 11.7 No No	55.3 1 11.4 No No	32.2 0 n/a n/a n/a	53.5 2 10.7 No No
Redlands Air Monitoring Station						
CO	Maximum Federal 8-hr concentration (ppm) Days > 9.0 ppm (Federal 8-hr standard) Maximum State 8-hr concentration (ppm) Days > 9.0 ppm (State 8-hr standard)	n/a n/a n/a n/a	n/a n/a n/a n/a	n/a n/a n/a n/a	n/a n/a n/a n/a	n/a n/a n/a n/a
O_3	Maximum 1-hr Concentration (ppm) Days > 0.09 ppm (State 1-hr standard) Days above Federal 1-hr standard Maximum State 8-hr Concentration (ppm) Days > 0.070 ppm (State 8-hr standard) Maximum Federal 8-hr Concentration (ppm) Days > 0.070 ppm (Federal 8-hr standard)	0.151 64 7 0.134 96 0.133 80	0.136 66 3 0.109 101 0.109 79	0.133 43 3 0.119 93 0.119 63	0.128 47 2 0.105 83 0.104 55	0.137 44 2 0.115 77 0.115 76
NO_2	Maximum 1-hr Concentration (ppm) Days > 0.18 ppm (State 1-hr standard) Days > 0.100 ppm (Federal 1-hr standard)	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a

Table 3.2.6-1 2011-2015 Ambient Air Quality Data in Project Vicinity

Pollu-tant	Pollutant Concentration & Standards	Calendar Year				
		2011	2012	2013	2014	2015
SO_2	Maximum 1-hr Concentration (ppm) Days > 0.25 ppm (State 1-hr standard) Days > 0.75 ppm (Federal 1-hr standard) Maximum 24-hr Concentration (ppm) Days > 0.04 ppm (State 24-hr standard)	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a
PM_{10}	Maximum 24-hr concentration (µg/m^3) Days > 50 µg/m3 (State 24-hr standard) Days > 150 µg/m3 (Federal 24-hr standard)	71.0 1 0	48.0 0 0	72.0 2 0	62.0 2 0	95.0 2 0
$PM_{2.5}$	Maximum 24-hr concentration (µg/m^3) Days > 35 µg/m^3 (Federal 24-hr standard) Annual Arithmetic Mean (µg/m^3) Exceed State Standard (12 µg/m^3) Exceed Federal Standard (12.0 µg/m^3)	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a

Note: n/a: Data not available either due to air monitoring stations not recording pollutant concentrations or data entry not being relevant to the specific NAAQS/CAAQS standards mentioned in a given row.

[a] CO data for years 2013through 2015 was not available at any of the studied air monitoring station.

[b] $PM_{2.5}$ data was not available at the Pomona, Upland or Ontario Fire Station air monitoring stations.

[c] PM_{10} data was not available at the Pomona air monitoring station or for year 2015 at the Ontario Fire Station air monitoring station.

[d] SO_2 data was not available at the Pomona, Upland, Ontario Fire Station, San Bernardino, or Redland air monitoring stations or for years 2014 and 2015 at the Fontana Arrow Highway air monitoring station.

Source: Air Quality Data Statistics, http://www.arb.ca.gov/adam/topfour/topfour1.php, accessed January 24, 2017..

Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. ARB has identified the following typical groups who are most likely to be affected by air pollution: children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. According to SCAQMD, sensitive receptors include residences, schools, playgrounds, child-care centers, athletic facilities, long-term health-care facilities, rehabilitation centers, convalescent centers, and retirement homes.

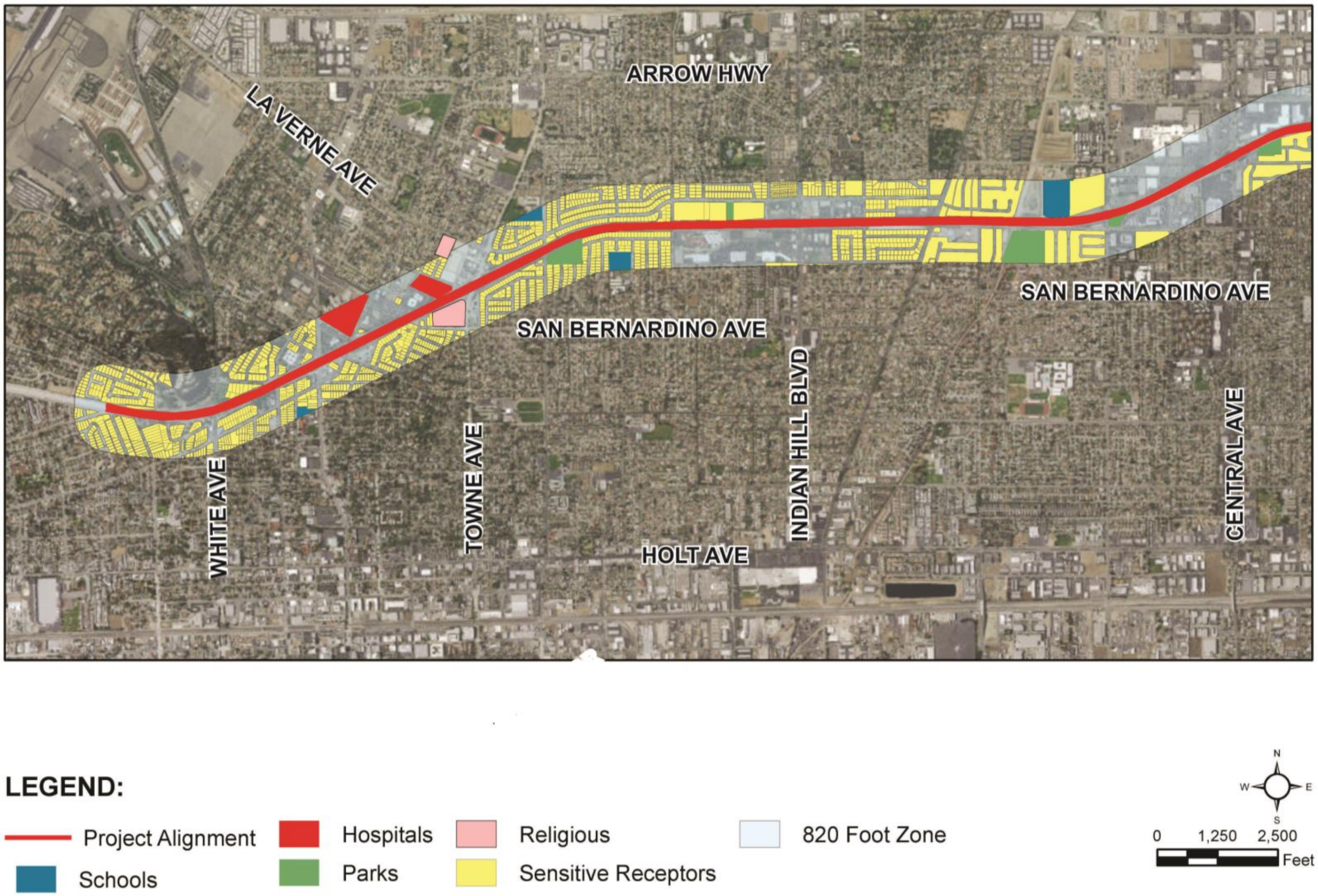
Figures 3.2.6-3 through 3.2.6-10 show sensitive receptors within 820 feet of the freeway right-of-way (ROW). Along the new alignment, surrounding land use varies widely. The corridor includes areas of substantial residential, retail, and other commercial and industrial land uses. Specific sensitive receptors, such as schools, hospitals, parks, and religious institutions, are denoted in different colors.

Studies have found that air pollutants from cars, trucks, and other motor vehicles are found in higher concentrations near major roads. People who live, work, or attend school near major roads appear to have an increased incidence and severity of health problems that may be related to air pollution from roadway traffic. Health effects that have been associated with proximity to roads include asthma onset and aggravation; cardiovascular disease; reduced lung function; impaired lung development in children and pre-term and low-birth weight infants; childhood leukemia; and premature death. Potential health-related effects and symptoms related to exposure to specific pollutants of concern are provided below.

Carbon Monoxide

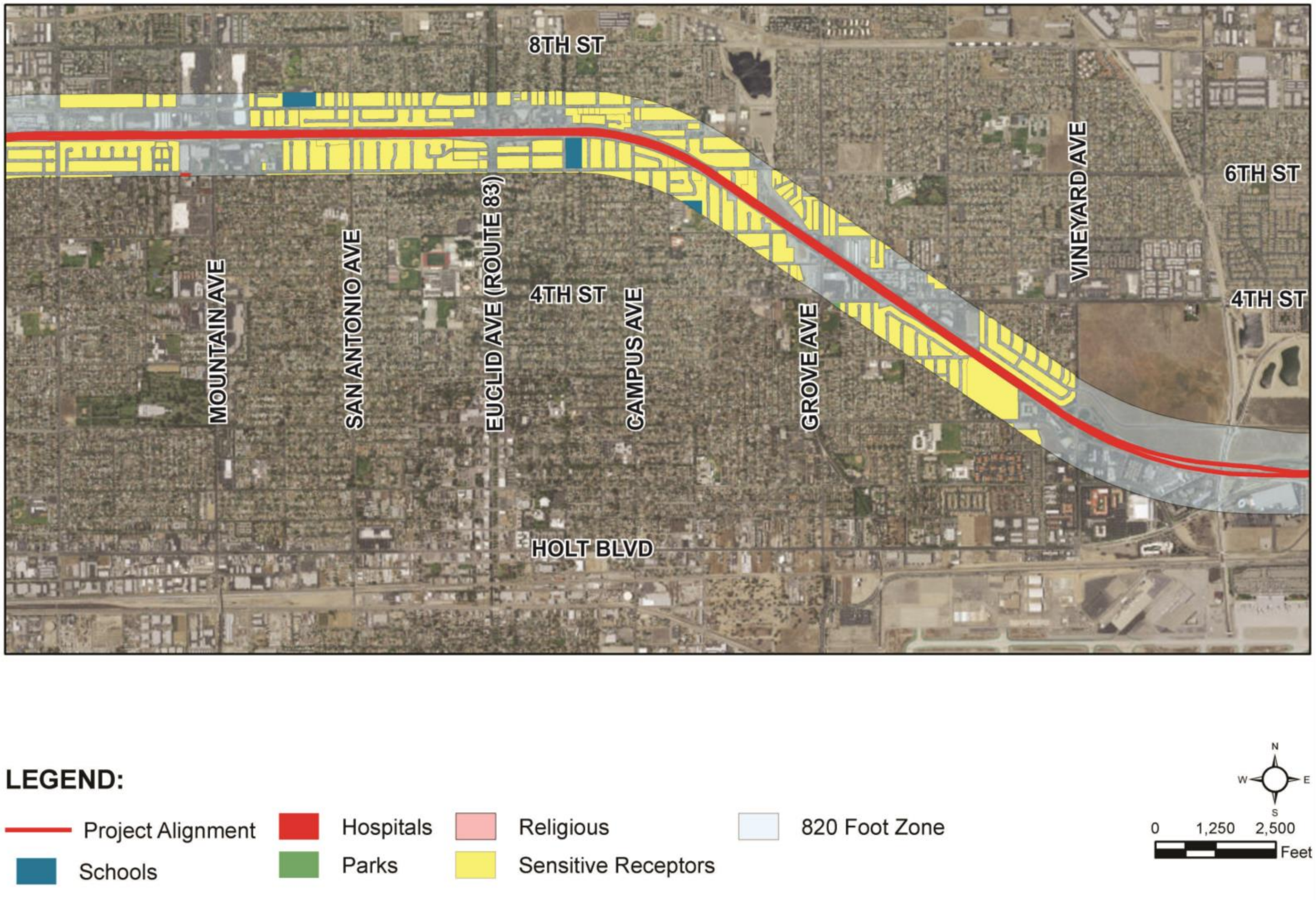
CO is a colorless and odorless gas formed by the incomplete combustion of fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas such as the project location, automobile exhaust accounts for most of the CO emissions. CO is a nonreactive air pollutant that dissipates relatively quickly, so ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions, primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, which is a typical situation at dusk in urban areas between November and February.[14] The highest levels of CO typically occur during the colder months of the year when inversion conditions are more frequent.

[14] Inversion is an atmospheric condition in which a layer of warm air traps cooler air near the surface of the earth, preventing the normal rising of surface air.



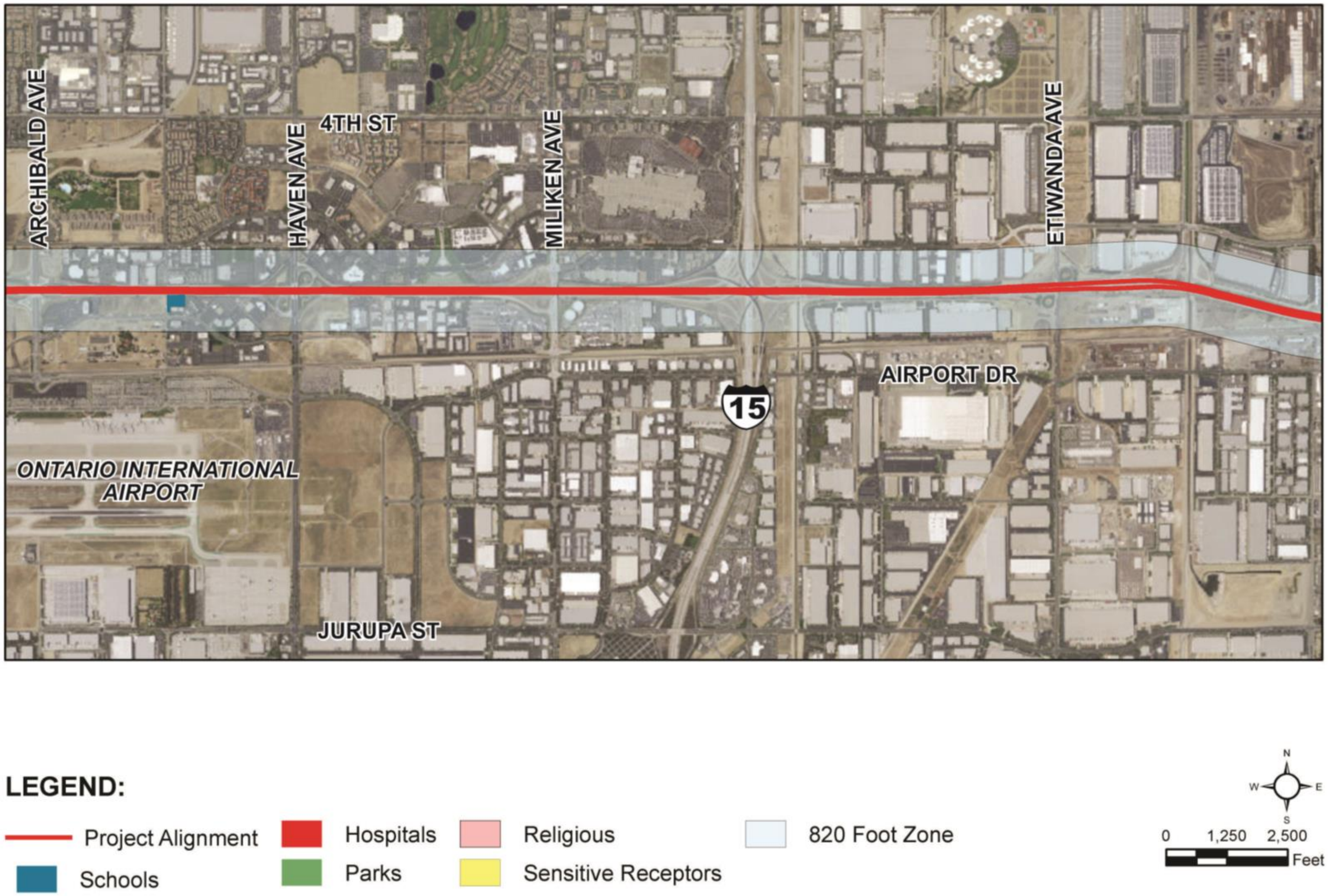
SOURCE: California Department of Transportation and TAHA, 2016.

Figure 3.2.6-3 Sensitive Receptor Map #1



SOURCE: California Department of Transportation and TAHA, 2016.

Figure 3.2.6-4 Sensitive Receptor Map #2

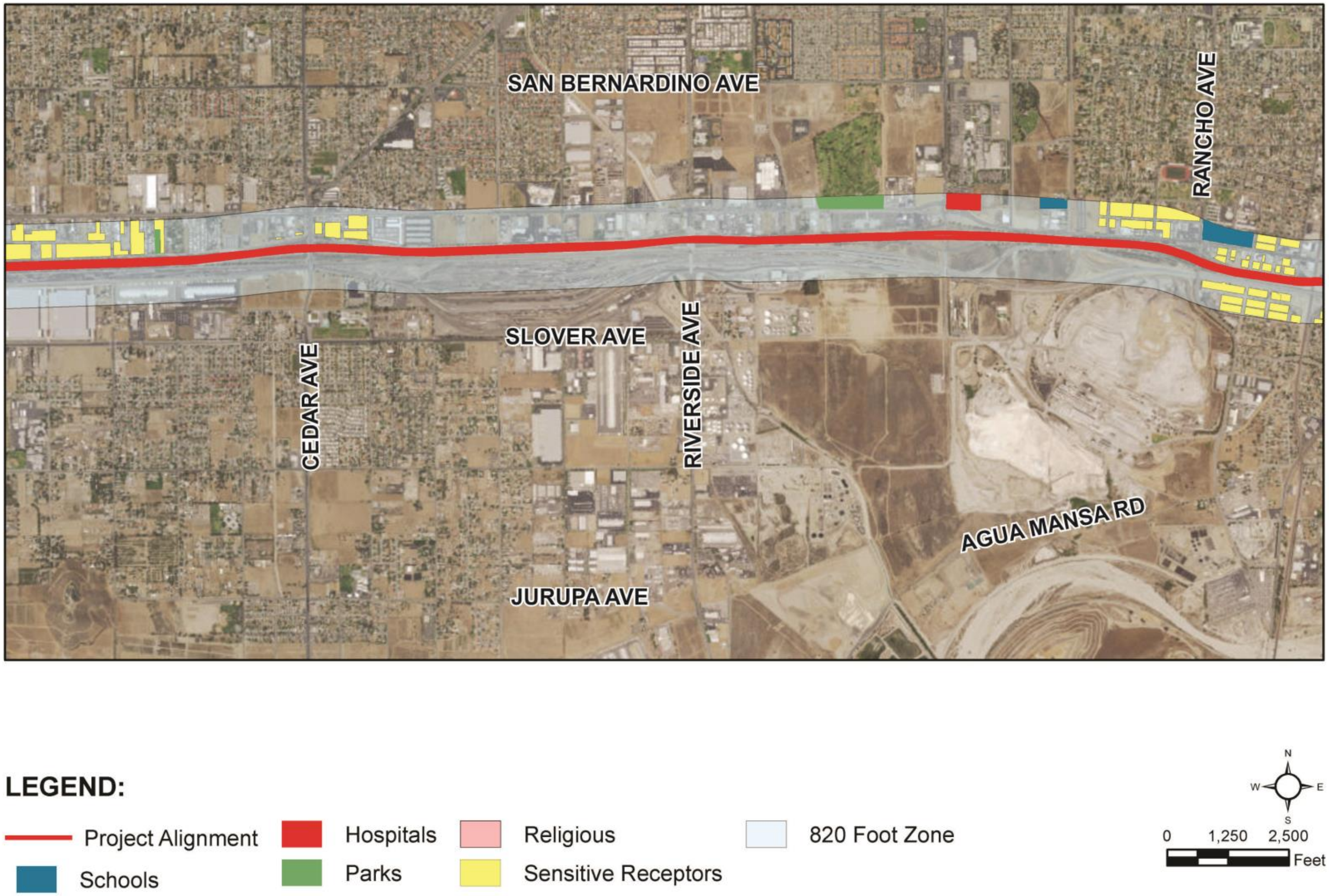


SOURCE: California Department of Transportation and TAHA, 2016.

Figure 3.2.6-5 Sensitive Receptor Map #3

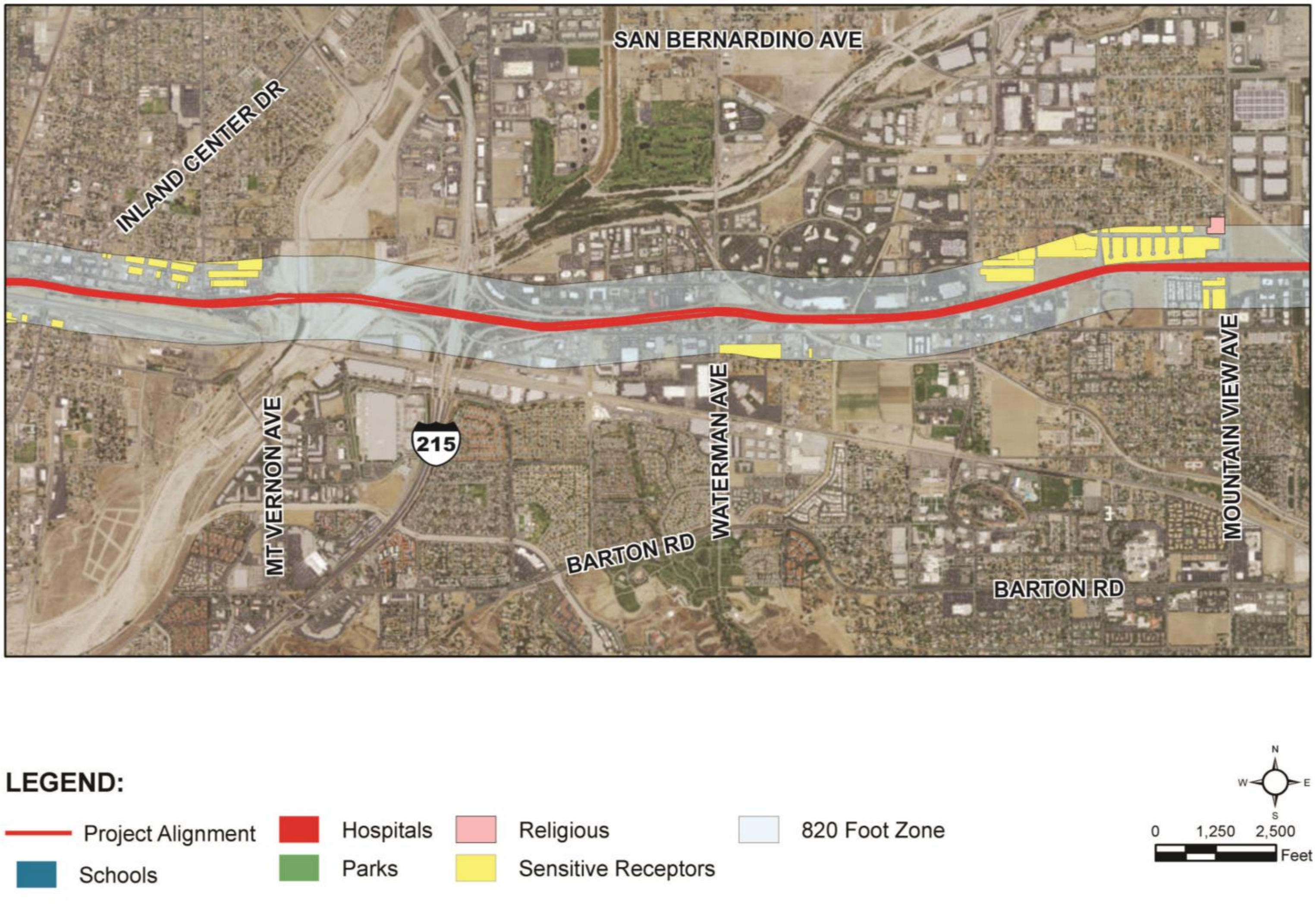
SOURCE: California Department of Transportation and TAHA, 2016.

Figure 3.2.6-6 Sensitive Receptor Map #4



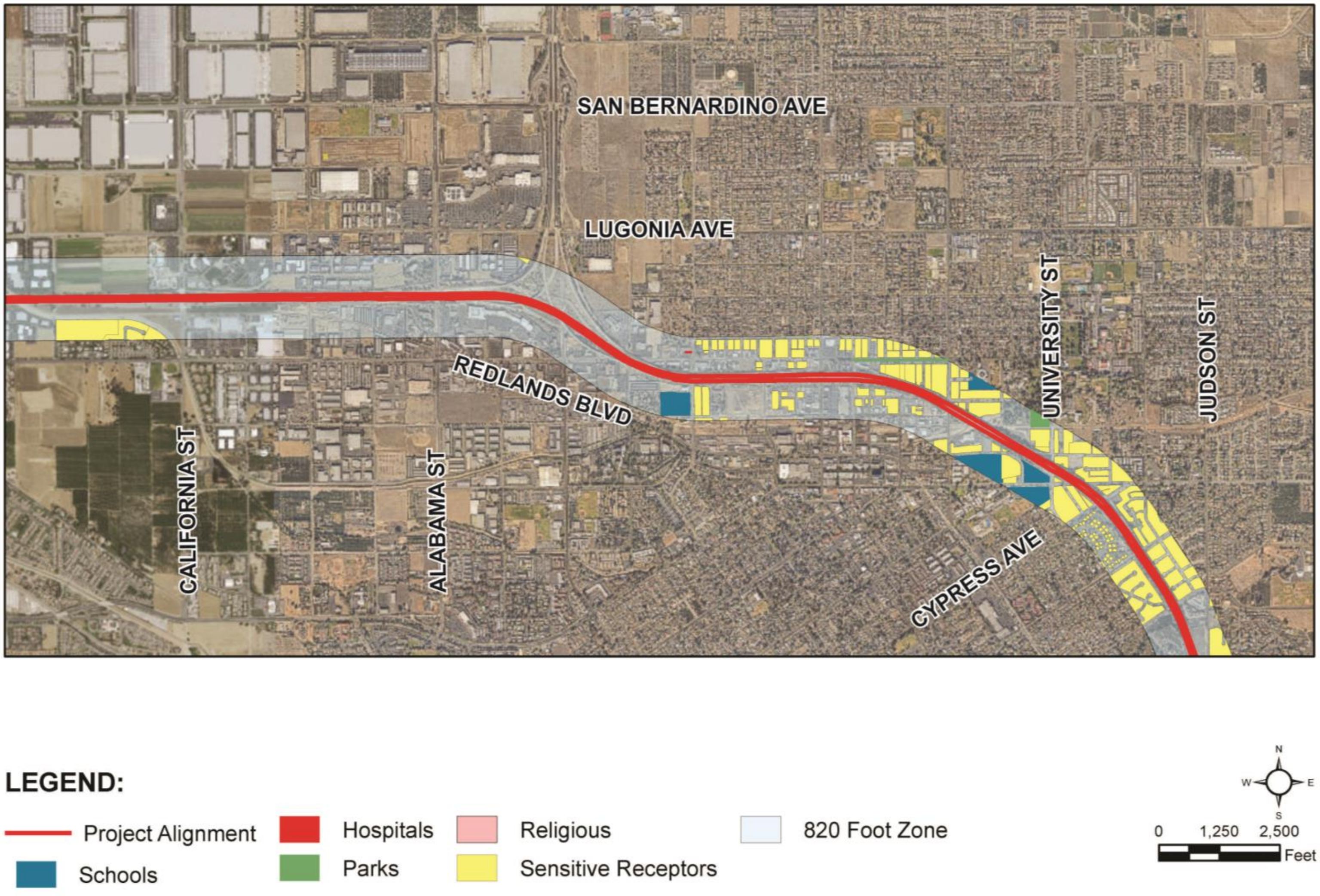
SOURCE: California Department of Transportation and TAHA, 2016.

Figure 3.2.6-7 Sensitive Receptor Map #5



SOURCE: California Department of Transportation and TAHA, 2016.

Figure 3.2.6-8 Sensitive Receptor Map #6



SOURCE: California Department of Transportation and TAHA, 2016.

Figure 3.2.6-9 Sensitive Receptor Map #7

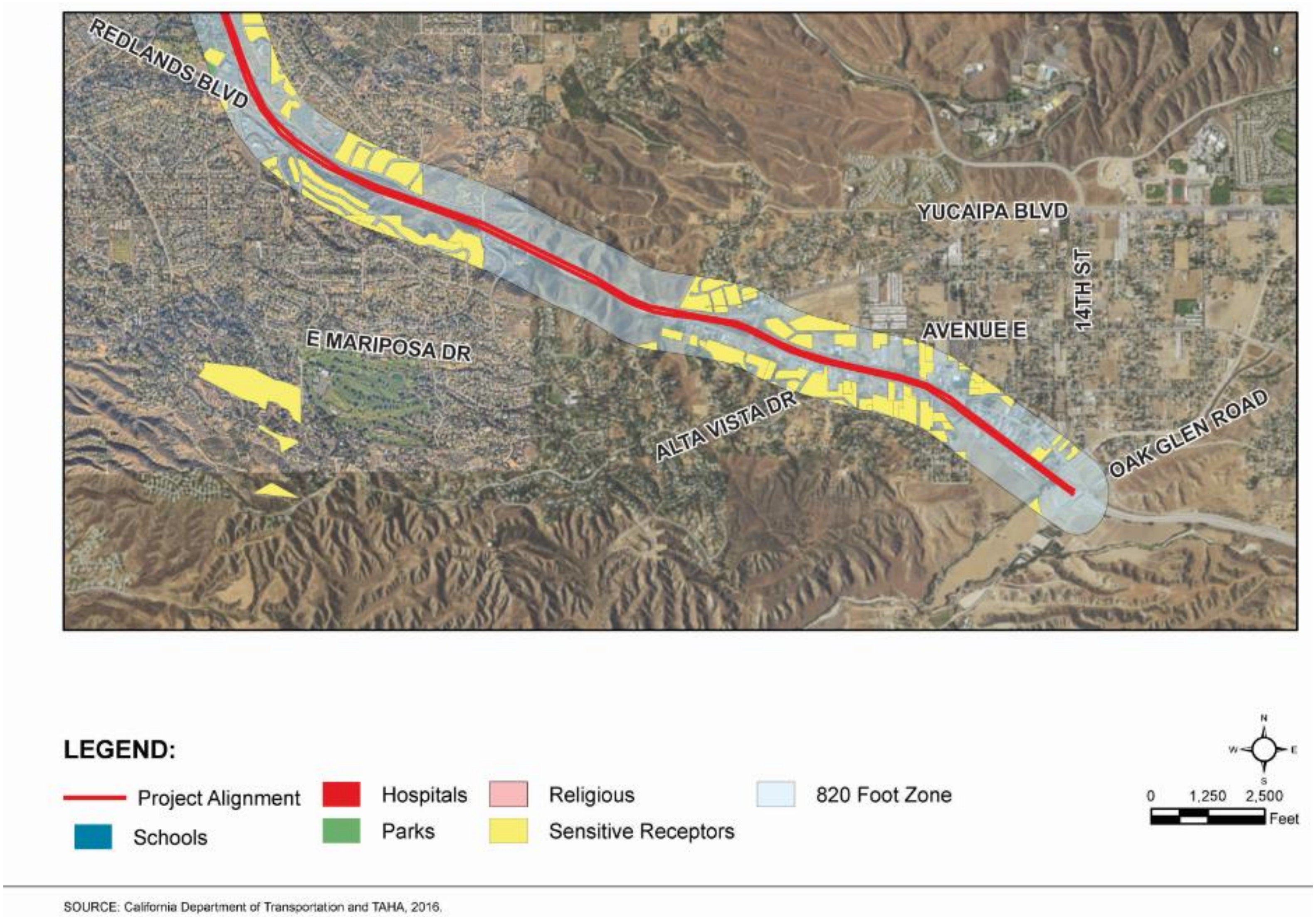


Figure 3.2.6-10 Sensitive Receptor Map #8

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise and electrocardiograph changes indicative of worsening oxygen supply to the heart. Inhaled CO has no direct toxic effect on the lungs but exerts its effect on tissues by interfering with oxygen transport by competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb); hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include patients with diseases involving heart and blood vessels, fetuses (unborn babies), and patients with chronic hypoxemia (oxygen deficiency) as seen in high altitudes. Reductions in birth weight and impaired neurobehavioral development have been observed in animals chronically exposed to CO, resulting in COHb levels similar to those observed in smokers. Studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels. These include pre-term births and heart abnormalities.[15]

Ozone

O_3 is a colorless gas that is formed in the atmosphere when reactive organic gases (ROG), which include volatile organic compounds (VOCs) and nitrogen oxides (NO_X), react in the presence of ultraviolet sunlight. O_3 is not a primary pollutant; it is a secondary pollutant formed by complex interactions of two pollutants directly emitted into the atmosphere. The primary sources of ROG and NO_X, which are the components of O_3, are automobile exhaust and industrial sources. Meteorology and terrain play major roles in O_3 formation. Ideal conditions occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. The greatest source of smog-producing gases is the automobile.

While O_3 is beneficial in the stratosphere because it filters out skin-cancer-causing ultraviolet radiation, it is a highly reactive oxidant. It is this reactivity that accounts for its damaging effects on materials, plants, and human health at the earth's surface. The propensity of O_3 for reacting with organic materials causes it to be damaging to living cells and cause health effects. O_3 enters the human body primarily through the respiratory tract and causes respiratory irritation and discomfort, makes breathing more difficult during exercise, and reduces the respiratory system's ability to remove inhaled particles and fight infection. Individuals exercising outdoors, children, and people with pre-existing lung disease, such as asthma and chronic pulmonary lung disease, are considered the most susceptible subgroups for O_3 effects. Short-term

[15] South Coast Air Quality Management District, *Final Program Environmental Impact Report for the 2012 AQMP*, December 7, 2012.

exposures (lasting for a few hours) to O_3 at levels typically observed in southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. In recent years, a correlation between elevated ambient O_3 levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in high O_3 communities. Elevated O_3 levels are also associated with increased school absences.[16] In addition, there is suggestive evidence of a contribution of O_3 to cardiovascular-related morbidity and highly suggestive evidence that short-term O_3 exposure directly or indirectly contributes to non-accidental and cardiopulmonary-related mortality, but additional research is needed to clarify the underlying mechanisms causing these effects. In a recent report on the estimation of O_3-related premature mortality published by the National Research Council, a panel of experts and reviewers concluded that short-term exposure to ambient O_3 is likely to contribute to premature deaths and that O_3-related mortality should be included in estimates of the health benefits of reducing O_3 exposure.

O_3 exposure under exercising conditions is known to increase the severity of the above-mentioned observed responses. Animal studies suggest that exposures to a combination of pollutants that include O_3 may be more toxic than exposure to O_3 alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.[17]

Nitrogen Dioxide

NO_2, like O_3, is not directly emitted into the atmosphere but is formed by an atmospheric chemical reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as NO_X and are major contributors to O_3 formation. NO_2 also contributes to the formation of PM_{10}. High concentrations of NO_2 can result in a brownish-red cast to the atmosphere with reduced visibility and can cause breathing difficulties. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase of bronchitis in children (2 and 3 years old) has also been observed at concentrations below 0.3 parts per million (ppm).

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[16] *Ibid.*
[17] *Ibid.*

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposures to NO_2 at levels found in homes with gas stoves, which are higher than ambient levels found in southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO_2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma and/or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these subgroups. More recent studies have found associations between NO_2 exposures and cardiopulmonary mortality, decreased lung function, respiratory symptoms, and emergency room asthma visits. In animals, exposure to levels of NO_2 considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of O_3 exposure increases when animals are exposed to a combination of O_3 and NO_2.[18]

Sulfur Dioxide

SO_2 is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Main sources of SO_2 are coal and oil used in power plants and industries. Generally, the highest levels of SO_2 are found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels.

All asthmatics are sensitive to the effects of SO_2. In asthmatics, an increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, is observed after acute higher exposure to SO_2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO_2. Animal studies suggest that despite SO_2 being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations; however, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO_2 levels. In these studies, efforts to separate the effects of SO_2 from those of fine particles have not

[18] *Ibid.*

been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.[19]

Particulate Matter

PM pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. PM also forms when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of PM. Fine PM, or $PM_{2.5}$, is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as SO_2, NO_X, and VOC. Inhalable particulate matter, or PM_{10}, is approximately 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions.

Respirable particles (PM_{10}) can accumulate in the respiratory system and aggravate health problems such as asthma, bronchitis, and other lung diseases. Children, the elderly, exercising adults, and those suffering from asthma are especially vulnerable to adverse health effects of particulate matter. A consistent correlation between elevated ambient fine particulate matter ($PM_{2.5}$) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks, and number of hospital admissions has been observed in different parts of the United States and various areas around the world. Studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in life-span, and increased mortality from lung cancer. Daily fluctuations in fine particulate matter concentration levels have also been related to hospital admissions for acute respiratory conditions, to school and kindergarten absences, to a decrease in respiratory function in normal children, and to increased medication use in children and adults with asthma. Studies have also shown lung function growth in children is reduced with long-term exposure to particulate matter. In addition to children, the elderly and people with pre-existing respiratory and/or cardiovascular disease appear to be more susceptible to the effects of PM_{10} and $PM_{2.5}$.[20]

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[19] *Ibid.*
[20] *Ibid.*

Lead

Pb in the atmosphere occurs as PM. Sources of Pb include leaded gasoline; the manufacturers of batteries, paint, ink, ceramics, and ammunition; and secondary Pb smelters. Prior to 1978, mobile emissions were the primary source of atmospheric Pb. Between 1978 and 1987, the phase-out of leaded gasoline reduced the overall inventory of airborne Pb by nearly 95 percent. With the phase-out of leaded gasoline, secondary Pb smelters, battery recycling, and manufacturing facilities have become Pb-emission sources of greater concern.

Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased Pb levels are associated with increased blood pressure. Pb poisoning can cause anemia, lethargy, seizures, and death. It appears that there are no direct effects of Pb on the respiratory system. Pb can be stored in the bone from early-age environmental exposure, and elevated blood Pb levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland), and osteoporosis (breakdown of bone tissue). Fetuses and breast-fed babies can be exposed to higher levels of Pb because of previous environmental Pb exposure of their mothers.[21]

Toxic Air Contaminants/Mobile Source Air Toxics (MSATs)

A substance is considered toxic if it has the potential to cause adverse health effects in humans. A toxic substance released into the air is considered a TAC. TACs are identified by state[22] and federal agencies based on a review of available scientific evidence. In California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management was designed to protect residents from the health effects of toxic substances in the air.

Numerous studies have shown that long-term pollution exposure along busy roads with heavy truck traffic increases hospitalization of children with asthma, reduces lung function in children and teenagers, damages small airways of the lungs, increases risk of death from cardiovascular disease, and increases risk of lower birth weight and infant mortality. Summaries of these studies are best reviewed in the 2016-2040 RTP/SCS and associated Program Environmental Impact Report (EIR)

[21] *Ibid*.
[22] California Health and Safety Code §39657.

prepared by the Southern California Association of Governments (SCAG) and the 2017 Air Quality Management Plan (AQMP) prepared by SCAQMD.[23,24] MSATs are discussed in detail on page 3.2.6-44.

Naturally Occurring Asbestos

Asbestos is a term used for several types of naturally occurring fibrous minerals that are a human health hazard when airborne. The most common type of asbestos is chrysotile, but other types, such as tremolite and actinolite, are also found in California. Asbestos is classified as a known human carcinogen by state, federal, and international agencies and was identified as a TAC by the ARB in 1986. All types of asbestos are hazardous and may cause lung disease and cancer.

Hydrogen Sulfide

H_2S is a colorless, flammable, poisonous compound having a characteristic rotten-egg odor. It is used as a reagent and as an intermediate in the preparation of other reduced sulfur compounds. It is also a byproduct of desulfurization processes in the oil and gas industries and rayon production, sewage treatment, and leather tanning. Geothermal power plants, petroleum production and refining, and sewer gas are specific sources of H_2S in California. H_2S exposure is a cause of sudden death in the workplace and can result in neurological damage. SCAQMD does not monitor H_2S at the San Bernardino County air quality monitoring stations near the alignment.

The current standard for H_2S exposure in California was adopted in 1969 and was based on the geometric mean odor threshold measured in adults. The purpose of the standard was to decrease odor annoyance. The standard was reviewed in 1980 and 1984, and it was not changed because no new relevant information had emerged.

Vinyl Chloride

Vinyl chloride is a colorless, flammable gas at ambient temperature and pressure. It is also highly toxic and is classified by the American Conference of Governmental Industrial Hygienists as A1 (confirmed carcinogen in humans) and by the International Agency for Research on Cancer as 1 (known to be a human carcinogen). At room temperature, vinyl chloride is a gas with a sickly sweet odor that is easily condensed; however, it is stored as a liquid. Due to the hazardous nature of vinyl chloride to human health, there are no end products that use vinyl chloride in its

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23 Southern California Association of Governments, *Final Program Environmental Impact Report for the 2016-2040 RTP/SCS*, November 24, 2015.

24 South Coast Air Quality Management District, *Draft Environmental Impact Report for the 2016 AQMP*, July 2016.

monomer form. Vinyl chloride is a chemical intermediate, not a final product. It is an important industrial chemical chiefly used to produce polymer polyvinyl chloride (PVC). The process involves vinyl chloride liquid fed to polymerization reactors where it is converted from a monomer to a polymer PVC. The final product of the polymerization process is PVC in either a flake or pellet form. Billions of pounds of PVC are sold on the global market each year. From its flake or pellet form, PVC is sold to companies that heat and mold the PVC into end products such as PVC pipe and bottles. Vinyl chloride emissions are historically associated primarily with sources such as landfills. SCAQMD does not monitor vinyl chloride at the San Bernardino County air quality monitoring stations near the alignment.

Attainment Status

The attainment status of the area in which the proposed project is located is shown in Table 3.2.6-2. According to the NAAQS, the area is designated by EPA as an extreme nonattainment area for the 2008 8-hour O_3 standard, a moderate nonattainment area for the 2012 annual $PM_{2.5}$ standard, a serious nonattainment area for the 2006 24-hour standard; unclassified/attainment for Pb standards; a maintenance area for PM_{10}, CO, and NO_2; and attainment status pending for the 2015 8-hour O_3 standard. ARB designated the project area as nonattainment for O_3, PM_{10}, and $PM_{2.5}$; as unclassified for H_2S and visibility-reducing particles; and as attainment for CO, NO_2, SO_2, Pb, and sulfate. The conformity process does not address pollutants for which the area is attainment/ unclassified for MSATs, other TACs or hazardous air pollutants, or greenhouse gases (GHGs).

Standards have been established for six criteria pollutants that have been linked to potential health concerns; these criteria pollutants in NEPA analysis include CO, NO_2, O_3, PM ($PM_{2.5}$ and PM_{10}), Pb, and SO_2. California Environmental Quality Act (CEQA) air pollutants, in addition to these criteria pollutants, include visibility-reducing particles, sulfates, H_2S, and vinyl chloride. The NAAQS and CAAQS standards are shown in Table 3.2.6-2.

Table 3.2.6-2 State and Federal Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State[1] Standard	Federal[2] Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
Ozone (O_3)	1 hour	0.09 ppm[3]	---[4]	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage and cancer. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include many known toxic air contaminants. Biogenic VOC may also contribute.	Low-altitude O_3 is almost entirely formed from reactive organic gases/volatile organic compounds (ROG or VOC) and nitrogen oxides (NO_X) in the presence of sunlight and heat. Common precursor emitters include motor vehicles and other internal combustion engines, solvent evaporation, boilers, furnaces, and industrial processes.	Nonattainment	8-Hour Standard (2015) - Pending 8-Hour Standard (2008) - Nonattainment (Extreme)
	8 hours	0.070 ppm	0.070 ppm (4th highest in 3 years)				
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen. CO also is a minor precursor for photochemical ozone. Colorless, odorless.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.	Attainment	Attainment-Maintenance
	8 hours	9.0 ppm[1]	9 ppm				
	8 hours (Lake Tahoe)	6 ppm	---				
Respirable Particulate Matter (PM_{10})[5]	24 hours	50 µg/m³ [3 6]	150 µg/m³ (expected number of days above standard < or equal to 1)	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many toxic and other aerosol and solid compounds are part of PM_{10}.	Dust- and fume-producing industrial and agricultural operations; combustion smoke and vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources.	Nonattainment	Attainment-Maintenance (Serious)
	Annual	20 µg/m³	--- [5]				

Table 3.2.6-2 State and Federal Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State[1] Standard	Federal[2] Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
Fine Particulate Matter ($PM_{2.5}$)[5]	24 hours	---	35 µg/m^3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – a toxic air contaminant – is in the $PM_{2.5}$ size range. Many toxic and other aerosol and solid compounds are part of $PM_{2.5}$.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical and photochemical reactions involving other pollutants including NO_X, sulfur oxides (SO_X), ammonia, and ROG.	Nonattainment	Annual Standard (2012) - Nonattainment (Moderate) 24-Hour Standard (2006) - Nonattainment (Serious)
	Annual	12 µg/m^3	12.0 µg/m^3				
	24 hours (conformity process[7])	---	65 µg/m^3				
	Secondary Standard (annual; also for conformity process[5])	---	15 µg/m^3 (98th percentile over 3 years)				
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm	0.100 ppm[8]	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain and nitrate contamination of stormwater. Part of the NO_X group of O_3 precursors.	Motor vehicles and other mobile or portable engines, especially diesel; refineries; industrial operations.	Attainment	Attainment-Maintenance
	Annual	0.030 ppm	0.053 ppm				
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm	0.075 ppm[9] (99th percentile over 3 years)	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing; some natural sources like active volcanoes. Limited contribution possible from heavy-duty diesel vehicles if ultra-low sulfur fuel not used.	Attainment	Attainment
	3 hours	---	0.5 ppm[10]				
	24 hours	0.04 ppm	0.14 ppm (for certain areas)				
	Annual	---	0.030 ppm (for certain areas)				

Table 3.2.6-2 State and Federal Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State[1] Standard	Federal[2] Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
Lead (Pb)[11]	Monthly	1.5 µg/m^3	---	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also a toxic air contaminant and water pollutant.	Lead-based industrial processes like battery production and smelters. Lead paint, leaded gasoline. Aerially deposited lead from older gasoline use may exist in soils along major roads.	Attainment	Nonattainment (Los Angeles County Only)
	Calendar Quarter	---	1.5 µg/m^3 (for certain areas)				
	Rolling 3-month average	---	0.15 µg/m^3 [12]				
Sulfate	24 hours	25 µg/m^3	---	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.	Attainment	N/A
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm	---	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea. Strong odor.	Industrial processes such as: refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.	Attainment	N/A
Visibility Reducing Particles (VRP)	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70%	---	Reduces visibility. Produces haze. NOTE: Not directly related to the Regional Haze program under the Federal CAA, which is oriented primarily toward visibility issues in National Parks and other "Class I" areas; however, some issues and measurement methods are similar.	See particulate matter above. May be related more to aerosols than to solid particles.	Attainment	N/A

Table 3.2.6-2 State and Federal Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State[1] Standard	Federal[2] Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
Vinyl Chloride[11]	24 hours	0.01 ppm	---	Neurological effects, liver damage, cancer. Also considered a toxic air contaminant.	Industrial processes		N/A

[1] State standards are "not to exceed" or "not to be equaled or exceeded" unless stated otherwise.

[2] Federal standards are "not to exceed more than once a year" or as described above.

[3] ppm = parts per million

[4] Prior to 6/2005, the 1-hour O_3 NAAQS was 0.12 ppm. Emission budgets for 1-hour O_3 are still in use in some areas where 8-hour O_3 emission budgets have not been developed, such as the San Francisco Bay Area.

[5] Annual PM_{10} NAAQS revoked October 2006; was 50 μg/m^3. 24-hour $PM_{2.5}$ NAAQS tightened October 2006; was 65 μg/m^3. Annual $PM_{2.5}$ NAAQS tightened from 15 μg/m^3 to 12 μg/m^3 December 2012 and secondary annual standard set at 15 μg/m^3.

[6] μg/m^3 = micrograms per cubic meter

[7] The 65 μg/m^3 $PM_{2.5}$ (24-hour) NAAQS was not revoked when the 35 μg/m^3 NAAQS was promulgated in 2006. The 15 μg/m^3 annual $PM_{2.5}$ standard was not revoked when the 12 μg/m^3 standard was promulgated in 2012. The 0.08 ppm 1997 O_3 standard is revoked for conformity purposes only when area designations for the 2008 0.075 ppm standard become effective for conformity use (7/20/2013). Conformity requirements apply for all NAAQS, including revoked NAAQS, until emission budgets for newer NAAQS are found adequate, SIP amendments for the newer NAAQS are approved with a emission budget, EPA specifically revokes conformity requirements for an older standard, or the area becomes attainment/unclassified. SIP-approved emission budgets remain in force indefinitely unless explicitly replaced or eliminated by a subsequent approved SIP amendment. During the "Interim" period prior to availability of emission budgets, conformity tests may include some combination of build versus no build, build versus baseline, or compliance with prior emission budgets for the same pollutant.

[8] Final 1-hour NO_2 NAAQS published in the Federal Register on 2/9/2010, effective 3/9/2010. Initial area designation for California (2012) was attainment/unclassifiable throughout. Project-level hot-spot analysis requirements do not currently exist. Near-road monitoring starting in 2013 may cause redesignation to nonattainment in some areas after 2016.

[9] EPA finalized a 1-hour SO_2 standard of 75 ppb (parts per billion [thousand million]) in June 2010. Nonattainment areas have not yet been designated as of 9/2012.

[10] Secondary standard, set to protect public welfare rather than health. Conformity and environmental analysis address both primary and secondary NAAQS.

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

[12] Lead NAAQS are not considered in Transportation Conformity analysis.

Source: Adapted from Sonoma-Marin Narrows Draft EIR and California ARB Air Quality Standards chart (http://www.arb.ca.gov/research/aaqs/aaqs2.pdf).
Greenhouse Gases and Climate Change: Greenhouse gases do not have concentration standards for that purpose. Conformity requirements do not apply to greenhouse gases.

3.2.6.3 Environmental Consequences

This section examines the degree to which the project alternatives may cause adverse or significant changes to air quality. Short-term construction emissions and long-term effects related to the ongoing operation of the alternatives are discussed in this section. This analysis focuses on air pollution from two perspectives: daily emissions and pollutant concentrations. Emissions refer to the quantity of pollutants released into the air. Concentrations refer to the amount of pollutant material per volumetric unit of air.

Transportation Conformity

The conformity requirement is based on Federal CAA Section 176(c), which prohibits the USDOT and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to the SIP for attainting the NAAQS. Transportation conformity applies to highway and transit projects and takes place on two levels: the regional—or planning and programming level—and the project level. The proposed project must conform at both levels to be approved.

Regional Conformity

In determining whether a project conforms to an approved air quality plan, agencies must use current emission estimates based on the most recent population, employment, travel, and congestion estimates determined by SCAG. As the MPO for the region, the Council of Governments is required to develop and maintain long-range plans and programs, such as 20-year RTPs and 4-year (or longer) FTIPs that set out transportation policies and programs for the region. A conforming FTIP model projects that the regulated pollutants will be reduced to acceptable levels within the timeframes that meet the NAAQS.

Alternative 3 is listed in the 2016-2040 RTP, which was found to conform by SCAG on April 7, 2016. FHWA and FTA made a regional conformity determination finding on June 1, 2016. Alternative 3 is also included in SCAG's 2017 FTIP, which was approved on December 16, 2016. The design concept and scope of Alternative 3 is consistent with the project description in the 2016-2040 RTP, the 2017 FTIP, and the open to traffic assumptions of SCAG's regional emissions analysis. The FTIP project listings and the FHWA Conformity Determination for the FTIP are included in Appendix K.

Project-Level Conformity

Carbon Monoxide Hot-Spots

Caltrans has developed a Transportation Project-Level Carbon Monoxide Protocol for assessing CO impacts of transportation projects. The procedures and guidelines comply with the following regulations without imposing additional requirements: Section 176(c) of the 1990 Federal CAA Amendments, federal conformity rules, State and local adoptions of the federal conformity rules, and CEQA requirements [California Code of Regulations Title 21 Section 1509.3(25)].

Two conformity-requirement decision flow charts are provided in the Transportation Project-Level Carbon Monoxide Protocol and are provided in the Air Quality Conformity Report. The flowcharts are included in the Air Quality Report (February 2016). An explanatory discussion of the steps used to determine the conformity requirements that apply to the current project is provided below:

<u>Is the project exempt from all emissions analyses?</u> NO. The proposed project is a highway improvement project, which would not be exempt from regional emissions analysis per 40 CFR 93.126.

<u>Is the project exempt from regional emissions analysis?</u> NO. The proposed project is a highway improvement project, which would not be exempt from regional emissions analysis per 40 CFR 93.127.

<u>Is the project locally defined as regionally significant?</u> YES. The proposed project would add high-occupancy vehicle (HOV) or Express Lanes to the I-10 corridor. The proposed project is defined as regionally significant.

<u>Is the project in a federal attainment area?</u> NO. The proposed project is located within an attainment/maintenance area for the federal CO standard as of June 11, 2007.

<u>Is there a currently conforming RTP and FTIP?</u> YES. The 2016-2040 RTP/Sustainable Communities Strategy (SCS) was found to conform by SCAG on April 7, 2016, and FHWA and FTA made a regional conformity determination finding on June 1, 2016. The proposed project is also included in Consistency Amendment #15-21 of SCAG's 2015 FTIP, which was approved on July 21, 2016, and the 2017 FTIP.

<u>Is the project included in the regional emissions analysis supporting the currently conforming RTP and FTIP?</u> YES. The design concept and scope of Alternative 2 and 3 is consistent with the project description in the 2016-2040 RTP/SCS, 2015 FTIP, the 2017 FTIP, and the open to traffic assumptions of the SCAG regional emissions analysis.

<u>Has project design concept and/or scope changed significantly from that in regional analysis?</u> NO. See previous response.

Examine local impacts. Section 3.1.9 of the flowchart directs the project evaluation to Section 4 (Local Analysis) of the Transportation Project-Level CO Protocol.

Assessment of the project's effect on localized ambient air quality is based on analysis of CO. The determination of project-level CO impacts should be carried out according to the local analysis. The following discussion provides explanatory remarks for every step of the local analysis of the protocol (screening methodology):

Is the project in a carbon monoxide nonattainment area? NO. The project site is located in a federal attainment/maintenance area as of June 11, 2007.

Was the area redesignated as "attainment" after the 1990 Clean Air Act? YES. See previous response.

Has "continued attainment" been verified with the local Air District, if appropriate? YES. As shown in Table 3.2.6-1, monitored CO concentrations in the project area were below the NAAQS for the latest 3-year period (2012 to 2014).

Does the project worsen air quality? YES. The proposed project would increase regional CO emissions when compared to no-build emissions.

Is the project suspected of resulting in higher CO concentrations than those existing within the region at the time of the attainment demonstration? NO. To answer this question, Section 7.4.2 of the CO Protocol recommends selecting one of the worst-case locations in the region where attainment has been demonstrated and compare it to the build scenario of the project with a similar configuration; therefore, the intersection of Wilshire Boulevard and Veteran Avenue from the SCAQMD 2003 AQMP Appendix V attainment demonstration and the intersection of Cedar Avenue and San Bernardino Avenue for the build alternatives were compared to evaluate whether the project would result in higher CO concentrations using the following conditions:

a. The receptors at the intersection of Cedar Avenue and San Bernardino Avenue would be the same distance or farther from the traveled roadway than the receptors at the intersection of Wilshire Boulevard and Veteran Avenue for which attainment has been demonstrated. The attainment demonstration evaluated the CO concentrations at a distance of 10 feet from the edge of the roadways. Because the CO Protocol does not permit the modeling of receptor locations closer than 10 feet, receptor locations for the build alternatives would be the same or farther than the receptors evaluated for the attainment demonstration.

b. The Cedar Avenue and San Bernardino Avenue intersection would have lower traffic volumes compared to the intersection of Wilshire Boulevard and Veteran Avenue. The Cedar Avenue and San Bernardino Avenue intersection would be a 3x4 intersection in comparison to the Wilshire Boulevard and Veteran Avenue intersection, which is a 4x4 intersection. The traffic volumes are presented in Table 3.2.6-3.

Table 3.2.6-3 Intersection Peak-Hour Traffic Volumes for the CO Hot-Spot Analysis

Intersection	Peak-Hour Traffic Lane Volumes				Total Volume
	West Link	East Link	North Link	South Link	
Attainment Demonstration: Wilshire Boulevard and Veteran Avenue	4,951	3,317	1,400	933	10,601
No Build Alternative (2035): Cedar Avenue and San Bernardino Avenue	863	687	1,237	1,436	4,223
Alternative 2 (2035): Cedar Avenue and San Bernardino Avenue	888	692	1,273	1,491	4,344
Alternative 3 (2035): Cedar Avenue and San Bernardino Avenue	817	648	1,300	1,490	4,255

c. The meteorology used for the Cedar Avenue and San Bernardino Avenue would be the same as the meteorology used for the Wilshire Boulevard and Veteran Avenue intersection in the attainment demonstration. The CAL3QHC model was used for the attainment demonstration. Therefore, if the proposed project were modeled, both intersections would be evaluated using the same meteorology settings in the CAL3QHC model, as the model only has one meteorological data set.

d. The peak-hour traffic volumes presented in Table 3.2.6-3 show that the peak-hour traffic lane volumes for Cedar Avenue and San Bernardino Avenue would be lower than the traffic volumes at the intersection of Wilshire Boulevard and Veteran Avenue used in the attainment demonstration.

e. The number of vehicles operating in cold start mode was not available in the attainment demonstration for the Wilshire Boulevard and Veteran Avenue intersection; however, the percentage of vehicles operating during the peak hour in cold start mode for the Cedar Avenue and San Bernardino Avenue intersection would be expected to be the same or lower than the Wilshire Boulevard and Veteran Avenue intersection.

f. The percentage of heavy-duty gas trucks utilizing the Cedar Avenue and San Bernardino Avenue intersection would be expected to be the same or less than the Wilshire Boulevard and Veteran Avenue intersection. It is assumed that the traffic distribution at the Wilshire Boulevard and Veteran Avenue intersection would not vary from the EMFAC2002 default distribution used for the attainment demonstration. The percentage of trucks would be expected to range from 1.0 to 2.4 percent under the build alternatives, which would include gasoline and diesel trucks. Therefore, the percentage of heavy-duty gas trucks would be expected to be less.

g. The average delay and queue length for the Cedar Avenue and San Bernardino Avenue intersection would be expected to be the same or less than the Wilshire Boulevard and Veteran Avenue intersection used for the attainment demonstration. The Level of Service (LOS) for the Wilshire Boulevard and Veteran Avenue intersection used for the attainment demonstration was not listed; however, based on the traffic volumes and intersection geometry, the intersection was likely LOS F. The average delay and queue length is not available for the Cedar Avenue and San Bernardino Avenue intersection; however, this intersection has less volume than the Wilshire Boulevard and Veteran Avenue intersection, and it could not have an LOS worse than F. Therefore, the average delay and queue length for the project would be expected to be the same or less than the Wilshire Boulevard and Veteran Avenue intersection.

h. The background concentrations of CO in the project area are lower than the CO concentrations used in the attainment demonstration for the intersection of Wilshire Boulevard and Veteran Avenue. The maximum background 8-hour CO concentration measured between 2010 and 2014 at the San Bernardino Monitoring Station, which is in the area of the Cedar Avenue and San Bernardino Avenue intersection, was between 1.64 and 1.73 ppm. The maximum background 1-hour CO concentration is not available on the ARB database. According to SCAQMD, 1-hour CO concentrations were last monitored in 2010, and the highest concentration in San Bernardino County was 3 ppm. These concentrations are lower than the background concentrations used for the attainment demonstration, which were predicted to be 10.8 ppm for the 1-hour measurements and 9.9 ppm for the 8-hour measurements for the year 2002.

The evaluation of the above conditions has shown that the Cedar Avenue and San Bernardino Avenue intersection would not be expected to result in higher CO concentrations than the Wilshire Boulevard and Veteran Avenue intersection used for the attainment demonstrations. In addition, the SCAQMD 2003 AQMP Appendix V attainment demonstration indicated that in 1997 and 2002, 1-hour CO concentrations were considerably lower than the NAAQS and CAAQS (Table 3.2.6-4). The analysis was based on 1997 and 2002 traffic volumes and showed a 38 to 45 percent reduction in concentrations between the 2 years. Therefore, according to the CO Protocol, the proposed project is satisfactory, and no further analysis is needed. The proposed project would not be expected to create a CO hot-spot; therefore, the proposed project has demonstrated project-level conformity for CO.

Table 3.2.6-4 Average 1-Hour Carbon Monoxide Concentrations (ppm) at the Most Congested Intersections in Los Angeles

	Morning[1]	Afternoon[2]	Peak[3]	Standard	Maximum 1-Hour CO Concentration between 2010 and 2014 at the San Bernardino Monitoring Station[8]
1997					
Wilshire Boulevard – Veteran Avenue[4]	7.7	5.7	-	35	3
Sunset Boulevard – Highland Avenue[5]	6.9	7.3	-	35	3
La Cienega Boulevard – Century Boulevard[6]	6.4	5.2	-	35	3
Long Beach Boulevard – Imperial Highway[7]	5.1	5.2	2.2	35	3
2002					
Wilshire Boulevard – Veteran Avenue	4.6	3.5	-	35	3
Sunset Boulevard – Highland Avenue	4.0	4.5	-	35	3
La Cienega Boulevard – Century Boulevard	3.7	3.1	-	35	3
Long Beach Boulevard – Imperial Highway	3.0	3.1	1.2	35	3

1 Morning: 7:00 to 8:00 a.m. for La Cienega Boulevard – Century Boulevard; 8:00 to 9:00 a.m. for Wilshire Boulevard – Veteran Avenue; 7:00 to 8:00 a.m. for Long Beach Boulevard – Imperial Highway; and 8:00 to 9:00 a.m. for Sunset Boulevard – Highland Avenue.

2 Afternoon: 3:00 to 4:00 p.m. for Sunset Boulevard – Highland Avenue; 5:00 to 6:00 p.m. for Wilshire Boulevard – Veteran Avenue; 4:00 to 5:00 p.m. for Long Beach Boulevard – Imperial Highway; and 6:00 to 7:00 p.m. for La Cienega Boulevard – Century Boulevard.

3 Peak: 11:00 to 12:00 p.m. (concentration at the hour of the observed peak). Peak is only provided for the Long Beach Boulevard/Imperial Highway intersection because it is the intersection associated with the regional peak at Lynwood.

4 The most congested intersection in Los Angeles County. The average daily traffic volume is approximately 100,000 vehicles per day.

5 One of the most congested intersections in the City of Los Angeles. The intersection study has been conducted and traffic data is available.

6 One of the most congested intersections in the City of Los Angeles. The intersection study has been conducted and traffic data is available.

7 The Lynwood Air Monitoring Station consistently records the highest 8-hour CO concentrations in the Basin each year.

8 The maximum background 1-hour CO concentration is not available on the ARB database. According to SCAQMD, 1-hour CO concentrations were last monitored in 2010, and the highest concentration in San Bernardino County was 3 ppm.

Source: 2003 AQMP, Appendix V, Modeling and Attainment Demonstrations, page V-4-26.

The analysis above focused on the potential for CO hot spots at intersections. The Transportation Project-Level Carbon Monoxide Protocol was designed for assessing intersection CO concentrations and does not directly apply to the mainline of a freeway. A CO analysis for the mainline was completed using the AERMOD dispersion model and the following procedures and assumptions.

- Roadway and Traffic Conditions: Traffic volumes and operating conditions were obtained from the traffic analysis prepared for this project. CO modeling was conducted based on the mainline traffic volumes that generated the most mass emissions. According to the traffic data, emissions would peak in 2025 within a 1.4-mile segment between Milliken and Haven avenues associated with Alternative 3.
- Vehicle Emission Rates: Vehicle emission rates were determined using the ARB's EMFAC2014 emission rate program.
- Receptor Locations: Receptors included a fine 25- by 25-meter grid to a distance of 100 meters from the ROW and a 100- by 100-meter coarse grid to a distance 500 meters from the ROW. A line of receptors was also placed along the ROW. Receptor heights were set at 5.9 feet (1.8 meters).
- Meteorological Conditions: Meteorological data was obtained from the SCAQMD website and included 5 years of processed AERMOD data from the Upland Meteorological Station. Wind primarily blows from the west with an average wind speed of 1.73 meters per second.
- Background Concentrations and 8-Hour Values: CO concentrations in the project area are low (e.g., 8-hour concentrations are approximately 10 percent of the standard), and 1-hour concentrations have not been monitored in the project area for many years. A background concentration of 1.3 ppm was added to the modeled 1-hour values to account for sources of CO not included in the modeling. The 1-hour value was calculated using the monitored 8-hour value of 0.93 ppm and a persistence factor of 0.7. All background concentration data were taken from the monitoring data provided by ARB for the Upland Monitoring Station, which last monitored CO concentrations in 2012.

The analysis focuses on the horizon year concentrations instead of also presenting existing and interim year concentrations, or no-build concentrations. The rationale is that the horizon year presents the highest potential for the NAAQS to be exceeded given the change in traffic volumes and the methodology that holds the background concentrations steady between the existing and future conditions. The maximum 1-hour concentration along the I-10 mainline was determined to be 2.8 ppm and the standard is 9 ppm. The 8-hour concentration was determined to be 1.3 ppm and the standard is 35 ppm. There would be no exceedance of the CO NAAQS along the mainline.

Particulate Matter Hot-Spots

A PM hot-spot analysis is required under the EPA Transportation Conformity rule for Projects of Air Quality Concern (POAQCs). According to the EPA Transportation Conformity Guidance, five types of projects are considered a POAQC. These types of projects are listed below, along with information related to the proposed project.

1. New or expanded highway projects that have a significant number of or significant increase in diesel vehicles (significant number is defined as greater than 125,000 annual average daily traffic [AADT] and 8 percent or more of such AADT is diesel truck traffic;

   Detailed traffic forecasts and analyses were prepared for each alternative. The basis for the detailed traffic analysis was developed based on interagency consultation with EPA, SCAQMD, FHWA, and Caltrans. Based on review of the project list included in the RTP, it was noted that the proposed East/West Freight Corridor Project, which is located parallel to I-10 and State route (SR) 60, is not scheduled to be completed until year 2035; therefore, it was concluded that the year of highest traffic demand for the I-10 corridor would be the year just prior to the opening of the East/West Freight Corridor Project. Based on this information, the year 2034 was identified as the worst-case year for traffic and emissions on the I-10 corridor; hence, detailed traffic forecasts were prepared for year 2034 at the request of the Transportation Conformity Working Group (TCWG).

   In addition, as discussed during the interagency consultation, Alternative 3 is expected to result in higher emissions than Alternative 2 due to increased traffic volumes associated with the additional capacity and highway widening; therefore, a detailed traffic analysis was completed for Alternative 3 using 2034 traffic forecasts. The analysis indicated that the build alternatives would locally reduce PM emissions on the I-10 corridor due to the diversion of heavy and medium trucks to other corridors. The model also shows an attraction of autos and light trucks from other highways to I-10. Construction of Alternative 3 provides additional capacity on the I-10 corridor that is not available to heavy and medium trucks but is available to light trucks and cars. PM emissions, including re-entrained dust, are a function of vehicle weight. In addition, re-entrained dust, and not exhaust, comprises most of the PM emissions on the I-10 corridor. The diversion of trucks to other highways reduced emissions within the project limits; therefore, the build alternatives were determined to not be a POAQC.

During the interagency conference call held on January 29, 2016, some comments were expressed regarding the potential for PM hot spots to be created by the heavy and medium truck diversion to SR-60 and other corridors. A response was provided to the TCWG on February 11, 2016. Some heavy and medium trucks would be diverted from I-10 to SR-60, and some light trucks and autos would be attracted from SR-60 to I-10. Based on the traffic data, the net diversion would represent less than 1 percent of the SR-60 traffic volumes. Resulting environmental impacts from this slight increase in traffic along SR-60 would not introduce additional adverse environmental effects, such as re-entrained dust impacts, health, noise, and potential impacts to sensitive receptors (e.g., schools, hospitals, parks).

2. Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles, or that that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;

   Based on the guidance stated above, 10,000 trucks may be used as an indicator of potential hot spots. There are no intersections affected by the proposed project with more than 10,000 trucks AADT.

3. New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;

   The proposed project does not include a new bus or rail terminal or transfer point.

4. Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; or

   The proposed project does not include an expanded bus or rail terminal or transfer point.

5. Projects in or affecting locations, areas, or categories of sites that are identified in the $PM_{2.5}$ or PM_{10} Implementation Plan or Implementation Plan submission, as appropriate, as sites of possible violation.

   The project location has not been identified as a possible violation site.

On February 23, 2016, the TCWG confirmed that, based on the additional information provided, the project is not a POAQC for purposes of analysis of project-level transportation conformity analysis. The proposed project is not considered a POAQC because it does not meet the definition as defined in EPA's Transportation Conformity Guidance; therefore, PM hot-spot analysis is not required. POAQC determination documentation can be found in Appendix K, Air Quality. FHWA provided a project-level conformity determination on December 6, 2016. This letter can also be found in Appendix K and states, "The analysis demonstrates that the project will not create any new violations of the standards or increase the severity or number of existing violations."

Construction Emissions Related to Conformity

Construction would occur over approximately 42 months (3.5 years) for Alternative 2 and approximately 60 months (5 years) for Alternative 3.

Regional Emissions – Mobile Sources

Existing emissions in the project corridor were estimated using emission factors from the latest version of CT-EMFAC (version 5.0) for VOC, NO_X, and CO and using emission factors from EMFAC2011 for PM_{10} and $PM_{2.5}$.[25] CT-EMFAC and EMFAC are based on the same underlying data; however, CT-EMFAC incorporates emissions data and algorithms in the model that enable output of emission factors and project-level emissions. It also enables analysts to pair project-level emission factors with project-level travel activity to estimate emissions for individual roadway links. CT-EMFAC also allows composition of project-specific vehicle fleets to be incorporated in the modeling. CT-EMFAC was first developed by University of California, Davis, with support from Caltrans and ARB. Versions 3.0 and later were developed by Sonoma Technology, Inc., with permission from University of California, Davis, and with support from Caltrans and San Diego Association of Governments (SANDAG).

EMFAC2011 was the current model approved for estimating emissions in October 2012 when the Notice of Intent to prepare an EIS and the Notice of Preparation to prepare an EIR were published by the Lead Agency. Implementation of EMFAC2011 was carried through the publication of the Final Environmental Document as the baseline condition.

[25] EMFAC2014 was released on December 30, 2014, by the ARB. This new model version has not been approved by EPA. The Air Quality Report consistency applies EMFAC2011 to emissions analyses.

Brake and tire wear emissions were estimated using EMFAC2011 and are both included in the total reported PM mass. Similarly, re-entrained dust, as a fraction of total PM mass, is calculated using the following formula:[26]

$$E = k\,(sL)^{0.91} \times (W)^{1.02}\,(1 - P/4N)$$

where:

E: particulate matter emission factor (g/mile),

k: particle size multiplier for particle size range and units of interest (for PM_{10} k=0.0022 lb/VMT and for $PM_{2.5}$ k=0.15×0.0022=0.00033 lb/VMT),

sL: road surface slit loading (grams per square meter, 0.02 g/m^2 for freeway) (g/m^2),

W: average weight (tons) of the vehicles traveling on the road (depends on the ratio of number trucks to number of non-trucks),

P: number of wet days during the averaging period,

N: number of days in the averaging period.

Project-related emissions are presented in Table 3.2.6-5 for comparison to the No Build Alternative and Alternatives 2 and 3. The total project length is identical for each alternative to compare emissions between the alternatives. Existing emissions are greater than projected 2025 and 2045 emissions for all pollutants except for PM_{10} in both years and $PM_{2.5}$ in 2045, despite increases in vehicle volumes due to improvements in engine efficiencies and associated emission rates.

Table 3.2.6-5 Estimated 2012 Daily Operational Emissions

Emission Source	Pounds per Day				
	VOC	NO_X	CO	$PM_{2.5}$	PM_{10}
Existing Conditions	2,507	14,718	53,708	740	2,482

Source: Parsons traffic analysis, emission rates from EMFAC2011 for PM2.5 and PM10 and from CT-EMFAC (version 5.0) for VOC, NOX, and CO.

Tables 3.2.6-6 and 3.2.6-7 show 2025 and 2045 regional emissions for the No Build Alternative (Alternative 1) and Alternatives 2 and 3. Between the build alternatives, Alternative 2 would generate less regional emissions than Alternative 3.

[26] EPA, AP-42 Section 13.2.1 Paved Roads - Re-entrained Dust from Paved Roads, January 2011.

Table 3.2.6-6 Estimated 2025 Daily Operational Emissions

Emission Source	Pounds Per Day				
	VOC	NO_X	CO	$PM_{2.5}$	PM_{10}
No Build Alternative	960	4,840	22,039	658	2,592
Alternative 2 (% Change from 2025 No Build Alternative)	955 (1%)	4,895 1%	21,654 (2%)	630 (4%)	2,415 (7%)
Net Change from No Build Alternative to Alternative 2	(5)	55	(385)	(28)	(177)
Alternative 3 (% Change from 2025 No Build Alternative)	1,059 10%	5,256 9%	23,955 9%	662 1%	2,461 (5%)
Net Change from No Build Alternative to Alternative 3	99	416	1,916	4	131

Source: Parsons traffic analysis, emission rates from EMFAC2011 for PM2.5 and PM10 and from CT-EMFAC (version 5.0) for VOC, NOX, and CO.

Table 3.2.6-7 Estimated 2045 Daily Operational Emissions

Emission Source	Pounds Per Day				
	VOC	NO_X	CO	$PM_{2.5}$	PM_{10}
No Build Alternative	893	4,606	21,824	775	3,040
Alternative 2 (% Change from 2045 No Build Alternative)	916 3%	4,788 4%	22,233 2%	766 (1%)	2,922 (4%)
Net Change from No Build Alternative to Alternative 2	23	182	409	(9)	(118)
Alternative 3 (% Change from 2045 No Build Alternative)	1,003 12%	4,964 8%	23,918 10%	785 1%	2,904 (4%)
Net Change from No Build Alternative to Alternative 3	110	358	2,094	10	(136)

Source: Parsons traffic analysis, emission rates from EMFAC2011 for PM2.5 and PM10 and from CT-EMFAC (version 5.0) for VOC, NOX, and CO.

PM emissions are composed of exhaust, brake- and tire-wear, and re-entrained road dust emissions. Exhaust emissions will decrease in the future due to improvements in engine and emission control technologies. As exhaust emissions decrease due to more advanced technologies, re-entrained road dust emissions make up a higher fraction of PM. PM emissions become a stronger function of vehicle miles traveled (VMT) and vehicle distribution. The vehicle distribution can change the average vehicle weight and subsequently the re-entrained road dust emission factors. As previously discussed, the build alternatives would reduce PM emissions on I-10 due to the diversion of heavy and medium trucks to other corridors. By diverting more heavy-duty trucks and attracting more light- and medium-duty trucks to the I-10 corridor, the build alternatives would have a lighter average vehicle weight compared to the No Build Alternative. Less re-entrained road dust emissions would be generated per unit mile traveled for the build alternatives compared to the No Build Alternative; however, the build alternatives would add capacity and more mobility and result in increased VMT. The combination of the two effects would result in decreases or increases in regional PM emissions depending on the build alternative and year, as shown in Tables 3.2.6-6 and 3.2.6-7.

In addition, truck engines and their emission control technologies are optimized to emit the least amount of PM emissions at a much lower speed compared to the average speed of the proposed project. According to the EMFAC2011 model, the least amount of PM emissions per unit distance traveled in 2025 for trucks is released at a speed of 30 mph, while for non-truck vehicles, optimum speed in terms of emissions is 50 mph. Although increasing the speed of traffic by only 5 mph increases the non-truck emissions by only 2.4 percent, the same amount of increase in speeds increases truck emissions by 13 percent; therefore, the total emissions due to operation of the proposed project quickly increases as speeds deviate from an optimum speed. This optimum speed is highly dependent on the truck/non-truck composition of the traffic (i.e., proportion of trucks and non-trucks), at any given link.

Mobile Source Air Toxics

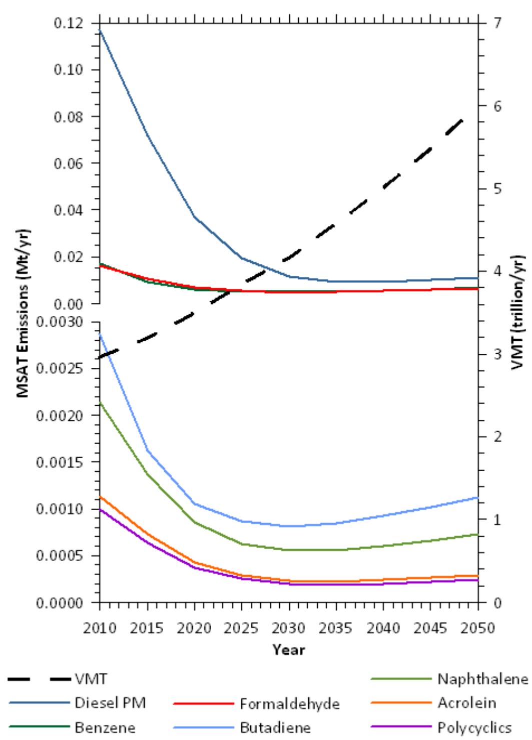
Background

Controlling air toxic emissions became a national priority with passage of the Federal CAA Amendment of 1990, whereby Congress mandated that EPA regulate 188 air toxics, also known as hazardous air pollutants. EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS). In addition, EPA identified 7 compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA). These are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (DPM), formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority MSATs, the list is subject to change and may be adjusted in consideration of future EPA rules. The 2007 EPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines.

Motor Vehicle Emissions Simulator

According to EPA, Motor Vehicle Emissions Simulator (MOVES) improves upon the previous MOBILE model in several key aspects: MOVES is based on a vast amount of in-use vehicle data collected and analyzed since the latest release of MOBILE, including millions of emissions measurements from light-duty vehicles. Analysis of this data enhanced EPA's understanding of how mobile sources contribute to emissions inventories and the relative effectiveness of various control strategies. In addition, MOVES accounts for the significant effects that vehicle speed and temperature have on PM emissions estimates, whereas MOBILE did not. MOVES2010b includes all air toxic pollutants in the NATA that are emitted by mobile sources. EPA has incorporated more recent data into MOVES2010b to update and enhance the quality of MSAT emission estimates. These data reflect advanced emission control technology and modern fuels, plus additional data for older technology vehicles.

Based on an FHWA analysis using EPA's MOVES2010b model, as shown in Figure 3.2.6-11, even if VMT increases by 102 percent as assumed from 2010 to 2050, a combined reduction of 83 percent in the total annual emissions for the priority MSAT is projected for the same time period.



Source: Federal Highway Administration, *Memorandum: Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA*, December 6, 2012.

Figure 3.2.6-11 National MSAT Emission Trends 1999-2050 for Vehicles Operating on Roadways using EPA's MOVES2010b Model

The implications of MOVES on MSAT emissions estimates compared to MOBILE are: lower estimates of total MSAT emissions; significantly lower benzene emissions; and significantly higher DPM emissions, especially for lower speeds. Consequently, DPM is projected to be the dominant component of the emissions total.

Mobile Source Air Toxic Research

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how potential public health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA.

Nonetheless, air toxics concerns continue to be raised on highway projects during the NEPA process. Even as the science emerges, the public and other agencies expect MSAT impacts to be addressed in environmental documents. FHWA, EPA, Health Effects Institute (HEI), and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. FHWA will continue to monitor the developing research in this field.

Incomplete or Unavailable Information for Project-Specific Mobile Source Air Toxic Health Impact Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Federal CAA and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSATs. EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain IRIS, which is “a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects.” Each report contains assessments of noncancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSATs, including the HEI. Two HEI studies are summarized in Appendix D of FHWA's Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling, dispersion modeling, exposure modeling, and then final determination of health impacts, with each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because information regarding changes in travel patterns and vehicle technology over that time frame – information that would affect emissions rates – is unavailable, so unsupportable assumptions would have to be made.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSATs because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, which is a concern expressed by HEI. As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds and, in particular, for DPM. EPA and HEI have not established a basis for quantitative risk assessment of DPM in ambient settings.

There is also a lack of national consensus on an acceptable level of risk. The current context is the process used by EPA as provided by the Federal CAA to determine whether more stringent controls are required to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine a “safe” or “acceptable” level of risk due to emissions from a source, which is generally no greater than approximately 100 in 1 million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in 1 million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in 1 million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in 1 million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA’s approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities, plus improved access for emergency response, that are better suited for quantitative analysis.

Mobile Source Air Toxic Emissions in the Project Area

FHWA, in its Interim Guidance published on December 6, 2012 (Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents), recommends a range of options deemed appropriate for addressing and documenting the MSAT issue in NEPA documents. Based on the FHWA guidance, the proposed project has the potential for meaningful differences in MSAT emissions among project alternatives; therefore, level of emissions for the highest priority MSATs for the No Build Alternative and build alternatives was evaluated (Level 3 Analysis: Projects with Higher Potential MSAT Effects).

The procedure for analyzing emissions for on-road MSATs is to calculate emission factors using CT-EMFAC 5 based on EMFAC2011 and apply the emission factors to speed and VMT data specific to the proposed project. EMFAC2011 is the emission inventory model developed by ARB, which calculates emission inventories for motor vehicles operating on roads in California. The emission factors used in this analysis are from CT-EMFAC 5 and are specific to the San Bernardino County portion of the SCAB. The MSAT emission factors were obtained using the CT-EMFAC manual option mode for Truck/Non-Trucks and for various truck percentages according to the traffic study. The geographic area was set to San Bernardino County, and the analysis years of 2012, 2025, and 2035 were selected.[27] When CT-EMFAC completed the calculations, the output file contained fleet-average emissions factors by pollutant and by emission process.

Tables 3.2.6-8 and 3.2.6-9 show the 2025 and 2045 MSAT emissions, respectively. The total project length is identical for each alternative to compare emissions between the alternatives. For Alternative 2, the change in no build to build emissions ranges from a decrease of 2 percent to an increase of 6 percent in 2025, and 2045 emissions range from 2 to 8 percent increases. For Alternative 3, the change in no build to build emissions ranges from an increase of 9 to 11 percent in 2025 and an increase of 8 to 17 percent in 2045. Between the two build alternatives, Alternative 2 would generate less MSAT emissions than Alternative 3.

Table 3.2.6-8 MSAT Emissions – 2025

Toxic Air Contaminant	2012 Existing Emissions (lb/day)	2025 No Build Alternative Emissions (lb/day)	2025 Build		
			Emissions (lb/day)	Existing Percent Change	No Build Percent Change
Alternative 2					
Benzene	79.7	28.8	28.6	(64%)	(1%)
Acrolein	3.9	1.4	1.3	(67%)	(7%)
Acetaldehyde[a]	43.0	17.3	17.6	(59%)	2%
Formaldehyde	112.1	44.1	44.7	(60%)	1%
Butadiene	17.5	6.2	6.1	(65%)	(2%)
Naphthalene	3.4	2.3	2.3	(32%)	0%
POM	2.0	0.7	0.7	(65%)	0%
DPM	359.8	94.1	99.2	(72%)	5%
Alternative 3					
Benzene	79.7	28.8	31.8	(60%)	10%
Acrolein	3.9	1.4	1.5	(62%)	7%

[27] The horizon year analysis (2045) is based on 2045 traffic volumes and 2035 emission rates from CT-EMFAC as this is the latest available year for analysis in CT-EMFAC.

Table 3.2.6-8 MSAT Emissions – 2025

Toxic Air Contaminant	2012 Existing Emissions (lb/day)	2025 No Build Alternative Emissions (lb/day)	2025 Build		
			Emissions (lb/day)	Existing Percent Change	No Build Percent Change
Acetaldehyde	43.0	17.3	18.6	(57%)	8%
Formaldehyde	112.1	44.1	47.9	(57%)	9%
Butadiene	17.5	6.2	6.8	(61%)	10%
Naphthalene	3.4	2.3	2.5	(26%)	9%
POM	2.0	0.7	0.8	(60%)	14%
DPM	359.8	94.1	102.0	(72%)	8%

[a] Acetaldehyde has not been identified by as a priority MSAT, although it has been identified by ARB as a TAC.
Note: Percent change is calculated as (B-A)/A. For example, the no build percent change for DPM in Alternative 3 is (102.0-94.1)/94.1.

Table 3.2.6-9 MSAT Emissions – 2045

Toxic Air Contaminant	2012 Existing Emissions (lb/day)	2045 No Build Alternative Emissions (lb/day)	2045 Build		
			Emissions (lb/day)	Existing Percent Change	No Build Percent Change
Alternative 2					
Benzene	79.7	27.3	28.0	(65%)	3%
Acrolein	3.9	1.3	1.3	(67%)	0%
Acetaldehyde	43.0	18.6	19.3	(55%)	4%
Formaldehyde	112.1	46	47.6	(58%)	3%
Butadiene	17.5	5.7	5.9	(66%)	4%
Naphthalene	3.4	2.9	2.9	(15%)	0%
POM	2.0	0.9	0.9	(55%)	0%
DPM	359.8	108.6	116.9	(68%)	8%
Alternative 3					
Benzene	79.7	27.3	30.7	(61%)	12%
Acrolein	3.9	1.3	1.4	(64%)	8%
Acetaldehyde	43.0	18.6	19.6	(54%)	5%
Formaldehyde	112.1	46	49.2	(56%)	7%
Butadiene	17.5	5.7	6.5	(63%)	14%
Naphthalene	3.4	2.9	3.2	(6%)	10%
POM	2.0	0.9	0.9	(55%)	0%
DPM	359.8	108.6	115.7	(68%)	7%

Note: Percent change is calculated as (B-A)/A. For example, the no build percent change for DPM in Alternative 3 is (115.7-108.6)/108.6.

Appendix E of the MSAT guidance document includes mitigation for countering the effects of MSAT emissions. These mitigation strategies include commuter incentives (Alternatives 2 and 3), congestion pricing (Alternative 3), and Intelligent Transportation System (ITS) programs, such as traffic management centers or incident management systems (Alternatives 2 and 3). Other suggested mitigation strategies would not be feasible, such as truck-stop electrification, buffer zones between new or expanded highway alignments and populated areas, and reducing a particular type of travel. Electrification is outside the scope of the proposed project, and buffer zones cannot be established because I-10 is an existing alignment with land uses bordering the ROW. The project corridor supports warehouse and trucking facilities, and truck trips associated with these facilities cannot reasonably be limited by Caltrans or the San Bernardino County Transportation Authority (SBCTA).

Diesel Particulate Matter

In 1998, California identified DPM as a TAC based on its potential to cause cancer, premature death, and other health problems. This assessment formed the basis for a decision by ARB to formally identify particles in diesel exhaust as a TAC that may pose a threat to human health.

Diesel engines emit a complex mix of pollutants, the most visible of which are very small carbon particles or soot, known as DPM. Diesel exhaust also contains more than 40 cancer-causing substances, most of which are readily adsorbed on the soot particles. These include many known or suspected cancer-causing substances, such as benzene, arsenic, and formaldehyde.

Overall, diesel engine emissions are responsible for most of California's estimated cancer risk attributable to air pollution. In addition, DPM is a significant fraction of California’s particulate pollution problem. Assessments by ARB and EPA estimate that DPM annually contributes to approximately 3,500 premature respiratory and cardiovascular deaths and thousands of hospital admissions, asthma attacks, and other respiratory symptoms.

ARB has found that DPM contributes more than 70 percent of the known risk from air toxics and poses the greatest cancer risks among all identified air toxics. Diesel trucks contribute more than half of the total diesel combustion sources; however, ARB has adopted a Diesel Risk Reduction Plan with control measures that would reduce the overall DPM emissions by approximately 85 percent from 2000 to 2020. In addition, total toxic risk from diesel exhaust may only be exposed for a much shorter duration. Furthermore, DPM is only one of many environmental toxics, and those of other toxics and other pollutants in various environmental media may overshadow its cancer risks; therefore, while diesel exhaust may pose potential cancer risks to receptors spending time on or near high-risk DPM facilities, most receptors' short-term exposure would only cause minimal harm, and these risks would also greatly diminish in the future operating years of the proposed project due to planned emission control regulations.

In addition to DPM, ultrafine particle counts are highest near mobile sources, with some of the highest concentrations observed on busy roads. In the urban environment, motor vehicles are a major source of ultrafine particulates. Other recent studies conducted in southern California have shown high counts of particulates near freeways.[28] While information on health effects of ultrafine particles is limited, various studies suggest that ultrafine particles may have consequential health effects greater than or independent of the effects due to larger particles that comprise most of the ambient PM mass.

The SCAQMD Multiple Air Toxics Exposure Study IV (MATES IV) indicates that the cancer risk ranges from 593 persons in 1 million along the western portion of the alignment to 301 persons in 1 million along the eastern portion of the alignment.[29] The average risk in the SCAB is 418 persons in 1 million. DPM contributes approximately 68.2 percent of the risk. Details of the proposed project MSAT emissions from the existing conditions and future alternatives are provided in Tables 3.2.6-8 and 3.2.6-9. The increase in emissions is largely due to the high percentage of trucks along the corridor, increase in truck speeds of the build scenarios, and added capacity. The same rationale as to why the regional emissions would increase applies to MSAT emissions.

The proposed project would divert heavy-duty and medium-duty trucks from I-10 to SR-60. Additionally, automobiles and light trucks would be diverted from SR-60 to I-10. The proposed project provides additional capacity on I-10 that is not available to heavy- and medium-duty trucks but is available to light-duty trucks and autos. Consequently, the project team studied equivalent heavy-duty trucks to assess the net effect of heavy- and medium-duty truck diversion and automobile/light-duty truck attraction in terms of impact on PM emissions.

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[28] South Coast Air Quality Management District, *2012 Air Quality Management Plan*, 2012.
[29] South Coast Air Quality Management District, *Multiple Air Toxics Exposure Study IV*, October 2014.

Table 3.2.6-10 shows the heavy-duty truck PM equivalents of medium trucks, light trucks, and autos for PM. These ratios are calculated based on emission factors for light-, medium-, and heavy-duty truck categories. The calculated emissions include exhaust plus brake and tire wear emissions. The emissions also include re-entrained road dust estimated as described in the EPA AP-42 document. For light-duty trucks, LHDT1 (T4) and LHDT2(T5) categories have been used. Medium- and heavy-duty trucks are assumed to be MHDT(T6) and HHDT(T7) truck categories, respectively.

Table 3.2.6-10 Emissions Equivalency Factors for PM_{10} and $PM_{2.5}$ Relative to Heavy-Duty Trucks

Vehicle Classification	PM_{10}	$PM_{2.5}$
Medium-Duty Trucks	49.0%	55.1%
Heavy-Duty Trucks	22.5%	22.7%
Automobiles	9.1%	11.1%

Table 3.2.6-11 summarizes the net effect of the diversion from, and attraction to, I-10 on SR-60. The table accounts for the diversion from I-10 to SR-60 of heavy and medium trucks, as well as the attraction from SR-60 to I-10 of light trucks and autos (shown in the table by negative numbers). The final column of the table shows the net diversion (stated as heavy truck equivalents). Based on the traffic data, the net diversion would represent less than 1 percent of the SR-60 traffic volumes. As such, the re-entrained dust impacts and other environmental and health impacts resultant from these diversions are not expected to be substantial.

Table 3.2.6-11 Daily Truck Diversion from I-10 to/from SR-60 in Year 2034 under Build Alternative 3 Compared to Alternative 1 (No Build)

Pollutant	Heavy-Duty Trucks		Medium-Duty Trucks		Light-Duty Trucks		Automobiles		Net Diversion from I-10 to SR-60 in Heavy-Duty Truck Equivalents	Total Traffic Volume	Net Flow of Heavy Trucks as % of Total Traffic Volume
	Diversion to SR-60 from I-10	Heavy-Duty Truck Equivalent	Diversion to SR-60 from I-10	Heavy-Duty Truck Equivalent	Attraction to I-10 from SR-60	Heavy-Duty Truck Equivalent	Attraction to I-10 from SR-60	Heavy-Duty Truck Equivalent			
PM_{10}	3,200	3,200	700	343	-3,800	-857	-3,300	-300	2,386	293,800	0.81%
$PM_{2.5}$	3,200	3,200	700	385	-3,800	-863	-3,300	-366	2,356	293,800	0.80%

Values for "Attraction to I-10 from SR-60" and their "Heavy Duty Truck Equivalent" are stated as negative to contrast these values with those of diversion from I-10 to SR-60 and to accommodate calculation of the "Net Diversion from I-10 to SR-60 in Heavy Truck Equivalents".

Naturally Occurring Asbestos and Structural Asbestos

Asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have commonly been used for unpaved gravel roads, landscaping, fill projects, and other improvement projects in some localities. Asbestos may be released into the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations. All of these activities may have the effect of releasing potentially harmful asbestos into the air. Natural weathering and erosion processes can act on asbestos-bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed. Serpentinite may contain chrysotile asbestos, especially near fault zones. Ultramafic rock, which is a rock closely related to serpentinite, may also contain asbestos minerals. Asbestos can also be associated with other rock types in California, though much less frequently than serpentinite and/or ultramafic rock. Serpentinite and/or ultramafic rock are known to be present in 44 of California's 58 counties. These rocks are particularly abundant in the counties of the Sierra Nevada foothills, the Klamath Mountains, and Coast Ranges. As part of an ongoing study, the U.S. Geological Survey (USGS) identifies and maps reported occurrences of asbestos in the United States. The maps and reports provide Federal, State, local government agencies, and other stakeholders with geologic information on the natural occurrence of asbestos.

According to the USGS Survey Map for Asbestos in California, there is no occurrence of asbestos reported within a 25-mile vicinity of the proposed project area. These asbestos occurrences are described as outcrop exposures or in rock exposed by exploration and mining operations. Although it is not anticipated that construction activity would encounter Naturally Occurring Asbestos (NOA), the project dust control measures would effectively control unanticipated NOA exposure through a variety of required control measures, including watering. In addition, it is not anticipated that construction activity would encounter structural asbestos. If asbestos were to be encountered, the proposed project would be required to comply with SCAQMD Rule 1403 (Asbestos Emissions from Demolition/Renovation). Nationally, asbestos is regulated under the National Emission Standards for Hazardous Air Pollutants (NESHAP). The proposed project would be required to comply with all NESHAP regulations.

Lead

It is not anticipated that construction of the proposed project would involve disturbance of soils containing high levels of aerially deposited lead (ADL), or painting or modification of structures with lead-based coatings using sandblasting and other activities related to Pb paint removal or disturbance; therefore, no control or mitigation measure is required.

Mobile Source Air Toxics

FHWA's MSAT guidance document includes mitigation for countering the effects of MSAT emissions. These mitigation strategies include commuter incentives (Alternatives 2 and 3), congestion pricing (Alternative 3), and ITS programs, such as traffic management centers or incident management systems (Alternatives 2 and 3). Other suggested mitigation strategies would not be feasible, such as truck-stop electrification, buffer zones between new or expanded highway alignments and populated areas, and reducing a particular type of travel. Electrification is outside the scope of the proposed project, and buffer zones cannot be established because I-10 is an existing alignment with land uses bordering the ROW. The project corridor supports warehouse and trucking facilities, and truck trips associated with these facilities cannot reasonably be limited by Caltrans or SBCTA.

Construction Emissions (Short-Term Impacts)

General Construction Information

During construction, short-term degradation of air quality may occur due to the release of particulate emissions (i.e., airborne dust) generated by excavation, grading, hauling, and various other construction-related activities. Emissions from construction equipment also are expected and would include CO, NO_X, VOCs, directly emitted PM (PM_{10} and $PM_{2.5}$), and TACs such as diesel exhaust PM. O_3 is a regional pollutant that is derived from NO_X and VOCs in the presence of sunlight and heat.

Construction of the proposed project is planned to commence in 2019 and is anticipated to be completed in 2024 or early 2025. The duration of construction for the build alternatives is approximately 42 months (3.5 years) for Alternative 2 and 60 months (5 years) for Alternative 3. The proposed project is envisioned to be constructed in four phases due to the scale of the proposed project and the need to minimize traffic impacts and maintain traffic during construction. These four phases include grubbing/land clearing, grading/excavation, drainage/utilities, and paving.

The temporary impact analysis described below utilizes the Sacramento Metropolitan Air Quality Management District's Roadway Construction Emissions Model (RoadMod) Version 7.1.5.1, published December 2013, to quantify emissions associated with roadway construction. RoadMod is a data-entry spreadsheet that utilizes various sources to estimate construction emissions, including OFFROAD2011 and EMFAC2011. The project-specific assumptions used for the construction calculations are summarized as follows:

<u>Alternative 2</u>

- Year 2019 start date
- 42-month construction period
- 25-mile corridor length
- 360-acre project area
- A maximum of 40 acres of land disturbed per day
- A maximum of 200 cubic yards per day of soil to be imported
- No exported soil
- Water trucks used as control measure for fugitive dust

<u>Alternative 3</u>

- Year 2019 start date
- 60-month construction period
- 33-mile corridor length
- 432-acre project area
- A maximum of 40 acres of land disturbed per day
- A maximum of 700 cubic yards per day of soil to be imported
- No exported soil
- Water trucks used as control measure for fugitive dust

The above assumptions were used as input parameters to the RoadMod model. The construction activity schedule and equipment fleet mix for Alternatives 2 and 3 were estimated by the model. RoadMod is specifically developed to estimate emissions associated with roadway construction projects because the default equipment, activities, and typical phasing are different than those of land use development projects and building construction projects. The methodologies and assumptions used in RoadMod are appropriate for road construction projects, including new road construction, road widening, and bridge or overpass construction. The RoadMod phasing assumptions were used to allocate the project-specific construction equipment to the specific phases. Table 3.2.6-12 shows the assumed construction schedule and off-road equipment used in each phase of the proposed project alternatives. Calculation methods and assumptions as generated by RoadMod are provided in Appendix A of the Air Quality Study.

Table 3.2.6-12 Duration and Equipment for Construction Activities

Construction Phase	Duration (months)	Equipment Used
Alternative 2		
Grubbing/Land Clearing	4.2	Crawler Tractors, Excavators, Signal Boards
Grading/Excavation	16.8	Cranes, Crawler Tractors, Excavators, Graders, Rollers, Rubber Tired Loaders, Scrapers, Signal Boards, Tractors/Loaders/Backhoes
Drainage/Utilities	14.7	Air Compressors, Generator Sets, Graders, Plate Compactors, Pumps, Rough Terrain Forklifts, Scrapers, Signal Boards, Tractors/Loaders/Backhoes
Paving	6.3	Pavers, Paving Equipment, Rollers, Signal Boards, Tractors/Loaders/Backhoes
Alternative 3		
Grubbing/Land Clearing	6.0	Crawler Tractors, Excavators, Signal Boards
Grading/Excavation	24.0	Cranes, Crawler Tractors, Excavators, Graders, Rollers, Rubber Tired Loaders, Scrapers, Signal Boards, Tractors/Loaders/Backhoes
Drainage/Utilities	21.0	Air Compressors, Generator Sets, Graders, Plate Compactors, Pumps, Rough Terrain Forklifts, Scrapers, Signal Boards, Tractors/Loaders/Backhoes
Paving	9.0	Pavers, Paving Equipment, Rollers, Signal Boards, Tractors/Loaders/Backhoes

Source: Roadway Construction Emissions Model and project-specific construction information.

Construction staging and material storage for the proposed project would be located in relatively close distance to the work areas along the I-10 corridor.

There are 11 general locations as described below. Refer to the construction analysis of the Final EIR/EIS for detailed maps showing locations of the staging areas.

- Northwest and southeast quadrants of I-10/Etiwanda Avenue interchange
- North side of I-10, east of Cherry Avenue
- North side of I-10 between Poplar Avenue and Catawbe Avenue
- North side of I-10 between Poplar Avenue and Catawbe Avenue
- North side of I-10 between Warm Creek and Santa Ana River
- North side of I-10 between Waterman Avenue and Westbound on-ramp
- North side of I-10 between Ferree Street and Richardson Street

- South side of I-10 west of Richardson Street
- North side of I-10 east of Richardson Street
- North side of I-10 west of Mission Channel/West Redlands bridge
- South side of I-10 between Bryn Mawr Avenue and California Street

Two locations are within the State ROW; all others are private parcels (currently vacant) outside the State ROW.

Tables 3.2.6-13 and 3.2.6-14 show the estimated daily emissions associated with each construction phase for Alternatives 2 and 3, respectively. The emissions were estimated using RoadMod and the assumptions listed in the methodology discussion. Limited detailed construction information was available at the time of this analysis; therefore, the analysis relies on RoadMod default assumptions, including the fleet mix.

Table 3.2.6-13 Alternative 2 Estimated Daily Construction Emissions

Activities	Pounds Per Day				
	VOC	NO_X	CO	$PM_{2.5}$	PM_{10}
Grubbing/Land Clearing	9	122	75	87	405
Grading/Excavation	38	415	260	100	419
Drainage/Utilities	26	239	205	94	412
Paving	8	63	85	3	4
Potential Overlapping Emissions (lb/day)	81	839	625	284	1,240
Total (tons/project)	12	125	91	38	163

Source: Roadway Construction Emissions Model and project-specific construction information.

Table 3.2.6-14 Alternative 3 (Preferred Alternative) Estimated Daily Construction Emissions

Activities	Pounds Per Day				
	VOC	NO_X	CO	$PM_{2.5}$	PM_{10}
Grubbing/Land Clearing	10	122	77	87	405
Grading/Excavation	37	402	262	99	418
Drainage/Utilities	24	209	206	93	411
Paving	7	58	85	3	3
Potential Overlapping Emissions (lb/day)	78	791	631	282	1,237
Total (tons/project)	17	168	130	54	232

Source: Roadway Construction Emissions Model and project-specific construction information.

The construction schedule indicates that overlapping activities would occur throughout the project corridor. Without detailed information available, this conservative analysis assumed that each of the construction phases presented in Tables 3.2.6-13 and 3.2.6-14 could occur simultaneously throughout the corridor. Daily emissions would vary and typically be less than the maximum emissions presented in the tables.

Some phases of construction, particularly asphalt paving, may result in short-term odors in the immediate area of each paving site(s). Such odors would quickly disperse to below detectable levels as distance from the site(s) increases.

3.2.6.4 Avoidance, Minimization, and/or Mitigation Measures

Most of the construction impacts to air quality are short term in duration; therefore, they will not result in long-term adverse conditions. Measures will be implemented under SBCTA and Caltrans oversight. Any changes would require SBCTA and Caltrans approvals. Implementation of the following measures would reduce fugitive dust emissions resulting from construction activities:

AQ-1: The construction contractor must comply with the Caltrans Standard Specifications in Section 14-9 (2015).

AQ-2: Section 14-9-02 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances.

AQ-3: Section 14-9.03 is directed at controlling dust. If dust palliative materials other than water are to be used, material specifications are described in Section 18.

AQ-4: The construction contractor must comply with SCAQMD Rule 403 (Fugitive Dust). Water or dust palliative will be applied to the site and equipment as often as necessary to control fugitive dust emissions. Fugitive emissions generally must meet a “no visible dust” criterion either at the point of emissions or at the ROW line depending on local regulations.

AQ-5: Soil binder will be spread on any unpaved roads used for construction purposes and on all project construction parking areas.

AQ-6: Trucks will be washed as they leave the ROW as necessary to control fugitive dust emissions.

AQ-7: A dust control plan will be developed documenting sprinkling, temporary paving, speed limits, and timely revegetation of disturbed slopes as needed to minimize construction impacts to existing communities.

AQ-8: Equipment and materials storage sites will be located as far away from residential and park uses as practicable. Construction areas will be kept clean and orderly.

AQ-9: Track-out reduction measures, such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic, will be used.

AQ-10: All transported loads of soils and wet materials will be covered before transport, or adequate freeboard (i.e., space from the top of the material to the top of the truck) will be provided to minimize emission of dust (i.e., PM) during transportation.

AQ-11: Dust and mud that are deposited on paved, public roads due to construction activity and traffic will be promptly and regularly removed to decrease PM.

AQ-12: Mulch will be installed or vegetation planted as soon as practical after grading to reduce windblown particulate in the area. Be aware that certain methods of mulch placement, such as straw blowing, may themselves cause dust and visible emission issues and may need to use controls such as dampened straw. Hydroseeding may be used as an alternative to mulch.

Implementation of the following measures would reduce exhaust emissions resulting from construction activities:

AQ-13: Construction equipment and vehicles will be properly tuned and maintained. All construction equipment will use low sulfur fuel as required by California Code of Regulations Title 17, Section 93114.

AQ-14: Environmentally Sensitive Areas (ESAs) or their equivalent will be established within 1,000 feet of sensitive air receptors. Within these areas, construction activities involving the extended idling of diesel equipment or vehicles will be prohibited, to the extent feasible.

AQ-15: A plan will be developed to ensure that construction traffic will be scheduled and routed, to the extent feasible, to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.

AQ-16: Under ARB's idling emissions rule, 2008 and newer model year heavy-duty diesel engines will be equipped with a nonprogrammable engine shutdown system that automatically shuts down the engine after 5 minutes of idling, or optionally meet a stringent NO_X idling emission standard. This rule applies to diesel-fueled commercial motor vehicles that operate in California with gross vehicular weight ratings of greater than 10,000 pounds that are or must be licensed for operation on highways.

AQ-17: To the extent feasible, all construction signal/message boards shall be solar powered.

AQ-18: To the extent feasible, electricity shall be obtained from power poles rather than temporary diesel or gasoline generators.

AQ-19: To the extent feasible, commuter incentives and ITS programs, such as traffic management centers or incident management systems, will be incorporated per FHWA's MSAT guidance.

AQ-20: Congestion pricing per FHWA's MSAT guidance will be implemented as a means to counter the effects of MSAT emissions.

AQ-21: Implement Best Available Control Technology (BACT) during construction and operation of projects where feasible, including: solicit bids that include use of energy and fuel-efficient fleets; solicit preference construction bids that use BACT, particularly those seeking to deploy zero- and/or near zero emission technologies; employ use of alternative fuel vehicles; use lighting systems that are energy efficient, such as limited wavelength amber light-emitting diode (LED) technology; use CEQA Guidelines Appendix F, Energy Conservation, to create an energy conservation plan; use an adopted emissions calculator to estimate construction-related emissions; use the minimum feasible amount of GHG-emitting construction materials that is feasible; use of cement blended with the maximum feasible amount of flash or other materials that reduce GHG emissions from cement production; use of lighter-colored pavement where feasible; recycle construction debris to maximum extent feasible; and plant shade trees in or near construction projects where feasible.

3.2.6.5 Climate Change

The Council on Environmental Quality (CEQ) released Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Reviews (August 1, 2016) This final guidance provides a framework for federal agencies to consider both the effects of a proposed action on climate change, as indicated by its estimated greenhouse gas emissions, and the effects of climate change on a proposed action. Climate change is discussed in Chapter 4 of this document. As the CEQ guidance aligns with the analysis required by the state of California under CEQA, the analysis in Chapter 4 will be used to inform the NEPA decision for the project.

3.2.7 Noise

This section evaluates potential traffic noise impacts on nearby frequent outdoor use areas as a result of implementation of the No Build Alternative and Alternatives 2 and 3 pursuant to the National Environmental Policy Act (NEPA) requirements. Noise impacts pursuant to the California Environmental Quality Act (CEQA) are represented in Chapter 4 of this Environmental Impact Report (EIR)/Environmental Impact Statement (EIS). Results of the detailed noise analysis, are contained in the *Noise Study Report* (NSR) (July 2015) and the *NSR Addendum* (August 2015). Noise abatement in terms of soundwalls is proposed at various locations impacted by traffic noise levels. The *Noise Abatement Decision Report* (NADR) (July 2015) and the *NADR Addendum* (August 2015) for this project provide details of the proposed soundwalls.

3.2.7.1 Regulatory Setting

NEPA and CEQA provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation differ between NEPA and CEQA.

California Environmental Quality Act

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project would have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless those measures are not feasible. The rest of this section will focus on the NEPA Title 23 *Code of Federal Regulations* (CFR) Part 772, which outlines the procedures for noise analysis and abatement. Chapter 4 of this document contains information on noise analysis under CEQA.

National Environmental Policy Act and 23 CFR 772

For highway transportation projects with Federal Highway Administration (FHWA) (and California Department of Transportation [Caltrans], as assigned) involvement, the Federal-Aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations include noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 A-weighted decibels [dBA]) is lower than the NAC for commercial areas (72 dBA). Table 3.2.7-1 lists the NAC for use in the Title 23 CFR 772 analysis. Figure 3.2.7-1 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise levels discussed in this section with common activities.

Table 3.2.7-1 Noise Abatement Criteria

Activity Category	Activity $L_{eq}[h]$[1]	Evaluation Location	Description of Activities
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[2]	67	Exterior	Residential.
C[2]	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F.
F	--[3]	--[3]	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	--[3]	--[3]	Undeveloped lands that are not permitted (without building permits)

[1] The $L_{eq}(h)$ activity criteria values are for impact determination only and are not design standards for noise abatement measures. All values are A-weighted decibels (dBA).

[2] Includes undeveloped lands permitted for this activity category.

[3] No NAC—reporting only.

Source: 23 CFR Part 772, 2014.

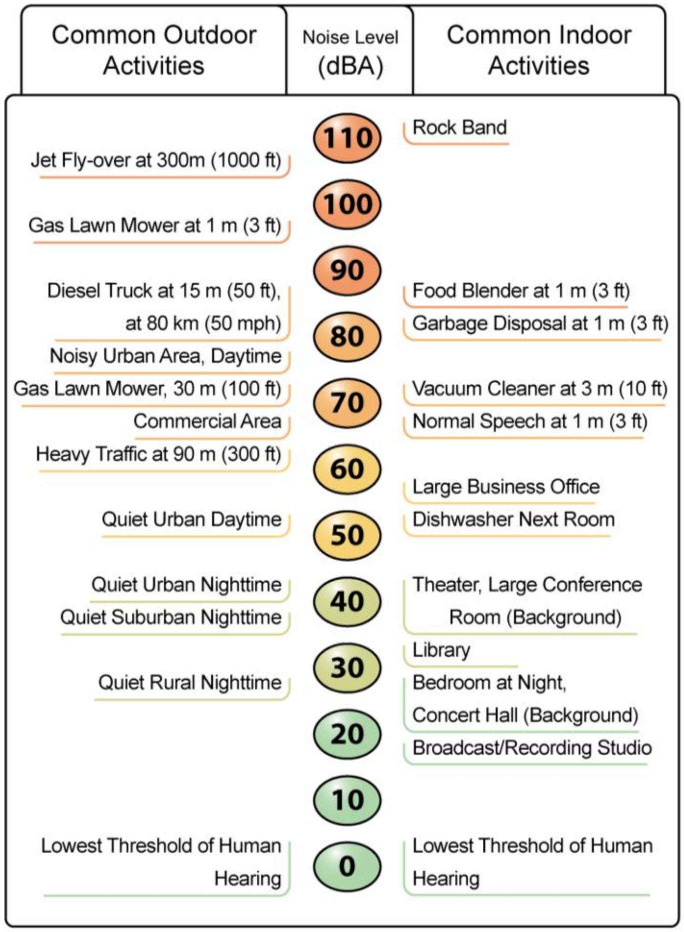

Figure 3.2.7-1 Noise Levels of Common Activities

According to Caltrans' *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects* (May 2011), a noise impact occurs when the predicted future noise level with the project substantially exceeds the existing noise level (defined as a 12-decibel [dB] or more increase) or when the future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined by Caltrans as coming within 1 dB of the NAC.

If it is determined that the project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of design-build are incorporated into the project plans and specifications. If during the design-build phase the project has substantially changed, noise barriers might not be provided. The final decision regarding construction of noise barriers will be made after completion of the public involvement process during the final project design process. This document discusses noise abatement measures that would likely be incorporated in the project.

Based on the traffic noise studies so far accomplished, Caltrans intends to incorporate noise abatement measures in the form of barriers between Towne Avenue in Pomona and Ford Street in Redlands, with respective total length ranging from 24,297 feet (Alternative 2) to 31,212 feet (Alternative 3), and heights ranging from 8 to 22 feet. Calculations based on preliminary design data indicate that the barriers will reduce noise levels by 5 to 13 dB, depending on the selected alternative.

Caltrans' *Traffic Noise Analysis Protocol* sets forth the criteria for determining when an abatement measure is feasible and reasonable. Feasibility of noise abatement is basically an engineering concern. Noise abatement measures must reduce the noise level at impacted receptors by at least 5 dB to be considered feasible. Other considerations include topography, access requirements, other noise sources, and safety considerations. The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include a minimum 7-dB reduction in the future noise level that must be achieved for at least one receptor, cost of noise abatement, and the viewpoints of benefited receptors.

3.2.7.2 Affected Environment

This section has been prepared based on the *Noise Study Report, I-10 Corridor Project* (July 2015) and the *NSR Addendum* (August 2015). These studies were required to satisfy Caltrans' Traffic Noise Analysis Protocol (2011), which is based on FHWA noise regulations (23 CFR 772). In addition to the existing traffic noise levels, the technical report analyzes potential traffic noise impacts for the No Build Alternative and two build alternatives for the design year of 2045.

Existing Noise-Level Measurements

A thorough field investigation was conducted to identify frequent outdoor use areas that could be subject to traffic noise impacts and to consider the physical setting of the highway alignment relative to those areas. Land uses in the project area were categorized as defined in the Activity Category of Table 3.2.7-1. As stated in the Protocol, noise abatement is only considered for areas of frequent human use that would benefit from a lowered noise level. Accordingly, the NSR and NSR Addendum focused on locations with defined outdoor use activity areas, such as residential backyards and common use areas at multi-family residences. In some cases, second-story balconies of residences with a view to the highway are also considered outdoor activity areas. The interior criterion was also used throughout the corridor to determine whether there are impacts at the interior of hotels/motels, schools, and places of worship. Typically indoor noise levels were considered when there were no outdoor areas. The interior criterion was used for hotels and motels because, per the Protocol, in situations where no exterior activities are to be affected by the traffic noise, or where the exterior activities are far from or physically shielded from the roadway in a manner that prevents an impact on exterior activities, Activity Category D is used as the basis of determining noise impacts. Furthermore, consideration of the interiors of hotels/motels was established in the Work Plan. Insertion loss of building shell is considered when determining all interior noise levels, including hotels/motels. Figures in Appendices L3 and L4 indicate the locations of relevant land use types within the study corridor.

Long-term noise monitoring was conducted at 40 locations in October through December 2013 and October 2014. The long-term sound-level data was collected for at least a 24-hour period to observe variations in sound levels throughout the day and identify the peak noise hours. Short-term noise measurements were conducted at 126 sites in October through December 2013; May, July, October, November, and December 2014; and January, March, and June 2015. Measurements were taken for a duration of 20 minutes at each short-term site. Indoor/outdoor measurements were conducted at 8 locations in April 2009, 4 locations in November 2014, and 2 locations in January 2015. The purpose of these measurements was to determine the noise reduction provided by the building shell to later determine future indoor noise levels.

The noise monitoring was typically conducted at or adjacent to Activity Category B and C land uses. Additional short-term monitoring was conducted at Activity Category E land uses. Noise measurement results, presented in Appendices L1 and L5, indicate that several sites within the study area already approach or exceed the NAC for several activity categories. The measurement locations are shown on the NSR Analysis Segments, Noise Monitoring, and Analysis Positions Figures in Appendices L2 and L5. Please note that the NSR Addendum did not require any additional measurement locations. Details about the instruments used during this investigation are provided in the NSR.

Traffic Noise Prediction Methods

Traffic Noise Model (TNM) version 2.5 was used for the noise computations (FHWA, 2004). TNM 2.5 inputs are based on a three-dimensional grid created for the study area to be modeled. All roadway, barrier, terrain lines, and receiver points are defined by their x, y, and z coordinates and are coded into TNM 2.5 as line segments defined by points in space. Receivers, defined as single points, are typically located at frequent outdoor use areas such as residences, schools, and hotels/motels. In general, receivers are modeled at a height of 5 feet above ground elevation. The NSR Addendum used TNM 2.5 and train noise using the Federal Transit Administration's (FTA) procedures for noise computations. The methods and procedures used to calculate traffic noise levels in the NSR were also used in the NSR Addendum.

To determine the noise levels generated by traffic, the TNM computer program requires inputs of traffic volumes, speeds, and vehicle types (i.e., cars, medium trucks, and heavy trucks). Traffic noise is a function of volume and speed. Generally, noise increases with increased speed and with higher volumes of traffic; however, at much higher volumes, travel speed decreases (stop-and-go conditions), so the worst-case noise levels are experienced when there is an optimum balance between the volume and speed. See Appendix A of the NSR for a comprehensive listing of the future traffic volumes and traffic distribution per direction of travel used for the noise analysis for the future No Build Alternative and two build alternatives. Detailed information about the noise model calibration process is also provided in the NSR.

Existing Noise Environment

For this assessment, the study area corridor was divided into 24 distinct segments that are based on major local interchanges. Please refer to Appendix L2 for NSR Analysis Areas, Noise Monitoring, and Analysis Positions for these segments. The following 24 segments were identified in the NSR and NSR Addendum.

Segment 1 – Towne Avenue to Indian Hill Boulevard: The area north of Interstate 10 (I-10) is a mix of single-family and multi-family residences (Activity Category B), Rancho San Jose Park and the playground of Kinder Kountry Preschool (Activity Category C), and outdoor seating areas of each room in Howard Johnson Hotel (Activity Category E). The area south of I-10 includes single-family residences (Activity Category B), the playgrounds of Covenant United Methodist Church, and a community center, as well as Jaycee Park (Activity Category C). The south side of I-10 also includes several commercial establishments, including the outdoor seating area of Norm's Restaurant (Activity Category E). There are existing soundwalls located at the shoulder and ROW protecting Activity Category B and C land uses to the north and south of this segment from highway traffic noise. The adjacent land uses are at a lower elevation relative to I-10, except in the middle of the segment where the freeway is at grade.

Segment 2 – Indian Hill Boulevard to Monte Vista Avenue: Areas north of I-10 are a mixture of single-family and multi-family residences including Claremont Place Assisted Living (Activity Category B), along with the Claremont City Blessing Church School, Serrano Middle School, and the playground of a multi-family complex (Activity Category C), as well as the pool area of the Claremont Lodge (Activity Category E) and some commercial establishments. The area south of I-10 consists of single-family residences (Activity Category B) and the pool area of Hotel Claremont and Tennis Club (Activity Category C). There are also a Jehovah's Witnesses church with no windows and no outdoor use area, a couple of commercial establishments, and utilities south of I-10 in this segment. There are existing soundwalls located at the shoulder and ROW along eastbound (EB) and westbound (WB) I-10 that protect most of the Activity Category B and C land uses in this segment from highway traffic noise. Along this segment of I-10, the highway is elevated with respect to adjacent land uses.

Segment 3 – Monte Vista Avenue to Central Avenue: Montclair Plaza Mall covers the areas along I-10 on the north side, with an outdoor seating area at Acapulco's Restaurant (Activity Category E). Land uses south of I-10 include multi-family residences (Activity Category B) and several commercial establishments, including two car dealerships. The land uses adjacent to I-10 are at a lower elevation than the highway at the west and east ends and at grade in the middle.

Segment 4 – Central Avenue to Mountain Avenue: Areas north of I-10 contain multi-family residences and mobile homes (Activity Category B), Boomers Entertainment Park (Activity Category C), and Super 8 Motel with the pool exposed to the traffic noise (Activity Categories D and E). Areas south of I-10 contain single-family residences (Activity Category B), MacArthur Park (Activity Category C), a Cineplex, and some other commercial uses. There are existing soundwalls located along the EB shoulder protecting Activity Category B and C land uses from highway traffic noise. Along this segment of I-10, the adjacent land uses are at a lower elevation relative to I-10.

Segment 5 – Mountain Avenue to Euclid Avenue: The land use north of I-10 is a composite of single-family and multi-family residences (Activity Category B), as well as Westwood College (Activity Category D), and a couple of commercial establishments. The land use south of I-10 consists of a mixture of single-family residences (Activity Category B), Redeemer Lutheran School and outdoor use area of Church of Christ (Activity Category C), Church of Christ (Activity Category D), and commercial uses, including the outdoor seating area of Wingnuts Restaurant (Activity Category E). There are existing soundwalls located at the ROW along EB and WB I-10 that protect most of the Activity Category B and C land uses in this segment from highway traffic noise. Along this segment of I-10, the highway is at a higher elevation with respect to the adjacent land uses at the west end and quickly transitions to become depressed for the remainder of the segment.

Segment 6 – Euclid Avenue to 6th Street: The area north of I-10 is a mix of single-family and multi-family residences including common use areas of multi-family complexes (Activity Category B), the OPARC Resource Center (Activity Category C), Kingdom Hall of Jehovah's Witness and medical offices (Activity Category D), and office buildings. The area south of I-10 includes single-family residences (Activity Category B) and Edison Elementary School (Activity Category C). There are existing soundwalls located at the ROW protecting most of the Activity Category B and C land uses to the north and south of this segment from highway traffic noise. The adjacent land uses are at a higher elevation relative to I-10.

Segment 7 – 6th Street to 4th Street: Areas north of I-10 are a mixture of single-family and multi-family residences as well as mobile homes (Activity Category B), along with Little Learners Preschool (Activity Category C) and some commercial establishments. The area south of I-10 consists of single-family and multi-family residences (Activity Category B), West Coast Inn, Travelodge, and Days Inn (Activity Category D), as well as the pool areas of Travelodge and Days Inn (Activity Category E). There are also two large parcels of land on either side of I-10 that are owned by Metropolitan Water District of Southern California (MWD), through which the West Cucamonga Channel flows. There are existing soundwalls located at the shoulder and ROW along EB and WB I-10 that protect most of the Activity Category B and C land uses in this segment from highway traffic noise. Along this segment of I-10, the highway is depressed with respect to adjacent land uses at the west end, transitioning to become elevated with respect to adjacent land uses at the eastern half of this segment.

Segment 8 – 4th Street to Vineyard Avenue: The land use north of I-10 consists of single-family residences (Activity Category B), as well as a fire station and Motel 6 (Activity Category D), and a few commercial establishments. The land use south of I-10 consists of a mixture of single-family and multi-family residences including a common use area of a multi-family complex (Activity Category B), Ontario Airport Inn and Ramada Inn (Activity Category D), as well as the pool areas of Ontario

Airport Inn, Ramada Inn, and Quality Inn (Activity Category E). There are existing soundwalls located at the shoulder and ROW along both EB and WB I-10, as well as existing 10- to 13-foot-high property walls on the south side of I-10 that protect most of the Activity Category B land uses in this segment from highway traffic noise. Along this segment of I-10, the highway is at a higher elevation with respect to the adjacent land uses at the west end and transitions to become depressed at the east end.

Segment 9 – West of Cherry Avenue to Citrus Avenue: The land use north of I-10 consists of a mix between single-family and multi-family residences (Activity Category B) and commercial establishments (Activity Category E). The land use south of I-10 consists of pockets of single-family and multi-family residences as well as mobile homes (Activity Category B) mixed with commercial uses (Activity Category E). There is an existing soundwall located at the ROW along WB I-10 that protects most of the Activity Category B land uses to the north from highway traffic noise. Union Pacific Railroad (UPRR) train tracks run parallel to EB I-10 on the south side in this segment. Land uses adjacent to I-10 are at grade compared to the highway.

Segment 10 – Citrus Avenue to Sierra Avenue: The area north of I-10 is a mix of single-family residences (Activity Category B) and commercial uses, including Pancho Villas Restaurant (Activity Category E). The area south of I-10 includes single-family residences (Activity Category B) and a few commercial establishments (Activity Category E). UPRR train tracks run parallel to EB I-10 on the south side in this segment. The adjacent land uses are at grade relative to I-10.

Segment 11 – Sierra Avenue to Cedar Avenue: Areas north of I-10 include single-family and multi-family residences as well as Bloomington, Idle Wheels, and Log Cabin Mobile Home Parks (Activity Category B), along with Ayala Park (Activity Category C), Motel 6, and Econo Lodge (Activity Category D), as well as the pool area of the Motel 6 and several commercial establishments (Activity Category E). There is also a firehouse located north of I-10. The area south of I-10 consists of single-family residences (Activity Category B) and commercial uses (Activity Category E). There is an existing soundwall located at the ROW along WB I-10 that protects the Bloomington, Idle Wheels, and Log Cabin Mobile Home Parks, as well as Ayala Park, from highway traffic noise. The UPRR West Colton Receiving Freight Yard runs parallel to EB I-10 in this segment where the yard runs between I-10 and the land uses south of I-10. Along this segment of I-10, the highway is at grade with respect to adjacent land uses.

Segment 12 – Cedar Avenue to Riverside Avenue: Areas north of I-10 are a mixture of single-family residences (Activity Category B), Joe Baca Middle School, and a picnic area next to the Teamsters Local 63 offices (Activity Category C), Days Inn (Activity Category D), and the pool area of Days Inn and other commercial establishments (Activity Category E). There is also an industrial park and empty lots north of I-10 (Activity Category F). The area south of I-10 contains a rail yard (Activity Category F) and commercial uses (Activity Category E). Land uses south of the rail yard are too far from I-10 to be considered. An existing soundwall that protects some of the Activity Category B land uses is located on the ROW along WB I-10. Along this segment of I-10, the highway's elevation is depressed compared to the adjacent land uses.

Segment 13 – Riverside Avenue to Pepper Avenue: Along I-10 to the north, the Activity Category B land uses are three single-family residences. Other land uses include Sam Snead Golf Course (Activity Category C), American Inn and Valley View Inn (Activity Category D), as well as Taco Joe's Restaurant with an outdoor seating area and other commercial establishments (Activity Category E). The area south of I-10 contains a rail yard where land uses south of the rail yard are too far from I-10 to be considered. The land uses adjacent to I-10 for this segment are elevated relative to I-10.

Segment 14 – Pepper Avenue to Rancho Avenue: Areas north of I-10 are a mixture of single-family residences and mobile homes with one duplex (Activity Category B), Slover Mountain High School (Activity Category C), Lido Motel (Activity Category D), a school administration office (Activity Category E), and several commercial establishments (Activity Category E), as well as large open lots (Activity Category E). Railroad tracks travel north/south in the northern area of this segment. The area south of I-10 contains a rail yard and a cement plant. Land uses south of the rail yard and cement plant are too far from I-10 to be considered. Along this segment of I-10, the land uses are at grade relative to I-10.

Segment 15 – Rancho Avenue to La Cadena Drive: The land use north of I-10 consists of a mix between single-family and multi-family residences (Activity Category B) and commercial establishments (Activity Category E). The land use south of I-10 consists of single-family residences (Activity Category B), along with commercial uses (Activity Category E). An existing soundwall is located at the ROW and shoulder along WB I-10 that protect Activity Category B land uses to the north from highway traffic noise. UPRR train tracks run parallel to EB I-10 on the south side in this segment, as well as Burlington Northern Santa Fe (BNSF) train tracks that run north/south in this segment (Activity Category F). The UPRR tracks are elevated on a flyover through this segment. Land uses adjacent to I-10 are at grade compared to the highway at the west end and depressed compared to I-10 at the east end of the segment.

Segment 16 – La Cadena Drive to I-215: The area north of I-10 is a mix of single-family residences and mobile homes (Activity Category B), Colony Motel and Colton Motel (Activity Category D), as well as commercial uses including the pool areas of Hampton Inn, Colony Motel, and Comfort Inn (Activity Category E). There is also a church north of I-10 in this segment; however, there are no outdoor use areas associated with this church. The area south of I-10 includes single-family and multi-family residences (Activity Category B) and commercial establishments (Activity Category E) and an electrical substation (Activity Category F). UPRR train tracks run parallel to EB I-10, and there is a rail yard on the south side in this segment. The UPRR tracks are elevated on a flyover through this segment. At the east end of the segment, Warm Creek and Santa Ana River pass under I-10. The adjacent land uses are depressed relative to I-10 at the west end of the segment but transition to become elevated compared to I-10 at the east end of the segment.

Segment 17 – West of Tippecanoe Avenue to Mountain View Avenue: Areas north of I-10 are a mixture of single-family and multi-family residences (Activity Category B), along with the Fairfield Inn (Activity Category D) and some commercial establishments (Activity Category E). The area south of I-10 consists of single-family residences and mobile homes (Activity Category B), as well as the International Christian Faith Church (Activity Category D), commercial establishments (Activity Category E), and some empty lots and a sod farm (Activity Category F). There is an existing soundwall located at the ROW along WB I-10 that protects the Activity Category B land uses immediately east of South Richardson Street in this segment from highway traffic noise. There is a second soundwall that is planned but has not been constructed east of Tippecanoe Avenue north of I-10. For the interchange of Tippecanoe Avenue, the existing WB off-ramp configuration is different than the no-build configuration due to the approved I-10/Tippecanoe Interchange Improvement Project. Along this segment of I-10, the highway is elevated with respect to adjacent land uses.

Segment 18 – Mountain View Avenue to Nevada Street: The land use north of I-10 consists of commercial establishments including Splash Kingdom Water Park and

San Bernardino County Museum (Activity Category C), a radio station (Activity Category D), and a couple of sod farms (Activity Category F). The land use south of I-10 consists of multi-family residences (Activity Category B) and commercial uses (Activity Category E). Along this segment of I-10, the adjacent land uses are at a lower elevation compared to I-10.

Segment 18A – Nevada Street to SR-210: Land use in this area is predominantly commercial, including retail establishments (Activity Category E). There is also the playground of Redlands Day Nursery (Activity Category C) and Super 8 located to the north of I-10, as well as Good Nite Inn and Country Inn Suites located to the south (Activity Category D). In addition, Super 8 and Country Inn Suites have pool areas facing I-10, and The Old Spaghetti Factory has an outdoor seating area (Activity Category E). The adjacent land uses are at a lower elevation relative to I-10 at the west end of this segment and transition to be roughly at grade by the east end of the segment.

Segment 19 – Tennessee Street to Orange Street: The land use north of I-10 is a composite of single-family and multi-family residences (Activity Category B), as well as commercial establishments including Shakey's Restaurant (Activity Category E). The land use south of I-10 consists of a mixture of single-family residences and a trailer park (Activity Category B), Orangewood High School which includes We Care Baby Care (Activity Category C), Comfort Suites, Motel 6, and Ayres Hotel (Activity Category D), and commercial uses including an outdoor patio area of Comfort Suites and the pool area of Motel 6 (Activity Category E). Along this segment of I-10, the highway is at a higher elevation with respect to the adjacent land uses.

Segment 20 – Orange Street to East Cypress Avenue: The area north of I-10 is a mix of single-family and multi-family residences (Activity Category B), a Spiritual Treatment Center, Sylvan Park, and Ahrens Child Care Center (Activity Category C), Budget Inn (Activity Category D), the pool area of Stardust Motel (Activity Category E), and several commercial establishments (Activity Category E). The area south of I-10 includes single-family and multi-family residences (Activity Category B), Redlands High School athletic fields (Activity Category C), The Living Word Fellowship Church and The Blessing Center (Activity Category D), and various commercial establishments (Activity Category E). Existing soundwalls are located at the shoulder protecting most of the Activity Category B and C land uses to the north and south of this segment from highway traffic noise. The adjacent land uses are at a lower elevation relative to I-10.

Segment 21 – East Cypress Avenue to East of Ford Street: Areas north of I-10 are a mixture of single-family and multi-family residences (Activity Category B), along with the outdoor use areas of Church on the Hill and Trinity Evangelical Free Church as well as a playground for a school (Activity Category C), the interior of Kingdom Hall of Jehovah's Witness, Church on the Hill, and the school associated with Trinity Evangelical Free Church (Activity Category D), as well as an office building (Activity Category E). The area south of I-10 consists of single-family residences and multi-family residences with a tennis court (Activity Category B), El Carmelo Retreat House (Activity Category C), and some commercial establishments (Activity Category E). Existing soundwalls located at the shoulder along EB and WB I-10 protect most of the Activity Category B land uses in this segment from highway traffic noise. Along this segment of I-10, the highway is elevated with respect to adjacent land uses, except for the south side at the east end where the adjacent land uses are elevated with respect to I-10.

Areas Not Analyzed Using TNM

In addition, there are two segments that were not analyzed using TNM modeling in the NSR due to the lack of identifiable frequent human outdoor use areas; however, there are several isolated hotels, motels, and continuing education schools located in these areas. These two segments are:

Segment 22 – Vineyard Avenue to West of Cherry Avenue: Land use in this area is predominantly commercial, including restaurants, hotels (Activity Category E), continuing education schools (Activity Category D), auto dealerships (Activity Category E), and truck stops (Activity Category F). Specifically, the areas north of I-10 contain American Career College, Best Western, Platt College, Extended Stay America, Country Inn Suites, and United Education Institute (Activity Category D). The pool areas of Best Western and Extended Stay America are shielded from freeway traffic noise by the hotels; however, the pool area for Country Inn Suites is exposed to freeway traffic noise (Activity Category E).

The areas south of I-10 include Residence Inn, Holiday Inn, West Coast University, Fairfield Inn, and Argosy University (Activity Category D), as well as Marie Callender's with an outdoor seating area on the opposite side of the restaurant from the freeway (Activity Category E). The Residence Inn is protected from freeway traffic noise by an existing soundwall located at the shoulder of EB I-10 and Holiday Inn, which is set farther back from I-10 and is shielded by an office building and Marie Callender's Restaurant. The pool areas of Residence Inn, Holiday Inn, and

Fairfield Inn are shielded by the hotel buildings from freeway traffic noise. The adjacent land uses are generally at grade relative to I-10 throughout this area.

Segment 23 – I-215 to west of Tippecanoe Avenue: Land use in this area is predominantly commercial, including several restaurants without any outdoor use areas (Activity Category E). La Quinta Inn, Super 8, and Hilton Hotel are located to the north of I-10 west of Waterman Avenue (Activity Category E). Along this area of I-10, the adjacent land uses are at a lower elevation compared to I-10.

Noise Study Report and Noise Abatement Decision Report Addendums

The NSR and NADR addendums were prepared to analyze whether feasible noise abatement would be possible for impacted receivers located south of the UPRR tracks with a soundwall located on private property in Segments 9 through 11. Receivers located on the south side of I-10 in Segments 9 through 11 are exposed to train noise in addition to traffic noise; therefore, the composite noise levels of trains and I-10 traffic were modeled for these receivers. However, noise impacts are based on traffic noise levels only.

Soundwalls are being considered on private property because (1) UPRR will not allow soundwalls to be constructed on their ROW, (2) soundwall analysis was only performed on the shoulder of I-10, and (3) soundwalls located on the shoulder of I-10 would not provide feasible noise abatement and meet the design goal, as established in the NSR.

3.2.7.3 Environmental Consequences

The project is considered a Type I project by 23 CFR 772 because of the proposed construction that would add capacity via high-occupancy vehicle (HOV) or Express Lanes.

Permanent Impacts (Abatement Decision Analyses)

No Build Alternative

Noise in the study area is dominated by traffic on I-10, and there are numerous soundwalls along both sides of I-10. The bordering communities within the corridor are already impacted by highway noise, and these conditions are projected to worsen. Noise measurement results indicate that traffic noise levels at various locations along the I-10 corridor either approach or exceed the aforementioned NAC of 67 dBA for frequent outdoor use areas during the peak noise hour. Noise modeling results indicate many Activity Category B land use locations within the corridor are projected to experience a 1- to 3-dB increase under the Design Year (2045) no-build condition.

Future operation of alternative improvements to I-10 would not occur under the No Build Alternative; therefore, abatement associated with the proposed project would not be implemented. Existing adverse noise conditions at frequent outdoor use areas along both sides of I-10 within the study area corridor would continue under this alternative. Along most of I-10, noise conditions would worsen, with several areas projected to experience an increase of 2 to 4 dB by the Design Year (2045).

Common to Both Build Alternatives

From Tennessee Street to Ford Street in Redlands (Segments 19 through 21), Alternative 2 has the same design footprint as Alternative 3, with the only difference being the HOV lanes in Alternative 2 are considered Express Lanes in Alternative 3. Despite the assumption that Express Lanes would contain slightly higher traffic volume than HOV lanes, the difference in traffic volumes between Alternatives 2 and 3 is negligible compared to the overall traffic volumes, and Alternative 2 would result in the same noise levels as Alternative 3. Therefore, only Alternative 3 conditions were analyzed from Tennessee Street to Ford Street, and it is assumed for analysis purposes that Alternative 2 is the same as Alternative 3.

The traffic noise analysis indicates that residential areas, schools, and motels would be impacted by both build alternatives between Segments 19 and 21 (i.e., the noise level would approach or exceed the NAC). Without any additional barrier protection, noise analysis results indicate that the proposed project would raise noise levels in some areas from 1 to 2 dB compared to the Design Year (2045) No Build Alternative. The proposed project is not anticipated to cause a substantial noise increase (i.e., 12 dB) in these segments.

The preliminary noise abatement decision for each acoustically feasible soundwall identified within the NSR, NSR Addendum, NADR, and NADR Addendum for Alternatives 2 and 3 is provided below. The physical characteristics of noise abatement described herein may be subject to change. If pertinent parameters change substantially during the final project design, the abatement measures or preliminary noise abatement decisions may be modified or changed for the final project design. Other noise abatement options were considered; however, because of the constrained configuration and suburban location of the proposed project, construction of noise barriers is the only abatement measure considered practical. A final decision on whether and how to construct noise abatement would be made upon completion of the project design. The locations and heights of the recommended soundwalls from the NADR and NADR Addendum are summarized in Appendices L3 and L4.

Segment 19 – Tennessee Street to Orange Street

Soundwall S2619: Soundwall S2619 would be 2,301 feet in length and would be located along WB I-10 at the edge of shoulder of the general purpose (GP) lanes, as well as the Orange Street on-ramp. Figures 159 and 160 in Appendix H of the NSR show the location, minimum length, and heights required for this soundwall to provide feasible traffic noise abatement. The estimated total construction cost of $1,284,000 for this wall is more than the reasonable allowance of $1,207,000. However, the difference is within 10 percent of the allowance; therefore, the soundwall is considered to be reasonable. A 10-foot-high portion of this wall is sandwiched between 12-foot-high segments. Raising this portion to 12 feet would provide an additional 1 dB of noise reduction at one receiver location, which would not justify a higher wall; however, raising the wall would improve aesthetics of the soundwall for an additional cost of $39,000. Because the 10-, 12-, and 14-foot-high soundwall already exceeds the reasonable allowance, it is not recommended to raise the 10-foot-high portion to 12 feet.

With consideration of the acoustic benefit and the incremental cost, Soundwall S2619 is reasonable and feasible, and it is recommended to be a 10-, 12- and 14-foot-high masonry wall, as shown in Figures 159 and 160 and Tables 1 and 2 in Appendices L3 and L4 of this report.

Segment 20 – Orange Street to East Cypress Avenue

Soundwalls S2638A and S2654A: Soundwalls S2638A and S2654A would act as a noise barrier system to provide feasible abatement for impacted receivers. Soundwall S2638A would be 1,142 feet long, and Soundwall S2654A would be 2,798 feet long. Soundwall S2638A would be located along the shoulder of the GP lanes of EB I-10 from the edge of the Orange Street Overcrossing (OC) to the 6th Street on-ramp. Soundwall S2654A would begin along the shoulder of the 6th Street on-ramp and continue along the shoulder of EB I-10 until joining to existing Soundwall SW158A, which is located near the start of the EB I-10 University Street off-ramp. Figures 160 and 161 in Appendix H of the NSR show the locations, minimum lengths, and heights required for these soundwalls to provide feasible traffic noise abatement. A 10- and 12-foot-high design barrier was analyzed in the NSR as a cost-effective option;

however, the estimated total construction cost of $1,542,100 for this wall is more than the reasonable allowance of $1,420,000.

With consideration of the acoustic benefit and cost, Soundwalls S2638A and S2654A are not reasonable; therefore, they are not recommended for construction.

Soundwalls S2638B and S2654B (Option): An optional design allowing for partial noise abatement was analyzed following calculations of the estimated construction cost of Soundwalls S2638A and S2654A. The original soundwall system, as presented in the NSR, would need to cross over three existing overcrossing bridges; however, significant costs associated with widening and strengthening the existing bridges would result in an estimated total construction cost greater than the reasonable allowance. If the soundwall lengths were reduced and did not cross the bridges, the soundwall system would still provide feasible abatement to more than half of the impacted receivers. Eleven (11) residences would be benefited by Soundwalls S2638B and S2654B; therefore, the current reasonable allowance of $71,000 per benefited residence would produce a total reasonable allowance of $781,000.

Soundwalls S2638B and S2654B would act as a noise barrier system to provide feasible abatement for impacted receivers. Soundwall S2638B would be 418 feet long (Stations 2638+73 to 2643+00), and Soundwall S2654B would be 1,898 feet long (Stations 2639+10 to 2658+51). Soundwall S2638B would be located along the shoulder of the GP lanes of EB I-10 from the edge of the 6th Street OC to the 6th Street on-ramp. Soundwall S2654B would begin along the shoulder of the 6th Street on-ramp and continue along the shoulder of EB I-10 to the Church Street OC. Per the Caltrans Highway Design Manual (HDM), because the shoulder width of EB I-10 would be less than 15 feet in this area, the maximum height of the analyzed noise barrier could not exceed 14 feet. The estimated total construction cost of $808,800 for this wall is more than the reasonable allowance of $781,000. Although estimated construction cost is greater than total reasonable allowance, the difference is within 10 percent of the allowance; therefore, the soundwall is considered reasonable.

With consideration of the acoustic benefit and the incremental cost, Soundwalls S2638B and S2654B are reasonable and feasible, and they are recommended to be a 12-foot-high masonry wall, as shown in Figures 160 and 161 and Tables 1 and 2 in Appendices L3 and L4 of this report.

Segment 21 – East Cypress Avenue to East of Ford Street

Soundwall S2730: Soundwall S2730 would provide feasible abatement for an impacted outdoor use area of the El Carmelo Retreat. Soundwall S2730 would be 736 feet long and would be connected to existing Soundwall SW172 along the shoulder of EB I-10. The soundwall would immediately transition from the shoulder of the roadway to the ROW line, which rises in elevation compared to I-10. Figures 163 and 164 in Appendix H of the NSR show the location, minimum length, and heights required for this soundwall to provide feasible traffic noise abatement. A 12-, 14-, 16-, 18-, and 20-foot-high design barrier was analyzed, and it was determined to be acoustically feasible and meet the design goal. The estimated total construction cost of $386,100 for this wall is more than the reasonable allowance of $71,000.

With consideration of the acoustic benefit and the cost, Soundwall S2730 is not reasonable; therefore, it is not recommended to be constructed.

Soundwall S2737: Soundwall S2737 would be approximately 2,043 feet in length and would be located at the ROW line along the WB lanes of I-10. Figures 163 and 164 in Appendix H of the NSR show the location, minimum length, and heights required for this soundwall to provide feasible traffic noise abatement. The NSR proposed a 16-, 18-, 20-, 22-, and 24-foot-high soundwall for this location. The estimated total construction cost of $1,118,000 for this wall is more than the reasonable allowance of $355,000.

With consideration of the acoustic benefit and the cost, Soundwall S2737 is not reasonable; therefore, it is not recommended to be constructed.

Soundwall S2765: Soundwall S2765 would be 1,424 feet long and would provide feasible abatement for impacted receivers. This soundwall would be located along the shoulder of the GP lanes of WB I-10. Figures 164 and 165 in Appendix H of the NSR show the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement and meet the design goal. The estimated total construction cost for this 14-foot-high wall is $557,900, which is less than the reasonable allowance of $1,136,000; therefore, this soundwall is reasonable.

With consideration of the acoustic benefit and the incremental cost, Soundwall S2765 is reasonable and feasible, and it is recommended to be a 14-foot-high masonry wall, as shown in Figures 164 and 165 and Tables 1 and 2 in Appendices L3 and L4 of this report.

Alternative 2

As discussed in the previous section (Common to Both Build Alternatives), Alternative 2 has the same design footprint as Alternative 3 from Tennessee Street to Ford Street in Redlands; therefore, the following analysis for Alternative 2 stretches between Cherry Avenue and Tennessee Street, covering Segments 9 through 18A.

The traffic noise analysis indicates that residential areas and park and recreation facilities, as well as schools and motels, would be impacted by this alternative between Segments 9 through 18A (i.e., the noise level would approach or exceed the NAC). Without any additional barrier protection, noise analysis results indicate that the proposed project would raise noise levels in some areas from 1 to 3 dB compared to the Design Year (2045) No Build Alternative. While all of the alternatives would result in adverse noise impacts, from a numerical perspective, Alternative 2 would exceed the NAC at fewer frequent outdoor use locations than Alternative 3 because it is narrower than that alternative. Impacts to other Activity Category B types would be comparable between the build alternatives. The proposed project would not cause a substantial noise increase (i.e., 12 dB).

The preliminary noise abatement decision for each acoustically feasible soundwall identified within the NSR, NSR Addendum, NADR, and NADR Addendum for Alternative 2 is provided below. It should be noted that the physical characteristics of noise abatement described herein also may be subject to change. If pertinent parameters change substantially during the final project design, the abatement measures or preliminary noise abatement decisions may be modified or changed for the final project design. A final decision on whether and how to construct noise abatement would be made upon completion of the project design. The locations and heights of the recommended soundwalls from the NADR and NADR Addendum are summarized in Table 1 and shown in the figures included in Appendix L3.

Segment 9 – West of Cherry Avenue to Citrus Avenue

Soundwall S1749: Soundwall S1749 would be 207 feet long and located on the ROW line, north of I-10 between Cherry Avenue and Citrus Avenue. Figure 76 in Appendix H of the NSR shows the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement and meet the design goal. Soundwall S1749 meets the 7-dB noise reduction design goal at 10 feet, while all other wall height options exceed the reasonable cost allowance. The estimated total construction cost of $65,550 for this 10-foot-high wall is less than the reasonable allowance of $71,000; therefore, Soundwall S1749 is considered reasonable.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1749 is feasible and reasonable, and it is recommended to be a 10-foot-high masonry wall, as shown in Figure 76 and Table 1 in Appendix L3 of this report.

Segment 10 – Citrus Avenue to Sierra Avenue

Soundwall S1818: Soundwall S1818 would be 810 feet long and located on private property, south of I-10, east of Citrus Avenue. Figure 78 in Appendix C of the NSR Addendum shows the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement and meet the design goal. Soundwall S1818 meets the 7-dB noise reduction design goal at 20 feet. The estimated total construction cost for the 20-foot-high wall option is $433,500, which is less than the reasonable cost allowance of $639,000.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1818 is feasible and reasonable; and is recommended to be a 20-foot-high masonry wall as shown in Figure 78 and Table 1 in Appendix L3 of this report.

Soundwall S1819: Soundwall S1819 would be 2,065 feet long and located on the ROW line, north of I-10 between Citrus Avenue and Cypress Avenue. Figures 78 and 79 in Appendix H of the NSR show the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement and meet the design goal. An 18-foot-high wall would achieve the 7-dB noise reduction design goal, and it would benefit 33 adjacent residences. The estimated total construction cost of $1,068,000 for the recommended 18-foot-high wall is less than the reasonable allowance of $2,343,000; therefore, this soundwall is considered reasonable.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1819 is feasible and reasonable, and it is recommended to be an 18-foot-high masonry wall, as shown in Figures 78 and 79 and Table 1 in Appendix L3 of this report.

Soundwall S1833: Soundwall S1833 would be 706 feet long and located north of I-10 on the ROW line between Cypress Avenue and Sierra Avenue. Figure 79 in Appendix H of the NSR shows the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement and meet the design goal. Soundwall S1833 meets the 7-dB noise reduction goal and provides feasible abatement at four residences as a 16-foot-high barrier. The estimated total construction cost of $336,100 for this 16-foot-high wall is more than the reasonable allowance of $284,000; therefore, this soundwall is not considered reasonable.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1833 is not reasonable; therefore, it is not recommended.

Soundwall S1834: Soundwall S1834 would be 815 feet long and located on private property, south of I-10, east of Cypress Avenue. Figure 79 in Appendix C of the NSR Addendum shows the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement and meet the design goal. Soundwall S1834 meets the 7-dB noise reduction goal at 18 feet. The estimated total construction cost of $398,300 for this 18-foot-high wall is less than the reasonable cost allowance of $568,000. Soundwall S1834 was also analyzed as a 20-, 22-, and 24-foot-high wall, but the number of benefitted receivers would remain the same.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1834 is feasible and reasonable, and it is recommended to be an 18-foot-high masonry wall, as shown in Figure 79 and Table 1 in Appendix L3 of this report.

Segment 11 – Sierra Avenue to Cedar Avenue

Soundwall S1877: Soundwall S1877 would be 1,502 feet long and located on the ROW line along WB I-10 between Sierra Avenue and Cedar Avenue. Soundwall S1877 is raised higher than otherwise required in front of four receivers to achieve feasible abatement at adjacent receivers. Soundwall S1877 would be located adjacent to an existing 7-foot-high property wall located at the property line. Removal of the 7-foot-high property wall is required for construction of Soundwall S1877. Figures 80 and 81 in Appendix H of the NSR show the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement. Soundwall S1877 meets the minimum design criteria and maximizes noise reduction benefits as a 16-foot-high barrier. The estimated total construction cost of $688,300 for this 16-foot-high wall is less than the reasonable allowance of $4,686,000; therefore, this soundwall is reasonable.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1877 is feasible and reasonable, and it is recommended to be constructed as a 16-foot-high masonry wall, as shown in Figures 80 and 81 and Table 1 in Appendix L3 of this report.

Soundwall S1907: Soundwall S1907 would be 3,587 feet long and located on the ROW line north of I-10, between Sierra Avenue and Cedar Avenue. Soundwall S1907 would tie into Soundwall SW1, which will be constructed as part of the Cedar Avenue Improvement Project, also located at the ROW line. Figures 81 and 82 in Appendix H of the NSR show the locations, minimum lengths, and heights required for this soundwall to provide feasible traffic noise abatement. The total reasonable allowance for the proposed 12-, 14-, and 16-foot-high design barrier benefitting 46 residents is $3,266,000. The estimated total construction cost of $1,679,000 for this 12-, 14-, and 16-foot-high wall is less than the reasonable allowance; therefore, the cost of this soundwall is reasonable. The design barrier option for Soundwall S1907 also meets the 7-dB noise reduction design goal. A uniform 16-foot-high masonry wall was also considered; however, only one residence would be benefited for an additional $157,046.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1907 is reasonable and feasible, and it is recommended to be constructed as a combination 12-, 14-, and 16-foot-high masonry wall, as shown in Figures 81 and 82 and Table 1 in Appendix L3 of this report.

Soundwall S1969: Soundwall S1969 would be 354 feet long and would be located on the ROW line of WB I-10, transitioning to edge of shoulder of the WB on-ramp from Cedar Avenue. Figure 83 in Appendix H of the NSR shows the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement. Soundwall S1969 is acoustically feasible and meets the 7-dB noise reduction goal as a 12-foot-high wall. The total reasonable allowance benefiting one residence and a fire station is $142,000. The estimated total construction cost of $97,840 for this 12-foot-high wall is less than the reasonable allowance; therefore, this soundwall is reasonable.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1969 is reasonable and feasible, and it is recommended to be a 12-foot-high masonry wall, as shown in Figure 83 and Table 1 in Appendix L3 of this report.

Segment 12 – Cedar Avenue to Riverside Avenue

Soundwall S2033: Soundwall S2033 would be 444 feet long and would be located on the ROW line along the WB side of I-10 between Cedar Avenue and Riverside Avenue. Figure 85 in Appendix H of the NSR shows the location, minimum length, and height of Soundwall S2033 to provide feasible abatement and meet the design goal. The estimated total construction cost of $268,900 for this wall height is less than the reasonable allowance of $284,000; therefore, Soundwall S2033 is considered reasonable. Both a 22- and 24-foot-high wall would be reasonable based on the cost; however, the noise reduction benefits were negligible and did not benefit any additional receptors.

With consideration of the acoustic benefit and the incremental cost, Soundwall S2033 is reasonable and feasible, and it is recommended to be a 20-foot-high masonry wall, as shown in Figure 85 and Table 1 in Appendix L3 of this report.

Segment 13 – Riverside Avenue to Pepper Avenue

Soundwall S2079: Soundwall S2079 would be 729 feet long and would be located north of I-10 on the ROW line between Riverside Avenue and Pepper Avenue. Figure 87 in Appendix H of the NSR shows the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement. Soundwall S2079 meets the 7-dB noise reduction goal as a 16-foot-high wall; however, the estimated total construction cost of $428,300 for this wall is more than the reasonable allowance of $284,000.

With consideration of the acoustic benefit and the incremental cost, Soundwall S2079 is not reasonable; therefore, it is not recommended.

Segment 14 – Pepper Avenue to Rancho Avenue

Soundwall S2145: Soundwall S2145 would be 2,289 feet long and would be located on the ROW line along WB I-10 between Pepper Avenue and Rancho Avenue. Figure 89 in Appendix H of the NSR shows the location, minimum length, and heights of Soundwall S2145 to provide feasible abatement and meet the design goal. The estimated total construction cost of $1,131,000 for this wall is less than the reasonable allowance of $3,195,000; therefore, Soundwall S2145 is recommended for construction. Uniform wall heights of 22 and 24 feet were considered; however, the cost did not justify the noise benefits. If the entire wall is 22 or 24 feet, the additional cost for each case compared to the proposed variable wall height would be $1,282,000 and $1,381,000, respectively. No additional receivers would get feasible abatement, and noise would be reduced by 1 or 2 dB at few of the benefited receivers. The design barrier option for Soundwall S2145 is the most cost-effective option, benefitting 45 residences.

With consideration of the acoustic benefit and the incremental cost, Soundwall S2145 is both reasonable and feasible; therefore, it is recommended to be a combination 16-, 20-, and 22-foot-high masonry wall, as shown in Figure 89 and Table 1 in Appendix L3 of this report.

Segment 17 – West of Tippecanoe Avenue to Mountain View Avenue

Soundwalls S2382 and S2384: Soundwalls S2382 and S2384 work as a system where Soundwall S2382 would be located on top of a retaining wall along the EB shoulder of I-10 and Soundwall S2384 would be located on the ROW line along the EB off-ramp to Tippecanoe Avenue. Soundwall S2382 would be 792 feet long, and Soundwall S2384 would be 393 feet long. Figure 97 in Appendix H of the NSR shows the locations, minimum lengths, and heights of Soundwalls S2382 and S2384 to provide feasible abatement and meet the design goal. The estimated total construction cost of the recommended 12- and 16-foot-high walls is $452,500, which is more than the reasonable allowance of $71,000; therefore, these soundwalls are not reasonable.

With consideration of the acoustic benefit and the incremental cost, Soundwalls S2382 and S2384 are not reasonable; therefore, they are not recommended.

Soundwalls S2434A and S2438 (Option 1): Two options have been considered for the location of Soundwall S2434: the ROW line (S2434A) and the shoulder of the EB off-ramp to Mountain View Avenue (S2434B). Soundwalls S2434A and S2438 would work as a system where Soundwall S2434A would be located on the ROW line and Soundwall S2438 would be located on the shoulder of EB I-10. Soundwall S2434A would be 1,418 feet long, and Soundwall S2438 would be 1,262 feet long. Figures 98-1 and 99-1 in Appendix L3 of this report show the locations, minimum lengths, and heights of Soundwalls S2434A and S2438 to provide feasible abatement and meet the design goal. The design barrier option with varying heights would benefit 40 residences and is well below the reasonable allowance. The estimated total construction cost of $909,100 for the design barrier option is less than the reasonable allowance of $2,840,000; therefore, these soundwalls are deemed reasonable. Uniform wall height of 14 feet was also considered for Soundwalls S2434A and S2438, but there would be no additional acoustical benefits; however, a uniform height would be desirable for visual improvement. With this uniform height, the total construction cost would be $984,800, which is still below the reasonableness allowance.

With consideration of the acoustic benefit, aesthetics, and the incremental cost, Soundwalls S2434A and S2438 are both reasonable and feasible. Soundwall S2434A is recommended to be a 12-, 14-, and 16-foot-high masonry wall, and Soundwall S2438 is recommended to be 14 feet high. These soundwalls are shown in Figures 98-1 and 99-1 and Table 1 in Appendix L3 of this report.

Soundwalls S2434B and S2438 (Option 2): Soundwalls S2434B and S2438 would work as a system where Soundwall S2434B would be located on the shoulder of the EB off-ramp to Mountain View Avenue and Soundwall S2438 would be located on the shoulder of EB I-10. Soundwall S2434B would be 1,400 feet long, and Soundwall S2438 would be 1,200 feet long. Figures 98-2 and 99-2 in Appendix L3 of this report show the locations, minimum lengths, and heights of Soundwalls S2434B and S2438 to provide feasible abatement. The estimated total construction cost of $757,000 for these walls is less than the reasonable allowance of $2,698,000; therefore, these soundwalls are reasonable. A uniform 14-foot-high wall was also considered for Soundwall S2438, but there would be no additional acoustic benefits. Furthermore, because the shoulder width is less than 15 feet, the maximum height of a noise barrier in this location cannot exceed 14 feet.

With consideration of the acoustic benefit, aesthetics, and the incremental cost, Soundwalls S2434B and S2438 are reasonable and feasible. Soundwall S2434B is recommended to be a 12-foot-high masonry wall, and Soundwall S2438 is recommended to be 14 feet high, as shown in Figures 98-2 and 99-2 and Table 1 in Appendix L3 of this report.

Both options that are considered for Soundwalls S2434 and S2438 provide feasible abatement for 36 mobile homes and 4 single-family homes; however, the estimated construction cost of Option 2 is $525,400 less than Option 1. Therefore, Option 2 is considered the preferred option for this soundwall system.

Soundwalls S2435 and S2437: Soundwalls S2435 and S2437 would work as a system where Soundwall S2435 would be located on the ROW line north of I-10 and Soundwall S2437 would be located along the shoulder of WB I-10. Soundwall S2435 would be 469 feet long, and Soundwall S2437 would be 1,016 feet long. Soundwall S2435 would tie into existing Soundwall SW264, which is also located at the ROW line. Figures 98-1, 99-1, 98-2, and 99-2 in Appendix H of the NSR show the locations, minimum lengths, and heights required for these soundwalls to provide feasible traffic noise abatement. The estimated total construction cost of $380,800 for a 10- and 14-foot-high design barrier is less than the reasonable allowance of $1,065,000; therefore, Soundwalls S2435 and S2437 are reasonable. A 14-foot-high soundwall was also considered for Soundwall S2435, but the acoustical benefits are minimal compared to the cost of this option.

With consideration of the acoustic benefit and the incremental cost, Soundwalls S2435 and S2437 are reasonable and feasible; therefore, they are recommended to be 10- and 14-foot-high masonry walls, as shown in Figures 98-1, 99-1, 98-2, and 99-2 and Table 1 in Appendix L3 of this report.

Segment 18 – Mountain View Avenue to East of California Street

Soundwall S2476: Soundwall S2476 would be 2,098 feet long and would be located on the shoulder of EB I-10 between Mountain View Avenue and California Street. Figure 100 in Appendix H of the NSR shows the location, minimum length, and heights of Soundwall S2476 to provide feasible abatement and meet the design goal. The NSR proposed a 12- and 14-foot-high wall combination to provide feasible abatement to impacted receivers and to meet the design goal; however, after further analysis, it was determined that the 14-foot-high masonry soundwall would benefit 14 additional nonimpacted residences for an additional $52,500. The estimated construction cost for a uniform 14-foot-high wall is $469,700, which is well below the reasonable cost allowance of $5,254,000.

With consideration of the acoustic benefit and the incremental cost, Soundwall S2476 is reasonable and acoustically feasible; therefore, it is recommended to be a 14-foot-high masonry wall, as shown in Figure 100 and Table 1 in Appendix L3 of this report.

Alternative 3 (Preferred Alternative)

As previously discussed, Alternatives 2 and 3 have the same design footprint from Tennessee Street to Ford Street in Redlands; therefore, the following analysis for Alternative 3 includes Segments 1 through 18A, covering the area between Towne Avenue and Tennessee Street.

The traffic noise analysis for Segments 1 through 18A indicates that residential areas and park and recreation facilities, as well as schools and motels, would be impacted by this alternative (i.e., the noise level would approach or exceed the NAC). Without any additional barrier protection, noise analysis results indicate that the proposed project would raise noise levels in some areas from 1 to 5 dB compared to the Design Year (2045) No Build Alternative. While all of the alternatives would result in adverse noise impacts, from a numerical perspective, Alternative 3 is the longest; therefore, it would exceed the NAC at more frequent outdoor use locations than Alternative 2. Overall, impacts to other Activity Category B types would be comparable between the build alternatives. The proposed project would not cause a substantial noise increase (i.e., 12 dB).

The preliminary noise abatement decision for each acoustically feasible soundwall identified within the NSR, NSR Addendum, NADR, and NADR Addendum for Alternative 3 is provided below. It should be noted that the physical characteristics of noise abatement described herein also may be subject to change. If pertinent parameters change substantially during the final project design, the preliminary noise abatement decision may be changed to include abatement in the final project design. A final decision on whether and how to construct noise abatement would be made upon completion of the project design. The locations and heights of the recommended soundwalls are summarized in Table 2 and shown in the figures included in Appendix L4.

Segment 1 – Towne Avenue to Indian Hill Boulevard

Soundwall S699: Soundwall S699 would be 450 feet long and would be located along the shoulder of the WB I-10 Indian Hill Boulevard on-ramp. The soundwall would be joined at its western terminus to existing Soundwall SW651. Figure 104 in Appendix H of the NSR shows the location, minimum length, and heights required for this soundwall to provide feasible traffic noise abatement. The design barrier option for Soundwall S699 as a 16-, 18-, and 20-foot-high wall would provide feasible abatement and would meet the 7-dB noise reduction design goal. The estimated total construction cost of $406,100 for this wall option is less than the reasonable allowance of $1,136,000; therefore, Soundwall S669 is reasonable. However, Howard Johnson Hotel may not want this soundwall because it would block the view of the hotel from the I-10 corridor.

With consideration of the acoustic benefit and the incremental cost, Soundwall S699 is reasonable and feasible, and it is recommended to be a 16-, 18-, and 20-foot-high masonry wall, as shown in Figure 104 and Table 2 in Appendix L4 of this report.

Segment 4 – Central Avenue to Mountain Avenue

Soundwall S1117: Soundwall S1117 would be 222 feet long and would be located on the ROW line along the WB on-ramp from Mountain Avenue. Figure 109 in Appendix H in the NSR shows the location, minimum length, and height of

Soundwall S1117 to provide feasible abatement to Super 8 Motel. The estimated total construction cost of $101,200 for this 12-foot-high wall option is less than the reasonable allowance of $284,000; therefore, this soundwall is deemed reasonable. Both 14- and 16-foot-high options were also considered for Soundwall S1117; however, the acoustical benefits were negligible, resulting in only 1 dB of noise reduction for every 2 feet added to the height.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1117 is reasonable and feasible, and it is recommended to be a 12-foot-high masonry wall, as shown in Figure 109 and Table 2 in Appendix L4 of this report.

Segment 5 – Mountain Avenue to Euclid Avenue

Soundwall S1132: Soundwall S1132 would be approximately 590 feet in length and would be located on the shoulder of the EB on-ramp from Mountain Avenue and would end where existing Soundwall SW136 begins. Figure 110 in Appendix H in the NSR shows the location, minimum length, and height of Soundwall S1132 to provide feasible abatement and meet the design goal. The estimated total construction cost of $132,600 for this soundwall is less than the reasonable allowance of $142,000; therefore, this soundwall is considered reasonable. Soundwall options higher than 14 feet could not be considered due to the location of Soundwall S1132. Per the Caltrans HDM, the maximum height of this noise barrier cannot exceed 14 feet when located 15 feet or less from a traffic lane.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1132 is reasonable and acoustically feasible; therefore, Soundwall S1132 is recommended to be a 14-foot-high masonry wall, as shown in Figure 110 and Table 2 in Appendix L4 of this report.

Soundwall SW154: Soundwall SW154 is an existing 14-foot-high soundwall located on the ROW line. As a result of a required retaining wall at the I-10/Euclid Avenue EB off-ramp, reconstruction of 400 feet of this soundwall is necessary. The soundwall analysis results summarized in the NSR demonstrated that replacing this soundwall with a soundwall as high as 24 feet in height would not provide 5 dB or more of additional noise reduction at these receivers; therefore, Soundwall SW154 is not feasible. Figure 111 in Appendix H of the NSR shows the benefited receivers and existing Soundwall S154. Because a taller wall is not acoustically feasible, the 400-foot-long portion of Soundwall S154 will be replaced-in-kind on top of a new retaining wall to match the existing 14-foot height.

Segment 6 – Euclid Avenue to 6th Street

Soundwall S1190: Soundwall S1190 would be 973 feet long and would be located along the ROW line south of I-10. Figure 112 in Appendix H of the NSR shows the location, minimum length, and heights required for this soundwall to provide feasible traffic noise abatement and meet the design goal. The estimated total construction cost of $326,800 for this 12-foot soundwall is less than the reasonable allowance of $1,420,000; therefore, this soundwall is considered reasonable. An 8-, 10-, and 12-foot-high design barrier was considered for Soundwall S1190, which would benefit 10 residences; however, after further analysis, the uniform 12-foot-high soundwall option was determined to be the most cost effective. For an additional cost of $42,200, the number of benefited residences doubles, resulting in 20 benefited residences.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1190 is reasonable and feasible, and it is recommended to be a 12-foot-high masonry wall with the estimated construction cost of $326,800, as shown in Figure 112 and Table 2 in Appendix L4 of this report.

Segment 7 – 6th Street to 4th Street

Soundwall S1244: Soundwall S1244 would be located along the shoulder of EB I-10. This soundwall would close a gap that would exist between replace-in-kind Soundwalls SW230 and SW246 because replace-in-kind Soundwall SW230 would end short of its current location at the east end due to design constraints. Therefore, the soundwall has been moved to the shoulder to provide seamless abatement for this area. Figure 114 in Appendix H of the NSR shows the location, minimum length, and height of Soundwall S1244. The estimated total construction cost of this 175-foot-long wall is $40,080.

This soundwall does not provide feasible abatement to any receiver; therefore, no reasonableness allowance has been calculated. Although this soundwall would not provide feasible abatement for residences in this area, it does reduce the traffic noise exposure at the residences by closing the gap in replace-in-kind soundwalls. Soundwall S1244 is recommended to be a 14-foot-high masonry wall to close the 175-foot-long gap, as shown in Figure 114 and Table 2 in Appendix L4 of this report.

Soundwall S1262: Soundwall S1262 would be 297 feet long and would be located on the shoulder along EB I-10 providing abatement to the pool area of Travelodge Hotel. Figure 114 in Appendix H of the NSR shows the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement. The estimated total construction cost of $67,400 for this 14-foot-high wall is less than the reasonable allowance of $71,000; therefore, the cost of Soundwall S1262 is reasonable. Soundwall options higher than 14 feet could not be considered due to the location of Soundwall S1262. Per the Caltrans HDM, the maximum height of this noise barrier cannot exceed 14 feet when located 15 feet or less from a traffic lane.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1262 is both reasonable and acoustically feasible, and it is recommended to be a 14-foot-high masonry wall, as shown in Figure 114 and Table 2 in Appendix L4 of this report. Because Travelodge Hotel is the only beneficiary of this soundwall, they may choose to decline it to avoid blockage of the motorists' view of the hotel.

Soundwall S1266: Soundwall S1266 would be 685 feet long and would be located along the shoulder of EB I-10, as well as the EB off-ramp to 4th Street. Figures 114 and 115 in Appendix H of the NSR show the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement and meet the design goal at Days Inn. The estimated total construction cost of $128,100 for a 12-foot-high soundwall is less than the reasonable allowance of $213,000; therefore, this soundwall is reasonable. A 14-foot-high masonry wall was also considered, but the acoustical benefits were not significant enough to justify the cost. Per the HDM, the maximum height of this noise barrier cannot exceed 14 feet when located 15 feet or less from a traffic lane.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1266 is reasonable and feasible; therefore, it is recommended to be a 12-foot-high masonry wall, as shown in Figures 114 and 115 and Table 2 in Appendix L4 of this report. Because Days Inn is the only beneficiary of this soundwall, they may choose to decline it to avoid blockage of the motorists' view of the hotel.

Segment 8 – 4th Street to Vineyard Avenue

Soundwall S1285: Soundwall S1285 would be 407 feet long and would be located north of I-10 on the shoulder of the WB off-ramp to 4th Street. Figure 115 in Appendix H of the NSR shows the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement and meet the design goal at Motel 6. The estimated total construction cost of $91,830 for this wall option is less than the reasonable allowance of $1,775,000; therefore, this soundwall is considered reasonable. Soundwall options higher than 14 feet could not be considered due to the location of Soundwall S1285. Per the Caltrans HDM, the maximum height of this noise barrier cannot exceed 14 feet when located 15 feet or less from a traffic lane.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1285 is reasonable and feasible, and it is recommended to be a 14-foot-high masonry wall, as shown in Figure 115 and Table 2 in Appendix L4 of this report. Because Motel 6 is the only beneficiary of this soundwall, they may choose to decline it to avoid blockage of the motorists' view of the hotel.

Soundwall S21: Soundwall S21 would be located north of I-10, on the shoulder of the WB on-ramp from North Vineyard Avenue. Soundwall S21 would be approximately 464 feet long. The western terminus of the soundwall would overlap with the existing 14-foot-high Soundwall SW296. Figure 116 in Appendix H of the NSR shows the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement. The estimated total construction cost of $167,400 for this 12-foot-high wall exceeds the reasonable allowance of $142,000.

With consideration of the acoustic benefit and the incremental cost, Soundwall S21 is not reasonable; therefore, it is not recommended.

Soundwall S1276: Soundwall S1276 would be 216 feet long and would be located south of I-10, on the shoulder of the EB on-ramp from East 4th Street. The soundwall would be joined at its eastern terminus with the in-kind replacement Soundwall SW278. Figure 115 in Appendix H of the NSR shows the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement and meet the design goal. The estimated total construction cost of $24,990 for an 8-foot-high wall is less than the reasonable allowance of $213,000; therefore, the cost of this soundwall is reasonable. A 10-foot-high barrier was also analyzed for Soundwall S1276. With a 10-foot-high wall, the number of benefited residences remains the same, but an additional 2 dB of noise reduction can be achieved. The estimated construction cost for a 10-foot-high soundwall is $33,070, which is still less than the reasonableness allowance.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1276 is reasonable and is recommended to be a 10-foot-high masonry wall, as shown in Figure 115 and Table 2 in Appendix L4 of this report.

Soundwall S1306: Soundwall S1306 would be 2,448 feet long and would be located along the EB shoulder of I-10 and the shoulder of the EB off-ramp to North Vineyard

Avenue. Soundwall S1306 would connect with replace-in-kind Soundwall SW278 at the west end. Figures 115 and 116 in Appendix H in the NSR show the location, minimum length, and heights required for this soundwall to provide feasible traffic noise abatement and meet the design goal. The estimated total construction cost of $638,100 for this wall option is less than the reasonable allowance of $5,964,000; therefore, this soundwall is considered reasonable. An 8-, 10-, 12-, and 14-foot-high design barrier was considered as a cost-effective option that would also meet the 7-dB noise reduction design goal. Results of further analysis of predicted noise levels showed that a uniform 14-foot-high wall would provide feasible abatement to six more hotel rooms with no additional benefit to any of the residential receivers.

With consideration of the acoustic benefit, Soundwall S1306 is reasonable and feasible, and it is recommended to be an 8-, 10-, 12-, and 14-foot-high masonry wall, as shown in Figures 115 and 116 and Table 2 in Appendix L4 of this report.

Segment 9 – West of Cherry Avenue to Citrus Avenue

Soundwall S1708: Soundwall S1708 would be 380 feet long and located on private property, south of I-10, east of Cherry Avenue. Figure 130 in Appendix C of the NSR Addendum shows the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement and meet the design goal. Soundwall S1708 meets the 7-dB noise reduction goal at 24 feet; however, the estimated construction cost of $242,200 exceeds the reasonable cost allowance of $142,000.

With consideration of acoustic benefit and the incremental cost, Soundwall S1708 is not reasonable; therefore, it is not recommended.

Soundwall S1748: Soundwall S1748 would be 720 feet long and located on private property, south of I-10, at Beech Avenue. Figure 131 in Appendix C of the NSR Addendum shows the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement and meet the design goal. Soundwall S1748 meets the 7-dB noise reduction goal at 24 feet. The estimated total construction cost of $457,300 is more than the reasonable cost allowance of $213,000.

With consideration of acoustic benefit and the incremental cost, Soundwall S1748 is not reasonable; therefore, it is not recommended.

Segment 10 – Citrus Avenue to Sierra Avenue

Soundwall S1818: Soundwall S1818 would be 810 feet long and located on private property, south of I-10, east of Citrus Avenue. Figure 133 in Appendix C of the NSR Addendum shows the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement and meet the design goal. Soundwall S1818 meets the 7-dB noise reduction goal at 22 feet. The estimated total construction cost of $472,700 is less than the reasonable cost allowance of $639,000. As a 22-foot-high wall, Soundwall S1818 benefits nine receivers. A 24-foot-high wall was also analyzed for Soundwall S1818, but the number of benefitted receivers would remain the same, and no additional noise reduction would be achieved.

With consideration of acoustic benefit and the incremental cost, Soundwall S1818 is reasonable and is recommended to be a 22-foot high masonry wall, as shown in Figure 133 in Appendix L4 of this report.

Soundwall S1819: Soundwall S1819 would be 2,055 feet long and would be located north of I-10 on the ROW line. Figures 133 and 134 in Appendix H of the NSR show the location, minimum length, and heights required for this soundwall to provide feasible traffic noise abatement and meet the design goal. A 16- and 18-foot-high design barrier was proposed for Soundwall S1819 to provide feasible abatement at impacted receivers and meet the design goal. The estimated total construction cost of $999,100 for this wall option is less than the reasonable allowance of $2,343,000; therefore, this soundwall is recommended for construction. A uniform 18-foot-high soundwall option was also analyzed. Even though the acoustical benefits were at most 1 dB, the 18-foot-high wall was considered for beneficial aesthetic purposes for an additional cost of $64,900.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1819 is reasonable and feasible, and it is recommended to be an 18-foot-high masonry wall, as shown in Figures 133 and 134 and Table 2 in Appendix L4 of this report.

Soundwall S1833: Soundwall S1833 would be 707 feet in length and would be located north of I-10 on the ROW line. Figure 134 in Appendix H of the NSR shows the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement. The estimated total construction cost of $308,000 for this wall height is more than the reasonable allowance of $284,000. However, the difference between the estimated construction cost and the reasonable allowance is within 10 percent; therefore, the soundwall is considered reasonable.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1833 is reasonable and feasible, and it is recommended to be a 14-foot-high masonry wall, as shown in Figure 134 and Table 2 in Appendix L4 of this report.

Segment 11 – Sierra Avenue to Cedar Avenue

Soundwall S1877: Soundwall S1877 would be 1,502 feet long and would be located on the ROW line along WB I-10. Soundwall S1877 would be located adjacent to an existing 7-foot-high property wall located at the property line. Figures 135 and 136 in Appendix H of the NSR show the location, minimum length, and heights required for this soundwall to provide feasible traffic noise abatement. A design barrier consisting of both 14- and 16-foot-high segments was considered as an acoustically feasible option that would benefit 72 residences and would meet the design goal. The estimated total construction cost of the design barrier is $635,800. The reasonable allowance for 72 benefited residences is $5,112,000; therefore, this soundwall is considered reasonable. A uniform 16-foot-high wall was also analyzed; however, the acoustical benefits were negligible.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1877 is reasonable and feasible, and it is recommended to be a 14- and 16-foot-high masonry wall, as shown in Figures 135 and 136 and Table 2 in Appendix L4 of this report.

Soundwall S1907: Soundwall S1907 would be 3,587 feet in length. Soundwall S1907 would be located on the ROW line north of I-10 and would tie into Soundwall SW1, which will be constructed as part of the Cedar Avenue Improvement Project, also located at the ROW line. Figures 136 and 137 in Appendix H of the NSR show the location, minimum length, and heights required for this soundwall to provide feasible traffic noise abatement. The estimated total construction cost of $1,707,000 for this wall option is less than the reasonable allowance of $4,473,000; therefore, the cost of this soundwall is reasonable. A uniform 16-foot-high soundwall would be aesthetically beneficial in this location and would provide more acoustical benefits for an additional cost of $129,000.

With consideration of the acoustic benefit, aesthetics, and the incremental cost, Soundwall S1907 is reasonable and feasible, and it is recommended to be a 16-foot-high masonry wall, as shown in Figures 136 and 137, and Table 2 in Appendix L4 of this report.

Soundwall S1934: Soundwall S1934 would be 745 feet long and located on private property, south of I-10, at Locust Avenue. Figure 137 in Appendix C of the NSR Addendum shows the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement and meet the design goal. Soundwall S1934 meets the 7-dB noise reduction goal at 16 feet. The estimated total construction cost of $330,800 exceeds the reasonable cost allowance of $142,000.

With consideration of acoustic benefit and the incremental cost, Soundwall S1934 is not reasonable; therefore, it is not recommended.

Soundwall S1969: Soundwall S1969 would be 369 feet long and would be located on the edge of shoulder of the WB on-ramp from Cedar Avenue. Figure 138 in Appendix H of the NSR shows the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement. The estimated total construction cost of $132,400 for this wall height is less than the reasonable allowance of $142,000; therefore, this soundwall is considered reasonable.

With consideration of the acoustic benefit and the incremental cost, Soundwall S1969 is reasonable and feasible; therefore, it is recommended to be a 12-foot-high masonry wall, as shown in Figure 138 and Table 2 in Appendix L4 of this report.

Segment 12 – Cedar Avenue to Riverside Avenue

Soundwall S2033: Soundwall S2033 would be 444 feet long and would be located on the ROW line along the WB side of I-10. Figure 140 in Appendix H in the NSR shows the location, minimum length, and height of Soundwall S2033 to provide feasible abatement and meet the design goal. The estimated total construction cost of $268,900 for this wall is less than the reasonable allowance of $284,000; therefore, this soundwall is reasonable. Both 22- and 24-foot-high wall options were considered for Soundwall S2033, but neither of these options provided adequate additional noise abatement to justify using a higher wall.

With consideration of the acoustic benefit and the incremental cost, Soundwall S2033 is reasonable and feasible, and it is recommended to be a 20-foot-high masonry wall, as shown in Figure 140 and Table 2 in Appendix L4 of this report.

Segment 13 – Riverside Avenue to Pepper Avenue

Soundwall S2079: Soundwall S2079 would be 851 feet long and would be located north of I-10 on the ROW line. Figure 142 in Appendix H of the NSR shows the location, minimum length, and height required for this soundwall to provide feasible traffic noise abatement. The estimated total construction cost of $525,500 for this wall height is more than the reasonable allowance of $284,000; therefore, this soundwall is not reasonable.

With consideration of the acoustic benefit and the incremental cost, Soundwall S2079 is not reasonable; therefore, it is not recommended.

Segment 14 – Pepper Avenue to Rancho Avenue

Soundwall S2145: Soundwall S2145 would be 2,388 feet long and would be located on the shoulder and ROW line along WB I-10. Because the shoulder would be less than 15 feet in width, per the Caltrans HDM, the maximum height of a portion of the noise barrier located on the shoulder should not exceed 14 feet when located 15 feet or less from edge of traveled way. Figure 144 in Appendix H of the NSR shows the location, as well as the minimum length and heights, of Soundwall S2145 to provide feasible abatement. The estimated total construction cost of $772,800 for this wall option is less than the reasonable allowance of $3,053,000; therefore, this soundwall is considered reasonable.

With consideration of the acoustic benefit and the incremental cost, Soundwall S2145 is reasonable and feasible, and it is recommended to be a 14- and 16-foot-high masonry wall, as shown in Figure 144 and Table 2 in Appendix L4 of this report.

Segment 16 – La Cadena Drive to I-215

Soundwall S2238: Soundwall S2238 would be 1,462 feet long and would be located north of I-10 on the ROW line and shoulder. Figure 147 in Appendix H of the NSR shows the location, minimum length, and heights required for this soundwall to provide feasible traffic noise abatement and meet the design goal. A 14- and 16-foot-high design barrier was proposed for Soundwall S2238 to maximize acoustical benefits to adjacent residents. Because a portion of the shoulder would be less than 15 feet in width, the maximum height of this noise barrier could not exceed 14 feet when located 15 feet or less from edge of the travel way. The estimated total construction cost of $601,700 for the 14- and 16-foot-high design barrier option is less than the reasonable allowance of $3,266,000; therefore, this soundwall is reasonable.

With consideration of the acoustic benefit and the incremental cost, Soundwall S2238 is reasonable and feasible, and it is recommended to be a 14- and 16-foot-high masonry wall, as shown in Figure 147 and Table 2 in Appendix L4 of this report.

Segment 17 – West of Tippecanoe Avenue to Mountain View Avenue

Soundwalls S2382 and S2384: Soundwalls S2382 and S2384 work as a system where Soundwall S2382 would be located on top of a retaining wall along the EB shoulder of I-10, and Soundwall S2384 would be located on the ROW line along the EB off-ramp to Tippecanoe Avenue. Soundwall S2382 would be 837 feet long, and Soundwall S2384 would be 395 feet long. Figure 152 in Appendix H of the NSR shows the locations, minimum lengths, and heights of Soundwalls S2382 and S2384 to provide feasible abatement and meet the design goal. A 12- and 14-foot-high design barrier was analyzed as an effective design; however, the estimated total construction cost of $466,000 for these walls is more than the reasonable allowance of $71,000.

With consideration of the acoustic benefit and the incremental cost, Soundwalls S2382 and S2384 are not reasonable; therefore, they are not recommended.

Soundwalls S2434A and S2438 (Option 1): Two options have been considered for the location of Soundwall S2434: the ROW line (S2434A) and the shoulder of the EB off-ramp to Mountain View Avenue (S2434B). Soundwalls S2434A and S2438 would work as a system where Soundwall S2434A would be located on the ROW line and Soundwall S2438 would be located on the shoulder of EB I-10. Soundwall S2434A would be 1,513 feet long, and Soundwall S2438 would be 1,201 feet long. Figures 153-1 and 154-1 in Appendix L4 of this report show the locations, minimum lengths, and heights of Soundwalls S2434A and S2438 to provide feasible abatement and meet the design goal. According to the NSR predicted noise level analysis, the 14- and 16-foot-high design barrier option would benefit 40 residences and is well below the reasonable allowance. The estimated total construction cost of $1,010,200 for these walls is less than the reasonable allowance of $2,840,000; therefore, these soundwalls are reasonable. A uniform wall height of 16 feet was also considered for Soundwall S2434A, but no additional noise reduction can be achieved at the benefited receivers.

With consideration of the acoustic benefit and the incremental cost, Soundwalls S2434A and S2438 are reasonable and feasible. It is recommended that Soundwall S2434A be a 14- and 16-foot-high masonry wall, and Soundwall S2438 be a 12-foot high masonry wall, as shown in Figures 153-1 and 154-1 and Table 2 in Appendix L4 of this report.

Soundwalls S2434B and S2438 (Option 2): Soundwalls S2434B and S2438 would work as a system where Soundwall S2434B would be located on the shoulder of the EB off-ramp to Mountain View Avenue and Soundwall S2438 would be located on the shoulder of EB I-10. Soundwall S2434B would be 1,390 feet long, and Soundwall S2438 would be 772 feet long. Figures 153-2 and 154-2 in Appendix L4 of this report show the locations, minimum lengths, and heights of Soundwalls S2434B and S2438 to provide feasible abatement. A 12- and 14-foot-high design barrier was proposed in the NSR as a means to maximize benefited residences, while also remaining cost effective. The estimated total construction cost of $759,800 for this wall is less than the reasonable allowance of $2,698,000; therefore, this soundwall is reasonable. A uniform 14-foot-high soundwall was also considered for both walls, but only 1-dB additional noise reduction can be achieved at some of the benefited receivers; therefore, higher wall heights are not recommended.

With consideration of the acoustic benefit and the incremental cost, Soundwalls S2434B and S2438 are reasonable and feasible. It is recommended that Soundwall S2434B be a 12- and 14-foot-high masonry wall and Soundwall S2438 be a 12-foot-high masonry wall, as shown in Figures 153-2 and 154-2 and Table 2 in Appendix L4 of this report.

Both options that are being considered for Soundwalls S2434 and 2438 provide feasible abatement for 36 mobile homes and 4 single-family homes; however, the estimated construction cost of Option 2 is $250,400 less than Option 1. Therefore, Option 2 is considered as the preferred option for this soundwall system.

Soundwalls S2435 and S2437: Soundwalls S2435 and S2437 would work as a system where Soundwall S2435 would be located on the ROW line north of I-10 and Soundwall S2437 would be located along the shoulder of WB I-10. Soundwall S2435 would be 469 feet long, and Soundwall S2437 would be 971 feet long. Soundwall S2435 would tie into existing Soundwall SW264, which is also located at the ROW line. Figures 154-1 and 154-2 in Appendix H of the NSR show the locations, minimum lengths, and heights required for these soundwalls to provide feasible traffic noise abatement. The estimated total construction cost of these two soundwalls at 14 feet high is $331,900, which is less than the reasonable allowance of $1,065,000; therefore, these soundwalls are considered reasonable. A 16-foot-high wall was also analyzed for Soundwall S2435, but only 1-dB additional noise reduction can be achieved at few of the benefited receivers; therefore, a higher wall is not recommended. Soundwall S2437 cannot be higher than 14 feet because the shoulder is less than 15 feet wide.

With consideration of the acoustic benefit and the incremental cost, Soundwalls S2435 and S2437 are reasonable and feasible; therefore, they are recommended to consist of two 14-foot-high masonry walls, as shown in Figures 154-1 and 154-2 and Table 2 in Appendix L4 of this report.

Segment 18 – Mountain View Avenue to Nevada Street

Soundwall S2476: Soundwall S2476 would be 1,957 feet long and would be located on the shoulder of EB I-10. Figure 155 in Appendix H of the NSR shows the location, minimum length, and heights of 12 and 14 feet for Soundwall S2476 to provide feasible abatement and meet the design goal. Because the shoulder would be less than 15 feet in width, per the Caltrans HDM, the maximum height of a noise barrier should not exceed 14 feet when located 15 feet or less from edge of the travel way; therefore, providing additional abatement by increasing the height of the existing soundwall could not be attempted. The estimated total construction cost of $608,200 for this 14- and 12-foot-high wall option is less than the reasonable allowance of $4,970,000; therefore, the cost of this soundwall is reasonable. A uniform height of 14 feet was also considered for Soundwall S2476. A 1-dB noise reduction can be achieved at numerous benefited receivers, and six second-story balconies would also receive feasible abatement for an additional cost of $55,000. Therefore, a uniform height of 14 feet is recommended.

With consideration of the acoustic benefit and the incremental cost, Soundwall S2476 is reasonable and feasible, and it is recommended to be a 14-foot-high masonry wall, as shown in Figure 155 and Table 2 in Appendix L4 of this report.

Soundwall Surveys

For soundwalls determined to be feasible and reasonable, the affected property owners were given an opportunity to decide whether they were in favor of construction of the feasible soundwalls at the proposed locations within the project. The process of surveying the viewpoints of the benefitted receptors is the last of three reasonableness criteria that must be satisfied for a given soundwall to be wholly classified as feasible and reasonable. A total of 715 soundwall surveys and accompanying letters were sent out via certified mail on July 22, 2016, and again via U.S. Postal Service (USPS) priority mail on September 12, 2016, to all property owners and non-owner occupants of benefited receptors asking them to provide a position either in favor of or in opposition to the proposed noise abatement by a specified deadline. Door-to-door surveys were also conducted on October 10, 2016. Soundwall survey efforts and the deadline for responses ended on November 10, 2016.

If more than 50 percent of the votes from responding benefited receptors oppose the abatement located within Caltrans ROW, the abatement will not be considered reasonable. Votes from property owners and non-owner occupants of benefited receptors were surveyed. For owner-occupied dwelling units, the property owner gets one vote. For non-owner-occupied dwelling units, the renter gets 10 percent of one vote and the owner gets 90 percent of one vote. Overall, approximately 75 percent of the total surveyed benefited receptors completed the soundwall survey, which is enough to make a definitive decision whether each soundwall would be constructed as part of the project. Based on the results of the soundwall surveys, at least 50 percent of the responding property owners voted in favor of the following soundwalls to be constructed within Caltrans ROW:

- S699
- S1132
- S1244
- S1266
- S1285
- S1819
- S1907
- S2033
- S2238
- S2434B/S2438
- S2435/2437
- S2476
- S2619
- S2638/2654
- S2765
- S2145
- S1117
- S1190
- S1262
- S1276
- S1306
- S1877
- S1969

Based on the results of the soundwall surveys, Soundwall S1833 will not be built due to opposition expressed by surveyed property owners. Aside from Soundwall S1833, all soundwalls within Caltrans ROW are reasonable, feasible, meet the design goal, and are acceptable to adjacent property owners. These soundwalls will be constructed as part of the Preferred Alternative 3.

For soundwalls to be located on private property, 100 percent of owners of property upon which the abatement is to be placed must support the proposed abatement. In the case of proposed soundwalls on private property, no response from a property owner, after a reasonable number of attempts, is considered a no vote. Soundwall S1818 is the only soundwall proposed to be located on private property as part of the Preferred Alternative 3. Input from the affected property owners and tenants was obtained through a citizen survey and door-to-door surveys. Surveys were sent out via certified mail on July 22, 2016, and door-to-door surveys were conducted on October 13, 2016. Two benefited receptors are in favor and one property owner opposed construction of the soundwall. In addition, the remaining property owners did not vote on the soundwall after several repeated attempts, which is considered a no vote. Therefore, Soundwall S1818 will not be constructed because 100 percent of the property owners did not agree to construction of this wall.

Temporary/Construction Impacts

Construction noise varies greatly depending on the construction process, type, and condition of the equipment used and layout of the construction site. Projections of potential construction noise levels may vary from actual noise experienced during construction due to these factors. Overall, construction noise levels are governed primarily by the noisiest pieces of equipment, including large and small equipment such as compressors, generators, pneumatic tools, and jackhammers. The engine, which is usually diesel, is the dominant noise source for most construction equipment. Newer equipment generally operates more quietly than older equipment.

In general, construction activities conducted during daytime hours would have a lesser impact on residential land uses than nighttime construction; however, nighttime construction is expected to be necessary to avoid unacceptable disruptions to traffic during daytime hours (e.g., in commercial areas where businesses may be disrupted during daytime hours). Construction operations near residential neighborhoods would be restricted to the greatest extent possible so that noise and vibration are kept to a minimum.

It is possible that certain construction activities could cause intermittent localized concern from vibration in the project area. Processes, such as earth moving with bulldozers, the use of vibratory compaction rollers, impact pile driving, demolitions, or pavement breaking, may cause construction-related vibration impacts such as human annoyance or, in some cases, building damage. There are cases where it may be necessary to use this type of equipment in close proximity to residential buildings. A combination of the mitigation techniques for equipment vibration control, as well as administrative measures, when properly implemented, can be selected to provide the most effective means to minimize the effects of construction activity. Application of the mitigation measures will reduce the construction impacts; however, temporary increases in vibration would likely occur at some locations.

Measures will be implemented under San Bernardino County Transportation Authority (SBCTA) and Caltrans oversight. Any changes would require SBCTA and Caltrans approvals. With implementation of Measures N-1 through N-4, temporary construction noise and vibration impacts would be minimized.

3.2.7.4 Avoidance, Minimization, and/or Mitigation Measures

N-1: Noise barriers presented in Appendix L, Sections L3 and L4, and identified in Section 3.2.7 of the Final EIR/EIS will be included in the design-build plans and constructed for noise abatement.

N-2: Sound control used will conform to the provisions in Section 14-8.02, "Noise Control," of the Standard Specifications.

N-3: The following are control measures that will be implemented to minimize noise disturbances at sensitive areas during construction:

- All equipment shall have sound-control devices no less effective than those provided on the original equipment. Each internal combustion engine used for any purpose on the job or related to the job shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine should be operated on the jobsite without an appropriate muffler.
- Construction methods or equipment that will provide the lowest level of noise impact (e.g., avoid impact pile driving near residences and consider alternative methods that are also suitable for the soil condition) will be used.
- Idling equipment shall be turned off.
- Truck loading, unloading, and hauling operations shall be restricted through residential neighborhoods to the greatest possible extent.
- Construction activities shall be coordinated to build recommended permanent soundwalls during the first phase of construction to protect sensitive receivers from subsequent construction noise, dust, light, glare, and other impacts, to the extent feasible.

- Temporary noise barriers shall be used and relocated, as needed. Noise barriers can be made of heavy plywood, moveable insulated sound blankets, or other best available control techniques.
- Newer equipment with improved noise muffling shall be used, and all equipment items shall have the manufacturers' recommended noise abatement measures (e.g., mufflers, engine covers, and engine vibration isolators) intact and operational. All construction equipment shall be inspected at periodic intervals to ensure proper maintenance and presence of noise-control devices (e.g., mufflers and shrouding).
- Construction activities shall be minimized in residential areas during evening, nighttime, weekend, and holiday periods. Coordination with each city shall occur before construction can be performed in noise sensitive areas.
- Construction lay-down or staging areas shall be selected in industrially zoned districts. If industrially zoned areas are not available, commercially zoned areas may be used, or locations that are at least 100 feet from any noise-sensitive land use (e.g., residences).
- Contractor shall prepare a Noise and Vibration Monitoring and Mitigation Plan by a qualified Acoustical Engineer and submit it for approval. The Plan must outline noise and vibration monitoring procedures at predetermined noise and vibration sensitive sites, as well as historic properties. The Plan also must include calculated noise and vibration levels for various construction phases and mitigation measures that may be needed to meet the project specifications. The Contractor shall not start any construction work or operate any noise-generating construction equipment at the construction site before approval of the Plan. The Plan will be updated every 3 months or sooner if there are any changes.

N-4: The following are some procedures that will be used to minimize the potential impacts from construction vibration:

- Hours of vibration-intensive activities, such as vibratory rollers, will be restricted to minimize adverse impacts to the residents (e.g., weekdays during daytime hours only when as many residents as possible are away from home).
- The owner of a building close enough to a construction vibration source that damage to that structure due to vibration is possible would be entitled

to a preconstruction building inspection to document the preconstruction condition of that structure.

- Conduct vibration monitoring during vibration-intensive activities.

3.2.8 Energy

3.2.8.1 Regulatory Setting

The National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] Part 4332) requires the identification of all potentially significant impacts to the environment, including energy impacts.

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

3.2.8.2 Affected Environment

The California Energy Commission (CEC) is California's primary energy policy and planning agency. The Southern California Association of Governments' (SCAG) responsibilities include tracking and forecasting energy use in southern California. An Energy Working Group, as part of SCAG's Energy Planning Program, assists in developing energy policies consistent with the adopted plans such as the Regional Transportation Plan (RTP) and the Regional Comprehensive Plan and Guide. Over the past 50 years, energy supplies in southern California have sufficiently served the rapid growth in population and development (SCAG, 2008).

The SCAG region, which includes Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties, consumes more than 23 million gallons of gasoline and diesel per day; vehicle fuel consumption in the region has increased more than 20 percent in the past 10 years. Energy in the project area is consumed for construction of private and public projects, operation of vehicles, and operation of existing land uses. Over the coming years, SCAG forecasts a substantial increase in energy consumption resulting from growth in population, households, and jobs (SCAG, 2008).

In the project study area, energy is consumed primarily for residential, commercial, and transportation purposes. Transportation energy for motor vehicles is primarily provided by direct combustion of petroleum fuels (i.e., gasoline and diesel) with lesser contributions from compressed natural gas; electricity is used in a small number of electric-powered vehicles. The transportation facilities in the study area are already heavily congested and, consequently, support substantial energy consumption. Transit facilities operating within the study area corridor provide an alternative mode to the automobile, reducing the passenger's reliance on private vehicles and providing a more efficient use of energy.

3.2.8.3 Environmental Consequences

Evaluation Criteria

The project alternatives were evaluated to determine if they would result in a demand for energy that would exceed the current supply or cause a substantial increase in the rate of energy use.

Methodology

The energy analysis addresses direct and indirect energy consumption. Direct energy refers to the fuel consumed by vehicles traveling within the study area. There are many other indirect energy-using phases in the lifecycle of transport systems as well, including the energy required for construction and maintenance of roads, manufacturing and service of vehicles and facilities, and production and distribution of gasoline and diesel. For purposes of this analysis, indirect energy refers to the energy associated with construction and maintenance of the proposed project.

The direct energy analysis for each alternative was based on projected No Build (or baseline). The daily VMT was obtained from the project team and was annualized using a factor of 365 days per year. Energy intensity factors for the various transportation modes identified in Table 3.2.8-1 were developed by the Oak Ridge National Laboratory (Oak Ridge National Laboratory, 2016). As this is a highway project, and consistent with the air quality and greenhouse gas analyses, the analysis focused on energy consumption associated with nontrucks (automobiles) and trucks (heavy trucks) to obtain BTU per vehicle mile. The applicable nontruck and truck energy intensity factors are 4,839 and 21,573 BTU per vehicle mile, respectively. Direct energy use is also provided in barrels of oil. According to the U.S. Energy Information Administration, 1 barrel of crude oil is the equivalent of 5,729,000 BTU.

Table 3.2.8-1 Energy Intensity Factors

Mode	Factor
Automobile	4,839 BTU[a]/Vehicle Mile
Personal Trucks	6,555 BTU/ Vehicle Mile
Motorcycles	2,871 BTU/ Vehicle Mile
Demand Response[b]	14,106 BTU/Passenger Mile
Transit Bus	3,829 BTU/Passenger Mile
Intercity Amtrak	2,186 BTU/Passenger Mile
Urban Rail	2,381 BTU/Passenger Mile
Rail Transit	2,708 BTU/Passenger Mile
Heavy Trucks	21,573 BTU/ Vehicle Mile

Note:
[a] BTU = British Thermal Unit, equal to the amount of heat required to raise 1-pound of water 1 degree Fahrenheit (°F) at 1 atmosphere of pressure.
[b] Includes passenger cars, vans, and small buses operating in response to calls from passengers to the transit operator who dispatches the vehicles.

Source: Oak Ridge National Laboratory, 2016.

Indirect or construction energy effects involve the one-time, nonrecoverable energy costs associated with construction of roadways and structures, and construction and maintenance of the vehicles using the facility. Indirect energy is calculated by determining the energy equivalent of all the material products and operations necessary to keep the transportation system operable. The analysis is based on existing data from other roadway improvement projects in the United States, utilizing conversions listed in Table 3.2.8-2. To determine the construction energy use, the construction costs were multiplied by the indirect energy use factor provided by Caltrans' *Energy and Transportation Systems Handbook*, which is 2.75 x 10^4 BTU per dollar for the project. Roadway construction energy was based on construction costs. At the time of this analysis, Alternative 2 was estimated to cost $550,000,000 and Alternative 3 was estimated to cost $1,560,000,000.

Table 3.2.8-2 Construction Energy Consumption Factors

Mode	Factor
Construction	
Automobiles and Trucks (manufacturing)	1,410 BTU[a]/Vehicle Mile
Roadway (construction)	27,500 BTU/1977$
Maintenance	
Automobiles and Trucks	1,400 BTU/Vehicle Mile

Note:
[a] BTU = British Thermal Unit, equal to the amount of heat required to raise 1-pound of water 1°F at 1 atmosphere of pressure.

Source: Caltrans, 1983.

Utilizing the annual direct energy savings and the energy consumed for construction, a payback period was calculated. The energy payback period is the amount of time it takes to recover the quantity of energy expended for project construction. The energy payback period is determined by dividing the construction energy by the annual operational energy savings due to the project, as with the following:

> *Example*
> *Construction Energy/Operational Energy Savings (Example Alternative 1 - No Build) = Payback Period 240,000 barrels of oil/31,000 barrels of oil= 7.7 years*

If the project would use more operational energy than the No Build Alternative, then there is no annual energy savings compared to the No Build Alternative, and the payback period would never be met. A payback period of fewer than 5 years is considered an excellent investment, while a payback period of greater than 20 years will generally be beyond the foreseeable future of the project (Caltrans, 1983).

For the analysis below, BTUs have been converted to the equivalent barrels of crude oil for the comparison of alternatives.

Direct Energy (Operational)

Energy used during operation of any alternative is directly related to the gasoline and diesel consumption of automobiles and trucks. Local energy demand for transportation projects typically is dominated by vehicle fuel consumption with fuel consumption being directly related to the VMT. The subsequent energy calculations are based on annual project-specific VMT in the Corridor for the 2025 base year and the build-out year 2045. Table 3.2.8-3 shows that the VMT would increase for each of the build alternatives compared to the No Build Alternative, except for Alternative 2 in 2025. The increase is due to the increased capacity for vehicles with implementation of the proposed project.

Table 3.2.8-3 Annual 2025 and 2045 Direct Energy Consumption

Alternative	Annual Project-Specific VMT (millions)	Regional VMT (millions)	BTU (trillions)	Million Barrels	% Change from No Build
2012					
Existing	2,246	11.11	1.94	--	--
2025					
No Build Alternative	2,553	12.64	2.21	13.7%	--
Alternative 2	2,522	12.48	2.18	12.4%	(1.4%)
Alternative 3 (Preferred Alternative)	2,793	13.82	2.4	24.2%	9.05%
2045					
No Build Alternative	3,061	15.15	2.64	36.1%	--
Alternative 2	3,129	15.49	2.70	39.2%	2.3%
Alternative 3 (Preferred Alternative)	3,343	16.55	2.89	49.0%	9.5%

Sources: U.S. Energy Information Administration, 2011

No Build Alternative

Without the capacity improvements proposed in the build alternatives, congested traffic conditions and limitations on mobility would be more prevalent throughout the study area. These conditions would contribute to inefficient energy consumption, as vehicles would use extra fuel while idling in stop-and-go traffic or moving at slow speeds through congested roadways. The No Build Alternative would increase existing energy consumption by 13.7 percent in 2025 and 36.1 percent in 2045.

Alternative 2

Alternative 2 would result in an annual energy consumption of approximately 2.18 and 2.70 million barrels of crude oil in Opening Year 2025 and Design Year 2045, respectively. Due to increased VMT, Alternative 2 would increase existing energy consumption by 12.4 percent in 2025 and 39.2 percent in 2045. In the No Build condition, Alternative 2 would result in the annual consumption of approximately 1.4 percent less crude in 2025. In 2045, Alternative 2 would result in 2.3 percent more crude oil usage compared to the No Build Alternative. The 2.3 percent increase in crude oil usage from the project is a small percentage and would not impact regional energy supply.

The project corridor is already highly developed, so it is unlikely that the addition of one lane in each direction would change travel patterns in the surrounding areas in such a way that would result in a sizeable increase or decrease in the expenditure of fuel, either within the study area or regionally. With this alternative, more vehicles are projected to use the highway in a given period, but each vehicle would be expected to use less fuel than under the No Build Alternative.

With respect to minimizing energy consumption, Alternative 2 would incorporate energy conservation measures, such as selecting energy-efficient project features (e.g., lighting, pavement surface), using energy-efficient design (i.e., reduced grades, decrease in out-of-direction travel, traffic flow improvements), including ramp metering, auxiliary lanes, and other Transportation System Management (TSM)/Transportation Demand Management (TDM) measures, as well as bicycle and pedestrian facilities, to further offset increased fuel consumption associated with the projected increase in VMT.

Alternative 3 (Preferred Alternative)

Alternative 3 would result in a projected annual energy consumption of approximately 2.4 and 2.89 million barrels of crude oil. Due to increased VMT, Alternative 3 would increase existing energy consumption by 12.4 percent in 2025 and 49 percent in 2045. In the No Build condition. Alternative 3 would result in the annual consumption of approximately 9.05 percent more crude oil than the No Build Alternative in 2025 and 9.5 percent more crude oil in 2045. Although a 9.5 percent increase on a project to project level would appear high, regionally the increase of energy usage is insignificant. As such, the increases in crude oil usage from the project would be a small percentage of total energy use and would not impact regional energy supply.

The project corridor is already highly developed, so it is unlikely that the addition of two lanes in each direction would change travel patterns in the surrounding areas in such a way that would result in a sizeable increase in the expenditure of fuel, either within the study area or regionally. With this alternative, more vehicles are projected to use the highway in a given period, but each vehicle would be expected to use less fuel than under the No Build Alternative.

With respect to minimizing energy consumption, Alternative 3 would incorporate energy conservation measures, such as selecting energy-efficient project features (e.g., lighting, pavement surface), using energy-efficient design (i.e., reduced grades, decrease in out-of-direction travel, traffic flow improvements), including ramp metering, auxiliary lanes, and other TSM/TDM measures, as well as bicycle and pedestrian facilities, to further offset increased fuel consumption associated with the projected increase in VMT.

Indirect Energy (Construction and Maintenance)

Energy consumed for construction and maintenance is referred to as indirect energy usage. Energy use for maintenance comprises day-to-day upkeep of equipment and systems, as well as the energy embedded in any replacement equipment, materials, and supplies. The indirect energy impacts associated with the construction and maintenance of the build alternatives are directly related to the total project capital cost and maintenance cost.

The existing maintenance energy consumption is approximately 0.5 million barrels of crude oil annually. Under the No Build Alternative, maintenance energy would be approximately 0.6 million barrels of crude oil in 2025. The indirect energy consumption for the construction of each project alternative is summarized in Table 3.2.8-4 and is discussed below. If a project alternative would use more operational energy than the No Build Alternative operational energy, then there is no annual energy savings compared to the No Build Alternative, and the payback period would never be met.

Table 3.2.8-4: Annual Indirect Energy Consumption 2025 – Construction and Maintenance

Description	Existing Conditions (2012)	No Build Alternative	Alternative 2	Alternative 3 (Preferred Alternative)
Construction				
Corridor Annual VMT[2](millions)	2,245,520	2,553	2,526	2,522
Vehicles-Auto Mfg BTUs (millions)	3,166,184	3,600,937	3,562,819	3,556,281
Roadway BTUs (millions)	--	--	15,125,000	42,900,000
Subtotal BTUs (millions)	3,166,184	3,600,937	18,681,281	46,838,224
Subtotal Barrels of Oil	552,659	628,545	3,260,828	8,175,637
Maintenance				
Maintenance (BTUs) (millions)	3,143,729	3,575,398	3,531,059	3,910,293
Subtotal Barrels of Oil	548,740	624,088	616,348	682,544
Total BTUs (millions)	6,309,914	7,176,336	22,122,340	50,748,517
Total Barrels of Oil	1,101,399	1,252,633	3,877,176	8,725,317
Operational Direct Energy Savings	N/A	N/A	No Savings	No Savings
Payback Period	N/A	N/A	N/A	N/A

As shown in Table 3.2.8-3, Alternative 2 in 2025 would result in energy savings equivalent to 27,359 barrels of oil per year. This implies that if the operational energy savings would stay at this rate in the subsequent years, it would take more than 142 years to pay back the construction costs associated with Alternative 2; however, for the payback period to be relevant, it has to be shorter than 20 years. In general, a payback period of fewer than 5 years is considered an excellent payback, and a period of more than 20 years is usually beyond the foreseeable future of the project. As shown in Table 3.2.8-3, Alternative 3 would increase the energy consumption by 206,462 and 244,023 barrels of oil per year in 2025 and 2045, respectively; hence, it would not have any energy savings associated with it.

No Build Alternative

The primary indirect energy consumption associated with the No Build Alternative would be the manufacturing and maintenance of vehicles for use within the study corridor, as well as Caltrans highway maintenance. Under the No Build Alternative, approximately 0.6 and 0.7 million barrels of oil would be consumed through maintenance activities in 2025 and 2045, respectively. Because construction work associated with the proposed project would not occur, this alternative would consume the least amount of indirect energy.

Alternative 2

In addition to vehicle manufacturing, construction of structures, roadway, and other improvements, Alternative 2 would increase the short-term indirect energy consumed. Vehicle maintenance would also contribute to the energy consumed for this alternative. The future amount of crude oil use associated with the construction and maintenance of Alternative 2 is estimated to be approximately 3.8 million barrels. Compared to the No Build Alternative, there would be energy savings equivalent to 7,739 barrels of crude oil associated with maintenance activities in 2025 and no savings in 2045.

Alternative 3 (Preferred Alternative)

The same factors as in Alternative 2 would result in indirect energy consumption in Alternative 3. The future crude oil consumption for Alternative 3 is estimated to be approximately 8.8 million barrels. The overall energy consumption for Alternative 3 would be higher compared to Alternative 2. Compared to the No Build Alternative, there would be no indirect energy savings regarding the associated maintenance activities.

As outlined under CEQA and NEPA guidance, long-term operational, direct energy impacts would occur if a proposed project would place a substantial demand on the regional energy supply or require substantial additional capacity, or considerably increase peak and base period demand on various energy sources. Construction of any of the build alternatives would entail the one-time energy expenditure to manufacture building materials, prepare the surface, and construct the roadway and facilities. This expenditure would be balanced by the improved system efficiency over the design life of the proposed project.

Although both build alternatives would result in increased energy usage, when compared to the regional energy use (i.e., the SCAG region consumes more than 23 million gallons of gasoline and diesel per day), the increased expenditure related to the proposed project is not considered to be substantial or adverse. The aforementioned TSM measures to be incorporated into each of the build alternatives would be designed and implemented with the intent of improving energy efficiency within the study area. The increased energy use under Alternatives 2 and 3 would not impact regional energy supply.

3.2.8.4 Avoidance, Minimization, and/or Mitigation Measures

Based on the discussion provided in Section 3.2.8.3, no avoidance, minimization, and/or mitigation measures are required for any of the alternatives.

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3.3 Biological Environment

3.3.1 Natural Communities

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat (CH) under the Federal Endangered Species Act (FESA) are discussed below in Section 3.3.5, Threatened and Endangered Species. Wetlands and other waters are discussed in Section 3.3.2, Wetlands and Other Waters.

3.3.1.1 Affected Environment

The analysis of potential impacts of the proposed project to natural communities is based on the *Natural Environment Study* (NES) (December 2015).

Biological Study Area

The Biological Study Area (BSA) for the project is located along a 33-mile-long segment of Interstate 10 (I-10) in San Bernardino County, California, between the cities of Montclair and Redlands. The BSA consists of California Department of Transportation (Caltrans) right-of-way (ROW), anticipated temporary construction easements (TCEs), proposed construction staging areas (CSAs), and areas within a 50-foot-wide buffer immediately adjacent to the ROW and CSAs. The BSA includes all areas anticipated to be disturbed during construction of the proposed project.

The BSA is based on preliminary project design information for Alternative 3, which represents the maximum area potentially affected by the proposed project and extends to the ROW line throughout the study corridor. The BSA also includes a 50-foot-wide buffer beyond Caltrans ROW and around the proposed CSAs to capture any sensitive habitats that may be located immediately adjacent to the construction areas. The BSA includes all areas required for construction of the proposed project, including TCEs and ROW to accommodate construction of proposed retaining walls and soundwalls. The buffer (i.e., areas outside Caltrans ROW) is generally restricted due to the intense urbanization associated with land use adjacent to I-10 within the study corridor. The BSA extends from Garey Avenue in Montclair to Ford Street in Redlands.

The BSA contains extensively disturbed and developed areas, primarily consisting of the I-10 freeway and freeway ROW, local arterial roadways and adjacent buildings, and other urban development. Urban areas dominate the study corridor. Other vegetation communities recorded include freshwater marsh, southern willow scrub, mule fat scrub, Riversidean sage scrub (RSS), non-native grassland, ruderal, ornamental, and agriculture. Due to the presence of vehicular traffic and other public/ private infrastructure, the BSA is consistently exposed to trash, debris, noise, light, dust, emissions, and roadway maintenance activities. As a result, plant and wildlife species present within the BSA are assumed to be acclimated/adapted to frequent human disturbance.

Natural Communities of Special Concern

As identified in the California Natural Diversity Database (CNDDB), sensitive plant communities within the BSA include RSS and riparian plant communities (i.e., southern willow scrub, mule fat scrub, freshwater marsh).

Three riparian vegetation communities were identified within the study corridor: freshwater marsh, southern willow scrub, and mule fat scrub. Freshwater marsh is found within the Montclair Basins, near San Antonio Creek Channel, and within some smaller channel features that were constructed to drain urban runoff. Southern willow scrub is found primarily along the Santa Ana River beyond the immediate I-10 footprint. It also occurs in smaller patches along Etiwanda Creek Channel. Mule fat scrub occurs within and adjacent to some of the southern willow scrub areas, but it is also found in a few isolated patches in the study corridor. These vegetation communities would be considered environmentally sensitive areas (ESAs).

RSS was also found at various locations along the study corridor, with the largest concentrations in the eastern portions near Redlands. Patch sizes range from less than 1 acre to 5 acres, with the largest patches near the Crafton Hills across from Ford Street at the eastern end of the study corridor.

Vegetation Communities

The BSA contains extensively disturbed and developed areas, primarily consisting of the I-10 freeway and freeway ROW, local arterial roadways and adjacent buildings, and other urban development. Urban areas dominate the study corridor. Other vegetation communities recorded include freshwater marsh, southern willow scrub, mule fat scrub, RSS, non-native grassland, ruderal, ornamental, and agriculture.

Table 3.3.1-1 lists the acreages of each of the vegetation communities observed within the BSA. Descriptions of each community are provided below.

Table 3.3.1-1 Existing Vegetation Communities Occurring in the BSA

Vegetation Community	Total Acres
Freshwater Marsh	0.29
Southern Willow Scrub	0.72
Mule Fat Scrub	1.42
Riversidean Sage Scrub	14.29
Non-native Grassland	564.04
Ruderal	37.08
Ornamental	394.84
Agriculture	30.50
Disturbed	193.62
Developed	4,053.61
Total	**5,290.41**

Source: Parsons, 2015.

Freshwater Marsh

Freshwater marsh is an emergent wetland vegetation community that occurs where water sits for long periods of time. Dominant plant species within marsh communities are usually obligate wetland species and can include cattail *(Typha latifolia)*, bulrush *(Scirpus angustifolia)*, sedges *(Cyperus* sp.), or other similar species. Within the study corridor, marsh habitat is very limited and is only associated with soil deposits within concrete-lined channel areas. These deposits are created by urban runoff and have built up sufficiently to allow wetland vegetation to develop. Some of the marsh areas are associated with unlined channel features. None of the marsh areas occur within natural stream channels.

Southern Willow Scrub

Willows *(Salix* sp.) are a species associated with riverine environments and wetland fringes. They occur where there is flooding but not prolonged inundation. Within the study corridor, willows primarily observed include arroyo willow *(Salix lasiolepis)* and black willow *(Salix goodingii)*. Associated species include a variety of riparian plant species such as mule fat *(Baccharis salicifolia)*, sunflower *(Helianthus annuus)*, marsh plants, Fremont cottonwoods *(Populus fremontii)*, western sycamores *(Platanus racemosa)*, and a wide variety of riparian herbaceous plants. Southern willow scrub is mainly found within the study corridor in association with natural stream course locations, such as the Santa Ana River. It is also found within portions of Etiwanda Creek.

Mule Fat Scrub

Also a riverine plant community, mule fat scrub is dominated almost exclusively by mule fat. This community occurs on higher, drier terraces within alluvial floodplains and smaller stream courses. It can also occur within disturbed sites where a water source is present, such as a leaky water pipe.

Riversidean Sage Scrub

Areas mapped as RSS contain native shrubs mixed with non-native grasses and other ruderal species. Dominant shrubs include California buckwheat *(Eriogonum fasciculatum)*, brittlebush *(Encelia californica)*, croton *(Croton californicus)*, and dove weed *(Croton setigerus)*.

Non-native Grassland

Grasslands are dominated by grasses rather than forbs, and the grasses present are usually of Mediterranean origin. Non-native grassland can be dominated by slender wild oats *(Avena barbata)*, rip-gut brome *(Bromus diandrus)*, red brome *(Bromus madritensis* ssp. *rubens)*, Bermuda grass *(Cynodon dactlyon)*, cheat grass *(Bromus tectorum)*, or a variety of other species of exotic origin. Most non-native grasses were brought to southern California to serve as feed crops for the cattle industry.

Ruderal

Ruderal areas are characterized by disturbed areas and non-native annual plants. The dominant species in the ruderal areas include non-native grasses, including rip-gut brome, red brome, slender wild oats, Russian thistle *(Salsola tragus)*, lamb's quarters *(Chenopodium album)*, telegraph weed *(Heterotheca grandiflora)*, and common sunflower.

Ornamental

Ornamental areas are planted with common landscaping plants. Groundcover plants include hottentot fig *(Capobrotus edulis)*, and lantana *(Lantana camara)*. Tree species include eucalyptus *(Eucalyptus* sp.), Peruvian pepper tree *(Schinus molle)*, olive *(Olea europaea)*, Mexican fan palm *(Washingtonia robusta)*, and Canary Island date palm *(Phoenix canariensis)*. Within the ornamental areas, there are also some native trees planted, including Fremont's cottonwood and western sycamore. There is also a decorative recirculating waterfall feature near the interchange between State Route (SR) 210 and I-10 that is included within this designation.

Agriculture

Agricultural areas consist of any part of the study corridor that is under active cultivation, either irrigated or not. It includes orchards such as orange groves. There are a few active agricultural row crops, consisting mostly of strawberries, near Loma Linda and San Bernardino; otherwise, all of the agricultural areas are citrus groves.

Disturbed

Areas considered disturbed include, but are not limited to, all cleared locations, dirt lots maintained free of vegetation for parking, and nonpaved equipment storage locations. The disturbed designation indicates a location that is actively maintained to be free of vegetation or that has compacted to such a degree that vegetation is very sparse. Vegetation within disturbed areas is usually quite limited.

Developed

Developed areas include all areas within the buffer areas outside the freeway ROW, some smaller landscaped areas, buildings, and paved areas. These areas include residential, commercial, and agricultural areas, as well as railroad facilities. Paved parking areas, driveways, landscaping, and bare soils that are not part of freeway landscaping are also included in the developed category.

Habitat Connectivity

Habitat connectivity is established when there is a wildlife movement corridor that connects two blocks of native habitat. A wildlife corridor between such habitats functions to allow genetic interchange between populations. Movement corridors allow dispersal of young and allow animals to flee one patch of habitat in the event of a fire or other large-scale disturbance. Viable connections between habitat areas act as a linkage between those habitats contained in each connected habitat, effectively expanding the usable areas for wildlife that use both the habitats and the corridors connecting them. The major regional blocks of habitat in the region of the project include San Gabriel Mountains, San Bernardino Mountains, Chino Hills, Prado Basin, Jurupa Hills, San Timoteo Badlands, and Crafton Hills. The upper Santa Ana River floodplain between Redlands and San Bernardino is also a major block of habitat. Wildlife movement connections between these features, across I-10, are generally limited by urbanization. Restrictions are lessened where these habitat blocks are closer to each other, mainly in the eastern portions of the study corridor.

Most of the study corridor is so heavily urbanized that there is little to no opportunity for regular, regional movement of wildlife across I-10. Urban developments are not generally conducive to wildlife travel between natural areas because of vehicular traffic, human presence, and the presence of too much noise and light. Along the study corridor, on either side, most of the expanse of urban development between blocks of open space encompasses a total width of 6 miles (near Redlands) to 11 miles (Fontana-Ontario). At the far eastern portion of the study corridor, there is a 1-mile gap between the Crafton Hills and San Timoteo Canyon. That area is an exception to what is typical for the study corridor. The amount of urban development along most of the study corridor severely limits the presence of functional wildlife movement corridors to major stream corridors.

There are no designated wildlife corridors that cross I-10 in the project BSA. According to the California Essential Habitat Connectivity (CEHC) mapping developed by the California Department of Fish and Wildlife (CDFW) and Caltrans in 2010, there are no critical linkages within the project BSA. In addition, no missing linkages are identified within the project BSA according to the South Coast Missing Linkages project.[1]

Although no designated wildlife corridors occur in the BSA, it should be mentioned that there are some wildlife species that are well adapted to urban environments and will thrive among residential and commercial developments. A discussion of these species is included within Section 3.1.3 of the NES (December 2015). Most of the species that are commonly observed in urban environments do not have specific movement corridor requirements, instead using nonspecific movement patterns across these urban areas.

Rivers, streams, and canyons provide natural movement corridors for wildlife. They provide a regular water source and cover in the form of native riparian vegetation, and they supply a steady food source. Studies have found that the width of a riparian corridor and its amount of vegetative cover is important in determining the wildlife capable of using it. Larger mammal species, such as deer *(Odocoileus hemionus)* or mountain lions *(Felis concolor)*, require larger movement corridors with ample cover. Smaller mammal species, such as bobcats *(Lynx rufus)* or coyotes *(Canis latrans)*, are more apt to use smaller movement corridors.

Within the study corridor, there are several streams that cross I-10, but all of them have been channelized. Even though these streams form a conduit across the entire

[1] South Coast Wildlands. 2008. South Coast Missing Linkages: A Wildland. Network for the South Coast Ecoregion. Produced in cooperation with partners in the South Coast Missing Linkages Initiative. Available online at http://www.scwildlands.org.

urban landscape, their channelization limits wildlife interaction. Many of the channels, such as Day Creek Channel and Lower Deer Creek Channel, are completely concrete lined and have vertical sidewalls greater than 15 feet in height and no natural vegetation to provide cover. Animal species using such features for movement would be very visible and exposed. Generally, concrete channels with no vegetative cover are not considered adequate for wildlife movement. Some of the smaller streams in the east end of the study corridor, such as Mission Creek Channel and Zanja Creek Channel, are natural-bottom streams that contain varying amounts of ruderal vegetation and are more conducive to wildlife movement.

The Santa Ana River, the largest of these stream corridors, is approximately 600 feet wide within a distance of 0.75 mile through the study corridor. The channel is concrete lined with trapezoidal concrete sides within the immediate vicinity of I-10, but to the north and south, the river is natural bottom with concrete sides. Natural vegetation occurs approximately 0.10 mile upstream and 0.30 mile downstream of I-10, but the river immediately near I-10 is sparse and devoid of substantial vegetative growth that could provide cover. The Santa Ana River Channel is likely used as a wildlife movement corridor for many species, because it is a major riparian corridor. Due to the extensive urban environment surrounding the study corridor, and because larger mammals such as deer are sensitive to the presence of urban environments, most wildlife use within the river across the study corridor is expected to be small- to medium-sized mammal species, riparian birds, common reptiles, and common amphibian species. The river, downstream of the study corridor, is also known to support a population of the federally endangered Santa Ana sucker (SAS). Other species found within the Santa Ana River upstream or downstream of the study corridor include the southwestern willow flycatcher (SWWF), least Bell’s vireo (LBV), and (farther upstream) San Bernardino kangaroo rat (SBKR). The river is also known to support several rare and endangered plant species. There are also known bat populations with artificial roost boxes in place over the Santa Ana River at the Interstate 215 (I-215) interchange.

The components of the vegetation communities within the study area described above are mapped in Figure 3.3.1-1. The figure also depicts impacts from Alternative 3, the larger in scope of the two proposed build alternatives for this project.

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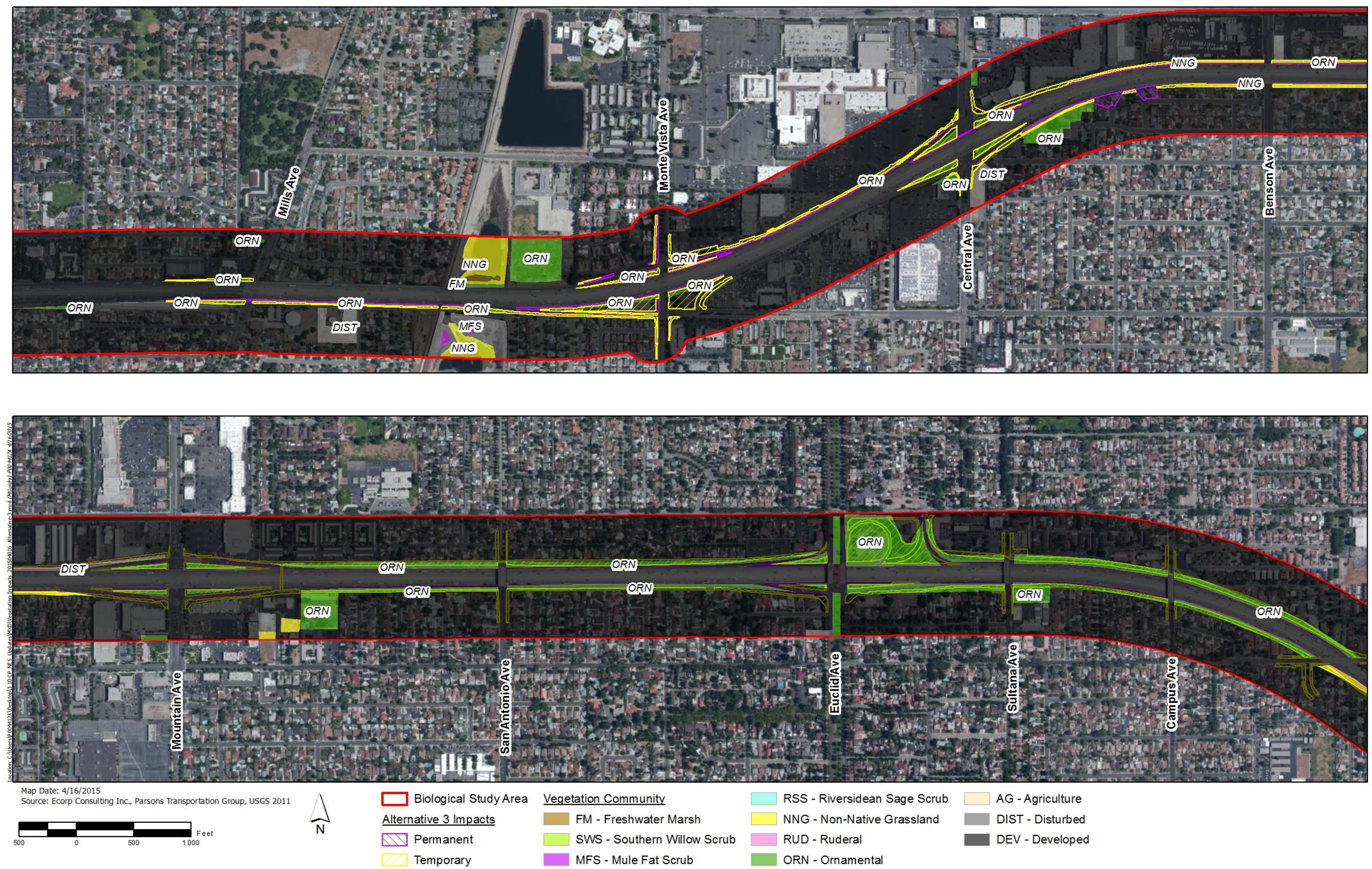

Figure 3.3.1-1 Vegetation Communities and Impacts (Sheets 1A and 1B)

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Figure 3.3.1-1 Vegetation Communities and Impacts (Sheets 2A and 2B)

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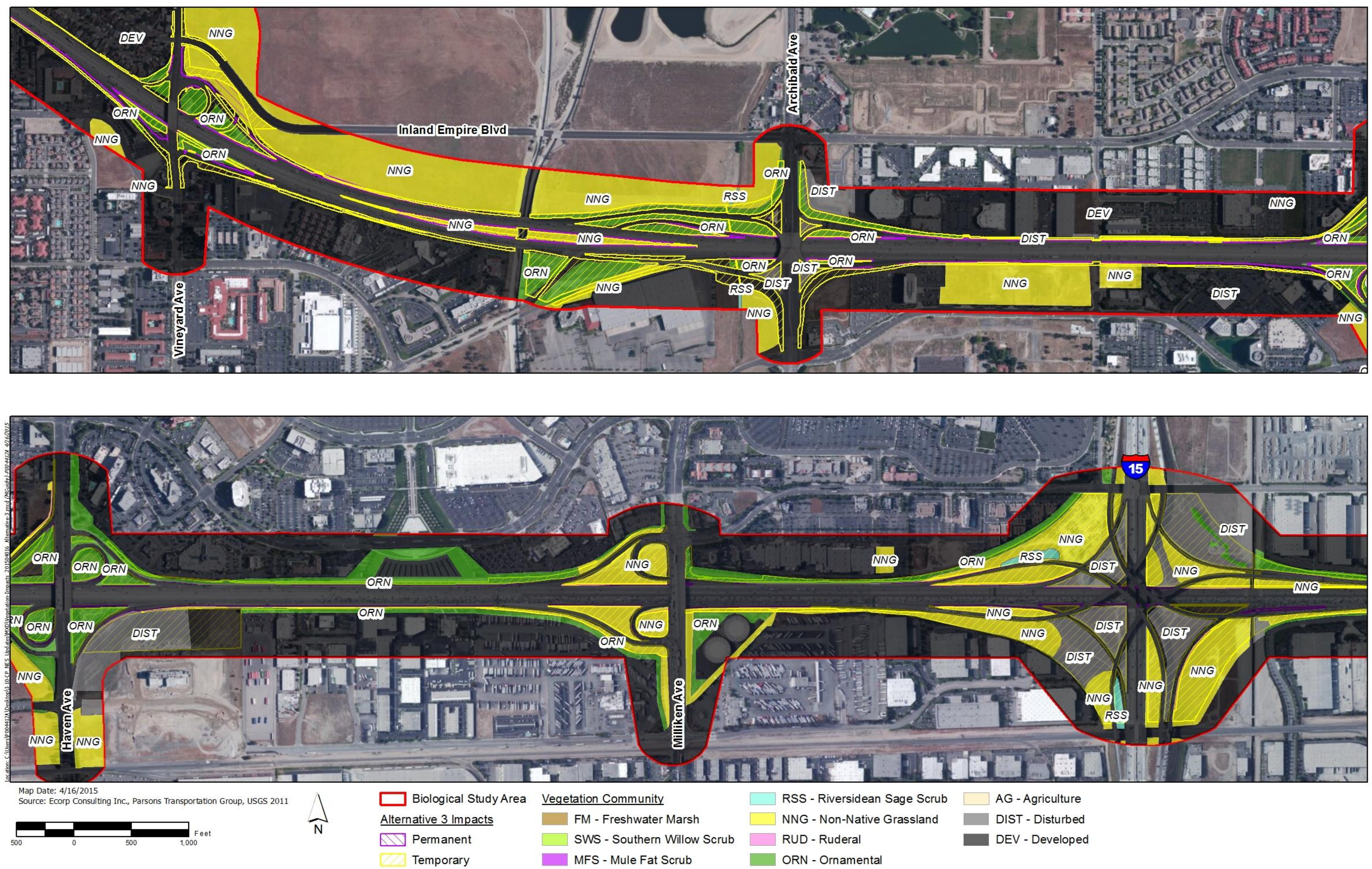

Figure 3.3.1-1 Vegetation Communities and Impacts (Sheets 3A and 3B)

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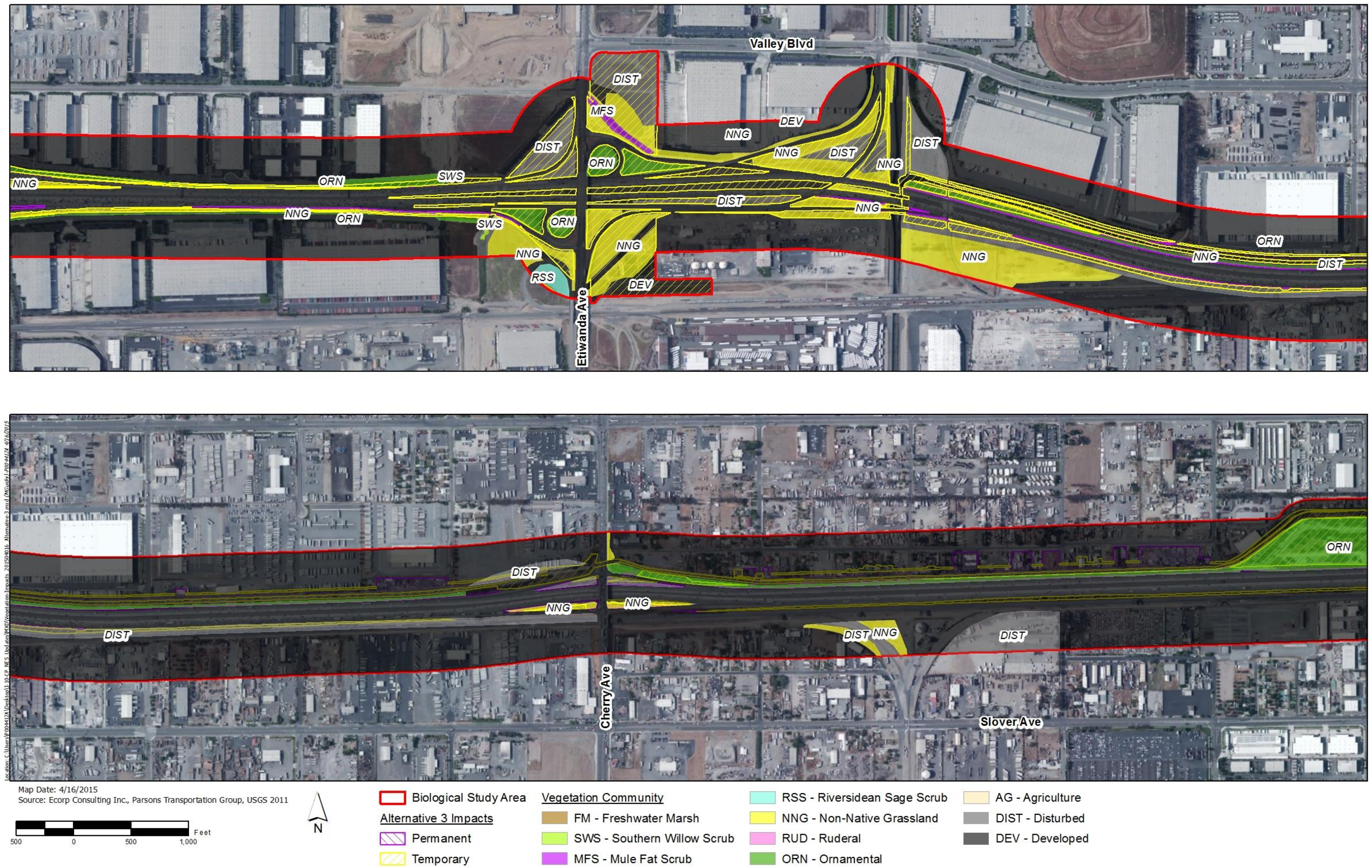

Figure 3.3.1-1 Vegetation Communities and Impacts (Sheets 4A and 4B)

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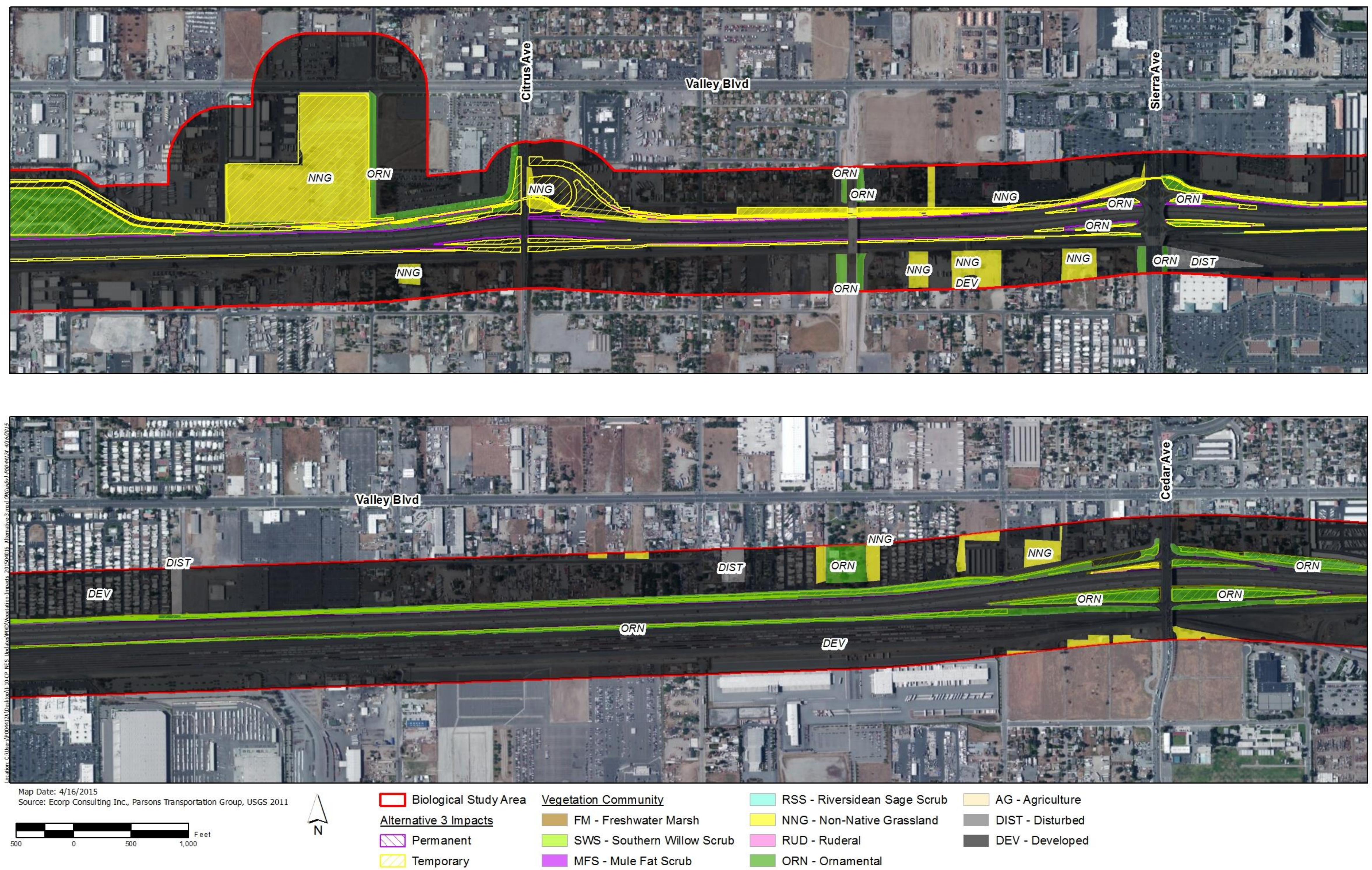

Figure 3.3.1-1 Vegetation Communities and Impacts (Sheets 5A and 5B)

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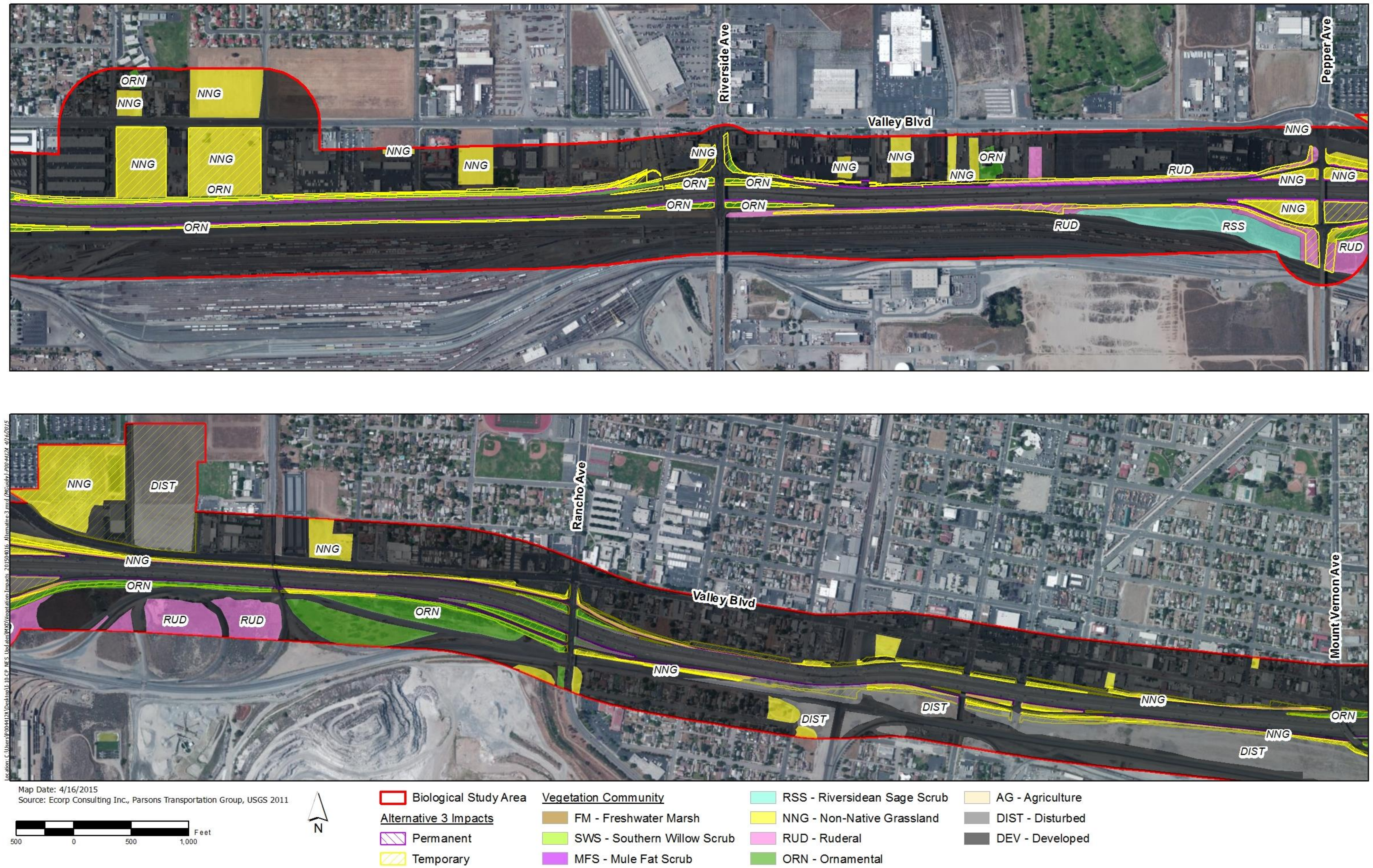

Figure 3.3.1-1 Vegetation Communities and Impacts (Sheets 6A and 6B)

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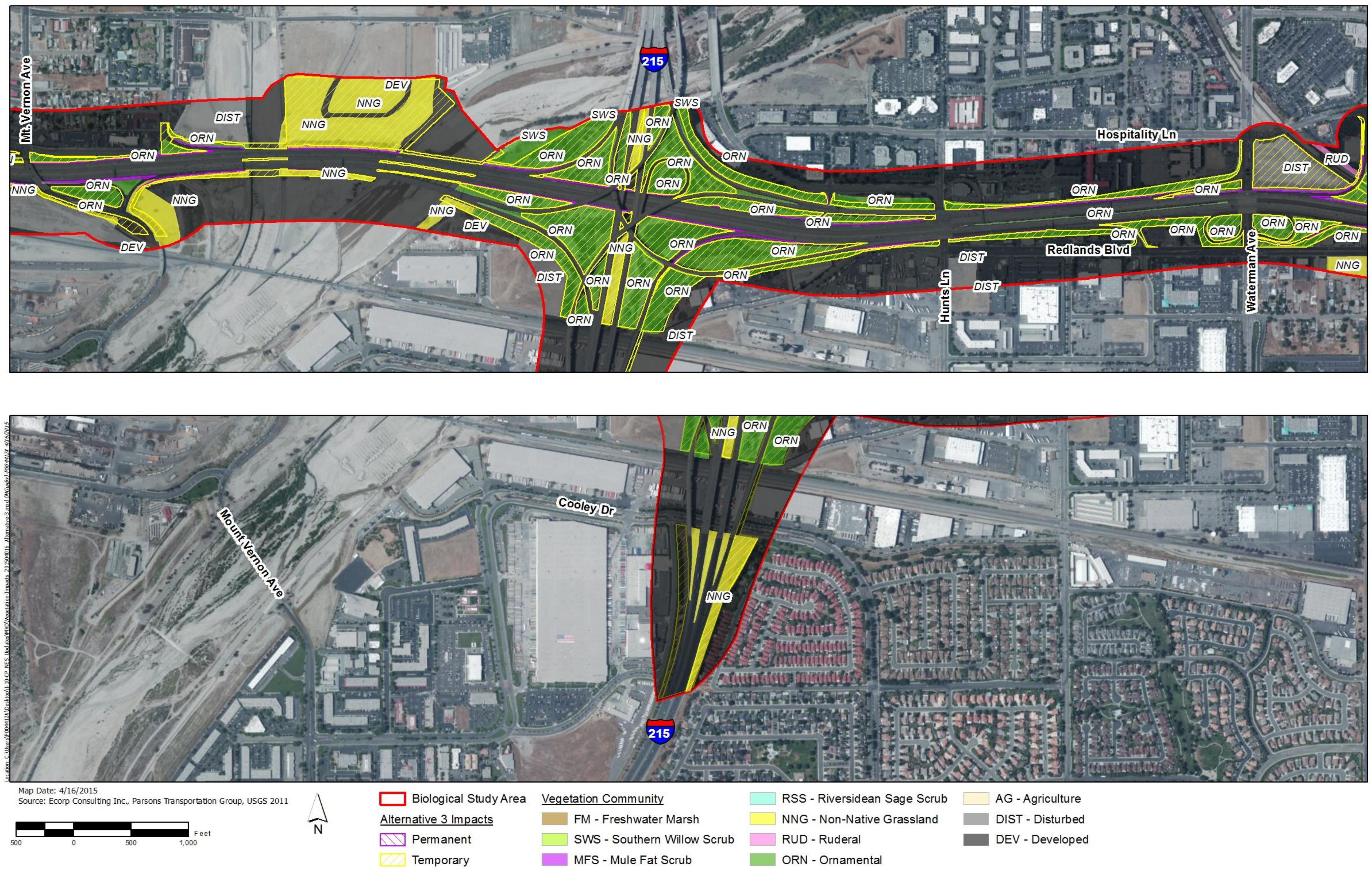

Figure 3.3.1-1 Vegetation Communities and Impacts (Sheets 7A and 7B)

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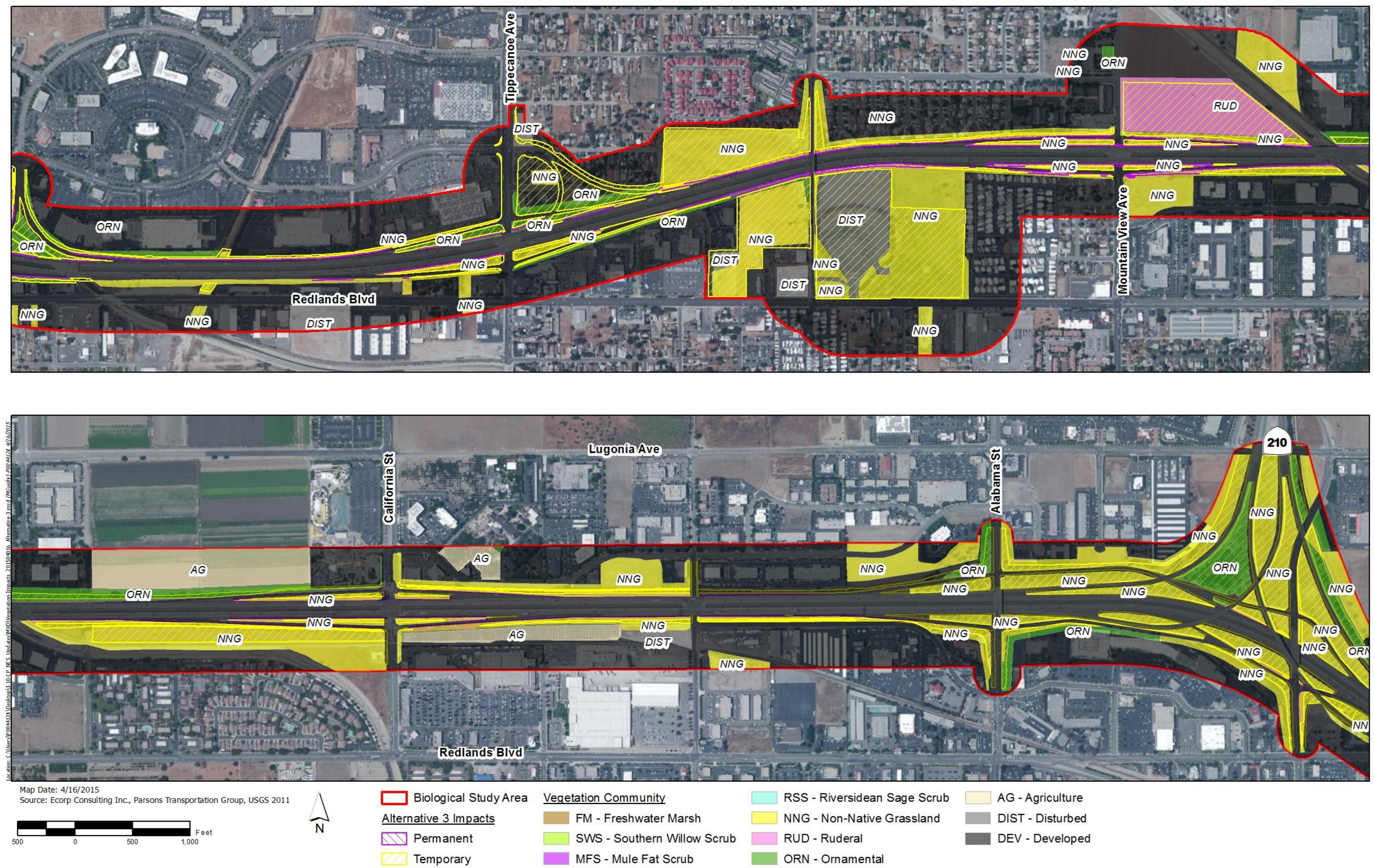

Figure 3.3.1-1 Vegetation Communities and Impacts (Sheets 8A and 8B)

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Figure 3.3.1-1 Vegetation Communities and Impacts (Sheets 9A and 9B)

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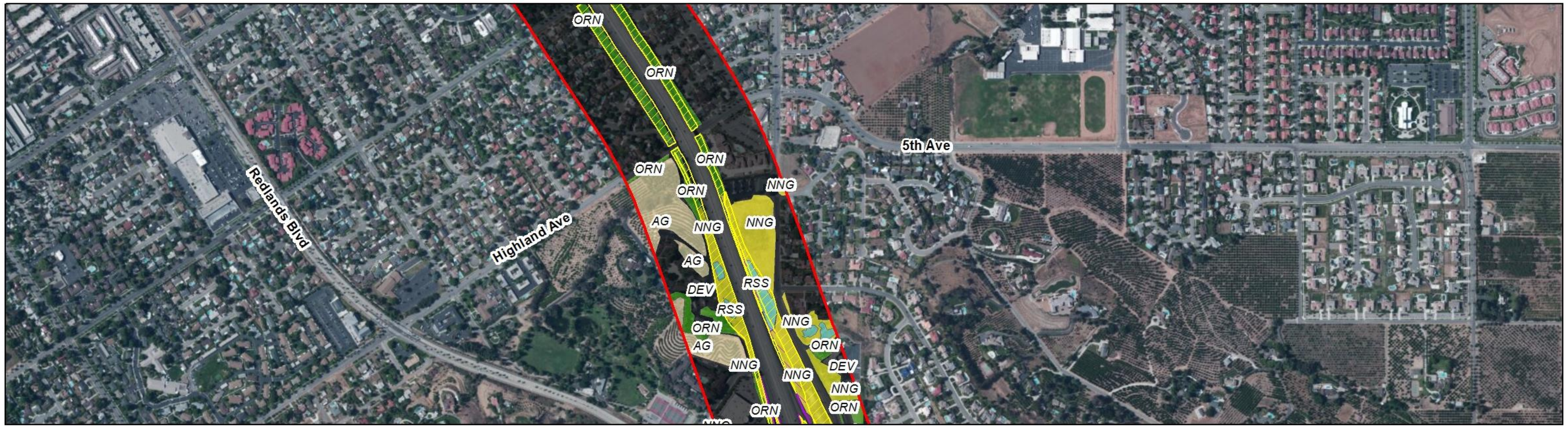

Map Date: 4/16/2015
Source: Ecorp Consulting Inc., Parsons Transportation Group, USGS 2011

500 0 500 1,000 Feet

N

Biological Study Area

Alternative 3 Impacts
- Permanent
- Temporary

Vegetation Community
- FM - Freshwater Marsh
- SWS - Southern Willow Scrub
- MFS - Mule Fat Scrub
- RSS - Riversidean Sage Scrub
- NNG - Non-Native Grassland
- RUD - Ruderal
- ORN - Ornamental
- AG - Agriculture
- DIST - Disturbed
- DEV - Developed

Figure 3.3.1-1 Vegetation Communities and Impacts (Sheets 10A and 10B)

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3.3.1.2 Environmental Consequences

Permanent Impacts

No Build Alternative

The No Build Alternative does not propose any construction or other disturbance in the BSA; therefore, this alternative would not result in permanent impacts to natural communities.

Build Alternatives

Natural Communities of Special Concern

Most of the mapped riparian and RSS plant communities are outside of proposed project impact areas. Based on current project designs, there would be no permanent impact to riparian and other wetland habitat associated with the project for either alternative. The area of permanent impact of RSS habitat was calculated to be 0.23 acre for Alternative 2 and 0.25 acre for Alternative 3. Within the BSA, ESAs will be designated to include all riparian vegetation communities and RSS vegetation not identified as temporarily or permanently impacted. Furthermore, the Santa Ana River, Warm Creek Channel, and other Waters of the U.S. and Waters of the State within the BSA that are not identified as temporarily or permanently impacted will be designated as ESAs.

Vegetation Communities

Vegetation communities that would be permanently impacted within the BSA are summarized in Table 3.3.1-2.

Table 3.3.1-2 Permanent Impacts to Vegetation Communities by Alternative

Vegetation Community	Permanent Impact Area (Acres)	
	Alternative 2	Alternative 3 (Preferred Alternative)
Freshwater Marsh	0.00	0.00
Southern Willow Scrub	0.005	0.005
Mule Fat Scrub	0.00	0.00
Riversidean Sage Scrub	0.23	0.25
Non-native Grassland	10.83	36.83
Ruderal	0.63	2.35
Ornamental	9.61	56.15
Agriculture	0.00	0.00
Disturbed	2.36	6.05
Developed	11.19	48.54
Total	**34.855**	**150.175**

Source: Parsons, 2015.

Habitat Connectivity

Given the high level of existing development within the BSA, minimal opportunity for regional wildlife movement across I-10, and no recognized wildlife corridors occurring in the study area, no permanent impacts to wildlife movement are anticipated to result from either of the build alternatives.

Temporary/Construction Impacts

No Build Alternative

The No Build Alternative does not propose any construction or other disturbance in the BSA; therefore, this alternative would not result in temporary impacts to natural communities.

Build Alternatives

Natural Communities of Special Concern

For both build alternatives, there would be temporary impacts to riparian plant communities, including southern willow scrub and mule fat scrub, as detailed in Table 3.3.1-3. In addition, 2.85 acres of RSS habitat would be temporarily impacted by both Alternatives 2 and 3.

Table 3.3.1-3 Temporary Impacts to Riparian Vegetation Communities by Alternative

Vegetation Communities	Temporary Impact Area (Acres)	
	Alternative 2	Alternative 3 (Preferred Alternative)
Freshwater Marsh	0.00	0.00
Southern Willow Scrub	0.06	0.08
Mule Fat Scrub	0.96	0.96
Total	**1.02**	**1.04**

Source: Parsons, 2015.

As discussed in Section 3.3.2, Wetlands and Other Waters, to offset impacts to jurisdictional resources and riparian vegetation communities, the San Bernardino County Transportation Authority (SBCTA) will compensate for impacts by purchase of mitigation credits from a mitigation bank or in-lieu fee program at a minimum 1:1 impact to mitigation ratio.

Vegetation Communities

Vegetation communities that would be temporarily impacted within the BSA are summarized in Table 3.3.1-4.

Table 3.3.1-4 Temporary Impacts to Vegetation Communities by Alternative

Vegetation Community	Temporary Impact Area (Acres)	
	Alternative 2	Alternative 3 (Preferred Alternative)
Freshwater Marsh	0.00	0.00
Southern Willow Scrub	0.06	0.08
Mule Fat Scrub	0.96	0.96
Riversidean Sage Scrub	2.85	2.85
Non-native Grassland	263.98	267.30
Ruderal	17.82	17.82
Ornamental	150.81	193.68
Agriculture	0.00	0.00
Disturbed	75.04	84.88
Developed	88.77	158.67
Total	**600.29**	**726.24**

Source: Parsons, 2015.

Habitat Connectivity

Given the high level of existing development within the BSA, minimal opportunity for regional wildlife movement across I-10, and no recognized wildlife corridors occurring in the study area, no temporary impacts to wildlife movement are anticipated to result from either of the build alternatives.

3.3.1.3 Avoidance, Minimization, and/or Mitigation Measures

Measures will be implemented under SBCTA and Caltrans oversight. Any changes would require SBCTA and Caltrans approvals.

NC-1: SBCTA's Design Engineer will coordinate with the qualified biologist to delineate all ESAs within the project footprint and immediately surrounding areas in the project specifications. ESAs include riparian vegetation communities and Riversidean sage scrub vegetation within the Santa Ana River and Warm Creek Channel that are not identified as temporarily or permanently impacted in the environmental document.

Prior to clearing vegetation or construction within or adjacent to ESAs, the Contractor will install highly visible barriers (e.g., orange construction fencing) adjacent to the project footprint to designate

ESAs to be preserved in place. No grading or fill activity of any type will be permitted within these ESAs. In addition, no construction activities, materials, or equipment will be allowed within the ESAs. All construction equipment will be operated in a manner to prevent accidental damage to nearby ESAs. No structure of any kind, or incidental storage of equipment or supplies, will be allowed within the ESAs. Silt fence barriers will be installed at the ESA boundaries to prevent accidental deposition of fill material in areas where vegetation is adjacent to planned grading activities. The ESA fencing will conform to the provisions of Section 14-1.03 “Type ESA Temporary Fence,” of Caltrans’ 2010 Standard Specifications and Special Provisions. A qualified biologist will supervise the placement of ESA fencing.

NC-2: Prior to the completion of construction, the Resident Engineer will require the Contractor to hydroseed and/or plant container plants to restore temporarily impacted vegetation communities with appropriate native plant species that are approved by the Caltrans District 8 Biologist. Plant species used in the seeding or plantings should be similar to what was present in each area prior to the impact unless prohibited by Measures VA-17, VA-34, and VA-35.

3.3.2 Wetlands and Other Waters

3.3.2.1 Regulatory Setting

Clean Water Act: Section 404

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

Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE) with oversight by the U.S. Environmental Protection Agency (EPA).

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

Ordinarily, projects that do not meet the criteria for an NWP may be permitted under one of USACE's Standard permits. There are two types of Standard permits: Individual permits and Letters of Permission. For Standard permits, the USACE decision to approve is based on compliance with EPA's Section 404(b)(1) Guidelines (EPA 40 *Code of Federal Regulations* [CFR] Part 230), and whether permit approval is in the public interest. The Section 404 (b)(1) Guidelines (Guidelines) were developed by 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 lesser effects on Waters of the U.S., and not have any other significant adverse environmental consequences.

As discussed below, waters found to be isolated and not subject to CWA regulation are often still regulated by the Regional Water Quality Control Board (RWQCB) under the State Porter–Cologne Water Quality Control Act (Porter–Cologne Act).

Executive Order 11990: Protection of Wetlands

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

Waters of the State

At the state level, wetlands and waters are regulated primarily by the State Water Resources Control Board (SWRCB), the RWQCBs, and the California Department of Fish and Wildlife (CDFW).

Clean Water Act: Section 401

RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. RWQCBs have regulatory authority over Waters of the U.S. pursuant to CWA Section 401 and Waters of the State pursuant to the Porter–Cologne Act. USACE cannot issue authorization for fill or discharge into Waters of the U.S. without a Certification of Water Quality from the RWQCB. Isolated non-navigable waters and wetlands excluded from USACE jurisdiction are also subject to RWQCB authority as Waters of the State, and any discharge of waste (the RWQCB considers fill to be waste) may require a Report of Waste Discharge and may be subject to Waste Discharge Requirements (WDRs) by the RWQCB.

The RWQCB can require mitigation measures beyond those required by USACE or CDFW; however, typically the mitigation proposed to satisfy USACE and CDFW meets RWQCB requirements to offset impacts to water quality.

California Fish and Game Code: Section 1602

State of California Fish and Game Code Section 1602 requires any person, state, or local government agency, or public utility proposing a project that may affect a river, stream, or lake to notify CDFW before beginning the project. If activities will result in the diversion or obstruction of the natural flow of a stream; substantially alter its bed, channel, or bank; impact riparian vegetation; or adversely affect existing fish and wildlife resources, then a Streambed Alteration Agreement is required.

A Streambed Alteration Agreement lists the CDFW conditions of approval relative to the project, and it serves as an agreement between an applicant and CDFW for a term of not more than 5 years for the performance of activities subject to this section. A CDFW Streambed Alteration Notification (SAN) is required for all activities potentially affecting streambeds and/or their associated riparian habitats. Subsequently, implementation of the project may require a 1602 Streambed Alteration Agreement if these areas are determined to be jurisdictional by CDFW. A Streambed Alteration Agreement will be required for potential impacts to drainages within the study area.

3.3.2.2 Affected Environment

This section discusses wetlands and other waters and summarizes the *Jurisdictional Delineation Report* (JD) completed in September 2016 and the *Natural Environment Study* (NES) completed in December 2015.

A delineation of jurisdictional waters and wetlands within the Biological Study Area (BSA) was conducted in accordance with regulations set forth in 33 CFR Part 328 and the USACE guidance documents as referenced in the NES and JD.

During the jurisdictional delineation, several drainage features, including potential wetlands, were identified within the project study area. The JD was reviewed by the San Bernardino County Transportation Authority (SBCTA) and Caltrans, and it was submitted to USACE along with a request for a combined Approved Jurisdictional Delineation (AJD) and Preliminary Jurisdictional Delineation (PJD) for the project in March 2014. In June 2015, USACE staff provided the project with a formal response, which included guidance regarding the jurisdictional classification of each feature and whether certain features identified within the BSA are considered Waters of the U.S. Furthermore, USACE requested the preparation of separate PJD and AJD reports for the project, as opposed to the combined AJD/PJD approach that was previously submitted in March 2014. Based on guidance provided by USACE, Caltrans prepared and submitted separate PJD and AJD reports to USACE on September 29, 2016.

Jurisdictional waters identified in both reports and in this Final EIR/EIS are considered preliminary until USACE issues concurrence on both the PJD and AJD. Further coordination with USACE regarding the Jurisdictional Determination will continue during the design-build phase.

The final determination of the limits of the jurisdictional areas within the BSA and whether mitigation will be required for such impacts is ultimately subject to the discretion of the agencies (i.e., CDFW, USACE, and RWQCB) during the federal and State regulatory permitting processes. Before construction for the proposed project begins, the following permits must be obtained or determined not applicable by Caltrans through additional coordination with the applicable federal and State resource agencies: Section 404 NWP 14 authorization from USACE (Linear Transportation Projects), Section 401 Water Quality Certification from RWQCB, and Section 1602 Streambed Alteration Agreement from CDFW. Measures to address unavoidable impacts will be negotiated with resource agencies and incorporated into the environmental commitments record for the project before construction begins.

Jurisdictional Delineation Methodology

Prior to the field visit, a 200-scale (1 inch = 200 feet) aerial photograph and applicable United States Geological Survey (USGS) 7.5-minute topographic quadrangle maps (Ontario, Guasti, Fontana, San Bernardino South, and Redlands, California) were reviewed and compared to identify potential drainage features within the BSA. The National Wetland Inventory (NWI) was also reviewed to identify any documented wetlands within the BSA. It should be noted that there is no NWI data for the Fontana, San Bernardino South, and Redlands quadrangles. In addition, the United States Department of Agriculture (USDA) Soil Survey Map was reviewed to determine soil series that occur within and adjacent to the BSA.

The unified federal method, as defined by USACE using methodology outlined in the Corps of Engineers Wetlands Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Arid West Region Supplement Version 2.0) was used to delineate the jurisdictional areas. The boundaries of potential Waters of the U.S. were delineated through a field determination, made in conjunction with aerial photograph interpretation. Tools used during the jurisdictional delineation fieldwork included a Trimble GeoXT Handheld global positioning system (GPS) unit, shovel, Munsell color chart, and digital camera.

The field surveys were conducted in January 2013 by walking the study corridor limits to determine the location and extent of potential Waters of the U.S. and Waters of the State. For areas suspected of being a wetland, paired sample points were taken. One sample point was collected within the potential wetland area, while the other was located within the nearby upland area. The total area of the potential waters within the study corridor was recorded in the field using a post-processing capable GPS unit with sub-meter accuracy (Trimble GeoXT). All potentially jurisdictional features within the BSA and immediate vicinity were systematically inspected to record existing conditions and to determine the jurisdictional limits of waters and wetlands within the BSA. Although many of the drainages were fenced off, access was sufficient to gather pertinent data regarding existing conditions. The apparent flow regimes and corresponding hydrogeomorphic features were subsequently identified.

Measurements were entered into Geographic Information System (GIS) ArcView software to identify the location and dimensions of potential jurisdictional areas. The GIS ArcView application was then used to compute federal and State jurisdictional acreages located within the BSA. Acreage computations were verified using a 200-scale aerial photograph and field data.

Jurisdictional delineators based their field interpretation of the boundaries of jurisdictional areas on guidelines contained within the references cited above. Waters of the U.S. that may be regulated by USACE under Section 404 of the CWA include traditionally navigable waters, other Waters of the U.S., and wetlands. Wetlands are a subset of Waters of the U.S. that meet specific vegetative, soil, and hydrologic criteria.

USACE Jurisdiction

Within the BSA, 30 features were determined to be jurisdictional Waters of the U.S., as set forth in 33 CFR 328.33(a). These features within the Interstate 10 Corridor Project (I-10 CP) BSA are under the jurisdiction of USACE because they are associated with historic, named drainage features, and/or convey substantial flows through the BSA, ultimately leading to the Santa Ana River and to Traditional Navigable Waterways (TNW). As summarized in Table 3.3.2-1, 158.01 acres of non-wetland waters and 0.35 acre of wetland waters occur within the BSA.

Table 3.3.2-1 USACE Jurisdictional Areas

Geomorphic Feature	USACE Jurisdiction			Type of Feature
	Non-wetland Waters Acres	Non-wetland Waters LF	Wetland Waters Acres (LF)	
(1) San Antonio Creek Channel	1.00	1,104	0.00 (0)	RPW/Intermittent/Perennial
(2)	6.18	370	0.00 (0)	Non-RPW/Ephemeral
(3)	1.08	386	0.28 (256)	Non-RPW/Ephemeral
(5)	1.12	5,052	0.00 (0)	Non-RPW/Ephemeral
(7) West Cucamonga Channel	3.53	2,031	0.00 (0)	Non-RPW/Ephemeral
(9) Cucamonga Creek Channel	10.22	1,162	0.00 (0)	RPW/Intermittent/Perennial
(10)	0.18	1,126	0.00 (0)	Non-RPW/Ephemeral
(12) Lower Deer Creek Channel	0.15	449	0.00 (0)	Non-RPW/Ephemeral
(14)	0.70	1,907	0.00 (0)	Non-RPW/Ephemeral
(15)	0.12	795	0.00 (0)	Non-RPW/Ephemeral
(16) Day Creek Channel	0.85	1,065	0.00 (0)	RPW/Intermittent/Perennial
(18)	0.12	417	0.04 (106)	RPW/Intermittent/Perennial
(19) Lower Etiwanda Creek Channel	1.39	1,289	0.00 (0)	Non-RPW/Ephemeral
(20) San Sevaine Creek Channel	7.00	1,105	0.00 (0)	Non-RPW/Ephemeral
(21) I-10 Channel	13.52	25,936	0.00 (0)	Non-RPW/Ephemeral
(22)	0.04	416	0.00 (0)	Non-RPW/Ephemeral
(23)	0.23	558	0.00 (0)	Non-RPW/Ephemeral
(24) Rialto Tributary	5.68	15,975	0.00 (0)	Non-RPW/Ephemeral
(25) Rialto Creek Channel	5.58	1,056	0.00 (0)	Non-RPW/Ephemeral
(32)	0.03	408	0.00 (0)	Non-RPW/Ephemeral
(34)	0.02	306	0.03 (206)	Non-RPW/Ephemeral
(35) Warm Creek Channel	17.08	1,077	0.00 (0)	RPW/Intermittent/Perennial
(36) Santa Ana River Channel	56.22	1,378	0.00 (0)	TNW/Intermittent/Perennial
(38) San Timoteo Creek Channel	14.35	2,505	0.00 (0)	RPW/Intermittent/Perennial
(40) Mission Creek Channel	7.80	4,626	0.00 (0)	RPW/Intermittent/Perennial
(46) Zanja Creek Channel	1.21	1,479	0.00 (0)	RPW/Intermittent/Perennial
(47)	0.38	3,990	0.00 (0)	Non-RPW/Ephemeral
(50)	0.04	256	0.00 (0)	Non-RPW/Ephemeral
(51)	2.18	1,842	0.00 (0)	Non-RPW/Ephemeral
(52)	0.01	191	0.00 (0)	Non-RPW/Ephemeral
Total	**158.01**	**80,257**	**0.35 (568)**	

LF = linear feet; RPW = Relatively Permanent Waters

RWQCB and CDFW Jurisdiction

RWQCB/CDFW jurisdiction includes the entirety of the 30 USACE jurisdictional features cited above. An additional 22 features, for a total of 52 features, were found to be non-jurisdictional to USACE because they exhibit no ordinary high water mark, are constructed within uplands outside of historic drainage courses, and do not convey flows between Waters of the U.S.; however, these features are thought to be jurisdictional to RWQCB and CDFW. In general, RWQCB/CDFW jurisdiction for the larger features with trapezoidal sides is considered to include the entire bank-to-bank width, whereas the USACE jurisdictional boundary includes the main channel only and not the entire width at the top of the bank.

As summarized in Table 3.3.2-2, the total acreage and linear feet of RWQCB/CDFW jurisdiction for the BSA totals 169.98 acres and 124,756 linear feet of channel and features.

Table 3.3.2-2 Potential CDFW and RWQCB Jurisdictional Areas

Geomorphic Feature Number	Total Potential Area		Type of Feature
	Acres	Linear Feet (LF)	
(1) San Antonio Creek Channel	1.00	1,104	RPW/Intermittent/Perennial
(2)	6.18	370	Non-RPW/Ephemeral
(3)	1.36	386	Non-RPW/Ephemeral
(4)	0.21	898	Non-RPW/Ephemeral
(5)	1.12	5,052	Non-RPW/Ephemeral
(6)	0.48	4,095	Non-RPW/Ephemeral
(7) West Cucamonga Channel	3.53	2,031	Non-RPW/Ephemeral
(8)	0.07	709	Non-RPW/Ephemeral
(9) Cucamonga Creek Channel	10.22	1,162	RPW/Intermittent/Perennial
(10)	0.18	1,126	Non-RPW/Ephemeral
(11)	0.07	962	Non-RPW/Ephemeral
(12) Lower Deer Creek Channel	0.15	449	Non-RPW/Ephemeral
(13)	0.27	1,128	Non-RPW/Ephemeral
(14)	0.70	1,907	Non-RPW/Ephemeral
(15)	0.12	795	Non-RPW/Ephemeral
(16) Day Creek Channel	0.85	1,065	RPW/Intermittent/Perennial
(17)	0.15	3,194	Non-RPW/Ephemeral
(18)	0.16	492	RPW/Intermittent/Perennial
(19) Lower Etiwanda Creek Channel	1.39	1,289	Non-RPW/Ephemeral

Table 3.3.2-2 Potential CDFW and RWQCB Jurisdictional Areas

Geomorphic Feature Number	Total Potential Area		Type of Feature
	Acres	Linear Feet (LF)	
(20) San Sevaine Creek Channel	7.00	1,105	Non-RPW/Ephemeral
(21) I-10 Channel	13.51	25,936	Non-RPW/Ephemeral
(22)	0.04	416	Non-RPW/Ephemeral
(23)	0.23	558	Non-RPW/Ephemeral
(24) Rialto Tributary	5.68	15,975	Non-RPW/Ephemeral
(25) Rialto Creek Channel	5.58	1,056	Non-RPW/Ephemeral
(26)	0.02	973	Non-RPW/Ephemeral
(27)	0.02	908	Non-RPW/Ephemeral
(28)	0.03	478	Non-RPW/Ephemeral
(29)	0.01	582	Non-RPW/Ephemeral
(30)	0.01	88	Non-RPW/Ephemeral
(31)	0.01	89	Non-RPW/Ephemeral
(32)	0.03	408	Non-RPW/Ephemeral
(33)	0.09	495	Non-RPW/Ephemeral
(34)	0.05	592	Non-RPW/Ephemeral
(35) Warm Creek Channel	17.08	1,077	RPW/Intermittent/Perennial
(36) Santa Ana River Channel	56.22	1,378	RPW/Intermittent/Perennial
(37)	0.06	505	Non-RPW/Ephemeral
(38) San Timoteo Creek Channel	14.35	2,505	RPW/Intermittent/Perennial
(39)	4.33	10,935	Non-RPW/Ephemeral
(40) Mission Creek Channel	7.80	4,626	RPW/Intermittent/Perennial
(41)	1.69	8,497	Non-RPW/Ephemeral
(42)	0.57	5,040	Non-RPW/Ephemeral
(43)	0.01	25	Non-RPW/Ephemeral
(44)	3.43	3,166	Non-RPW/Ephemeral
(45)	0.04	573	Non-RPW/Ephemeral
(46) Zanja Creek Channel	1.21	1,479	RPW/Intermittent/Perennial
(47)	0.37	3,990	Non-RPW/Ephemeral
(48)	0.04	448	Non-RPW/Ephemeral
(49)	0.03	350	Non-RPW/Ephemeral
(50)	0.04	256	Non-RPW/Ephemeral
(51)	2.18	1,842	Non-RPW/Ephemeral
(52)	0.01	191	Non-RPW/Ephemeral
Total	**169.98**	**124,756**	

Regulatory Approvals

Before construction activities begin for the proposed project, the following approvals/ permits must be obtained or determined not applicable by Caltrans through additional coordination with the applicable federal and State resource agencies:

- USACE NWP pursuant to CWA Section 404; and RWQCB 401 Water Quality Certification pursuant to CWA Section 401.
- Streambed Alteration Agreement pursuant to California Fish and Game Code Section 1602; and
- USFWS Biological Opinion and take authorization pursuant to the Federal Endangered Species Act (FESA).

The jurisdictional areas and impacts for Alternatives 2 and 3 are shown in Appendix B of the JD. The limits of jurisdictional waters and potential impacts will be verified with the regulatory agencies as part of the permitting processes described above.

3.3.2.3 Environmental Consequences

Permanent Impacts

No Build Alternative

The No Build Alternative does not propose any construction or other disturbance in the BSA; therefore, this alternative would not result in permanent impacts to wetlands or other jurisdictional waters.

Build Alternatives

USACE Jurisdiction

On August 27, 2014, a preliminary coordination meeting was conducted onsite with Veronica Chan of USACE to discuss the results of the jurisdictional delineation. As a result of this meeting, it was concluded that impacts to concrete channels that were to remain concrete would be considered temporary impacts, assuming hydrologic connectivity is maintained. It was determined that areas supporting wetland features that were concrete lined would not be considered wetlands because they do not meet all three of the wetland parameters as discussed above in Section 3.3.2.1.

With the exception of two features (Features 19 and 52), most of the USACE jurisdictional waters being impacted consist of previously constructed concrete drainage channels, v-ditches, concrete channels, and other man-made features. As discussed above, impacts to concrete-lined features would be considered temporary, as long as connectivity to the earthen-bottom upstream and downstream waters remains the same.

As such, based on preliminary engineering, Alternative 2 would result in 0.07 acre of permanent impacts. Alternative 3 would result in 0.09 acre of permanent impacts to waters pursuant to USACE jurisdiction, as summarized in Table 3.3.2-4.

After circulation of the Draft EIR/EIS, as well as various design changes, permanent impacts to jurisdictional waters in the area remained less than 0.5 acre. As such, an individual permit from USACE is not required, and the project is not subject to Section 404(b)(1) conditions. Therefore, a LEDPA analysis is not required as part of this final environmental document, and decision to select Alternative 3 as the Preferred Alternative does not require concurrence from USACE.

CDFW and RWQCB Jurisdiction

Based on preliminary engineering, Alternative 2 would result in 0.07 acre of permanent impacts. Alternative 3 would result in 0.09 acre of permanent impacts to waters pursuant to CDFW and RWQCB jurisdiction, as summarized in Table 3.3.2-3.

Table 3.3.2-3 Potential CDFW and RWQCB Jurisdictional Area Impacts

Geomorphic Feature Number	Alternative 2 Impacts (Acres)		Alternative 3 (Preferred Alternative) Impacts (Acres)	
	Temporary	Permanent	Temporary	Permanent
(4)	0.00	0.00	0.21	0.00
(5)	0.00	0.00	0.01	0.00
(8)	0.00	0.00	0.07	0.00
(9) Cucamonga Creek Channel	0.00	0.00	0.02	0.00
(11)	0.00	0.00	0.01	0.00
(12) Lower Deer Creek Channel	0.00	0.00	0.01	0.00
(13)	0.00	0.00	0.27	0.00
(19) Lower Etiwanda Creek Channel	0.00	0.06	0.00	0.08
(21) I-10 Channel	0.35	0.00	8.77	0.00
(24) Rialto Tributary	0.00	0.00	3.39	0.00
(27)	0.02	0.00	0.02	0.00
(28)	0.03	0.00	0.03	0.00
(29)	0.01	0.00	0.01	0.00
(30)	0.00	0.00	0.01	0.00
(31)	0.01	0.00	0.01	0.00
(35) Warm Creek Channel	0.02	0.00	0.05	0.00
(36) Santa Ana River Channel	0.06	0.00	0.13	0.00

Table 3.3.2-3 Potential CDFW and RWQCB Jurisdictional Area Impacts

Geomorphic Feature Number	Alternative 2 Impacts (Acres)		Alternative 3 (Preferred Alternative) Impacts (Acres)	
	Temporary	Permanent	Temporary	Permanent
(38) San Timoteo Creek Channel	0.01	0.00	0.01	0.00
(39)	1.33	0.00	3.59	0.00
(40) Mission Creek Channel	0.02	0.00	0.03	0.00
(41)	0.00	0.00	0.16	0.00
(52)	0.00	0.01	0.00	0.01
Total	**1.86**	**0.07**	**16.81**	**0.09**

Temporary/Construction Impacts

No Build Alternative

The No Build Alternative does not propose any construction or other disturbance in the BSA; therefore, this alternative would not result in temporary impacts to wetlands or other jurisdictional waters.

Build Alternatives

Temporary impacts include physical impacts from construction that would cease once construction is complete. Temporary impacts would include access to and within the construction area, and areas for storage and staging of construction equipment. In addition, several concrete-lined jurisdictional features would be demolished and reconstructed as needed to accommodate the project improvements. Temporary impacts would not result in the permanent loss of jurisdictional acreage or permanent loss of function or value of these areas. The affected jurisdictional features would be restored to their approximate original contours, hydrologic regime, and vegetation cover (if any).

USACE Jurisdiction

Based on preliminary engineering, Alternative 2 would result in 0.46 acres of temporary impacts to USACE jurisdictional areas, and Alternative 3 would result in 12.42 acres of temporary impacts. Potential impacts for each of the build alternatives are provided in Table 3.3.2-4.

Table 3.3.2-4 Potential USACE Jurisdictional Area Impacts

Geomorphic Feature	Alternative 2 Impacts (Acres)		Alternative 3 (Preferred Alternative) Impacts (Acres)	
	Temporary	Permanent	Temporary	Permanent
(5)	0.00	0.00	0.01	0.00
(9) Cucamonga Creek Channel	0.00	0.00	0.02	0.00
(12) Lower Deer Creek Channel	0.00	0.00	0.01	0.00
(19) Lower Etiwanda Creek Channel	0.00	0.06	0.00	0.08
(21) I-10 Channel	0.35	0.00	8.77	0.00
(24) Rialto Tributary	2.76	0.00	3.39	0.00
(35) Warm Creek Channel	0.02	0.00	0.05	0.00
(36) Santa Ana River Channel	0.06	0.00	0.13	0.00
(38) San Timoteo Creek Channel	0.01	0.00	0.01	0.00
(40) Mission Creek Channel	0.02	0.00	0.03	0.00
(52)	0.00	0.01	0.00	0.01
Total	**0.46**	**0.07**	**12.42**	**0.09**

CDFW and RWQCB Jurisdiction

Alternative 2 would result in 1.86 acres of temporary impacts, and Alternative 3 would result in 16.81 acres of temporary impacts to waters pursuant to CDFW and RWQCB jurisdiction.

3.3.2.4 Avoidance, Minimization, and /or Mitigation Measures

Impacts to Waters of the U.S. and Waters of the State have been avoided to the greatest extent practicable during project design. A key component to the project's avoidance and minimization of impacts to jurisdictional waters includes the August 27, 2014, meeting between the project team and USACE staff Veronica Chan to review potential jurisdictional waters within the BSA. Based on information from that meeting, the project design team was able to adjust the design for each of the build alternatives to avoid impacts to the extent feasible. Please see Chapter 5 for more information related to agency coordination.

Additional measures related to water quality and stormwater runoff are provided in Section 3.2.2.

Measures will be implemented under SBCTA and Caltrans oversight. Any changes would require SBCTA and Caltrans approvals. The following measures are being proposed to reduce and minimize impacts:

WET-1: The Design Engineer will coordinate with the qualified biologist to delineate all environmentally sensitive areas (ESAs) within the project footprint and immediately surrounding areas in the project specifications. ESAs will include the Santa Ana River, Warm Creek Channel, and other Waters of the U.S. and Waters of the State that are not identified as temporarily or permanently impacted in the environmental document.

Prior to clearing vegetation or construction within or adjacent to ESAs, the Contractor will be required to install highly visible barriers (e.g., orange construction fencing) adjacent to the project footprint to designate ESAs to be preserved in place. No grading or fill activity of any type will be permitted within these ESAs. In addition, no construction activities, materials, or equipment will be allowed within the ESAs. All construction equipment will be operated in a manner to prevent accidental damage to nearby ESAs. No structure of any kind, or incidental storage of equipment or supplies, will be allowed within the ESAs. Silt fence barriers will be installed at the ESA boundaries to prevent accidental deposition of fill material in areas where vegetation is adjacent to planned grading activities. The ESA fencing will conform to the provision of Section 14-1.03 "Type ESA Temporary Fence" of the California Department of Transportation's 2010 Standard Specifications and Special Provisions. A qualified biologist will supervise the placement of ESA fencing.

WET-2: A Storm Water Pollution Prevention Plan (SWPPP) will be prepared and implemented for the project, which will include all applicable water pollution control measures for the project. In addition, construction activities within the Santa Ana River will be designed and conducted to maintain downstream flow conditions. All construction activities will be effectively isolated from water flows to the greatest extent feasible. This may be accomplished by working in the dry season or dewatering the work area in the wet season. When work in standing or flowing water is required, structures for isolating the in-water work area and/or diverting the water flow must not be removed until all disturbed areas are cleaned and stabilized. The diverted water flow must not be contaminated by construction activities. Structures used to isolate the in-water work area and/or diverting the water flow (e.g., coffer dam, geotextile silt curtain) must not be removed until all disturbed areas are stabilized.

WET-3: If groundwater dewatering is required for the project, the Applicant shall consult with the RWQCB to determine if additional permits are required. If additional RWQCB permits relating to dewatering are required, the designated RWQCB staff contact identified in this Certification must be notified and copied on pertinent correspondence pertaining to those other required permits.

When dewatering is necessary, the water must be pumped or channeled through a sediment settling or filtration device prior to return discharge to the water body. The enclosure and the supporting material for settling or filtration devices must be removed when the dewatering activity is completed. Removal must proceed from upstream to downstream when multiple devices are deployed. Construction plans and specifications for dewatering and nonstormwater construction BMPs for clearwater diversion and dewatering operations will be implemented.

3.3.2.5 Compensatory Mitigation

As part of the permitting processes discussed above in Section 3.3.2.2, the project will confirm compensatory mitigation requirements. Compensatory mitigation currently proposed is discussed in measures WET-4 and WET-5 below.

WET-4: Prior to the completion of construction, the Resident Engineer will require the Contractor to hydroseed or revegetate with container plants, temporarily impacted, earthen-bottom Waters of the U.S., Waters of the State, and other drainages with appropriate native plant species that are approved by the Caltrans District 8 Biologist. Plant species used in the seeding or plantings should be similar to what was present in each area prior to the impact. Specific revegetation criteria and plant establishment requirements may be required as part of the project's 401, 404, and 1602 permit conditions.

WET-5: To offset impacts to jurisdictional resources and riparian vegetation communities, compensation for impacts will be made by purchasing mitigation credits from a mitigation bank or in-lieu fee program at a minimum 1:1 impact to mitigation ratio, or as otherwise indicated in the project's 401, 404, and/or 1602 permits. SBCTA will be responsible for purchasing these credits.

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3.3.3 Plant Species

3.3.3.1 Regulatory Setting

The U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) have regulatory responsibility for the protection of special-status plant species. "Special-status" species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are provided varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species, which are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Please see Section 3.3.5, Threatened and Endangered Species, for detailed information about these species.

This section of the document discusses all of the other special-status plant species, including CDFW species of special concern, USFWS candidate species, and California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at 16 United States Code (U.S.C.), Section 1531, *et seq.* See also 50 *Code of Federal Regulations* (CFR) Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, *et seq.* California Department of Transportation (Caltrans) projects are also subject to the Native Plant Protection Act, found at Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act (CEQA), CA Public Resources Code (PRC), Sections 2100-21177.

3.3.3.2 Affected Environment

The analysis of the potential for the project to result in adverse impacts on special-status plant species is described in detail in the *Natural Environment Study* (NES) (December 2015). In developing the NES, the Biological Study Area (BSA) was surveyed by biologists to determine the extent of plant communities and assess the presence of suitable habitat for sensitive plant species. In addition, a rare plant assessment of the BSA was conducted during spring 2013 and summer 2016 to identify any rare plant species present within native habitat areas of the Santa Ana River, Warm Creek, and within other native habitats such as Riversidean sage scrub (RSS). The survey was conducted in all areas of potentially suitable habitat using meandering transects. Surveys were conducted during a period of below-average annual rainfall in southern California. Plant species were identified using the Jepson

Manual (Baldwin *et al.*,1993) along with other references such as the Flora of the Santa Ana River (Clarke, 2007). Any rare plants observed were mapped using hand-held global positioning system (GPS) units and mapped on project maps. The survey timing was established based on observations of reference populations within the vicinity of the BSA and at known population sites for the rare plant species with potential to occur within the BSA.

Additional surveys were conducted in June 2016 for sensitive plant species in and around the Santa Ana River and Warm Creek Channel area, per United States Department of the Interior (DOI) recommendation. Based on the findings of the survey, there is currently no suitable habitat or occurrence of any special-status plant species within the surveyed area.

As discussed in the NES, the literature reviews and database search of the Ontario, Guasti, Fontana, San Bernardino South, and Redlands quadrangles indicated that 14 special-status plant species potentially occur within the region. Five of the 14 special-status plant species are federal- and State-listed endangered species and are discussed further in Section 3.3.5, Threatened and Endangered Species.

The remaining special-status species identified in the literature review are considered special-status by CDFW, USFWS, local agencies, and/or special-interest groups (i.e. CNPS). Although not federally or State-listed, these species are perceived as having declining populations or local populations that are sparse, rapidly dwindling, or otherwise unstable. Table 3.3.3-1 includes a list of all remaining special-status plant species, their habitat descriptions, status, and potential for occurrence. Based on surveys conducted and the rationale discussed for each of the species in Table 3.3.3-1, there is no suitable habitat for any of these sensitive plant species within the BSA. These designations are based on their current distribution, habitat requirements, and information concerning land use within the vicinity of the BSA.

Table 3.3.3-1 Special-Status Plant Species Potential for Occurrence within BSA

Scientific Name/ Common Name	Status	General Habitat Description	Habitat Present (HP) or Absent (A)	Rationale
Calochortus plummerae Plummer's mariposa lily	CNPS 1B	Occurs in coastal scrub, chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland on alluvial or granitic, rocky or sandy soils. RSS not considered suitable habitat.	A	**Not likely to occur.** No suitable habitat within the BSA. A focused rare plant survey was conducted within native habitat areas of the Santa Ana River, Warm Creek, and within other native habitats such as RSS. Plummer's mariposa lily was not found during the survey.
Horkelia cuneata ssp. *puberula* Mesa horkelia	CNPS 1B	Coastal strand, closed-cone pine forest, foothill woodland, northern coastal scrub, chaparral, coastal sage scrub. RSS not considered suitable habitat.	A	**Not likely to occur.** No suitable habitat within the BSA. A focused rare plant survey was conducted within native habitat areas of the Santa Ana River, Warm Creek, and within other native habitats such as RSS. Mesa horkelia was not found during the survey.
Centromadia pungens ssp. *laevis* Smooth tarplant	CNPS 1B	Occurs in chenopod scrub, meadows and seeps, playas, riparian woodland, and valley and foothill grassland on alkaline soils.	A	**Not likely to occur.** No suitable habitat within the BSA.
Lepidium virginicum var. robinsonii Robinson's pepper-grass	CNPS 1B	Occurs in chaparral and coastal scrub; prefers dry soils and shrubland. RSS not considered suitable habitat.	A	**Not likely to occur.** No suitable habitat within the BSA. A focused rare plant survey was conducted within native habitat areas of the Santa Ana River, Warm Creek, and within other native habitats such as RSS. Robinson's pepper-grass was not found during the survey.
Symphyotrichum defoliatum San Bernardino aster	CNPS 1B	Grasslands and disturbed places.	A	**Not likely to occur.** No suitable habitat within the BSA.

Table 3.3.3-1 Special-Status Plant Species Potential for Occurrence within BSA

Scientific Name/ Common Name	Status	General Habitat Description	Habitat Present (HP) or Absent (A)	Rationale
Chorizanthe parryi var. parryi Parry's spineflower	CNPS 1B	Occurs in chaparral and coastal scrub in rocky/sandy openings. RSS not considered suitable habitat.	A	**Not likely to occur.** No suitable habitat within the BSA. A focused rare plant survey was conducted within native habitat areas of the Santa Ana River, Warm Creek, and within other native habitats such as RSS. Parry's spineflower was not found during the survey.
Helianthus nuttallii ssp. *parishii* Los Angeles sunflower	CNPS 1A	Coastal salt marsh, wetland-riparian.	A	**Not likely to occur.** No suitable habitat within the BSA.
Malacothamnus parishii Parish's bush-mallow	CNPS 1A	Chaparral, coastal sage scrub. RSS not considered suitable habitat.	A	**Not likely to occur.** No suitable habitat within the BSA. A focused rare plant survey was conducted within native habitat areas of the Santa Ana River, Warm Creek, and within other native habitats such as RSS. Parish's bush-mallow was not found during the survey.
Imperata brevifolia California satintail	CNPS 2	Wet areas and floodplains below 1,600-foot elevation. Widespread in California and the western U.S. Also occurs in Mexico.	A	**Not likely to occur.** No suitable habitat within the BSA.

STATUS CODES
California Native Plant Society (CNPS) Classifications
1A Plants Presumed Extinct in California
1B Plants Rare, Threatened, or Endangered in California and Elsewhere
2 Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
3 Plants About Which We Need More Information - A Review List
4 Plants of Limited Distribution - A Watch List

Source: Parsons, 2015.

3.3.3.3 Environmental Consequences

Permanent Impacts

No Build Alternative

The No Build Alternative does not propose any construction or other disturbance in the BSA; therefore, this alternative would not result in permanent impacts to special-status plant species.

Build Alternatives

Botanical surveys to establish the presence/absence of special-status plant species in the BSA were conducted during the appropriate blooming period in spring 2013. None of the nine special-status plant species were observed during the surveys; therefore, no permanent impacts to these special-status plants would occur as a result of the project.

Temporary/Construction Impacts

No Build Alternative

The No Build Alternative does not propose any construction or other disturbance in the BSA; therefore, this alternative would not result in temporary impacts to special-status plant species.

Build Alternatives

Botanical surveys to establish the presence/absence of special-status plant species in the BSA were conducted during the appropriate blooming period in spring 2013. None of the nine special-status plant species were observed during the surveys; therefore, no temporary impacts to these special-status plants would occur as a result of the project.

3.3.3.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are warranted because no special-status plant species occur in the BSA.

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3.3.4 Animal Species

This section discusses animal species with the potential to occur within the Biological Study Area (BSA) and summarizes the results of research and fieldwork conducted to date and the *Natural Environment Study* (NES), which was completed in December 2015.

3.3.4.1 Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service), and the California Department of Fish and Wildlife (CDFW) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal or state Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed in Section 3.3.5, Threatened and Endangered Species. All other special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NOAA Fisheries Service candidate species.

Federal laws and regulations relevant to wildlife include the following:

- National Environmental Policy Act (NEPA)
- Migratory Bird Treaty Act (MBTA)
- Fish and Wildlife Coordination Act

State laws and regulations relevant to wildlife include the following:

- California Environmental Quality Act (CEQA)
- Sections 1600 – 1603 of the California Fish and Game Code
- Section 4150 and 4152 of the California Fish and Game Code

3.3.4.2 Affected Environment

Thirty-three (33) special-status wildlife species are reported to occur within the United States Geological Survey (USGS) quadrangles containing the proposed project. Ten (10) of these special-status wildlife species are federally and/or State-listed endangered, threatened, or candidate species and are discussed further in Section 3.3.5, Threatened and Endangered Species. Of the remaining 23 species, 10 of these special-status wildlife species were determined to have an *"Absent"* potential for occurrence designation within the BSA.

Although not federally or State-listed, these species are perceived as having declining populations or local populations that are sparse, rapidly dwindling, or otherwise unstable. In addition, native bird species and their nests are protected under the MBTA (16 United States Code [U.S.C.] 703–712). The MBTA states that all migratory birds and their parts, including eggs, nests, and feathers, are fully protected. The MBTA prohibits the take, possession, import, export, transport, sale, purchase, or barter, or offering for sale, purchase, or barter, any migratory bird and its eggs, parts, and nests, except as authorized under a valid permit.

Table 3.3.4-1 includes a list of the 23 remaining special-status wildlife species, their habitat descriptions, status, and potential for occurrence.

Table 3.3.4-1 Special-Status Wildlife Species Potential for Occurrence within BSA

Scientific Name Common Name	Status	General Habitat Description	Habitat Present (P)/ Absent (A)	Rationale
Birds				
Agelaius tricolor Tricolored blackbird	US: BCC and UR CA: --	Associated with dairies, agricultural areas, and wetlands.	A	**Not likely to occur.** No suitable habitat within the BSA.
Athene cunicularia Burrowing owl (BUOW)	US:BCC CA:SSC	Uses large rodent burrows or other burrows in grasslands, prairies, and agricultural areas.	P	**Moderate potential to occur.** No habitat within California Department of Transportation (Caltrans) right-of-way (ROW). Suitable habitat occurs within the BSA in former agricultural fields, non-native grasslands, and disturbed areas.
Eremophila alpestris actia California horned lark	US: -- CA:WL	Found in coastal regions in short-grass prairie, “bald” hills, mountain meadows, open coastal plains, fallow grain fields, or alkali flats.	A	**Not likely to occur.** No suitable habitat within the BSA.
Icteria virens yellow-breasted chat	US:-- CA:SSC	Summer resident; inhabits riparian thickets of willow and other brushy tangles near watercourses.	P	**Low potential to occur.** A limited amount of dense linear strands of riparian with sandy soils present in BSA.

Table 3.3.4-1 Special-Status Wildlife Species Potential for Occurrence within BSA

Scientific Name Common Name	Status	General Habitat Description	Habitat Present (P)/ Absent (A)	Rationale
Accipiter cooperii Cooper's hawk	US:-- CA: WL	Occurs primarily in forests and woodlands throughout North America. Increasingly common in urban habitats. Nests in tall trees, especially pines. Occasionally nests in isolated trees in more open areas.	P	**Low potential to occur.** Several ornamental trees could provide nesting habitat for the species.
Lanius ludovicianus loggerhead shrike	US: BCC CA: SSC	Nests in broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub, and washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	A	**Not likely to occur.** No suitable habitat within the BSA.
Dendroica petechia brewsteri yellow warbler	US:-- CA: SSC	Riparian plant associations; prefers willows, cottonwoods, aspens, sycamores, and alders for nesting and foraging, swamp areas.	P	**Present.** Minimally suitable habitat exists in eastern portion of survey area in willow thickets of the Santa Ana River and Etiwanda Creek. Adults and fledglings were observed in survey area.
Reptiles				
Crotalus ruber ruber northern red-diamond rattlesnake	US:-- CA: SSC	Associated with chaparral, woodland, grassland, and desert communities from coastal San Diego County to the eastern slopes of the mountains. Prefers rocky areas with dense vegetation. Needs rodent burrows, cracks in rocks, or surface cover objects for shelter.	A	**Not likely to occur.** No suitable habitat within the BSA. The closest CNDDB occurrence for this species is more than 5 miles away.

Table 3.3.4-1 Special-Status Wildlife Species Potential for Occurrence within BSA

Scientific Name Common Name	Status	General Habitat Description	Habitat Present (P)/ Absent (A)	Rationale
Anniella pulchra silvery legless lizard	US:-- CA:SSC	Loose organic soil or where there is plenty of leaf litter in a variety of habitats, including coastal sage scrub, chaparral, oak woodland, and pine forests.	P	**Low potential to occur.** Limited areas of shrubs bordered by developed areas are present in BSA. The nearest CNDDB occurrences are 1.14 miles south of the BSA in Redlands (1999) and 2 miles south of the BSA in Ontario (1993).
Aspidoscelis hyperythra orange-throated whiptail	US:-- CA:SSC	May be found in low-elevation coastal scrub, chaparral, and valley-foothill hardwood; prefers sandy washes with patches of brush and rocks.	P	**Low potential to occur.** Minimally suitable habitat exists within the BSA where Riversidean sage scrub (RSS) occurs near Colton to Ontario. The nearest CNDDB occurrence is 1.5 miles south of the BSA in Redlands (1990).
Phrynosoma coronatum (blainvillii) coast (San Diego) horned lizard	US:-- CA:SSC	May be found in coastal sage scrub and chaparral in arid and semi-arid climate; prefers friable, rocky, or shallow sandy soils. Requires harvester ants for food.	P	**Low potential to occur.** Minimally suitable habitat exists within the BSA at the Etiwanda Wash/Fan. The most recent CNDDB record for this species from 1998 is located approximately 0.75 mile south of the BSA in Fontana. The site and surrounding open space have since been developed.

Table 3.3.4-1 Special-Status Wildlife Species Potential for Occurrence within BSA

Scientific Name Common Name	Status	General Habitat Description	Habitat Present (P)/ Absent (A)	Rationale
Mammals				
Antrozous pallidus pallid bat	US:-- CA:SSC	May be found in rocky, mountainous areas and near water. Found in a variety of habitats, from scattered desert scrub, grassland, shrub land, woodland, and forests, from sea level through mixed conifer. In addition, found over more open, sparsely vegetated grasslands, and seems to prefer to forage in the open. Commonly found roosting in bridges.	P	**Moderate potential to occur.** Although the vegetation is disturbed, ruderal areas adjacent to the BSA may provide foraging opportunities for this species. May roost in trees, buildings, and bridges within and near study corridor.
Chaetodipus fallax fallax northwestern San Diego pocket mouse	US:-- CA:SSC	May be found in coastal scrub, chaparral, grasslands, and sagebrush; prefers sandy, herbaceous areas in rocks or coarse gravel.	P	**Moderate potential to occur.** Suitable habitat exists within the BSA at Haven Avenue. The nearest CNDDB occurrence is 0.6 mile south of the BSA in Fontana in 1999. There were other multiple occurrences of this species in 2001 and 2002 2.75 miles north of the BSA in Redlands and 2.25 miles south of the BSA in Reche Canyon.
Nyctinomops femorosaccus pocketed free-tailed bat	US:-- CA:SSC	Found in the lower Colorado Desert and coastal areas of southern California, but are known as far north as Los Angeles and southern San Bernardino counties. Associated with arid lowland areas, particularly desert canyons, and creosote bush and chaparral habitats. Day roosts primarily in crevices in cliff faces and boulders, although has been found in caves and buildings.	A	**Not likely to occur.** No suitable habitat within the BSA. Species not known to roost in bridges in California.

Table 3.3.4-1 Special-Status Wildlife Species Potential for Occurrence within BSA

Scientific Name Common Name	Status	General Habitat Description	Habitat Present (P)/ Absent (A)	Rationale
Eumops perotis californicus western mastiff bat	US:-- CA:SSC	Primarily a cliff-dwelling species and is most frequently encountered in broad open areas. Its foraging habitat includes dry desert washes, floodplains, chaparral, oak woodland, open ponderosa pine forest, grassland, and agricultural areas. Roosts in crevices in cliff faces, high buildings, trees, and tunnels. Characteristically, day roosts are located in large cracks in exfoliating slabs of granite or sandstone. Mastiff bats have great difficulty taking flight, and must drop at least 7 to 10 feet for launching.	P	**Low potential to occur.** Species may forage at open areas associated with the proposed CSAs. Site is comprised of ruderal and disturbed communities with no significant rock features; however, developed areas adjacent to the BSA could provide suitable roosting sites. This species is not known to roost in bridges within California.
Lasiurus xanthinus western yellow bat	US:-- CA:SSC	Found in fan palm oases and associated riparian habitats in the Colorado Desert of California. Appears to be expanding its range northward in association with ornamental palms. Range extends into Los Angeles and southern San Bernardino counties.	P	**Moderate potential to occur.** This species is not known to use bridges for roosting; however, the BSA contains ornamental palms within and adjacent to the BSA.
Taxidea taxus American badger	US:-- CA:SSC	Drier open stages of shrub, forest, and herbaceous habitats, with friable soils; needs sufficient food and open, uncultivated ground; digs burrows.	A	**Not likely to occur.** No suitable habitat within the BSA.

Table 3.3.4-1 Special-Status Wildlife Species Potential for Occurrence within BSA

Scientific Name Common Name	Status	General Habitat Description	Habitat Present (P)/ Absent (A)	Rationale
Lepus californicus bennettii San Diego black-tailed jackrabbit	US:-- CA:SSC	Inhabits deserts, grasslands, and open scrub habitats.	P	**Low potential to occur.** The BSA is highly developed, and only limited habitat exists within the BSA at the proposed CSAs and at other adjacent undeveloped parcels outside the BSA along Interstate 10 (I-10). The nearest CNDDB occurrence of this species is within the BSA at the I-10/Pepper Avenue interchange (1995). Since 1995, significant development in this area has resulted in less suitable habitat in the vicinity for this species.
Neotoma lepida intermedia San Diego desert wood rat	US:-- CA:SSC	Alluvial fan sage scrub; moderate to dense canopies preferred. They are particularly abundant in rock outcrops and rocky cliffs and slopes.	A	**Not likely to occur.** No suitable habitat within the BSA.
Onychomys torridus Ramona Southern grasshopper mouse	US:-- CA:SSC	Found in grasslands and sparse coastal sage scrub habitats.	A	**Not likely to occur.** No suitable habitat within the BSA.
Perognathus longimembris brevinasus Los Angeles pocket mouse	US:-- CA:SSC	May be found in lower elevation grasslands and coastal sage communities; prefers open ground with fine sandy soils.	P	**Moderate potential to occur.** Suitable habitat exists within/near Haven Avenue. There are multiple CNDDB occurrences for this species approximately 0.4 mile north of the BSA in Ontario (1999, 2001, 2003). Much of this area has since been developed to commercial land uses. Another CNDDB record from 2001 occurred 0.65 mile south of the BSA in Colton.

Table 3.3.4-1 Special-Status Wildlife Species Potential for Occurrence within BSA

Scientific Name Common Name	Status	General Habitat Description	Habitat Present (P)/ Absent (A)	Rationale
Fish				
Rhinichthys osculus ssp. *3* Santa Ana speckled dace	US:-- CA:SSC	Found in the headwaters of the Santa Ana and San Gabriel rivers. Requires permanent flowing streams with summer water temperatures of 17 to 20 degrees Celsius. Usually inhabits shallow cobble and gravel riffles.	A	**Not likely to occur.** No suitable habitat within the BSA. BSA at the Santa Ana River is concrete lined with minimal permanent flow.
Gila orcuttii arroyo chub	US:-- CA:SSC	Inhabits sandy and muddy bottoms in flowing pools and runs of headwaters, creeks, and small to medium rivers.	A	**Not likely to occur.** No suitable habitat within the BSA. BSA at the Santa Ana River is concrete lined with minimal permanent flow.

US: Federal Classifications
FE Federal Endangered
FT Federal Threatened
PE Proposed Endangered
PT Proposed Threatened
FC Federal Candidate
BCC Bird of Conservation Concern

CA: State Classifications
SE State Endangered
ST State Threatened
SR State Rare
SSC California Species of Concern

Habitat Present/Absent within the BSA
P Present
A Absent
CH Critical Habitat

Source: Parsons, 2015.

Channel features within the BSA are primarily concrete lined and contain portions of freshwater marsh and southern willow scrub; however, these areas occur in small patches. In addition, the channel areas lack water most of the year.

Based on the habitat types and quality within the BSA, the following species are not likely to occur within the BSA: tricolored blackbird, California horned lark, loggerhead shrike, northern red-diamond rattlesnake, pocketed free-tailed bat, and American badger. There is a low potential to occur within the BSA for yellow-breasted chat, Cooper’s hawk, silvery legless lizard, orange-throated whiptail, coast (San Diego) horned lizard, and western mastiff bat. There is a moderate potential for burrowing owl (BUOW), pallid bat, northwestern San Diego pocket mouse, and western yellow bat to occur within the BSA. Yellow warbler was observed within the BSA.

Areas with the highest potential for other special-status species include the undeveloped proposed construction staging areas (CSAs), undeveloped areas within and adjacent to Etiwanda Creek, within bridges, and in trees and shrubs within the BSA.

Although not specifically listed in Table 3.3.4-1, common raptors and other nesting birds protected by the MBTA have a high potential to occur within shrubs and trees within the BSA; however, no nests were observed within vegetation during the biological surveys conducted for the NES. Based on recent surveys completed for a nearby California Department of Transportation (Caltrans) project in March 2009 (EA 0J8800), which includes various improvements on bridges along Interstate 10 (I-10), swallow nests and bat guano were observed on and beneath the Warm Creek Channel and Santa Ana River bridges. No BUOW or sign of BUOW were observed within Caltrans right-of-way (ROW) or temporary construction easements (TCEs).

Proposed CSAs were surveyed from public ROWs as permitted; however, no pedestrian surveys of these areas were completed. No focused surveys for other special-status wildlife species were completed for the proposed project.

3.3.4.3 Environmental Consequences

Permanent Impacts

No Build Alternative

The No Build Alternative does not propose any construction or other disturbance in the BSA; therefore, this alternative would not result in permanent impacts to special-status animal species.

Build Alternatives

Burrowing Owl

The project is not expected to directly affect any BUOWs due to the low probability of this species occurring in the BSA; however, there is a permanent impact to non-native grassland and disturbed areas. The habitat assessment for burrowing owl included a determination of the presence of grasslands and shrublands, trees, and shrubs if the canopy covers less than 30 percent of the ground surface.

Nesting Birds and Swallows

Raptors and migratory birds potentially using shrubs within the BSA could be affected by their removal and/or proximity to construction activities. In particular, construction during the breeding season could disturb nesting activities, possibly resulting in nest abandonment, loss of young, and reduced health and vigor of eggs and/or nestlings. Additionally, swallows are known to exist on the Warm Creek Channel and Santa Ana River bridges. Permanent impacts to raptors and common bird species include loss of nesting trees and shrubs. Project effects would be offset through replacement landscaping and trees within the BSA, where feasible. Permanent impacts from loss of vegetation communities are limited to primarily ruderal and ruderal/ornamental species that do not provide any substantial value as wildlife habitat. Other than loss of vegetation, no other permanent effects on wildlife are expected.

In addition to project effects on general shrubs and vegetation within the study corridor, the proposed project would require removal of large eucalyptus trees adjacent to I-10. These trees harbor a higher potential to support nesting bird species due to their age and size. Based on the current project design, approximately 1,148 eucalyptus trees adjacent to the study corridor would be removed, and 295 trees would be protected from damage in place during construction.

Bats

Habitat assessments for bats will include assessment of crevices in bridge joints, abandoned structures, cracks, and culverts, with a focus on bridges over water, including the Santa Ana River, following guidelines of the *Level 1 Habitat Potential Screening of Bats and Bridges Technical Bulletin: Hitch Hikers Guide to Bat Roosts.* Further evaluation will occur at locations with the presence of bat indicators (i.e., guano, staining) if identified during the initial assessment.

It is known that bats currently use the Warm Creek Channel and Santa Ana River bridges and are likely present in other bridges that span surface water (i.e., San Sevaine Channel, Etiwanda Wash, Rialto Channel, Warm Creek Channel, Mission Channel, San Timoteo Creek, and Zanja Creek). Alternative 3 would require widening all bridges, except for Mission Channel, San Timoteo Creek, and Zanja Creek. Alternative 2 is smaller and would require widening fewer bridges within the study corridor; therefore, fewer permanent impacts to bats are anticipated under Alternative 2. The proposed widening of bridges to accommodate the additional eastbound (EB) and westbound (WB) lanes could result in bat mortality if they are not excluded from the structures prior to the bridge widening activities. As specified in measure AS-5, if the project's bat surveys identify roosts, bat exclusion would be conducted.

Other Special-Status Animal Species

No permanent direct effects on other special-status animal species, including orange-throated whiptail, coast horned lizard, northwestern San Diego pocket mouse, San Diego blacktailed jackrabbit, and Los Angeles pocket mouse, would occur under the build alternatives. Permanent indirect effects to other non-listed special-status species could occur as a result of habitat loss and habitat fragmentation under the proposed build alternatives. Permanent indirect effects of the build alternatives on animal species in areas adjacent to the project footprint could also result from edge effects, such as exotic plant and animal infestations, litter, fire, noise, vibration, dust, nighttime lighting, human encroachment, and pollutants associated with vehicle use. Edge effects are expected to extend into the surrounding natural habitat by approximately the same distance that I-10 is being widened under each build alternative.

Temporary/Construction Impacts

No Build Alternative

The No Build Alternative does not propose any construction or other disturbance in the BSA; therefore, this alternative would not result in temporary impacts to special-status animal species.

Build Alternatives

Temporary effects to several special-status animal species may occur during construction of the build alternatives when habitats are temporarily disturbed during grading or other activities as described in the following sections.

A very low potential for temporary impacts from noise, light, vibration, and dust may occur to orange-throated whiptail, coast horned lizard, northwestern San Diego pocket mouse, San Diego blacktailed jackrabbit, and Los Angeles pocket mouse. The BSA is dominated by developed conditions and lacks extensive mature scrub and suitable sandy substrates necessary to support these species.

Burrowing Owl

Although the build alternatives are not expected to directly affect any western BUOWs due to the low probability of this owl occurring in the BSA, the build alternatives could result in temporary construction effects to BUOWs through the unavailability of potential habitat during construction. These temporary effects to BUOW cannot be quantified because they depend on many uncontrollable factors. Temporary effects are expected as a result of noise, vibration, dust, nighttime lighting, and human encroachment. Preconstruction surveys will be conducted to confirm that no BUOWs have moved into the project construction limits prior to construction.

Under Alternative 2, there would be 11.68 acres of permanent impacts and 309.84 acres of temporary impacts to potential BUOW habitat. Under Alternative 3, there would be 39.43 acres of permanent impacts and 312.47 acres of temporary impacts to potential BUOW habitat. Most areas with suitable habitat are distant from the I-10 corridor and would not likely be affected by the proposed highway improvements. Some areas, however, might be located within proposed CSAs. The proposed CSAs have a moderate potential to support BUOW. Figure 3.3.4-1 shows potential BUOW habitat and impacts for Alternative 3.

The proposed CSAs are the most likely areas for BUOW to occur at this time. By the time construction begins on this project, the proposed CSAs may change from those currently identified. The areas may be unusable due to being developed, or the contractor may choose to use alternative sites as CSAs. For these reasons, preconstruction BUOW surveys and coordination with CDFW will occur prior to ground disturbance or site preparation within the approved CSAs where habitat is present in accordance with the measures discussed in Section 3.4.4.4. If a new CSA is proposed, then a new BUOW habitat assessment will be conducted within that CSA prior to construction.

With implementation of the proposed measures, no substantial effects on BUOWs are anticipated.

Nesting Birds and Swallows

Raptors and migratory birds potentially using shrubs within the BSA could be affected by their removal and/or proximity to construction activities. Temporary effects include increased noise and vibration that may result in an alteration in bird behavior and the potential to abandon nests and/or alter nesting locations. In addition, increased dust on vegetation from construction may alter bird behavior for preferred nest sites.

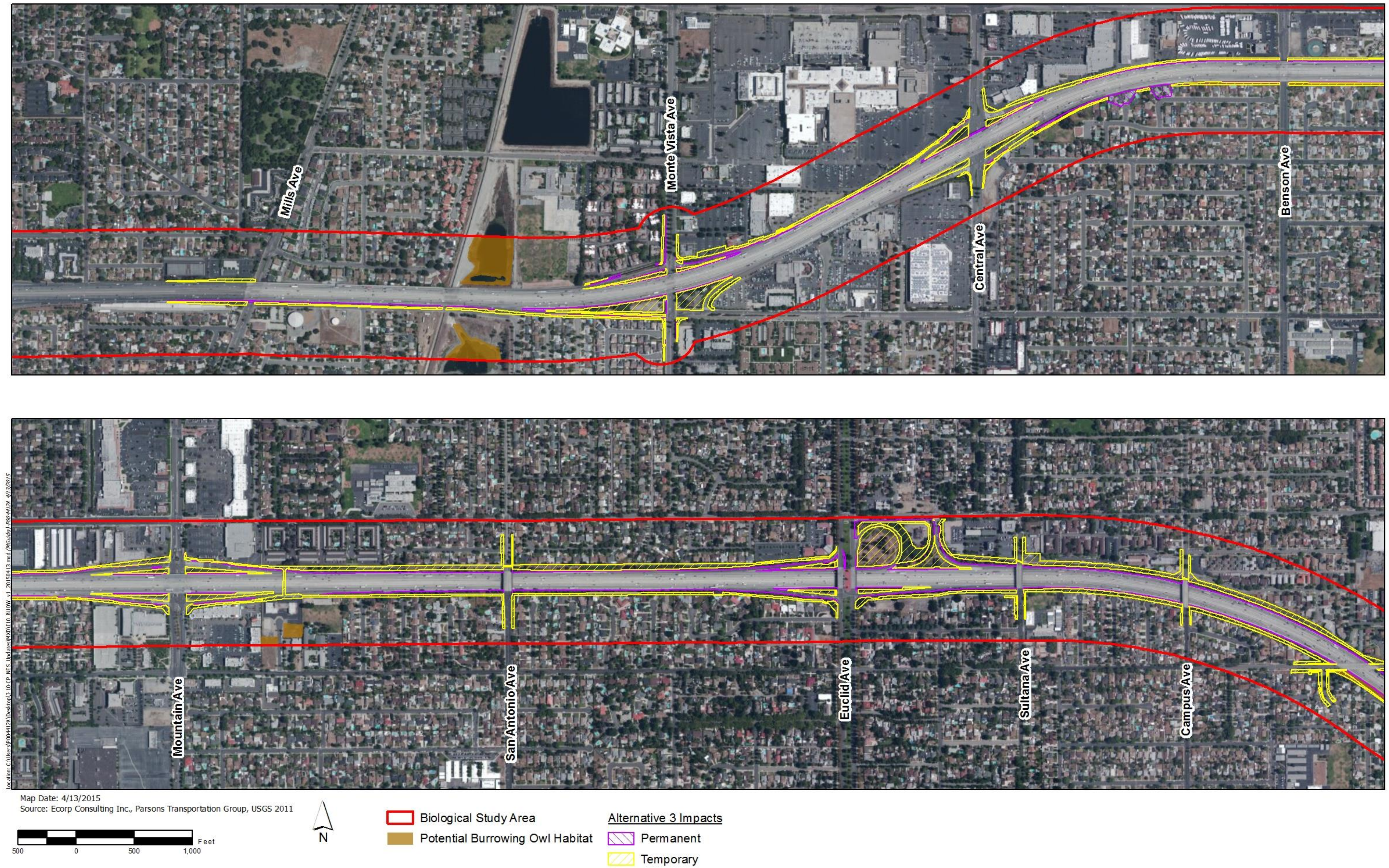

Figure 3.3.4-1 Potential Burrowing Owl Habitat and Impacts Alternative 3 [Preferred Alternative] (Sheets 1A and 1B)

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Figure 3.3.4-1 Potential Burrowing Owl Habitat and Impacts Alternative 3 [Preferred Alternative] (Sheets 2A and 2B)

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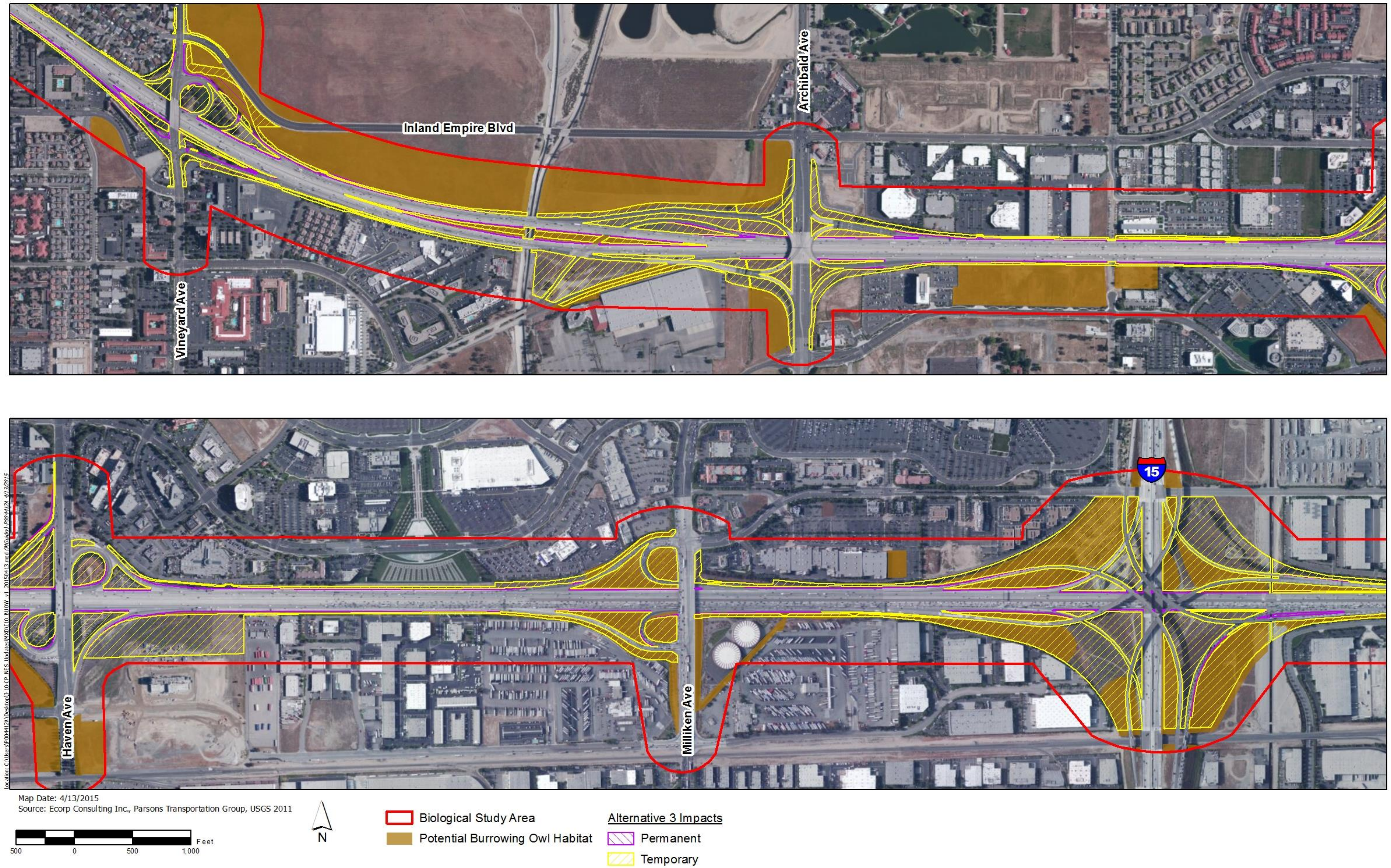

Figure 3.3.4-1 Potential Burrowing Owl Habitat and Impacts Alternative 3 [Preferred Alternative] (Sheets 3A and 3B)

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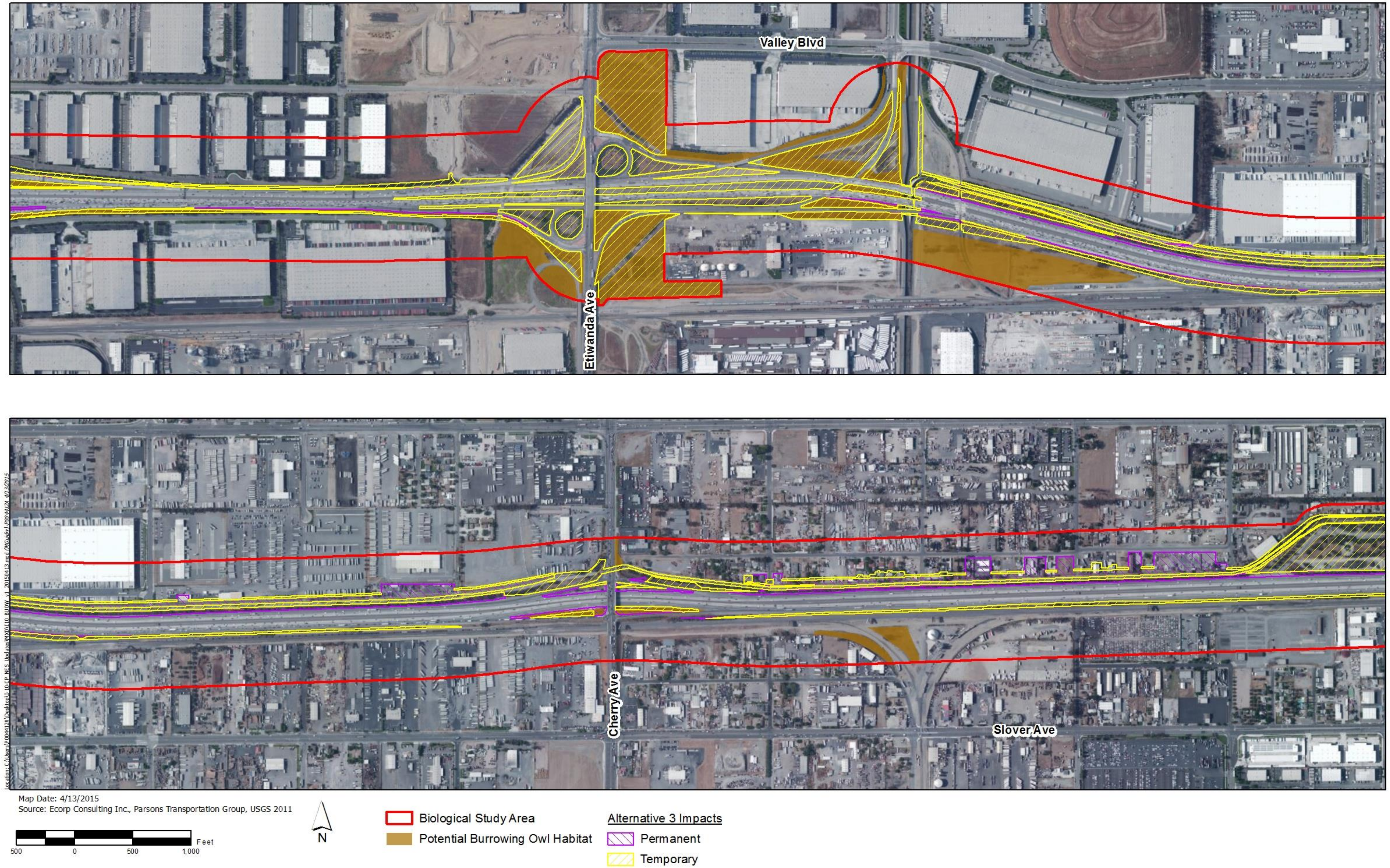

Figure 3.3.4-1 Potential Burrowing Owl Habitat and Impacts Alternative 3 [Preferred Alternative] (Sheets 4A and 4B)

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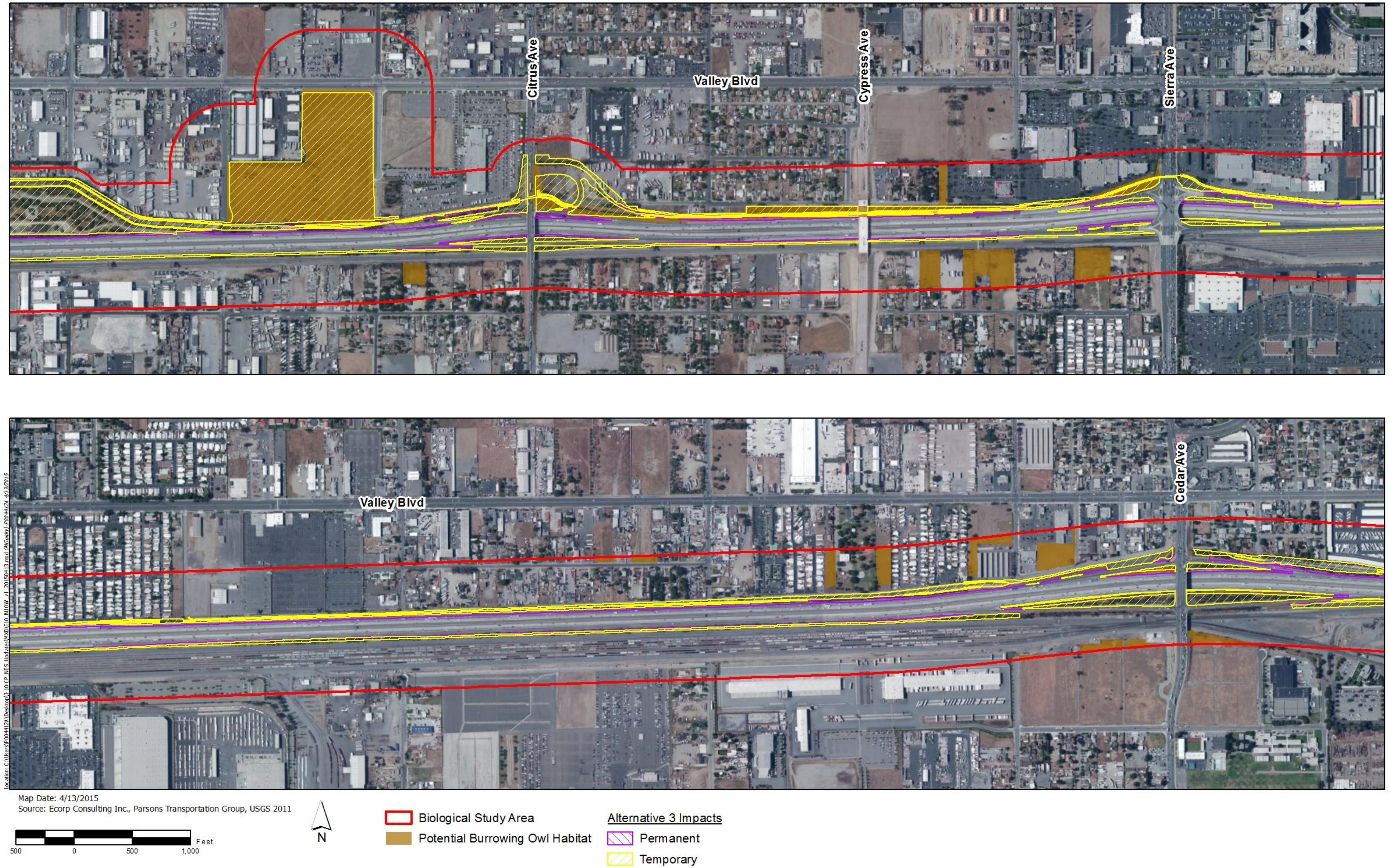

Figure 3.3.4-1 Potential Burrowing Owl Habitat and Impacts Alternative 3 [Preferred Alternative] (Sheets 5A and 5B)

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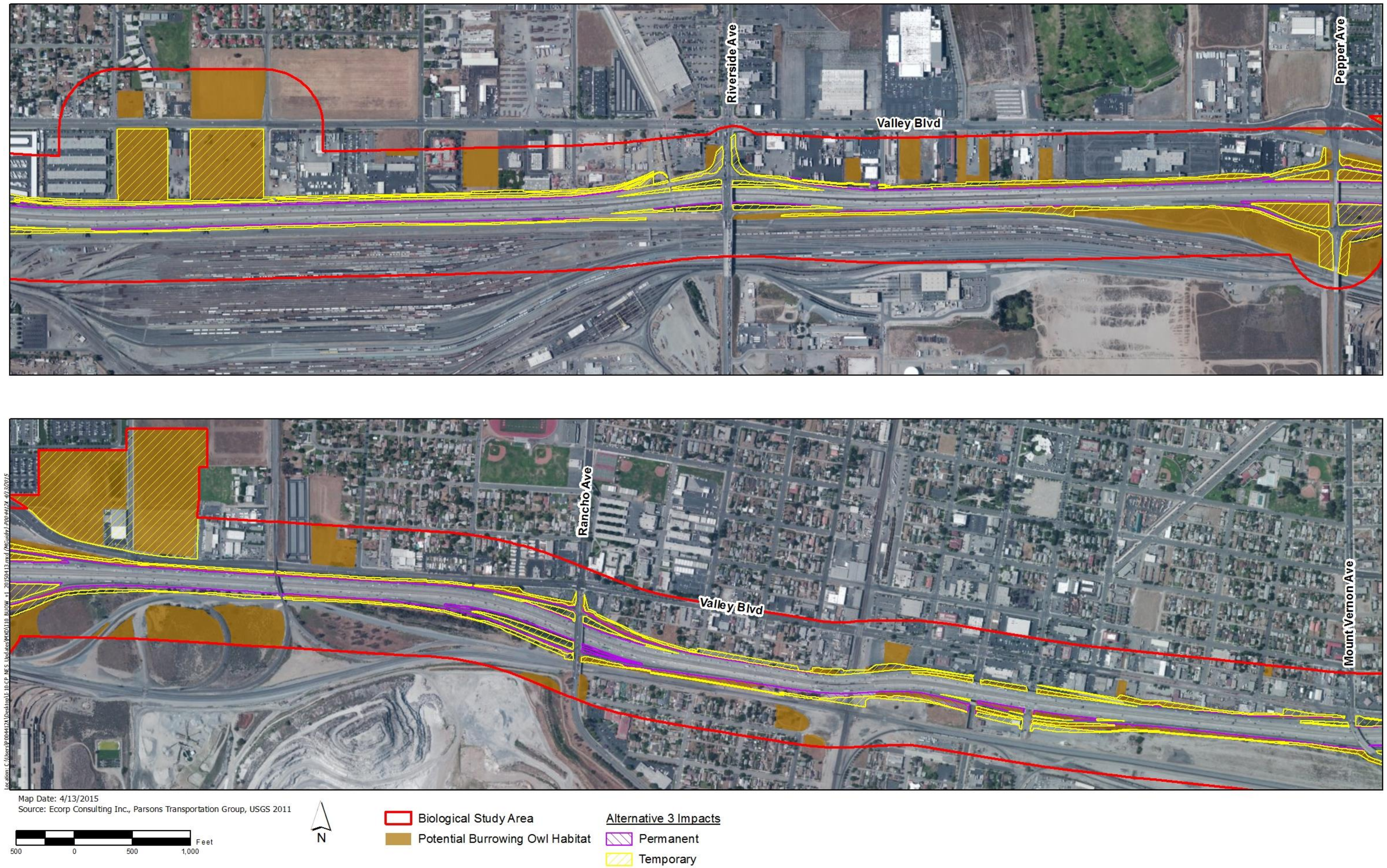

Figure 3.3.4-1 Potential Burrowing Owl Habitat and Impacts Alternative 3 [Preferred Alternative] (Sheets 6A and 6B)

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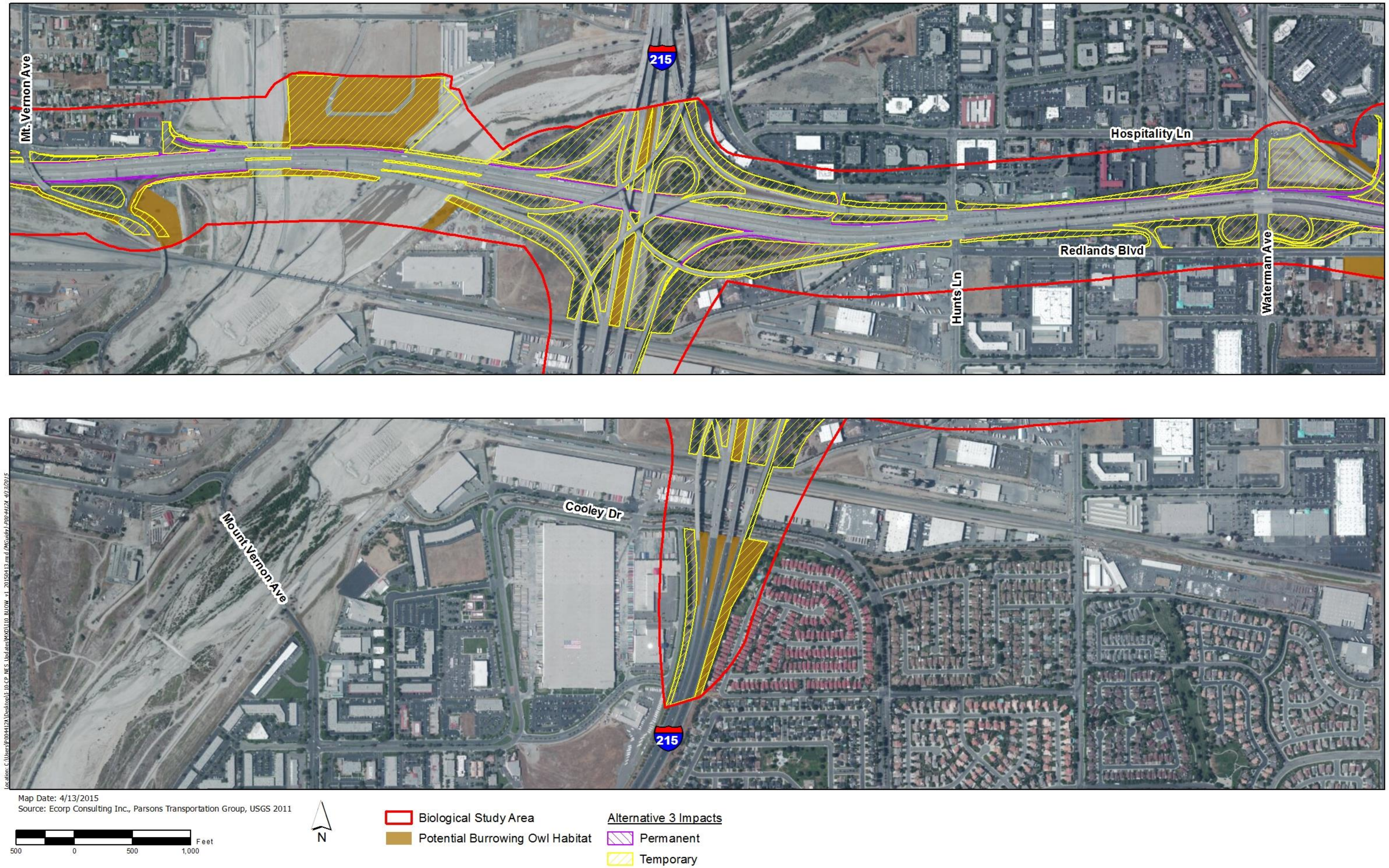

Figure 3.3.4-1 Potential Burrowing Owl Habitat and Impacts Alternative 3 [Preferred Alternative] (Sheets 7A and 7B)

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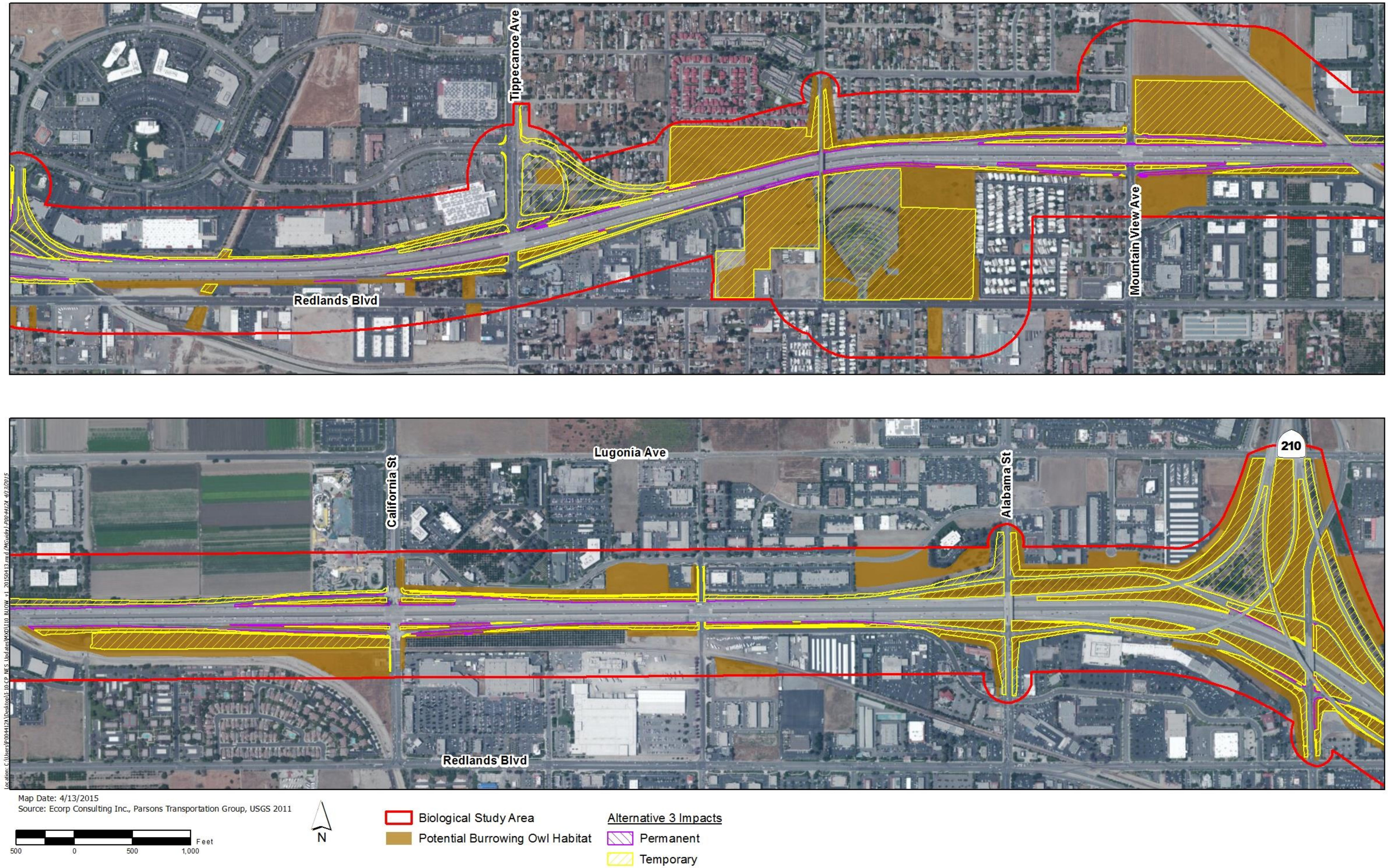

Figure 3.3.4-1 Potential Burrowing Owl Habitat and Impacts Alternative 3 [Preferred Alternative] (Sheets 8A and 8B)

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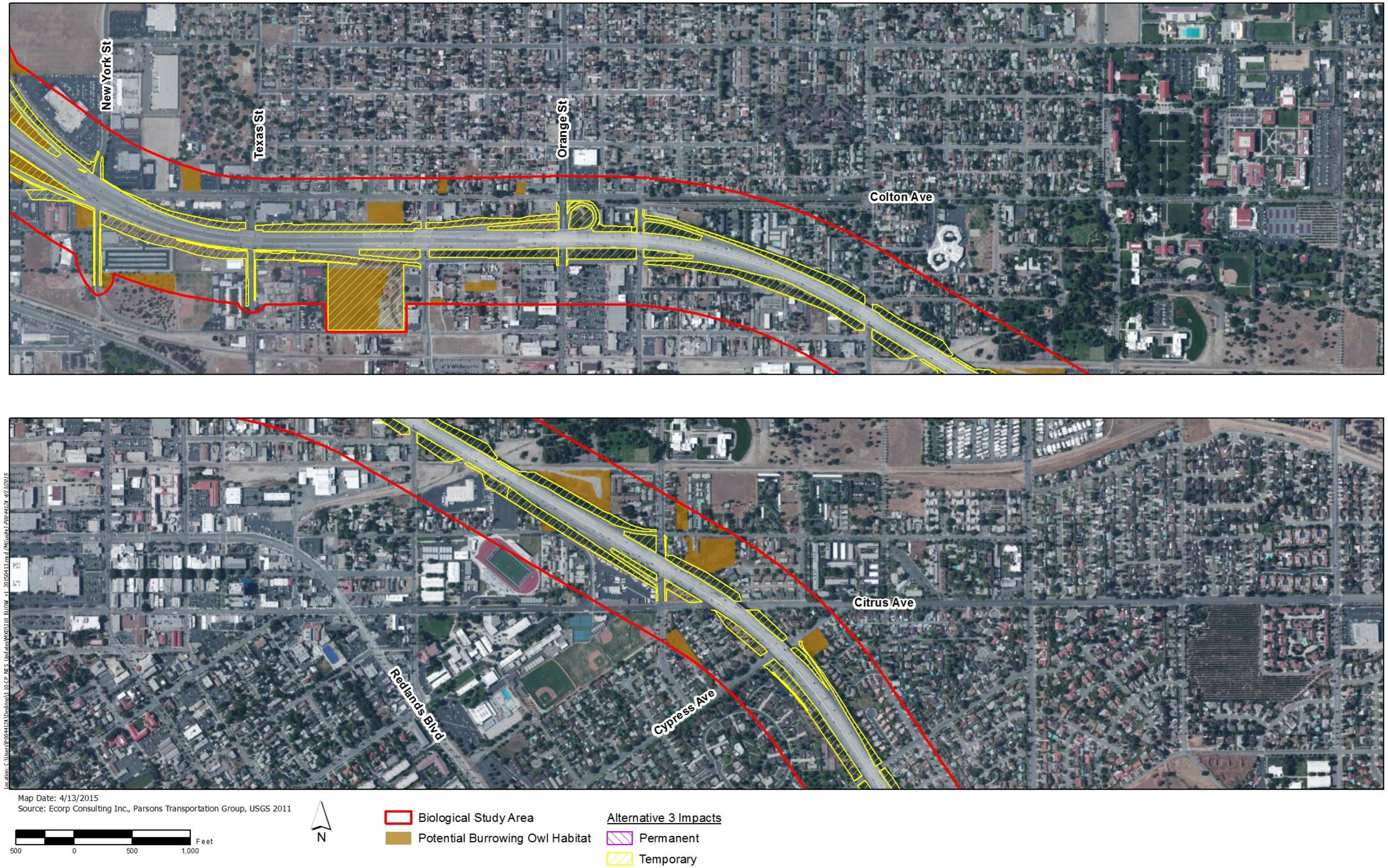

Figure 3.3.4-1 Potential Burrowing Owl Habitat and Impacts Alternative 3 [Preferred Alternative] (Sheets 9A and 9B)

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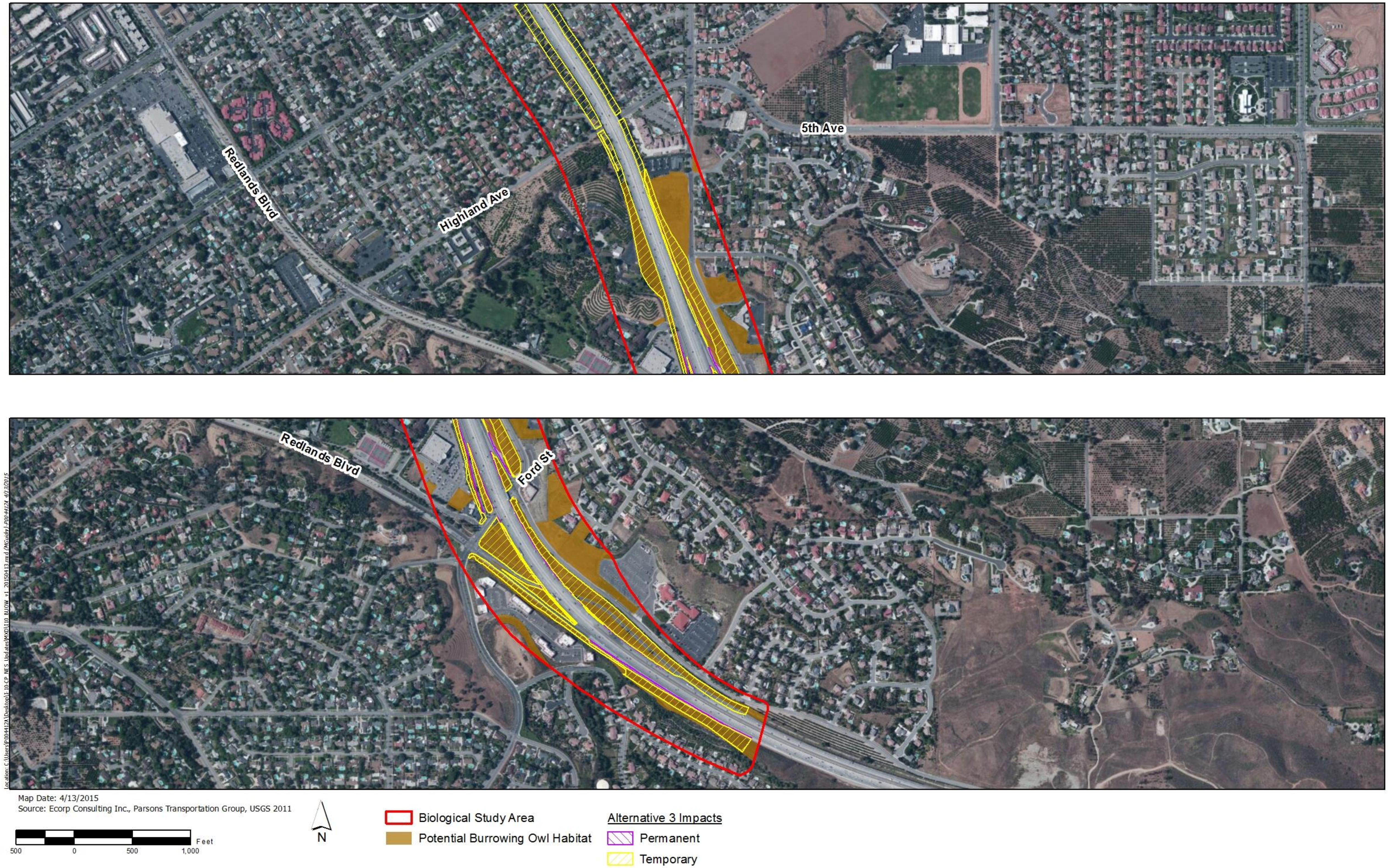

Figure 3.3.4-1 Potential Burrowing Owl Habitat and Impacts Alternative 3 [Preferred Alternative] (Sheets 10A and 10B)

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As discussed above, construction during the breeding season could disturb nesting activities, possibly resulting in nest abandonment, loss of young, and reduced health and vigor of eggs and/or nestlings. In addition, construction activities may result in a shift in foraging locations and behaviors for nesting birds and swallows that occur near the project.

Additionally, swallows are known to exist on the Warm Creek Channel and Santa Ana River bridges. Project impacts to nesting birds are primarily limited to the removal of trees and shrubs within the BSA and exclusion of swallows from prior nesting locations. No raptor nests or other nests in trees or shrubs were observed during biological surveys, indicating that these resources may be less suitable for nesting than other resources located outside the BSA and farther away from I-10.

Temporary effects on swallows would occur during exclusion activities. Depending on the timing of construction, swallow exclusion would not likely be required for more than two nesting seasons.

Bats

As discussed above, bats are known to currently use the Warm Creek Channel and Santa Ana River bridges and are likely present in other bridges that span surface water (i.e., San Sevaine Channel, Etiwanda Wash, Rialto Channel, Warm Creek Channel, Mission Channel, San Timoteo Creek, and Zanja Creek). Both build alternatives would have impacts on bridges that are likely used as habitat by bats. The proposed bridge widenings would result in temporary effects on bats, including excluding them from familiar roosting areas, noise, vibration, and increased lighting. Human disturbance can also lead to a change in humidity, temperatures, or the approach to a roost that could force the animals to change their mode of egress and/or ingress to a roost. In addition, construction activities may result in a shift in foraging locations and behaviors for bats that occur near the project.

Depending on the timing of the construction, bridge construction activities are not expected to require exclusion efforts for more than 1 year and a maximum of 2 years. With implementation of the bridge survey and exclusion measures, as discussed below in Measures AS-4, AS-5, and AS-6, no substantial project effects on bats are anticipated.

Other Special-Status Animal Species

Temporary direct impacts to other special-status animal species would include temporary loss of habitat, including trees and shrubs used for nesting and burrows used by ground-dwelling mammals and reptiles. Species that are relatively mobile (e.g., birds and many small mammals and reptiles) would likely disperse into nearby areas. Some mortality of less mobile and burrowing species may occur.

Temporary impacts would be limited to the construction period and include increased noise levels and increased human disturbance. Construction noise may adversely affect nesting birds, particularly if construction and vegetation clearing begins after the onset of the nesting season; however, all vegetation clearing and nest removal would be completed in accordance with the measures previously discussed, and no substantial temporary effects on nesting birds are anticipated.

Temporary indirect effects on wildlife beyond the BSA could result from impacts to water quality during construction; however, these impacts would be avoided and minimized through implementation of Best Management Practices (BMPs) in accordance with the Storm Water Pollution Prevention Plan (SWPPP). The SWPPP and anticipated treatment BMPs are designed to minimize impacts on water quality and accommodate and treat runoff from the road surface. Incorporation of BMPs into all phases of the project in accordance with Caltrans policy would ensure no substantial adverse effects on wildlife associated with construction or operational effects on water quality. With the implementation of BMPs in accordance with Caltrans policy, no substantial adverse indirect impacts to wildlife beyond the BSA are expected as a result of the project. Additional common indirect effects associated with construction include noise and glare, invasive species, increased dust generation, mortality of displaced wildlife, and increased potential for soil erosion, siltation, and runoff.

3.3.4.4 Avoidance, Minimization, and/or Mitigation Measures

The following measures will avoid, minimize, or mitigate potential temporary and permanent impacts related to special-status animal species. Measures will be implemented under San Bernardino County Transportation Authority (SBCTA) and Caltrans oversight. Any changes would require SBCTA and Caltrans approvals.

Nesting Birds and Swallow Species

AS-1: To avoid effects to nesting birds, the SBCTA Resident Engineer will require the Contractor to conduct any native or exotic vegetation removal or tree-trimming activities outside of the nesting bird season (i.e., February 15 through August 31). If vegetation clearing or the start of construction in a previously undisturbed area is necessary during the nesting season, SBCTA's Resident Engineer will require the Contractor to have a qualified biologist conduct a preconstruction survey within 300 feet of construction areas no more than three days prior to construction at the location to identify the locations of nests, if any. If an occupied nest is discovered, the biologist will monitor the nests on a weekly basis when new equipment is utilized or when night work is performed to ensure lighting is shielded and directed away from the nest. These preconstruction surveys are also required to comply with the federal MBTA. A qualified biologist is one that has previously surveyed for nesting bird species within southern California. Should nesting birds be found, an exclusionary buffer of 300 feet will be established by the qualified biologist around each nest site. The buffer will be clearly marked in the field by construction personnel under guidance of the Contractor's qualified biologist, and construction or clearing will not be conducted within this zone until the qualified biologist determines that the young have fledged or the nest is no longer active.

The qualified biologist will monitor the nests on a weekly basis to ensure that construction activities do not disturb or disrupt nesting activities. If the qualified biologist determines that construction activities are disturbing or disrupting nesting activities, then the biologist will direct the Resident Engineer to stop or modify construction and immediately contact the U.S. Fish and Wildlife Service, Palm Springs Office to determine appropriate actions to reduce the noise and/or disturbance to the nests. Responses may include, but are not limited to, increasing the size of the exclusionary buffer to 500 feet, curtailing nearby work activities, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nest and the construction activities, and/or working in other areas until the young have fledged. If more than three days lapse between the preconstruction survey and construction start date at that location, the survey will be reconducted.

AS-2: Because work may occur during the swallow/swift nesting season (March 1 through August 31), swallows will be excluded from structures, if necessary, by a qualified biologist during the nonbreeding season no earlier than 5 days prior to the start of construction. Exclusion structures (e.g., netting and weep hole plugs) will be left in place and maintained through August 31 of each breeding season or until the work is complete. All nest exclusion techniques will be coordinated among the Caltrans District 8 Biologist, Project Manager, Resident Engineer, the Contractor, and CDFW.

Burrowing Owl

AS-3: Although current known areas of BUOW habitat have been mapped as part of this study, land development or other factors could modify the distribution of habitat within the study corridor. The Design Engineer will coordinate with the designated qualified biologist to reassess potential BUOW habitat within the project footprint or in the immediately surrounding areas and will designate those areas on the project plans and specifications.

To ensure that any BUOW that may occupy the site in the future are not affected by construction activities, the Resident Engineer will require the Contractor to have preconstruction BUOW surveys conducted by a qualified biologist within 30 days prior to any phase of construction in the areas identified as potential BUOW habitat in the project specifications. These preconstruction surveys are also required to comply with the federal MBTA. If any of the preconstruction surveys determine that BUOW are present, SBCTA's Resident Engineer will contact CDFW to identify appropriate avoidance and minimization measures, such as establishing an avoidance buffer and/or work in the vicinity with a biological monitor on hand.

SBCTA's Resident Engineer will ensure that any BUOW measures determined to be required based on the results of the preconstruction surveys and the required coordination described above are properly implemented by the Contractor prior to and during construction in areas occupied by BUOW, as identified in the preconstruction surveys.

Bats

AS-4: **Bat Surveys.** SBCTA will coordinate with the designated qualified biologist to identify all areas of potential bat habitat within and immediately adjacent to the project footprint and will designate those areas on the project specifications, including, but not limited to, the following assessment features: bridge type, geographic region, and potential deterrents. Structures currently considered to contain potential bat habitat include bridges that span surface water within the vicinity including, but not limited to, the Warm Creek Channel, Santa Ana River, San Sevaine Channel, Etiwanda Wash, Rialto Channel, Mission Channel, San Timoteo Creek, and Zanja Creek. Ornamental trees that will be impacted where roosting may occur will also be included in the bat surveys.

Prior to construction at structures with potential bat habitat as identified in the project specifications, SBCTA will require the Contractor to have a qualified bat biologist conduct a series of surveys of all potential bat habitat areas. Surveys will occur during the bat breeding season (preferably May or June) immediately preceding the start of construction, to assess the potential for the presence of roosts. The qualified bat biologist must have previously conducted bat surveys for the bat species most likely to be present within the study corridor. Bat surveys may be conducted acoustically, using an acoustic bat-call detector such as an Anabat device, or may be conducted visually by inspection of suspected bat roost areas.

The qualified bat biologist will also perform preconstruction surveys at structures and ornamental trees potentially containing bats because bat roosts can change seasonally. The surveys will include structure inspection, sampling, exit counts, and acoustic surveys.

AS-5: **Bat Exclusion.** If bat roosts are found, a qualified bat biologist will be onsite for the duration of construction activities that may impact bats. If it is determined that the roosts are present and, based on consultation with CDFW, exclusion is warranted, bats will be excluded from the bridge using CDFW-approved exclusionary devices to the extent necessary to prevent mortality to the colony. Exclusion will take place prior to April 15. Caltrans or SBCTA will confer with CDFW to identify and implement appropriate avoidance and minimization efforts that are satisfactory to CDFW. Examples of exclusion devices are provided in Figures 4-5, 4-6, and 4-7 of the NES. Coordination with CDFW will occur prior to exclusion if measures are proposed after April 15.

AS-6: **Bat Replacement Roosting Structures.** If bat exclusion is conducted, replacement roosting habitat may also be required by CDFW to offset and minimize impacts to excluded bats in the project's Lake and Streambed Alteration Agreement. Replacement roosts will be built according to bat house standards (e.g., those endorsed by Bat Conservation International) and will be placed within close proximity to impact areas. Bat houses must be constructed, painted, and placed carefully in specific locations based on the aspect of a given site, the expected temperatures within the bat house location, and the exposure to weather elements. All bat exclusion techniques and replacement roosting habitat will be coordinated among the Caltrans District 8 Biologist, SBCTA's Project Manager, Caltrans Project Manager, the Contractor, the Contractor's Designated Qualified Bat Biologist, and CDFW. Replacement roosting habitat will adhere to guidance provided in the *Bat and Bridges Technical Bulletin: Hitch Hikers Guide to Bat Roosts* (September 2002).

3.3.5 Threatened and Endangered Species

This section discusses threatened and endangered species with the potential to occur within the biological study area (BSA) as well as designated Critical Habitat (CH) as documented in the project's *Natural Environment Study* (NES) (December 2015) and *Supplemental Natural Environment Study* (SNES) (April 2017).

3.3.5.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (U.S.C.), Section 1531, *et seq.* See also 50 *Code of Federal Regulations* (CFR) Part 402. This act and later amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration (FHWA), are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated CH. CH is defined as specific areas within the geographic area that contain the physical or biological features essential to the conservation of a threatened or endangered species. The outcome of consultation under Section 7 may include a Biological Opinion (BO) with an Incidental Take statement and/or a Letter of Concurrence. Section 3 of FESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code, Section 2050, *et seq.* CESA emphasizes early consultation to avoid potential effects to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The California Department of Fish and Wildlife (CDFW) is the agency responsible for implementing CESA. Section 2081 of the Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFW. For species listed under both the FESA and CESA requiring a BO under Section 7 of the FESA, CDFW may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code.

3.3.5.2 Affected Environment

The analysis of the project's potential effects on threatened and endangered species is based on the NES. The NES contains many individual technical studies, including studies focused on sensitive species. The findings of the NES and the individual technical studies included in the NES related to threatened and endangered species are summarized in this section. Additional details not included in this summary are available in the NES. A SNES was also prepared to document additional surveys conducted and changes made in 2016.

Prior to performing field surveys for threatened and endangered species, existing documentation relevant to the BSA was reviewed. The most recent records of the California Natural Diversity Database (CNDDB) (3-mile radius) and the California Native Plant Society's (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants of California were reviewed for the quadrangles containing and surrounding the BSA (i.e., Guasti, Fontana, San Bernardino South, and Redlands, California U.S. Geological Survey [USGS] 7.5-minute quadrangles). These databases contain records of reported occurrences of federal- or State-listed endangered, threatened, proposed endangered, or threatened species; California Species of Special Concern (SSC); or other special-status species or habitat that may occur within, or in the immediate vicinity of, the BSA. In addition, a list of proposed, threatened, or endangered species potentially occurring within the BSA was obtained from USFWS in September 2016 (Appendix M1, USFWS Species List). The USFWS species list will be validated and updated, if necessary, as part of the Section 7 Consultation process for the project, which specifically allows for updating the species list at that time.

The BSA was surveyed by biologists from ECORP Consulting, Inc., to determine the extent of plant communities, conduct focused surveys for several plant and animal species, and assess the presence of suitable habitat for sensitive plant and wildlife species. Focused, protocol-level surveys conducted for the project included surveys for coastal California gnatcatcher *(Polioptila californica)* (CAGN) between April 17 and June 20, 2013; least Bell's vireo *(Vireo bellii pusillus)* (LBV) between April 10 and July 31, 2013; and southwestern willow flycatcher *(Empidonax extimus traillii)* (SWWF) between May 15 and July 17, 2013. Rare plant surveys were conducted during spring 2013. The rare plant survey timing was established based on observations of reference populations within the vicinity of the BSA and at known population sites for the rare plant species with potential to occur within the BSA. During the public review period of the Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS), United States Department of the Interior (DOI) recommended additional rare plant surveys to be conducted for the Santa Ana River woolly-star *(Eriastrum densifolium* ssp. *sanctorum)* and slender-horned spineflower *(Dodecahema leptoceras).* Additional rare plant surveys were conducted within suitable habitat locations for these two rare plant species on June 22, 2016, to satisfy USFWS recommendations. Rare plant surveys were conducted during peak blooming season for these two species between June and July.

In addition, a habitat assessment was conducted for Delhi Sands flower-loving fly *(Rhaphiomidas terminatus abdominalis)* (DSF). Focused protocol-level surveys for DSF were conducted in 2015 and 2016, as discussed in Section 3.3.5.2.2. Surveys were conducted during a period of below-average annual rainfall in southern California. Preconstruction surveys will be conducted for sensitive plant and animal species during appropriate seasonal survey requirements

Table 3.3.5-1 shows the 15 threatened and endangered species identified in the USFWS letter and/or the literature review as occurring or potentially occurring in the BSA and/or the surrounding area, and a summary of the rationale used to determine the potential likelihood of each species occurring within the BSA. These species may also be State listed as threatened or endangered, as shown in Table 3.3.5-1.

3.3.5.2.1 Threatened and/or Endangered Plant Species

As indicated in Table 3.3.5-1, there may be potential habitat in the BSA for two of the four threatened and/or endangered plant species identified in the USFWS Species List and other resources utilized to develop the NES. There is no designated CH for any threatened and/or endangered plant species in the BSA.

Table 3.3.5-1 Threatened and Endangered Species Potential for Occurrence within BSA

Scientific Name Common Name	Status	General Habitat Description	Habitat Present (P)/ Absent (A)	Rationale	Effect Determination
PLANTS					
Berberis nevinii Nevin's barberry	US:FE CA:SE	Occurs on steep north-facing slopes or sandy washes in chaparral, coastal scrub, and riparian scrub.	A	**Not likely to occur.** The BSA contains disturbed land typical of urban freeway right-of-way (ROW) with maintained and irrigated landscaped areas. Adjacent land use generally consists of dense commercial, industrial, and residential. No suitable habitat within the BSA.	No effect.
Dodecahema leptoceras slender-horned spineflower	US:FE CA:SE	Occurs in coastal scrub, chaparral in sandy soils on river floodplain, or terraced fluvial deposits.	A	**Low potential to occur.** No suitable habitat currently exists within the BSA; however, limited habitat may occur in the Santa Ana River and Warm Creek channels in the future due to seasonal and annual variability of the species, variability of climatic and physical conditions within the channels, and the potential passage of time between environmental approval and construction. Surveys for this species in 2013 were negative.	No effect.
Eriastrum densifolium ssp. *Sanctorum* Santa Ana River woolly-star	US:FE CA:SE	Chaparral, coastal scrub, alluvial fan, sandy, or gravelly soils.	A	**Low potential to occur.** No suitable habitat currently exists within the BSA; however, limited habitat may occur in the Santa Ana River and Warm Creek channels in the future due to seasonal and annual variability of the species, variability of climatic and physical conditions within the channels, and the potential passage of time between environmental approval and construction. Surveys for this species in 2013 were negative in the BSA, although a single plant was observed approximately 500 feet outside of the BSA. Nearest CNDDB occurrence is 0.5 mile away from the BSA in the Santa Ana River.	No effect.

Table 3.3.5-1 Threatened and Endangered Species Potential for Occurrence within BSA

Scientific Name Common Name	Status	General Habitat Description	Habitat Present (P)/ Absent (A)	Rationale	Effect Determination
Rorippa gambellii Gambel's watercress	US:FE CA:ST	Historically known to occur in marshes and other perennially mesic areas (i.e., streams, creeks) from Arroyo Grande in central California (San Luis Obispo County) to the Santa Ana River in southern California (Orange and San Bernardino counties). Relatively little is known about the habitat conditions at the historical locations.	A	**Not likely to occur.** No suitable habitat within the BSA.	No effect.
Ambrosia pumila San Diego ambrosia	US:FE CA:SE	Sandy loam or clay, disturbed areas, alkaline, chaparral, coastal scrub, valley and foothill grassland, vernal pools.	A	**Low potential to occur.** No suitable habitat currently exists within the BSA; however, limited habitat may occur in the Santa Ana River and Warm Creek channels in the future due to seasonal and annual variability of the species, variability of climatic and physical conditions within the channels, and the potential passage of time between environmental approval and construction. Surveys for this species in 2013 were negative.	No effect.
BIRDS					
Vireo bellii pusillus least Bell's vireo	US: FE CA: SE	Prefers dense riparian habitats, but can also be found in more open riparian habitats such as mule fat. Nests from central California to northern Baja California. Winters in southern Baja California. Although identified in the USFWS Species List (Appendix M1), no USFWS-designated CH occurs within the BSA for this species. The nearest Critical Habitat is located approximately 6.3 miles south of the BSA.	P	**Low potential to occur.** No suitable habitat within the BSA. Small patch of mule fat scrub habitat within the BSA, however habitat does not exhibit LBV's preferred habitat constituents. Nearest CNDDB occurrence/ suitable habitat occurs approximately 0.5 mile upstream to the east of the I-215/Santa Ana River Crossing. Surveys for this species within the study corridor in 2013 were negative in the project BSA; however, LBV was present outside the BSA.	May affect but not likely to adversely affect.

Table 3.3.5-1 Threatened and Endangered Species Potential for Occurrence within BSA

Scientific Name Common Name	Status	General Habitat Description	Habitat Present (P)/ Absent (A)	Rationale	Effect Determination
Empidonax traillii extimus southwestern willow flycatcher	US:FE CA:SE	Rare and local breeder in extensive riparian areas of dense willows or (rarely) tamarisk, and usually with standing water. Winters in Central and South America. USFWS-designated CH is located within the BSA for this species.	P	**Low potential to occur.** No dense riparian habitat present within the BSA. BSA within the Santa Ana River is within CH; however, the BSA contains only concrete channel and no dense riparian habitat. Nearest CNDDB occurrence is 2 miles southwest of the eastern project limits. Surveys for this species in the study corridor in 2013 were negative in the project BSA; however, the species was present outside the BSA..	May affect but not likely to adversely affect.
Polioptila californica californica coastal California gnatcatcher	US:FT, CA:SSC	Inhabits coastal sage scrub in low-lying foothills and valleys in cismontane southwestern California and Baja California. May be found in coastal sage scrub below 2,500 feet; prefers low, coastal sage scrub in arid washes, mesas, and slopes.	P	**Low potential to occur.** Disturbed and fragmented sage scrub vegetation occurs within the BSA. Only Riversidean sage scrub (RSS) near Ford Street adjacent to I-10 would be potentially affected by the proposed project. Surveys for CAGN in this area in 2013 were negative. No known occurrences within 5 miles of RSS near Ford Street. Nearest CH is 2 miles away.	No effect.
Coccyzus americanus occidentalis western yellow-billed cuckoo	US:FT CA:SE	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Prefers riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	A	**Not likely to occur.** No suitable habitat within the BSA. No suitable riparian habitat within the BSA. Last CNDDB occurrence within the Santa Ana River reported in 1930.	No effect.

Table 3.3.5-1 Threatened and Endangered Species Potential for Occurrence within BSA

Scientific Name Common Name	Status	General Habitat Description	Habitat Present (P)/ Absent (A)	Rationale	Effect Determination
AMPHIBIANS					
Anaxyrus californicus arroyo toad	US:FE CA:SSC	Found within third-order streams and associated with braided alluvial floodplains. Breeds within stream braids that are at least season in flow patterns, contain sandy and well-oxygenated stream water, and with open to sparse riparian habitats. The toad aestivates during summer months away from riparian areas within surrounding uplands.	A	**Not likely to occur.** No suitable habitat within the BSA.	No effect.
Rana muscosa mountain yellow-legged frog	US:FE CA:SSC	Inhabits ponds, dams, lakes, and streams at moderate to high elevations. Appears to prefer open stream and lake margins that gently slope up to a depth of 2 to 3 inches. Always encountered within a few feet of water. Tadpoles may require up to 2 years to complete their aquatic development.	A	**Not likely to occur.** No suitable habitat within the BSA. The nearest occupied stream is approximately 10 miles north of the project BSA at East Fork City Creek in the San Bernardino Mountains. The nearest historical occurrences are approximately 5 miles north of the project BSA.	No effect.
MAMMALS					
Dipodomys merriami parvus San Bernardino Merriam's kangaroo rat	US:FE CA:SSC	Alluvial scrub vegetation on sandy loam substrates characteristic of alluvial fans and floodplains. Needs early to intermediate seral stages. USFWS-designated CH for this species exists within the Santa Ana River upstream of the BSA.	A	**Not likely to occur.** No suitable habitat within the BSA; however, San Bernardino Merriam's kangaroo rat CH Unit 1 is located approximately 0.5 mile upstream to the east of the I-215 crossing.	May affect but not likely to adversely affect.
Dipodomys stephensi Stephens' kangaroo rat	US:FE CA: ST	Occurs at elevations below 2,000 feet in flat or gently rolling, often degraded, annual grassland. Often associated with locations where grass cover and bare ground are abundant but where bush and rock are uncommon.	A	**Not likely to occur.** No suitable habitat within the BSA. Closest known occurrence to the BSA is near Reche Canyon, southeast of the I-10/I-215 interchange.	No effect.

Table 3.3.5-1 Threatened and Endangered Species Potential for Occurrence within BSA

Scientific Name Common Name	Status	General Habitat Description	Habitat Present (P)/ Absent (A)	Rationale	Effect Determination
FISH					
Catostomus santanae Santa Ana sucker	US: FT CA:--	Endemic to Los Angeles basin south coastal streams. Is a habitat generalist, but prefers sand-rubble-boulder bottoms, cool, clear water, and algae. USFWS-designated CH is located within the BSA for this species.	A	**Not likely to occur.** No suitable habitat within the BSA. BSA at the Santa Ana River is concrete lined with minimal permanent flow. Potential habitat occurs adjacent to the BSA to both the north and south within the Santa Ana River. Nearest CNDDB occurrence is approximately 3 miles southwest of the BSA.	May affect but not likely to adversely affect.
INVERTEBRATES					
Rhaphiomidas terminatus abdominalis Delhi Sands flower-loving fly	US:FE CA:--	Found only in fine, sandy soils, often with wholly or partly consolidated dunes referred to as the Delhi Sands. The fly is typically found in relatively intact, open, sparse, native habitats with less than 50 percent vegetative cover.	P	**Moderate potential to occur.** Suitable habitat was identified within the BSA along I-10 between the Riverside Avenue and Rancho Avenue interchanges. DSF was observed within the Pepper Avenue interchange and the southeast quadrant of the interchange between the eastbound (EB) on-ramp. California Department of Transportation (Caltrans) ROW is considered occupied suitable habitat. Based on the BO Amendment issued by USFWS (FWS-SB-08B0369-17F0669), “the proposed action is not likely to jeopardize the continued existence of the DSF.”	May effect.

US: Federal Classifications		CA: State Classifications		Habitat Present/Absent within the BSA	
FE	Federal Endangered	SE	State Endangered	P	Present
FT	Federal Threatened	ST	State Threatened	A	Absent
PE	Proposed Endangered	SR	State Rare	CH	Critical Habitat
PT	Proposed Threatened	SSC	California Species of Concern		
FC	Federal Candidate				
BCC	Bird of Conservation Concern				

Source: Parsons, 2015.

A rare plant assessment of the BSA was conducted during spring 2013 to identify threatened, endangered, and other rare plant species present within native habitat areas of the Santa Ana River, Warm Creek, and within other native habitats such as Riversidean sage scrub (RSS). The survey timing was established based on observations of reference populations within the vicinity of the BSA and at known population sites for the threatened and/or endangered plant species with potential to occur within the BSA. Additional surveys were conducted in June 2016 to check for the presence of Santa Ana River woolly-star and slender-horned spineflower within the BSA. Figure 3.3.5-1 shows the survey area. Based on the findings of the assessment and surveys, there is currently no suitable habitat or occurrences of any of the sensitive plant species within the BSA; however, outside the BSA within the Santa Ana River, there is marginally suitable habitat for the Santa Ana River woolly-star *(Eriastrum densifolium* ssp. *sanctorum)*, slender-horned spineflower *(Dodecahema leptoceras)*, and San Diego ambrosia *(Ambrosia pumila).* As discussed in the NES, limited habitat may occur in the Santa Ana River and Warm Creek channels in the future due to seasonal and annual variability of the species, variability of climatic and physical conditions within the channels, and the potential passage of time between environmental approval and the initiation of construction.

During the rare plant surveys conducted in 2013 and 2016, no Santa Ana River woolly-star, slender-horned spineflower, or San Diego ambrosia plants were observed within the BSA. A single Santa Ana River woolly-star plant was observed outside of the BSA during surveys for the LBV. This plant was approximately 500 feet away from the eastern edge of the project limit and would not be affected by project activities based on current design for the two build alternatives.

3.3.5.2.2 Threatened and/or Endangered Animal Species

As shown in Table 3.3.5-1, there is potential habitat in the BSA for two threatened and/or endangered animal species: CAGN and DSF. As a result, focused protocol surveys for CAGN and a habitat assessment for DSF were conducted in suitable habitat areas within the BSA. The survey and assessment results for these species are described below.

Although no suitable habitat exists for LBV or SWWF in the BSA, protocol-level presence/absence surveys were conducted for these species within and adjacent to the Santa Ana River, which is identified by USFWS as CH for SWWF, and because known populations of these species occur upstream and downstream of the BSA. LBV and SWWF were present during surveys conducted in 2013; however, they were outside the BSA. Presence/absence surveys in 2016 resulted in LBV present outside the BSA.

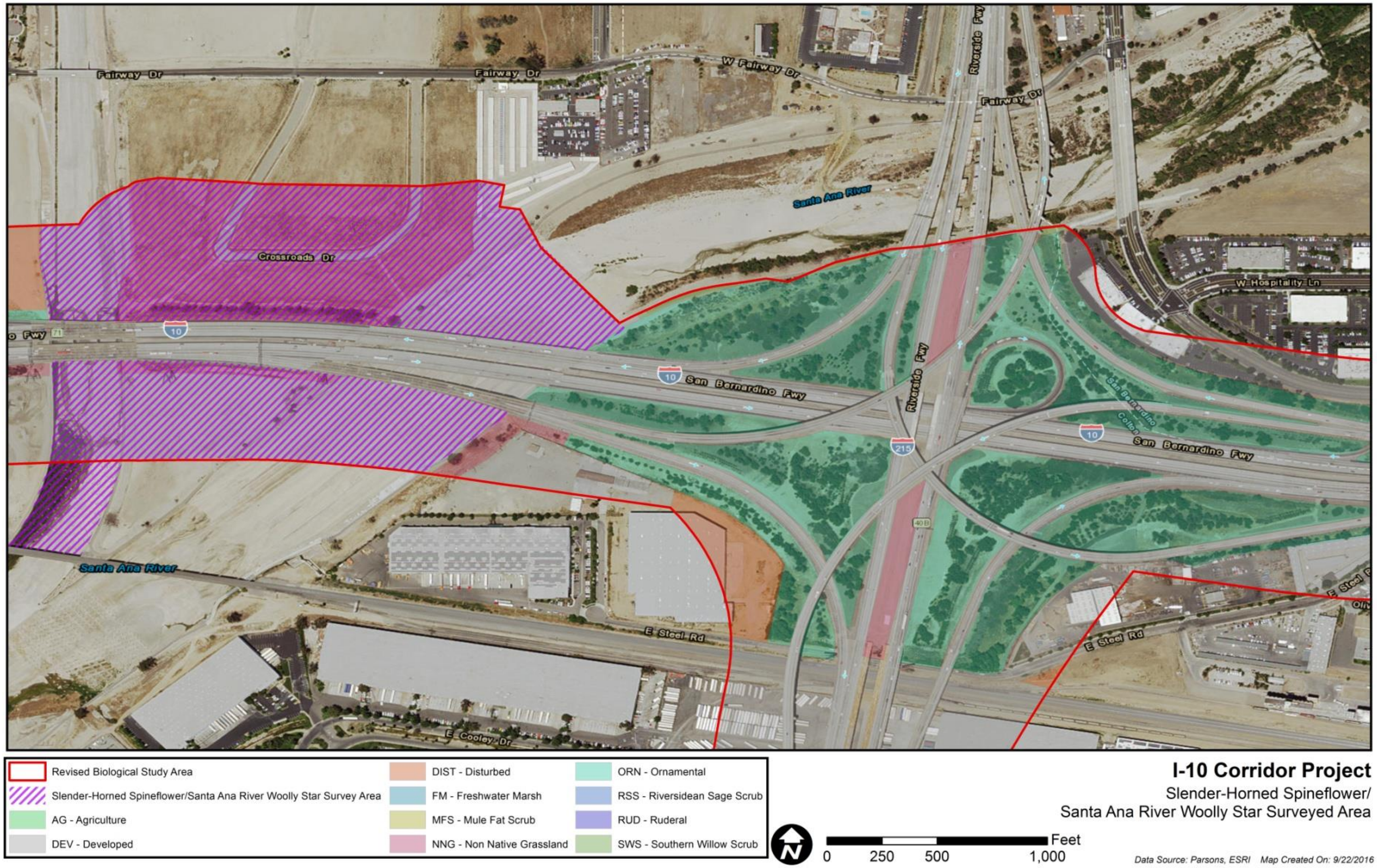

Figure 3.3.5-1 Slender-Horned Spineflower/Santa Ana River Woolly-Star Surveyed Area

In addition, although suitable habitat for Santa Ana sucker *(Catostomus santanae)* (SAS) does not occur within the BSA, designated CH for this species exists within the BSA in the Santa Ana River; therefore, information on potential effects to SAS has been analyzed in the NES and is summarized below.

Based on the findings of the NES and Supplemental NES, the California Department of Transportation (Caltrans) has determined that the project "May Affect, But Not Likely to Adversely Affect" SWWF, LBV, SAS and SBKR. Consultation for LBV, SWWF, SAS, and San Bernardino kangaroo rat (SKBR) and designated CH was initiated in February 2017. USFWS concurred with the effect determination to these species and their respective CH on March 2017 through an Informal Section 7 Consultation (FWS-SB-08B0758-17I0449). USFWS also issued a "May Affect, But Not Likely to Adversely Affect" determination for DSF at the Haven Avenue, Milliken Avenue and I-15 interchanges.

Following circulation of the Draft EIR/EIS, a "May Affect" finding for DSF at the Pepper Avenue interchange was determined due to permanent and temporary (direct and indirect) impacts to DSF individuals and its potentially suitable habitat. As described later in this section, DSF protocol-level surveys for two consecutive survey seasons have been completed in 2016, and Caltrans has reinitiated formal consultation with USFWS. In April 2017, USFWS issued the BO Amendment (FWS-SB-08B0369-17F0669) for the I-10 Corridor Project indicating that the proposed action is not likely to jeopardize the continued existence of DSF.

No Section 2081 Incidental Take Permit from CDFW is anticipated given that no State-listed species are expected to occur within the BSA.

Coastal California Gnatcatcher (CAGN)

No CH for CAGN is designated within the BSA; however, suitable habitat was identified within the BSA during field surveys. During protocol-level presence/absence surveys at these suitable habitat locations, no CAGN were observed. In addition, no CH for CAGN exists within 2 miles of potentially impacted CAGN suitable habitat, and there are no known occurrences of CAGN recorded within 5 miles of potentially suitable habitat according to CNDDB records. Therefore, CAGN are considered absent, and no future surveys are necessary.

Delhi Sands Flower-Loving Fly (DSF)

CH has not been designated for the DSF, but Delhi Soils correspond with the areas where this species can be found. Delhi soils for the endangered DSF occur in several areas within the study corridor in Caltrans right-of-way (ROW). DSF is typically found in areas of unconsolidated sandy soils (Delhi series) supporting an open community of native and exotic plant species, including California buckwheat, California croton, telegraph weed, and deerweed *(Lotus scoparius).* Adult DSF are known to nectar at flowers of California buckwheat and California croton. Many other plant species are common, including Thurber's eriogonum *(Eriogonum thurberi),* autumn vinegar weed *(Lessingia glandulifera),* and sapphire eriastrum *(Eriastrum sapphirinum).* DSF habitat also supports other associated insects, such as flies and wasps, which are considered indicator species.

Habitat assessments for DSF were completed in 2009 and 2014. The habitat assessment area included mapped Delhi fine soils that occur within the existing and proposed Interstate 10 (I-10) ROW, whichever was larger. Delhi fine soils mapping originated from the Natural Resources Conservation Service (NRCS) Web site mapping, and habitat used as a baseline came from USFWS mapping.

The results of the 2014 habitat assessment were divided into three categories, defined as follows:

- Suitable habitat – Presence of Delhi series soils at the surface with vegetation components. This definition is consistent with USFWS protocols that define the baseline criteria for areas suitable for focused surveys.
- Restorable habitat – A thin layer of removable material lies on substantially unaltered Delhi series soils. Typical overlying layers encountered in this survey included mulch and ice plant. Currently not suitable for use by DSF.
- Unsuitable habitat – Lack of Delhi series soils at the surface, Delhi series soils that have been severely contaminated with other soils or substances, or the addition of a permanent soil covering that would preclude restoration of underlying Delhi series soils (e.g., pavement). Not suitable for use by DSF.

USFWS Section 7 Consultation

Caltrans has reinitiated formal Section 7 consultation with USFWS for potential effects to DSF. The previously issued BO for the Interstate 10 Corridor Interchange Improvement Projects (FWS-SB-4339.5, April 2006) indicated that there are "No direct impacts to suitable or recoverable DSF habitat or to individual DSF are anticipated in association with the construction of the interchange improvement projects." The finding applies to the Alder, Cedar, Riverside, and Pepper Avenues Interchange Improvement Projects, which are similar to the current project impact areas for the I-10 Corridor Project (I-10 CP). The previously issued BO also stated that the Cherry, Beech, Cypress, and Citrus interchanges "would have no adverse effect on DSF." Section 7 consultation has been reinitiated for potential impacts to suitable habitat areas identified in the habitat assessment at shoulder areas along the entire 33-mile-long I-10 CP limits, and interchange areas along I-10 that were not included in the previously issued BO at the following interchange locations: Haven Avenue, Milliken Avenue, and Interstate 15 (I-15). In March 2017, Caltrans completed the Informal Section 7 Consultation with USFWS for DSF (FWS-SB-08B0758-17I0449) and concurred that the project "May Affect, But Not Likely to Adversely Affect" DSF at these three interchange locations. In April 2017, USFWS issued a BO Amendment (FWS-SB-08B0369-17F0669) for the I-10 Corridor Project (at Pepper Avenue Interchange) and its potential effects to DSF, indicating that "the proposed action is not likely to jeopardize the continued existence of the DSF." The previously issued BO, Informal Section 7 consultation, and the BO Amendment are provided in Appendix M.

Focused DSF Surveys

To confirm the findings of the previously issued BO in 2006 and determine the presence/absence of DSF within the additional suitable DSF habitat areas beyond those identified in the previously issued BO, protocol-level DSF surveys were conducted for the project. Presence/absence surveys for the DSF were conducted in areas identified by the 2014 habitat assessment as suitable habitat during the 2015 and 2016 survey periods. Presence/absence surveys conformed with the latest USFWS guidelines for conducting DSF surveys, which include surveys two times per week from July 1 to September 20 for 2 consecutive years under suitable conditions. DSF presence/absence surveys were completed in September 2016. In addition to presence/absence surveys, another habitat assessment was conducted focusing on specific impact areas related to both build alternatives and analyzed the quality of DSF suitable habitat identified in the habitat assessment conducted in 2014. DSF habitat ratings within the BSA classified the quality of DSF habitat by the following: *Unsuitable, Very Low, Low, Moderate, and High.*

The results of DSF surveys indicated that habitat conditions for DSF ranged widely, mainly from *Unsuitable/Very Low Quality to Moderate Quality* potential habitat for DSF. Several areas with historic DSF soils have been previously impacted by development and are currently unsuitable for DSF. Close proximity to constant and active freeway traffic and the narrow linear distributions of habitat patches significantly diminish prospects of habitat use and suitability for DSF on many portions of the study area. All freeway median areas were found to consist of solid, road base material, graded, and so compacted as to be clearly rated as *Unsuitable* for DSF and not appropriate for survey. The I-10 CP's potential impact to suitable DSF habitat consists of highly disturbed areas immediately adjacent to I-10. These areas are considered potential suitable habitat because DSF habitat soils are present at these locations, but the quality of the habitat is rated *Unsuitable/Very Low Quality to Moderate Quality*. Suitable DSF habitat observed to contain *Moderate to High Quality* habitat for DSF within the project's impact area is at the general area of the I-10/Milliken Avenue interchange area (*Moderate*) and the I-10/Pepper Avenue interchange *(Moderate to High Quality).* All other suitable DSF habitat locations that would be impacted by the project are rated *Unsuitable to Low Quality;* hence, for the entire 33-mile-long project area, only two areas of DSF habitat are considered to be at least of *Moderate Quality*.

Based on the results of the presence/absence DSF survey conducted in 2015, there were no DSF observed within suitable DSF habitat within the I-10 CP footprint, which includes shoulder areas along I-10 and interchanges within the 33-mile-long corridor. The second-year DSF presence/absence survey conducted during the 2016 DSF survey season resulted in absence of DSF in suitable habitat areas throughout the entire project footprint (shoulder and interchange areas) except for the I-10/Pepper Avenue interchange. DSF was observed at the southeast corner of the I-10/Pepper Avenue interchange on two occasions: July 17 and August 22, 2016. Both DSF observations were immediately reported to USFWS. Potential impacts to DSF habitat at this location are further discussed in Section 3.3.5.3.

Because DSF was absent for two consecutive survey seasons at other suitable habitat locations outside of the I-10/Pepper Avenue interchange area, DSF is considered absent within the remainder of the project footprint.

Southwestern Willow Flycatcher (SWWF)

CH for SWWF occurs within the study corridor along I-10 within the Santa Ana River Channel. Although the CH designation occurs at this location, the primary constituent elements (PCEs) are absent from the Santa Ana River Channel directly adjacent to I-10 within the BSA. PCEs are the physical and biological features of a landscape that are essential to the conservation of a species where CH occurs. In the section of the Santa Ana River where CH for SWWF occurs, the river is channelized and completely devoid of dense riparian vegetation, and insect prey populations are minimal. Figure 3.3.5-2 shows existing conditions of this Santa Ana River segment.

**Figure 3.3.5-2 Santa Ana River Channel –
South of I-10 Facing Northeast**

Least Bell's Vireo (LBV)

No CH or potentially suitable habitat for LBV occurs within the study corridor; however, potentially suitable habitat and known populations of LBV occur within the Santa Ana River just outside of the BSA. During protocol-level presence/absence surveys for LBV, none were observed within the BSA; however, adult and juvenile LBV were observed upstream of the study corridor within the Santa Ana River, approximately 1,000 feet from the current I-10 CP footprint.

During the public review period of the Draft EIR/EIS, DOI recommended that additional LBV habitat surveys be conducted. Additional LBV habitat surveys were conducted on July 11 and August 22, 2016, to satisfy USFWS recommendations, as shown in Figure 3.3.5-3. LBV habitat surveys were conducted within the BSA and the immediate project impact area at Santa Ana River and Warm Springs Creek Channel. In the immediate area of the I-10 CP, both the Santa Ana River and Warm Springs Creek Channel are concrete lined at the bottom and at the banks. The surveys indicate that no riparian vegetation is present within the project footprint at the Santa Ana River and no suitable LBV habitat occurs at this location.

At Warm Springs Creek Channel, a layer of sediment has accumulated on the concrete-lined channel bottom, and a small amount of ponded water was present north of I-10. A small patch of southern willow scrub and mulefat located immediately north of the I-10 bridge was observed; however, this habitat does not exhibit LBV's preferred habitat constituents consisting of riverine riparian vegetation with dense stratified canopy (USFWS, Final Rule, 1986). This small patch of southern willow scrub is not considered suitable habitat for LBV, and no LBV was observed at this location. At the southern area of the I-10 bridge spanning over the channel, a larger patch of marginally suitable southern willow scrub habitat was observed; however, this area is outside of the I-10 CP BSA. No LBV were present in this area during the surveys.

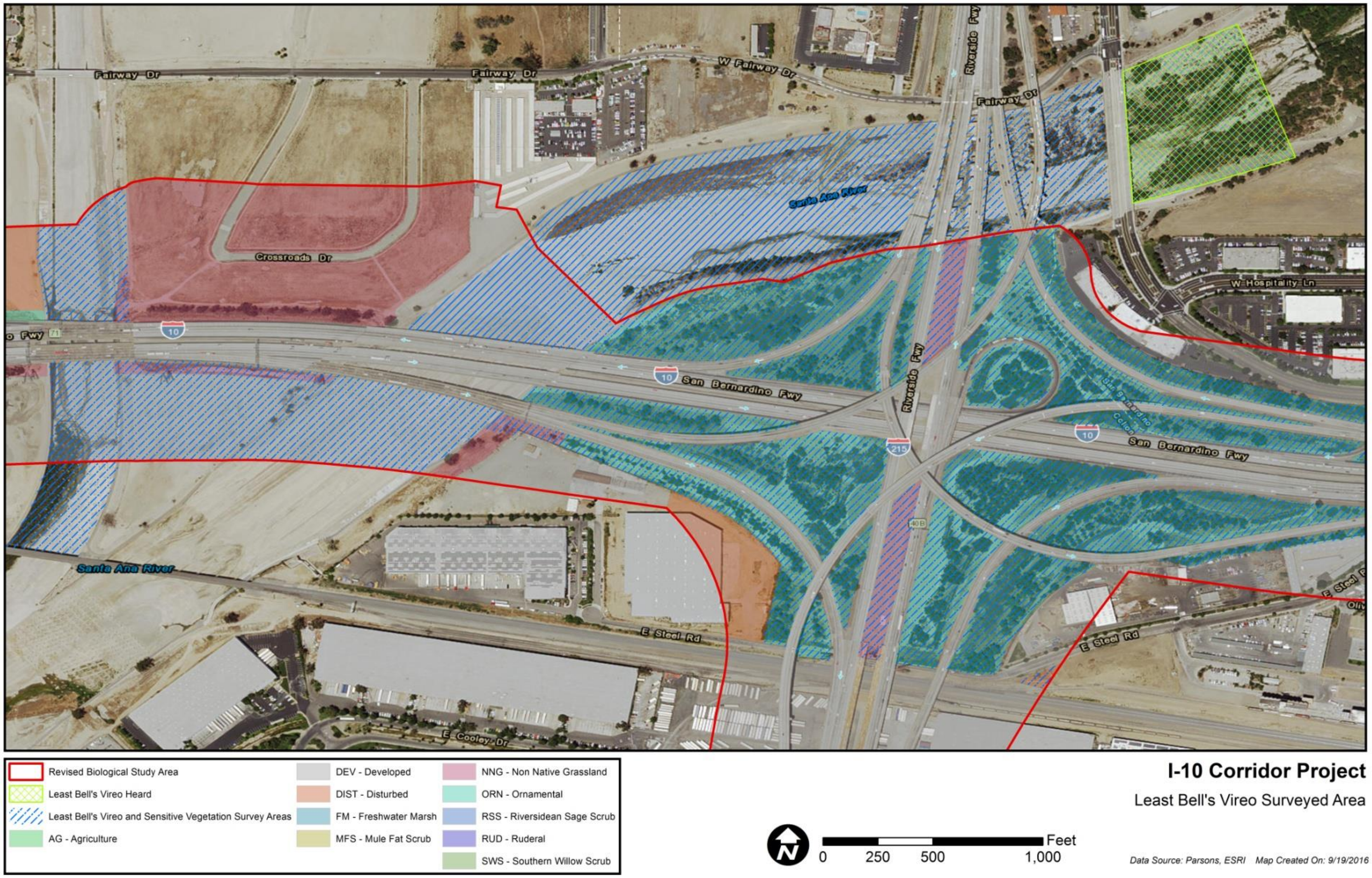

Figure 3.3.5-3 Least Bell's Vireo Survey Area

Santa Ana Sucker (SAS)

Approximately 5.5 acres of the BSA are located within CH Unit 1, Subunit 1B for the SAS. According to the 2010 final rule designating CH for SAS, PCEs for SAS include:

1. A functioning hydrological system within the historical geographic range of SAS that experiences peaks and ebbs in the water volume (either naturally or regulated) that encompasses areas that provide or contain sources of water and coarse sediment necessary to maintain all life stages of the species, including adults, juveniles, larvae, and eggs, in the riverine environment;
2. Stream channel substrate consisting of a conglomerate of loose sand, gravel, cobble, and boulder substrates in a series of riffles, runs, pools, and shallow sandy stream margins necessary to maintain various life stages of the species, including adults, juveniles, larvae, and eggs, in the riverine environment;
3. Water depths greater than 1.2 inches and bottom water velocities greater than 0.01 feet per second;
4. Clear or only occasionally turbid water;
5. Water temperatures less than 86 degrees Fahrenheit (°F);
6. Instream habitat that includes food sources (e.g., zooplankton, phytoplankton, and aquatic invertebrates), and associated vegetation such as aquatic emergent vegetation and adjacent riparian vegetation to provide: (a) Shading to reduce water temperature when ambient temperatures are high, (b) shelter during periods of high water velocity, and (c) protective cover from predators; and
7. Areas within perennial stream courses that may be periodically dewatered, but that serve as connective corridors between occupied or seasonally occupied habitat and through which the species may move when the habitat is wetted.

Although the study corridor is within CH, it is not considered occupied due to a steep concrete revetment/drop structure at the La Cadena Drive Bridge, which serves as a physical barrier to SAS upstream dispersal beyond La Cadena Drive. The nearest CNDDB occurrence for the species is approximately 3 river miles downstream from the BSA. Because there is no suitable habitat for SAS within the BSA, and it is considered by federal agencies to be unoccupied, no focused surveys for this species were completed. SAS is expected to be absent from the project footprint, but a population does occur downstream of the study corridor (within 3 miles), and the study corridor is considered by federal agencies to be important as a source of water and course sediment for the downstream populations.

San Bernardino Kangaroo Rat (SBKR)

The western extent of CH for SBKR Unit 1 extends to approximately 0.5 mile upstream of the BSA. Though SBKR has been documented in recent years in that area, the portion of the BSA within and adjacent to the Santa Ana River is a concrete-lined channel or adjacent to upland areas outside the levees. Because no suitable habitat occurs within the BSA, no focused surveys were conducted for SBKR. No SBKR were observed during surveys conducted in 2013 and 2016.

3.3.5.3 Environmental Consequences

Permanent Impacts

No Build Alternative

The No Build Alternative does not propose any construction or other disturbance in the BSA; therefore, this alternative would not result in any permanent effects to threatened and endangered species.

Build Alternatives

Santa Ana River Woolly-Star

There is no suitable habitat for the Santa Ana River woolly-star currently within the BSA. With incorporation of Measure TE-2, no permanent effects to the species are anticipated.

Slender-Horned Spineflower

There is currently no suitable habitat for the slender-horned spineflower within the BSA. With incorporation of Measure TE-3, no permanent effects to the species are anticipated.

Coastal California Gnatcatcher

Based on the negative survey results for this species, no known occurrences of CAGN in the vicinity, and absence of CH, CAGN is not expected to occur within the project footprint. The proposed project would not result in direct effects to this species.

Delhi Sands Flower-Loving Fly

Alternatives 2 and 3 would result in permanent effects to areas identified as potentially suitable DSF habitat in the Habitat Assessment. The habitat assessment conducted in 2014 identified all potentially suitable habitat for DSF within the BSA. Based on this information, Alternative 2 would result in 2.13 acres of permanent effects to potentially suitable DSF habitat. Alternative 3 would result in 9.70 acres of permanent effects to potentially suitable DSF habitat. The affected DSF potentially suitable habitat areas all occur between the existing edge of shoulder and the Caltrans

ROW line. These areas were considered as potentially suitable habitat because of the presence of DSF habitat soils regardless of whether DSF would occupy these areas. DSF protocol-level surveys were conducted to determine presence/absence of DSF within potentially suitable habitat locations. Due to the elusive nature of the fly and lack of understanding of the various stages of the fly lifecycle, the proposed project may result in take of the fly during construction, pursuant to FESA if it is present.

Direct Effects to DSF

Permanent effects to potentially suitable habitat under Alternatives 2 and 3 are mostly located in areas where frequent disturbance by vehicles occurs (between the existing edge of shoulder and the Caltrans ROW line). According to studies conducted on DSF, adult flies are easily disturbed and agitated by any disturbance; passing vehicles would most likely dislodge adults from habitat along I-10, further reducing potential for mating success. Hence, most of the potentially suitable habitat identified as permanently impacted along the I-10 CP area, regardless of the condition of the habitat, is not conducive for DSF occupation because of the proximity of the habitat to the freeway and the level of surrounding disturbance (i.e., wind velocity, irrigation of Delhi soils, noise, and vibration) along I-10. These interchange and shoulder areas along the I-10 corridor are littered by roadway debris and routinely maintained by Caltrans, which involves vegetation clearing, other landscaping activities, and debris removal.

Per the 2014 DSF habitat assessment, DSF habitat was classified into three categories: potentially suitable, potentially restorable, and unsuitable. Habitat classifications were considered as potential habitat because of the presence of DSF habitat soils irrespective of whether DSF would occupy these areas. Although permanent and temporary impacts to potentially suitable DSF habitat have been identified, areas outside of the I-10/Pepper Avenue interchange are not anticipated to be occupied by DSF nor serve as locations that would sustain the recovery of this species. Hence, shoulder and interchange areas are not recoverable areas because of their proximity to I-10. DSF was found absent at potentially suitable habitat locations for two consecutive survey seasons along the shoulders of the I-10 CP limits and at the following interchange locations: Haven Avenue, Milliken Avenue, and I-15. Therefore, the freeway widening, interchange improvements, and associated activities under Alternatives 2 and 3 at these locations are not anticipated to result in direct effects to DSF. Per USFWS, the interchange and shoulder areas along I-10 within the Haven Avenue, Milliken Avenue, and I-15 would result in “May Affect, But Not Likely to Adversely Affect.” USFWS provided concurrence in March 2017.

DSF was found present on two separate occasions at the southeast quadrant of the I-10/Pepper Avenue interchange during the 2016 DSF survey period; hence, this area of the interchange is considered to be occupied DSF habitat. Proposed improvements at the I-10/Pepper Avenue interchange area include the construction of additional lanes at the eastbound (EB) on-ramp and westbound (WB) off-ramp locations, which would result in disturbance of the existing edge of shoulder to Caltrans' ROW line. A retaining wall would be constructed at the southeast corner of the I-10/Pepper Avenue interchange in conjunction with the EB on-ramp improvements. The area where the DSF was observed during the 2016 DSF survey season would be permanently impacted with construction of the retaining wall and widening of the EB on-ramp.

Figures 3.3.5-4 and 3.3.5-5 illustrate the occupied suitable DSF habitat that would be permanently impacted by construction of both build alternatives. At the southeast quadrant of the I-10/Pepper Avenue interchange, the EB on-ramp is currently constructed at a higher elevation with a steep slope, which shields DSF from freeway disturbance and traffic. In addition, DSF was observed at this location due to the *Moderate to High Quality* DSF habitat adjacent to the existing Caltrans ROW, southeast of the Pepper Avenue interchange. At the northwest, northeast, and southwest quadrants of the I-10/Pepper Avenue interchange, the existing freeway and adjoining ramps are currently constructed at an elevation relative to the freeway that does not provide an effective barrier to shield DSF from freeway traffic. Potentially suitable DSF habitat at these quadrants of the interchange is generally fragmented habitat that is surrounded by existing development and roadway traffic. All four gore and infield areas of the I-10/Pepper Avenue interchange are also exposed to traffic and are not conducive to DSF occupation. Results of the DSF surveys confirm absence of DSF in other areas of the I-10/Pepper Avenue interchange; therefore, only the southern area of the I-10/Pepper Avenue EB on-ramp is considered occupied by DSF and a portion of this area will be directly impacted as a result of implementation of both build alternatives. Therefore, based on information currently available on this species, the proposed project may affect DSF.

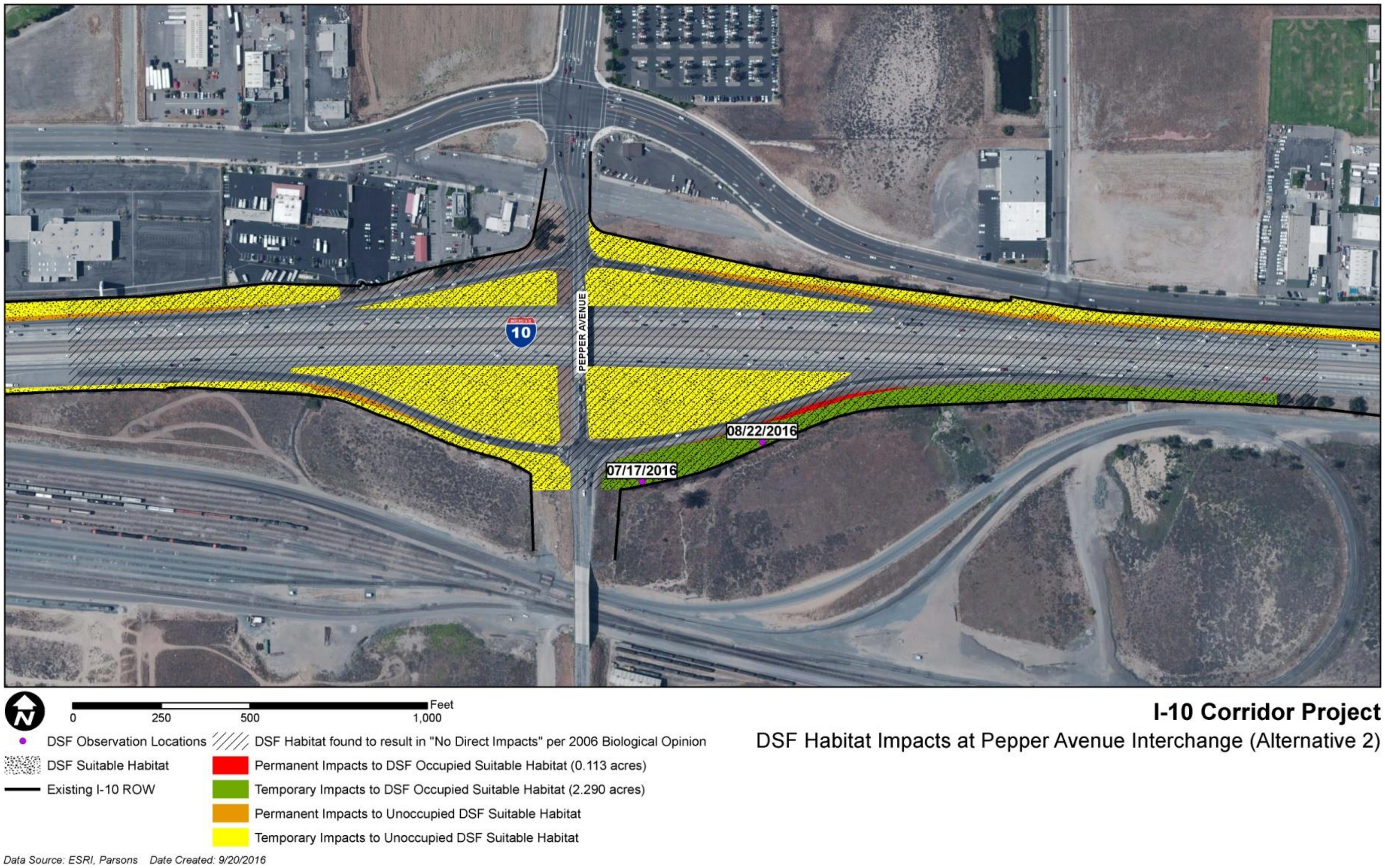

Figure 3.3.5-4 DSF Habitat Impacts at I-10/Pepper Avenue Interchange (Alternative 2)

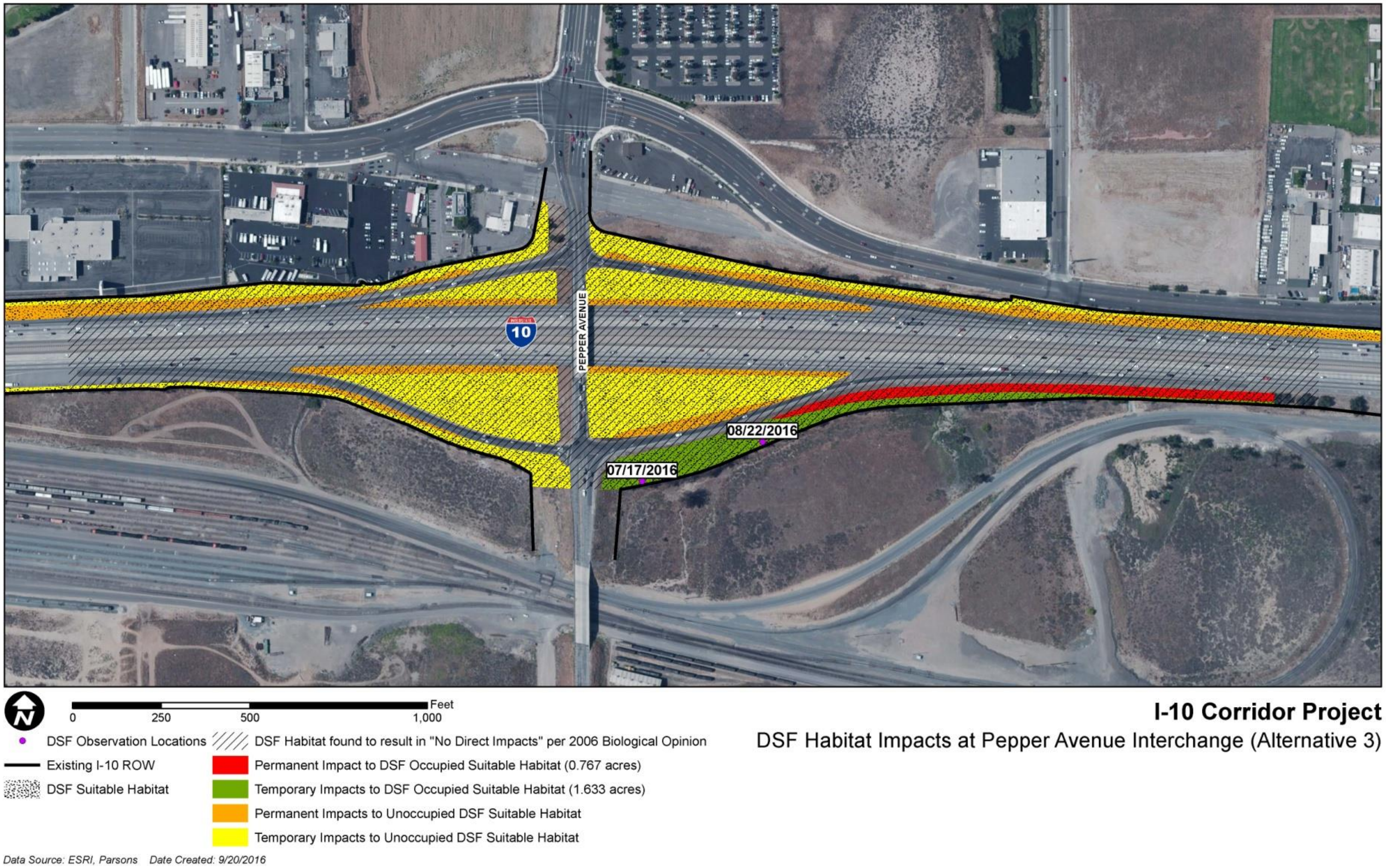

Figure 3.3.5-5 DSF Habitat Impacts at I-10/Pepper Avenue Interchange (Alternative 3)

Because DSF was found at the I-10/Pepper Avenue interchange area between the EB on-ramp and Caltrans ROW, the I-10 CP would result in permanent effects to suitable, occupied DSF habitat identified for Alternatives 2 and 3, a total of 0.11 acre for Alternative 2 and 0.77 acre for Alternative 3 are considered *occupied* by DSF and will be mitigated at a 3:1 ratio through mitigation credits at a USFWS-approved mitigation bank. With implementation of avoidance measure TE-4, permanent impacts to DSF will be mitigated.

Indirect Effects

Only the I-10/Pepper Avenue interchange area contains occupied suitable habitat, which may also result in indirect effects. DSF was found absent in other suitable habitat areas. Hence, evaluation of indirect effects to DSF applies to the I-10/Pepper Avenue interchange area.

Per the previous BO issued by USFWS in 2006, indirect effects to DSF are described as growth-inducing and edge effects resulting from the project, which could increase the likelihood of DSF mortality by vehicle strikes. Improvements at the I-10/Pepper Avenue interchange in the previously issued 2006 BO included bridge widening, additional left-turn lanes at the WB and EB ramp intersections, and widening ramps to three lanes. The scope of improvements for this interchange location has been reduced since the issuance of the 2006 BO. The I-10 CP would only add one additional lane at the EB on-ramp and WB off-ramp locations, retaining walls, shoulders, and restriping of the roadway. These improvements are not considered capacity-increasing improvements because the receiving lanes at Pepper Avenue would not be widened as part of the I-10 CP, which is reflected in the decrease of traffic north of Valley Boulevard.

The project is anticipated to benefit DSF by reducing the potential of DSF versus vehicle conflict. The decrease in average daily traffic (ADT) along Pepper Avenue under year 2025 conditions is attributed to the increase in capacity on I-10 under the build alternatives. The increase in capacity on the mainline is anticipated to result in changes to traffic along arterial roadways; traffic on arterials is anticipated to shift towards I-10 due to improvements in traffic operations along I-10. A previously proposed extension of Pepper Avenue past Slover Avenue is no longer anticipated, which contributed to the decrease of traffic volumes along Pepper Avenue. There are no indirect effects to DSF resulting from increase in traffic at the I-10/Pepper Avenue interchange because the current proposed improvements are not anticipated to induce growth.

Based on the BO Amendment issued by USFWS (FWS-SB-08B0369-17F0669), the removal of vegetation and replacement with impermeable surface will lead to an increase in the amount of surface runoff during precipitation events. Conservation measures will be implemented within sensitive habitats to minimize the impact to soils by clearly delineating the boundary of disturbance and entry into sensitive habitat by motorized vehicles. With the application of Best Management Practices, impacts from erosion and entry into adjacent habitat are expected to be negligible.

Southwestern Willow Flycatcher

CH for SWWF occurs within the study corridor along I-10 within the Santa Ana River. PCEs, such as a species preference for mosaics of relatively dense and expansive growth of trees and shrubs, generally near or adjacent to surface water or underlain by saturated soil, are absent in the BSA. Mature riparian vegetation is present in the Santa Ana River outside the BSA. During 2016 surveys, SWWF was present upstream of the I-10 corridor outside the BSA. The proposed project would result in temporary effects to mapped SWWF CH. Alternative 3 would result in 0.59 acre of temporary effects to SWWF CH. CH within the BSA is unoccupied. Based on the presence of CH, though not suitable within the BSA, this species is not expected to occur within the project footprint. Although CH is designated in the Santa Ana River, SWWF are not present in the BSA due to the concrete-lined portion of the Santa Ana River in the footprint. The proposed project may have temporary effects to mapped SWWF CH during construction in the concrete-lined portion of the Santa Ana River, along with a minimal permanent impact. Indirect impacts to SWWF are not anticipated due to the distance of SWWF suitable habitat from the BSA. Caltrans reinitiated consultation on SWWF and received concurrence for a May Affect, Not Likely to Adversely Affect finding.

Least Bell's Vireo

There is no suitable habitat within the BSA for LBV. Surveys conducted in 2013 and 2016 resulted in LBV observed upstream of the study corridor within the Santa Ana River. This species is not expected to occur within the project footprint. Project best management practices (BMPs) and conservation would be implemented during project construction to avoid any potential for downstream effects on LBV CH. The proposed project would not result in direct or indirect effects to this species. As such, Caltrans has received a USFWS concurrence on a finding of May Affect, Not Likely to Adversely Affect for LBV.

Santa Ana Sucker

USFWS-designated CH for SAS would be permanently affected under Build Alternative 3 and would result in less than 0.59 acre of temporary impacts and less than 0.01 acre of permanent impacts to mapped SAS CH, associated with new bridge columns and pier walls that would be constructed in the Santa Ana River. As discussed previously, although CH is designated in the Santa Ana River, PCEs for SAS do not exist at this location due to the concrete-lined, channelized nature of the Santa Ana River within the BSA. The BSA is concrete-lined and does not contain stands of riparian vegetation or channel substrates to support the life stages of SAS. The BSA does not contain the PCEs according to the USFWS designation of CH for SAS. Caltrans reinitiated consultation on LBV and received concurrence for a May Affect, Not Likely to Adversely Affect determination.

San Bernardino Kangaroo Rat

The western extent of CH for SBKR Unit 1 extends to approximately 0.5 mile upstream of the BSA. According to the final rule designating CH for SBKR, PCEs for SBKR include:

1. Soil series consisting predominantly of sand, sandy loam, or loam within the historical range of the species;
2. Alluvial sage scrub and associated vegetation, such as coastal sage scrub and chamise chaparral, with a moderately open canopy;
3. River, creek, stream, and wash channels; alluvial fans; floodplains; floodplain benches and terraces; and historic braided channels that are subject to dynamic geomorphological and hydrological processes; and
4. Upland areas proximal to floodplains containing soils, vegetation, or hydrological processes required by SBKR.

The BSA is concrete-lined and contains some sediment deposited during fluvial events; however, the soil does not meet the series requirements according to the CH designation. In addition, alluvial sage scrub and associated vegetation with a canopy are lacking in the BSA. The upland areas proximal to the channels are composed of compacted fill and concrete typical of disturbed conditions.

There are no areas within the BSA with the potential to support SBKR. No suitable habitat exists within the BSA, and no impacts to SBKR are anticipated.

Temporary/Construction Impacts

No Build Alternative

The No Build Alternative does not propose any construction or other disturbance in the BSA; therefore, this alternative would not result in temporary effects to threatened and endangered species.

Build Alternatives

Santa Ana River Woolly-Star

There is currently no suitable habitat for the Santa Ana River woolly-star within the BSA. With incorporation of Measure TE-2, no temporary effects to the species are anticipated.

Slender-Horned Spineflower

There is currently no habitat for the slender-horned spineflower within the BSA. With incorporation of Measure TE-3, no temporary effects to the species are anticipated.

Coastal California Gnatcatcher

Based on the negative survey results for this species, CAGN is not expected to occur within the project footprint. The proposed project would not result in temporary effects to this species.

Delhi Sands Flower-Loving Fly

Alternatives 2 and 3 would result in temporary effects to areas identified as potentially suitable DSF habitat in the Habitat Assessment. Based on this information, Alternative 2 would result in 48.10 acres of temporary effects to potentially suitable DSF habitat. Alternative 3 would result in 48.15 acres of temporary effects to potentially suitable DSF habitat.

Based on the presence/absence surveys for DSF conducted in 2015 and 2016, suitable habitat within the I-10 CP was found to be occupied by DSF at the southeast quadrant of the I-10/Pepper Avenue interchange. Of the total 48.10 acres of potentially suitable DSF habitat to be temporarily impacted for the entire project limits under Alternative 2, a total of 2.29 acres is considered occupied suitable habitat. Of the total 48.15 acres of potentially suitable DSF habitat to be temporarily impacted for the entire project limits under Alternative 3, a total of 1.63 acres is considered occupied suitable habitat. Figures 3.3.5-4 and 3.3.5-5 illustrate temporary impacts to occupied suitable DSF habitat. Temporary impacts to occupied DSF suitable habitat will be mitigated at a 1:1 ratio through the purchase of mitigation credits at a USFWS-approved mitigation bank. With implementation of avoidance measure TE-4, temporary impacts to DSF will be mitigated.

Caltrans has agreed with USFWS' proposed 3:1 mitigation ratio for permanent impacts to approximately 0.77 acre of occupied DSF habitat, which would require 2.30 acres of mitigation credits to be purchased. Caltrans has also agreed with a proposed 1:1 mitigation ratio for temporary impacts to approximately 1.63 acres of occupied DSF habitat, which would require 1.63 acres of mitigation credits to be purchased.

San Bernardino Kangaroo Rat

There are no areas within the BSA with the potential to support SBKR. No suitable habitat exists within the BSA, and no impacts to SBKR are anticipated.

Indirect Effects

Delhi Sands Flower-Loving Fly

Temporary indirect effects to DSF during construction would include increased exposure of DSF to noise, vibration, dust, and human presence. Based on the USFWS BO Amendment (April 2017), DSF could be indirectly affected if construction activities encroached onto adjacent vacant lands that contain Delhi fine sand. However, with implementation of BMPs related to personnel training regarding DSF and access restrictions to adjacent occupied suitable DSF habitat outside of the project area, potential indirect effects are expected to be avoided or negligible.

Southwestern Willow Flycatcher

The proposed build alternatives would result in 0.59 acre of temporary effects to SWWF CH. As discussed previously, although CH is designated in the Santa Ana River, PCEs for SWWF do not exist due to the concrete-lined, channelized nature of the Santa Ana River within the BSA. Based on the absence of suitable habitat within the BSA and negative surveys for SWWF in the BSA, SWWF is not expected to occur within the project footprint. Construction activities would occur within the Santa Ana River and other drainages within the BSA that drain to the Santa Ana River. If the proposed construction activities increase sedimentation within the Santa Ana River, they could affect SWWF habitat; however, with implementation of Measure TE-1 and NC-1, as described below, no substantial indirect effects to SWWF CH are expected to occur. The lack of suitable habitat within the general vicinity of construction activities, in addition to the considerable distance of the nearest SWWF observation made during focused surveys, indicates that indirect impacts such as noise and human presence will have a negligible effect on LBV. Mitigation and minimization measures included in Section 3.2.7, Noise, will also minimize any potential noise impacts. In addition, as indicated in TE-6, wildlife-friendly lighting would be used, and light would be directed away from the riparian habitat north of the BSA near the Santa Ana River, minimizing potential light impacts associated with construction. Based on this information, a finding of May Affect, Not Likely to Adversely Affect has been received for this species.

During construction, the potential exists for increased noise and light that may disrupt bird behavior. In particular, construction during the breeding season could disrupt nesting activities, possibly resulting in nest abandonment, loss of young, and reduced health and vigor of eggs and/or nestlings. These effects are considered temporary in nature and considered to not cause any permanent disruption to these birds given species absence in the BSA.

Least Bell's Vireo

Based on the absence of suitable habitat within the BSA and negative surveys for LBV in the BSA, this species is not expected to occur within the project footprint. Construction activities, some of which involve soil disturbance and grading, would occur within the Santa Ana River and other drainages within the BSA that drain to the Santa Ana River. If the proposed construction activities increase sedimentation within the Santa Ana River, they could affect downstream LBV habitat; however, with implementation of the avoidance measures TE-1 and NC-1, no substantial indirect effects on downstream LBV CH are expected to occur during construction of the build alternatives. The lack of suitable habitat within the general vicinity of construction activities in addition to the considerable distance of the nearest LBV observation made during focused surveys indicates that indirect impacts such as noise and human presence will have a negligible effect on LBV. Mitigation and minimization measures included in Section 3.2.7, Noise, will also minimize any potential noise impacts. In addition, as indicated in TE-6, wildlife-friendly lighting would be used, and light would be directed away from the riparian habitat north of the BSA near the Santa Ana River, minimizing potential light impacts associated with construction. Based on this information, a finding of May Affect, Not Likely to Adversely Affect has been received for this species.

During construction, the potential exists for increased noise and light that may disrupt bird behavior. In particular, construction during the breeding season could disrupt nesting activities, possibly resulting in nest abandonment, loss of young, and reduced health and vigor of eggs and/or nestlings. These effects are considered temporary in nature and considered to not cause any permanent disruption to these birds given species absence in the BSA.

Santa Ana Sucker

SAS is expected to be absent from the project footprint, but a population does occur downstream of the study corridor (within 3 miles), and the study corridor is considered by federal agencies to be important as a source of water and course sediment for the downstream populations.

With implementation of measures described in Section 3.3.1, Water Quality, and Section 3.3.3, Wetlands and Other Waters, temporary effects to SAS or downstream suitable habitat are not anticipated to result from either of the build alternatives. USFWS-designated CH for SAS would be temporarily affected under the two build alternatives. To construct new footings and widen the I-10 bridges above the Santa Ana River, Alternative 3 would result in 0.59 acre of temporary impacts and less than 0.01 acre of permanent impacts to designated CH for this species. Although CH is designated in the Santa Ana River, PCEs for SAS do not exist at these temporary effect locations due to the concrete-lined, channelized nature of the Santa Ana River. Based on the absence of suitable habitat within the BSA and minimal impacts to CH, a finding of May Affect, Not Likely to Adversely Affect has been received for SAS. With implementation of avoidance measure TE-5, impacts to SAS and its habitat downstream of the project area will be avoided.

3.3.5.4 Avoidance, Minimization, and/or Mitigation Measures

In addition to measures provided in Sections 3.2.2, Water Quality; 3.3.1, Natural Communities; 3.3.2, Wetlands and Other Waters; 3.3.3, Plant Species; and 3.3.4, Animal Species, the measures listed below would be required to avoid and minimize temporary and permanent effects to threatened, endangered, and candidate species associated with the build alternatives. Measures will be implemented under San Bernardino County Transportation Authority (SBCTA) and Caltrans oversight. Any changes would require SBCTA and Caltrans approvals.

TE-1: SBCTA’s Design Engineer will coordinate with the qualified biologist to delineate all environmentally sensitive areas (ESAs) within the project footprint and immediately surrounding areas in the project specifications. ESAs will include the Santa Ana River and Warm Creek Channel, as well as Delhi soils (potential DSF habitat) that are not identified as temporarily or permanently impacted in the environmental document.

Prior to clearing vegetation or construction within or adjacent to ESAs, the Contractor will install highly visible barriers (e.g., orange construction fencing) under the direction of the qualified biologist, adjacent to the project footprint to designate ESAs to be preserved in place. No grading or fill activity of any type will be permitted within these ESAs. In addition, no construction activities, materials, or equipment will be allowed within the ESAs. All construction equipment will be operated in a manner to prevent accidental damage to nearby ESAs. No structure of any kind, or incidental storage of equipment or supplies, will be allowed within the ESAs. Silt fence barriers will be installed at the ESA boundaries to prevent accidental deposition of fill material in areas where vegetation is adjacent to planned grading activities. The ESA fencing will conform to the provision of Section 14-1.03 "Type ESA Temporary Fence" of the California Department of Transportation's 2010 Standard Specifications and Special Provisions. A qualified biologist will supervise the placement of ESA fencing.

TE-2: A preconstruction survey will be conducted by a qualified biologist for the Santa Ana River woolly-star within the BSA in the vicinity of Warm Creek Channel and the Santa Ana River. The preconstruction survey will be conducted during the blooming season (i.e., May to September) prior to initiation of construction activities within the area of Warm Creek Channel and the Santa Ana River. If the species is found within the construction footprint during the preconstruction surveys, then Caltrans will reinitiate consultation with USFWS and CDFW in accordance with FESA and CESA. If present, one or more of the following mitigation strategies will be required: purchase of credits from a mitigation bank; onsite conservation of existing Santa Ana River woolly-star through avoidance and designation of ESAs; and/or translocation of Santa Ana River woolly-star outside of the project ROW to areas of suitable habitat, as identified by a Contractor-supplied plant biologist with knowledge of and experience with translocation of local flora species of the region.

TE-3: A preconstruction survey will be conducted by a qualified biologist for the slender-horned spineflower within the BSA in the vicinity of Warm Creek Channel and the Santa Ana River. The preconstruction survey will be conducted during the blooming season (i.e., May through September) prior to initiation of construction activities within the area of Warm Creek Channel and the Santa Ana River. If the species is found within the construction footprint during the preconstruction surveys, then Caltrans will reinitiate consultation with USFWS and CDFW in accordance with FESA and CESA. If present, one or more of the following mitigation strategies will be required: purchase of credits from a mitigation bank; onsite conservation of existing slender-horned spineflower through avoidance and designation of ESAs; and/or translocation of slender-horned spineflower outside of the project ROW to areas of suitable habitat, as identified by a Contractor-supplied plant biologist with knowledge of and experience with translocation of local flora species of the region.

TE-4: Permanent impacts to *occupied* suitable DSF habitat will be mitigated through the purchase of mitigation credits at a 3:1 ratio. For temporary impacts to *occupied* suitable DSF habitat, mitigation credits will be purchased at a 1:1 ratio. Potential regional DSF conservation programs that may be used for compensatory mitigation include the Reichel HCP, the Angelus Block Property, the Owl Company Property, the Laing Homes (King is Coming) Site, the Hospital Site, the Colton Substation Site, the Vulcan Materials DSF Mitigation Bank or other appropriate mitigation area as approved by USFWS. Prior to the onset of ground disturbance, Caltrans will submit a record of credits purchased to USFWS for review and approval.

TE-5: To avoid potential downstream impacts to SAS and its habitat, silt fencing will be installed at construction areas adjacent to the river, and the requirements of measure WET-2 will be implemented prior to construction within the Santa Ana River and Warm Creek Channel.

TE-6: For night lighting during construction, wildlife-friendly limited wavelength amber light-emitting diode (LED) roadway lighting fixtures will be used. Night lighting during construction will be directed away from SBKR CH within the Santa Ana River. A qualified biological monitor will be present to inspect onsite lighting prior to initiating nighttime construction activities.

TE-7: ***For DSF Occupied, Suitable Habitat* -** Prior to initiation of ground-disturbing activities, construction personnel will receive training regarding potential impacts to DSF and restricted areas in accordance with USFWS BO Amendment (FWS-SB-08B0369-17F0669). In addition, a qualified biologist will periodically monitor and report on compliance with the established construction limits. If there are unanticipated impacts to DSF occupied, suitable habitat, construction in that area will be halted and USFWS will be contacted immediately. Caltrans will submit a report following completion of the project to USFWS, identifying total DSF habitat impacted.

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3.3.6 Invasive Species

This section discusses invasive species with the potential to occur within the Biological Study Area (BSA) as discussed in the *Natural Environment Study* (NES) (December 2015).

3.3.6.1 Regulatory Setting

On February 3, 1999, President William J. Clinton signed Executive Order (EO) 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." Federal Highway Administration (FHWA) guidance issued August 10, 1999, directs the use of the State’s invasive species list, maintained by the California Invasive Species Council (Cal-IPC) to define the invasive plants that must be considered as part of the National Environmental Policy Act (NEPA) analysis for a proposed project.

3.3.6.2 Affected Environment

Highway corridors provide opportunities for the movement of invasive species through the landscape. Invasive species can move on vehicles and in the loads they carry. Invasive plants can be moved from site to site during spraying and mowing operations. Weed seed can be inadvertently introduced into the corridor on equipment during construction and through the use of mulch, imported soil or gravel, and sod. In erosion control, landscape, or wildflower projects, some invasive plant species might be planted deliberately. Transportation corridor rights-of-way (ROW) provide ample opportunity for weeds in adjacent lands to spread along corridors that span, on a national scale, millions of miles along highways.

The Cal-IPC Invasive Plant Inventory is based on information submitted by members, land managers, botanists, and researchers throughout the state, as well as published sources. The inventory highlights non-native plants that are serious problems in wildlands (i.e., natural areas that support native ecosystems, including national, state, and local parks; ecological reserves; wildlife areas; national forests; and Bureau of Land Management [BLM] lands). The Invasive Plant Inventory categorizes plants as High, Moderate, or Limited based on the species’ negative ecological impact in California. Plants categorized as “High” have severe ecological impacts. Plants categorized as “Moderate” have substantial and apparent, but not severe, ecological impacts. Plants categorized as “Limited” are invasive, but their ecological impacts are minor on a statewide level.

Exotic plant species exist within the non-native plant communities throughout the BSA within patches of native plant communities and in areas that have been disturbed by human uses. Exotic species are typically more numerous adjacent to roads and developed areas and frequently border the ornamental landscape. In the past, these areas likely supported grasslands, oak woodland, coastal sage scrub, and riparian habitats. Consequently, scattered plant species associated with these plant communities are often found in these areas.

As discussed in the NES (December 2015), 12 plant species considered exotic/invasive by the Cal-IPC were observed within the BSA. These species generally occurred in areas identified as ruderal, ornamental, or ruderal/ornamental and include wild oat *(Avena fatua)*, slender wild oat *(Avena barbata)*, Russian thistle *(Salsola tragus)*, tree tobacco *(Nicotiana glauca)*, hottentot fig (ice plant) *(Capobrotus edulis)*, rip-gut brome *(Bromus diandrus)*, red brome *(Bromus madritensis* ssp. rubens), eucalyptus *(Eucalyptus* sp.), Peruvian pepper *(Schinus molle)*, olive *(Olea europaea)*, Mexican fan palm *(Washingtonia robusta)*, and Canary Island date palm *(Phoenix canariensis)*. Of these species, 2 have an overall high rating, 5 have a moderate rating, and 5 have a limited rating. Invasive species that have severe ecological impacts are given a high rating. Within the BSA, the 2 species with a high rating are hottentot fig (ice plant) and red brome.

No substantial populations of invasive wildlife have been documented in the BSA. House sparrows *(Passer domesticus)*, rock pigeons *(Columba livia)*, and European starlings *(Sturnus vulgaris)*, as well as Virginia opossums *(Didelphis virginiana)* and feral dogs *(Canis lupus familiaris)* and cats *(Felis catus)*, are known to occur in urban areas along the Interstate 10 (I-10) corridor.

3.3.6.3 Environmental Consequences

None of the species on the California list of invasive species is used by the California Department of Transportation (Caltrans) for erosion control or landscaping.

Permanent Impacts

No Build Alternative

The No Build Alternative does not propose any construction or other disturbance in the BSA; therefore, this alternative would not result in long-term impacts related to the introduction or spread of invasive species to or from the BSA and would not cause permanent direct or indirect adverse impacts regarding invasive species.

Build Alternatives

Implementation of the build alternatives would have the potential to spread invasive species by the entering and exiting of construction equipment contaminated by invasives, the inclusion of invasive species in seed mixtures and mulch, and the improper removal and disposal of invasive species so that seed is spread along the highway. The plant palette used for revegetation would not include invasive species; therefore, the build alternatives for the proposed project would not have a substantial effect on invasive species.

Temporary/Construction Impacts

No Build Alternative

The No Build Alternative does not propose any construction or other disturbance in the BSA; therefore, this alternative would not result in temporary impacts related to the introduction or spread of invasive species to or from the BSA and would not cause temporary direct or indirect adverse impacts regarding invasive species.

Build Alternatives

Implementation of the build alternatives would have the potential to spread invasive species by the entering and exiting of construction equipment from the project site that is contaminated by invasives, the accidental inclusion of invasive species in seed mixtures and mulch, and the improper removal and disposal of invasive species so that seed is spread along the highway. With implementation of Minimization and Avoidance Measure IS-1, temporary invasive species impacts are not anticipated.

3.3.6.4 Avoidance, Minimization, and/or Mitigation Measures

The following measures will avoid, minimize, or mitigate potential temporary and permanent impacts related to invasive species:

IS-1 In compliance with the Executive Order on Invasive Species, EO 13112, and guidance from FHWA, the landscaping and erosion control included in the project will not use species listed as invasive. In areas of particular sensitivity (i.e., near or adjacent to drainages), extra precautions will be taken if invasive species are found in or next to the construction areas. This will include the inspection and cleaning of construction equipment and eradication strategies, as required by the Caltrans Biological Monitor, to be implemented should an invasion occur. Any cleaning of equipment or site watering will be conducted in adherence to any applicable drought conditions and related regulations.

3.4 Relationship between Local Short-Term Uses of the Human Environment and the Maintenance and Enhancement of Long-Term Productivity

Project implementation would result in attainment of long-term transportation objectives at the expense of some short-term social, economic, aesthetic, biological, noise, water quality, and other land use impacts. The need for these long-term transportation improvements is based on the current poor operating conditions of the I-10 corridor, and it is necessary to ensure safe and efficient local and regional movement of people and goods.

3.4.1 Build Alternatives

The build alternatives would have similar short-term impacts. These impacts would vary in degree and severity for each alternative alignment but are generally similar.

Short-term impacts would include inconvenient access, and/or residential and business relocation; traffic delays and detours; limited access for bicyclists and pedestrians; construction impacts related to visual quality, water quality, and increased noise levels; and general access and travel inconveniences.

Short-term benefits would include increased job creation and increased local revenue generated during construction activities.

Long-term effects would include noise increases and irrevocable use of construction materials, including concrete, steel, and asphalt.

Long-term benefits would include an improved transportation network in the area, reduced congestion, and improved intersection circulation.

3.4.2 No Build Alternative

The No Build Alternative would offer none of the benefits or have any of the impacts listed above; however, it would not resolve worsening congestion on local streets and highways.

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3.5 Irreversible and Irretrievable Commitments of Resources that would be Involved in the Proposed Project

Implementation of the project involves the commitment of a range of natural, physical, human, and fiscal resources. The commitment of these irretrievable resources for the build alternatives would vary in degree and amount but are generally similar. Land used in construction of the proposed facility is considered an irreversible commitment during the time period that the land is used for a highway facility; however, if a greater need arises for use of the land or if the highway facility is no longer needed, the land could be converted to another use. At present, there is no reason to believe such a conversion would ever be necessary or desirable.

Considerable amounts of fossil fuels, labor, and highway construction materials, such as cement, aggregate, and bituminous material, are expended for construction of a highway facility. Additionally, large amounts of labor and natural resources are used in the making of construction materials. These materials are generally not retrievable; however, they are not in short supply, and their use for the proposed project would not have an adverse effect on continued availability of these resources. Any construction would also require a substantial onetime expenditure of State and federal funds, which are not retrievable; however, savings in energy and time, and a reduction in accidents, would offset this commitment of fiscal resources. In addition to the initial costs of construction and right-of-way (ROW), there would be ongoing costs for roadway maintenance, including pavement, roadside litter/sweeping, signs and markers, and electrical and storm maintenance.

The commitment of these resources is based on the concept that residents of the immediate area, region, and state would benefit from the improved quality of the transportation system. These benefits would consist of improved accessibility, safety, and regional mobility for people and goods, which are expected to outweigh the commitment of these resources.

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3.6 Cumulative Impacts

3.6.1 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of the proposed project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

The California Environmental Quality Act (CEQA) Guidelines Section 15130 describes when a cumulative impact analysis is necessary and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts under CEQA can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts under the National Environmental Policy Act (NEPA) can be found in 40 *Code of Federal Regulations* (CFR) Section 1508.7 of the Council on Environmental Quality (CEQ) Regulations.

3.6.2 Affected Environment

The Interstate 10 (I-10) corridor study area consists of a mixture of urbanized mixed-use, residential, agricultural, industrial, commercial, and open space land uses. Twelve municipalities are responsible for land use and zoning oversight within the project study area and include the cities of Pomona, Claremont, Montclair, Upland, Ontario, Fontana, Rialto, Colton, San Bernardino, Loma Linda, Redlands, and Yucaipa; the community of Bloomington; and the counties of Los Angeles and San Bernardino. The study area for each of the environmental resources potentially affected by the proposed project and cumulative projects has been previously discussed in their respective sections in Chapter 3.

3.6.3 Methodology

Cumulative impacts were identified by comparing the temporary and permanent impacts of the proposed project and other past, current, or reasonably foreseeable future actions within the I-10 Corridor Project (I-10 CP) area to establish whether, in the aggregate, they could result in cumulative environmental impacts. Direct and indirect impacts are assessed during the construction and operations of the I-10 CP for Alternative 2 and Alternative 3. The cumulative effect analysis focuses on those issues and resources that would be affected by aggregation of stress factors on the environment and does not address in detail those topics that would not have additional environmental effects from the cumulative condition. The analysis provided in this section considered the effects of the other projects and the build alternatives in assessing whether a particular environmental parameter would experience cumulative adverse impacts. Specific geographic boundaries for cumulative effects are determined for each environmental topic analyzed and may vary accordingly.

Further actions anticipated to occur include further growth within the cities of Pomona, Claremont, Montclair, Upland, Ontario, Fontana, Rialto, Colton, San Bernardino, Loma Linda, Redlands, and Yucaipa; the community of Bloomington; and the counties of Los Angeles and San Bernardino. The growth would require continued expansion of supporting infrastructure such as roadways, commercial uses, public services, and utilities. The anticipated growth is reflected in the regionally adopted growth projections and is planned for in the General Plans of the cities and communities in which the proposed project is located. The following eight steps serve as the guidelines for identifying and assessing cumulative impacts and are based on the *Caltrans Standard Environmental Reference – Cumulative Impact Analysis*.[16]

- Identify the resources to consider in the cumulative impact analysis by gathering input from knowledgeable individuals and reliable information sources. This process is initiated during project scoping and continues throughout the environmental analysis.
- Define the geographic boundary of the Resource Study Area (RSA) for each resource to be addressed in the cumulative impact analysis.
- Describe the current health and historical context of each resource.
- Identify the direct and indirect impacts of the proposed project that might contribute to a cumulative impact on the identified resources.

[16] http://www.dot.ca.gov/ser/cumulative_guidance/approach.htm.

- Identify a set of past, present, and reasonably foreseeable future actions or projects and their associated environmental impacts to include in the cumulative impact analysis.
- Assess cumulative impacts.
- Report the results of the cumulative impact analysis.
- Assess the need for mitigation and/or recommendations for actions by other agencies to address a cumulative impact.

As specified in the above cumulative analysis guidelines, if the proposed project would not result in a direct or indirect impact to a resource, it will not contribute to a cumulative impact on that resource. This cumulative impact analysis includes environmental resources that are substantially affected by the project and resources that are currently in poor or declining health, or at risk even if project impacts would not be substantial.

3.6.4 Related Projects

The list of past, present, and reasonably foreseeable projects is based on research of documents prepared by the California Department of Transportation (Caltrans) and various local and regional agencies within the vicinity of the proposed project. These documents include adopted plans that guide local and regional land uses. These plans include General Plans, Specific Plans, Area Plans, Community Plans, and other land use planning documents for the cities of Pomona, Claremont, Montclair, Upland, Ontario, Rancho Cucamonga, Fontana, Bloomington, Colton, Rialto, Loma Linda, San Bernardino, and Redlands; and unincorporated areas in San Bernardino County. Information on current and future transportation projects was provided by Caltrans. Approved and planned transportation improvements in eastern Los Angeles County and San Bernardino County include various road and highway improvements, and passenger rail service and facility improvements.

Table 3.6-1 summarizes the past, present, and reasonably foreseeable projects considered in the cumulative impact analysis of the proposed project. The cumulative project timeframe includes any projects that may occur within 3 years of the proposed project implementation. The projects identified in Table 3.6-1 show transportation and residential projects located within 5 miles of the proposed alignment and all other development located within 2 miles. The projects were used to analyze cumulative impacts of the proposed project. Figure 3.6-1 illustrates the location of the cumulative projects.

Table 3.6-1 Related Projects

Project Name, Type, Status, and ID Number (Refer to Figure 3.6-1)	Project Description	Summary of Environmental Evaluation, Documentation, and Impacts
I-10 Projects • Transportation projects • Located at various locations along the I-10 corridor • Caltrans projects • In various phases of planning or development through the year 2045 (These projects are located all along I-10 and are not shown in the Related Projects map.)	Caltrans has 38 projects proposed for I-10, ranging from minor maintenance to interchange projects. Of the 38 projects along I-10, only 5 interchange projects require measures to address impacts.	Roadway improvement projects are proposed. Impacts are anticipated to be similar to the proposed project. Construction impacts related to noise, air quality, visual, and traffic are anticipated to contribute to cumulative impacts. **Source:** Caltrans, 2015
Metrolink Station Accessibility Improvement Project • Transportation project • Located parallel to the proposed project at various Metrolink stations and their surrounding catchment areas • Final Design has been completed, and the project is currently in the construction phase with anticipated completion in 2018 (This project is located all along I-10 and is not shown in the Related Projects map.)	The San Bernardino County Transportation Authority (SBCTA) is proposing to improve bicycle and pedestrian access to the regional transit network and extend the catchment areas of the Metrolink stations included in the proposed project along the San Bernardino Line. The proposed projects would be located within the 0.5-mile radius for pedestrian access and 1.5-mile radius for bicycle access from the six existing Metrolink transit stations in the cities of Montclair, Upland, Rancho Cucamonga, Fontana, Rialto, and San Bernardino. The individual Active Transportation Program (ATP) projects aim to improve transit/bicycle/pedestrian connectivity and safety.	The project is currently in the construction phase and was environmentally cleared under State and federal categorical exclusions/exemptions. Permanent impacts are anticipated to be beneficial to the overall circulation of the region. **Source:** http://www.catc.ca.gov/programs/ATP/2014_Project_Applications/0561_SANBAG.pdf, accessed January 2017.

Table 3.6-1 Related Projects

Project Name, Type, Status, and ID Number (Refer to Figure 3.6-1)	Project Description	Summary of Environmental Evaluation, Documentation, and Impacts
I-15 Express Lanes Project • Transportation project • Located in Jurupa Valley, Eastvale, Norco, Corona, and Riverside • Riverside County Transportation Commission (RCTC) and Caltrans project • Currently in the environmental phase and is expected to be completed in 2016 (This project is south of the I-10 CP and is not shown in the Related Projects map.)	RCTC, in partnership with Caltrans District 8, is constructing improvements on a 14.6-mile-long segment of the I-15 corridor. The project includes the addition of one to two tolled express lanes in each direction from Cajalco Road where it crosses I-15 in Corona to just south of the I-15 and State Route (SR) 60 interchange at Riverside Drive. This project has an estimated construction cost of $425 to $450 million.	Environmental documentation is expected to be completed in summer 2016. Impacts are anticipated to be similar to the proposed project. Construction impacts related to noise, air quality, and traffic are anticipated to contribute to cumulative impacts. **Source:** http://i15project.info/index.php, accessed April 2016.
San Bernardino County Flood Control District's Master Stormwater System Maintenance Program (MSWSMP) • Located within the San Bernardino County Flood Control District Jurisdiction • San Bernardino County Flood Control District (SBCFCD) Project • An Initial Study was completed for the project in June 2014. A Notice of Preparation of a Draft Environmental Impact Report (EIR) was circulated on June 30, 2014. (The project is located throughout San Bernardino County and will apply to all Flood Control District Facilities. It is not shown in the Related Projects map.)	SBCFCD is proposing to implement a comprehensive program to prepare and implement a Maintenance Plan for maintenance of flood facilities throughout San Bernardino County. Types of routine operations and maintenance activities include, but are not limited to, the removal of excess sediment, debris, and vegetation; stockpiling excess material and debris following removal; maintaining sufficient flowpaths; grooming/repairing earthen and improved channel slopes and bottoms; and maintaining culverts and bridges to ensure proper drainage and structural integrity.	An Initial Study was prepared for the project in June 2014. Proposed project activities would result in potentially significant impacts to air quality, biological resources, cultural resources, geology and soils, greenhouse gas (GHG) emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, public services, recreation, transportation and traffic, and utilities and service systems. These issues will also be analyzed further in the project's Draft EIR. **Source:** http://www.sbcounty.gov/dpw/public_notices/pdf/MSWMP_NOP_Initial_Study.pdf, accessed July 2014.

Table 3.6-1 Related Projects

Project Name, Type, Status, and ID Number (Refer to Figure 3.6-1)	Project Description	Summary of Environmental Evaluation, Documentation, and Impacts
State Route 210 Foothill Freeway Planned Construction Activity – ID Number 1 (Sheet 4) • Transportation project • Located in La Verne, Claremont, Upland, Rancho Cucamonga, Fontana, Rialto, and San Bernardino • SBCTA and Caltrans projects • Future planned projects; timeline is uncertain	Future work on SR-210 would include: • Freeway landscaping is planned for the final 8 miles (Segment 11) of SR-210 ending at the I-10 interchange. Caltrans is developing the landscaping design, which will follow the elements of the Foothill Corridor Beautification Master Plans. Irrigation systems, trees, shrubs, groundcover, flowers, and rock treatments will be installed under separate landscaping contracts in the future. • Seismic retrofit of the Union Pacific Railroad (UPRR) bridge in San Bernardino. • Construction of an interchange at Pepper Avenue in Rialto. SBCTA built a bridge at this location. Once the City of Rialto extends Pepper Avenue north to SR-210, SBCTA will build on-ramps and off-ramps at this location. Preliminary engineering and preparation of the environmental document are underway now. • SR-210 to Interstate 215 (I-215) high-speed connectors.	The project proposes to improve aesthetics, safety, and traffic circulation in San Bernardino County. Temporary impacts may result from construction, including traffic delays. Impacts related to the freeway facility connectivity would likely result in similar impacts to the proposed project. **Source:** http://www.sanbag.ca.gov/projects/z-completed/mi_fwy_foothill_future.html, accessed April 2016.
Redlands Passenger Rail Project – ID Number 2 (Sheet 4) • Transportation project • Located in San Bernardino, Loma Linda, Redlands, and unincorporated areas of San Bernardino County • Federal Transit Administration (FTA), SBCTA, Omnitrans, Metrolink, and the City of San Bernardino Project • Project construction is expected to begin in late 2017	The Redlands Passenger Rail Project is proposed to run along existing railroad right-of-way (ROW) from E Street just before Stoddard Avenue in San Bernardino to Rialto Avenue in Redlands, roughly a 9-mile extension of passenger rail service. The project is proposing to build five new stations. The project will incorporate track improvements, including redesign of the existing track alignment, track ballast, and subgrade foundation. Additional project components include the replacement or strengthening of five bridges; additional traffic and rail signals; utility replacement and relocation; and culvert replacements, extensions, and relocations.	SBCTA and FTA finalized the EIR/Environmental Impact Statement (EIS) for the project in February 2015 pursuant to the requirements of NEPA and CEQA. Proposed project activities will result in potentially significant or adverse impacts after mitigation to land use and planning, visual quality and aesthetics, noise, floodplains, and hydrology. Beneficial economic and fiscal impacts will occur. **Source:** http://www.sanbag.ca.gov/projects/redlands-transit.html; http://www.redlandsrailproject.org/ l, accessed April 2016.

Table 3.6-1 Related Projects

Project Name, Type, Status, and ID Number (Refer to Figure 3.6-1)	Project Description	Summary of Environmental Evaluation, Documentation, and Impacts
Metro Gold Line Foothill Extension Construction Activity: **Glendora to Montclair – ID Number 3 (Sheet 1)** • Transportation project • Located in Glendora, San Dimas, La Verne, Pomona, Claremont, and Montclair • Metro project • In March 2016, Addendum No. 3 to the Final EIR was approved	The Metro Gold Line light-rail transit (LRT) system extension is proceeding in two phases. Construction of the first phase from the Pasadena Sierra Madre Villa Station, located at Raymond Avenue and Del Mar, to the Azusa-Citrus Station, located between Palm Drive and Citrus Avenue, began in late 2011, and construction was completed in late 2015. The Foothill extension from Vermont Avenue in Azusa to just east of Monte Vista Avenue and north of Arrow Highway in Montclair will extend the Metro Gold Line 12.3 miles and add six stations in the cities of Glendora, San Dimas, La Verne, Pomona, Claremont, and Montclair.	The Final EIR for this project was certified by the Construction Authority Board of Directors in March 2013, and a locally preferred alternative was selected. Proposed project activities will result in potentially significant long-term impacts to transportation, vibration, and visual quality. Potentially significant short-term impacts will occur for air quality and noise. **Source:** http://www.foothillgoldline.org/construction_phases/glendora_to_montclair/metro-gold-line-foothill-extension-azusa-to-montclair-draft-environmental-impact-report/; accessed April 2016.
Metro Gold Line Foothill Extension Construction Activity: **Ontario Airport Extension – ID Number 4 (Sheets 1 and 2)** • Transportation project • Located in Montclair, Upland, and Ontario • Metro project • Funding for the Ontario Airport Extension has not been identified; project timeline is uncertain • No progress has been made on the airport extension since 2014	The Ontario Airport Extension will extend the Gold Line approximately 8 miles – from the TransCenter in Montclair, located just east of Monte Vista Avenue and north of Arrow Highway, to Ontario – and terminate the line at the LA/Ontario International Airport. Although not formally part of the Foothill Extension Project, the Construction Authority completed a study to understand the feasibility of extending the line from Montclair to the airport in 2008. The initial study concluded that extending the line was feasible and provided many potential route options.	The Metro Gold Line Foothill Extension to LA/Ontario International Airport Strategic Planning Study was commissioned in November 2007. The study evaluated a conceptual light rail route to determine publicly acceptable, technically sound, and cost-effective alternatives for extending Metro Gold Line service nearly 8 miles east of its proposed terminus in Montclair to LA/Ontario International Airport. The Construction Authority will be starting the Alternatives Analysis sometime in 2014. This 2-year study will then go through environmental review. **Source:** http://foothillgoldline.org/images/uploads/2014-04-21_In_Case_You_Missed_It_-_Support_Growing_for_AB2574.pdf, accessed April 2016.
The Paseos – ID Number 5 (Sheet 1) • Land development project • Located in Montclair • GLJ Partners and Alliance Project • Specific Plan approved in 2010 • Multi-family residential development opened in 2013	The proposed project would construct a 385-unit multi-family residential development at the northeast corner of Monte Vista Avenue and Moreno Street.	The project is open. Impacts would be similar to other residential/commercial specific plan developments identified in this table. **Source:** http://www.cityofmontclair.org/depts/redev_agency/econdev/downtown.asp, accessed April 2016.

Table 3.6-1 Related Projects

Project Name, Type, Status, and ID Number (Refer to Figure 3.6-1)	Project Description	Summary of Environmental Evaluation, Documentation, and Impacts
Arrow Station – ID Number 6 (Sheet 1) • Land development project • Located in Montclair • Meritage Homes Project • The project was completed in 2016	The Specific Plan proposes a 129-unit residential development consisting of 99 urban-style multi-family units and 30 single-family detached homes, which was approved by the City Council in December 2010. Arrow Station is to be located on the north side of Arrow Highway just east of Monte Vista Avenue.	The project opened in 2016. Impacts would be similar to other residential/commercial specific plan developments identified in this table. **Source:** http://www.cityofmontclair.org/depts/cd/planning/current_projects.asp; http://www.dailybulletin.com/business/20151016/montclair-plaza-shopping-mall-revamp-still-on-hold, accessed April 2016.
Park View Specific Plan – ID Number 7 (Sheet 1) • Land development project • Located in Upland • City of Upland Housing Element – Specific Plan • Project timeline is uncertain	The Park View Specific Plan is envisioned as a mixed-use village that will be located in between east Baseline Road, SR-210, and Cajon Road. The plan calls for the development of up to 100,000 square feet of commercial/retail space, residential, and open space on 42 acres of land. When built to capacity, the Specific Plan will add 400 housing units to Upland, most of which will be single-family housing.	The project timeline for this project is uncertain; however, impacts would be similar to other residential/commercial specific plan developments identified in this table. **Source:** http://www.ci.upland.ca.us/uploads/ftp/city_departments/development_services/planning/specific_plans/pdfs/ParkView%20Specific%20Plan.pdf, accessed April 2016.
Upland Crossing Specific Plan – ID Number 8 (Sheet 1) • Land development project • Located in Upland • City of Upland Housing Element – Specific Plan • Project timeline is uncertain; Specific Plan adopted in 2006	This Specific Plan area is composed of a residential development with a small commercial-retail component. The Specific Plan proposes 355 attached and detached residential condominium units and 27,500 square feet of commercial/retail space. The area is bounded by Foothill Boulevard, Monte Vista Avenue, and west Arrow Route, just below Central Avenue.	The project timeline for this project is uncertain; however, impacts would be similar to other residential/commercial specific plan developments identified in this table. **Source:** http://www.ci.upland.ca.us/uploads/ftp/city_departments/development_services/planning/specific_plans/pdfs/Upland%20Crossing%20Specific%20Plan.pdf, accessed April 2016.
College Park Specific Plan – ID Number 9 (Sheet 1) • Land development project • Located in Upland • City of Upland Housing Element – Specific Plan • Project is open; Specific Plan adopted in 2004	In 2004, the City adopted the College Park Specific Plan to encourage mixed-use development in southwest Upland and provide housing opportunities for the Claremont Colleges. The planning area includes 25 acres of residential land that can accommodate approximately 500 housing units. A total of 450 apartment units have been built. An additional 92 small-lot, detached single-family units are planned at a density of 10 units per acre.	The College Park Specific Plan EIR was prepared in October 2009. **Source:** http://www.ci.upland.ca.us/uploads/ftp/city_departments/development_services/planning/specific_plans/pdfs/College%20Park%20Specific%20Plan.pdf; http://www.liveatcollegepark.com/, accessed April 2016.

Table 3.6-1 Related Projects

Project Name, Type, Status, and ID Number (Refer to Figure 3.6-1)	Project Description	Summary of Environmental Evaluation, Documentation, and Impacts
Meredith International Centre Specific Plan – ID Number 10 (Sheets 1 and 2) • Land development project • Located in Ontario • City of Ontario Specific Plan • An Initial Study was prepared for the project in 2014	The Meredith International Centre Specific Plan Amendment Project proposes a mix of industrial, commercial, and residential land uses on approximately 257 acres located in the southeast portion of Ontario within San Bernardino County. The site is generally located north of I-10, south of 4th Street, between Vineyard Avenue, and Archibald Avenue. The project area is located in between the Southern Pacific Trail and west Arrow Route.	An Initial Study was prepared for the project in May 2014 to determine the appropriate scope and focus of the environmental analysis for the project. The analysis presented in the Initial Study indicates that the project may result in or cause potentially significant effects related to: aesthetics; air quality, including potential GHG emissions and global climate change impacts; biological resources; cultural resources; geology and soils; hazards/hazardous materials; hydrology/water quality; land use and planning; noise; population and housing; public services; transportation and circulation; and utilities and service systems. Based on the findings and conclusions of this Initial Study, potential environmental impacts of the project will be evaluated within an EIR. **Source:** http://www.ontarioca.gov/sites/default/files/Ontario-Files/Planning/Reports/environmental-reports/appendix_a-may_2014_initial_study.pdf, accessed April 2016.
Ontario Center Specific Plan – ID Number 11 (Sheet 2) • Land development project • Located in Ontario • City of Ontario Specific Plan • An amendment to the Ontario Specific Plan was approved in 2006	The Ontario Center site consists of approximately 88 acres of vacant land located at the northerly boundary of the eastern portion of Ontario, south of 4th Street, between Haven Avenue and Milliken Avenue, and less than 0.25 mile north of I-10. The Ontario Center will include urban commercial, urban residential, garden commercial, and open space elements.	The project timeline for this project is uncertain; however, impacts would be similar to other residential/commercial specific plan developments identified in this table. **Source:** http://www.ci.ontario.ca.us/index.aspx?page=600, accessed March 2014.
Ontario Festival Specific Plan – ID Number 12 (Sheet 2) • Land development project • Located in Ontario • City of Ontario Specific Plan • Approved in 2012	The Ontario Festival Specific Plan is a comprehensive plan for the development of a planned residential site that could accommodate up to 472 dwelling units on approximately 37.6 acres. This project will be located along Inland Empire Boulevard between Archibald Avenue and Turner Avenue, south of Guasti Regional Park.	The project timeline for this project is uncertain; however, impacts would be similar to other residential/commercial specific plan developments identified in this table. **Source:** http://www.ci.ontario.ca.us/index.aspx?page=600, accessed March 2014.

Table 3.6-1 Related Projects

Project Name, Type, Status, and ID Number (Refer to Figure 3.6-1)	Project Description	Summary of Environmental Evaluation, Documentation, and Impacts
Wagner Properties Specific Plan – ID Number 13 (Sheet 2) • Land development project • Located in Ontario • City of Ontario Specific Plan • Approved in 2010	The Specific Plan addresses the development of 11 parcels, totaling 54.57 acres located in eastern Ontario.	The project timeline for this project is uncertain; however, impacts would be similar to other residential/commercial specific plan developments identified in this table. **Source:** http://www.ci.ontario.ca.us/index.aspx?page=600, accessed March 2014.
Southwest Industrial Park – ID Number 14 (Sheets 2 and 3) • Land development project • Located in Fontana • City of Fontana Specific Plan • Latest Specific Plan amendment approved in 2009	The Southwest Industrial Park (SWIP) Specific Plan is expected to promote economic development and provide opportunities for existing property owners and new businesses. A total of 1,101 acres have been included in the plan since its adoption in 1977. The project area spans both sides of I-10 and is roughly between Etiwanda Avenue and Citrus Avenue.	The project timeline for this project is uncertain; however, impacts would be similar to other residential/commercial specific plan developments identified in this table. **Source:** http://www.fontana.org/index.aspx?NID=1092, http://www.fontana.org/DocumentCenter/Home/View/3285, accessed March 2014.
Alliance California Gateway South Building 3 – ID Number 15 (Sheet 4) • Land development project • Located in San Bernardino • City of San Bernardino Project • Final EIR certified in February 2014	The proposed project involves construction and operation of an industrial warehouse building consisting of 1,199,360 square feet of interior floor space and 215 loading bays on a 49.65-acre portion of a 62.65-acre property located south of and adjacent to East Orange Show Road and approximately 450 feet east of South Waterman Avenue in the south-central portion of San Bernardino.	An EIR was prepared for this project. The analysis determined that potentially significant impacts after mitigation would include impacts to air quality; noise; and traffic/ circulation. All of the impacts listed were considered to be significant impacts after mitigation measures. The Final EIR was approved on February 6, 2014. **Source:** https://www.ci.san-bernardino.ca.us/cityhall/community_development/planning/environmental_documents.asp, accessed April 2016.
Downtown Redlands Specific Plan (Amendment No. 15) – ID Number 16 (Sheets 4 and 5) • Land development project • Located in Redlands • City of Redlands Project • Plan approved in 2011	The Specific Plan area extends from Texas Street in the west to North Church Street in the east, and from the south side of I-10 in the north to San Gorgonio Drive, Brookside Avenue, West Vine Street, South 6th Street, East Olive Avenue, and East Citrus Avenue in the south. Rail tracks cut through the site, just south of Stuart Avenue.	The project timeline for this project is uncertain; however, impacts would be similar to other residential/commercial specific plan developments identified in this table. **Source:** http://www.cityofredlands.org/sites/default/files/pdfs/DSD/dnsp_part1.pdf, accessed April 2016.

Table 3.6-1 Related Projects

Project Name, Type, Status, and ID Number (Refer to Figure 3.6-1)	Project Description	Summary of Environmental Evaluation, Documentation, and Impacts
West of Devers Project – ID Number 17 (Sheet 4) • Public infrastructure project • Located within incorporated and unincorporated areas of Riverside and San Bernardino counties, cities of Banning, Beaumont, Calimesa, Colton, Grand Terrace, Loma Linda, and Redlands • Southern California Edison (SCE) Project • EIR finalized in 2015; Errata submitted to State Clearinghouse in 2016 • Project scheduled to be operational and in-service 2019-2020	This project will consist of removing and replacing approximately 48 miles of existing 220-kilovolt (kV) transmission lines with new double-circuit 220-kV transmission lines, between the existing Devers Substation (located on 10th Avenue and Diablo Road, near Palm Springs), Vista Substation (in Grand Terrace), and San Bernardino Substation (located on San Bernardino Avenue in between Mountain View Avenue and California Street).	SCE finalized the EIR in 2015 and submitted Errata to the State Clearinghouse in 2016. The analysis concluded that the following resources will result in potentially significant impacts after mitigation: air quality, cultural resources, noise, and visual resources. **Source:** http://www.cpuc.ca.gov/environment/info/aspen/westofdevers/toc-feir.htm, accessed April 2016.
Freeway Corridor Specific Plan – ID Number 18 (Sheet 5) • Land development project • Located in Yucaipa • City of Yucaipa Project • Plan approved in 2007 • Final EIR certified in 2008	The Specific Plan site encompasses 1,234.3 acres and is located in the southwestern corner of Yucaipa within San Bernardino County. The Specific Plan site is bisected by I-10 and abuts the Riverside county line to the south. The proposed Specific Plan is composed of three distinct neighborhoods. Each neighborhood includes residential, commercial, business park, public facilities, and open space land uses. Local access to the location is provided by Live Oak Canyon Road, County Line Road, Oak Glen Road, Wildwood Canyon Road, and Calimesa Boulevard.	An EIR was finalized for the Freeway Corridor Specific Plan in November 2008; however, only the Draft EIR was available on the City of Yucaipa Web site. The analysis concluded that the potentially significant impacts of this project include aesthetic impacts to the distant panoramic views; loss of agricultural land; project and cumulative air quality impacts, and GHG emissions; wetlands; changes in land use and planning; and noise impacts. Beneficial impacts to population and housing will result from the project. **Source:** http://yucaipa.org/development/community-development/environmental-review/freeway-corridor-specific-plan/, accessed April 2016.

Table 3.6-1 Related Projects

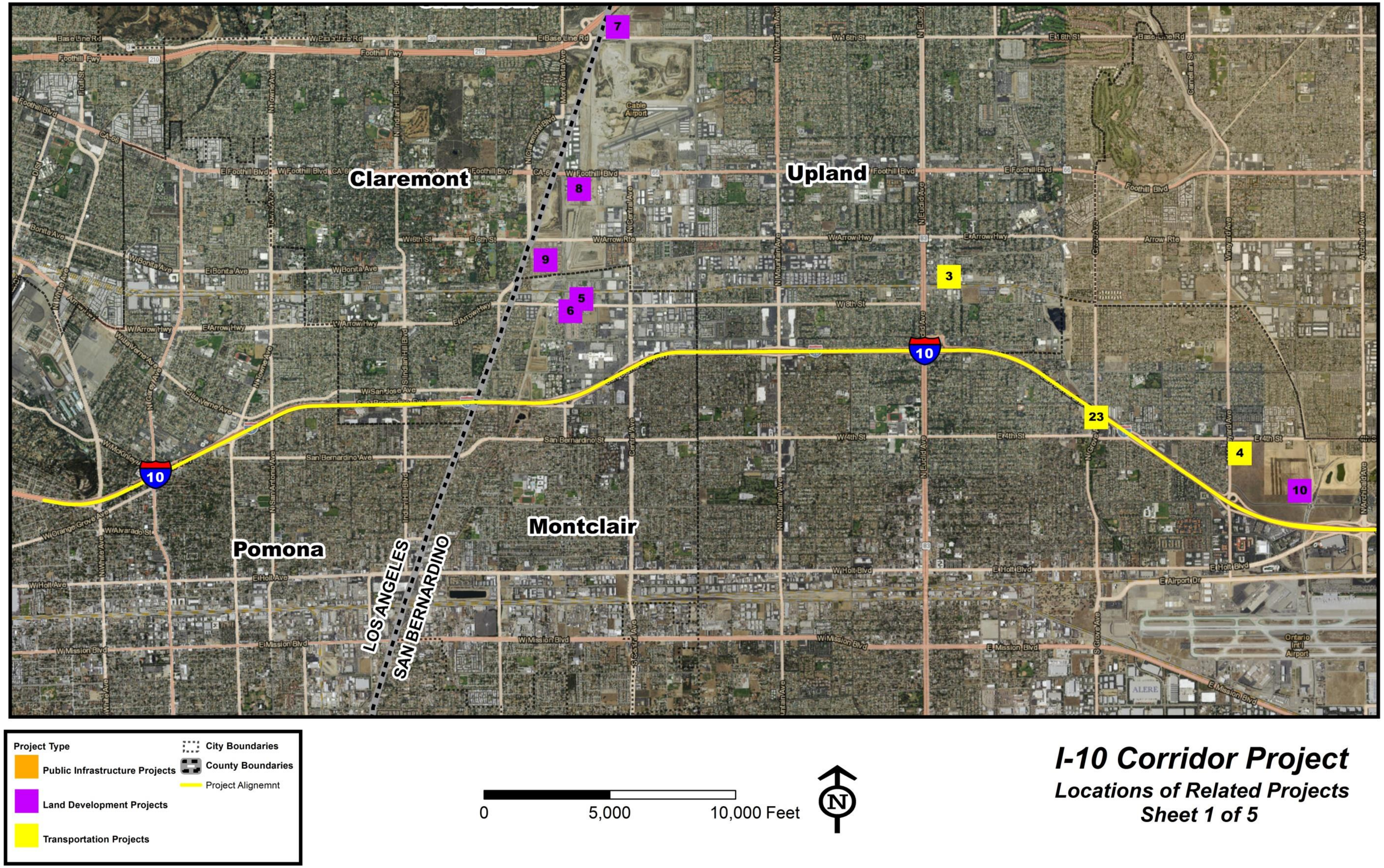
Project Name, Type, Status, and ID Number (Refer to Figure 3.6-1)	Project Description	Summary of Environmental Evaluation, Documentation, and Impacts
Oak Hills Marketplace Specific Plan – ID Number 19 (Sheet 5) • Land development project • Located in Yucaipa • City of Yucaipa Project • Plan approved in 2007	The Oak Hills Marketplace (OHM) property occupies approximately 63.66 acres located in southern Yucaipa. The site is located adjacent to eastbound I-10, immediately east of Live Oak Canyon Road. Wildwood Creek traverses the project site, and several unnamed hills are located along the southern border of the property. The proposed project aims to provide a regional shopping destination, including dining and shopping opportunities, and approximately 1,000 new jobs to area residents.	An EIR was prepared for the Oak Hills Marketplace Specific Plan in February 2007. The Draft EIR identified the following impacts from the project that remain significant after mitigation: short-term air quality from construction; long-term air quality from project occupancy; loss of agriculture land; and aesthetics because of a fundamental change in views. **Source:** http://yucaipa.org/development/community-development/environmental-review/oak-hills-marketplace/, accessed April 2016.
Robinson Ranch Planned Development – ID Number 20 (Sheet 5) • Land development project • Located in Yucaipa • City of Yucaipa Project • Plan approved in 2011	The Planned Development area covers 522 acres in the southwest portion of Yucaipa. The planned development area is divided into the following three primary planning areas: Robinson Ranch North, West Oak Center, and Wildwood Ranch. In total, the planned development envisions 4,159 multi- and single-family attached and detached dwelling units distributed throughout 385 acres, 109 acres of general commercial uses, and 28 acres of business park uses. Approximately 119 acres of improved open space and 49 acres of natural open space areas would be included within these land uses. I-10 separates the Robinson Ranch North Planning Area on the north side of the freeway and the Wildwood Ranch and Wildwood Center planning areas to the south of the freeway.	An EIR was prepared for the Robinson Ranch Planned Development in February 2011. Significant environmental impacts associated with the Planned Development that would not be avoided even with the implementation of mitigation measures include impacts to aesthetics; air quality; biological resources; land use and planning; noise; population and housing; and direct and cumulative impacts to transportation and traffic. **Source:** http://yucaipa.org/development/community-development/environmental-review/robinson-ranch-planned-development/, accessed April 2016.
Comprehensive 3-5 Storm Drain Project (Installation of 2 RCP under I-10) – ID Number 21 (Sheet 3) • Public infrastructure project • Located in Colton and unincorporated San Bernardino County • City of Colton project • Construction anticipated to begin in 2019 or 2020	As part of the Comprehensive 3-5 Storm Drain Project, two 108-inch-diameter reinforced concrete pipes (RCP) will be installed under I-10 between Rancho Avenue and Cypress Avenue in the city of Colton and unincorporated San Bernardino County. The installation of these pipes under I-10 would benefit stormwater management to the Santa Ana River.	Beneficial hydrological impacts are anticipated as a result of this project. Possible construction impacts include noise, traffic, and geology. **Source:** City of Colton, 2016.

Table 3.6-1 Related Projects

Project Name, Type, Status, and ID Number (Refer to Figure 3.6-1)	Project Description	Summary of Environmental Evaluation, Documentation, and Impacts
Mt. Vernon Bridge over UPRR Widening: M Street to I-10 Ramp – ID Number 22 (Sheets 3 and 4) • Transportation project • Located in Colton • City of Colton project • Project anticipated to be completed by 2019	The project will consist of widening the Mt. Vernon Bridge from two to four lanes over UPRR from M Street to I-10 ramp in the city of Colton.	The project timeline for this project is uncertain; however, impacts would be similar to other transportation projects included in this table. Temporary traffic and transportation impacts would likely result from this project. **Source:** http://maps.sanbag.ca.gov/website/programming/ProjectStatus.aspx?id=200856, accessed July 2016.
I-10/Grove Avenue Interchange Project – ID Number 23 (Sheet 1) • Transportation project • Located in Ontario • City of Ontario and Caltrans project • Project currently in preliminary engineering and environmental document phase	The project would construct a new interchange at Grove Avenue, close the existing I-10/4th Street interchange, and include improvements along Grove Avenue and 4th Street near the interchange.	Project is currently in the environmental documentation phase and project timeline is uncertain. Impacts are anticipated to be similar to the proposed project. Construction impacts related to noise, air quality, visual, and traffic are anticipated to contribute to cumulative impacts. **Source:** http://www.ontarioca.gov/engineering/cip/i-10-grove-interchange-and-corridor, accessed November 2016.
I-15 Corridor Project – ID Number 24 (Sheet 2) • Transportation project • Located in the cities of Victorville, Hesperia, Rialto, Fontana, Rancho Cucamonga, Ontario, and unincorporated San Bernardino County • SBCTA and Caltrans Project • Currently in the environmental phase which is expected to be completed in 2017.	SBCTA is studying another Express Lane corridor along I-15 in San Bernardino County in conjunction with this I-10 CP. The I-15 Corridor Project is currently in the PA/ED phase, proposing to add two Express Lanes in each direction from Cantu-Galleano Ranch Road near State Route 60 (SR-60) to SR-210, approximately 13 miles. A future phase to extend the Express Lanes to U.S Highway 395 (US-396) is also under consideration.	Project is currently in the environmental documentation phase which is anticipated to conclude in the summer of 2017. The first phase of the project is scheduled to open to traffic in 2022. Impacts are anticipated to be similar to the proposed project. Construction impacts related to noise, air quality, and traffic are anticipated to contribute to cumulative impacts. **Source:** http://www.1015projects.com/app_pages/view/29, accessed April 2017

Table 3.6-1 Related Projects

Project Name, Type, Status, and ID Number (Refer to Figure 3.6-1)	Project Description	Summary of Environmental Evaluation, Documentation, and Impacts
I-10/I-15 Express Lanes Direct Connectors – ID Number 25 (Sheet 2) • Transportation project • Located in the city of Ontario • SBCTA and Caltrans project • Project currently under preliminary evaluation	As part of SBCTA's consideration of the Express Lane corridors on I-10 and I-15, a preliminary evaluation has been performed to evaluate the potential future direct connectors between the proposed I-10 and I-15 Express Lanes to provide system connectivity and further improve traffic operations in the vicinity of the I-10/I-15 interchange.	Though they are not economically viable at this time, the direct connectors could be implemented as a separate future project after construction of the I-10 and I-15 Express lanes as additional system-wide improvements when additional funds are available. The project timeline for this project is uncertain; however, impacts would be similar to other transportation projects included in this table. **Source:** SBCTA, 2017



Sources: US Census 2014; CalAtlas 2013; Parsons 2014.

Figure 3.6-1 Related Projects (Sheet 1 of 5)

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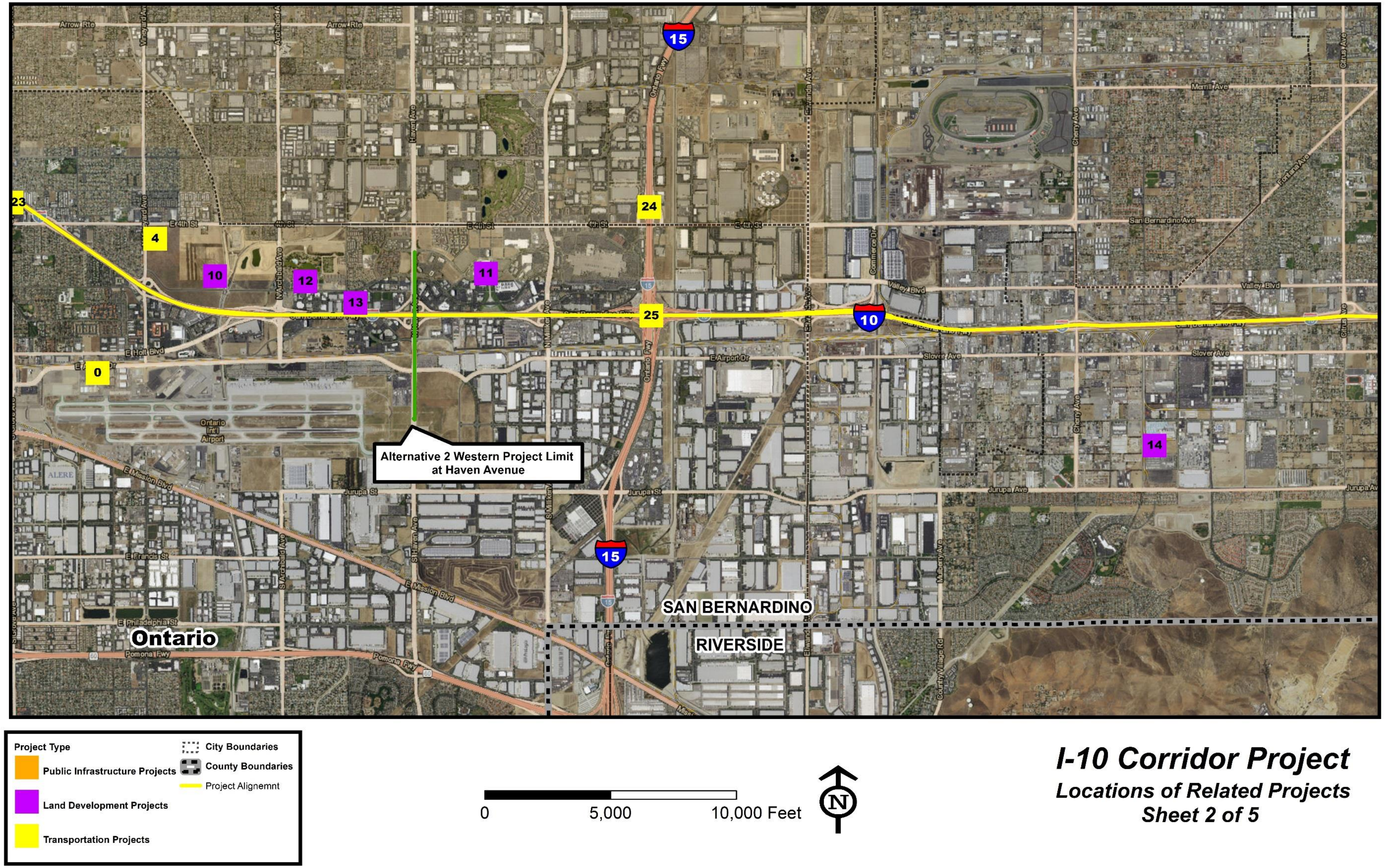

Sources: US Census 2014; CalAtlas 2013; Parsons 2017.

Figure 3.6-1 Related Projects (Sheet 2 of 5)

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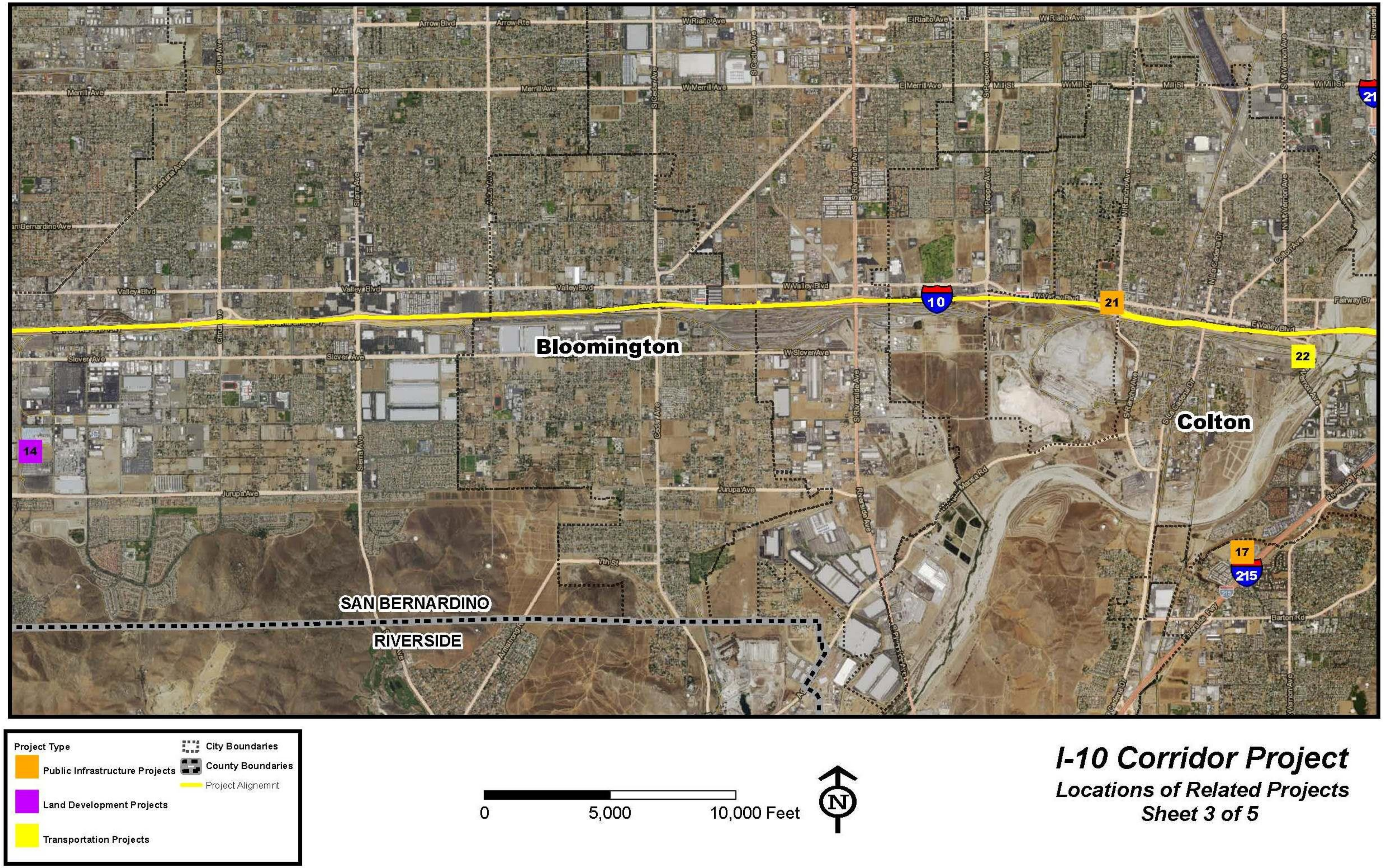

Sources: US Census 2014; CalAtlas 2013; Parsons 2014.

Figure 3.6-1 Related Projects (Sheet 3 of 5)

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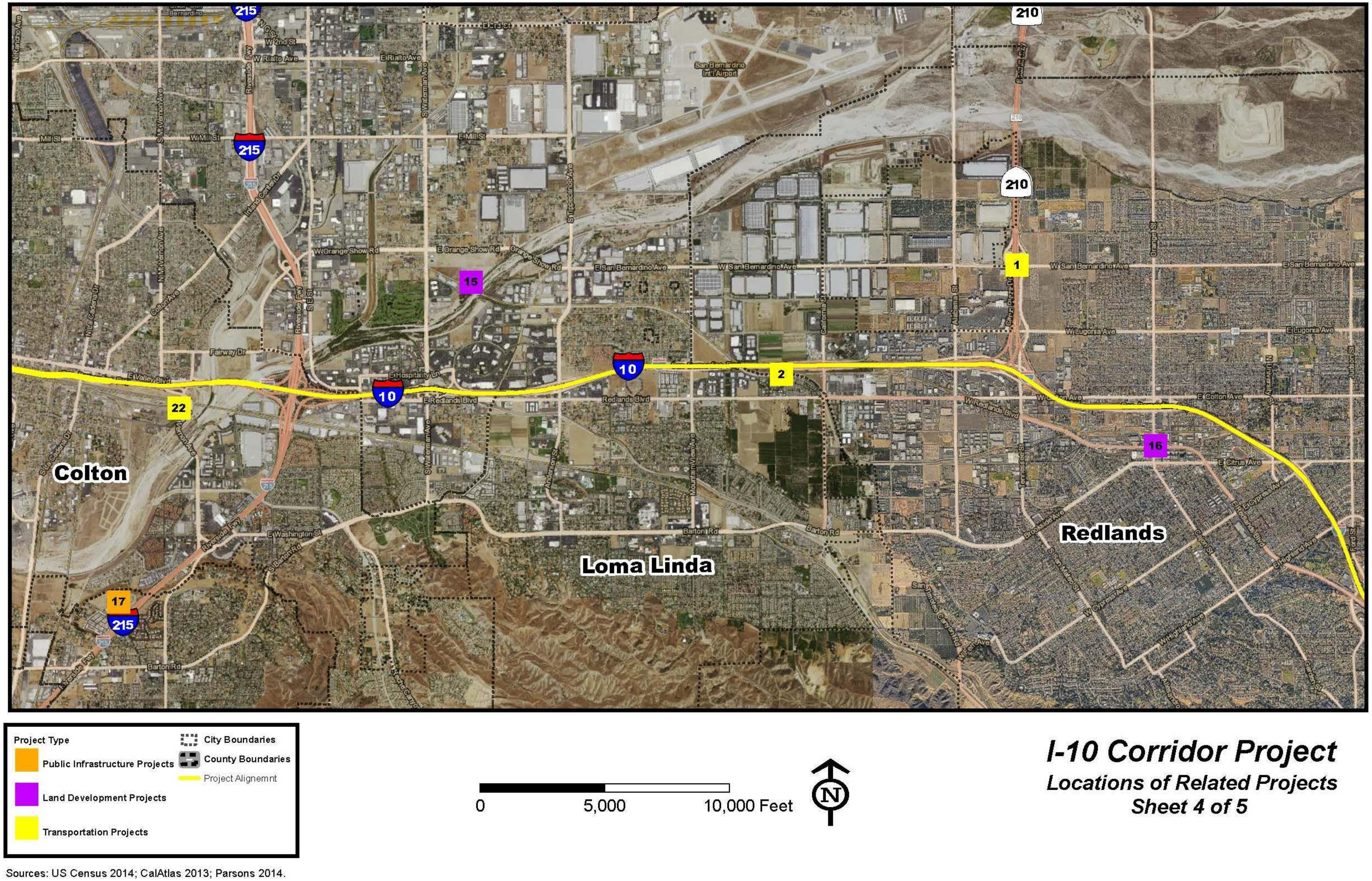

Figure 3.6-1 Related Projects (Sheet 4 of 5)

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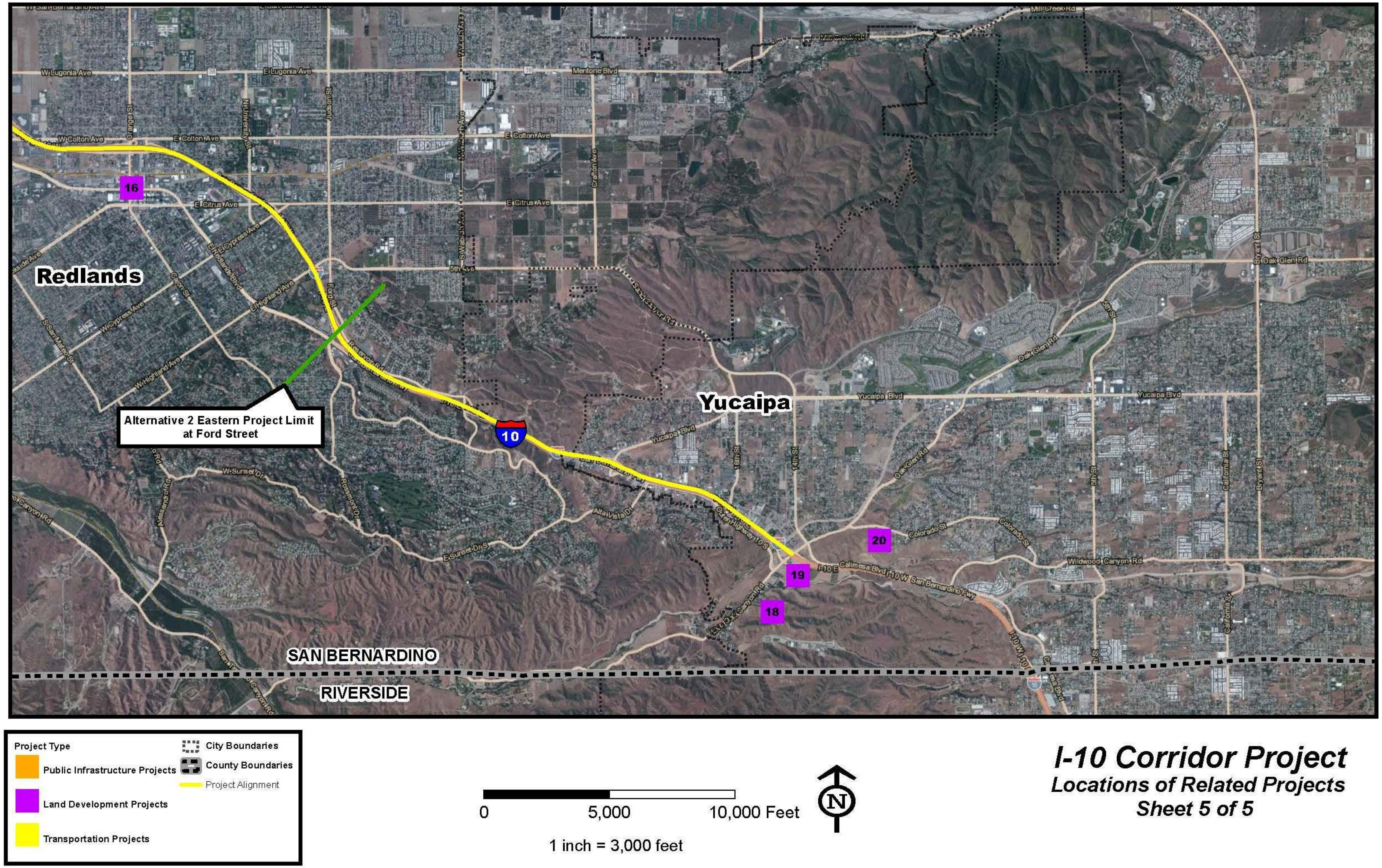

Sources: US Census 2014; CalAtlas 2014; Parsons 2014.

Figure 3.6-1 Related Projects (Sheet 5 of 5)

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3.6.5 Environmental Resources Excluded from Cumulative Impact Analysis

Based on the nature of the proposed project, the affected project area, and the impact analysis for each resource conducted for the Final Environmental Impact Report (EIR)/Environmental Impact Statement (EIS), it was determined the following resources would not require detailed cumulative impact analysis for the reason described under each resource area.

3.6.5.1 Land Use

The RSA for land use and planning covers the boundary of 12 cities, the community of Bloomington and the counties of Los Angeles and San Bernardino, located along the I-10 corridor, as described in Section 3.1.1, Land Use. General plans serve as the long-range planning documents for communities located within the project study area. Planned transportation and other development projects must comply with land use designations and associated policies contained within these plans as part of project review and implementation. As noted above, the communities adjacent to the I-10 corridor in which the proposed project is located are almost entirely built out, containing few undeveloped or vacant parcels located at the eastern segment of the project. Current vacant and open space parcels are also subject to comply with the respective jurisdiction's General Plan land use designations.

Given these requirements, planned and approved projects listed in Table 3.6-1 would be consistent with applicable general plan and zoning requirements. Alternative 2 would result in conversion of 0.2 acre of commercial, recreational, and utility land uses, as described in Section 3.1.1, Land Use, to transportation use. Alternative 3 would result in the partial land use conversion of 10.7 acres and full conversion of 8.35 acres. Conversion of parcels to transportation use for Alternative 3 consists of residential, commercial, and utility land uses. As noted previously, related projects within the project area are subject to compliance with the respective jurisdiction's General Plan. In approving other planned projects, the local jurisdictions have determined that the land use conversion impacts associated with cumulative projects would remain unsubstantial. Implementation of minimization measure LU-1 would minimize project effects on land use; therefore, no substantial impacts pertaining to land use conversion on a cumulative basis are anticipated.

3.6.5.2 Growth

The RSA for growth would be regional in nature because the I-10 corridor is the major link between Los Angeles County and San Bernardino County. The I-10 corridor and parallel arterial highways, as well as arterial east-west streets, experience severe daily congestion. The economic attractiveness of this corridor location remains strong despite these congestion problems. The build alternatives include capacity enhancements along an existing freeway corridor that are intended to respond to expected demand and improve current operations. Some of the projects listed in Table 3.6-1 may have the potential to individually and collectively produce growth impacts. These include high-density residential, commercial, and industrial development and Specific Plans identified in Table 3.6-1 as ID# 5 through #20.

As discussed in Section 3.1.2, Growth, Alternatives 2 and 3 are not anticipated to influence the amount, location, and/or distribution of growth or housing and/or jobs in the local cities and unincorporated areas within the study area. Because there are very few open areas available in the close vicinity of the study area, the build alternatives would not create new housing or opportunities for capital investment by the public or private sectors, such as the construction of a new interchange to facilitate access to undeveloped areas.

In terms of project-related growth, the proposed project is not growth inducing because it includes land use changes that will convert existing uses to transportation uses. The proposed project would not influence growth because it accommodates existing and future plans for the project area. The proposed project is not anticipated to induce any growth either regionally or in the local project area; therefore, it is not anticipated to contribute to any cumulative direct or indirect growth impacts. Because the proposed transportation improvements accommodate transportation-related operational deficiencies to an existing transportation facility and do not provide direct accessibility to land development projects, the proposed project would have no substantial potential for stimulating the location, rate, timing, or amount of growth locally or regionally. Based on the information and analysis above, the proposed project would not contribute to growth-related direct or indirect cumulative impacts; therefore, no further analysis is necessary, and no additional measures are required.

3.6.5.3 Parks and Recreation

The RSA area for parks and recreational facilities includes those resources within a 0.5-mile radius of the project. A total of 39 public parks and recreation areas and 4 trails are located within 0.5 mile of the existing I-10 corridor and are considered Section 4(f) resources. Alternative 2 would not result in any permanent impacts to parks and recreational activities. Alternative 3 would require acquisition of 0.14 acre of MacArthur Park in Montclair. The 0.14-acre area to be acquired contains only landscaping with no recreational facilities or playing fields. Although the acquisition area would minimally reduce the overall size of the park from 2.64 acres to 2.50 acres, it would not inhibit existing recreational activities within the park. In addition, planned projects are primarily transportation related, which does not result in demand for recreational services, but instead facilitates access; however, residential land uses and, to a lesser extent, mixed-use projects identified in Table 3.6-1 would create additional demand for recreational services. Future land development projects would be required to provide additional parkland based on the population generated by these proposed projects.

Potential impacts to parks and recreation from the implementation of the proposed and cumulative projects would be addressed through the provision of parkland or in lieu fees, as determined by the local jurisdiction. Moreover, proposed project-related impacts to Section 4(f) resources would be addressed through the incorporation of avoidance or minimization measures LU-3 through LU-9. Based on the information and analysis above, only *de minimis* impacts pertaining to parks and recreation or Section 4(f) resources on a cumulative basis are anticipated. Caltrans' Division of Right-of-Way and Land Surveys will coordinate with the City of Montclair to provide the compensation required under the Park Preservation Act.

3.6.5.4 Environmental Justice

Environmental justice populations exist within the RSA, particularly dominating the western portion of the proposed project area, while the eastern portion has a more affluent population consisting of fewer minorities. Colton has the highest percentage of Non-White residents (95.4 percent), while Redlands has the lowest (27.8 percent). Ontario has the highest percentage of Hispanic or Latino residents (almost 95 percent). The census tracts with the fewest Non-White and Hispanic or Latino residents are all located at the east end of the project corridor, with the lowest concentration of Hispanic or Latino residents in Tract 85 in Redlands (12.1 percent). The lowest percentage of residents living below the poverty level is in Tract 11.03 in Ontario (3.4 percent), and the highest percentage is in Tract 4023.03 in Pomona (37.3 percent).

Both build alternatives would benefit most study area residents, including minority and low-income populations, by improving mobility and circulation throughout the study area; however, the build alternatives would also affect communities that have a higher number of Non-White persons, a larger Hispanic or Latino population, a higher number of persons below the poverty line, and lower median incomes than the counties and cities within the study area due to property acquisitions. Non-minority and higher-income population would also be equally affected by property acquisitions; therefore, the build alternatives would not have a disproportionately high or adverse impact to environmental justice populations because the impacts are not predominantly borne by a minority or low-income population. The proposed project would also result in temporary construction detours, temporary and permanent air and noise impacts, and temporary and permanent changes in travel patterns throughout the study area. Temporary construction cumulative impacts on community disruption could occur if multiple projects in the same locality are scheduled to undergo construction at the same time. The San Bernardino County Transportation Authority (SBCTA) and Caltrans would work closely with the cities and communities within the project area to identify such potential consequences and adjust construction schedules to avoid construction, to the extent applicable, of multiple projects to occur within the same locality simultaneously. With the implementation of minimization/mitigation measure COM-17, substantial cumulative impacts due to construction would be avoided.

Because the build alternatives would not cause disproportionately high and adverse effects on minority or low-income populations from the implementation of Alternatives 2 and 3, adverse impacts related to environmental justice populations are not anticipated. In addition, minimization/mitigation measures COM-16 and COM-17 would be implemented to ensure environmental justice communities are not impacted by project implementation. The proposed project is anticipated to benefit environmental justice communities by enhancing the operations of the I-10 corridor; therefore, the potential for the I-10 build alternatives to contribute to cumulative adverse environmental justice impacts was not evaluated further in this analysis.

3.6.5.5 Utilities/Emergency Services

Utilities and emergency services are actively planned for and developed based on service needs of the area in which they are provided. The RSA, which is comprised of utilities, emergency services, and public services, is limited to the immediate vicinity of the active construction work areas; however, various water, sewer, power, and other utility lines currently cross the RSA and may require relocation or special handling during construction activities. Proposed construction activities requiring relocation of an underground sewer main, for example, could be scheduled to coincide with a telephone company project to underground telephone lines. In this way, a situation may be avoided where constant construction and accompanying traffic delays occur on a busy street due to poorly coordinated schedules. The effect of other projects identified in Table 3.6-1 on utilities and emergency services would be assessed as part of the environmental review of those projects; however, for transportation and public infrastructure projects, the impacts from these projects would be beneficial because they normally improve circulation in their respective project areas. Installation of the storm drains associated with Project ID Number 21 would require careful construction coordination with the proposed project. Emergency services would benefit from improved access and circulation. Mitigation measures UT-1 through UT-3 would help reduce impacts to utilities and emergency services during construction activities. Based on the information and analysis above, direct or indirect cumulative impacts to utilities and emergency services are not anticipated to result, and no further analysis is necessary and no additional measures are required.

3.6.5.6 Traffic and Transportation/Pedestrian and Bicycle Facilities

Implementation of the proposed project, together with the other transportation projects located within the cumulative projects study area, would accommodate future traffic demand during peak periods resulting in the reduction of traffic congestion conditions at various segments and interchanges. Other cumulative transportation projects would also provide alternative transportation modes, therefore resulting in additional beneficial congestion-relief. The impacts to circulation and access systems are beneficial on a cumulative basis. As a result, Alternatives 2 and 3 are anticipated to result in beneficial effects to circulation along the I-10 corridor; therefore, the potential for these build alternatives to contribute to cumulative long-term adverse traffic impacts was not evaluated further in this analysis.

If multiple projects are built during the same general time frame, it would likely result in increased localized construction-related traffic congestion due to potential lane/road closures. Caltrans shall work together with local jurisdictions and regional agencies to ensure overlapping construction from multiple projects in the same vicinity would be managed to avoid or lessen cumulative traffic impacts. Avoidance and minimization measure T-1 would address any cumulative adverse temporary impacts to traffic and transportation.

3.6.5.7 Visual/Aesthetics

The visual environment in the I-10 project study area includes a substantial amount of infrastructure, including local roads and freeways; the existing visual character is typical for a highway viewshed. The RSA for visual/aesthetics is defined as the areas along the project segments of I-10, areas that can be seen from those freeways, and areas from which those freeways or components of those freeways can be seen. The primary features visible along the I-10 corridor are urban/suburban features and include substantial amounts of hardscape, such as buildings, walls, freeway and road surfaces, and freeway structures.

Alternatives 2 and 3 would result in expanded right-of-way (ROW), which would add additional hardscape, graded slopes, modified and new ramps, overcrossings and bridges, concrete barriers, and new retaining, tieback, and sound walls. These changes would modify the visual quality of the RSA by adding more hardscape; however, with the consideration of aesthetic features for retaining walls, soundwalls, and bridge structures during the design-build phase, some of the project impacts to visual resources would be minimized.

Additional landscaping would be implemented where existing landscaping is removed during construction and/or where the expanded ROW allows. The additional landscaping would further minimize potential visual impacts of Alternatives 2 and 3. Although visual and aesthetic mitigation measures would minimize the visual impacts, the widened freeway facilities would contribute to continued urbanization of the RSA. In addition to cumulative transportation and development projects listed in Table 3.6-1, the widened freeway facilities would also contribute to changes in the visual environment in the communities along I-10 in the RSA as a result of property acquisition and development of new land uses.

These projects, plus the overall corridor project, are expected to alter the existing aesthetics of the corridor. The overall effect of the proposed project, combined with other projects identified in Table 3.6-1 would generally increase the hard surfaces over the vegetated ones currently in the corridor. Where necessary, additional eucalyptus trees will need to be removed, especially those located within interchanges being reconstructed (e.g., Cherry, Citrus, and Riverside avenues); however, this effect would remain until trees grow back to existing conditions.

However, given that much of the existing corridor has an overall low visual quality and that Caltrans has developed a Corridor Master Plan to address aesthetics and landscaping within this corridor, the visual quality of the corridor would be maintained or slightly improved when all of the projects are complete. The project, combined with other transportation and development projects, would contribute incrementally to the increasing urbanization in the area, which changes the visual environment along I-10 in the RSA. Because the corridor is already urbanized, the added pavement would not cause substantial impact on a cumulative basis. Mitigation measures VA-1 through VA-38, which would include new landscape plantings in the highway interchanges, especially along soundwalls, would reduce the perceived amount of paving. Many other landscape or design treatments would also be employed, including construction of drainage basins and bioswales, which are more natural in appearance. Based on the above analysis, no direct or indirect cumulative impacts related to visual and aesthetic resources are anticipated to result from the proposed project; therefore, no further analysis is necessary, and no additional measures are required.

3.6.5.8 Hydrology and Floodplains

The RSA has undergone considerable urbanization, resulting in substantial alteration of the local hydrology and floodplains. Few areas within the RSA are unpaved, and most drainages are channelized. As discussed in Section 3.2.1, Hydrology and Floodplains, the build alternatives would result in up to 14 floodplain encroachments. All of the build alternatives would require culvert extensions, pier construction within water bodies, and reinforced concrete box extensions; however, based on the Location Hydraulic Study (LHS) prepared as part of this project, implementation of the proposed project would not create a high-risk condition. Risks of the actions associated with the build alternatives are predominantly low. The water surface elevation returns to existing levels shortly upstream of the Warm Creek confluence. Although a moderate risk was identified for encroachment in the Santa Ana River, the LHS indicated that there is still sufficient freeboard and channel capacity. Furthermore, the floodplain study determined that floodplain encroachments would not adversely affect the base flood elevations (BFEs) within the project study area. Because the 100-year flood would still be contained within the existing floodplain boundaries at each location, there would be no increased risk to life or property associated with the proposed improvements. With the implementation of Project ID Number 21, drainage improvements to the Santa Ana River would benefit the area and help minimize flooding. Development of the proposed project, in combination with all other development that would occur in the hydrologic subareas (HSAs) would not flood upstream of the proposed project improvements.

A Final LHS would also be prepared during the design-build phase. With implementation of avoidance, and minimization measures HYD-1 through HYD-6 identified in Section 3.2.1.4, Avoidance, Minimization, and/or Mitigation Measures, the proposed project would not result in cumulative adverse impacts to the natural and beneficial floodplain values, would not result in an adverse change in flood risks or damage, does not have substantial potential for interruption or termination of emergency services or emergency routes, and is not considered to be a significant encroachment. The proposed project would not contribute to a cumulative impact to hydrology or floodplains.

Planned projects contained within Table 3.6-1 would also be required to analyze their individual and cumulative impacts to hydrology and floodplains. These proposed projects would be required to be designed such that conveyance facilities have adequate capacity to meet projected flows. Similarly, the Federal Emergency Management Agency (FEMA) and local requirements ensure that development within the floodplain or floodway consider potential effects to buildings and their occupants or visitors. Based on the information and analysis above, direct or indirect cumulative impacts related to hydrology and floodplains are not anticipated to result, and no further analysis is necessary and no additional measures are required.

3.6.5.9 Water Quality and Stormwater Runoff

The primary study area for the water quality analysis is the Santa Ana River Watershed. The Santa Ana River extends approximately 96 miles from its headwaters to 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, Prado Basin, and a narrow pass in the Santa Ana Mountains, and then southwest to the Pacific Ocean. The Santa Ana River Watershed is divided into upper and lower watersheds at Prado Dam.

Water quality in this watershed has been affected historically by past and present runoff from agricultural and urban land uses. Pollutants of potential concern during operation of a transportation facility include sediments, trash, and debris that can be generated from facility maintenance and vehicles operating on the facility. In addition to sediments and trash, pollutants of concern during operation of a transportation facility include petroleum products, metals, nutrients, solvents, waste paint, herbicides, and pesticides. These pollutants of concern can be generated from maintenance activities, as well as vehicles operating on the facility, and thus have the potential for accidental spills and discharges to receiving waters. Increased impervious areas associated with urbanizing development increase the volume of runoff during a storm, which more effectively transports pollutants to receiving waters and may lead to adverse effects on water quality and downstream erosion.

The potential impacts of construction activities on water quality focus primarily on sediments, turbidity, and pollutants that might be associated with sediments (e.g., phosphorus and pesticides) and how these may impact water quality objectives and/or beneficial uses. Construction-related activities that are primarily responsible for sediment releases are related to exposing soils to potential erosion by rainfall/runoff and wind. Nonsediment-related pollutants of concern during construction include waste construction materials; chemicals, liquid products, and petroleum products (e.g., paints, solvents, and fuels) used in construction or the maintenance of heavy equipment; and concrete-related waste streams. These construction-related pollutants may be spilled, leaked, or transported via storm runoff into receiving waters and may potentially impair water quality objectives and/or beneficial uses.

As part of the build alternatives, best management practices (BMPs) will be implemented to target constituents of concern in runoff from the additional freeway facilities under Alternatives 2 and 3. All of the runoff from the new net impervious surface areas and some parts of the existing freeway facilities would be treated by BMPs such as biofiltration swales, infiltration basins, detention basins, and/or media filters. The BMPs would be implemented in accordance with National Pollutant Discharge Elimination System (NPDES) Permit requirements and would reduce the impact to existing water quality.

The other cumulative projects in Table 3.6-1 would all increase impervious areas in the RSA and, as a result, would increase stormwater and other runoff from those project sites during construction and operations in the Santa Ana River Watershed. That stormwater and runoff could include many pollutants of concern. Construction of new development could result in erosion of soil, thereby cumulatively degrading water quality within the HSAs. In addition, the increase in impervious surface area and more intensive land uses within the RSA resulting from future development may also adversely affect water quality by increasing the amount of stormwater runoff, transportation-related pollutants, and associated targeted design constituents (TDCs) entering the storm drain system. New development, however, would have to comply with existing regulations regarding construction practices that minimize risks of erosion and runoff. The cumulative projects would be required to provide control and treatment of stormwater and other runoff on those project sites prior to discharge of the water offsite. Those controls could include a wide range of BMPs during construction and operations. Among the various regulations are the applicable provisions of the Caltrans Statewide NPDES Permit; County and municipal codes related to control of stormwater quality for new development and substantial redevelopment; municipal grading permits; and other NPDES permits. This would minimize degradation of water quality at individual project construction sites.

The build alternatives and the cumulative projects combined would result in a cumulative increase in impervious surfaces in the RSA and in the amount of stormwater and added runoff from other projects in the Santa Ana River Watershed. All of the projects would be required to implement Treatment BMPs, such as biofiltration swales and infiltration devices, which augment groundwater by retaining stormwater runoff and increasing infiltration into the groundwater regime. Therefore, the proposed project is not anticipated to result in substantial direct or indirect impacts to groundwater, and would not have a cumulatively considerable contribution to cumulative effects related to groundwater. Based on the information and analysis above, direct or indirect cumulative impacts related to groundwater recharge are not anticipated to result, and no further analysis is necessary and no additional measures are required.

3.6.5.10 Geology/Soils/Seismicity/Topography

The RSA is comprised of the area along I-10 that traverses the central part of the Upper Santa Ana River plain. The native ground surface along the corridor is flat to very gently undulating. The freeway roadway across this terrain is a mixture of shallow excavated cuts and low embankment fills constructed to form a relatively flat roadway. San Bernardino and Los Angeles counties are seismically active and contain geological hazards of varying degrees; however, seismically induced impacts are localized and would not result in any cumulative impact as a result of the proposed project implementation.

In addition, the proposed project would also include the implementation of mitigation measures GEO-1 through GEO-14, which are intended to verify that the geological conditions of the construction sites are properly characterized, as reflected in the geotechnical studies. Moreover, hazards mapping provisions require that the location of proposed structures be evaluated for their susceptibility to catastrophic risks, including seismic and geotechnical hazards. California building standards have been developed to consider such risks. The combination of these provisions ensures that risks to these structures and their inhabitants, visitors, or users are minimized; therefore, the build alternatives and planned projects contained within Table 3.6-1 would be required to adhere to these guidelines. Based on the information and analysis above, direct or indirect cumulative impacts related to geology, soils, or seismicity are not anticipated to result, and no further analysis is necessary and no additional measures are required.

3.6.5.11 Paleontology

The RSA for paleontology for this project is located within San Bernardino County, with less than 3 miles extending into Los Angeles and Riverside counties. This area is part of the eastern part of the upper Santa Ana Valley, which is one of the main alluvial valleys in the area. The Santa Ana Mountains and the Santa Ana River Valley is the area where the I-10 CP could contribute to cumulative impacts to paleontological resources. Most of the project area has been geologically mapped as various types of Quaternary alluvium, including valley fill, eolian deposits, and river deposits. The San Timoteo Formation was formed during the Pleistocene and is considered as highly sensitive for paleontological resources. Fossils have been previously recovered from this formation and include fossil mammals such as mammoth, mastodon, horse, and camel remains. The San Timoteo Formation is located from Yucaipa Boulevard to Live Oak Canyon Road in Yucaipa and also south of Mount Vernon Avenue at the southern extent of the Project Excavation Parameter near Grand Terrace.

All excavations in areas mapped as San Timoteo Formation have the potential to encounter significant paleontological resources due to the age of the sediments. Excavations deeper than 5 feet have the potential to impact fossils in the Quaternary old alluvial fan, very old axial channel deposits, and old eolian deposits based on the shallow depth where previously recovered mammal fossils in this project vicinity have been found. However, within the inland valleys, ground disturbances typically have to be greater than 10 feet deep before fossils are recovered from younger units. Within the Project Excavation Parameters, this includes young alluvial fan, young eolian, young axial channel, and very young deposits.

Other cumulative projects may also result in permanent impacts to paleontological resources when construction activities occur within the San Timoteo Formations. These cumulative projects are located at the eastern segment of the build alternatives in Yucaipa and are identified as Freeway Corridor Specific Plan, Oak Hills Marketplace Specific Plan, and Robinson Ranch. The potential to impact paleontological resources within sensitive areas are related to the amount of soil disturbed and the depth of excavation.

Implementation of the proposed project and other cumulative projects have the potential to encounter paleontological resources during augering and foundation activities due to the high sensitivity of the subsurface foundations in the study area; however, mitigation measure PA-1 outlines monitoring and proper handling of paleontological resources if paleontological resources are encountered during construction activities. With implementation of the mitigation measure, potential impacts to paleontological resources are not cumulatively considerable. In addition, the effects of other cumulative projects on paleontological resources would be evaluated as part of the environmental review process for those projects. Based on the information and analysis above, direct or indirect cumulative impacts related to paleontological resources are not anticipated to result, and no further analysis is necessary and no additional measures are required.

3.6.5.12 Hazardous Waste/Materials

For hazardous materials and waste, the concern would not be from contamination caused by the project, but rather from materials that are currently present in the environment, and hazardous materials transported on the areawide roadway system on a daily basis. The transportation, use, storage, and disposal of hazardous waste and associated materials are highly regulated by local, State, and federal laws; therefore, impacts associated with hazardous waste and materials would be localized. There would be an incremental increase in the generation of hazardous materials in the study area during construction; however, long-term operational impacts of the I-10 CP would not contribute to the generation of hazardous materials. The proposed project would serve to remediate (i.e., clean up) existing concerns that exist in the corridor, including asbestos-containing materials (ACM), lead-based paint (LBP), and contaminated soils. In addition, for trucks and other vehicles traveling through the I-10 corridor that are carrying hazardous materials, freeways generally have a lower accident rate than surface streets. This would be a cumulative benefit rather than an impact.

With the implementation of mitigation measures HAZ-1 through HAZ-10, the proposed project would not result in substantial permanent adverse impacts related to hazardous waste and materials. Future land use and transportation projects noted in Table 3.6-1 would comply with applicable City and County Hazardous Waste Management Plans, ordinances, and State regulations related to hazardous materials, which would ensure that there would be no adverse hazardous material impacts resulting from future development in the cities and the county; therefore, the proposed project would not contribute to cumulative hazardous waste and materials impacts. Based on the information and analysis above, direct or indirect cumulative impacts related to hazardous waste and materials are not anticipated to result, and no further analysis is necessary and no additional measures are required.

3.6.5.13 Energy

The RSA for energy is limited to San Bernardino and Los Angeles counties because construction materials and equipment can be obtained within this area. Although diminishing, fossil fuels and other sources of energy used to manufacture and transport goods remain readily available. As discussed in Section 3.2.8, Energy, factors to consider in energy consumption before and during project construction include materials extraction, product manufacturing (e.g., asphalt, concrete), transporting materials to the site, construction worker vehicle miles traveled (VMT) during construction, and fossil fuel consumption by construction vehicles. The planned and approved projects listed in Table 3.6-1 would cumulatively contribute to regional energy consumption. This increased fuel consumption would be temporary, would cease at the end of the construction activity, and would not have a residual requirement for additional energy input. The marginal increases in fossil fuel use resulting from project construction are not expected to have appreciable impacts on energy resources.

In terms of project operation, while each build alternative associated with the proposed action is expected to result in more vehicles using the highway in 2040, each vehicle would be expected to use less fuel than under the No Build Alternative. In conjunction with other current or future planned projects within the study area, the proposed action would not be expected to result in cumulatively adverse effects related to energy consumption. It should also be noted that planned projects contained within Table 3.6-1 would be required to adhere to the local building code or applicable ordinances that require the use of energy-efficient building materials and other systems (e.g., heating and air conditioning) designed to reduce energy consumption. Based on the information and analysis above, direct or indirect cumulative impacts related to energy are not anticipated to result; therefore, no protection measures are needed, and no further analysis is necessary and no additional measures are required.

3.6.5.14 Biological Environment

Wetlands and Other Waters

The RSA pertaining to wetlands and other waters is the Biological Study Area (BSA), which is located along a 33-mile-long segment of I-10 in San Bernardino County between the cities of Montclair and Redlands. The BSA consists of Caltrans ROW, anticipated temporary construction easements (TCEs), proposed construction staging areas (CSAs), and areas within a 50-foot-wide buffer immediately adjacent to the ROW and CSAs. The BSA includes all areas anticipated to be disturbed during construction of the proposed project.

Wetlands and other waters within the RSA have largely been removed due to urbanization. As discussed in Section 3.3.2, Wetlands and Other Waters, a detailed jurisdictional delineation was conducted within the BSA. No wetlands under the jurisdiction of the United States Army Corps of Engineers (USACE) would be impacted by the project. Implementation of one of the build alternatives would result in impacts to California Department of Fish and Wildlife (CDFW) and Regional Water Quality Control Board (RWQCB) jurisdictional waters. Alternative 2 would result in 0.07 acre of permanent impacts. Alternative 3 would result in 0.09 acres of permanent impacts to waters pursuant to CDFW and RWQCB jurisdiction. Given that the proposed project's impacts would be addressed through avoidance and minimization measures WET-1 through WET-5, the project's contribution to jurisdictional waters impacts would not be cumulatively considerable. Planned projects contained in Table 3.6-1 are located within highly urbanized and developed areas. Existing drainages are largely channelized, containing few wetland areas. Project-specific analysis would be required for each of these planned developments to ensure that impacts to wetlands or other waters are assessed and adequately mitigated. Based on the information and analysis above, direct or indirect cumulative impacts related to wetlands and other waters are not anticipated to result, and no further analysis is necessary and no additional measures are required.

Plant Species

The RSA pertaining to plant species is the BSA, which was established for the biological resource study of this project, as described above. Plant species within the RSA have largely been removed due to urbanization. As discussed previously under Section 3.3.3, Plant Species, botanical surveys to establish the presence/absence of special-status plant species in the BSA were conducted during the appropriate blooming period in 2013. No plant species observed within the BSA are considered special-status; therefore, the proposed project would not result in cumulative impacts to special-status plant species. Planned projects contained within Table 3.6-1 are proposed within a highly urbanized and developed area dominated by nonnative plant species. Project-specific analysis would be required for each of these planned developments to ensure that impacts to sensitive plant species are assessed and adequately mitigated. Based on the information and analysis above, direct or indirect cumulative impacts related to plant species are not anticipated to result, and no further analysis is necessary and no additional measures are required.

Animal Species

The RSA pertaining to animal species is the BSA, which was established for the biological resource study of this project, as described in Section 3.3.1, Natural Communities. Animal species within the RSA have largely been removed due to urbanization. As discussed previously under Section 3.3.4, Animal Species, 33 special-status wildlife species are reported to occur within the BSA. Ten (10) of these special-status wildlife species are federally and/or State-listed endangered, threatened, or candidate species and are discussed further in Section 3.3.5, Threatened and Endangered Species. Of the remaining 23 species, 10 of these special-status wildlife species were determined to have an *"Absent"* potential for occurrence designation within the BSA.

Raptors and other birds protected by the Migratory Bird Treaty Act (MBTA) may nest in existing trees and shrubs within and adjacent to the BSA. Direct permanent impacts, such as the direct removal of nests, may occur (e.g., during vegetation clearing). Indirect permanent impacts, such as nest failure, may also occur as a result of excessive disturbance of the nesting birds (e.g., from excessive noise and disruption from increased human activities). Given that the proposed project's impacts would be addressed through avoidance and minimization measures AS-1 through AS-6, the project's contribution to special-status animal species impacts would not be cumulatively considerable. Similar impacts as those described above would be anticipated for planned projects contained within Table 3.6-1. Project-specific analysis would be required for each of these planned developments to ensure that impacts to sensitive animal species are assessed and adequately mitigated. Based on the information and analysis above, direct or indirect cumulative impacts related to animal species are not anticipated to result, and no further analysis is necessary and no additional measures are required.

Invasive Species

The RSA pertaining to invasive species is the BSA, which was established for biological resource study of this project, as described above. Urbanization over the years has greatly facilitated the introduction and dominance of invasive species within the RSA. As discussed previously under Section 3.3.6, Invasive Species, the proposed project would provide the benefit of removal of existing invasive species within the BSA to the extent practicable; however, implementation of the proposed project could have the potential to spread invasive species by the entering and exiting of construction equipment contaminated by invasive species, the inclusion of invasive species in seed mixtures and mulch, and the improper removal and disposal of invasive species so that seed is spread along the highway. Because the project area is predominantly confined to heavily developed, disturbed areas containing public and private infrastructure, and with implementation of avoidance and minimization measure IS-1, the proposed project's contribution to invasive species impacts would not be cumulatively considerable. Similar impacts as those described above would be anticipated for planned projects identified in Table 3.6-1. Project-specific analysis would be required for each of these planned developments to ensure that impacts associated with invasive species are assessed and adequately mitigated. Based on the information and analysis above, direct or indirect cumulative impacts related to invasive species are not anticipated to result, and no further analysis is necessary and no additional measures are required.

3.6.6 Environmental Resources Included in the Cumulative Impact Analysis

This section discusses potential cumulative impacts to various resources that could occur as a result of the construction and operations of the build alternatives (Alternatives 2 and 3) together with the related projects listed in Table 3.6-1.

3.6.6.1 Farmlands

Resource Study Area

The study area for farmlands for the I-10 corridor is 1 mile wide on each side of I-10 for the length of the project limits. This study area is consistent with the study area requirements for the Natural Resources Conservation Service (NRCS) analysis of farmland impacts.

Current Condition and Historical Context

As noted in Section 3.1.3, Farmlands, agriculture faces continuing conversion pressures from urbanization, foreign competition, and rising production costs near and within significant agricultural regions; therefore, the lands within the study area that remain in agricultural production represent open space and economic value for the cities and counties in which they are located. Agricultural production in the study area is extremely limited due to existing dense urban development; however, there are agricultural lands, as identified by the Farmland Mapping and Monitoring Program (FMMP), particularly concentrated at the eastern end of the proposed project corridor in Loma Linda and Redlands and unincorporated San Bernardino County. A total of 4,436.23 acres (8.18 percent) of the project study area are designated as farmland according to the California Department of Conservation (DOC) FMMP maps; whereas 49,168.22 acres (91.72 percent) of the study area are categorized as nonagricultural lands by the FMMP.

According to annual Crop Reports prepared by the San Bernardino County Department of Agriculture/Weights and Measures, the total value of production in the County dropped approximately 32 percent between 2011 and 2013. This decline was a result of the 26 percent decline in the dairy industry in San Bernardino County from 2011 to 2013.

Project Impacts

Alternative 2 is not anticipated to convert designated farmland to transportation uses; however, Alternative 3 is expected to acquire 10,654 square feet of designated farmland. Farmland impacts are located in Ontario and Redlands. The farmland in Ontario is not currently occupied by any grazing animals, and there is no sign that any of the parcels have been used for grazing or other agricultural purposes in recent years. In addition, these parcels are zoned for office/commercial uses in the Guasti Plaza Specific Plan Land Use Map, adopted by the City of Ontario in May 2011. There are no other planned cumulative projects that would impact the same farmland parcels in Ontario. In addition, there would be no effects on points of access and associated onsite roads, equipment and crop storage and staging areas, or planting and harvesting activities to farmlands with the incorporation of avoidance or minimization measures FARM-1 through FARM-4.

Reasonable Foreseeable Actions

The Freeway Corridor Specific Plan (ID #18) and the Oak Hills Marketplace Specific Plan (ID #19) in Yucaipa are anticipated to convert farmland to other land uses; these conversions of farmland have been approved by the City of Yucaipa. Planned projects converting farmland to other uses would be required to address potential impacts through mitigation and as part of project approvals required by the implementing jurisdiction in which they are located.

Cumulative Impacts

The proposed and related projects resulting in farmland conversion would continue the regional trend of converting farmland to nonagricultural uses. Agricultural land proposed for conversion under Alternative 3 in Redlands would not be affected by other planned projects. The farmland conversion to transportation uses for the proposed project would be much less than 1 percent of the total agricultural lands within the RSA. Because the conversion of farmland is not substantial and no agricultural preserves, Williamson Act Contract lands, or timberlands are located in the study area, adverse cumulative impacts to farmlands are not anticipated. Therefore, the project would not cumulatively contribute to considerable cumulative farmland impacts.

3.6.6.2 Community Impacts

Resource Study Area

The RSA for community impact assessment includes the localized area within the project limits and surrounding vicinity within a 0.5-mile radius of the I-10 corridor.

Current Condition and Historical Context

Historically, the land use in the RSA was agriculture and now includes a wide range of urban and suburban uses, as well as parks, open space, and transportation uses. In most of the I-10 CP study area, the community character is suburban/urban with a wide range of land uses, including residential, commercial, and industrial uses. I-10 is a major feature crossing these cities. The eastern I-10 CP limits include areas that are slightly lower in land use density. Rural areas are not seen within close proximity to the I-10 CP.

The cities encompassed by the RSA developed over time. Large retail centers serve as local landmarks and as areas promoting community cohesion by providing free and ticketed entertainment, along with a variety of shopping and services. While the land uses in the project area are similar, there is a diverse population composed of varied socioeconomic neighborhoods within the project limits. The sense of community cohesion has likely changed over time as new roads, freeways, and major developments have been constructed.

Project Impacts

Permanent Impacts

Alternative 2 is not anticipated to displace any residents or businesses. Alternative 3 would result in the acquisition and removal of residential (40 residential unit displacements) and nonresidential (12 displacements) properties. Community Impacts are discussed in detail in Section 3.1.4, Community Impacts, of this Final EIR/EIS. Because I-10 is an existing facility, widening of the lanes would not divide an existing community or create a barrier between communities.

Alternatives 2 and 3 would result in changes in the viewsheds in the area, related to wider overcrossings and undercrossings at I-10; however, because the character of the area is highly urbanized, changes to existing surroundings would not be highly noticeable to community members. With the incorporation of aesthetic treatments on hardscape and vegetation plantings, Alternatives 2 and 3 would not contribute to considerable cumulative impacts to community character and cohesion.

Construction Impacts

Community impacts from construction of the build alternatives would include temporary access and business disruptions from construction; traffic congestion within and near the construction zone; air pollutant emissions from construction activities; and temporary noise-level elevations from construction equipment operations. The level of these impacts would escalate if the construction period overlaps with other construction projects in the vicinity or is extended considerably.

Reasonable Foreseeable Actions

Recent development trends in the I-10 corridor study area have been primarily focused on transportation projects. Several transportation-related projects are under construction or have been planned for construction within the vicinity of the proposed project, as listed in Table 3.6-1. The related specific plan projects would build additional housing, and there are no new projects that would divide a community in the RSA. One of the main goals of the Metrolink Station Accessibility Improvement Project is to improve public transportation connectivity, which would provide cumulative benefits for the County. Several other public transportation extension projects, such as the Redlands Passenger Rail Project and the Metro projects, would further connect the region through public transportation improvements.

Other components of community impacts that could have the potential to be affected include community disruption deriving from roadway construction and increased urbanization due to expanded pavement/hardscape; modified ramps; concrete barriers; new retaining, tieback, and sound walls; and new freeway appurtenances (e.g., changeable message signs [CMS], overhead traffic sensors, and video cameras). Additionally, the community character of the area would be further urbanized with the loss of mature landscaping, which currently softens the urban nature of the roadway, until the new landscaping is established.

Cumulative Impacts

Implementation of Alternative 3 would result in property acquisitions. Cumulative impacts may result from the replacement properties that would need to be acquired for various projects located within the cumulative impact study area; however, a sufficient number of replacement properties currently exist within the city or area vicinity. In addition, many of the specific plan projects listed in Table 3.6-1 would build additional housing, thereby offsetting any housing reduction resulting from the proposed and other related roadway improvement projects. Changes to the project viewshed and other related projects would not result in cumulative impacts because the project area is generally built out, and the components proposed for the project are similar in nature to the existing environment.

Construction impacts would also result from the project and other related projects. As shown in Table 3.6-1, many transportation projects are under construction and would be completed prior to construction commencement of the proposed project in 2020; however, if some projects are delayed or their construction periods extended, the build alternatives, in combination with these projects, could further inconvenience residences and businesses, potentially resulting in deterioration of quality of life and loss of business revenues. It should be noted, however, that standard construction techniques, in combination with mitigation measures COM-1, COM-2, and COM-4 through COM-14, would address impacts associated with access and would be anticipated to reduce these impacts; therefore, no substantial impacts pertaining to community disruption on a cumulative basis are anticipated.

Once the proposed project and other related projects are completed, area residents and businesses along the I-10 corridor, including new development projects, would receive benefit from a less-congested freeway network and improved mobility at various interchanges and local streets along the I-10 corridor and other interconnected transportation facilities. Alternative 3 would not contribute incrementally to continuing changes in community character and cohesion in the RSA. Therefore, implementation of the proposed project and other related projects would not have a cumulatively considerable contribution to the cumulative effects related to community impacts.

3.6.6.3 Cultural Resources

Resource Study Area

The RSA includes all cultural resources located within the designated Area of Potential Effects (APE) established for this project, which includes the project footprint plus a 50-foot buffer. As discussed in Section 3.1.8, Cultural Resources, the RSA contains 5 historic properties listed in or eligible for listing in the National Register of Historic Places (NRHP) and 11 historical resources eligible for listing in the California Register of Historical Resources (CRHR). The analysis considers impacts only to cultural resources that are eligible for either the National Register of Historic Places (known as historic properties) or the California Register of Historical Resources (known as historical resources). No further management of non-qualifying resources is required under existing laws and regulations, and destruction of those resources is not considered to be a significant impact or effect (refer to Section 3.1.8 for the NHPA Section 106 impact analysis and Chapter 4 for the CEQA impact analysis for these resources for all three alternatives).

Current Condition and Historical Context

As described in the project HRER, San Bernardino County was initially settled by three Native American groups. Euro-American settlement began in the area in the early 1800s as persons seeking land and fortunes made their way west from the mid-west and east coast, or north from what is now known as Mexico. Two Mormon colonies were established on either side of the Santa Ana River; the Mormons who settled in the San Bernardino area raised livestock, planted crops, and established civic services such as a school and a post office. General agriculture and livestock raising pursuits were quickly overshadowed by the citrus industry in southern California beginning in the 1870s. As industry began to boom in southern California, transportation needs to ship the products to consumer markets also grew, which led to the development of rail lines in the late 1800s. The establishment of interstate and intercontinental rail lines brought an influx of people and money to southern California, which led to a real estate boom. Finally, the section of I-10 known as the “San Bernardino Freeway” was constructed between 1943 and 1957.

The following historic properties or historical resources currently remain within the project RSA. Mill Creek Zanja, Redlands (CA-SBR-8092H) and Euclid Avenue/State Route (SR) 83, Upland and Ontario (36-015982) are listed in the NRHP. The Peppers/El Carmelo, located at 926 E. Highland Avenue, Redlands (36-016795), is eligible for listing in the NRHP. The property located at 1055 E. Highland Avenue, Redlands, is also found to be eligible for listing in the NRHP. One historic archaeological site, the Curtis Homestead (CA-SBR-12989H; 36-014510), is eligible for inclusion in the NRHP. In addition, the Euclid Avenue Historic District, including Euclid Avenue and three fronting properties in Ontario, and Terrace Park and B.W. Cave Residence in Redlands are historical resources for the purposes of CEQA. More detailed descriptions of the sites can be found in Section 3.1.8, Cultural Resources. As additional properties reach historic maturity after 50 years, the RSA will continue to transform and contain a mixture of old and new properties with the assistance of government conservation regulations.

Project Impacts

Alternative 2 would not result in any direct impacts to cultural resources; however, indirect impacts to historic resources may result from the proposed project. Alternative 3 would result in a direct impact to Euclid Avenue/SR-83 and could result in indirect impacts to the other historic properties/historical resources within the APE. With the implementation of minimization/mitigation measures CUL-1 through CUL-9, the project would avoid any adverse impacts to cultural resources. With concurrence from the State Historic Preservation Officer (SHPO), Caltrans has determined that a finding of No Adverse Effect with Non-Standard Conditions is appropriate for the undertaking as a whole, pursuant to Section 106 Programmatic Agreement (PA) Stipulation X.B.2.

Reasonable Foreseeable Actions

In regard to future projects, it is anticipated those projects would incorporate measures to avoid adverse impacts; therefore, potential future cumulative adverse effects would be conditioned or mitigated. The Metrolink Station Accessibility Improvement Project could result in minor impacts to the Euclid Avenue/SR-83 resource outside of the APE; however, with mitigation and minimization measures imposed by Caltrans, the cumulative effect would likely not rise to the level of being considered adverse. No physical destruction or damage to all or part of the property is anticipated, and any other potential effects would be temporary in nature.

Cumulative Impacts

It is not anticipated that the proposed project, when viewed in the context of other related projects, would create a situation in which a collection or group of resources would be subjected to adverse cumulative impacts resulting from the combination of projects. Given the overall size of the Euclid Avenue/SR-83 resource, the extent of historic fabric, and the adherence by most of the past projects, the cumulative effect does not rise to the level of being considered adverse. For the reasons described above, adverse cumulative effects to cultural resources are not anticipated as a result of the proposed project. Therefore, implementation of the proposed project and other related projects would not have a cumulatively considerable contribution to the cumulative effects related to cultural resources.

3.6.6.4 Noise

Resource Study Area

The RSA is the same as the study area evaluated in the *Noise Study Report*, extending for approximately 33 miles of I-10 from the Los Angeles/San Bernardino (LA/SB) county line to Ford Street in San Bernardino County. This includes sensitive noise receptors (e.g., residences, hotels, churches) within approximately 300 to 600 feet of I-10. The study analyzed 24 distinct segments based on major local interchanges and evaluated the effects of noise on affected receivers next to the build alternatives.

Current Condition and Historical Context

Over the last 70 years, ambient noise conditions have increased due to greater urbanization; however, numerous land use controls have been adopted or are required by local jurisdictions to ensure that noise-generating land uses are situated in appropriate and compatible locations or employ noise-reduction equipment capable of meeting noise standards. Measured existing hourly averaged noise levels along the project corridor ranged from 55 to 81 A-weighted decibels (dBA) in the worst noise hour. Government regulations and mitigation measures, such as soundwalls, are anticipated to minimize noise impacts within the RSA.

Project Impacts

Project future noise conditions, when compared to the future no-build noise conditions, generally increase or decrease slightly compared to the future no-build noise condition. With incorporation of the abatement, maximum changes in future build noise range from a 3-decibel (dB) increase to a 12-dB decrease for Alternative 2, and a 4-dB increase to a 10-dB decrease for Alternative 3. Increases in operational noise at all receptors are considered minor with implementation of the recommended soundwalls summarized below.

Construction noise varies greatly depending on the construction process, type, and condition of the equipment used, and layout of the construction site. Projections of potential construction noise levels may vary from actual noise experienced during construction due to these factors. In general, construction activities conducted during daytime hours would have a lesser impact on sensitive receptors than nighttime construction; however, nighttime construction is expected to be necessary to avoid unacceptable disruptions to traffic during daytime hours.

Reasonable Foreseeable Actions

Table 3.6-1 summarizes many adopted transportation and land use plans that could potentially contribute to noise impacts and increase the number of receptors that may be exposed to noise associated with the I-10 CP. Among projects that could contribute to noise impacts, designated Project ID Numbers 8, 10, 15, 18, and 20 report increases in ambient noise levels in the long term that cannot be avoided or substantially mitigated. As a result, it is expected that ambient noise levels in much of the RSA would increase over time as additional land uses are developed and transportation facilities and improvements are implemented.

Cumulative Impacts

With regards to accepted, regional land use forecasts for 2045, which include future transportation improvements, the incremental contributions of the build alternatives to cumulative increases in ambient noise levels in the RSA are likely to be small when considered against the backdrop of substantial existing, adopted, and planned land development and other transportation improvements along the corridor. With implementation of noise barriers, the increased noise levels under the build alternatives would be minor. As a result, operation of the build alternatives would result in only a minor contribution to cumulative noise impacts in the RSA.

Permanent impacts would be addressed through implementation of Measure N-1, which includes the installation of noise barriers along the alignment at specific locations. During construction, noise impacts could be more severe if the construction period overlaps with other construction projects in the vicinity. The standard construction methods would be applied, in addition to Measures N-2 through N-4, to minimize individual and cumulative noise impacts during construction. In addition, Caltrans/SBCTA would coordinate with other agencies to schedule construction activities so that the potential for conflicts between the proposed action and other large, unrelated projects is minimized.

Based on the information and analysis above, direct or indirect cumulative impacts related to noise are not anticipated to result; no further analysis is necessary, and no additional measures are required. Therefore, implementation of the proposed project and other related projects would not have a cumulatively considerable contribution to the cumulative effects related to noise.

3.6.6.5 Air Quality

Resource Study Area

Air quality impacts are regional in nature. From an air quality standpoint, the cumulative analysis would extend beyond any local projects and, when wind patterns are considered, would cover an even larger area. Accordingly, the RSA encompasses the South Coast Air Basin (SCAB), an area bounded by the Pacific Ocean to the west and high mountains around the rest of its perimeter.

Current Condition and Historical Context

The California Air Resources Board (ARB) and the South Coast Air Quality Management District (SCAQMD) maintain a network of air quality monitoring stations located throughout the SCAB to characterize the air quality environment by measuring and recording pollutant concentrations in the local ambient air. SCAB is divided into 38 source receptor areas (SRAs). The proposed project corridor extends along 33 miles of I-10, which passes through SRAs 32 (Upland), 33 (Ontario), 34 (San Bernardino and Fontana), and 35 (Redlands) and along the border of SRAs 23 (Riverside and Rubidoux) and 24 (Perris). The monitoring stations near the project corridor include: Pomona, Upland, Fontana, San Bernardino, and Redlands.

The historical data from these monitoring stations were used to characterize the majority of existing conditions in the vicinity of the project area. Criteria pollutants carbon monoxide (CO), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2) did not exceed the State standards from 2010 to 2014. However, during the same time the 1-hour State standards for ozone (O_3) were exceeded 9 to 66 times as recorded by the Pomona and Redlands Air Monitoring Stations. The 24-hour State standard for PM_{10} was exceeded 1 to 15 times between 2010 and 2014 at Ontario Fire Station, Fontana Arrow Highway, San Bernardino, and Redlands Air Monitoring Stations. The State annual standard for particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) has been exceeded every year at the Fontana Arrow Highway and Ontario Fire Station (except in 2012) Air Monitoring Stations while it stayed below the standard at the San Bernardino Air Monitoring Station.

If a pollutant concentration is lower than the state or federal standard, the area is classified as being in attainment for that pollutant. If a pollutant exceeds the standard, the area is considered a nonattainment area. If data are not available or insufficient for determining whether a pollutant is exceeding the standard, the area is designated as unclassified. The State of California has designated the San Bernardino County portion of the SCAB, which includes the project area, as a nonattainment area for O_3,

$PM_{2.5}$, and particulate matter less than 10 microns in diameter (PM_{10}). The U.S. Environmental Protection Agency (EPA) has designated this area as a nonattainment area for O_3 (extreme, 8-hour standard), and $PM_{2.5}$ (moderate). Government regulations are anticipated to slow air quality degradation in the region.

Project Impacts

The air quality analysis is based on future traffic conditions in 2025 and 2045 presented in the Traffic Analysis Operations Report prepared for the proposed project, which included major roadway improvements listed in the Regional Transportation Plan (RTP) and Federal Transportation Improvement Program (FTIP). As a result, the analysis contained in Section 3.2.6 constitutes the operational cumulative analysis for the project.

Permanent Impacts

Alternative 2 would result in negligible changes in regional emissions for volatile organic compounds (VOCs), nitrogen oxides (NO_X), and CO (i.e., 1 to 2 percent decrease in 2025 and 2 to 4 percent increase in 2045) from no-build conditions. The decrease in regional emissions for PM_{10} and $PM_{2.5}$ would be 7 and 4 percent in 2025, and 1 and 5 percent in 2045, respectively. The change in no-build to build mobile source air toxic (MSAT) emissions ranges from a decrease of 7 percent to an increase of 8 percent in 2025, and 2045 emissions range from 3 to 8 percent increases. Alternative 2 would result in a diesel particulate matter (DPM) change of 5 percent in 2025 and 8 percent in 2045.

Alternative 3 would increase regional VOC, NO_X, and CO emissions by approximately 9 to 10 percent in 2025 and 2045 from no-build conditions. The increase in regional PM_{10} emissions in 2025 and 2045 would be 5 and 4 percent, respectively. $PM_{2.5}$ emissions would grow by 1 percent in years 2025 and 2045. The change in no-build to build MSAT emissions ranges from an increase of 7 to 14 percent in 2025 and from no increase to 14 percent in 2045. Alternative 3 would result in a DPM change of 8 percent in 2025 and 7 percent in 2045.

Construction Impacts

Construction is anticipated to last 42 months for Alternative 2 and 60 months for Alternative 3. As a result, project construction would not last more than 5 years and is considered temporary. Construction emissions would be associated with stationary or mobile-powered onsite construction equipment. Potential sources that may emit odors during construction activities include equipment exhaust and architectural coatings. Odors from these sources would be localized and generally confined to the immediate area surrounding the construction zone. The proposed project would utilize typical construction techniques (e.g., diesel-fueled heavy-duty equipment), and the odors would be typical of most construction sites and temporary in nature.

Reasonable Foreseeable Actions

Cumulative projects include local development, as well as general growth, within the project area; however, as with most development, the greatest source of emissions is from vehicular traffic that can travel well out of the local area. Construction and operation of cumulative projects, including the I-15 Express Lanes Project, would further degrade the local air quality, as well as the air quality of the SCAB. Air quality would be temporarily degraded during construction activities that occur separately or simultaneously; however, the greatest cumulative impact on the quality of regional air would be the incremental addition of pollutants from increased traffic from residential, commercial, and industrial development and the use of heavy equipment and trucks associated with construction of these projects.

Cumulative Impacts

Alternatives 2 and 3 are listed in the 2016-2040 financially constrained 2016-2040 RTP/Sustainable Communities Strategy (SCS), which was adopted by the Southern California Association of Governments (SCAG) on April 7, 2016, and the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) made a regional conformity determination finding on June 1, 2016. Therefore, despite the regional increase in emissions for certain pollutants in either Alternative 2 or 3, the build alternatives would not contribute to a cumulative impact.

Cumulative projects listed in Table 3.6-1, which include residential, commercial, and industrial development, as well as general growth, could also contribute to additional mobile and stationary emission sources; which could further degrade the local air quality, as well as the air quality of the SCAB. However, because these projects would be discretionary actions and subject to CEQA, they would be required to incorporate measures to reduce air quality impacts. In addition, any project located within the SCAB would be required to comply with SCAQMD rules and regulations to reduce potential emissions.

3.6.6.6 Biological Environment

Natural Communities

Resource Study Area

The RSA pertaining to natural communities is the BSA, which is located along a 33-mile-long segment of I-10 between the LA/SB county line and Redlands. The BSA also includes a 50-foot-wide buffer beyond Caltrans ROW and around the proposed CSAs. The BSA includes all areas required for construction of the proposed project, including TCEs and ROW to accommodate construction of proposed retaining walls and soundwalls.

Current Condition and Historical Context

The land uses within the BSA are predominantly composed of urban and other developed uses, with specific uses being primarily residential, commercial, and industrial properties. As recently as 50 years ago, most of the BSA was a mixture of urban areas, vineyards, and orchards. The ensuing urbanization has resulted in conversion of nearly all agriculture to commercial, industrial, and residential land use. The natural communities within the RSA have largely been removed due to urbanization.

Project Impacts

Implementation of any of the build alternatives would result in impacts to United States Fish and Wildlife Service (USFWS) critical habitat for Santa Ana sucker (SAS) and southwestern willow flycatcher (SWWF), and potentially suitable habitat for Delhi Sands flower-loving fly (DSF), as described in Section 3.3.5. The build alternatives would also impact the Santa Ana River, which is considered a constrained wildlife corridor due to the concrete-lined, channelized nature within the BSA.

Reasonable Foreseeable Actions

Planned projects contained within Table 3.6-1 are proposed within a highly urbanized and developed area. Impacts resulting from the implementation of these proposed projects would be anticipated to be similar in nature to those described for the build alternatives; however, project-specific analysis would be required for each to ensure that impacts to natural communities are assessed and adequately mitigated. If impacts to USFWS critical habitat are identified by any of the other cumulative projects, they are required to mitigate for the permanent impacts as required by USFWS through obtaining a Biological Opinion (BO) and other conditions.

Cumulative Impacts

With the implementation of avoidance, minimization, and mitigation measures NC-1 and NC-2, the project's contribution to impacts on natural communities would not be cumulatively considerable. Based on the information and analysis above, the proposed project's incremental contribution to cumulative direct or indirect effects related to natural communities would be mitigated through compensatory mitigation, which would result in no net loss of vegetation communities and habitat. Therefore, the project would not cumulatively contribute to considerable cumulative natural communities impacts.

Threatened and Endangered Species

Resource Study Area

The RSA pertaining to threatened and endangered species is the BSA, as described above.

Current Condition and Historical Context

The Federal Endangered Species Act (1973) (FESA) requires federal agencies, such as FHWA, to consult with USFWS and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. The California Endangered Species Act (1970) (CESA) requires similar agency coordination and requirements, as discussed in Section 3.3.5, Threatened and Endangered Species. Likely due to the implementation of these regulations after the industrialization of the RSA, threatened and endangered species within the RSA have largely been extirpated due to urbanization within the BSA. Government regulations are anticipated to slow the continued extirpation of threatened and endangered species.

Project Impacts

As discussed previously under Section 3.3.5, Threatened and Endangered Species, the coastal California gnatcatcher (CAGN), DSF, Santa Ana River woolly-star *(Eriastrum densifolium* ssp. *sanctorum)* and slender-horned spineflower *(Dodecahema leptoceras)* are State or federal threatened and endangered-listed species that have the potential to occur within the BSA. CAGN, Santa Ana River woolly-star, and slender-horned spineflower have a low potential to occur in the BSA, and DSF has a moderate potential to occur within the project area. For CAGN, Santa Ana River woolly-star, and slender-horned spineflower, additional focused surveys were conducted in 2016, and these species were not found in the BSA. Both build alternatives are not anticipated to adversely affect these species.

A habitat assessment conducted in 2014 identified all potentially suitable habitat for DSF within the BSA. Based on this information, Alternative 2 would result in 2.13 acres of permanent effects to potentially suitable DSF habitat. Alternative 3 would result in 9.70 acres of permanent effects to potentially suitable DSF habitat. The affected DSF potentially suitable habitat areas all occur between the existing edge of shoulder and the Caltrans ROW line.

Presence/absence surveys for the DSF were conducted in areas identified by the 2014 habitat assessment as potentially suitable habitat during the 2015 and 2016 survey periods. The DSF surveys determined that DSF is absent along the shoulders and at most interchanges where suitable habitat was identified for both build alternatives; however, DSF was present at the southeast quadrant of the I-10/Pepper Avenue interchange between the eastbound (EB) on-ramp and at the existing Caltrans ROW line. Although the I-10/Pepper Avenue interchange area was previously determined by USFWS not to result in direct impacts if improvements at the interchange remains within Caltrans ROW, the southeast quadrant of the interchange at the southern limits of Caltrans ROW is considered occupied because DSF was observed on two separate occasions. Both build alternatives are anticipated to permanently and temporarily impact occupied suitable DSF habitat within the existing I-10 corridor ROW. For Alternative 2, 0.11 acre of occupied, suitable habitat would be permanently impacted and 2.29 acres would be temporarily impacted by the project. Alternative 3 would result in permanent impacts of 0.77 acre to occupied, suitable habitat and temporarily impact 1.63 acres of occupied suitable habitat. Mitigation credits will be purchased at a 3:1: ratio for all permanent impacts to occupied, suitable DSF habitat and 1:1 for temporary impacts to occupied, suitable habitat. Therefore, project-related impacts to occupied suitable habitat would be mitigated.

Reasonable Foreseeable Actions

Similar impacts as those described above would be anticipated for planned projects identified in Table 3.6-1. Project-specific analysis would be required for each of these planned developments to ensure that impacts to threatened and endangered species are assessed and adequately mitigated. Each individual cumulative project would provide mitigation measures to address impacts to threatened and endangered species within the BSA.

Cumulative Impacts

Based on the information and analysis above, the build alternatives may contribute to direct or indirect cumulative impacts related to threatened or endangered species; however, the project's contribution to cumulative effects would be mitigated through mitigation measures approved by USFWS through the purchase of mitigation credits, which would offset direct impacts to occupied suitable DSF. Both build alternatives would be constructed in an area dedicated for transportation uses and would not result in additional loss of occupied suitable DSF habitat beyond the existing Caltrans ROW. There are no known projects that would result in further loss of occupied suitable DSF habitat. Measures AS-1 through AS-6, TE-1 through TE-7, and NC-1 through NC-2 would ensure that adverse cumulative effects to threatened and endangered species are not anticipated. Therefore, the project would not cumulatively contribute to considerable cumulative threatened and endangered species impacts.

3.6.7 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the measures described throughout Chapter 3 (and Appendix E), would minimize and reduce impacts. Similarly, the related projects contained within Table 3.6-1 would also be required to address potential impacts through avoidance, minimization, and/or mitigation as part of project approvals required by the implementing jurisdiction in which they are located. No additional measures are required to address the proposed project's contribution to cumulative impacts.

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Chapter 4 California Environmental Quality Act (CEQA) Evaluation

4.1 Determining Significance under the California Environmental Quality Act

The proposed project is a joint project by the California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA) and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). FHWA's responsibility for environmental review, consultation, and any other action required in accordance with NEPA and other applicable federal laws for this project is being, or has been, carried-out by Caltrans under its assumption of responsibility pursuant to 23 United States Code (U.S.C.) 327. Caltrans is the lead agency under CEQA and NEPA.

One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an Environmental Impact Statement (EIS), or a lower level of documentation, will be required. NEPA requires that an EIS be prepared when the proposed federal action (project) as a whole has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require Caltrans to identify each "significant effect on the environment" resulting from the project and ways to mitigate each significant effect. If the project may have a significant effect on any environmental resource, then an Environmental Impact Report (EIR) must be prepared. Each and every significant effect on the environment must be disclosed in the EIR and mitigated if feasible. In addition, the CEQA Guidelines list many mandatory findings of significance that also require preparation of an EIR. There are no types of actions under NEPA that parallel the findings of mandatory significance of CEQA. This chapter discusses the effects of this project and CEQA significance.

4.2 Effects of the Proposed Project

The significance of the potential impacts of the build alternatives under CEQA was assessed based on the CEQA Environmental Checklist provided in Appendix A and the analyses of project impacts discussed in detail in Chapter 3, Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures. The impacts of the build alternatives are summarized in the following sections, including the identification of the level of significance of the potential adverse effects under CEQA. This section discusses the impacts of Alternatives 2 and 3. For a discussion of the impacts of the No Build Alternative, refer to Chapter 3.

Because the significance discussion is organized by level of impact, starting with No Impact and concluding with Significant Effects, and because the CEQA Environmental Checklist asks about a variety of subjects for each environmental topic, environmental topics may be discussed in more than one level of significance discussion. For example, the discussion on Aesthetics appears in both the No Impact discussion as it relates to effects on scenic vistas and under the Less Than Significant Effects discussion as it relates to new sources of light or glare. To better help the reader, the specific CEQA Environmental Checklist questions that are addressed in the discussion are referenced below each heading for each environmental topic.

Lastly, the discussion on greenhouse gas (GHG) emissions and global climate change is discussed in detail later in Section 4.2.7, Climate Change. Caltrans remains firmly committed to implementing measures to help reduce the potential GHG effects of the project, as described in the measures outlined in Section 4.2.7, Climate Change.

4.2.1 No Effects

As indicated in Chapter 3 (Section 3.0) and the CEQA Environmental Checklist in Appendix A, the proposed build alternatives would not impact the following environmental resources: timberlands (forest land), coastal zone, wild and scenic rivers, and mineral resources. The proposed project would have no impacts on these resources due to the absence of these resources from the project area; therefore, no avoidance, minimization, and/or mitigation measures are required for these topics. No further discussion of these environmental resources is provided in this chapter.

4.2.1.1 Aesthetics Questions a):

As described in Section 3.1.7, Visual/Aesthetics, the project is located within an urbanized area that is primarily built out. None of the affected roadways are designated scenic highways, and there are no scenic vistas within the project area. There is no potential for the build alternatives to result in an adverse effect on a scenic vista or to substantially damage scenic resources within a State scenic highway.

4.2.1.2 Agriculture and Forest Resources Questions c) and d):

As described in Section 3.1.3, Farmlands/Timberlands, the build alternatives would not result in conversion of forest/timberland or loss of forest land.

4.2.1.3 Biological Resources Checklist Questions c) and f):

As discussed in Section 3.3, Biological Resources, there are no wetlands as defined by Section 404 of the Clean Water Act (CWA) within the Biological Study Area (BSA). In addition, there are no habitat conservation plans within the BSA that would apply to the project.

4.2.1.4 Hazards and Hazardous Material Checklist Questions f) and h):

The project is located within an urbanized freeway corridor that is not adjacent to wild lands and is not within the vicinity of a private airstrip.

4.2.1.5 Hydrology and Water Quality Checklist Questions g), i), and j):

As described in Section 3.2.1, Hydrology and Floodplains, the proposed project is a transportation improvement project, and it does not place housing or modify floodplains that would result in housing being in a 100-year floodplain and would not expose people or structures to a significant loss, injury, or death involving flooding. The project area is not located within an area susceptible to inundation by seiche, tsunami, or mudflow.

4.2.1.6 Land Use and Planning Checklist Question c):

As described in Section 3.3, Biological Environment, there are no habitat or natural community conservation plans within the project area.

4.2.1.7 Mineral Resources Checklist Questions a) and b):

The project is located in an urbanized transportation corridor. There are no known mineral resources or locally important mineral resource recovery sites designated on local, general, or specific plans, or other land use plans within the project area.

4.2.1.8 Noise Checklist Questions e) and f):

The project is located within the Ontario International Airport influence areas. However, the proposed project is a transportation project within an urbanized transportation corridor designed to enhance public safety and relieve congestion. The build alternatives' proposed improvements would not expose people residing or working in the area to excessive aircraft noise.

4.2.1.9 Recreation Checklist Questions a) and b):

As described in Section 3.1.2, Growth, the proposed project's improvements are not intended or anticipated to induce any substantial direct or indirect change in the location, distribution, amount, or rate of growth in the project area, county, or region. The project does not include the construction of and would not increase the use of existing neighborhood or regional parks or recreational facilities. The proposed project is a transportation project within an urbanized transportation corridor, designed to enhance public safety and relieve congestion.

4.2.1.10 Transportation/Traffic Checklist Question c):

The proposed project would widen Interstate 10 (I-10) within the vicinity of the LA/Ontario International Airport. The build alternatives would not result in change to air traffic patterns.

4.2.1.11 Utilities and Service Systems Checklist Questions a), b), e), and g):

The proposed project is a transportation project within an urbanized transportation corridor, designed to enhance public safety and relieve congestion. All stormwater within the State's right-of-way (ROW) will not require treatment by or the expansion/ reconstruction of wastewater treatment facilities or require a determination from a treatment provider to verify capacity. All construction debris will be characterized and recycled or disposed of at licensed solid waste disposal facilities in accordance with federal, State, and local statutes and regulations.

4.2.2 Less than Significant Effects of the Proposed Project

Based on the CEQA Environmental Checklist in Appendix A and the analyses in Chapter 3, the build alternatives are anticipated to result in less than significant impacts related to the environmental resources discussed below. No measures are required for these impacts; however, where feasible, additional measures have been identified to further reduce project effects, as applicable:

4.2.2.1 Agriculture and Forest Resources Checklist Questions a), b), and e):

As described in Section 3.1.3, Farmlands/Timberlands, Alternative 2 would not result in the current or future conversion of any Prime, Unique, or Important Farmland, or result in direct or indirect zoning changes to Prime, Unique, or Important Farmland designated by the California Resources Agency in the Farmland Mapping and Monitoring Program (FMMP). Although Alternative 3 would require minor partial acquisitions of designated grazing land in Ontario, the land is not currently occupied by any grazing animals, and there is no sign that any of the parcels have been used for grazing or other agricultural purposes in recent years. In addition, the site is zoned as Office/Commercial in the Guasti Plaza Specific Plan Land Use Map, adopted by the City of Ontario in May 2011. Conversion of agricultural land to transportation use is also required in Redlands; however, the area required for conversion is minimal (105 square feet) and most of the parcels would continue to be used for agricultural uses.

4.2.2.2 Air Quality Checklist Question a) – e): *Consistency with Air Quality Management Plans*

A consistency analysis determination plays an essential role in local agency project review by linking local planning and unique individual projects to the Air Quality Management Plan (AQMP) in the following ways: it fulfills the CEQA goal of fully informing local agency decision makers of the environmental costs of the proposed project under consideration at a stage early enough to ensure that air quality concerns are fully addressed, and it provides the local agency with ongoing information, assuring local decision makers that they are making real contributions to clean air goals defined in the most current AQMP (adopted 2012). Because the AQMP is based on projections from local General Plans, projects that are consistent with the local General Plan are generally considered consistent with the AQMP.

The overall control strategy for the 2012 AQMP is designed to meet applicable federal and State requirements, including attainment of ambient air quality standards. The focus of the 2012 AQMP is to demonstrate attainment of the federal 2006 24-hour particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) ambient air quality standard, as well as an update to further define measures to meet the federal and State 8-hour ozone (O_3) standards. The attainment demonstration for the recent 8-hour O_3 standard (75 parts per billion [ppb]) will be addressed in the next O_3 plan.

The 2012 AQMP provides base year emissions and future baseline emission projections. In doing so, the 2012 AQMP relies on the most recent zoning and land use designations and the best available information, including the California Air Resources Board's latest emission factors for the on-road mobile source emissions inventory, latest in-use fleet inventory for the off-road mobile source emission inventory, latest point source inventory, updated area source inventories, and the Southern California Association of Government's (SCAG) forecast growth assumptions based on its recent 2016-2040 Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS). The baseline emission projections provide a snapshot of the future air quality conditions, including the effects from already adopted rules and regulations.

On September 11, 2014, the SCAG Regional Council approved Amendment #2 to the 2012- 2035 RTP/SCS after a 30-day public review and comment period. Amendment #2 was developed as a response to changes to projects in the 2012-2035 RTP/SCS but also includes the complete list of modeled projects. Alternative 2 is identified by RTP ID 4H01001 and is described as “I-10 HOV Lane Addition – from Haven (Ontario) to Ford Street (Redlands) – Widening from 8-10 lanes, aux lanes widening, undercrossing, and reconstruction of ramps where needed.” Alternative 2 is also included in the adopted 2016-2040 RTP/SCS with the same ID and description.

Alternative 3 is listed in the 2016-2040 RTP/SCS, which was found to conform by SCAG on April 7, 2016 and received a FHWA and FTA regional conformity determination on June 1, 2016. Alternative 3 is identified by RTP IDs 4122004 and 4122005 and is described as “I-10 Corridor Express Lane Widening (Phase 1): From San Antonio Avenue to I-10/I-15 interchange; implement 2 express lanes in each direction for a total of 4 general purpose and 2 express lanes in each direction and auxiliary lane widening, undercrossing, overcrossings, and reconstruction of ramps and lane transitions where needed” and “I-10 Corridor Express Lane Widening (Phase 2): Implement 2 express lanes in each direction from I-10/I-15 interchange to California Street; implement 1 express lane in each direction from California Street to Ford Street in Redlands for a total of 10-12 lanes, and auxiliary lanes, undercrossings, overcrossings, ramp reconstruction, and lane transitions where needed,” respectively.

Alternatives 2 and 3 are included in the 2016-2040 RTP/SCS; therefore, the proposed project would be consistent with the 2012 AQMP.

Air Quality Standards and Pollutant Concentrations

The regional emissions analysis contained in Section 3.2.6 includes existing conditions/baseline emissions 2025 and 2045 Build Alternative emissions. Build Alternative emissions would be less than existing conditions for all pollutants, except for $PM_{2.5}$ and particulate matter less than 10 microns in diameter (PM_{10}) in 2045 (see Tables 3.2.6-6 through 3.2.6-8).

As stated above, the Build Alternatives would be consistent with the AQMP and are included in the 2016-2040 RTP/SCS attainment demonstration. Therefore, despite the increase in emissions for the criteria pollutant particulate matter, the Build Alternatives would not result in a significant impact.

A detailed discussion of mobile source air toxic (MSAT) emissions is included in Section 3.2.6, Air Quality. Emissions were estimated by calculating emission factors using CT-EMFAC and applying the emission factors to speed and VMT data. Table 3.2.6-9 shows that MSAT emissions would decrease when comparing 2025 and 2045 Build Alternatives to existing conditions. Therefore, MSAT concentrations would result in a less than significant impact. Refer to Section 3.2.6 for a detailed discussion of diesel particulate matter.

Cumulative Emissions

Both build alternatives would result in an increase in emissions compared to no-build conditions. Alternatives 2 and 3 are listed in the 2016-2040 financially constrained 2016-2040 RTP/SCS, which was found to conform by SCAG on April 7, 2016, and FHWA and the Federal Transit Administration (FTA) made a regional conformity determination finding on June 1, 2016. Therefore, despite the regional increase in emissions for certain pollutants in either Alternative 2 or 3, the build alternatives would not contribute to a cumulative impact. Refer to Section 3.6 for a discussion of cumulative emissions.

Odors

Some phases of construction, particularly asphalt paving, would result in short-term odors in the immediate area of each paving site. Such odors would be quickly dispersed below detectable thresholds as distance from the site increases. Construction emissions would be temporary and limited to the immediate area surrounding the construction site and would not have a significant effect on sensitive receptors, as discussed in Section 3.2.6, Air Quality. Measures AQ-1 through AQ-21 would minimize construction emissions and potential effects on adjacent sensitive receptors. The construction emission effects of the build alternatives on air quality would be less than significant.

4.2.2.3 Biological Resources Checklist Questions d) and e):

As discussed in Section 3.3, Biological Resources, the Santa Ana River is considered a wildlife corridor within the project area. The use of the Santa Ana River as a wildlife crossing is considered to be constrained because of degradation due to urban development and the existing concrete-lined channel. Construction of additional bridge structures in the channelized Santa Ana River would be required, and impacts to this wildlife crossing are less than significant.

There are no known local policies or ordinances protecting biological resources within the project area or habitat conservation plans, natural community plans, or other approved local, regional, or State conservation plans applicable to the project area. The build alternatives would not conflict with and would have no effect on local, State, or regional conservation policies, ordinances, or plans protecting biological resources. Tree removal would be necessary to construct the build alternatives and would be replaced in accordance with local ordinances.

4.2.2.4 Cultural Resources Checklist Questions b) and d):

As described in Section 3.1.8, Cultural Resources, the Curtis Homestead (CA-SBR-12989H) was identified as the only historic archaeological site within the project area of potential effects (APE). Impacts to this resource would be less than significant under Alternative 3; however, as an additional measure, this site would be delineated as an environmentally sensitive area (ESA) by a qualified archaeologist.

No sites with human remains have been identified within the project area, and the likelihood of encountering one of these sites is low. Although considered unlikely, a potential exists to encounter human remains during ground-disturbing activities; however, the type of construction planned in these locations does not propose disturbing intact native sediments below fill. Currently, no such sites would be impacted. With the implementation of avoidance, minimization, and/or mitigation measures, the potential project effects of the build alternatives would be further minimized.

4.2.2.5 Geology and Soils Checklist Questions a) – e)

As described in Section 3.2.3, Geology/Soils/Seismic/Topography, the build alternatives are not located in a fault zone; however, geophysical investigations conducted at the Highland Avenue structure concluded that although there were some possible geophysical anomalies at the Highland Avenue site, these features did not project through the overcrossing or its abutments, so no further investigations were done at the site. Based on the studies conducted, the potential for liquefaction, soil expansion, and erosion is low. The build alternatives are not anticipated to induce any potential geologic events.

The build alternatives would have less than significant effects on cultural resources identified in the Geology and Soils Checklist Questions a) – e).

4.2.2.6 Hazards and Hazardous Materials Checklist Questions a) – c) and e):

The proposed project is a transportation project, designed to enhance public safety and relieve congestion and would not result in a significant hazard to the public or environment associated with the transport, disposal, or use of hazardous material, nor result in conditions that increase risk related to foreseeable upset or accident conditions that would result in the release of hazardous materials into the environment. Construction of the proposed project would not require the extensive or ongoing use of acutely hazardous materials or substances. Construction activities would be short term and may occur over 54 months, and they would involve the limited transport, storage, use, or disposal of hazardous materials. Some examples of hazardous materials handling include fueling and servicing construction equipment onsite and the transport of fuels, lubricating fluids, and solvents. These types of materials, however, are not acutely hazardous, and all storage, handling, and disposal of these materials are regulated by the California Department of Toxic Substances Control (DTSC), United States Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), and other local agency ordinances. Adherence to the regulations set forth by county, State, and federal agencies would reduce the potential for hazardous materials impacts to less than significant.

4.2.2.7 Hydrology and Water Quality Checklist Questions a) – f) and h):

As described in Section 3.2.2, Water Quality and Stormwater Runoff, project effects on water quality are primarily related to construction disturbed soil area (up to 661 acres), the construction/modification of drainages/structures within drainages and dewatering during construction and stormwater runoff, and increased volumes related to increases in impervious surfaces during operation (up to 140 acres). Construction and operational water quality discharges are regulated through the CWA, as implemented through EPA, U.S. Army Corps of Engineers (USACE), State Water Resources Control Board (SWRCB), and Regional Water Quality Control Board (RWQCB). Project compliance with state and federal water quality regulations is required through the Statewide General Construction Permit, General Waste Discharge Requirement for Dewatering, and the Caltrans National Pollutant Discharge Elimination System (NPDES) permit. Compliance with these requirements is required. The project effects of the build alternative on water quality and hydrology would be less than significant.

4.2.2.8 Land Use and Planning Checklist Questions a) and b):

As shown in Section 3.1.1, Land Use, and in Table 3.1.1-1, the build alternatives are partially consistent with local and regional planning documents and would improve traffic flow along the 33-mile-long project segment of the I-10 corridor. The proposed build alternative improvements, overall, do not conflict with applicable land use plans, policies, or regulations, and project effects would be less than significant. Although minor ROW acquisitions and land-use conversions are required for Alternative 3, these land uses were not adopted by the local agencies for the purpose of avoiding or mitigating an environmental effect.

As described in Section 3.1.4.1, Community Character and Cohesion, construction of the proposed project would create typical construction-related temporary and intermittent inconvenience for local and regional users and adjacent residents and business owners within and adjacent to the project corridor (i.e., construction delays, equipment operations, and temporary traffic lane and ramp closures) to accommodate construction activities. There would be no substantial barriers to access affecting the neighborhood or community cohesion within the project area during the construction period, although there would be some degree of inconvenience due to construction-related delays, obstruction closures, and equipment operation. The proposed build alternative improvements to I-10 would be undertaken to reduce congestion during peak hours. Subsequent to construction, the proposed project is anticipated to result in a beneficial impact to neighborhoods and community cohesion by reducing cut-through traffic within the adjacent neighborhoods. Community members living within the vicinity of the I-10 corridor and people commuting between Los Angeles County and San Bernardino County would benefit from the reduced congestion and the improved freeway operations. The proposed build alternative improvements would not physically divide an established community, and project effects would be less than significant.

4.2.2.9 Noise Checklist Questions c) and d):

As shown in Tables 4-2 and 4-3, without the proposed project, traffic noise levels are not anticipated to significantly increase in the project vicinity above existing levels. While auto and truck traffic may result in an increase of ambient noise levels by design year 2045, existing soundwalls within the project area would adequately maintain or reduce rising noise levels. With the project, most receivers would experience an increase of 1 to 4 dB from existing noise levels. Typically, noise increases of 3 dB or less are inaudible to the human ear.

4.2.2.10 Population and Housing Checklist Questions a) – c):

As described in Section 3.1.2, Growth, the proposed project's improvements are not intended or anticipated to induce any substantial direct or indirect change in the location, distribution, amount, or rate of growth in the project area, county, or region. Additionally, as described in Section 3.1.4.2, Relocations and Real Property Acquisition, the project would not displace a substantial number of people. The proposed project is a transportation project within an urbanized transportation corridor, designed to enhance public safety and relieve congestion.

4.2.2.11 Public Services Checklist Question a) Schools, Parks, Other Public Facilities:

As described in Section 3.1.1.4, Parks and Recreational Facilities, all schools, parks, and other public facilities are summarized in Table 3.1.1-3. Alternative 2 would have no permanent effects on schools, parks and recreational facilities, or other public facilities. In addition, construction of the build alternatives may require temporary construction and/or aerial easements and/or partial acquisitions from the following:

- Santa Ana River Trail
- Orange Blossom Trail and the Zanja Trail (future)
- MacArthur Park

Project effects on the recreational use of the properties would be limited to construction-related noise, dust, and visual effects, and use could continue during construction. Although partial acquisitions at the boundaries adjacent to the project may be necessary, acquisitions would be minor and would not affect the overall recreational value or use. Project effects on the Santa Ana River Trail would require the temporary closure of the trail; however, a detour would be provided along the other side to maintain continuity and use. Project effects on these resources would be minimal and would not be considered physical adverse effects requiring replacement or modification. The proposed build alternative improvements would be less than significant on schools, parks, and other public facilities.

4.2.2.12 Transportation/Traffic Checklist Questions d) – f):

The proposed project would not substantially increase hazards due to design features or incompatible uses. Overall, the project would reduce hazards due to design features by including many design improvements over the existing condition.

As described in Section 2.4, the proposed project would improve several interchanges along I-10. Alternative 2 interchange improvements includes 3 system interchanges (I-10/Interstate 15 [I-15] interchange, I-10/Interstate 215 [I-215] interchange, and I-10/State Route [SR] 210 interchange) and 21 local street interchanges from Haven Avenue to Ford Street. Alternative 3 includes 3 system interchanges (I-10/I-15 interchange, I-10/I-215 interchange, and I-10/SR-210 interchange) and 30 local street interchanges, including 1 interchange (Indian Hill Boulevard) in Los Angeles County.

Both build alternatives would require reconstruction of several connectors and interchange ramps to accommodate the I-10 widening.

The proposed project would not result in inadequate emergency access. The proposed project would generally improve emergency access. The project would maintain existing arterials crossing I-10 with some widening and other improvements to those crossings that would provide improved emergency access across I-10. The project would increase emergency access to incidents along I-10 by providing additional auxiliary lanes along I-10, as described in Chapter 2.

The proposed project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. As described in Section 3.1.6, Traffic and Transportation/Pedestrian and Bicycle Facilities, the project would maintain existing bikeways in the corridor and construct additional bikeways and pedestrian facilities along arterials within the project limits. Bike lanes (Class I or Class II), which have been identified in the local circulation plans, will be incorporated into the design of the proposed arterial improvements along Euclid Avenue, Vineyard Avenue, and Tennessee Street. Sidewalks will be provided on both sides of local arterials in which improvements are proposed, including Monte Vista Avenue, Sultana Avenue, Campus Avenue, Euclid Avenue, Vineyard Avenue, Richardson Avenue, and Tennessee Street. Pedestrian facilities on arterials being improved will meet current Americans with Disabilities Act (ADA) standards.

4.2.2.13 Utilities and Service Systems Checklist Questions c), d), and f):

As described in Section 3.1.5, Utilities/Emergency Services, there are approximately 907 utilities within the project area, including overhead and underground electrical, natural gas, oil and gasoline pipelines, liquid oxygen line, hydrogen gas line, nitrogen gas line, telephone and communication, cable television lines, water, and sewer. Most of the utilities run perpendicular to I-10 or along local streets, while approximately 24 facilities run parallel to I-10.

Up to 281 of the 665 utilities within the project area, including cable television lines, fiber-optic lines, gas lines, gasoline lines, petroleum line, power/electrical lines, power transformer, sewer lines, telephone lines, wastewater lines, and water lines have the potential to be impacted by the proposed improvements. Up to 117 of these potentially impacted utilities would require minor to moderate work, such as extending the utility, constructing a structure or encasement around the utility, pouring a slurry mixture over the utility, or requiring a hand digging method when performing excavation around the utility. Up to 164 utilities would need to be removed and completely relocated to accommodate the proposed project improvements.

Relocation of all 50-kilovolt (kV) lines or greater, shall be in accordance with California Public Utilities Commission (CPUC) General Order 131-D. Relocation of these high-voltage transmission lines requires a long lead time and have the potential to result in significant impacts; however, coordination with utility companies has been ongoing and, during the design-build phase, the coordination will focus on relocating facilities to minimize environmental impacts as a result of project construction and ongoing maintenance and repair activities. Additionally, those utilities located within the proposed ROW and parallel to the corridor will require approval from Caltrans for an exception to the utility longitudinal encroachment policy. The proposed build alternative improvements would be less than significant on utilities and service systems.

Additionally, the build alternatives include modifications (i.e., extensions and widening) to existing stormwater drainage facilities within the State and local street ROWs to accommodate the widened freeway. The build alternatives would also increase impervious surfaces by up to 140 acres and disturb up to 661 acres during construction. As described in Section 3.2.2, Water Quality and Stormwater Runoff, stormwater management features in the State ROWs and construction site best management practices (BMPs) are proposed to accommodate and treat construction and operational stormwater to the maximum extent practicable (MEP), utilizing the best available and best conventional technologies. All storm drain systems for the build alternatives have been accounted for in the project design, and improvements were included in the design where necessary; therefore, impacts to stormwater facilities would be less than significant.

The proposed project would utilize the municipal supply for water required for construction and irrigation, and it would not require new or expanded entitlements. Project effects on municipal water supply would be less than significant. All construction debris will be recycled and/or appropriately disposed of at licensed solid waste facilities, in accordance with federal, State, and local regulations and policies. The effects of the proposed build alternative improvements would be less than significant on water supply and landfill capacity.

4.2.3 Significant Environmental Effects of the Proposed Project

The following environmental resources are determined to be significantly affected by implementation of the proposed build alternatives; however, these effects would be considered less than significant with the proposed measures outlined in Chapter 3 and as discussed below.

4.2.3.1 Aesthetics Checklist Questions b), c) and d):

As described in Section 3.1.7, Visual/Aesthetics, both build alternatives would require removal of eucalyptus trees and other vegetation within the interchange area, which is likely to have an adverse effect on visual quality; however, replacement vegetation, as described in Section 3.1.7.4, would be planted, so these effects would be temporary as vegetation matures.

Euclid Avenue has been listed in the National Register of Historic Places (NRHP) within Upland and Ontario, and it has been designated as a historic district within Ontario. The existing Euclid Avenue Bridge is not included in the NRHP designation. This bridge would be replaced under Alternative 3, which would provide an opportunity to design the bridge area to be visually compatible with the historic median. With implementation of measure VA-11, no significant impacts to the Euclid Avenue Bridge are anticipated.

The project is located within an urbanized area that is primarily built out. The build alternatives are not anticipated to result in a substantial effect on the existing visual quality or character with implementation of measures VA-1 through VA-38. Based on the analysis in Section 3.1.7, the general visual character of I-10 would not be greatly altered by the addition of one or two lanes (depending on the alternative and location).

The existing I-10 is currently well lit with street lighting along the corridor, within existing interchanges, and on adjacent local streets. There is a potential to create spot locations with additional new lighting along I-10 or at interchange locations; however, all lighting would be consistent with existing lighting and Caltrans' policy. Any new lighting would be directed downward and focused using cut-off fixtures and shielding to block light trespass into areas outside of Caltrans' ROW. The addition of traffic lanes is anticipated to create a new source of lighting or glare along I-10, but implementation of measure VA-37 will require installation of shielded fixtures that prevent light trespass onto adjacent properties. Additional traffic lanes and/or new light sources associated with the build alternatives would result in less than significant effects on daytime or nighttime views in the area.

4.2.3.2 Biological Resources Checklist Questions a) and b):

As described in Section 3.3.5, Threatened and Endangered Species, the coastal California gnatcatcher (CAGN) and Delhi Sands flower-loving fly (DSF) are State or federal threatened and endangered-listed species that have the potential to occur within the BSA. CAGN has a low potential to occur in the BSA, and the DSF has a moderate potential to occur within the project area. CAGN is not anticipated to occur within the project footprint because of the absence of critical habitat (CH). A habitat assessment conducted in 2014 identified all potentially suitable habitat for DSF within the BSA. Based on this information, Alternative 2 would result in 2.14 acres of permanent effects to potentially suitable DSF habitat. Alternative 3 would result in 9.67 acres of permanent effects to potentially suitable DSF habitat. The affected DSF potentially suitable habitat areas all occur between the existing edge of shoulder and the Caltrans ROW line. Based on the results of the DSF surveys in 2015 and 2016, DSF was determined to be absent in potentially suitable habitat locations along the shoulders and at most interchanges where suitable habitat was identified for both build alternatives. However, DSF was present at the southeast quadrant of the I-10/ Pepper Avenue interchange between the eastbound (EB) on-ramp and at the existing Caltrans ROW line. Although the Pepper Avenue Interchange area was previously determined by the United States Fish and Wildlife Service (USFWS) not to result in direct impacts if improvements at the interchange remains within Caltrans ROW, the southeast quadrant of the interchange at the southern limits of Caltrans ROW is considered occupied because DSF was observed on two separate occasions. The build alternatives may affect DSF; however, potential impacts to DSF would be mitigated through compensatory mitigation at a USFWS-approved conservation program such as the Reichel HCP, the Angelus Block Property, the Owl Company Property, the Laing Homes (King is Coming) Site, the Hospital Site, the Colton Substation Site, the Vulcan Materials DSF Mitigation Bank, or other appropriate mitigation area as approved by USFWS. In addition, the project will result in 0.25 acre and 0.005 acre of permanent impact to Riversidean sage scrub (RSS) and southern willow scrub habitat, respectively

The build alternatives may contribute to direct or indirect cumulative impacts related to threatened or endangered species; however, the project's contribution to cumulative effects would be mitigated through measures approved by USFWS and AS-1 through AS-6, TE-1 through TE-7, and NC-1 through NC-2. Adverse cumulative effects to threatened and endangered species are not anticipated. Adverse cumulative effects to riparian habitat would be mitigated through implementation of mitigation measures WET-5 and NC-1.

4.2.3.3 Cultural Resources Checklist Questions a) and c):

The following assessment conforms to CEQA requirements and evaluates effects to historical resources in accordance with Section 15064.5(b) of the CEQA Guidelines. Because the Section 106 process has the most guidance, Caltrans policy is to generally use the methodologies used for Section 106 effects analysis for CEQA impact analysis as well. The APE contains 11 historical resources for the purposes of CEQA, 6 of which are CEQA-only historical resources and are identified below.

Properties listed or formally determined eligible for listing in the NRHP are automatically listed in the California Register of Historical Resources (CRHR) and are historical resources for the purposes of CEQA. Properties listed in the CRHR and/or local designations are also considered historical resources under CEQA.

Caltrans Professionally Qualified Staff (PQS) has determined there is no impact to the following historical resources within the project area limits:

- Terrace Park
- B.W. Cave Residence
- Mill Creek *Zanja*
- 1055 E. Highland Avenue

The only proposed work that would occur at the locations of these four historical resources as a result of this project would be restriping or median reconstruction; therefore, the project would not result in direct or indirect substantial adverse changes to these historical resources as defined in Section 15064.5(b) of the CEQA Guidelines (for additional analysis on the Mill Creek *Zanja* and 1055 E. Highland Avenue, a Finding of No Adverse Effect (FNAE) (May 2015) was prepared for this project).

Curtis Homestead

Caltrans PQS, Archaeology, has determined there is no substantial adverse change through the implementation of an ESA for this historical resource because the impacts to the portions of this historical resource that are located within the project area limits would be avoided through the establishment of an ESA, enforcement measures, and conditions that are included in the attached documentation. Gary Jones, who meets the PQS Standards in Section 106 Programmatic Agreement (PA) Attachment 1 as a Principal Investigator, has reviewed the documentation and determined that it is adequate.

Euclid Avenue/SR-83

No work would occur at this location under Alternatives 1 and 2.

Alternative 3 would construct improvements to Euclid Avenue between Olive Street in Upland and Armsley Square/E. La Deney Drive in Ontario, and it would reconstruct the Euclid Avenue/I-10 overcrossing (OC) (Bridge No. 54 0445). The Euclid Avenue/I-10 OC was constructed when I-10 was constructed in the 1950s to carry Euclid Avenue over the new freeway. The bridge was reconstructed in 1970. The Euclid Avenue/I-10 OC was not identified as a character-defining feature of the historical resource in the nomination paperwork prepared for this resource, and this bridge is listed in the Caltrans Historic Bridge Inventory as Category 5, "Not NRHP eligible." Replacement of this bridge would not result in a direct substantial adverse change to this historical resource; however, the replacement bridge could result in indirect effects to the historical resource. The design and aesthetics of the replacement structure would be consistent with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* (SOIS). For example, the proposed replacement structure would include a landscaped deck to the extent possible to improve the historic setting of the historical resource at this location by improving the viewshed from a hardscaped bridge deck to a landscape design consistent with the existing landscape design. Therefore, reconstruction of this structure would not result in a substantial adverse change to a historical resource and could be considered a benefit to this historical resource.

In addition, Alternative 3 would add an additional EB turn pocket on the west side of the median located between 7th Street and I-10. Alternative 3 would also remove an additional 5 feet from the east side of this median. This median was previously substantially altered during reconstruction of the Euclid Avenue/I-10 OC and is not a character-defining feature of this historical resource. Additional modification of this median would not demolish or materially alter the historical resource in an adverse manner.

Landscape

Alternative 3 would remove mature landscaping in the project area; however, vegetation would be replaced with appropriate species and conforming with the historical landscape design (two rows of trees down the center median with a single row of trees in the parkways) to the extent feasible upon completion of construction. Therefore, Alternative 3 would not result in demolition or material alteration of the historical resource. Any mature vegetation that would be removed under Alternative 3 would be relocated and replanted consistent with the SOIS. Because the mature vegetation would be relocated or replanted in accordance with the SOIS, Alternative 3 would not result in the demolition or material alteration of the historical resource in an adverse manner as defined in Section 15064.5(b)(3) of the CEQA Guidelines.

Medians

Alternative 3 would require a tapering reduction of the medians to accommodate proposed turn pockets and queuing within the project footprint. Alternative 3 would minimally alter the property in terms of the reduction of the width of the medians; however, Euclid Avenue would continue to be used as it has been historically, and the proposed modifications could be reversed in the future to restore the 60-foot width of the medians. Therefore, this proposed modification is consistent with the SOIS and would not result in demolition or material alteration of a historical resource as defined in Section 15064.5(b)(3) of the CEQA Guidelines.

Curbs

Alternative 3 would require minor sliver acquisitions of cobblestone curbs within the project footprint. The sliver acquisitions of the curbs are minimal in nature when considering the total length of the resource (8.4 miles) and would result in minimal damage to part of the historical resource because the sliver acquisition would be barely perceptible to the casual observer. Furthermore, any curbs that would be removed to construct Alternative 3 would be rebuilt in accordance with the SOIS. Because the curbs would be reconstructed in accordance with the SOIS, Alternative 3 would not result in demolition or material alteration of a historical resource as defined in Section 15064.5(b)(3) of the CEQA Guidelines.

Sidewalks

No historical sidewalks would be removed under Alternative 3; therefore, Alternative 3 would not result in demolition or material alteration of a historic resource as defined in Section 15064.5(b) of the CEQA Guidelines.

Because the proposed modifications to the historical resource are consistent with the SOIS, the project would not result in a substantial adverse change to a historical resource as defined in Section 15064.5(b)(3) of the CEQA Guidelines, which states that generally a project that conforms with the SOIS shall be considered as mitigated to a level of less than significant impact on a historical resource.

Caltrans PQS, Principal Architectural Historian, has determined that for this historical resource, no substantial adverse change, either direct or indirect, would result from Alternative 3 because the proposed work that affects this historical resource within the project area limits will be mitigated below the level of significant impact by using the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings.* Andrew Walters, who meets the PQS Standards in Section 106 PA Attachment 1 as a Principal Architectural Historian, and has the appropriate education and experience, has reviewed the documentation and determined that it is adequate.

City of Ontario Euclid Avenue Historic District

The impacts to this property would be the same as identified above for Euclid Avenue/SR-83 (e.g., roadway and landscaping modifications and curb replacement); therefore, the proposed modifications to this historical resource is consistent with the SOIS, and the project would not result in a substantial adverse change to a historical resource as defined in Section 15064.5(b)(3) of the CEQA Guidelines.

1531 N. Euclid Avenue

Although the project would not directly impact this parcel, the impacts to the median adjacent to this property would be the same as identified above for Euclid Avenue/SR-83 (e.g., roadway and landscaping modifications and curb replacement). Construction-related noise would be temporary, occur during specified daylight business hours, and would result in a temporary less than significant impact. The project would increase throughput and relieve traffic congestion and associated noise; therefore, the proposed project would be a benefit to this resource. The property has historically been located adjacent to a major arterial roadway, and the project would not result in a change of setting because the arterial road would retain its historic use. Therefore, potential impacts to this historical resource are temporary in nature and would result in a less than significant impact to this historical resource during construction and would result in a long-term benefit due to expected noise reduction related to relieving traffic congestion.

1540 N. Euclid Avenue

Although the project would not directly impact this parcel, the impacts to the median adjacent to this property would be the same as identified above to Euclid Avenue/ SR-83 (e.g., roadway and landscaping modifications and curb replacement). Construction-related noise would be temporary, occur during specified daylight business hours, and result in a temporary less than significant impact. The project would increase throughput and relieve traffic congestion and associated noise; therefore, the proposed project would be a benefit to this resource. The property has historically been located adjacent to a major arterial roadway, and the project would not result in a change of setting because the arterial road would retain its historic use.

Therefore, potential impacts to this historical resource are temporary in nature and would result in a less than significant impact to this historical resource during construction and would result in a long-term benefit due to expected noise reduction related to relieving traffic congestion.

1524 N. Euclid Avenue

Although the project would not directly impact this parcel, the impacts to the median adjacent to this property would be the same as identified above to Euclid Avenue/ SR-83 (e.g., roadway and landscaping modifications and curb replacement). Construction-related noise would be temporary, occur during specified daylight business hours, and result in a temporary less than significant impact. The project would increase throughput and relieve traffic congestion and associated noise; therefore, the proposed project would be a benefit to this resource. The property has historically been located adjacent to a major arterial roadway, and the project would not result in a change of setting because the arterial road would retain its historic use. Therefore, potential impacts to this historical resource are temporary in nature and would result in a less than significant impact to this historical resource during construction and would result in a long-term benefit due to expected noise reduction related to relieving traffic congestion.

The Peppers/El Carmelo

An existing soundwall located just south of Highland Avenue, which provides noise abatement for the residential buildings lining Highland Avenue, would be replaced as part of this project, and an existing chain-link fence, which encloses the Caltrans ROW from The Peppers/El Carmelo, would be replaced with a soundwall.

The project would result in the construction of a soundwall within the Caltrans ROW, adjacent to the eastern/northern boundary of The Peppers/El Carmelo. The proposed soundwall would not result in the demolition or material alteration of the historical resource because it would be located outside of the historical resource's boundary. Therefore, it would not result in a substantial adverse change to a historical resource as defined in Section 15064.5(b) of the CEQA Guidelines and is consistent with the SOIS.

A temporary construction easement (TCE) for this project could be required to construct a soundwall at The Peppers/El Carmelo due to the cut slope at this location. The TCE would allow for ingress/egress of construction equipment and personnel to construct the wall, which cannot be constructed from the Caltrans ROW. No physical destruction or damage to all or part of the property is anticipated, and any other potential effects would be temporary in nature. Because the soundwall would be located within Caltrans ROW and the only construction activities that would occur on the historical resource would be limited to an approximately 20-foot buffer of the property boundary for a possible TCE for ingress/egress, no alteration of the property would occur as a result of this project. Therefore, the project would not result in a substantial adverse change to a historical resource as defined in Section 15064.5(b) of the CEQA Guidelines and is consistent with the SOIS.

Currently, The Peppers/El Carmelo is subject to noise from vehicular traffic, which diminishes the setting of the historical resource. The proposed soundwall would reduce the noise that results from automobile traffic traveling on I-10. A eucalyptus windrow was planted along the eastern/northern boundary within The Peppers/El Carmelo site boundary, approximately when I-10 was constructed in the late 1950s. The windrow was intended to visually screen the historic property, but it does not provide noise reduction. The proposed soundwall would be constructed adjacent to the windrow, which would also physically and visually separate the proposed soundwall from the terraced citrus groves, which are a character-defining feature of the site, and from the historic residence. Therefore, the proposed soundwall would not demolish or materially alter the historical resource in a manner that would result in a substantial adverse change as defined in Section 15064.5(b)(3) of the CEQA Guidelines and is consistent with the SOIS.

With the implementation of measures CUL-1 through CUL-9, the project would mitigate to less than significant impacts to cultural resources.

As discussed in Section 3.2.4, Paleontology, both of the build alternatives have the potential to impact significant paleontological resources during construction; however, because fossils are located subsurface, there is no way to know the full extent of the effect of the two build alternatives on fossil resources until excavation is underway. Impacts to paleontological resources are anticipated to be less than significant with mitigation. Measures would be implemented during construction to mitigate impacts, including preparation of a Paleontological Mitigation Plan (PMP), which will outline construction monitoring requirements.

4.2.3.4 Hazards and Hazardous Materials Checklist Question d) and g):

As described in Section 3.2.5, Hazardous Waste/Materials, properties that could be acquired and are considered recognized environmental conditions (RECs) are shown in Table 3.2.5-1. Also described in Section 3.2.5 are other site concerns related to leaking underground storage tanks (LUSTs), historical spills along I-10, lead-based paint (LBP), aerially deposited lead (ADL), asbestos-containing materials (ACMs), and soil within or adjacent to the project area.

Property acquisition or disturbance without further investigation or characterization could result in a significant hazard to the public; however, the procedures for hazardous materials investigation for the project are addressed in measures HAZ-1 through HAZ-10. If any hazardous materials are located within the area to be acquired, proper removal procedures in accordance with standard provisions and requirements would minimize any direct or indirect adverse temporary impacts.

With the implementation of measures HAZ-1 through HAZ-10, the potential project effects of the build alternatives on properties potentially containing hazardous materials would mitigate to less than significant.

As described in Section 3.1.6, Traffic and Transportation/Pedestrian and Bicycle Facilities, construction of the project would occur over several months. Construction of this project is anticipated to take approximately 42 months for Alternative 2 and 60 months for Alternative 3. Construction is anticipated to take place between 2019 and 2024, with construction progressing from west to east. It is anticipated that the first 11 miles of improvements from Los Angeles County to I-15 would be performed between 2019 and 2022 and the remainder of the corridor between 2021 and 2024. Construction of interchange ramps, local arterials, and overcrossing structure replacement will be staggered to minimize impacting two adjacent interchanges at the same time.

Proposed mainline improvements would necessitate the construction of structures as described in Section 2, Project Description. Construction-related delays are anticipated along I-10, I-15, I-215, and SR-210 and at interchanges, as well as on the surrounding arterials, including SR-83 and SR-38, and could result in significant effects on emergency response. Project construction-related closures would be addressed through a comprehensive Transportation Management Plan (TMP), as required by measure T-1, which includes requirements for coordination with and notification to the corridor cities and emergency responders.

4.2.3.5 Noise Checklist Questions a) and b):

CEQA Noise Discussion

Determining significance for noise impacts pursuant to CEQA is independent of the NEPA 23 CFR 772 analysis discussed in Chapter 3, which is centered on Noise Abatement Criteria. When determining whether a noise impact is significant under

CEQA, noise analysis focuses on a comparison of the existing noise level at the time of the NOP and the future build noise level. The CEQA noise analysis entails looking at the setting of the noise impact and then how large or perceptible any noise increase would be in the given area. Key considerations include the uniqueness of the setting, the sensitive nature of the noise receptors, the magnitude of the noise increase, the number of residences affected, and the absolute noise level.

Construction Noise and Vibration

During the construction phases of the project, noise from construction activities may intermittently dominate the noise environment in the immediate area of construction. Table 4-1 summarizes noise levels produced by construction equipment commonly used on roadway construction projects. As indicated, equipment involved in construction is anticipated to generate noise levels ranging from 80 to 89 A-weighted decibels (dBA) at a distance of 50 feet. Noise produced by construction equipment would be reduced over distance at a rate of approximately 6 decibels (dB) per doubling of distance.

Table 4-1 Construction Equipment Noise

Equipment	Maximum Noise Level (dBA at 50 feet)
Scrapers	89
Bulldozers	85
Heavy Trucks	88
Backhoe	80
Pneumatic Tools	85
Concrete Pump	82

Source: Federal Transit Administration, 2011

Temporary construction noise impacts are anticipated at areas located immediately adjacent to the proposed project alignment. The noise-level requirements are specified in measure N-2. Measures related to equipment shall apply to the equipment on the job or related to the job including, but not limited to, trucks, transit mixers, or transient equipment that may or may not be owned by the Contractor.

It is possible that certain construction activities could cause intermittent localized concern from vibration in the project area. During certain construction phases, processes such as earth moving with bulldozers, the use of vibratory compaction rollers, impact pile driving, demolitions, or pavement braking may cause construction-related vibration impacts such as human annoyance or, in some cases, building damages. It may be necessary to use this type of equipment close to residential buildings. Implementation of measure N-4 would eliminate or minimize vibration impacts during construction activities.

Minor deviations from this section concerning hours of work that do not significantly change the cost of the work may be permitted upon the written request of the Contractor if, in the opinion of the Resident Engineer, the work will be expedited and sound levels resulting from this work will not cause adverse public reaction. Compliance with Caltrans' Standard Specifications is required, and the project effects of the build alternatives related to construction noise would be less than significant.

Operational Noise

The information provided in Tables 4-2 through 4-5 compare existing noise levels to future build noise levels at each receptor. These tables also show the anticipated noise reduction associated with the recommended noise abatement for these receptors, as described in Section 3.2.7, Noise. The anticipated noise reduction for Tables 4-2 and 4-3 was calculated based on noise measurements in Appendix B of the Noise Study Report. The predicted noise reduction presented in Tables 4-4 and 4-5 was calculated based on noise measurements in Appendix A of the Noise Study Report Addendum. Related significance discussion for each alternative is provided below.

Tables 4-3 and 4-5 provide predicted noise levels for impacted receivers located south of I-10 and UPRR railroad tracks, between Segments 9 and 11, as shown in Appendix L2. Receivers located in this area are exposed to train noise in addition to traffic noise; therefore, the composite noise levels of trains and I-10 traffic were modeled for these receivers. However, noise impacts are based on traffic noise levels only.

A project is considered to have a significant noise impact when it causes an adopted noise standard to be exceeded at a sensitive receptor and when it substantially increases noise exposure. On June 24, 2015, the Project Development Team (PDT) made the determination that noise increases over 5 dB would be considered significant for the purposes of this CEQA analysis, because a 5-dB increase is generally perceived as a distinctly noticeable increase. Furthermore, a receiver is considered to be benefitted if they are predicted to experience a decrease in noise levels from existing conditions compared to Design Year (2045) build conditions.

Table 4-2 Noise Impact Analysis – Alternative 2

Receiver	Existing Noise Level (dBA)[1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 2 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 2 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R9.17A	76	75	74	S1749	-2	-8	-10	No Impact
R10.1	75	73	74	S1819	-1	-9	-10	No Impact
R10.2	70	68	70		0	-5	-5	No Impact
R10.3	70	69	69		-1	-5	-6	No Impact
R10.4	75	74	76		1	-12	-11	No Impact
R10.5	68	67	66		-2	-3	-5	No Impact
R10.6	70	69	67		-3	-5	-8	No Impact
R10.7	72	71	69		-3	-7	-10	No Impact
R10.8	70	69	67		-3	-5	-8	No Impact
R10.9	73	72	70		-3	-6	-9	No Impact
R10.9A	76	75	73		-3	-9	-12	No Impact
R10.10	67	66	65		-2	-5	-7	No Impact
R10.11	65	64	64		-1	-5	-6	No Impact
R10.12	71	70	69	S1833	-2	-5	-7	No Impact
R10.13	76	75	73		-3	-7	-10	No Impact
R11.3	72	72	72	S1877	0	-5	-5	No Impact
R11.4	74	74	74		0	-7	-7	No Impact
R11.5	72	72	71		-1	-6	-7	No Impact
R11.6	68	68	68		0	-6	-6	No Impact
R11.7	68	68	68		0	-5	-5	No Impact
R11.8	70	70	70		0	-4	-4	No Impact
R11.9	70	70	70		0	-6	-6	No Impact
R11.10	68	68	68		0	-5	-5	No Impact
R11.11	67	67	67		0	-4	-4	No Impact
R11.12	65	65	65		0	-4	-4	No Impact

Table 4-2 Noise Impact Analysis – Alternative 2

Receiver	Existing Noise Level (dBA)[1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 2 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 2 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R11.14	71	74	72	S1907	1	-5	-4	No Impact
R11.14A	73	76	75		2	-7	-5	No Impact
R11.15	62	65	65		3	-4	-1	No Impact
R11.15A	68	71	70		2	-5	-3	No Impact
R11.16	72	75	73		1	-7	-6	No Impact
R11.16A	66	70	69		3	-5	-2	No Impact
R11.17	73	77	74		1	0	1	Less than Significant
R11.18	71	75	72		1	-7	-6	No Impact
R11.19	66	69	68		2	0	2	Less than Significant
R11.20	62	65	65		3	-1	2	Less than Significant
R11.21	64	67	66		2	-4	-2	No Impact
R11.22	62	66	66		4	-4	0	No Impact
R11.23	65	69	68		3	-6	-3	No Impact
R11.24-1	73	77	73		0	-8	-8	No Impact
R11.24-2	74	77	77		3	-7	-4	No Impact
R11.25-1	73	74	71		-2	-6	-8	No Impact
R11.25-2	73	75	74		1	-4	-3	No Impact
R11.26-1	63	67	66		3	-6	-3	No Impact
R11.26-2	66	69	67		1	-4	-3	No Impact
R11.44	67	71	74	S1969	7	-7	0	No Impact
R12.10	66	67	68	S2033	2	-7	-5	No Impact

Table 4-2 Noise Impact Analysis – Alternative 2

Receiver	Existing Noise Level (dBA)[1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 2 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 2 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R13.3	66	67	69	S2079 (Not Recommended)	3	0	3	Less than Significant
R13.4	68	69	71		3	0	3	Less than Significant
R13.5	65	66	67		2	0	2	Less than Significant
R14.3	67	67	68	S2145	1	-6	-5	No Impact
R14.4	75	77	76		1	0	1	Less than Significant
R14.4[Int]	55	57	56		1	-6	-5	No Impact
R14.5	71	73	73		2	-6	-4	No Impact
R14.6	71	73	73		2	-7	-5	No Impact
R14.7	73	75	76		3	-7	-4	No Impact
R14.7A	67	69	69		2	-6	-4	No Impact
R14.7B	69	71	71		2	-8	-6	No Impact
R14.8	65	67	67		2	-6	-4	No Impact
R14.8A	59	61	62		3	-3	0	No Impact
R14.8B	65	67	68		3	-8	-5	No Impact
R14.9	71	73	74		3	-6	-3	No Impact
R14.9A	72	74	75		3	0	3	Less than Significant
R14.10	68	70	71		3	-5	-2	No Impact
R14.11	68	70	71		3	-5	-2	No Impact
R14.11A	62	64	64		2	-5	-3	No Impact
R14.12	61	63	63		2	-4	-2	No Impact
R17.34	69	69	70	S2384 & S2382	1	0	1	Less than Significant

Table 4-2 Noise Impact Analysis – Alternative 2

Receiver	Existing Noise Level (dBA)[1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 2 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 2 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R17.38	75	77	78	S2434A & S2438	3	-11	-8	No Impact
R17.39	71	73	75		4	-5	-1	No Impact
R17.40	68	70	71		3	-7	-4	No Impact
R17.41	71	73	74		3	-7	-4	No Impact
R17.42	68	70	71		3	-5	-2	No Impact
R17.43	68	70	72		4	-5	-1	No Impact
R17.44	67	69	71		4	-5	-1	No Impact
R17.45	66	68	69		3	-5	-2	No Impact
R17.46	65	66	68		3	-5	-2	No Impact
R17.47A	66	67	68		2	-5	-3	No Impact
R17.48	67	68	68		1	-2	-1	No Impact
R17.38	75	77	78	S2434B & S2438	3	-10	-7	No Impact
R17.39	71	73	75		4	-8	-4	No Impact
R17.40	68	70	71		3	-7	-4	No Impact
R17.41	71	73	74		3	-7	-4	No Impact
R17.42	68	70	71		3	-5	-2	No Impact
R17.43	68	70	72		4	-7	-3	No Impact
R17.44	67	69	71		4	-7	-3	No Impact
R17.45	66	68	69		3	-6	-3	No Impact
R17.46	65	66	68		3	-5	-2	No Impact
R17.47A	66	67	68		2	-5	-3	No Impact
R17.48	67	68	68		1	-2	-1	No Impact
R17.18	65	64	65	S2435 & S2437	0	0	0	No Impact
R17.24	66	65	67		1	-2	-1	No Impact
R17.25	68	66	67		-1	-6	-7	No Impact

Table 4-2 Noise Impact Analysis – Alternative 2

Receiver	Existing Noise Level (dBA)[1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 2 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 2 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R17.26	70	68	69		-1	-7	-8	No Impact
R17.27	68	66	66		-2	-7	-9	No Impact
R17.28	61	59	60		-1	-2	-3	No Impact
R17.29	68	66	66		-2	-5	-7	No Impact
R17.30	70	68	69		-1	0	-1	No Impact
R17.31	60	58	59		-1	-7	-8	No Impact
R18.6-1	66	66	67	S2476	1	-5	-4	No Impact
R18.6-2	69	69	68		-1	-6	-7	No Impact
R18.7-1	65	65	65		0	-6	-6	No Impact
R18.7-2	67	67	66		-1	-4	-5	No Impact
R18.8-1	65	65	66		1	-7	-6	No Impact
R18.8-2	68	68	67		-1	-7	-8	No Impact
R18.9-1	62	62	62		0	-6	-6	No Impact
R18.9-2	64	64	63		-1	-4	-5	No Impact
R18.10-1	60	60	61		1	-4	-3	No Impact
R18.10-2	63	63	63		0	-4	-4	No Impact
R18.11-1	67	67	68		1	-5	-4	No Impact
R18.11-2	70	70	70		0	-6	-6	No Impact
R18.12-1	67	67	68		1	-6	-5	No Impact
R18.12-2	70	70	69		-1	-6	-7	No Impact
R18.13-1	65.5	66	66		0.5	-6	-6	No Impact
R18.13-2	67.8	68	68		0.2	-7	-7	No Impact
R18.14-1	68.2	68	69		0.8	-6	-5	No Impact
R18.14-2	70.8	71	72		1.2	-8	-7	No Impact
R18.15-1	66.5	67	67		0.5	-5	-5	No Impact

Table 4-2 Noise Impact Analysis – Alternative 2

Receiver	Existing Noise Level (dBA)[1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 2 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 2 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R18.15-2	69	69	70		1	-6	-5	No Impact
R18.16-1	62.3	62	64		1.7	-6	-4	No Impact
R18.16-2	67.4	67	69		1.6	-5	-3	No Impact
R18.17	62.3	62	63		0.7	-3	-2	No Impact
R18.18	62	62	63		1	-3	-2	No Impact
R18.19	62.9	63	63		0.1	-1	-1	No Impact
R19.3	72	71	71	S2619	-1	-5	-6	No Impact
R19.4	71	70	70	S2619	-1	-5	-6	No Impact
R19.5	67	68	69	S2619	2	-5	-3	No Impact
R19.5A	70	71	72	S2619	2	-3	-1	No Impact
R19.5B	61	62	63	S2619	2	-2	0	No Impact
R19.5C	68	69	70	S2619	2	-5	-3	No Impact
R19.6	69	69	70	S2619	1	-6	-5	No Impact
R19.7	72	72	73	S2619	1	-7	-6	No Impact
R20.41	70	70	71	S2638B & S2654B	1	-2	-1	No Impact
R20.42	69	69	70	S2638B & S2654B	1	-5	-4	No Impact
R20.42A	69	69	69	S2638B & S2654B	0	0	0	No Impact
R20.42A[Int]	44	44	44	S2638B & S2654B	0	-4	-4	No Impact
R20.43	69	69	70	S2638B & S2654B	1	-7	-6	No Impact
R20.44	69	68	68	S2638B & S2654B	-1	-5	-6	No Impact
R20.45	70	69	70	S2638B & S2654B	0	-6	-6	No Impact
R20.46	69	68	68	S2638B & S2654B	-1	-5	-6	No Impact
R20.47	68	67	68	S2638B & S2654B	0	-5	-5	No Impact
R20.47A	69	68	69	S2638B & S2654B	0	0	0	No Impact
R20.47A[Int]	44	43	44	S2638B & S2654B	0	-5	-5	No Impact

Table 4-2 Noise Impact Analysis – Alternative 2

Receiver	Existing Noise Level (dBA)[1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 2 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 2 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R20.48	70	69	70		0	-6	-6	No Impact
R20.49	63	62	63		0	-1	-1	No Impact
R21.75	64	64	66	S2730	2	-7	-5	No Impact
R21.25	73	69	69	S2737	-4	-5	-9	No Impact
R21.25A	65	65	66	S2737	1	0	1	Less than Significant
R21.25A[Int]	25	25	26	S2737	1	-3	-2	No Impact
R21.26	58	58	59	S2737	1	-1	0	No Impact
R21.27	57	57	58	S2737	1	-2	-1	No Impact
R21.28	69	69	70	S2737	1	-2	-1	No Impact
R21.29	81	81	82	S2737	1	0	1	Less than Significant
R21.30	73	73	74	S2737	1	-7	-6	No Impact
R21.31	67	67	68	S2737	1	-5	-4	No Impact
R21.39	67	69	70	S2765	3	-7	-4	No Impact
R21.40	69	71	71	S2765	2	-7	-5	No Impact
R21.41	65	67	67	S2765	2	-7	-5	No Impact
R21.41[Int]	40	42	42	S2765	2	-10	-8	No Impact
R21.42	58	60	60	S2765	2	-3	-1	No Impact

[1] Existing noise conditions as measured and modeled for the project Noise Study Report.

[2] Future conditions are the predicted noise conditions for horizon year (2045). Predicted noise levels were derived from the Noise Study Report, Appendix B, Predicted Future Noise Levels and Noise Barrier Analysis.

[3] Includes replace in-kind, and recommended walls as discussed in the Section 3.3 of the NADR. Recommended locations and heights for new soundwalls are discussed in the NADR.

[4] Assumes any proposed abatement in the future build condition.

[Int] Interior

Note: All measurements are in dBA.

Table 4-3 NSR and NADR Addendum Noise Impact Analysis – Alternative 2

Receiver	Existing Noise Level + Train Noise Level (dBA) [1]	Predicted[2] Traffic Noise Level with the No-Build Alternative + Train Noise (dBA)	Predicted[2] Traffic Noise Level with Alternative 2	Predicted[2] Traffic Noise Level with Alternative 2 + Train Noise	Recommended[3] Soundwall (#)	Future Conditions with Alternative 2 minus Existing Conditions	Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R10.17A	67	67	65	67	S1818	0	5	-5	Beneficial
R10.17	70	70	68	70		0	7	-7	Beneficial
R10.19	66	66	64	67	S1834	1	6	-5	Beneficial
R10.20B	68	68	66	69		1	7	-6	Beneficial

[1] Existing noise conditions as measured and modeled for the project Noise Study Report Addendum.

[2] Future conditions are the predicted noise conditions for horizon year (2045). Predicted noise levels were derived from the Noise Study Report Addendum, Appendix A, Predicted Future Noise Levels and Noise Barrier Analysis.

[3] Includes recommended walls as discussed in the Section 3.3 of the NADR Addendum. Recommended locations and heights for new soundwalls are discussed in the NADR Addendum.

[4] Assumes any proposed abatement in the future build condition.

Note: All measurements are in dBA.

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R1.38	68	67	67	S699	-1	-1	-2	No Impact
R1.39	72	71	71		-1	-5	-6	No Impact
R1.40	73	72	72		-1	-7	-8	No Impact
R1.41	61	61	61		0	0	0	No Impact
R2.45	65	67	67	SW2 (Replace In-Kind)	2	0	2	Less than Significant
R2.46	63	64	65		2	0	2	Less than Significant
R2.47	62	63	64		2	0	2	Less than Significant
R2.49	59	60	62	SW6 (Replace In-Kind)	3	0	3	Less than Significant
R2.50	59	60	60		1	0	1	Less than Significant
R2.51	65	65	65	SW10 (Replace In-Kind)	0	0	0	No Impact
R2.52	68	68	67		-1	0	-1	No Impact
R2.53	64	64	64		0	0	0	No Impact
R2.54	66	66	65		-1	0	-1	No Impact
R2.55	61	61	62		1	0	1	Less than Significant
R2.56	64	64	65		1	0	1	Less than Significant
R2.26	73	70	71	SW29 & SW23 (SW29 Replace In-Kind)	-2	0	-2	No Impact
R2.27	73	70	71		-2	0	-2	No Impact
R2.28	71	68	68		-3	0	-3	No Impact
R2.29-1	68	65	66		-2	0	-2	No Impact
R2.29-2	71	68	68		-3	0	-3	No Impact
R2.30	67	64	64		-3	0	-3	No Impact

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R2.57	65	67	68	SW22 & SW30 (Replace In-Kind)	3	0	3	Less than Significant
R2.58	65	67	67		2	0	2	Less than Significant
R2.60	66	68	69		3	-1	2	Less than Significant
R2.61	63	65	66		3	-1	2	Less than Significant
R2.62	58	62	63		5	-2	3	Less than Significant
R2.63	57	61	61		4	0	4	Less than Significant
R2.64	59	63	64		5	-3	2	Less than Significant
R2.65	61	65	64		3	0	3	Less than Significant
R4.5-1	76	78	79	S1117	3	-8	-5	No Impact
R4.5-1[Int]	51	53	54		3	-8	-5	No Impact
R4.5-2	77	79	80		3	0	3	Less than Significant
R4.5-2[Int]	52	54	55		3	0	3	Less than Significant
R4.60	67	69	69	SW66	2	-2	0	No Impact
R4.70	66	68	69		3	-2	1	Less than Significant
R4.80	63	65	65	SW66 & SW68	2	-1	1	Less than Significant
R4.90	64	66	66		2	-1	1	Less than Significant

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R4.10	62	64	64	SW94	2	0	2	Less than Significant
R4.11	59	61	62		3	0	3	Less than Significant
R4.12	64	66	66		2	0	2	Less than Significant
R4.13	66	68	69		3	0	3	Less than Significant
R4.14	61	63	66		5	0	5*	Less than Significant
R4.15	66	68	69		3	0	3	Less than Significant
R4.16	63	65	66		3	0	3	Less than Significant
R4.17	60	62	65		5	0	5*	Less than Significant
R4.19	64	66	67		3	0	3	Less than Significant
R4.20	63	65	66		3	0	3	Less than Significant
R4.21	62	64	65		3	0	3	Less than Significant
R4.22	59	61	62		3	0	3	Less than Significant
R4.23	63	65	65		2	0	2	Less than Significant
R4.24	63	65	66		3	0	3	Less than Significant

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R4.25	66	67	68		2	0	2	Less than Significant
R4.26	67	68	68		1	0	1	Less than Significant
R4.27	65	67	68		3	0	3	Less than Significant
R4.28	65	67	68		3	0	3	Less than Significant
R4.29	64	66	67		3	0	3	Less than Significant
R4.30	66	66	67		1	0	1	Less than Significant
R4.31	66	66	66		0	0	0	No Impact
R4.32	61	63	63		2	0	2	Less than Significant
R4.33	61	63	63		2	0	2	Less than Significant
R4.34	63	64	64		1	0	1	Less than Significant
R4.35	62	64	64		2	0	2	Less than Significant
R4.36	60	62	63		3	0	3	Less than Significant
R4.37	60	62	63		3	0	3	Less than Significant
R4.38	63	63	64		1	0	1	Less than Significant
R4.39	63	63	64		1	-1	0	No Impact

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R5.21A	68	68	68	S1132	0	-5	-5	No Impact
R5.21B	73	73	73		0	0	0	No Impact
R5.21B[Int]	43	43	43		0	-7	-7	No Impact
R6.19	61	62	62	S1190	1	0	1	Less than Significant
R6.20	71	72	73		2	-7	-5	No Impact
R6.21	61	62	62		1	-5	-4	No Impact
R6.22	60	61	62		2	-5	-3	No Impact
R7.27	66	66	67	SW230	1	-1	0	No Impact
R7.28	67	67	68		1	-1	0	No Impact
R7.29	62	62	62		0	0	0	No Impact
R7.30	67	67	68		1	-1	0	No Impact
R7.31	65	65	65		0	-1	-1	No Impact
R7.32	67	67	68		1	-1	0	No Impact
R7.33	67	67	67		0	0	0	No Impact
R7.34	67	67	66		-1	0	-1	No Impact
R7.35	66	66	65	S1244	-1	0	-1	No Impact
R7.36	67	67	68	SW246	1	0	1	Less than Significant
R7.36A	67	67	67		0	0	0	No Impact
R7.37	66	67	67		1	0	1	Less than Significant
R7.38	67	68	68		1	0	1	Less than Significant
R7.39	67	68	69		2	0	2	Less than Significant

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R7.41	71	72	73	S1262	2	-7	-5	No Impact
R7.2	66	67	68	SW231	2	0	2	Less than Significant
R7.3	62	63	64		2	0	2	Less than Significant
R7.4	67	68	68		1	0	1	Less than Significant
R7.5	62	63	63		1	0	1	Less than Significant
R7.6	61	62	62		1	0	1	Less than Significant
R7.7	65	66	66		1	0	1	Less than Significant
R7.8	69	70	70		1	0	1	Less than Significant
R7.9	63	64	64	SW245	1	0	1	Less than Significant
R7.10-1	61	61	61		0	0	0	No Impact
R7.10-2	62	62	62		0	0	0	No Impact
R7.11	62	62	62		0	0	0	No Impact
R7.12	63	63	63		0	0	0	No Impact
R7.12-2	64	64	64		0	0	0	No Impact
R7.13-1	65	65	65		0	0	0	No Impact
R7.13-2	66	66	66		0	0	0	No Impact
R7.14	65	65	65		0	0	0	No Impact
R7.15-1	66	66	66		0	0	0	No Impact
R7.15-2	68	68	68		0	0	0	No Impact

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R7.19	66	66	66	SW259	0	0	0	No Impact
R7.2	66	66	66		0	0	0	No Impact
R7.21	64	64	65		1	0	1	Less than Significant
R7.22	66	66	65		-1	0	-1	No Impact
R7.23	68	68	67	SW275 (Replace In-Kind)	-1	-2	-3	No Impact
R7.24	67	67	68		1	-1	0	No Impact
R7.42	72	73	75	S1266	3	-7	-4	No Impact
R7.43-1[Int]	45	46	47		2	-6	-4	No Impact
R7.43-2[Int]	50	51	52		2	-7	-5	No Impact
R7.44-1[Int]	42	43	44		2	-2	0	No Impact
R7.44-2[Int]	45	46	48		3	-3	0	No Impact
R8.1	69	71	70	S1285 & SW275 (SW 275 Replace In-Kind)	1	0	1	Less than Significant
R8.1[Int]	44	46	45		1	-3	-2	No Impact
R8.2-1	75	77	76		1	0	1	Less than Significant
R8.2-1[Int]	50	52	51		1	-7	-6	No Impact
R8.2-2	76	78	79		3	0	3	Less than Significant
R8.2-2[Int]	51	53	54		3	-6	-3	No Impact
R8.3	75	77	77		2	-5	-3	No Impact

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R8.6	66	68	69	SW296 (Replace In-Kind)	3	0	3	Less than Significant
R8.7	68	69	70		2	0	2	Less than Significant
R8.8	67	69	70		3	0	3	Less than Significant
R8.9	66	68	69		3	0	3	Less than Significant
R8.10	66	69	69		3	0	3	Less than Significant
R8.11	66	69	69		3	0	3	Less than Significant
R8.14	59	61	62		3	0	3	Less than Significant
R8.14A	64	66	67		3	0	3	Less than Significant
R8.14B	62	64	64		2	0	2	Less than Significant
R8.14C	63	65	65		2	0	2	Less than Significant
R8.12	66	69	69	S21	3	-3	0	No Impact
R8.13	67	70	71		4	-7	-3	No Impact
R8.15	62	65	65		3	-1	2	Less than Significant
R8.16	71	74	74	S1276	3	-10	-7	No Impact

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R8.18	62	64	64	SW278	2	0	2	Less than Significant
R8.19	64	66	67		3	0	3	Less than Significant
R8.20	64	66	67		3	0	3	Less than Significant
R8.21	67	68	69		2	0	2	Less than Significant
R8.22	67	68	69		2	0	2	Less than Significant
R8.23	68	69	70		2	0	2	Less than Significant
R8.26	63	65	65		2	0	2	Less than Significant
R8.27	62	64	65		3	0	3	Less than Significant
R8.28	62	64	65		3	0	3	Less than Significant
R8.29	64	65	65		2	0	2	Less than Significant
R8.29	63	64	65		2	0	2	Less than Significant
R8.30	64	65	66		2	0	2	Less than Significant

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R8.31	67	68	69	S1306	2	-2	0	No Impact
R8.32-1	70	71	72		2	-6	-4	No Impact
R8.32-2	73	74	75		2	-6	-4	No Impact
R8.33-1	64	65	65		1	-3	-2	No Impact
R8.33-2	66	67	68		2	-4	-2	No Impact
R8.34-1	69	70	71		2	-3	-1	No Impact
R8.34-2	74	75	76		2	-6	-4	No Impact
R8.35	63	64	65		2	-4	-2	No Impact
R8.36-1	67	68	69		2	-5	-3	No Impact
R8.36-2	70	71	72		2	-6	-4	No Impact
R8.37	71	72	73		2	-6	-4	No Impact
R8.38	62	63	64		2	-3	-1	No Impact
R8.39	71	72	73		2	-6	-4	No Impact
R8.40	63	64	65		2	-4	-2	No Impact
R8.41	66	67	68		3	-6	-4	No Impact
R8.42-1	67	68	69		3	-5	-3	No Impact
R8.42-2	71	72	73		2	-6	-4	No Impact
R8.43-1	64	65	66		2	-5	-3	No Impact
R8.43-2	66	67	68		2	-5	-3	No Impact
R8.44-1	65	66	67		3	-5	-3	No Impact
R8.44-2	67	68	69		2	-5	-3	No Impact
R8.45-1	65	66	67		2	-3	-1	No Impact
R8.45-2	70	71	72		2	-6	-4	No Impact
R8.46-1	64	65	66		2	-3	-1	No Impact
R8.46-2	70	71	72		2	-5	-3	No Impact

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R8.47-1	66	67	67		2	-5	-4	No Impact
R8.47-2	77	78	79		2	-10	-8	No Impact
R8.48-1	80	80	76		-4	0	-4	No Impact
R8.48-1[Int]	55	55	51		-4	-7	-11	No Impact
R8.48-2	80	80	81		1	0	1	Less than Significant
R8.48-2[Int]	55	55	56		1	-5	-4	No Impact
R8.48-3	81	81	82		1	0	1	Less than Significant
R8.48-3[Int]	56	56	57		1	-1	0	No Impact
R8.49	65	65	65		0	-2	-2	No Impact
R8.50	75	75	74		-1	-6	-7	No Impact
R8.50 A-1	77	77	71		-6	0	-6	No Impact
R8.50 A-1[Int]	52	52	46		-6	-4	-10	No Impact
R8.50 A-2	80	80	81		2	0	2	Less than Significant
R8.50 A-2[Int]	55	55	56		2	-7	-6	No Impact
R8.50 B-1	73	73	68		-5	0	-5	No Impact
R8.50 B-1[Int]	48	48	43		-5	-3	-8	No Impact
R8.50 B-2	77	77	78		1	0	1	Less than Significant
R8.50 B-2[Int]	52	52	53		1	-8	-7	No Impact
R8.50 C-1	70	70	66		-4	0	-4	No Impact
R8.50 C-1[Int]	45	45	41		-4	-2	-6	No Impact
R8.50 C-2	76	76	75		-1	0	-1	No Impact
R8.50 C-2[Int]	51	51	50		-1	-6	-7	No Impact

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R9.2	61	62	64	SW697 (Replace In-Kind)	3	0	3	Less than Significant
R9.3	62	63	64		2	0	2	Less than Significant
R9.4	64	65	67		3	0	3	Less than Significant
R9.6	65	66	67		2	0	2	Less than Significant
R9.7	62	63	65		3	0	3	Less than Significant
R9.8	65	66	67		2	0	2	Less than Significant
R9.9	64	65	67		3	0	3	Less than Significant
R9.10	65	66	67		2	0	2	Less than Significant
R9.11	67	66	66		-1	0	-1	No Impact
R9.13	67	66	66		-1	0	-1	No Impact
R9.14	67	66	66		-1	0	-1	No Impact
R9.15	65	64	65		0	0	0	No Impact
R9.16	65	64	65		0	0	0	Less than Significant
R9.17	68	67	67		-1	0	-1	No Impact

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R10.1	75	73	76	S1819	1	-9	-8	No Impact
R10.2	70	68	71		1	-7	-6	No Impact
R10.3	70	69	70		0	-6	-6	No Impact
R10.4	75	74	79		4	-13	-9	No Impact
R10.5	68	67	67		-1	-4	-5	No Impact
R10.6	70	69	68		-2	-5	-7	No Impact
R10.7	72	71	70		-2	-8	-10	No Impact
R10.8	70	69	68		-2	-6	-8	No Impact
R10.9	73	72	71		-2	-6	-8	No Impact
R10.9A	76	75	74		-2	-8	-10	No Impact
R10.10	67	66	66		-1	-5	-6	No Impact
R10.11	65	64	65		0	-5	-5	No Impact
R10.12	71	70	70	S1833	-1	-5	-6	No Impact
R10.13	76	75	74		-2	-7	-9	No Impact
R11.3	72	72	73	S1877	1	-5	-4	No Impact
R11.4	74	74	75		1	-7	-6	No Impact
R11.5	72	72	73		1	-6	-5	No Impact
R11.6	68	68	69		1	-5	-4	No Impact
R11.7	68	68	69		1	-6	-5	No Impact
R11.8	70	70	71		1	-5	-4	No Impact
R11.9	70	70	70		0	-5	-5	No Impact
R11.10	68	68	69		1	-5	-4	No Impact
R11.11	67	67	68		1	-4	-3	No Impact
R11.12	65	65	66		1	-4	-3	No Impact

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA)[1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R11.14	71	74	73	S1907	2	-5	-3	No Impact
R11.14A	73	76	77		4	-11	-7	No Impact
R11.15	62	65	66		4	-5	-1	No Impact
R11.15A	68	71	71		3	-6	-3	No Impact
R11.16	72	75	74		2	-8	-6	No Impact
R11.16A	66	70	70		4	-6	-2	No Impact
R11.17	73	77	75		2	-8	-6	No Impact
R11.18	71	75	74		3	-8	-5	No Impact
R11.19	66	69	69		3	-2	1	Less than Significant
R11.20	62	65	66		4	-3	1	Less than Significant
R11.21	64	67	67		3	-5	-2	No Impact
R11.22	62	66	66		4	-5	-1	No Impact
R11.23	65	69	69		4	-6	-2	No Impact
R11.24-1	73	77	75		2	-9	-7	No Impact
R11.24-2	74	77	78		4	-7	-3	No Impact
R11.25-1	73	74	72		-1	-6	-7	No Impact
R11.25-2	73	75	75		2	-5	-3	No Impact
R11.26-1	63	67	66		3	-5	-2	No Impact
R11.26-2	66	69	68		2	-5	-3	No Impact
R11.44	67	71	74	S1969	7	-7	0	No Impact
R12.1	66	67	69	S2033	3	-7	-4	No Impact

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R13.3	66	67	70	S2079	4	-6	-2	No Impact
R13.4	68	69	71		3	-7	-4	No Impact
R13.5	65	66	69		4	-4	0	Less than Significant
R14.3	67	67	68	S2145	1	-5	-4	No Impact
R14.4	75	77	76		1	0	1	Less than Significant
14.4[Int]	55	57	56		1	-5	-4	No Impact
R14.5	71	73	75		4	-6	-2	No Impact
R14.6	71	73	74		3	-6	-3	No Impact
R14.7	73	75	77		4	-8	-4	No Impact
R14.7A	67	69	70		3	-5	-2	No Impact
R14.7B	69	71	72		3	-6	-3	No Impact
R14.8	65	67	68		3	-5	-2	No Impact
R14.8A	59	61	62		3	-3	0	No Impact
R14.8B	65	67	68		3	-5	-2	No Impact
R14.9	71	73	75		4	-6	-2	No Impact
R14.9A	72	74	76		4	0	4	Less than Significant
R14.1	68	70	72		4	-5	-1	No Impact
R14.11	68	70	72		4	-5	-1	No Impact
R14.11A	62	64	65		3	-4	-1	No Impact
R14.12	61	63	64		3	-4	-1	No Impact

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
15.1	68	68	68	SW5	0	0	0	No Impact
15.2	68	68	69		1	0	1	Less than Significant
15.3	66	66	65		-1	0	-1	No Impact
15.4	65	65	66		1	0	1	Less than Significant
15.5	65	65	66		1	0	1	Less than Significant
15.6	66	66	67		1	0	1	Less than Significant
R15.7	69	67	68		-1	0	-1	No Impact
R15.8	69	67	68		-1	0	-1	No Impact
R15.9	69	67	67		-2	0	-2	No Impact
R15.10	67	65	65		-2	0	-2	No Impact
R15.11	68	66	65		-3	0	-3	No Impact
R16.1	63	64	66	S2238	3	-1	2	Less than Significant
R16.11	61	62	64		3	-2	1	Less than Significant
R16.12	66	67	68		2	-5	-3	No Impact
R16.13	65	66	67		2	-4	-2	No Impact
R16.14	62	63	65		3	-4	-1	No Impact
R16.15-1	67	67	68		1	-6	-5	No Impact
R16.15-1[Int]	42	42	43		1	-6	-5	No Impact
R16.15-2	71	71	72		1	-7	-6	No Impact
R16.15-2[Int]	46	46	47		1	-7	-6	No Impact
R16.16-1	67	67	67		0	-5	-5	No Impact

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R16.16-1[Int]	42	42	42		0	-5	-5	No Impact
R16.16-2	71	71	72		1	-7	-6	No Impact
R16.16-2[Int]	46	46	47		1	-7	-6	No Impact
R16.17	70	70	71		1	-7	-6	No Impact
R16.18	61	62	63		2	-3	-1	No Impact
R16.19	63	64	65		2	-4	-2	No Impact
R16.20-1	66	66	67		1	-4	-3	No Impact
R16.20-1[Int]	41	41	42		1	-4	-3	No Impact
R16.20-2	69	69	70		1	-5	-4	No Impact
R16.20-2[Int]	44	44	45		1	-5	-4	No Impact
R16.21	61	61	61		0	-1	-1	No Impact
R17.34	69	69	71	S2384 & S2382	2	-8	-6	No Impact
R17.38	75	77	77	S2434B & S2438 Option 2	2	-8	-6	No Impact
R17.39	71	73	76		5	-9	-4	No Impact
R17.40	68	70	71		3	-9	-6	No Impact
R17.41	71	73	74		3	-7	-4	No Impact
R17.42	68	70	71		3	-5	-2	No Impact
R17.43	68	70	73		5	-8	-3	No Impact
R17.44	67	69	71		4	-5	-1	No Impact
R17.45	66	68	69		3	-5	-2	No Impact
R17.46	65	66	69		4	-5	-1	No Impact
R17.47A	66	67	68		2	-4	-2	No Impact
R17.48	67	68	69		2	-3	-1	No Impact

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R17.18	65	64	65	S2435 & S2437	0	-1	-1	No Impact
R17.24	66	65	67		1	-3	-2	No Impact
R17.25	68	66	67		-1	-6	-7	No Impact
R17.26	70	68	69		-1	-7	-8	No Impact
R17.27	68	66	66		-2	-7	-9	No Impact
R17.28	61	59	60		-1	-2	-3	No Impact
R17.29	68	66	66		-2	-5	-7	No Impact
R17.30	70	68	69		-1	0	-1	No Impact
R17.31	60	58	59		-1	-7	-8	No Impact
R18.6-1	66	66	67	S2476	1	-6	-5	No Impact
R18.6-2	69	69	68		-1	-7	-8	No Impact
R18.7-1	65	65	65		0	-7	-7	No Impact
R18.7-2	67	67	66		-1	-5	-6	No Impact
R18.8-1	65	65	66		1	-8	-7	No Impact
R18.8-2	68	68	67		-1	-8	-9	No Impact
R18.9-1	62	62	62		0	-7	-7	No Impact
R18.9-2	64	64	63		-1	-5	-6	No Impact
R18.10-1	60	60	61		1	-5	-4	No Impact
R18.10-2	63	63	63		0	-4	-4	No Impact
R18.11-1	67	67	68		1	-6	-5	No Impact
R18.11-2	70	70	70		0	-7	-7	No Impact
R18.12-1	67	67	68		1	-6	-5	No Impact
R18.12-2	70	70	69		-1	-7	-8	No Impact
R18.13-1	66	66	66		0	-6	-6	No Impact
R18.13-2	68	68	67		-1	-6	-7	No Impact

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R18.14-1	68	68	69		1	-6	-5	No Impact
R18.14-2	71	71	71		0	-7	-7	No Impact
R18.15-1	67	67	68		1	-6	-5	No Impact
R18.15-2	69	69	70		1	-6	-5	No Impact
R18.16-1	62	62	64		2	-6	-4	No Impact
R18.16-2	67	67	69		2	-5	-3	No Impact
R18.17	62	62	64		2	-4	-2	No Impact
R18.18	62	62	63		1	-3	-2	No Impact
R18.19	63	63	64		1	-2	-1	No Impact
R18.20	64	64	65		1	-1	0	No Impact
R18.21	63	63	64		1	0	1	Less than Significant
R18.22	64	64	66		2	-1	1	Less than Significant
R19.3	72	71	71	S2619	-1	-5	-6	No Impact
R19.4	71	70	70		-1	-5	-6	No Impact
R19.5	67	68	69		2	-5	-3	No Impact
R19.5A	70	71	72		2	-3	-1	No Impact
R19.5B	61	62	63		2	-2	0	No Impact
R19.5C	68	69	70		2	-5	-3	No Impact
R19.6	69	69	70		1	-6	-5	No Impact
R19.7	72	72	73		1	-7	-6	No Impact

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R20.41	70	70	71	S2638B & S2654B	1	-2	-1	No Impact
R20.42	69	69	70		1	-5	-4	No Impact
R20.42A	69	69	69		0	0	0	No Impact
R20.42A[Int]	44	44	44		0	-4	-4	No Impact
R20.43	69	69	70		1	-7	-6	No Impact
R20.44	69	68	68		-1	-5	-6	No Impact
R20.45	70	69	70		0	-6	-6	No Impact
R20.46	69	68	68		-1	-5	-6	No Impact
R20.47	68	67	68		0	-5	-5	No Impact
R20.47A	69	68	69		0	0	0	No Impact
R20.47A[Int]	44	43	44		0	-5	-5	No Impact
R20.48	70	69	70		0	-6	-6	No Impact
R20.49	63	62	63		0	-1	-1	No Impact
R21.75	64	64	66	S2730	2	-7	-5	No Impact
R21.25	73	69	69	S2737	-4	-5	-9	No Impact
R21.25A	65	65	66		1	0	1	Less than Significant
R21.25A[Int]	25	25	26		1	-3	-2	No Impact
R21.26	58	58	59		1	-1	0	No Impact
R21.27	57	57	58		1	-2	-1	No Impact
R21.28	69	69	70		1	-2	-1	No Impact
R21.30	73	73	74		1	-7	-6	No Impact
R21.31	67	67	68		1	-5	-4	No Impact

Table 4-4 Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level (dBA) [1]	Predicted[2] Noise Level with the No-Build Alternative (dBA) (2045)	Predicted[2] Noise Level with Alternative 3 (dBA) (2045)	Soundwall (#)[3]	Future Conditions with Alternative 3 minus Existing Conditions	Soundwall Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R21.39	67	69	70	S2765	3	-7	-4	No Impact
R21.40	69	71	71		2	-7	-5	No Impact
R21.41	65	67	67		2	-7	-5	No Impact
R21.41[Int]	40	42	42		2	-10	-8	No Impact
R21.42	58	60	60		2	-3	-1	No Impact

[1] Existing noise conditions as measured and modeled for the project Noise Study Report.
[2] Future conditions are the predicted noise conditions for horizon year (2045). Predicted noise levels were derived from the Noise Study Report, Appendix B, Predicted Future Noise Levels and Noise Barrier Analysis.
[3] Includes replace in-kind, and recommended walls as discussed in the Section 3.3 of the NADR. Recommended locations and heights for new soundwalls are discussed in the NADR.
[4] Assumes any proposed abatement in the future build condition.
* Future Design Year conditions under Alternative 3 are predicted to be less than the Noise Abatement Criteria (NAC) of 67 dBA set by Caltrans and FHWA.
[Int] Interior
Note: All measurements are in dBA.

Table 4-5 NSR and NADR Addendum Noise Impact Analysis – Alternative 3 (Preferred Alternative)

Receiver	Existing Noise Level + Train Noise Level (dBA) [1]	Predicted[2] Traffic Noise Level with the No-Build Alternative + Train Noise (dBA)	Predicted[2] Traffic Noise Level with Alternative 3	Predicted[2] Noise Level with Alternative 3 + Train Noise	Recommended[3] Soundwall (#)	Future Conditions with Alternative 3 minus Existing Conditions	Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level[4]	Impact
R9.21	64	67	65	67	S1708 (Not Recommended)	3	0	3	Less than Significant
R9.21A	65	68	65	69		4	0	4	Less than Significant
R9.22	65	68	66	69		4	0	4	Less than Significant
R9.23	69	69	66	70		1	0	1	Less than Significant
R9.29	67	68	67	69	S1748 (Not Recommended)	2	0	2	Less than Significant
R10.17A	67	67	65	67	S1818	0	5	-5	Beneficial
R10.17	70	70	67	70		0	7	-7	Beneficial
R11.47	64	69	66	70	S1934 (Not Recommended)	6	0	6*	Less than Significant
R11.47A	61	66	65	68		7	0	7*	Less than Significant

[1] Existing noise conditions as measured and modeled for the project Noise Study Report Addendum.

[2] Future conditions are the predicted noise conditions for horizon year (2045). Predicted noise levels were derived from the Noise Study Report Addendum, Appendix A, Predicted Future Noise Levels and Noise Barrier Analysis.

[3] Includes recommended walls as discussed in the Section 3.3 of the NADR Addendum. Recommended locations and heights for new soundwalls are discussed in the NADR Addendum.

[4] Assumes any proposed abatement in the future build condition.

* As previously noted, noise impacts are based on traffic noise levels only. Predicted Traffic Noise Levels with Alternative 3 for receivers R11.47 and R11.47A do not exceed the NAC, therefore, the increase is considered less than significant.

Note: All measurements are in dBA.

Alternative 1 (No Build)

As previously discussed in Section 3.2.7, noise in the study area is dominated by traffic on I-10, and there are numerous soundwalls along both sides of the freeway. The bordering communities within the corridor are already impacted by highway noise, and these conditions are projected to worsen. Noise measurement results indicate that traffic noise levels at various locations along the I-10 corridor either approach or exceed the aforementioned Noise Abatement Criteria (NAC) for frequent outdoor use areas during the peak noise hour. Noise modeling results indicate many residential land use locations within the corridor are projected to experience a zero- to 4-dB increase under the Design Year (2045) no-build condition. Future operation of alternative improvements to I-10 would not occur under the No Build Alternative; therefore, abatement associated with the proposed project alternatives would not be implemented.

Alternative 2

With consideration of the abatement measures as required in N-1, and as shown in Tables 4-2 and 4-4, predicted noise levels range from a 3-dB increase (R13.3 and R13.4) to a 12-dB decrease (R10.9A) from the future no build compared to the future build alternative with abatement. Predicted increases in noise from existing conditions compared to the future build alternative with abatement would not be perceptible and are considered less than significant as they do not exceed the 5-dB significance criteria. Additionally, future conditions under Build Alternative 2 with abatement would result in beneficial noise reductions compared to the future no build noise impacts for 144 receptors in Tables 4-2 and 4-4.

Alternative 3 (Preferred Alternative)

With consideration of the abatement measures as required in N-1, and as shown in Tables 4-4 and 4-5, predicted noise impacts range from a 4-dB increase (R2.63, R14.9A, R9.21A, and R9.22) to a 10-dB decrease (R10.7 and R10.9A) from the existing conditions compared to the future build alternative with abatement. Predicted increases in noise from existing conditions compared to the future build alternative with abatement would not be perceptible and are considered less than significant. Receivers R4.14 and R4.17 are predicted to experience a noise increase of 5 dB from existing conditions to Design Year (2045) under Alternative 3; however, future Design Year conditions for these two receivers are predicted to be exposed to noise levels below the 67 dBA NAC established by Caltrans and FHWA. Consequently, the predicted noise increase for receivers R4.14 and R4.17 is considered less than significant. Additionally, future conditions under Alternative 3 with abatement would result in beneficial noise reductions compared to the future no build noise impacts for 252 receptors, as shown in Tables 4-4 and 4-5. Soundwall surveys were conducted in July through September 2016 among all benefited receivers within the vicinity of soundwalls determined to be reasonable and feasible in the *Noise Abatement Decision Report* (NADR). Results of those surveys indicated that all soundwalls considered reasonable and feasible for Preferred Alternative 3, except for Soundwalls S1818 and S1833, would be constructed as part of the project.

4.2.3.6 Public Services Checklist Question a) Fire and Police Protection:

Emergency service providers and medical facilities within the project area are described in Section 3.1.5, Utilities/Emergency Services. Proposed mainline improvements would necessitate the construction of structures and delays are anticipated along I-10, I-15, I-215, and SR-210 and at interchanges, as well as on the surrounding arterials, including SR-83 and SR-38, and could result in significant effects on emergency response. However, as described in Section 3.1.4, Community Impacts, none of the temporary long-term closures that have been identified would result in any substantial effect on emergency access or response times. As described in Section 3.1.6, Traffic and Transportation/Pedestrian and Bicycle Facilities, a Final TMP (measure T-1) will be prepared in coordination with local jurisdictions and emergency service providers (e.g., California Highway Patrol [CHP], local police, fire, paramedics) to identify emergency service routes that serve hospitals, fire/police stations, emergency shelters, emergency command centers, and other facilities that provide essential services in times of emergency within the study area. All emergency service routes would be maintained during construction, or alternate routes would be provided. Mitigation measure UT-3 requires emergency service providers to be alerted in advance of any temporary road closures and delays so that they have adequate time to make appropriate accommodations to ensure prompt emergency response times that fulfill their responsibilities and defined service objectives.

4.2.3.7 Transportation/Traffic Checklist Questions a) and b):

This section identifies the potential significant impacts of the proposed build alternatives (Alternatives 2 and 3) to the performance of the roadways within the project limits, based on the information provided in Section 3.1.6.3, Traffic and Transportation/Pedestrian and Bicycle Facilities. Each build alternative is covered separately below. For each build alternative, there is the following:

- A comparison to the existing condition, including an identification of potentially significant cumulative impacts resulting from the combination of the proposed I-10 Corridor Project (I-10 CP) and other land development and roadway improvement projects in the corridor and region.
- A reference to the comparison of the build alternatives to the No Build Alternative (Alternative 1) (as presented in Section 3.1.6.3, Traffic and Transportation/Pedestrian and Bicycle Facilities [Environmental Consequences]), identifying the build alternative's contribution to the cumulative impacts.
- An identification of the difference between the build alternative and the No Build Alternative (Alternative 1), related back to the existing condition

The existing condition is the "CEQA Baseline" condition.

Alternative 2

Future Build Alternative Compared to Existing Condition

A comparison of Alternative 2 in 2025 and 2045 to the existing condition reveals the following information. The data used to make the comparison are presented in the tables indicated in Section 3.1.6.3, Traffic and Transportation/Pedestrian and Bicycle Facilities (Environmental Consequences). Impacts identified through the comparison are cumulative impacts resulting from the combination of the proposed I-10 CP and other land development and roadway improvement projects in the corridor and region. The inclusion of other land development and roadway improvement projects in the traffic forecasts is summarized in Section 3.6.5.6, Traffic and Transportation/ Pedestrian and Bicycle Facilities (Cumulative Impacts); Section 3.6.4, Related Projects (Cumulative Impacts); and more fully explained in the Traffic Study in Section 2.2.2.

1. Under Alternative 2, on I-10, between the Los Angeles/San Bernardino (LA/SB) county line and Ford Street, in 2025, average daily traffic (ADT) is anticipated to have increased by 63,000 to 72,000, compared to the existing condition. In 2045, ADT is anticipated to have increased by 92,000 to 103,000 (see Table 3.1.6-2).
2. Under Alternative 2, on I-10, between the LA/SB county line and Ford Street in 2025, daily vehicle miles traveled (VMT) is anticipated to have increased by 1.3 million, compared to the existing condition, and by 2.9 million in 2045 (see Table 3.1.6-3).
3. Under Alternative 2, on I-10, between the LA/SB county line and Ford Street, in 2025 and in 2045, level of service (LOS) conditions ranging from LOS C to F are anticipated during peak hours in the general purpose lanes, compared to LOS B to

F under the existing conditions. Under Alternative 2, in 2025, volume to capacity (v/c) ratios range from 0.01 to 0.36 greater than under the existing conditions. In 2045, v/c ratios range from 0.12 to 0.52 greater than under the existing conditions (see Tables 3.1.6-4 and 3.1.6-12).

4. Under Alternative 2, on I-10, between the LA/SB county line and Haven Avenue, in 2025 and in 2045, LOS F conditions are anticipated during peak hours in the high-occupancy vehicle (HOV) lanes except for LOS C in the EB segment during the morning peak hour in 2025. For the HOV lanes between Haven Avenue and Ford Street, LOS conditions range from LOS B to F. Under the existing condition, LOS conditions range from LOS B to F during peak hours in the HOV lanes between the LA/SB county line and Haven Avenue. There is no HOV lane between Haven Avenue and Ford Street under the existing condition. HOV traffic would be served by existing general purpose lanes east of Haven Avenue under existing conditions. LOS conditions range from LOS B to F during the peak hours in the general purpose lanes between Haven Avenue and Ford Street. Under Alternative 2, in 2025, v/c ratios in the HOV lane between the LA/SB county line and Haven Avenue range from 0.032 to 0.79 greater than under the existing conditions. Between Haven Avenue and Ford Street, v/c ratios in the HOV lanes range from 0.64 lower than in the general purpose lanes under the existing conditions to 0.40 greater. In 2045, v/c ratios between the LA/SB county line and Haven Avenue range from 0.45 to 0.92 greater than under the existing conditions. Between Haven Avenue and Ford Street, v/c ratios range from 0.19 lower than existing conditions to 0.55 greater (see Tables 3.1.6-5 and 3.1.6-13).

5. Under Alternative 2, in 2025, segment speeds in the general purpose lanes on I-10 range from 22 to 65 miles per hour (mph) in the EB direction and 12 to 65 mph in the westbound (WB) direction. Under existing conditions, speeds in the general purpose lanes ranges from 42 to 65 mph in the EB direction and 32 to 65 mph in the WB direction during the peak hours. Segment speeds in the HOV lanes during the peak hours range from 36 to 65 mph in the EB direction and 10 to 65 mph in the WB direction. For an entire corridor trip between the LA/SB county line and the Ford Street interchange, speed ranges from 36 to 48 mph in the general purpose lanes during the peak hours, compared to existing conditions speeds of 48 to 60 mph during the peak hours. Speeds of HOVs for an entire corridor trip range from 43 to 65 mph during the peak hours, compared to existing conditions speeds of 52 to 61 mph during the peak hours. In 2045 under Alternative 2, segment speeds in the general purpose lanes on I-10 range from 19 to 64 mph in the EB direction and 10 to 63 mph in the WB direction during the peak hours, compared

to existing conditions speeds of 42 to 65 mph in the EB direction and 32 to 65 mph in the WB direction during the peak hours. Segment speeds in the HOV lanes during the peak hours range from 10 to 65 mph in the EB direction and 10 to 60 mph in the WB direction. For an entire corridor trip between the LA/SB county line and the Ford Street interchange, speed ranges from 24 to 30 mph in the general purpose lanes during the peak hours, compared to existing conditions speeds of 48 to 60 mph during the peak hours. Speeds for HOVs for an entire corridor trip range from 29 to 57 mph during the peak hours, compared to existing conditions speed of 52 to 61 mph during the peak hours (see Table 3.1.6-6).

6. Under Alternative 2, in 2025, segment travel times in the general purpose lanes on I-10 range from 2 to 19 minutes in the EB direction and 2 to 41 minutes in the WB direction during the peak hours. Under existing conditions, segment travel times in the general purpose lanes range from 2 to 14 minutes in both directions during the peak hours. Segment travel times in the HOV lanes range from 2 to 12 minutes in the EB direction and 2 to 49 minutes in the WB direction. For an entire corridor trip between the LA/SB county line and the Ford Street interchange, travel time ranges from 36 to 49 minutes in the general purpose lanes during the peak hours, compared to the existing conditions travel times of 29 to 37 minutes during the peak hours. Travel times of HOVs for an entire corridor trip range from 26 to 33 minutes during the peak hours, compared to existing conditions travel times of 28 to 34 minutes during the peak hours. In 2045 under Alternative 2, segment travel times in the general purpose lanes on I-10 range from 2 to 42 minutes in the EB direction and 2 to 49 minutes in the WB direction during the peak hours, compared to existing conditions travel times of 2 to 14 minutes in both directions during the peak hours. Segment travel times in the HOV lanes range from 2 to 17 minutes in the EB direction and 3 to 49 minutes in the WB direction during the peak hours. For an entire corridor trip between the LA/SB county line and the Ford Street interchange, travel time ranges from 56 to 72 minutes in the general purpose lanes during the peak hours, compared to the existing conditions travel times of 29 to 37 minutes during the peak hours. Travel times of HOVs for an entire corridor trip range from 30 to 60 minutes during the peak hours, compared to the existing conditions travel times of 28 to 34 minutes during the peak hours (see Table 3.1.6-7).

7. Under Alternative 2, on I-10 between the LA/SB county line and Ford Street, in 2025, daily and annual vehicle hours of delay (VHD) are anticipated to be approximately 20,000 and 5.1 million, respectively. In 2045, daily and annual VHD are anticipated to be approximately 27,000 and 6.8 million, respectively.

Under existing conditions, daily and annual VHD are approximately 19,000 and 4.8 million, respectively (see Table 3.1.6-8).

8. Under Alternative 2, on I-10 from I-15 to SR-210, in 2025, branch connectors are anticipated to operate with v/c ratios ranging from 0.29 to 1.97 and from 0.38 to 2.18 in 2045, compared to the existing range of 0.25 to 1.81 (see Tables 3.1.6-9 and 3.1.6-14).
9. Under Alternative 2, in 2025, there are three intersections anticipated to operate at LOS F, and four to have v/c ratios greater than 1.00 during peak hours, compared to one intersection operating at LOS F and one with a v/c ratio over 1.00 under existing conditions. In 2045, there are three intersections anticipated to operate at LOS F and seven to have v/c ratios greater than 1.00 during peak hours, compared to one intersection operating at LOS F and one with a v/c ratio over 1.00 under the existing conditions (see Table 4-6).
10. Under Alternative 2, in 2045, within the project limits, the percentage of off-ramps with adequate storage at their arterial terminal is anticipated to be 56 percent, compared to 84 percent under the existing conditions (see Table 3.1.6-11).
11. Under Alternative 2, in 2045, within the project limits, the percentage of arterials with adequate storage at their intersections with freeway ramps is anticipated to be 32 percent, compared to 43 percent under the existing conditions (see Table 3.1.6-11).
12. Under Alternative 2, in 2045, within the project limits, the percentage of arterial/arterial intersections with adequate storage is anticipated to be 33 percent, compared to 67 percent under the existing conditions (see Table 3.1.6-11).

Table 4-6 shows that, under Alternative 2, in 2025, there are three intersections with a significant cumulative impact. The intersections are designated on the table with a “Y” (Yes) in the column labeled “Cumulative Significant Impact.” Table 4-6 also shows that, under Alternative 2 in 2045, there are three intersections with a significant cumulative impact.

An increase in the v/c ratio of a freeway segment is an indication of a cumulative impact on the freeway mainline. Based on the increases in freeway general purpose and HOV lane v/c ratios cited above in Items 3 and 4, there is a cumulative impact on the freeway mainline.

Table 4-6 Years 2025 and 2045 Alternative 2 (HOV) – Peak-Hour Intersection LOS Significant Impact Determination for the Build Alternatives

Interchange Location	Intersection #	Intersection Location		Traffic Control	Year 2012						Year 2025														Year 2045													
					Existing Traffic						Alternative 1 (No Build) Traffic on No Build Geometry						Alternative 2 (HOV) Traffic on Build Geometry						Cumulative Significant Impact	Project Contribution Significant Impact	Alternative 1 (No Build) Traffic on No Build Geometry						Alternative 2 (HOV) Traffic on Build Geometry						Cumulative Significant Impact	Project Contribution Significant Impact
					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				
		East/ West Street	North/ South Street		V/C	Avg Delay (sec)	LOS	V/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS			D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS		
Monte Vista Avenue	71	I-10 WB Ramp	Monte Vista Ave	Sig	0.83	25.3	C	0.77	22.3	C	0.90	28.6	C	1.02	38.2	D	0.93	31.2	C	0.92	34.7	C	N	N	0.99	39.6	D	1.19	57.7	E	1.00	46.4	D	1.09	49.8	D	N	N
	72	I-10 EB Off-Ramp/ Palo Verde St	Monte Vista Ave	Sig	0.83	31.7	C	1.00	45.8	D	0.93	36.1	D	1.18	57.4	E	0.94	33.8	C	1.01	50.5	D	N	N	1.01	46.1	D	1.29	74.6	E	1.07	49.5	D	1.19	69.9	E	N	N
	73	Palo Verde St	I-10 EB On-Ramp	Sig	0.36	10.7	B	0.37	13.0	B	0.38	9.8	A	0.41	11.6	B	0.38	10.2	B	0.40	14.5	B	N	N	0.43	10.3	B	0.46	13.1	B	0.42	10.6	B	0.46	13.5	B	N	N
Mountain Avenue	241	7th St/ Shopping Center	Mountain Ave	Sig	0.56	16.5	B	0.79	26.4	C	0.67	17.2	B	0.96	35.1	D	0.71	17.0	B	1.02	38.7	D	N	N	0.84	19.6	B	1.01	40.3	D	0.78	21.3	C	1.03	46.1	D	N	N
	242	I-10 WB On-/ Off-Ramp	Mountain Ave	Sig	0.70	20.0	C	0.79	25.3	C	0.85	32.2	C	0.99	35.2	D	0.88	35.1	D	1.04	43.1	D	N	N	0.98	40.9	D	1.11	52.0	D	0.99	45.7	D	1.14	59.4	E	N	N
	243	I-10 EB On-/ Off-Ramp	Mountain Ave	Sig	0.57	16.2	B	0.78	29.1	C	0.59	16.7	B	0.85	32.8	C	0.60	17.5	B	0.83	32.8	C	N	N	0.68	25.7	C	0.87	34.6	C	0.67	21.5	C	0.82	35.9	D	N	N
	244	6th St	Mountain Ave	Sig	0.65	18.7	B	0.71	21.7	C	0.48	16.7	B	0.74	22.8	C	0.48	16.7	B	0.73	23.2	C	N	N	0.57	18.5	B	0.77	23.3	C	0.54	18.2	B	0.72	24.0	C	N	N
SR-83 (Euclid Avenue)	351	7th St	SB Euclid Ave	Sig	0.74	18.1	B	0.73	20.6	C	0.79	22.8	C	0.78	21.8	C	0.79	21.3	C	0.77	21.1	C	N	N	0.95	32.8	C	0.89	29.6	C	0.94	32.0	C	0.88	28.1	C	N	N
	352	7th St	NB Euclid Ave	Sig	0.52	10.3	B	0.66	13.8	B	0.60	12.9	B	0.83	17.8	B	0.62	12.9	B	0.85	18.5	B	N	N	0.69	13.6	B	0.95	20.4	C	0.71	14.9	B	0.97	21.5	C	N	N
	354	I-10 WB On-Ramp	SB Euclid Ave	UC	0.43	--	--	0.37	--	--	0.45	--	--	0.39	--	--	0.45	--	--	0.39	--	--	N	N	0.50	--	--	0.43	--	--	0.50	--	--	0.42	--	--	--	--
	355	I-10 WB On-Ramp	NB Euclid Ave	UC	0.27	--	--	0.31	--	--	0.29	--	--	0.32	--	--	0.29	--	--	0.32	--	--	N	N	0.31	--	--	0.35	--	--	0.31	--	--	0.35	--	--	--	--
	356	I-10 EB Ramp	Euclid Ave	Sig	0.97	45.3	D	1.00	52.0	D	1.00	53.6	D	**1.14**	**92.1**	**F**	1.01	53.3	D	**1.15**	**95.9**	**F**	Y	N	1.23	**92.5**	**F**	**1.39**	**156.7**	**F**	**1.24**	**93.9**	**F**	**1.42**	**166.5**	**F**	Y	N
	353	7th St	I-10 WB Off-Ramp/ 2nd Ave	AWS	0.43	13.7	B	0.57	20.9	C	0.55	21.1	C	**0.70**	**50.1**	**F**	0.58	25.3	D	**0.71**	**55.2**	**F**	Y	N	0.63	35.2	E	**0.78**	**98.1**	**F**	0.66	46.2	E	**0.79**	**105.7**	**F**	Y	N
Vineyard Avenue	611	Inland Empire Blvd	Vineyard Ave	Sig	0.52	8.3	A	0.55	9.2	A	0.63	8.9	A	0.82	12.0	B	0.64	9.1	A	0.82	12.5	B	N	N	0.57	7.5	A	0.67	12.9	B	0.72	8.4	A	0.62	8.8	A	N	N
	612	I-10 WB Ramp	Vineyard Ave	Sig	0.59	10.0	A	0.64	11.9	B	0.83	14.5	B	1.05	36.8	D	0.90	18.1	B	1.08	45.2	D	N	N	1.02	34.7	C	1.16	58.6	E	0.96	28.2	C	1.07	41.5	D	N	N
	613	I-10 EB Ramp	Vineyard Ave	Sig	0.71	16.6	B	0.65	12.1	B	0.95	29.7	C	0.89	18.7	B	0.94	26.7	C	0.89	21.8	C	N	N	1.12	60.6	E	1.09	45.6	D	1.11	58.7	E	1.10	49.8	D	N	N
	614	E G St	Vineyard Ave	Sig	0.44	9.8	A	0.43	8.9	A	0.65	12.2	B	0.54	9.8	A	0.65	12.0	B	0.51	11.4	B	N	N	0.87	18.3	B	0.71	13.2	B	0.83	16.8	B	0.72	10.4	B	N	N
	615	E D St	Vineyard Ave	Sig	0.40	15.0	B	0.55	18.3	B	0.63	16.1	B	0.71	23.7	C	0.63	16.1	B	0.70	27.3	C	N	N	0.73	20.1	C	0.90	32.4	C	0.75	19.5	B	0.92	35.8	D	N	N

Table 4-6 Years 2025 and 2045 Alternative 2 (HOV) – Peak-Hour Intersection LOS Significant Impact Determination for the Build Alternatives

Interchange Location	Intersection #	Intersection Location: East/West Street	Intersection Location: North/South Street	Traffic Control	Year 2012 Existing Traffic AM Peak Hour V/C	AM Avg Delay (sec)	AM LOS	PM Peak Hour V/C	PM Avg Delay (sec)	PM LOS	Year 2025 Alternative 1 (No Build) Traffic on No Build Geometry AM Peak Hour D/C	AM Avg Delay (sec)	AM LOS	PM Peak Hour D/C	PM Avg Delay (sec)	PM LOS	Year 2025 Alternative 2 (HOV) Traffic on Build Geometry AM Peak Hour D/C	AM Avg Delay (sec)	AM LOS	PM Peak Hour D/C	PM Avg Delay (sec)	PM LOS	Cumulative Significant Impact	Project Contribution Significant Impact	Year 2045 Alternative 1 (No Build) Traffic on No Build Geometry AM Peak Hour D/C	AM Avg Delay (sec)	AM LOS	PM Peak Hour D/C	PM Avg Delay (sec)	PM LOS	Year 2045 Alternative 2 (HOV) Traffic on Build Geometry AM Peak Hour D/C	AM Avg Delay (sec)	AM LOS	PM Peak Hour D/C	PM Avg Delay (sec)	PM LOS	Cumulative Significant Impact	Project Contribution Significant Impact
Etiwanda Avenue/ Commerce Drive	1112	Valley Blvd	Commerce Dr	Sig	0.36	31.6	C	0.44	32.5	C	0.30	34.0	C	0.39	31.7	C	0.32	33.2	C	0.36	33.1	C	N	N	0.36	33.6	C	0.48	36.2	D	0.39	32.7	C	0.45	32.8	C	N	N
	1111	Valley Blvd/ Ontario Mills Pkwy	Etiwanda Ave	Sig	0.38	16.5	B	0.47	20.3	C	0.44	18.7	B	0.56	22.6	C	0.40	19.4	B	0.68	23.7	C	N	N	0.45	18.6	B	0.63	26.2	C	0.48	18.0	B	0.67	21.9	C	N	N
	1113	I-10 WB On-Ramp	SB Etiwanda Ave	UC	0.12	--	--	0.19	--	--	0.24	--	--	0.41	--	--	0.29	--	--	0.53	--	--	N	N	0.29	--	--	0.39	--	--	0.32	--	--	0.53	--	--	--	--
	1114	I-10 WB Off-Ramp	Etiwanda Ave	Sig	0.55	17.8	B	0.42	12.9	B	0.50	15.2	B	0.52	12.7	B	0.54	15.5	B	0.59	15.0	B	N	N	0.53	16.0	B	0.58	15.3	B	0.57	17.0	B	0.67	18.9	B	N	N
	1115	I-10 WB On-Ramp	NB Etiwanda Ave	UC	0.23	--	--	0.38	--	--	0.23	--	--	0.40	--	--	0.25	--	--	0.42	--	--	N	N	0.26	--	--	0.44	--	--	0.26	--	--	0.44	--	--	--	--
	1116	I-10 EB On-Ramp	SB Etiwanda Ave	UC	0.06	--	--	0.19	--	--	0.06	--	--	0.17	--	--	0.06	--	--	0.18	--	--	N	N	0.06	--	--	0.18	--	--	0.06	--	--	0.19	--	--	--	--
	1117	I-10 EB Off-Ramp	Etiwanda Ave	Sig	0.77	24.5	C	0.44	13.3	B	0.62	17.4	B	0.46	10.4	B	0.63	17.6	B	0.47	10.0	B	N	N	0.68	18.6	B	0.51	12.1	B	0.72	20.1	C	0.51	12.1	B	N	N
	1118	I-10 EB On-Ramp	NB Etiwanda Ave	UC	0.14	--	--	0.41	--	--	0.15	--	--	0.45	--	--	0.15	--	--	0.45	--	--	N	N	0.18	--	--	0.52	--	--	0.19	--	--	0.57	--	--	--	--
Pepper Avenue	2101	Valley Blvd	Pepper Ave	Sig	0.64	30.9	C	0.62	31.3	C	0.62	38.6	D	0.60	28.1	C	0.60	30.7	C	0.57	28.0	C	N	N	0.60	31.0	C	0.58	30.6	C	0.71	32.8	C	0.75	32.2	C	N	N
	2102	I-10 WB Ramp	Pepper Ave	Sig	0.65	24.3	C	0.52	14.9	B	0.50	24.9	C	0.42	21.3	C	0.50	19.2	B	0.39	18.8	B	N	N	0.64	28.8	C	0.61	23.2	C	0.71	30.1	C	0.61	20.8	C	N	N
	2103	I-10 EB Ramp	Pepper Ave	Sig	0.98	53.1	D	0.89	49.6	D	0.59	28.6	C	0.52	34.1	C	0.56	26.9	C	0.50	34.1	C	N	N	0.64	25.0	C	0.65	30.2	C	0.71	27.9	C	0.68	34.0	C	N	N
La Cadena/ 9th Street	2261	I-10 WB On-Ramp	La Cadena Dr	None	0.09	4.0	A	0.17	5.3	A	0.11	4.5	A	0.20	5.7	A	0.12	4.6	A	0.21	5.9	A	N	N	0.14	4.8	A	0.24	6.4	A	0.16	5.7	A	0.26	7.2	A	N	N
	2262	I-10 WB Off-Ramp	9th St	SC	0.49	12.9	B	0.46	12.9	B	0.43	12.5	B	0.65	16.9	C	0.40	11.6	B	0.51	13.7	B	N	N	0.49	13.3	B	0.80	24.8	C	0.51	14.0	B	0.64	18.3	C	N	N
	2263	I-10 EB Ramp	9th St	AWS	0.38	11.3	B	0.44	11.9	B	0.23	10.0	B	0.35	11.1	B	0.20	9.5	A	0.34	10.9	B	N	N	0.26	10.9	B	0.38	11.7	B	0.27	10.7	B	0.41	12.2	B	N	N
Tennessee Street	2981	I-10 WB Ramp	Tennessee St	Sig	0.74	20.5	C	0.57	16.9	B	0.61	18.0	B	0.51	19.8	B	0.47	15.7	B	0.52	11.3	B	N	N	0.62	15.9	B	0.70	18.0	B	0.48	14.9	B	0.57	13.9	B	N	N
	2982	I-10 EB Ramp	Tennessee St	Sig	0.52	14.7	B	0.90	37.2	D	0.55	15.8	B	0.98	52.9	D	0.44	13.5	B	0.80	23.8	C	N	N	0.68	23.8	C	**1.07**	**81.0**	**F**	0.52	15.1	B	0.86	28.5	C	N	N

Table 4-6 Years 2025 and 2045 Alternative 2 (HOV) – Peak-Hour Intersection LOS Significant Impact Determination for the Build Alternatives

Interchange Location	Intersection #	Intersection Location		Traffic Control	Year 2012						Year 2025														Year 2045													
					Existing Traffic						Alternative 1 (No Build) Traffic on No Build Geometry						Alternative 2 (HOV) Traffic on Build Geometry						Cumulative Significant Impact	Project Contribution Significant Impact	Alternative 1 (No Build) Traffic on No Build Geometry						Alternative 2 (HOV) Traffic on Build Geometry						Cumulative Significant Impact	Project Contribution Significant Impact
					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				
		East/ West Street	North/ South Street		V/C	Avg Delay (sec)	LOS	V/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS			D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS	D/C	Avg Delay (sec)	LOS		
Ford Street	3311	Reservoir Rd/ I-10 WB On-Ramp	Ford St	SC	**1.25**	**253.2**	**F**	0.60	45.6	E	0.89	32.9	C	0.75	20.6	C	0.88	37.2	D	0.73	20.0	C	N	N	0.55	20.9	C	0.50	22.0	C	0.59	19.1	B	0.66	17.8	B	N	N
	3312	I-10 EB Off-Ramp	Ford St	SC	0.50	13.9	B	0.86	29.5	D	0.71	19.1	C	**1.09**	**85.3**	**F**	0.67	22.5	C	0.87	29.2	D	N	N	0.72	17.4	C	**1.07**	**76.3**	**F**	0.67	17.1	C	0.81	27.3	D	N	N
	3313	Parkford Dr	Ford St	SC	0.40	21.9	C	0.65	31.8	D	0.47	27.9	D	0.79	48.8	E	0.53	33.3	D	**0.83**	**57.0**	**F**	**Y**	N	0.45	24.9	C	**1.18**	**162.3**	**F**	0.51	30.0	D	**0.97**	**89.6**	**F**	**Y**	N
	3314	Redlands Blvd/I-10 EB On-Ramp/ WB Off-Ramp	Ford St	Sig	0.62	19.8	B	0.52	32.8	C	0.62	23.3	C	0.48	18.1	B	0.66	23.2	C	0.55	18.8	B	N	N	0.84	35.1	D	1.01	44.0	D	0.87	31.7	C	0.89	28.6	C	N	N
	3315	Oak St	Ford St	SC	0.27	19.2	C	0.10	12.5	B	0.25	19.1	C	0.12	14.0	B	0.25	19.2	C	0.12	14.1	B	N	N	0.27	20.6	C	0.12	14.6	B	0.26	20.1	C	0.12	14.2	B	N	N
Wabash Avenue	3431	I-10 WB Off-Ramp/ Reservoir Rd	Wabash Ave	SC	0.12	12.7	B	0.08	10.7	B	0.19	12.4	B	0.18	11.1	B	0.19	12.2	B	0.17	10.9	B	N	N	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	3432	I-10 EB On-Ramp	Wabash Ave	None	0.02	1.4	A	0.01	1.2	A	0.03	2.4	A	0.05	2.7	A	0.03	2.2	A	0.04	2.5	A	N	N	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Notes:

1. LOS – Level of Service; V/C – Volume to Capacity; D/C – Demand Volume to Capacity
2. Sig –Signal; UC – Uncontrolled without conflicting movements; SC – Stop Controlled; AWS – All Way Stop; None – Uncontrolled with conflicting movements
3. For UC intersections, the d/c was calculated based on a saturation flow rate of 1,500 vehicles per hour. Average delay and LOS are not calculated for these intersections, denoted with double dashes (--). The significant impact does not apply to UC intersections.
4. For SC intersections, the average delay and LOS are for the worst stop-controlled approach; the v/c or d/c is for the worst stop-controlled approach.
5. Rows are bold when an intersection is forecast to operate at LOS F under Alternatives 1, 2 and 3.
6. Shaded cells indicate a significant impact.
7. n/a – Analysis for year 2045 is not conducted for the Wabash Avenue interchange due to studies currently being conducted to improve the interchange under RTP# 4M01032.

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Future Build Alternative Compared to Future No Build

Section 3.1.6.3, Traffic and Transportation/Pedestrian and Bicycle Facilities (Environmental Consequences), provides a comparison of Alternative 2 to Alternative 1 (No Build) in 2025 and 2045. That comparison identifies the contribution of Alternative 2 to cumulative impacts. As shown in Tables 3.1.6-4 and 3.1.6-12, v/c ratios for the I-10 freeway mainline under Alternative 2 are 0.16 lower to 0.14 higher than under Alternative 1 (No Build) in 2025 and 0.17 lower to 0.08 higher in 2045. Because Tables 3.1.6-4 and 3.1.6-12 show that, for segments on I-10 between the LA/SB county line and Ford Street, LOS is F under Alternative 1 (No Build), the contribution of Alternative 2 to the cumulative impact on the freeway mainline is less than significant.

Table 4-6 shows (in the column labeled "Project Contribution Significant Impact") that there are no intersections with project contributions to cumulative impacts that are significant.

Difference between Future Build Alternatives and Future No Build Alternative Related to Existing Condition

A comparison of the existing condition and the difference between Alternative 1 and the No Build Alternative reveals the following information. The data used to make the comparison are presented in the tables indicated in Section 3.1.6.3, Traffic and Transportation/Pedestrian and Bicycle Facilities (Environmental Consequences).

1. On I-10, between the LA/SB county line and Ford Street, in 2025, ADT under Alternative 2 is anticipated to be greater than under the Alternative 1 (No Build) condition by 14,000 to 26,000, compared to the existing condition ADT of 151,000 to 230,000. In 2045, ADT under Alternative 2 is anticipated to be greater than under the Alternative 1 condition by 9,000 to 26,000, compared to the existing condition ADT of 151,000 to 230,000 (see Table 3.1.6-2).
2. On I-10, between the LA/SB county line and Ford Street, in 2025, daily VMT under Alternative 2 is anticipated to be greater than under the Alternative 1 (No Build) condition by 256,000, compared to the existing condition daily VMT of approximately 7.1 million. In 2045, daily VMT under Alternative 2 is anticipated to be greater than under the Alternative 1 (No Build) condition by 267,000, compared to the existing condition daily VMT of approximately 7.1 million (see Table 3.1.6-3).
3. In 2025, there is no difference in the LOS anticipated on I-10 between the LA/SB county line and Ford Street in the general purpose lanes under both Alternative 2

and Alternative 1 (No Build), except for the LOS F during the morning peak hour under Alternative 2 for the EB segment between the LA/SB county line and Haven Avenue, compared to LOS D under Alternative 1 (No Build). In 2045, there is no difference in the LOS anticipated on I-10 between the LA/SB county line and Ford Street under both Alternative 2 and Alternative 1 (No Build), except for the LOS C during the evening peak hour under Alternative 2 for the WB segment between California Street and Ford Street, compared to LOS F under Alternative 1 (No Build). Under existing conditions, LOS conditions ranging from LOS C to F are anticipated during peak hours in the general purpose lanes. The peak-hour v/c ratios for the general purpose lanes in 2025 are anticipated to be 0.16 lower to 0.14 greater under Alternative 2 than under Alternative 1 (No Build), compared to v/c ratios of 0.52 to 1.17 under the existing conditions. In 2045, the v/c ratios are anticipated to be 0.17 lower to 0.08 greater under Alternative 2 than under Alternative 1 (No Build), compared to v/c ratios of 0.52 to 1.17 under the existing conditions (see Tables 3.1.6-4 and 3.1.6-12).

4. There is no difference in the LOS anticipated on I-10 between the LA/SB county line and Haven Avenue under both Alternative 2 and Alternative 1 (No Build) in the HOV lanes during peak hours in 2025 and in 2045. The LOS anticipated for these two conditions is LOS C and F, compared to LOS B to F under the existing conditions. Between Haven Avenue and Ford Street, LOS conditions range from LOS B to F under Alternative 2 during the peak hours in 2025 and 2045. There is no HOV lane between Haven Avenue and Ford Street under Alternative 1 (No Build) and existing conditions. HOV traffic would be served by existing general purpose lanes east of Haven Avenue. LOS conditions range from LOS C to F during the peak hours in the general purpose lanes between Haven Avenue and Ford Street under Alternative 1 (No Build) and LOS B to F under the existing condition. Under Alternative 2, in 2025, v/c ratios in the HOV lanes between the LA/SB county line and Haven Avenue range from 0.03 to 0.31 greater than under Alternative 1 (No Build), compared to v/c ratios of 0.36 to 0.81 under the existing conditions. Between Haven Avenue and Ford Street, v/c ratios in the HOV lanes range from 0.85 lower than in the general purpose lanes under the Alternative 1 (No Build) conditions to 0.14 greater, compared to v/c ratios of 0.52 to 1.17 in the general purpose lanes under the existing conditions. In 2045, v/c ratios between the LA/SB county line and Haven Avenue range from 0.06 to 0.32 greater than under the Alternative 1 (No Build) conditions, compared to v/c ratios of 0.36 to 0.81 under existing conditions. Between Haven Avenue and Ford Street, v/c ratios in the HOV lanes range from 0.50 lower than in the general purpose lanes under

Alternative 1 (No Build) conditions to 0.15 greater, compared to v/c ratios of 0.52 to 1.17 in the general purpose lanes under the existing conditions (see Tables 3.1.6-5 and 3.1.6-13).

5. On I-10, in 2025, segment speeds in the general purpose lanes during peak hours are anticipated to be 10 mph slower to 15 mph faster under Alternative 2 than under Alternative 1 (No Build), compared to segment speeds under the existing conditions ranging from 32 to 65 mph. For an entire corridor trip between the LA/SB county line and Ford Street, speeds are anticipated to be 4 mph slower to 7 mph faster under Alternative 2 than under Alternative 1 (No Build), compared to speeds under existing conditions ranging from 48 to 60 mph. Speeds for HOVs for an entire corridor trip are expected to be 10 to 19 mph faster under Alternative 2 than under Alternative 1 (No Build), compared to speeds under existing conditions ranging from 52 to 61 mph. In 2045, segment speeds in the general purpose lanes during peak hours are anticipated to be 7 mph slower to 12 mph faster under Alternative 2 than under Alternative 1 (No Build), compared to segment speeds under the existing conditions ranging from 32 to 65 mph. For an entire corridor trip between the LA/SB county line and Ford Street, speeds are anticipated to be 1 mph slower to 8 mph faster under Alternative 2 than under Alternative 1 (No Build), compared to speeds under existing conditions ranging from 48 to 60 mph. Speeds for HOVs for an entire corridor trip are expected to be 5 to 21 mph faster under Alternative 2 than under Alternative 1 (No Build), compared to speeds under existing conditions ranging from 52 to 61 mph (see Table 3.1.6-6).

6. On I-10, in 2025, segment travel times in the general purpose lanes during peak hours are anticipated to be 7 minutes less to 4 minutes more under Alternative 2 than under Alternative 1 (No Build), compared to segment travel times under the existing conditions ranging from 4 to 14 minutes. For an entire corridor trip between the LA/SB county line and Ford Street, travel times are anticipated to be 9 minutes less to 3 minutes more under Alternative 2 than under Alternative 1 (No Build), compared to travel times under existing conditions ranging from 29 to 37 minutes. Travel times for HOVs for an entire corridor trip are expected to be 5 to 22 minutes less under Alternative 2 than under Alternative 1 (No Build), compared to travel times under existing conditions ranging from 28 to 34 minutes. In 2045, segment travel times in the general purpose lanes during peak hours are anticipated to be 21 minutes less to 6 minutes more under Alternative 2 than under Alternative 1 (No Build), compared to segment travel times under the existing conditions ranging from 2 to 14 minutes. For an entire corridor trip

between the LA/SB county line and Ford Street, travel times are anticipated to be 3 to 21 minutes less under Alternative 2 than under Alternative 1 (No Build), compared to travel times under existing conditions ranging from 29 to 37 mph. Travel times for HOVs for an entire corridor trip are expected to be 24 to 11 minutes less under Alternative 2 than under Alternative 1 (No Build), compared to travel times under existing conditions ranging from 28 to 34 minutes (see Table 3.1.6-7).

7. Under Alternative 2, on I-10, between the LA/SB county line and Ford Street, in 2025, daily and annual VHD are anticipated to be approximately 1,300 and 339,000 less, respectively, than under Alternative 1 (No Build), compared to 19,000 daily and 4.8 million annual VHD under the existing conditions. Under Alternative 2, on I-10, between the LA/SB county line and Ford Street, in 2045, daily and annual VHD are anticipated to be approximately 4,600 and 1.1 million less, respectively, than under Alternative 1 (No Build), compared to 19,000 daily and 4.8 million annual VHD under the existing conditions (see Table 3.1.6-8).

8. Under Alternative 2, on I-10 from I-15 to SR-210, branch connectors are anticipated to operate with v/c ratios ranging from 0.07 less to 0.45 greater under Alternative 1 (No Build) and from 0.08 less to 0.70 greater in 2045, compared to the existing range of 0.25 to 1.81 (see Tables 3.1.6-9 and 3.1.6-14).

9. Under Alternative 2, in 2025, there is no difference in the number of intersections anticipated to operate at LOS F and one less having v/c ratio greater than 1.00 during peak hours than under Alternative 1 (No Build), compared to one intersection operating at LOS F and one with a v/c ratio over 1.00 under existing conditions. In 2045, there are two fewer intersections anticipated to operate at LOS F and four less having v/c ratios greater than 1.00 during peak hours, under Alternative 2, than under Alternative 1 (No Build), compared to one intersection operating at LOS F and one with a v/c ratio over 1.00 under the existing conditions (see Table 4-6).

10. In 2045, within the project limits, the percentage of off-ramps with adequate storage at their arterial terminal is anticipated to be greater by 12 percent under Alternative 2 than under Alternative 1 (No Build), compared to 84 percent of off-ramps with adequate storage at their arterial terminal under the existing conditions (see Table 3.1.6-11).

11. In 2045, within the project limits, the percentage of arterials with adequate storage at their intersections with freeway ramps is anticipated to be greater by 6 percent under Alternative 2 than under Alternative 1 (No Build), compared to 43 percent

of arterials with adequate storage at their intersections with freeway ramps under the existing conditions (see Table 3.1.6-11).

12. In 2045, within the project limits, the percentage of arterial/arterial intersections with adequate storage is anticipated to be the same between Alternative 2 and Alternative 1 (No Build) with 33 percent, compared to 67 percent of arterial/arterial intersections with adequate storage under the existing conditions (see Table 3.1.6-11).

Alternative 3 (Preferred Alternative)

Future Build Alternative Compared to Existing Condition

A comparison of Alternative 3 in 2025 and 2045 to the existing condition reveals the following information.

1. Under Alternative 3, on I-10, between the LA/SB county line and Ford Street, in 2025, ADT is anticipated to have increased by 72,600 to 106,000, compared to the existing condition. In 2045, ADT is anticipated to have increased by 109,000 to 139,000 (see Table 3.1.6-2).
2. Under Alternative 3, on I-10, between the LA/SB county line and Ford Street, in 2025, daily VMT is anticipated to have increased by 1.8 million compared to the existing condition and by 3.6 million in 2045 (see Table 3.1.6-3).
3. Under Alternative 3, on I-10, between the LA/SB county line and Ford Street, in 2025, LOS F conditions are generally anticipated during peak hours in the general purpose lanes. In 2045, LOS F conditions are generally anticipated during the peak hours in the general purpose lanes. Under the existing condition, LOS conditions range from LOS B to F. Under Alternative 3, in 2025, v/c ratios range from 0.01 to 0.31 greater than existing conditions. In 2045, v/c ratios range from 0.10 to 0.58 greater than existing conditions (see Tables 3.1.6-4 and 3.1.6-12).
4. Under Alternative 3, on I-10, between the LA/SB county line and Ford Street, in 2025 and in 2045, LOS A to D conditions are anticipated during peak hours in the Express Lanes (tolled). Under the existing conditions, there is no HOV or Express Lane between Haven Avenue and Ford Street. HOV traffic would be served by the existing general purpose lanes east of Haven Avenue. Under the existing condition, LOS conditions range from LOS B to F during peak hours in the HOV lanes between the LA/SB county line and Haven Avenue. LOS conditions range from LOS C to F in the general purpose lanes east of Haven Avenue. Under Alternative 3, in 2025, v/c ratios between the LA/SB county line and Haven Avenue range from 0.02 lower than under the existing conditions to 0.29 greater.

Between Haven Avenue and Ford Street, v/c ratios range from 0.47 to 0.14 lower than under the existing conditions. In 2045, v/c ratios between the LA/SB county line and Haven Avenue range from 0.04 to 0.41 greater than under the existing conditions. Between Haven Avenue and Ford Street, v/c ratios range from 0.34 to 0.14 lower than existing conditions (see Tables 3.1.6-5 and 3.1.6-13).

5. Under Alternative 3, on I-10, in 2025, segment speeds in the general purpose lanes on I-10 range from 22 to 64 mph in the EB direction and 18 to 64 mph in the WB direction. Under existing conditions, speeds in the general purpose lanes range from 42 to 65 mph in the EB direction and 32 to 65 mph in the WB direction during the peak hours. Segment speeds in the Express Lanes during the peak hours range from 55 to 65 mph. For an entire corridor trip between the LA/SB county line and the Ford Street interchange, speed ranges from 38 to 54 mph in the general purpose lanes during the peak hours, compared to existing conditions speeds of 48 to 60 mph during the peak hours. Speeds on the Express Lanes for an entire corridor trip range from 62 to 65 mph during the peak hours, compared to existing conditions HOV speeds of 52 to 61 mph during the peak hours. In 2045 under Alternative 3, segment speeds in the general purpose lanes on I-10 range from 10 to 61 mph in the EB direction and 10 to 55 mph in the WB direction during the peak hours, compared to existing conditions speeds of 42 to 65 mph in the EB direction and 32 to 65 mph in the WB direction. Segment speeds in the Express Lanes during the peak hours range from 54 to 65 mph. For an entire corridor trip between the LA/SB county line and the Ford Street interchange, speed ranges from 25 to 42 mph in the general purpose lanes during the peak hours, compared to existing conditions speeds of 48 to 60 mph during the peak hours. Speeds on the Express Lanes for an entire corridor trip range from 58 to 62 mph during the peak hours, compared to existing conditions HOV speeds of 52 to 61 mph during the peak hours (see Table 3.1.6-6).

6. Under Alternative 3, on I-10, segment travel times in the general purpose lanes on I-10 range from 2 to 18 minutes in the EB direction and 2 to 27 minutes in the WB direction during the peak hours. Under existing conditions, segment travel times in the general purpose lanes range from 2 to 14 minutes in both directions during the peak hours. Segment travel times in the Express Lanes range from 2 to 12 minutes in the EB direction and 2 to 13 minutes in the WB direction. For an entire corridor trip between the LA/SB county line and the Ford Street interchange, travel time ranges from 31 to 45 minutes in the general purpose lanes during the peak hours, compared to the existing conditions travel times of 29 to 37 minutes during the peak hours. Travel times on the Express Lanes for an entire

corridor trip range from 26 to 29 minutes during the peak hours, compared to existing conditions HOV travel times of 28 to 34 minutes during the peak hours. In 2045 under Alternative 3, segment travel times in the general purpose lanes on I-10 range from 2 to 31 minutes in the EB direction and 3 to 49 minutes in the WB direction during the peak hours, compared to existing conditions travel time of 2 to 14 minutes in both directions during the peak hours. Segment travel times in the Express Lanes ranges from 2 to 13 minutes in the EB direction and 2 to 14 in the WB direction. For an entire corridor trip between the LA/SB county line and the Ford Street interchange, travel time ranges from 41 to 70 minutes in the general purpose lanes during the peak hours, compared to the existing conditions travel times of 29 to 37 minutes during the peak hours. Travel times on the Express Lanes for an entire corridor trip range from 27 to 30 minutes during the peak hours, compared to the existing conditions HOV travel times of 28 to 34 minutes during the peak hours (see Table 3.1.6-7).

7. Under Alternative 3, on I-10, between the LA/SB county line and Ford Street, in 2025, daily and annual VHD are anticipated to be approximately 20,000 and 4.9 million, respectively. Under Alternative 3, on I-10, between the LA/SB county line and Ford Street, in 2045, daily and annual VHD are anticipated to be approximately 24,000 and 6.0 million, respectively. Under the existing conditions, daily and annual VHD are approximately 19,000 and 4.8 million, respectively (see Table 3.1.6-8).
8. Under Alternative 3, on I-10 from I-15 to SR-210, branch connectors are anticipated to operate with v/c ratios ranging from 0.36 to 2.03 in 2025 and from 0.43 to 2.25 in 2045, compared to the existing range of 0.25 to 1.81 (see Tables 3.1.6-9 and 3.1.6-14).
9. Under Alternative 3, in 2025, none of the intersections are anticipated to operate at LOS F and one to have a v/c ratio greater than 1.00 during peak hours, compared to one intersection operating at LOS F and one with a v/c ratio over 1.00 under the existing conditions. In 2045, there is one intersection anticipated to operate at LOS F and seven to have v/c ratios greater than 1.00 during peak hours, compared to one intersection operating at LOS F and one with a v/c ratio over 1.00 under the existing conditions (see Table 4-7).
10. Under Alternative 3, in 2045, within the project limits, the percentage of off-ramps with adequate storage at their arterial terminal is anticipated to be 79 percent compared to 84 percent under the existing conditions (see Table 3.1.6-11).

11. Under Alternative 3, in 2045, within the project limits, the percentage of arterials with adequate storage at their intersections with freeway ramps is anticipated to be 50 percent compared to 43 percent under the existing conditions (see Table 3.1.6-11).
12. Under Alternative 3, in 2045, within the project limits, the percentage of arterial/ arterial intersections with adequate storage is anticipated to be 33 percent compared to 67 percent under the existing conditions (see Table 3.1.6-11).

Table 4-7 shows that, under Alternative 3, in 2025, none of the intersections are found to have a significant cumulative impact. Under Alternative 3, in 2045, there is one intersection with a significant cumulative impact. The intersection is designated on the table with a “Y” (Yes) in the column labeled “Cumulative Significant Impact.”

An increase in the v/c ratio of a freeway segment is an indication of a cumulative impact on the freeway mainline. Based on the increases in freeway general purpose lane v/c ratios cited above in Item 3, there is a cumulative impact on the freeway mainline.

Future Build Alternative Compared to Future No Build

Section 3.1.6.3, Traffic and Transportation/Pedestrian and Bicycle Facilities (Environmental Consequences), provides a comparison of Alternative 3 to Alternative 1 (No Build) in 2025 and 2045. That comparison identifies the contribution of Alternative 3 to cumulative impacts. As shown in Tables 3.1.6-4 and 3.1.6-12, v/c ratios for the I-10 freeway mainline under Alternative 3 are 0.18 lower to 0.14 higher than under Alternative 1 (No Build) in 2025 and 0.17 lower to 0.11 higher in 2045. Because Tables 3.1.6-4 and 3.1.6-12 show that, for segments on I-10 between the LA/SB county line and Ford Street, LOS is F under Alternative 1 (No Build), the contribution of Alternative 3 to the cumulative impact on the freeway mainline is less than significant.

Table 4-7 shows (in the column labeled “Project Contribution Significant Impact”) that there are no intersections with project contributions to cumulative impacts that are significant.

Table 4-7 Years 2025 and 2045 Alternative 3 (Express) [Preferred Alternative] – Peak-Hour Intersection LOS Significant Impact Determination for the Build Alternatives

Interchange Location	Intersection #	Intersection Location		Traffic Control	Year 2012						Year 2025														Year 2045													
					Existing Traffic						Alternative 1 (No Build) Traffic on No Build Geometry						Alternative 3 (Express) Traffic on Build Geometry						Cumulative Significant Impact	Project Contribution Significant Impact	Alternative 1 (No Build) Traffic on No Build Geometry						Alternative 3 (Express) Traffic on Build Geometry						Cumulative Significant Impact	Project Contribution Significant Impact
					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				
		East/West Street	North/South Street		v/c	Avg Delay (sec)	LOS	v/c	Avg Delay (sec)	LOS	d/c	Avg Delay (sec)	LOS	d/c	Avg Delay (sec)	LOS	d/c	Avg Delay (sec)	LOS	d/c	Avg Delay (sec)	LOS			d/c	Avg Delay (sec)	LOS	d/c	Avg Delay (sec)	LOS	d/c	Avg Delay (sec)	LOS	d/c	Avg Delay (sec)	LOS		
Monte Vista Avenue	71	I-10 WB Ramp	Monte Vista Ave	Sig	0.83	25.3	C	0.77	22.3	C	0.90	28.6	C	1.02	38.2	D	0.54	22.3	C	0.58	21.0	C	N	N	0.99	39.6	D	1.19	57.7	E	0.68	21.3	C	0.67	24.7	C	N	N
	72	I-10 EB Off-Ramp/ Palo Verde St	Monte Vista Ave	Sig	0.83	31.7	C	1.00	45.8	D	0.93	36.1	D	1.18	57.4	E	0.76	31.9	C	0.79	39.1	D	N	N	1.01	46.1	D	1.29	74.6	E	0.85	39.5	D	1.00	46.7	D	N	N
	73	Palo Verde St	I-10 EB On-Ramp	Sig	0.36	10.7	B	0.37	13.0	B	0.38	9.8	A	0.41	11.6	B	0.39	16.1	B	0.48	14.2	B	N	N	0.43	10.3	B	0.46	13.1	B	0.45	16.7	B	0.54	13.9	B	N	N
Mountain Avenue	241	7th St/Shopping Center	Mountain Ave	Sig	0.56	16.5	B	0.79	26.4	C	0.67	17.2	B	0.96	35.1	D	0.7	17.6	B	0.94	36.2	D	N	N	0.84	19.6	B	1.01	40.3	D	0.78	21.2	C	0.99	42.7	D	N	N
	242	I-10 WB On/Off Ramp	Mountain Ave	Sig	0.70	20.0	C	0.79	25.3	C	0.85	32.2	C	0.99	35.2	D	0.89	33.3	C	1.03	40.0	D	N	N	0.98	40.9	D	1.11	52.0	D	0.99	46.2	D	1.11	54.2	D	N	N
	243	I-10 EB On/Off Ramp	Mountain Ave	Sig	0.57	16.2	B	0.78	29.1	C	0.59	16.7	B	0.85	32.8	C	0.62	17.8	B	0.83	32.3	C	N	N	0.68	25.7	C	0.87	34.6	C	0.69	19	B	0.84	36.9	D	N	N
	244	6th St	Mountain Ave	Sig	0.65	18.7	B	0.71	21.7	C	0.48	16.7	B	0.74	22.8	C	0.48	16.9	B	0.74	23	C	N	N	0.57	18.5	B	0.77	23.3	C	0.55	19.2	B	0.74	24.2	C	N	N
Euclid Avenue	351	7th St	SB Euclid Ave	Sig	0.74	18.1	B	0.73	20.6	C	0.48	16.7	B	0.74	22.8	C	0.48	16.9	B	0.74	23.0	0.48	N	N	0.95	32.8	C	0.90	29.6	C	1.04	46.5	D	1.00	40.1	D	N	N
	352	7th St	NB Euclid Ave	Sig	0.52	10.3	B	0.66	13.8	B	0.79	22.8	C	0.78	21.8	C	0.88	22.6	C	0.91	28.3	0.79	N	N	0.69	13.6	B	0.95	20.4	C	0.79	12.9	B	1.02	38.7	D	N	N
	353	7th St	I-10 WB Off-Ramp/ 2nd Ave	AWS	0.43	13.7	B	0.57	20.9	C	0.60	12.9	B	0.83	17.8	B	0.70	11.1	B	0.92	28.9	0.60	N	N	0.63	35.2	E	**0.78**	**98.1**	**F**	0.56	15.9	B	0.74	16.7	B	N	N
	354	I-10 WB On-Ramp	SB Euclid Ave	UC	0.43	--	--	0.37	--	--	0.55	21.1	C	**0.70**	**50.1**	**F**	0.49	17.4	B	0.67	15.6	0.55	N	N	0.50	--	--	0.43	--	--	0.55	--	--	0.49	--	--	--	--
	355	I-10 WB On-Ramp	NB Euclid Ave	UC	0.27	--	--	0.31	--	--	0.45	--	--	0.39	--	--	0.50	--	--	0.46	--	0.45	N	N	0.31	--	--	0.35	--	--	0.27	--	--	0.29	--	--	--	--
	356	I-10 EB Ramp	Euclid Ave	Sig	0.97	45.3	D	1.00	52.0	D	0.29	--	--	0.32	--	--	0.23	--	--	0.25	--	0.29	N	N	**1.23**	**92.5**	**F**	**1.39**	**156.7**	**F**	0.86	24.9	C	1.02	49.1	D	N	N
Vineyard Avenue	611	Inland Empire Blvd	Vineyard Ave	Sig	0.52	8.3	A	0.55	9.2	A	1.00	53.6	D	**1.14**	**92.1**	**F**	0.58	9.2	A	0.83	11.5	B	N	N	0.57	7.5	A	0.67	12.9	B	0.72	8.3	A	0.62	9.4	A	N	N
	612	I-10 WB Ramp	Vineyard Ave	Sig	0.59	10.0	A	0.64	11.9	B	0.63	8.9	A	0.82	12.0	B	0.71	11.9	B	0.83	17.6	B	N	N	1.02	34.7	C	1.16	58.6	E	0.97	29.2	C	0.92	23.4	C	N	N
	613	I-10 EB Ramp	Vineyard Ave	Sig	0.71	16.6	B	0.65	12.1	B	0.83	14.5	B	1.05	36.8	D	0.88	25.1	C	0.82	14.9	B	N	N	1.12	60.6	E	1.09	45.6	D	1.05	41.2	D	0.96	20.5	C	N	N
	614	E G St	Vineyard Ave	Sig	0.44	9.8	A	0.43	8.9	A	0.95	29.7	C	0.89	18.7	B	0.73	12.0	B	0.63	8.7	A	N	N	0.87	18.3	B	0.71	13.2	B	0.94	24.1	C	0.74	10.2	B	N	N
	615	E D St	Vineyard Ave	Sig	0.40	15.0	B	0.55	18.3	B	0.65	12.2	B	0.54	9.8	A	0.63	15.7	B	0.79	22.3	C	N	N	0.73	20.1	C	0.90	32.4	C	0.78	17.3	B	0.99	40.4	D	N	N
Etiwanda Ave/ Commerce Dr	1111	Valley Blvd/ Ontario Mills Pkwy	Etiwanda Ave	Sig	0.38	16.5	B	0.47	20.3	C	0.44	18.7	B	0.56	22.6	C	0.45	17.7	B	0.67	23.5	C	N	N	0.45	18.6	B	0.63	26.2	C	0.46	17.0	B	0.63	21.6	C	N	N
	1112	Valley Blvd	Commerce Dr	Sig	0.36	31.6	C	0.44	32.5	C	0.30	34.0	C	0.39	31.7	C	0.32	35.2	D	0.38	33.5	C	N	N	0.36	33.6	C	0.48	36.2	D	0.34	34.7	C	0.45	31.6	C	N	N

Table 4-7 Years 2025 and 2045 Alternative 3 (Express) [Preferred Alternative] – Peak-Hour Intersection LOS Significant Impact Determination for the Build Alternatives

Interchange Location	Intersection #	Intersection Location		Traffic Control	Year 2012						Year 2025														Year 2045													
					Existing Traffic						Alternative 1 (No Build) Traffic on No Build Geometry						Alternative 3 (Express) Traffic on Build Geometry						Cumulative Significant Impact	Project Contribution Significant Impact	Alternative 1 (No Build) Traffic on No Build Geometry						Alternative 3 (Express) Traffic on Build Geometry						Cumulative Significant Impact	Project Contribution Significant Impact
					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour					AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour				
		East/West Street	North/ South Street		v/c	Avg Delay (sec)	LOS	v/c	Avg Delay (sec)	LOS	d/c	Avg Delay (sec)	LOS	d/c	Avg Delay (sec)	LOS	d/c	Avg Delay (sec)	LOS	d/c	Avg Delay (sec)	LOS			d/c	Avg Delay (sec)	LOS	d/c	Avg Delay (sec)	LOS	d/c	Avg Delay (sec)	LOS	d/c	Avg Delay (sec)	LOS		
	1113	I-10 WB On-Ramp	SB Etiwanda Ave	UC	0.12	--	--	0.19	--	--	0.24	--	--	0.41	--	--	0.27	--	--	0.41	--	--	N	N	0.29	--	--	0.39	--	--	0.25	--	--	0.41	--	--	--	--
	1114	I-10 WB Off-Ramp	Etiwanda Ave	Sig	0.55	17.8	B	0.42	12.9	B	0.50	15.2	B	0.52	12.7	B	0.55	14.8	B	0.53	12.6	B	N	N	0.53	16.0	B	0.58	15.3	B	0.59	16.7	B	0.62	13.0	B	N	N
	1115	I-10 WB On-Ramp	NB Etiwanda Ave	UC	0.23	--	--	0.38	--	--	0.23	--	--	0.40	--	--	0.29	--	--	0.46	--	--	N	N	0.26	--	--	0.44	--	--	0.26	--	--	0.47	--	--	--	--
	1116	I-10 EB On-Ramp	SB Etiwanda Ave	UC	0.06	--	--	0.19	--	--	0.06	--	--	0.17	--	--	0.06	--	--	0.18	--	--	N	N	0.06	--	--	0.18	--	--	0.06	--	--	0.20	--	--	--	--
	1117	I-10 EB Off-Ramp	Etiwanda Ave	Sig	0.77	24.5	C	0.44	13.3	B	0.62	17.4	B	0.46	10.4	B	0.63	17.6	B	0.49	10.3	B	N	N	0.68	18.6	B	0.51	12.1	B	0.72	19.6	B	0.57	12.4	B	N	N
	1118	I-10 EB On-Ramp	NB Etiwanda Ave	UC	0.14	--	--	0.41	--	--	0.15	--	--	0.45	--	--	0.15	--	--	0.44	--	--	N	N	0.18	--	--	0.52	--	--	0.19	--	--	0.54	--	--	--	--
Pepper Ave	2101	Valley Blvd	Pepper Ave	Sig	0.64	30.9	C	0.62	31.3	C	0.62	38.6	D	0.60	28.1	C	0.58	29.9	C	0.55	29.4	C	N	N	0.6	31.0	C	0.58	30.6	C	0.65	52.3	D	0.75	33.8	C	N	N
	2102	I-10 WB Ramp	Pepper Ave	Sig	0.65	24.3	C	0.52	14.9	B	0.50	24.9	C	0.42	21.3	C	0.51	19.0	B	0.43	17.4	B	N	N	0.64	28.8	C	0.61	23.2	C	0.79	32.4	C	0.63	22.9	C	N	N
	2103	I-10 EB Ramp	Pepper Ave	Sig	0.98	53.1	D	0.89	49.6	D	0.59	28.6	C	0.52	34.1	C	0.59	27.0	C	0.5	29.4	C	N	N	0.64	25.0	C	0.65	30.2	C	0.77	26.7	C	0.68	34.6	C	N	N
La Cadena Dr/9th St	2261	I-10 WB On-Ramp	La Cadena Dr	None	0.09	4.0	A	0.17	5.3	A	0.11	4.5	A	0.20	5.7	A	0.13	4.6	A	0.23	6.6	A	N	N	0.14	4.8	A	0.24	6.4	A	0.15	5.2	A	0.24	6.6	A	N	N
	2262	I-10 WB Off-Ramp	9th St	SC	0.49	12.9	B	0.46	12.9	B	0.43	12.5	B	0.65	16.9	C	0.41	11.7	B	0.70	19.0	C	N	N	0.49	13.3	B	0.80	24.8	C	0.53	14.6	B	0.80	26.4	D	N	N
	2263	I-10 EB Ramp	9th St	AWS	0.38	11.3	B	0.44	11.9	B	0.23	10.0	B	0.35	11.1	B	0.22	9.9	A	0.38	11.6	B	N	N	0.26	10.9	B	0.38	11.7	B	0.32	11.7	B	0.35	12.9	B	N	N
Tennessee St	2981	I-10 WB Ramp	Tennessee St	Sig	0.74	20.5	C	0.57	16.9	B	0.61	18.0	B	0.51	19.8	B	0.46	15.9	B	0.49	13.0	B	N	N	0.62	15.9	B	0.70	18.0	B	0.47	14.6	B	0.56	14.9	B	N	N
	2982	I-10 EB Ramp	Tennessee St	Sig	0.52	14.7	B	0.90	37.2	D	0.55	15.8	B	0.98	52.9	D	0.45	14.1	B	0.75	24.0	C	N	N	0.68	23.8	C	**1.07**	**81.0**	**F**	0.55	15.4	B	0.84	29.1	C	N	N
Ford St	3311	Reservoir Rd/ I-10 WB On-Ramp	Ford St	SC	**1.25**	**253.2**	**F**	0.60	45.6	E	0.89	32.9	C	0.75	20.6	C	0.73	23.2	C	0.64	14.1	B	N	N	0.55	20.9	C	0.50	22.0	C	0.51	10.2	B	0.50	9.6	A	N	N
	3312	I-10 EB Off-Ramp	Ford St	SC	0.50	13.9	B	0.86	29.5	D	0.71	19.1	C	**1.09**	**85.3**	**F**	0.59	19.3	C	0.93	34.8	D	N	N	0.72	17.4	C	**1.07**	**76.3**	**F**	0.58	15.7	C	0.90	33.2	D	N	N
	3313	Parkford Dr	Ford St	SC	0.40	21.9	C	0.65	31.8	D	0.47	27.9	D	0.79	48.8	E	0.49	28.9	D	0.76	44.6	E	N	N	0.45	24.9	C	**1.18**	**162.3**	**F**	0.47	25.9	D	**1.26**	**197.6**	**F**	**Y**	N
	3314	Redlands Blvd/I-10 EB On-Ramp/WB Off-Ramp	Ford St	Sig	0.62	19.8	B	0.52	32.8	C	0.62	23.3	C	0.48	18.1	B	0.86	23.7	C	0.55	24.9	C	N	N	0.84	35.1	D	1.01	44.0	D	0.84	32.4	C	1.04	42.6	D	N	N
	3315	Oak St	Ford St	SC	0.27	19.2	C	0.10	12.5	B	0.25	19.1	C	0.12	14.0	B	0.25	19.4	C	0.12	14.5	B	N	N	0.27	20.6	C	0.12	14.6	B	0.27	21.2	C	0.12	14.6	B	N	N

Table 4-7 Years 2025 and 2045 Alternative 3 (Express) [Preferred Alternative] – Peak-Hour Intersection LOS Significant Impact Determination for the Build Alternatives

Interchange Location	Intersection #	Intersection Location: East/West Street	Intersection Location: North/South Street	Traffic Control	Year 2012 Existing Traffic AM Peak Hour v/c	Year 2012 Existing Traffic AM Peak Hour Avg Delay (sec)	Year 2012 Existing Traffic AM Peak Hour LOS	Year 2012 Existing Traffic PM Peak Hour v/c	Year 2012 Existing Traffic PM Peak Hour Avg Delay (sec)	Year 2012 Existing Traffic PM Peak Hour LOS	Year 2025 Alternative 1 (No Build) Traffic on No Build Geometry AM Peak Hour d/c	Avg Delay (sec)	LOS	Year 2025 Alternative 1 (No Build) Traffic on No Build Geometry PM Peak Hour d/c	Avg Delay (sec)	LOS	Year 2025 Alternative 3 (Express) Traffic on Build Geometry AM Peak Hour d/c	Avg Delay (sec)	LOS	Year 2025 Alternative 3 (Express) Traffic on Build Geometry PM Peak Hour d/c	Avg Delay (sec)	LOS	Year 2025 Cumulative Significant Impact	Year 2025 Project Contribution Significant Impact	Year 2045 Alternative 1 (No Build) Traffic on No Build Geometry AM Peak Hour d/c	Avg Delay (sec)	LOS	Year 2045 Alternative 1 (No Build) Traffic on No Build Geometry PM Peak Hour d/c	Avg Delay (sec)	LOS	Year 2045 Alternative 3 (Express) Traffic on Build Geometry AM Peak Hour d/c	Avg Delay (sec)	LOS	Year 2045 Alternative 3 (Express) Traffic on Build Geometry PM Peak Hour d/c	Avg Delay (sec)	LOS	Year 2045 Cumulative Significant Impact	Year 2045 Project Contribution Significant Impact
Wabash Avenue	3431	I-10 WB Off-Ramp/Reservoir Rd	Wabash Ave	SC	0.12	12.7	B	0.08	10.7	B	0.19	12.4	B	0.18	11.1	B	0.17	12.1	B	0.15	10.8	B	N	N	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	3432	I-10 EB On-Ramp	Wabash Ave	None	0.02	1.4	A	0.01	1.2	A	0.03	2.4	A	0.05	2.7	A	0.03	2.1	A	0.03	2.0	A	N	N	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Notes:
1. LOS – Level of Service; V/C – Volume to Capacity; D/C – Demand Volume to Capacity
2. Sig –Signal; UC – Uncontrolled without conflicting movements; SC – Stop Controlled; AWS – All Way Stop; None – Uncontrolled with conflicting movements
3. For UC intersections, the d/c was calculated based on a saturation flow rate of 1,500 vehicles per hour. Average delay and LOS are not calculated for these intersections, denoted with double dashes (--). The significant impact does not apply to UC intersections.
4. For SC intersections, the average delay and LOS are for the worst stop-controlled approach; the v/c or d/c is for the worst stop-controlled approach.
5. Rows are bold when an intersection is forecast to operate at LOS F under Alternatives 1, 2 and 3.
6. Shaded cells indicate a significant impact.
7. n/a – Analysis for year 2045 is not conducted for the Wabash Avenue interchange due to studies currently being conducted to improve the interchange under RTP# 4M01032.

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Difference between Future Build Alternatives and Future No Build Related to Existing Condition

A comparison of the existing condition and the difference between Alternative 3 and Alternative 1 (No Build) reveals the following information. The data used to make the comparison are presented in the tables indicated in Section 3.1.6.3, Traffic and Transportation/Pedestrian and Bicycle Facilities (Environmental Consequences).

1. On I-10, between the LA/SB county line and Ford Street, in 2025, ADT under Alternative 3 is anticipated to be greater than under the Alternative 1 (No Build) condition by 32,000 to 48,000, compared to the existing condition ADT of 151,000 to 230,000. In 2045, ADT under Alternative 3 is anticipated to be greater than under the Alternative 1 (No Build) condition by 19,000 to 56,000, compared to the existing condition ADT of 151,000 to 230,000 (see Table 3.1.6-2).
2. On I-10, between the LA/SB county line and Ford Street, in 2025, daily VMT under Alternative 3 is anticipated to be greater than under the Alternative 1 (No Build) condition by 486,000 compared to the existing condition daily VMT of approximately 7.1 million. In 2045, daily VMT under Alternative 3 is anticipated to be greater than under the Alternative 1 (No Build) condition by 990,000, compared to the existing condition daily VMT of approximately 7.1 million (see Table 3.1.6-3).
3. There is no difference in the LOS letter grade of F anticipated on I-10 between the LA/SB county line and Ford Street under both Alternative 3 and Alternative 1 (No Build) in the general purpose lanes during peak hours in 2025 and 2045, except for LOS D anticipated in 2025 during the morning peak hour EB between the LA/SB county line and Haven Avenue and LOS D anticipated in 2045 during the evening peak hour WB between California Street and Ford Street. Under the existing conditions, LOS conditions ranging from LOS C to F are anticipated during peak hours in the general purpose lanes. The peak-hour v/c ratios for the general purpose lanes in 2025 are anticipated to be 0.18 lower to 0.15 higher under Alternative 3 than under Alternative 1 (No Build), compared to v/c ratios of 0.52 to 1.17 under the existing conditions. In 2045, the v/c ratios are anticipated to be 0.17 lower to 0.11 higher under Alternative 3 than under Alternative 1 (No Build), compared to v/c ratios of 0.52 to 1.17 under the existing conditions (see Tables 3.1.6-4 and 3.1.6-12).
4. Express Lanes LOS conditions, in 2025 and 2045, are anticipated to range from LOS A to D during the peak hours under Alternative 3. There are no HOV lanes or Express Lanes between Haven Avenue and Ford Street under Alternative 1 (No

Build) and existing conditions. HOV traffic would be served by existing general purpose lanes east of Haven Avenue. LOS conditions range from LOS C to F under Alternative 1 (No Build) in both the HOV lanes between the LA/SB county line and Haven Avenue and in the general purpose lanes between Haven Avenue and Ford Street during the peak hours in 2025 and 2045. Under the existing condition during the peak hours, LOS conditions range from LOS D to F in the HOV lanes between the LA/SB county line and Haven Avenue. In the general purpose lanes between Haven Avenue and Ford Street, LOS conditions range from LOS B to F. Under Alternative 3, in 2025, v/c ratios between the LA/SB county line and Haven Avenue range from 0.03 to 0.46 lower than under Alternative 1 (No Build), compared to v/c ratios of 0.63 to 0.81 under the existing conditions. Between Haven Avenue and Ford Street, v/c ratios range from 0.36 to 0.77 lower than in the general purpose lanes under Alternative 1 (No Build), compared to v/c ratios of 0.52 to 1.17 in the general purpose lanes under the existing conditions. In 2045, v/c ratios between the LA/SB county line and Haven Avenue range from 0.18 to 0.61 lower than under the Alternative 1 (No Build) conditions, compared to v/c ratios of 0.63 to 0.81 under the existing conditions. Between Haven Avenue and Ford Street, v/c ratios range from 0.52 to 0.68 lower than in the general purpose lanes Alternative 1 (No Build) conditions, compared to v/c ratios of 0.52 to 1.17 in the general purpose lanes under the existing conditions (see Tables 3.1.6-5 and 3.1.6-13).

5. On I-10, in 2025, segment speeds in the general purpose lanes during peak hours are anticipated to be 5 mph slower to 16 mph faster under Alternative 3 than under Alternative 1 (No Build), compared to segment speeds under the existing conditions ranging from 32 to 65 mph. Segment speeds for the Express Lanes range from 55 to 65 mph in both directions during the peak hours. For an entire corridor trip between the LA/SB county line and Ford Street, speeds are anticipated to be 2 to 8 mph faster under Alternative 3 than under Alternative 1 (No Build), compared to speeds under existing conditions ranging from 48 to 60 mph. Speeds on the Express Lanes for an entire corridor trip are expected to be 10 to 30 mph faster under Alternative 3 than under Alternative 1 (No Build) for HOVs, compared to HOV speeds under existing conditions ranging from 52 to 61 mph. In 2045, segment speeds in the general purpose lanes during peak hours are anticipated to be 7 mph slower to 24 mph faster under Alternative 3 than under Alternative 1 (No Build), compared to segment speeds under the existing conditions ranging from 32 to 65 mph. Segment speeds on the Express Lanes range from 54 to 65 mph in both directions during the peak hours. For an entire

corridor trip between the LA/SB county line and Ford Street, speeds are anticipated to be 4 to 13 mph faster under Alternative 3 than under Alternative 1 (No Build), compared to speeds under existing conditions ranging from 48 to 60 mph. Speeds on the Express Lanes for an entire corridor trip are expected to be 26 to 39 mph faster under Alternative 3 than under Alternative 1 (No Build) for HOVs, compared to HOV speeds under existing conditions ranging from 52 to 61 mph (see Table 3.1.6-6).

6. On I-10, in 2025, segment travel times in the general purpose lanes during peak hours are anticipated to be 10 minutes less to 1 minute more under Alternative 3 than under Alternative 1 (No Build), compared to segment travel times under the existing conditions ranging from 2 to 14 minutes. Segment travel times in the Express Lanes range from 2 to 13 minutes during the peak hours. For an entire corridor trip between the LA/SB county line and Ford Street, travel times are anticipated to be 2 to 16 minutes less under Alternative 3 than under Alternative 1 (No Build), compared to travel times under existing conditions ranging from 29 to 37 minutes. Travel times on the Express Lanes for an entire corridor trip are expected to be 5 to 26 minutes less under Alternative 3 than under Alternative 1 (No Build) for HOVs, compared to HOV travel times under existing conditions ranging from 28 to 34 minutes. In 2045, segment travel times in the general purpose lanes during peak hours are anticipated to be 36 minutes less to 4 minutes more under Alternative 3 than under Alternative 1 (No Build), compared to segment travel times under the existing conditions ranging from 2 to 14 minutes. Segment travel times on the Express Lanes ranges from 2 to 14 minutes during the peak hours. For an entire corridor trip between the LA/SB county line and Ford Street, travel times are anticipated to be 10 to 28 minutes less under Alternative 3 than under Alternative 1 (No Build), compared to travel times under existing conditions ranging from 29 to 37 mph. Travel times on the Express Lanes for an entire corridor trip are expected to be 20 to 50 minutes less under Alternative 3 than under Alternative 1 (No Build) for HOVs, compared to HOV travel times under existing conditions ranging from 28 to 34 minutes (see Table 3.1.6-7).

7. Under Alternative 3, on I-10, between the LA/SB county line, in 2025, daily and annual VHD are anticipated to be approximately 1,900 and 485,000 less, respectively, than under Alternative 1 (No Build), compared to 19,000 daily and 4.8 million annual VHD under the existing conditions. Under Alternative 3, on I-10, between the LA/SB county line and Ford Street, in 2045, daily and annual VHD are anticipated to be approximately 485,000 and 1.9 million less,

respectively, than under Alternative 1 (No Build), compared to 19,000 daily and 4.8 million annual VHD under the existing conditions (see Table 3.1.6-8).

8. Under Alternative 3, on I-10 from I-15 to SR-210, in 2025, branch connectors are anticipated to operate with v/c ratios ranging from 0.03 less to 0.42 greater than under Alternative 1 (No Build) and from 0.08 to 0.81 greater in 2045, compared to the existing range of 0.25 to 1.81 (see Tables 3.1.6-9 and 3.1.6-14).
9. Under Alternative 3, in 2025, there is one less intersection anticipated to operate at LOS F and four less having v/c ratios greater than 1.00 during peak hours than under Alternative 1 (No Build), compared to one intersection operating at LOS F and one with a v/c ratio over 1.00 under the existing conditions. In 2045, there are four fewer intersections anticipated to operate at LOS F and four less having v/c ratios greater than 1.00 during peak hours under Alternative 3 than under Alternative 1 (No Build), compared to one intersection operating at LOS F and one with a v/c ratio over 1.00 under the existing conditions (see Table 4-7).
10. In 2045, within the project limits, the percentage of off-ramps with adequate storage at their arterial terminal is anticipated to be greater by 35 percent under Alternative 3 than under Alternative 1 (No Build), compared to 84 percent of off-ramps with adequate storage at their arterial terminal under the existing conditions (see Table 3.1.6-11).
11. In 2045, within the project limits, the percentage of arterials with adequate storage at their intersections with freeway ramps is anticipated to be greater by 24 percent under Alternative 3 than under Alternative 1 (No Build), compared to 43 percent of arterials with adequate storage at their intersections with freeway ramps under the existing conditions (see Table 3.1.6-11).
12. In 2045, within the project limits, the percentage of arterial/arterial intersections with adequate storage is anticipated to be the same under Alternative 3 as under Alternative 1 (No Build), compared to 67 percent of arterial/arterial intersections with adequate storage under the existing conditions (see Table 3.1.6-11).

4.2.3.8 Mandatory Findings of Significance

The discussion in this section provides mandatory findings as required in Section 15065 of the CEQA Guidelines.

4.2.3.9 Adverse Effects on Human Beings Mandatory Findings c):

Implementation of either build alternative has the potential to adversely affect human beings directly and indirectly, although with appropriate mitigation and minimization measures, the impacts would be less than significant.

Alternative 3 would result in the displacement of 40 residential units and 12 businesses. The displacements would result in physical changes that could permanently alter the character of the existing community. While directly affecting the displaced residents and businesses, implementation of the provisions of the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970 would reduce the effects to a less than significant level.

The removal of eucalyptus trees and other vegetation within the interchange areas resulting from construction of either build alternative would have an adverse effect on visual quality for local residents and motorists. Replacement vegetation, as described in Section 3.1.7.4, would be planted, so these effects would be temporary in duration as the replacement vegetation grows and matures. Implementation of measures VA-1 through VA-38 would reduce effects on the existing visual quality and character to a less than significant level.

Construction of either build alternative would result in temporary noise and vibration impacts for adjacent receivers. With implementation of measures N-2 and N-4, in addition to compliance with Caltrans Standard Specifications, it is anticipated that noise and vibration impacts would be minimized to a less than significant level. In addition, traffic noise analysis indicates that various residential areas and park and recreation facilities located adjacent I-10 would be impacted by increased noise levels. With implementation of the identified noise abatement measures, noise impacts would be reduced to a less than significant level.

Construction of the build alternatives and associated traffic delays could result in significant effects on emergency response. However, implementation of measures T-1 (prepare a Final TMP) and UT-3 (advance notification to emergency providers of road closures of delays) would minimize potential effects to emergency services and response to a less than significant level.

Under both build alternatives, the future traffic operations (2045) along segments of the I-10 corridor would experience LOS D or F for both the general purpose and HOV lanes, although the conditions within the corridor would be an improvement over the anticipated future no-build condition.

The concept of Express Lanes proposed under Alternative 3 has already been introduced along major highways in the SCAG region, and public acceptance of those improvements does not suggest that implementation of Alternative 3 would result in a substantial adverse effects on human beings. In addition, after public review of the

Draft EIR/EIS, only 60 individuals attended the public hearings, and a total of 56 comments were received regarding the project, suggesting that the project is generally accepted by the public and viewed as having a less than significant impact on human beings.

4.2.3.10 Wildlife and History Mandatory Finding a):

As described in Sections 3.1.8, Cultural; 3.2.4, Paleontology; and 3.3, Biological Environment, and as determined in the corresponding CEQA impact determinations in Chapter 4 for cultural, paleontology, and biology, the build alternatives' project effects would not significantly degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of a rare or endangered plant or animal. Project impacts on wildlife are less than significant with implementation of the biological measures provided in Appendix E (AS-1 through AS-6, TE-1 through TE-7, and NC-1 through NC-2). With incorporation of mitigation measures PA-1 and CUL-1 through CUL-9, project impacts on history would be less than significant and would not eliminate important examples of the major periods of California history or prehistory.

4.2.3.11 Cumulatively Considerable Effects Mandatory Findings b):

With implementation of the measures described below in Section 4.3, all impacts associated with the build alternatives would be less than significant with mitigation. Similarly, the reasonably foreseeable projects contained within Table 3.6-1 would also be required to address potential impacts through mitigation as part of project approvals required by the implementing jurisdiction in which they are located.

4.2.4 Unavoidable Significant Environmental Effects

Following implementation of the measures proposed to minimize and mitigate potentially significant adverse impacts of the build alternatives, no significant and unavoidable impacts would remain.

4.2.5 Significant Irreversible Environmental Changes

Implementation of a build alternative would involve the commitment of a range of physical, human, and fiscal resources. These resources include land, natural resources used for construction materials and energy, and manpower. While there would be irreversible changes associated with the build alternatives, these changes are not considered significant.

Land required for the project is an irretrievable commitment. The land acquired for the project would be permanently committed to a transportation use and would no longer be available for other uses, such as open space, residential, or commercial. The build alternatives have been designed to avoid impacts to existing built land uses to the extent practicable while adhering to design and operational criteria to maintain a safe roadway.

Fossil fuels and natural resources used for construction materials would be expended for construction of the build alternatives, all of which are irretrievable once used; however, their availability is not limited, and their use for construction of this project would not have an adverse impact on continued availability of these resources. While the labor specifically dedicated to the proposed project would be irreversible and unavailable for other uses, the existing labor pool or new labor sources would be likely available if there are willing individuals.

Construction of the project would also require expenditure of local, State, and federal funds, which, once spent, would not be retrievable.

Overall, the commitment of these resources is based on the concept that construction of the project would provide local and regional benefits with improved traffic operations on I-10, specifically with reduced congestion, increased throughput, and enhanced trip reliability.

4.2.6 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to GHG emissions, particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF_6), HFC-23 (fluoroform), HFC-134a (s, s, s, 2-tetrafluoroethane), and HFC-152a (difluoroethane).

In the U.S., the main source of GHG emissions is electricity generation, followed by transportation. In California, however, transportation sources, including passenger cars, light-duty trucks, other trucks, buses, and motorcycles, make up the largest source of GHG-emitting sources. The dominant GHG emitted is CO_2, mostly from fossil fuel combustion.

There are typically two terms used when discussing the impacts of climate change: “Greenhouse Gas Mitigation” and “Adaptation.” “Greenhouse Gas Mitigation” is a term for reducing GHG emissions to reduce or “mitigate” the impacts of climate change. “Adaptation” refers to the effort of planning for and adapting to impacts resulting from climate change (e.g., adjusting transportation design standards to withstand more intense storms and higher sea levels)[18].

There are four primary strategies for reducing GHG emissions from transportation sources: (1) improving the transportation system and operational efficiencies, (2) reducing travel activity, (3) transitioning to lower GHG-emitting fuels, and (4) improving vehicle technologies/efficiency. To be most effective, all four strategies should be pursued cooperatively.[19]

4.2.6.1 Regulatory Section of Climate Change

This section outlines State and federal efforts to comprehensively reduce GHG emissions from transportation sources.

State

With the passage of several pieces of legislation including State Senate and Assembly Bills and Executive Orders, California has been innovative and proactive in addressing GHG emissions and climate change.

Assembly Bill 1493 (AB 1493), Pavley, Vehicular Emissions: Greenhouse Gases, 2002: This bill requires the California Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year.

Executive Order (EO) S-3-05 (June 1, 2005): The goal of this EO is to reduce California’s GHG emissions to: (1) year 2000 levels by 2010, (2) year 1990 levels by

[18] http://climatechange.transportation.org/ghg_mitigation/

[19] http://www.fhwa.dot.gov/environment/climate_change/mitigation/

2020, and (3) 80 percent below year 1990 levels by 2050. This goal was further reinforced with the passage of AB 32 in 2006 and Senate Bill (SB) 32 in 2016.

Assembly Bill 32 (AB 32), Chapter 488, 2006 Núñez and Pavley, The Global Warming Solutions Act of 2006: AB 32 codified the 2020 GHG emissions reduction goals as outlined in EO S-3-05, while further mandating that ARB create a scoping plan and implement rules to achieve “real, quantifiable, cost-effective reductions of greenhouse gases.” The Legislature also intended that the statewide GHG emissions limit continue in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020 (Health and Safety Code Section 38551(b)). The law requires ARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

Executive Order S-20-06 (October 18, 2006): This order establishes the responsibilities and roles of the Secretary of the California Environmental Protection Agency (Cal/EPA) and state agencies with regard to climate change.

Executive Order S-01-07 (January 18, 2007): This order set forth the low carbon fuel standard for California. Under this EO, the carbon intensity of California’s transportation fuels is to be reduced by at least 10 percent by the year 2020. ARB re-adopted the low carbon fuel standard regulation in September 2015, and the changes went into effect on January 1, 2016. The program establishes a strong framework to promote the low carbon fuel adoption necessary to achieve the Governor's 2030 and 2050 GHG reduction goals.

Senate Bill 97 (SB 97) Chapter 185, 2007, Greenhouse Gas Emissions: Required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the CEQA Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

Senate Bill 375 (SB 375), Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires the ARB to set regional emissions reduction targets from passenger vehicles. The Metropolitan Planning Organization (MPO) for each region must then develop a "Sustainable Communities Strategy" (SCS) that integrates transportation, land use, and housing policies to plan for the achievement of the emissions target for their region.

Senate Bill 391 (SB 391) Chapter 585, 2009 California Transportation Plan: This bill requires the State's long-range transportation plan to meet California's climate change goals under AB 32.

Executive Order B-16-12 (March 2012): Orders State entities under the direction of the Governor, including ARB, California Energy Commission (CEC), and CPUC to support the rapid commercialization of zero emission vehicles. It directs these entities to achieve various benchmarks related to zero emission vehicles,

Executive Order B-30-15 (April 2015): Establishes an interim statewide GHG emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050. It further orders that all state agencies with jurisdiction over sources of GHG emissions to implement measures, pursuant to statutory authority, to achieve reductions of GHG emissions to meet the 2030 and 2050 GHG emissions reductions targets. It also directs ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent ($MMTCO_2e$). Finally, it requires the Natural Resources Agency to update the State's climate adaptation strategy, Safeguarding California, every 3 years and to ensure that its provisions are fully implemented.

Senate Bill 32 (SB32): **Chapter 249, 2016:** This legislation codifies the GHG reduction targets to achieve a mid-range goal of 40 percent below 1990 levels by 2030 established in EO B-30-15.

Federal

Although climate change and GHG reduction are a concern at the federal level; to date no national standards have been established for nationwide mobile source GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level. NEPA (42 U.S.C. Part 4332) requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or project.

The Council on Environmental Quality (CEQ) released final guidance (August 1, 2016) for federal agencies on how to consider the impacts of their actions on global climate change in their NEPA reviews. This final guidance provides a framework for agencies to consider the effects of a proposed action on climate change, as indicated by its estimated GHG emissions, and the effects of climate change on a proposed action. The final guidance applies to all types of proposed federal agency actions that are subject to NEPA analysis and guides agencies on how to address the GHG emissions from federal actions and the effects of climate change on their proposed actions within the existing NEPA regulatory framework.

FHWA supports the approach that climate change considerations should be integrated throughout the transportation decision-making process, from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will assist in decision making and improve efficiency at the program level, and it will inform the analysis and stewardship needs of project-level decision making. Climate change considerations can be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life. The four strategies outlined by FHWA to lessen climate change impacts correlate with efforts that the state is undertaking to deal with transportation and climate change; these strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and a reduction in travel activity.

Climate change and its associated effects are being addressed through various efforts at the federal level to improve fuel economy and energy efficiency.

The Energy Policy Act of 1992 (102nd Congress H.R.776.ENR, abbreviated as EPACT92) was passed by Congress and set goals, created mandates, and amended utility laws to increase clean energy use and improve overall energy efficiency in the United States. The Act consists of 27 titles detailing various measures designed to lessen the nation's dependence on imported energy, provide incentives for clean and renewable energy, and promote energy conservation in buildings. Title III of EPACT92 addresses alternative fuels. It gave the U.S. Department of Energy administrative power to regulate the minimum number of light-duty alternative fuel vehicles required in certain federal fleets beginning in fiscal year 1993.The primary goal of the Program is to cut petroleum use in the United States by 2.5 billion gallons per year by 2020

Energy Policy Act of 2005 (**109th Congress H.R.6 [2005-2006])** sets forth an energy research and development program covering:

- Energy efficiency
- Renewable energy
- Oil and gas

- Coal
- Indian energy
- Nuclear matters and security
- Vehicles and motor fuels, including ethanol
- Hydrogen
- Electricity
- Energy tax incentives
- Hydropower and geothermal energy
- Climate change technology

Energy Policy and Conservation Action of 1975 and Corporate Average Fuel Standards: The Energy Policy and Conservation Act of 1975 (42 U.S.C. Section 6201 [1975]) establishes fuel economy standards for on-road motor vehicles sold in the United States.

Compliance with federal fuel economy standards is determined through the Corporate Average Fuel Economy (CAFE) program on the basis of each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the United States.

Executive Order 13514, **Federal Leadership in Environmental, Energy, and Economic Performance 74 *Federal Register* 52117 (October 8, 2009).** The Executive Order set sustainability goals for federal agencies and focuses on making improvements in their environmental, energy, and economic performance. It instituted United States policy that federal agencies measure, report, and reduce their GHG emissions from direct and indirect activities.

Executive Order 13653 Preparing the United States for the Impacts of Climate Change (78 Federal Register 66817,November 6, 2013): Builds on a previously released (and since revoked) EO I3514 Federal Leadership in Environmental Energy, and Economics Performance to establish direction for federal agencies on how to improve on climate preparedness and resilience strategies.

President Barack Obama's Climate Action Plan June 2013: President Obama announced a comprehensive plan for action to cut carbon pollution, prepare the Nation for the impacts of climate change, and lead international efforts to address climate change as a global challenge. The Plan builds on the work of the 13 United States Global Change Research Program (USGCRP) member agencies, the USGCRP National Climate Assessment program, and the Interagency Climate Change Adaptation Task Force.

Executive Order 13693 Planning for Federal Sustainability (80 Federal Register 15869, March 2015): This Executive Order reaffirms the policy of the United States that federal agencies measure, report, and reduce their GHG emissions from direct and indirect activities. It sets sustainability goals for all agencies to promote energy conservation, efficiency, and management while reducing energy consumption and GHG emissions. It builds on the adaptation and resiliency goals in EO 13693 to ensure agency operations and facilities prepare for impacts of climate change. This Executive Order revokes EO 13514.

EPA's authority to regulate GHG emissions stems from the U.S. Supreme Court decision in Massachusetts v. EPA (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Clean Air Act (CAA) and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, EPA finalized an endangerment finding in December 2009. Based on scientific evidence, it found that six GHGs constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing Act and EPA's assessment of the scientific evidence that form the basis for EPA's regulatory actions.

EPA, in conjunction with the National highway Traffic Safety Administration (NHTSA), issued the first of a series of GHG emission standards for new cars and light-duty vehicles in April 2010[20] and significantly increased the fuel economy of all new passenger cars and light trucks sold in the United States. The standards set a requirement to meet an average fuel economy of 34.1 miles per gallon by 2016. In August 2012, the federal government adopted the second rule that increases fuel economy for the fleet of passenger cars, light-duty trucks, and medium-duty passenger vehicles for model years 2017 and beyond to average fuel economy of 54.5 miles per gallon by 2025. Because NHTSA cannot set standards beyond model year 2021 due to statutory obligations and the rule's long timeframe, a mid-term evaluation is included in the rule. The Mid-Term Evaluation is the overarching process by which NHTSA, EPA, and ARB will decide on CAFE and GHG emissions standards stringency for model years 2022-2025. Standards for model years 2022 through 2025 have not been formally adopted by NHTSA.

NHTSA and EPA issued a Final Rule for "Phase 2" for medium- and heavy-duty vehicles to improve fuel efficiency and cut carbon pollution. The agencies estimate

[20] http://www.c2es.org/federal/executive/epa/greenhouse-gas-regulation-faq

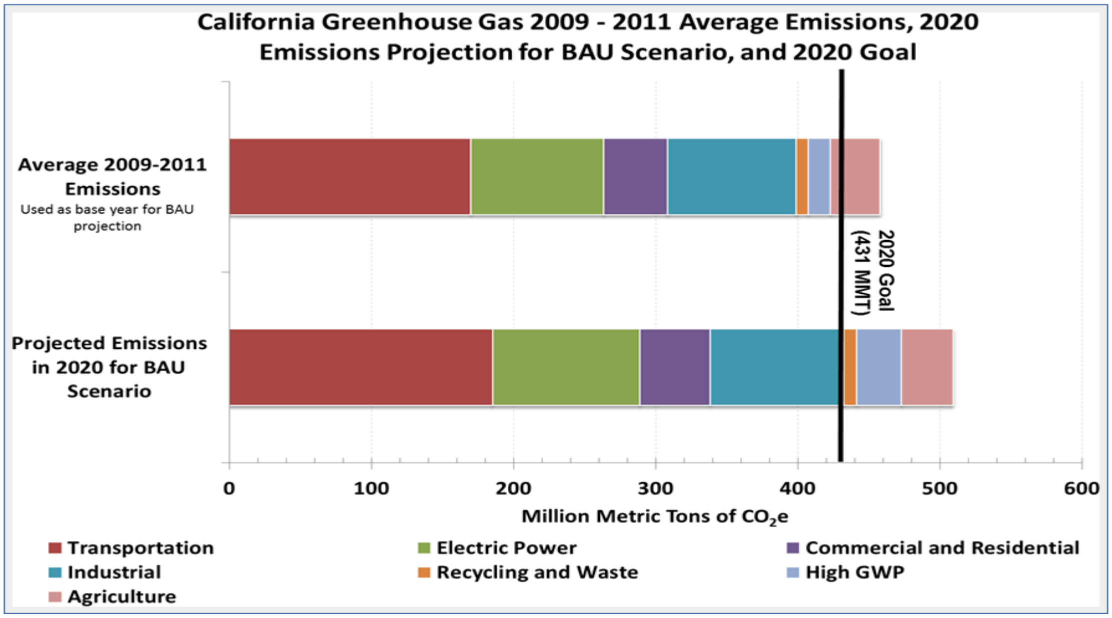
that the standards will save up to 2 billion barrels of oil and reduce CO_2 emissions by up to 1.1 billion metric tons over the lifetime of model years 2018-2029 vehicles.

4.2.6.2 Project Analysis

An individual project does not generate enough GHG emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may contribute to a potential impact through its *incremental* change in emissions when combined with the contributions of all other sources of GHG.[21] In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines Sections 15064(h)(1) and 15130). To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects to make this determination is a difficult, if not impossible, task.

The AB 32 Scoping Plan mandated by AB 32 includes the main strategies California will use to reduce GHG emissions. As part of its supporting documentation for the Draft Scoping Plan, ARB released the GHG inventory for California (forecast last updated: May 2014). The forecast is an estimate of the emissions expected to occur in 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. The base year used for forecasting emissions is the average of statewide emissions in the GHG inventory for 2009, 2010, and 2011, as shown in Figure 4-1.

[21] This approach is supported by the AEP: *Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), as well as the South Coast Air Quality Management District (Chapter 6: The CEQA Guide, April 2011) and the U.S. Forest Service (Climate Change Considerations in Project Level NEPA Analysis, July 13, 2009).



Source: http://www.arb.ca.gov/cc/inventory/data/bau.htm

Figure 4-1 California Greenhouse Gas Forecast

Caltrans and its parent agency, the Transportation Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human-made GHG emissions are from transportation, Caltrans has created and is implementing the Climate Action Program at Caltrans, which was published in December 2006.[22]

One of the main strategies in Caltrans' Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of CO_2 from mobile sources, such as automobiles, occur at stop-and-go speeds (zero to 25 mph) and speeds over 55 mph; the most severe emissions occur from zero to 25 mph (see Figure 4-2). To the extent that a project relieves congestion by enhancing operations and improving travel times in high congestion travel corridors, GHG emissions, particularly CO_2, may be reduced.

[22] Caltrans Climate Action Program is located at the following Web address: http://www.dot.ca.gov/hq/tpp/offices/ogm/key_reports_files/State_Wide_Strategy/Caltrans_Climate_Action_Program.pdf.

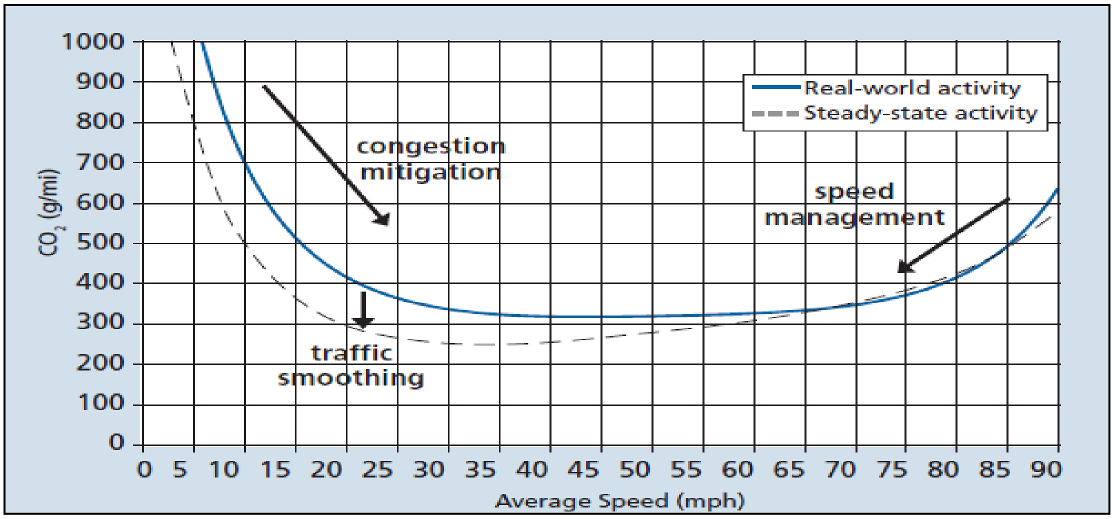


Figure 4-2 Possible Effect of Traffic Operation Strategies in Reducing On-Road CO_2 Emissions[23]

The I-10 corridor within the project limits is currently experiencing congestion and traffic delays during the peak hours due to demand exceeding capacity, resulting from local, regional, and interregional traffic demand. In addition, forecasted local and regional traffic demand is expected to increase, resulting in the need to improve the I-10 corridor. The proposed project alternatives are designed to improve traffic operations on I-10 in San Bernardino County to reduce congestion, increase throughput, and enhance trip reliability for the planning design year of 2045.

Existing GHG emissions are presented in Table 4-8, and future GHG emissions are presented in Tables 4-9 and 4-10. Emissions were estimated using Caltrans CT-EMFAC version 5.0, which is based on EMFAC2011.

Table 4-8 Estimated Existing Annual Carbon Dioxide Emissions

Source	Carbon Dioxide (Metric Tons per Year)	Annual VMT (per 1,000,000)
Existing Conditions (2012)	1,181,102	2,457

Source: Air Quality Report, TAHA 2016.

[23] Traffic Congestion and Greenhouse Gases: Matthew Barth and Kanok Boriboonsomsin (TR News 268 May-June 2010)<http://onlinepubs.trb.org/onlinepubs/trnews/trnews268.pdf>.

Table 4-9 Estimated 2025 Annual Carbon Dioxide Emissions

Source	Metric Tons per Year	Percent Change Compared to No Build	Annual VMT (per 1,000,000)
Alternative 1 (No Build Alternative)	1,328,541	-	2,768
Alternative 2	1,322,275	-	1.7% decrease
Net Change from No Build to Alternative 2	(6,266)	<1% decrease	2,721
Alternative 3 (Preferred Alternative)	1,451,131	-	9.2% increase
Net Change from No Build to Alternative 3	122,590	9% increase	3,023

Source: Air Quality Report, TAHA 2016.

Table 4-10 Estimated 2045 Annual Carbon Dioxide Emissions

Source	Metric Tons per Year	Percent Change Compared to No Build	Annual VMT (per 1,000,000)
Alternative 1 (No Build Alternative)	1,586,298	-	3,298
Alternative 2	1,628,457	-	3,366
Net Change from No Build to Alternative 2	42,159	3% increase	2.1% increase
Alternative 3 (Preferred Alternative)	1,748,113	-	3,661
Net Change from No Build to Alternative 3	161,815	10% increase	11.0% increase

Source: Air Quality Report, TAHA 2016.

Operational Emissions

No Build Alternative

The No Build Alternative would not include any of the proposed improvements, as described in Chapter 2 and would result in increased and continuing congestion. The No Build Alternative would result in greater amounts of GHG emissions than Alternative 2 and less than Alternative 3 in 2025. For horizon year 2045 conditions, the No Build Alternative would result in less GHG emissions (see Tables 4-8 and 4-9) compared to both build alternatives.

Build Alternatives

Alternative 2 would result in negligible changes in GHG emissions in 2025 (i.e., less than 1 percent decrease) and 3 percent increases in 2045. Alternative 3 would increase GHG emissions by 9 percent in 2025 and 10 percent in 2045. Between the two build alternatives, Alternative 2 would generate less GHG emissions than

Alternative 3. Compared to the existing conditions, Alternatives 2 and 3 would increase the GHG emissions by 12 and 23 percent in 2025 and by 38 and 48 percent in 2045, respectively.

The regional increase in emissions is related to population growth in southern California. The 2016-2040 RTP/SCS was developed to include a strong commitment to reduce emissions from transportation sources to comply with SB 375, improve public health, and meet the National Ambient Air Quality Standards (NAAQS) as set forth by the federal CAA. The proposed project was included in emissions modeling for the 2016–2040 RTP/SCS. Therefore, despite the estimated increase in emissions compared to the No Build Alternative, the proposed project is consistent with the 2016–2040 RTP/SCS and the goals to reduce regional emissions.

Construction Emissions

GHG emissions for transportation projects can be divided into those produced during construction and those produced during operation. Construction GHG emissions include emissions produced as a result of material processing, emissions produced by onsite construction equipment, and emissions arising from traffic delays due to construction. These emissions would be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

In addition, with innovations such as longer pavement lives, improved TMPs, and changes in materials, the GHG emissions produced during construction would be lessened to some degree by longer intervals between maintenance and rehabilitation events.

Construction GHG emissions for Alternatives 2 and 3 are presented in Table 4-11. The CEQA baseline emissions for construction are zero. Construction emissions were estimated using RoadMod. Alternative 2 would generate 5,504 metric tons per year and 19,265 total metric tons over the 42-month schedule. Alternative 3 would generate 5,711 metric tons per year and 28,557 total metric tons over the 60-month schedule. Between the two build alternatives, Alternative 2 would generate less GHG construction emissions than Alternative 3.

Table 4-11 Estimated Construction Carbon Dioxide Emissions

Alternative	Carbon Dioxide		Construction Duration
	Metric Tons per Year	Total Metric Tons	
Alternative 2	5,504	19,265	60 months
Alternative 3 (Preferred Alternative)	5,711	28,557	42 months

As discussed in Section 3.2.6, Air Quality, measures AQ-1, AQ-2, AQ-13, AQ-15, AQ-16, and AQ 19 through AQ-21 will help minimize construction-related GHG emissions.

GHG – Limitations and Uncertainties with Modeling

EMFAC

Although EMFAC can calculate CO_2 emissions from mobile sources, the model does have limitations when it comes to accurately reflecting changes in CO_2 emissions due to impacts on traffic. According to the National Cooperative Highway Research Program report, *Development of a Comprehensive Modal Emission Model* (April 2008) and a 2009 University of California study[24], brief but rapid accelerations, such as those occurring during congestion, can contribute significantly to a vehicle's CO_2 emissions during a typical urban trip. Current emission-factor models do not distinguish the emission of such modal events (i.e., acceleration, deceleration) in the operation of a vehicle and instead estimate emissions by average trip speed. It is difficult to model this because the frequency and rate of acceleration or deceleration that drivers choose to operate their vehicles depend on each individual's human behavior, their reaction to other vehicles' movements around them, and their acceptable safety margins. Currently, EPA and ARB have not approved a modal emissions model that is capable of conducting such detailed modeling. This limitation is a factor to consider when comparing the model's estimated emissions for various project alternatives against a baseline value to determine impacts.

Other Variables

With the current understanding, project-level analysis of GHG emissions has limitations. Although a GHG analysis is included for this project, there are numerous

[24] Matthew Bartha, Kanok Boriboonsomsin. 2009. *Energy and Emissions Impacts of a Freeway-Based Dynamic Eco-Driving System.* Transportation Research Part D: Transport and Environment. Volume 14, Issue 6, August 2009, Pages 400–410.

external variables that could change during the design life of the proposed project and would thus change the projected CO_2 emissions.

First, vehicle fuel economy is increasing. EPA's annual report, "Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2012,"[25] which provides data on the fuel economy and technology characteristics of new light-duty vehicles, including cars, minivans, sport utility vehicles, and pickup trucks, confirms that average fuel economy improves each year with a noticeable rate of change beginning in 2005. CAFE standards remained the same between model years 1995 and 2003 and subsequently increase to higher fuel economy standards for future vehicle model years. EPA estimates that light-duty fuel economy rose by 16 percent from 2007 to 2012. Table 4-12 shows the increases in required fuel economy standards for cars and trucks between Model Years 2012 and 2025 as available from the NHTSA for the 2012-2016 and 2017-2025 CAFE Standards.

Table 4-12 Average Required Fuel Economy (mpg)

	2012	**2013**	**2014**	**2015**	**2016**	**2018**	**2020**	**2025**
Passenger Cars	33.3	34.2	34.9	36.2	37.8	41.1-41.6	44.2-44.8	55.3-56.2
Light Trucks	25.4	26	26.6	27.5	28.8	29.6-30.0	30.6-31.2	39.3-40.3
Combined	29.7	30.5	31.3	32.6	34.1	36.1-36.5	38.3-38.9	48.7-49.7

Source: EPA 2013, http://www.epa.gov/fueleconomy/fetrends/1975-2012/420r13001.pdf

Second, new lower emissions and zero emissions vehicles will come into the market within the expected design life of this project. According to the 2013 Annual Energy Outlook (AEO2013):

> "LDVs [light-duty vehicles] that use diesel, other alternative fuels, hybrid-electric, or all-electric systems play a significant role in meeting more stringent GHG emissions and CAFE standards over the projection period. Sales of such vehicles increase from 20 percent of all new LDV sales in 2011 to 49 percent in 2040 in the AEO2013 Reference case."[26]

The greater percentage of lower emissions and zero emissions vehicles on the road in the future will reduce overall GHG emissions compared to scenarios in which vehicle technologies and fuel efficiencies do not change.

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[25] http://www.epa.gov/oms/fetrends.htm
[26] http://www.eia.gov/forecasts/aeo/pdf/0383(2013).pdf

Third, California recently adopted a low-carbon transportation fuel standard in 2009 to reduce the carbon intensity of transportation fuels by 10 percent by 2020. The regulation became effective on January 12, 2010 (codified in title 17, California Code of Regulations[CCR], Sections 95480-95490). Beginning January 1, 2011, transportation fuel producers and importers must meet specified average carbon intensity requirements for fuel in each calendar year.

CEQA Conclusion

As discussed above, both the future with project and future no build show increases in CO_2 emissions over the existing levels; the future build CO_2 emissions are higher than the future no-build emissions; therefore, it is Caltrans' determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a determination regarding significance of the project's direct impact and its contribution on the cumulative scale to climate change. Caltrans is firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the following section.

4.2.6.3 GHG Reduction Strategies

Caltrans continues to be involved on the Governor's Climate Action Team as the ARB works to implement EO S-3-05 and EO S-01-07 and help achieve the targets set forth in AB 32. Many of the strategies Caltrans is using to help meet the targets in AB 32 come from Former Governor Arnold Schwarzenegger's Strategic Growth Plan for California. The Strategic Growth Plan targeted a significant decrease in traffic congestion below 2008 levels and a corresponding reduction in GHG emissions, while accommodating growth in population and the economy. The Strategic Growth Plan relies on a complete systems approach to attain CO_2 reduction goals: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements as shown in Figure 4-3.

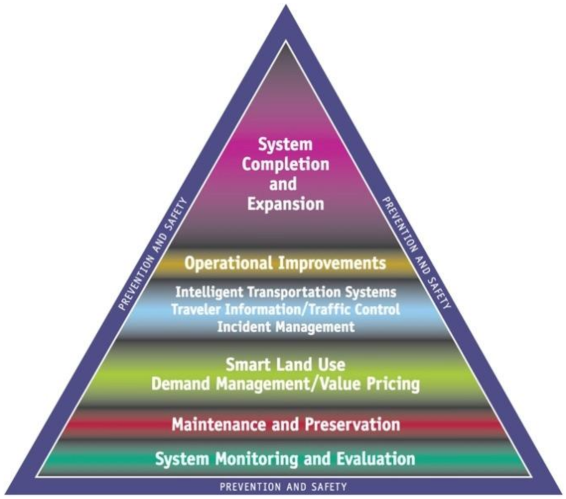

Figure 4-3 Mobility Pyramid

Caltrans is supporting efforts to reduce VMT by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high-density housing along transit corridors. Caltrans works closely with local jurisdictions on planning activities, but does not have local land use planning authority. Caltrans also assists efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars and light- and heavy-duty trucks; Caltrans is doing this by supporting ongoing research efforts at universities, supporting legislative efforts to increase fuel economy, and participating on the Climate Action Team. It is important to note, however, that control of fuel economy standards is held by EPA and ARB.

Caltrans is also working towards enhancing the State's transportation planning process to respond to future challenges. Similar to requirements for regional transportation plans under SB 375 (Steinberg 2008), SB 391(Liu 2009) requires the State's long-range transportation plan to meet California's climate change goals under AB 32.

The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet our future mobility needs and reduce GHG emissions. The CTP defines performance-based goals, policies, and strategies to achieve our collective vision for California's future, statewide, integrated, multimodal transportation system.

The purpose of the CTP is to provide a common policy framework that will guide transportation investments and decisions by all levels of government, the private sector, and other transportation stakeholders. Through this policy framework, the

CTP 2040 will identify the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the State's transportation needs.

Table 4-13 summarizes the Caltrans and statewide efforts that are being implemented to reduce GHG emissions. More detailed information about each strategy is included in the Climate Action Program at Caltrans (December 2006).

Caltrans Director's Policy 30 (DP-30) Climate Change (June 22, 2012) is intended to establish a Caltrans policy that will ensure coordinated efforts to incorporate climate change into Caltrans' decisions and activities.

Caltrans Activities to Address Climate Change (April 2013)[27] provides a comprehensive overview of activities undertaken by Caltrans statewide to reduce greenhouse gas emissions resulting from agency operations.

The following measures will also be included in the project to reduce the GHG emissions and potential climate change impacts from the project.

1. Caltrans and CHP are working with regional agencies to implement Intelligent Transportation Systems (ITS) to help manage the efficiency of the existing highway system. ITS commonly consists of electronics, communications, or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system.
2. In addition, the San Bernardino County Transportation Authority (SBCTA) provides ridesharing services and park-and-ride facilities to help manage the growth in demand for highway capacity.
3. Landscaping reduces surface warming and, through photosynthesis, decreases CO_2. The project would include planting in the intersection slopes, drainage channels, and seeding in areas next to frontage roads, as well as planting a variety of different-sized plant material and scattered skyline trees where appropriate but not to obstruct the view of the mountains. These trees will help offset any potential CO_2 emissions increase.

[27] http://www.dot.ca.gov/hq/tpp/offices/orip/climate_change/projects_and_studies.shtml

Table 4-13 Climate Change/CO_2 Reduction Strategies

Strategy	Program	Partnership		Method/ Process	Estimated CO_2 Savings Million Metric Tons (MMT)	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review (IGR)	Caltrans	Local governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Caltrans	Local and regional agencies & other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional agencies	Caltrans	Regional plans and application process	0.975	7.8
Operational Improvements & ITS Deployment	Strategic Growth Plan	Caltrans	Regions	State ITS; Congestion Management Plan	0.07	2.17
Mainstream Energy & GHG into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational & Information Program	Office of Policy Analysis & Research	Interdepartmental, Cal/EPA, ARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening & Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement B20 B100	.0045	0.0065 0.045 0.0225
Nonvehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	0.117	0.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5 % limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 0.36	4.2 3.6
Goods Movement	Office of Goods Movement	Cal/EPA, ARB, BT&H, MPOs		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					2.72	18.18

4. The project would incorporate the use of energy-efficient lighting, such as light-emitting diode (LED) traffic signals. LED bulbs cost $60 to $70 each but last 5 to 6 years, compared to the 1-year average lifespan of the incandescent bulbs previously used. The LED bulbs themselves consume 10 percent of the electricity of traditional lights, which will also help reduce the project's CO_2 emissions.[28]
5. The construction contractor must comply with SCAQMD rules, ordinances, and regulations in regards to air quality restrictions.

4.2.6.4 Adaptation Strategies

"Adaptation strategies" refer to how Caltrans and others can plan for the effects of climate change on the State's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damage to roadbeds from longer periods of intense heat; increasing storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts to the transportation infrastructure.

At the federal level, the Climate Change Adaptation Task Force, co-chaired by the CEQ, the Office of Science and Technology Policy (OSTP), and the National Oceanic and Atmospheric Administration (NOAA), released its interagency task force progress report on October 28, 2011[29], outlining the federal government's progress in expanding and strengthening the Nation's capacity to better understand, prepare for, and respond to extreme events and other climate change impacts. The report provides an update on actions in key areas of federal adaptation, including building resilience in local communities, safeguarding critical natural resources such as freshwater, and providing accessible climate information and tools to help decision makers manage climate risks.

Climate change adaptation must also involve the natural environment. Efforts are underway on a statewide-level to develop strategies to cope with impacts to habitat and biodiversity through planning and conservation. The results of these efforts will

[28] Knoxville Business Journal, "LED Lights Pay for Themselves," May 19, 2008 at http://www.knoxnews.com/news/2008/may/19/led-traffic-lights-pay-themselves/.

[29] http://www.whitehouse.gov/administration/eop/ceq/initiatives/adaptation.

help California agencies plan and implement mitigation strategies for programs and projects.

On November 14, 2008, then-Governor Arnold Schwarzenegger signed EO S-13-08, which directed many State agencies to address California's vulnerability to sea level rise caused by climate change. This EO set in motion several agencies and actions to address the concern of sea level rise.

In addition to addressing projected sea level rise, the California Natural Resources Agency (Resources Agency) was directed to coordinate with local, regional, State, and federal public and private entities to develop *The California Climate Adaptation Strategy* (December 2009)[30], which summarizes the best-known science on climate change impacts to California, assesses California's vulnerability to the identified impacts, and then outlines solutions that can be implemented within and across State agencies to promote resiliency.

The strategy outline is in direct response to EO S-13-08, which specifically asked the Resources Agency to identify how State agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. Numerous other State agencies were involved in the creation of the Adaptation Strategy document, including Cal/EPA; Business, Transportation and Housing; Health and Human Services; and the Department of Agriculture. The document is broken down into strategies for different sectors, including Public Health; Biodiversity and Habitat; Ocean and Coastal Resources; Water Management; Agriculture; Forestry; and Transportation and Energy Infrastructure. As data continues to be developed and collected, the State's adaptation strategy will be updated to reflect current findings.

The National Academy of Science was directed to prepare a Sea Level Rise Assessment Report[31] to recommend how California should plan for future sea level rise. The report was released in June 2012 and included:

- Relative sea level rise projections for California, Oregon, and Washington taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge, and land subsidence rates.
- The range of uncertainty in selected sea level rise projections.

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30 http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF.

31 *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future* (2012) is available at: http://www.nap.edu/catalog.php?record_id=13389.

- A synthesis of existing information on projected sea level rise impacts to state infrastructure (e.g., roads, public facilities and beaches), natural areas, and coastal and marine ecosystems.
- A discussion of future research needs regarding sea level rise.

In 2010, interim guidance was released by the Coastal Ocean Climate Action Team (CO-CAT), as well as Caltrans, as a method to initiate action and discussion of potential risks to the State's infrastructure due to projected sea level rise. Subsequently, CO-CAT updated the Sea Level Rise guidance to include information presented in the National Academy of Science's study.

All State agencies that are planning to construct projects in areas vulnerable to future sea level rise are directed to consider a range of sea level rise scenarios for the years 2050 and 2100 to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. Sea level rise estimates should also be used in conjunction with information on local uplift and subsidence, coastal erosion rates, predicted higher high water levels, storm surge, and storm wave data.

All projects that have filed a Notice of Preparation (NOP) as of the date of EO S-13-08, and/or are programmed for construction funding through 2013, or are routine maintenance projects may, but are not required to, consider these planning guidelines. The NOP for this project was filed in October 2012. The proposed project is outside the coastal zone and direct impacts to transportation facilities due to projected sea level rise are not expected.

EO S-13-08 also directed the Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level rise affecting safety, maintenance and operational improvements of the system, and economy of the state. Caltrans continues to work on assessing the transportation system vulnerability to climate change, including the effect of sea level rise.

Currently, Caltrans is working to assess which transportation facilities are at greatest risk from climate change effects; however, without statewide planning scenarios for relative sea level rise and other climate change effects, Caltrans has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, Caltrans will be able to review its current design standards to determine what changes, if any, may be needed to protect the transportation system from sea level rise.

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels. Caltrans is an active participant in the efforts being conducted in response to EO S-13-08 and is mobilizing to be able to respond to the National Academy of Science Sea Level Rise Assessment Report.

4.3 Mitigation Measures for Significant Impacts under CEQA

Avoidance, minimization, and/or mitigation measures are those discussed in Chapter 3 within each section under avoidance, minimization, and/or mitigation measures. Measures pursuant to CEQA were identified for each potentially significant effect of the project, described above in Section 4.2.3. Please refer to Chapter 3 for specific measures. Identified mitigation measures pursuant to CEQA that reduce impacts to less than significant include Aesthetics measures VA-1 through VA-38; Biological measures AS-1 through AS-6, TE-1 through TE-7, and NC-1; Cultural Resources measures CUL-1 through CUL-9 and PA-1; Hazardous Waste measures HAZ-1 through HAZ-10; Noise measures N-1 through N-4; and Transportation/Traffic measure T-2.

Chapter 5 Comments and Coordination

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures, and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including monthly Project Development Team (PDT) meetings, Community Advisory Group (CAG) meetings, meetings with corridor city staff, meetings with other organizations or groups as requested, interagency coordination meetings, public scoping meetings, and public announcements placed in local newspapers, the *Federal Register*, at the County Clerk's office, and in public libraries. This chapter summarizes the results of the California Department of Transportation's (Caltrans) and San Bernardino County Transportation Authority's (SBCTA) efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

5.1 Consultation and Coordination

5.1.1 Consultation and Coordination with Cooperating and Participating Agencies

23 United States Code (U.S.C.) 139 requires that the lead agencies establish a Coordination Plan for public and agency participation and comment during the environmental review process. The plan establishes a framework and timeframe for regular communication among all of the agencies involved in the Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) process and the public. In addition, the plan explains the roles of and provides contact information for agencies involved in the EIR/EIS process.

The initial step in complying with the 23 U.S.C. 139 rules on coordinating with agencies is to invite all agencies with known or potential jurisdiction over land or resources within the project area to participate in the project process. Participating Agencies are federal, State, regional, or local agencies that may have an interest in the project. Cooperating Agencies are federal agencies that have jurisdiction by law or special expertise with respect to any environmental impact involved in a proposed project or project alternative. Cooperating Agencies are also Participating Agencies.

Invitation letters were sent in two rounds; On November 1, 2012, Caltrans sent letters inviting agencies to be Cooperating and/or Participating Agencies in the environmental process for the project. On January 22, 2013, Caltrans sent e-mails to those agencies that did not respond to the letters sent on November 1, 2012. A copy of the federal and State Cooperating/Participating Agency letter that was sent to the agencies is provided in Appendix G. Of all the agencies invited to be a Cooperating and/or Participating Agency, only the California Transportation Commission (CTC) declined. Table 5-1 shows the agencies involved and their role(s).

Table 5-1 List of Agencies, Roles, and Responsibilities

Agency Name	Role	Responsibilities
California Department of Transportation (Caltrans)	Lead Agency	Prepare EIR/EIS; provide opportunity for public and participating/cooperating agency involvement; provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS, including preparation of a conceptual mitigation plan.
San Bernardino County Transportation Authority (SBCTA)	Sponsor Agency; Participating Agency	Provide funds, resources, and leadership attention needed to complete EIR/EIS; provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
Federal Highway Administration (FHWA)	Approving Agency	Provide government-to-government consultation and air quality conformity determination.
Caltrans District 7	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
California Transportation Commission (CTC)	Invited, but did not respond to Participating Agency status	N/A
United States Army Corps of Engineers (USACE)	Cooperating Agency	Assist in identifying any waters of the U.S. and wetlands within the project area and provide feedback on the Section 404 and 408 processes; provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
United States Fish and Wildlife Service (USFWS)	Participating Agency	Assist in identifying federally listed species and critical habitat within the project area and provide guidance on the Section 7 processes; provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
United States Environmental Protection Agency (EPA)	Cooperating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
Native American Heritage Commission (NAHC)	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
Southern California Association of Governments (SCAG)	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
County of Los Angeles Department of Regional Planning	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.

Table 5-1 List of Agencies, Roles, and Responsibilities

Agency Name	Role	Responsibilities
Los Angeles County Metropolitan Transportation Authority (Metro)	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
California Highway Patrol (CHP)	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
Regional Water Quality Control Board (RWQCB), Region 4	Participating Agency	Provide feedback on Section 401 processes; provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
RWQCB, Region 8	Participating Agency	Provide feedback on Section 401 processes; provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
South Coast Air Quality Management District (SCAQMD)	Participating Agency	Provide feedback regarding air quality; provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
Federal Energy Regulatory Commission	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
California Public Utilities Commission (CPUC), Policy and Planning Division	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
California Department of Fish and Wildlife (CDFW)	Trustee Agency; Participating Agency	Assist in identifying State-listed species within the project area and provide feedback on the Section 1602 process; provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
California Department of Conservation, Division of Land Resource Protection	Participating Agency	Assist in identifying farmlands within the project area; provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS)	Participating Agency	Assist in identifying farmlands within the project area; provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
State Historic Preservation Officer (SHPO)	Participating Agency	Section 106 consultation and agreement for the work that would impact historic resources; provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
California Department of Parks and Recreation District 6	Trustee Agency; Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
County of San Bernardino, Land Use Services Department (Planning)	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
County of San Bernardino Department of Public Works	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
County of San Bernardino, Regional Parks	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
City of Redlands	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.

Table 5-1 List of Agencies, Roles, and Responsibilities

Agency Name	Role	Responsibilities
City of Loma Linda	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
City of Grand Terrace	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
City of San Bernardino	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
City of Colton	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
City of Rialto	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
City of Fontana	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
City of Ontario	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
City of Rancho Cucamonga	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
City of Upland	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
City of Montclair	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
City of Claremont	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
City of La Verne	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
City of Pomona	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
City of San Dimas	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
Pomona Unified School District	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
Claremont Unified School District	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
Ontario-Montclair School District	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
Upland Unified School District	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
Colton Joint Unified School District	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
Redlands Unified School District	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.
San Bernardino City Unified School District	Participating Agency	Provide comments on purpose and need, range of alternatives, and draft/final EIR/EIS.

On December 31, 2014, the "Purpose and Need" and "Range of Alternatives" were sent to the Cooperating and Participating Agencies. Comments received from the Cooperating and Participating Agencies, which are provided in Appendix G, were taken into consideration during preparation of the Draft EIR/EIS and are summarized in Table 5-2 below.

Table 5-2 Summary of Comments Received from Cooperating and Participating Agencies

Agency	Summary of Input/Issues
EPA (Region IX)	Agreed to be both a Cooperating Agency and a Participating Agency; provided scoping comments regarding purpose and need, range of alternatives, impacts of increased vehicle travel, integration with existing transportation facilities, phasing, air quality impacts, community health, Executive Order 12898, waters of the U.S., biological resources, cumulative impact analysis, growth-related impacts, and tribal coordination.
California Transportation Commission	Declined role as a Participating Agency; the Commission requested notification for Responsible Agency (CEQA) role if, in future, funds or other actions under their purview are required.
NAHC	Recommended early consultation with tribes, described confidentiality requirements, and discussed legal requirements for inadvertent discoveries of human remains; provided a list of Native American contacts within the affected counties.
SCAG	Commented on the regional significance of the project.
Metro	Commented on the regional significance of the project; advised that Metro does not have this project or associated funding in their Long Range Transportation Plan.
CHP	Affected region is patrolled by personnel from the Baldwin Park CHP office; CHP has jurisdictional authority related to traffic safety and enforcement.
Santa Ana RWQCB	Concurred that a 401 Certification will be required and noted, all impacts to Waters of the U.S. will occur in their region.
CPUC, Policy and Planning Division	Noted CPUC's jurisdiction over safety of highway rail crossings; modifications to existing grade-separated crossings require authorization from CPUC; recommended a meeting with CPUC staff and affected railroads.
San Bernardino County, Department of Parks and Recreation	Discussed potential temporary and permanent impacts to the Santa Ana River Trail, a Class I Bikeway; requested plans be submitted for review of safety and operational criteria.
Metropolitan Water District of Southern California	Discussed specific concerns about crossing the District's upper feeder pipeline at three locations, service connections, and ROW potentially affected by the proposed project.
California Department of Conservation, Division of Land Resource Protection	Noted per the Land Conservation Act of 1965 statute that public agencies must notify the Director of the Department before making a decision to acquire property located in an agricultural preserve.
Colton Joint Unified School District	Concerned about the financial impact that construction activities along I-10 would have on their transportation department.
EPA (Region IX)	Provided comments regarding purpose and need, range of alternatives, independent utility, integration with existing transportation facilities, and coordination plan.

Table 5-2 Summary of Comments Received from Cooperating and Participating Agencies

Agency	Summary of Input/Issues
City of Ontario	Provided comments on the purpose of the project, project description/range of alternatives, coordination plan, and other traffic-related comments regarding local streets, I-10/Grove Avenue Interchange Project, and Euclid Avenue.
USFWS	Provided comments on MAP-21; proposed interchange, structure, and drainage improvements under Alternative 2 and Alternative 3; and ingress/egress access points.

5.1.2 Consultation and Coordination with Public Agencies

This section describes consultation and coordination with public agencies, including some of the Cooperating and Participating Agencies described above. Meetings held to discuss specific environmental resources are described below.

5.1.2.1 Biological Resources Coordination and Meetings

The United States Fish and Wildlife Service (USFWS) was consulted regarding plant and animal species, and threatened and endangered species. A list of species was supplied by USFWS and is provided in Appendix M1.

The following meetings were held with the resource agencies noted in regard to biological resources in the project study area:

- January 14, 2009
  - Caltrans and consultant staff met Eric Porter of USFWS onsite to discuss preliminary results of the Delhi sands flower-loving fly (DSF) habitat assessment. Analysis of the habitat quality and potential project effects were revised consistent with discussions at the field meeting.

- September 12, 2014
  - A meeting was conducted onsite with Veronica Chan of the U.S. Army Corps of Engineers (USACE) to discuss the results of the jurisdictional delineation. Representatives from SBCTA were present, as well as representatives from Parsons and ECORP. As a result of this meeting, it was concluded that impacts to concrete channels that were to remain concrete would be considered temporary impacts, assuming hydrologic connectivity is maintained.

5.1.2.2 Section 4(f) Consultations

Impacts to parks and parkland are discussed in detail in Section 3.1.3, Parks and Recreational Facilities. Caltrans and SBCTA will engage in regular consultation with the agencies with jurisdiction over the following Section 4(f) properties that may be temporarily or permanently used as a result of the build alternatives. Table 5-3 lists the Section 4(f) properties that may be affected.

Table 5-3 Potentially Affected Section 4(f) Properties

Section 4(f) Resource	Property Owner	Coordination Efforts
Edison Elementary School	Ontario-Montclair School District (OMSD)	Caltrans sent a letter to OMSD on November 3, 2014, which described the proposed project, provided project design near Edison Elementary School, identified potential impacts, and proposed avoidance, minimization, and mitigation measures. Meetings and further correspondence between Caltrans and OMSD will continue to occur throughout development of the Draft EIR/EIS. SBCTA met with OMSD at Edison Elementary School on March 12, 2015, to discuss proposed project, Section 4(f) impacts, and *de minimis* findings After circulation of the DED and comments received from OMSD, impacts to this property have been avoided.
MacArthur Park – Ontario	City of Montclair	Caltrans sent a letter to the City of Montclair on January 12, 2014, which described the proposed project, provided project design near MacArthur Park, identified potential impacts, and proposed avoidance, minimization, and mitigation measures. Meetings and further correspondence between Caltrans and the City of Montclair will continue to occur throughout development of the Draft EIR/EIS. SBCTA met with City of Montclair on March 12, 2015, to discuss proposed project, Section 4(f) impacts, and *de minimis* findings. On November 28,2016, the City of Montclair provided concurrence with Caltrans' determination that the proposed project would result in *de minimis* impacts to MacArthur Park under Section 4(f).
Orange Blossom Trail (OBT)	City of Redlands	In May 2014, the project manager for the OBT project from the City of Redlands Municipal Utilities and Engineering Department, Ross Whitman, was contacted to discuss the current and future status of the OBT near I-10. During the conversation, Mr. Whitman provided current plans for the planned trail segments, an anticipated timeline, and a primary City contact to coordinate detours and potential trail-related mitigation measures. In addition, Caltrans sent a letter to the City of Redlands on November 3, 2014, which described the proposed project, provided project design near the OBT, identified potential impacts, and proposed avoidance, minimization, and mitigation measures. On November 7, 2016, Redlands provided concurrence with Caltrans' determination that the proposed project would result in *de minimis* impacts to the OBT under Section 4(f).

Table 5-3 Potentially Affected Section 4(f) Properties

Section 4(f) Resource	Property Owner	Coordination Efforts
Santa Ana River Trail (SART)	San Bernardino County Regional Parks	During the scoping period for the proposed project in November 2012, the San Bernardino County Regional Parks Department provided comments regarding their concerns that the proposed project might result in temporary and permanent impacts to the SART. In their letter, the County requested that plans be submitted for review. Additionally, the County requested that trail closures be kept to a minimum and restricted to weekday periods when trail traffic is typically light. Since the scoping period, Caltrans has contacted the County to consult on potential project impacts at the SART and address their concerns identified during the scoping period. Caltrans sent a letter to the County on November 3, 2014, which described the proposed project, provided project design near the SART, identified potential impacts, and proposed avoidance, minimization, and mitigation measures. On November 1, 2016, the County provided concurrence that the proposed project would not adversely affect the SART on the condition that the agreed upon minimization measures are implemented.
Euclid Avenue/ SR-83	City of Ontario and Upland	Since the scoping period, Caltrans has contacted the Cities of Ontario and Upland to consult on project impacts to Euclid Avenue/SR-83. Focus meetings with the City of Ontario and Upland occurred on April 17, 2014 and May 6, 2014, respectively. Additional correspondence occurred on June 11, June 17, and July 29, 2014. Caltrans sent a letter to the cities of Ontario and Upland on March 30, 2017 which described the proposed project, provided project design at Euclid Avenue/SR-83, identified uses, and proposed avoidance, minimization, and mitigation measures. On March 31, 2017 and April 3, 2017, respectively, the cities of Ontario and Upland provided concurrences that the proposed project would not adversely affect Euclid Avenue/SR-83 on the condition that the agreed upon minimization measures are implemented.

5.1.2.3 Coordination with Project Development Team

The Interstate 10 Corridor Project (I-10 CP) has gathered representatives from Caltrans, SBCTA, and community stakeholders to create the PDT. The PDT is an interdisciplinary group composed of members with experience in the various resources analyzed in the EIR/EIS and responsible for developing the project, addressing issues on behalf of the community, and identifying a preferred alternative.

There have been 70 PDT meetings to date for the project. The PDT meetings have developed a project outline; established critical deadlines; addressed issues related to the project such as traffic studies, environmental studies, and preliminary engineering; and provided effective coordination amongst stakeholders.

5.1.3 Notice of Preparation

The Notice of Preparation (NOP) for the project under the California Environmental Quality Act (CEQA) was distributed on October 30, 2012, to Federal, Tribal, State, regional, county, and local agencies; elected officials; special districts; groups; businesses, major property owners, and organizations; and property owners within 0.25 mile of the project.

The State Clearinghouse (SCH) distributed the NOP to Reviewing Agencies on October 30, 2012. The NOP and SCH letter are provided, respectively, in Appendix G.

Notice of Scoping/Initiation of Studies letters were sent on October 30, 2012, to elected and City officials, agencies, and other interested parties. These letters included a project location map and information on the proposed project. Written comments that were received in response to the NOP are provided in Appendix G.

5.1.4 Notice of Intent

The Notice of Intent (NOI) was prepared by Caltrans and was published on November 5, 2012, in the *Federal Register,* Volume 77, No. 214, under the National Environmental Policy Act (NEPA).

No written comment letters were received in response to the NOI. The NOI is provided in Appendix G.

5.1.5 Stakeholder Interviews

To enhance outreach efforts, SBCTA identified business owners and community leaders who could provide initial feedback on the I-10 corridor proposed alternatives. The key stakeholders were chosen at random and included representatives from the following backgrounds:

- Elected officials (including SBCTA Board Members)
- Businesses
- Community-based organizations
- Constituents
- Educational institutions
- First responders
- Freight shippers/service providers
- Key city/county/agency personnel
- Local committees (e.g., transportation, environmental)
- Medical facilities
- Private providers of transportation
- Public attractions
- Shopping centers
- Utility service providers

The key stakeholders were interviewed to provide SBCTA with public opinions, philosophies, and attitudes toward the project, along with input on lane configuration and specific corridor improvements. Seventy-four (74) participants were identified and sent invitation letters to participate in the interview processes. Fifty-two (52) participants accepted the invitation and were interviewed from May through August 2012. Table 5-4 shows a complete list of the 52 participants that were interviewed.

Table 5-4 List of Participants Interviewed

Organization	Representative
SBCTA Board Members	
County of San Bernardino	Janice Rutherford, Supervisor 2nd District, President of SBCTA
City of Hesperia	Mike Leonard, Council Member, Vice President of SBCTA
City of Adelanto	Cari Thomas, Mayor
Town of Apple Valley	Rick Roelle, Council Member
City of Barstow	Julie Hackbarth-McIntyre, Mayor Pro Tem
City of Big Bear Lake	Bill Jahn, Mayor
City of Chino	Dennis Yates, Mayor
City of Chino Hills	Ed Graham, Council Member
City of Colton	Sarah Zamora, Mayor
City of Fontana	Michael Tahan, Council Member
City of Highland	Larry McCallon, Mayor
City of Ontario	Alan Wapner, Council Member
City of Rancho Cucamonga	L. Dennis Michael, Mayor
City of Redlands	Pete Aguilar, Mayor
City of Rialto	Ed Scott, Mayor Pro Tem
City of San Bernardino	Patrick J. Morris, Mayor
City of Upland	Ray Musser, Mayor
City of Victorville	Ryan McEachron, Mayor
City of Yucaipa	Richard "Dick" Riddell, Mayor
Town of Yucca Valley	George Huntington, Council Member
County of San Bernardino	Garry Ovitt, Supervisor 4th District
County of San Bernardino	Brad Mitzelfelt, Supervisor 1st District
County of San Bernardino	Neil Derry, Supervisor 3rd District
Elected Officials (Non-SBCTA Board Members)	
California State Senate, 32nd District	Gloria Negrete McLeod, Senator
California State Assembly, 36th District	Steve Knight, Assemblyman

Table 5-4 List of Participants Interviewed

Organization	Representative
Town of Apple Valley	Barb Stanton, Mayor
Operational Participants and Government Officials	
CHP, Inland Empire	William G. Siegl, Assistant Chief
Caltrans	Basem Muallem, District 8 Director
City of Hesperia	Mike Podegracz, City Manager
County of San Bernardino	Greg Devereaux, CEO
Omnitrans	Milo Victoria, CEO
San Bernardino County Sheriff's Department	John McMahon, Deputy Sheriff
San Bernardino County Fire Department	Dan Odom, Deputy Chief
Community Groups and Special Interest Groups	
Building Industry Association (BIA) – Baldy View Chapter of the Inland Empire	Carlos Rodriguez, CEO
High Desert Hispanic Chamber of Commerce	Eric Camerena, Vice Chairman/Treasurer
Inland Action, Inc.	Carole Beswick, CEO
San Manuel Band of Mission Indians	Bryan Benso, Real Estate Development, Division Manager, Dept. of Planning and Development
Victor Valley Association of Realtors	Diane Smith, Executive Officer
Business Community and Regional Attractors	
Arrowhead Regional Medical Center	Jorge Valencia, Director of Business Development and Marketing
California State University San Bernardino	Larry Sharp, VP Advancement
DesertXpress	Andrew Mack, Chief Operating Officer
Lewis Operating Corp.	Randall Lewis, Executive Vice President
Loma Linda University	Kenneth Bryer, Assistant Vice President
Ontario International Airport	Jess Romo, General Manager
San Bernardino Area Chamber of Commerce	Judi Penman, President, CEO
Southern California Logistics Airport	Dougall Agan, President, CEO
Stater Bros.	Jim Lee, President
The Bradco Companies	Joseph W. Brady, President
Union Pacific Railroad (UPRR)	Lupe Valdez, Director of Public Affairs
UPS, Central California District	Noel Massie, President
Victorville Chamber of Commerce	Robert Lovingood, Chairman of the Board
Victoria Gardens Mall	Christine Pham, General Manager

5.1.6 Scoping Meetings

SBCTA and Caltrans hosted two public scoping meeting for the proposed project. The meetings were hosted in the cities of San Bernardino and Ontario on November 13 and 15, 2012, from 5:00 to 7:00 p.m., respectively. In addition, an agency scoping meeting was held in Ontario from 3:00 to 5:00 p.m. before the second public scoping meeting. Project aerial maps and display boards that showed the build alternatives were provided. Environmental process display boards were also provided, as were tables for scoping meeting participants to use for writing summary comment cards. The aerial maps and display boards were described by SBCTA, Caltrans, and consultant staff.

The combined public and agency scoping meetings had 60 community members and community-based organization members, 25 representatives from agencies, 17 representatives from firms, 15 representatives from Caltrans' PDT, 3 media representatives, and 2 elected officials. Public comments and feedback were received in many forms and were compiled and recorded at the end of the scoping period, which was November 26, 2012. In total, 67 comments were received. See Appendix G for a copy of the NOP and Table 5-5 for more detail on the scoping meetings.

Table 5-5 Number and Affiliation of Participants at Scoping Meetings

Affiliation	Scoping Meeting #1 San Bernardino, CA November 13, 2012	Agency Scoping Meeting Ontario, CA November 15, 2012	Scoping Meeting #2 Ontario, CA November 15, 2012	Total	
				Number	Percent
Community/ Community-Based Organization	23	-	37	60	49
Public Agency	2	13	10	25	20
Private Firm	11	-	6	17	14
Project Development Team/ Caltrans	9	3	3	15	12
Media	2	-	1	3	3
Elected Official/Staff	2	-	-	2	2
TOTAL	49	16	57	122	100

A *Scoping Summary Report* (January 2013) was prepared for the proposed project. The purpose of the scoping process under CEQA is to examine a proposed project early in the environmental analysis/review process to identify the range of issues pertinent to the proposed project and feasible alternatives or mitigation measures to avoid the potentially significant adverse environmental effects of those alternatives. The scoping process stresses early consultation with resource agencies, other State and local agencies, Tribal governments, and any federal agency whose approval or funding of the proposed project would be required for completion of the project, as well as interested members of the general public.

Under NEPA, the lead agency is required to conduct an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action (Section 1501. 7, 40 *Code of Federal Regulations* [CFR]). The scoping process is used to identify the range of alternatives to be addressed in the environmental document.

The *Scoping Summary Report* for the proposed project documented the following scoping process:

- Distribution of the NOP and NOI
- Summary of the comments received in response to the NOP and NOI
- Initiation of Studies letters
- Cooperating and Participating Agency letters
- Scoping meeting

The following section describes, in detail, the activities completed for the public information meetings and summarizes the comments received during this period.

5.1.6.1 November 13, 2012, Public Scoping Meeting

A public scoping meeting held on November 13, 2012, at the Hilton San Bernardino, which is located immediately adjacent to I-10 in San Bernardino, was Americans with Disabilities Act (ADA) accessible and had 49 people in attendance. Interpreters were also available at the meeting. Advertisements for that meeting included:

- Postcard invitations mailed to 25,332 addresses within 0.25 mile of the project corridor on October 30, 2012, including residential and commercial occupants.

- Ten newspaper notices were published for the project. Seven notices were published in English language newspapers, as follows:
  - *Inland Valley Daily Bulletin* (November 1-4, 2012)
  - *Press-Enterprise* (November 1-4, 2012)
  - *Redlands Daily Facts* (November 1-4, 2012)
  - *The Los Angeles Times* (November 4, 2012)
  - *The Hesperia Resorter* (November 1 and 8, 2012)
  - *The Sun* (November 2, 4-5, 2012)
  - *Yucaipa News Mirror* (November 2, 2012).
- Three notices were published in Spanish language newspapers, as follows:
  - *La Opinión* (November 1-4, 2012)
  - *El Clasificado* (October 31, 2012)
  - *La Prensa* (November 2, 2012). *La Prensa* is a Spanish newspaper that is affiliated with Press-Enterprise and is published weekly.
- Project Hotline was created for the I-10 CP to provide information to stakeholders and interested parties. The Project Hotline provides information about the project in English and Spanish and allows callers to leave a message.
- Social media accounts were created to provide information to stakeholders and interested parties. The social media accounts include Facebook (https://www.facebook.com/1015Projects) and Twitter (https://twitter.com/SANBAGnews).

5.1.6.2 November 15, 2012, Public Scoping Meeting

The second public scoping meeting held on November 15, 2012, at the Sheraton Ontario Airport Hotel, which is located immediately adjacent to I-10 in Ontario, was ADA accessible and had 57 people in attendance. Interpreters were also available at the meeting. Advertisements for that meeting included:

- Postcard invitations mailed to 25,332 addresses within 0.25 mile of the project corridor on October 30, 2012, including residential and commercial occupants.
- Ten newspaper notices were published for the project. Seven notices were published in English language newspapers, as follows:
  - *Inland Valley Daily Bulletin* (November 1-4, 2012)
  - *Press-Enterprise* (November 1-4, 2012)
  - *Redlands Daily Facts* (November 1-4, 2012)
  - *The Los Angeles Times* (November 4, 2012)
  - *The Hesperia Resorter* (November 1 and 8, 2012)

  - *The Sun* (November 2, 4-5, 2012)
  - *Yucaipa News Mirror* (November 2, 2012).
- Three notices were published in Spanish language newspapers, as follows:
  - *La Opinión* (November 1-4, 2012)
  - *El Clasificado* (October 31, 2012)
  - *La Prensa* (November 2, 2012). *La Prensa* is a Spanish newspaper that is affiliated with Press-Enterprise and is published weekly.
- Project Hotline was created for the I-10 CP to provide information to stakeholders and interested parties. The Project Hotline provides information in English and Spanish.
- Social media accounts were created to provide information to stakeholders and interested parties. The social media accounts include Facebook (https://www.facebook.com/1015Projects) and Twitter (https://twitter.com/SANBAGnews).

5.1.6.3 Public Scoping Comment Period Summary

The following list summarizes the most common issues that members of the public identified during the scoping period:

- Request for more information once available (9 comments)
- ROW acquisitions, specifically concern over how many homes, if any, would be acquired, and where those homes would be located (8 comments)
- Questions about noise impacts and soundwalls (7 comments)
- Opposition to the project in general (6 comments)
- Explicitly expressed support for the Express Lanes Alternative (4 comments)
- Support for the project (3 comments)
- Opposition to the tolling concept on the freeways, general feedback about tolling, or questions about how tolling would be monitored (3 comments)
- Suggestions or questions about alternatives and possible design modifications (4 comments)
- Suggestions about mass transit options (1 comment)
- Miscellaneous suggestions (7 comments)

5.1.7 Community Advisory Groups

Due to the extensive distance covered by the I-10 CP, two CAGs were formed to optimize community involvement throughout the affected region. CAGs include West Valley CAG and East Valley CAG; Figure 5-1 illustrates these geographical segments that are covered by the CAGs.

These CAGs were formed by SBCTA in recognition that the ultimate success of the project will likely be determined by responses, viewpoints, and degrees of influence at the grass roots levels (i.e., communities, industries, academia, and special interest groups of all sizes). With the formation of CAGs, representative local community leaders have provided and generated first-hand feedback regarding the consideration of high-occupancy vehicle (HOV) lanes, Express Lanes, and other possible alternatives along these corridors.

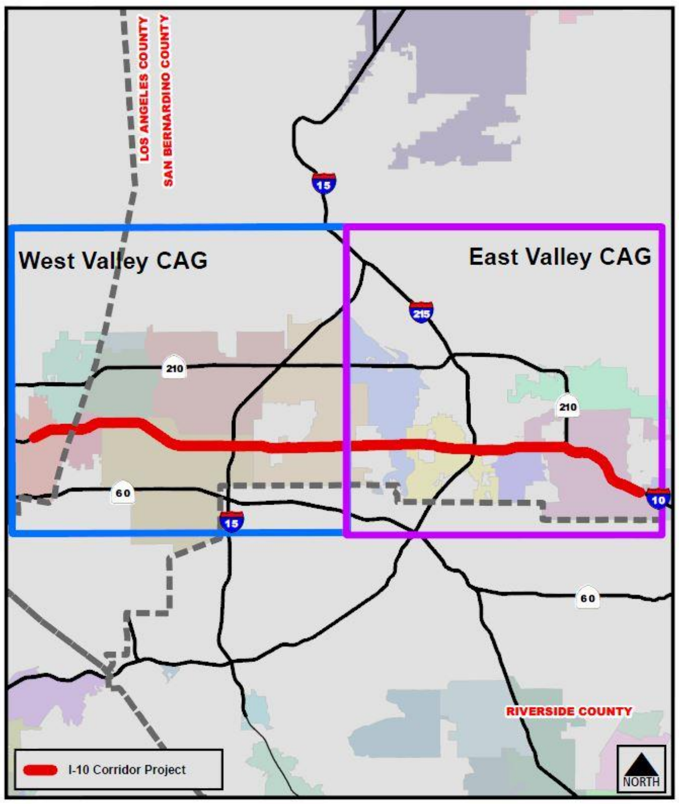


Figure 5-1 Community Advisory Group Coverage Areas

Prospective CAG members were first identified through the use of the stakeholder database, as well as recommendations from SBCTA Board Members, city officials, and other key stakeholders. All prospective CAG members were required to submit an application for consideration. Due to the limited size of CAGs and the need for a mix of participants that reflect the makeup of the community, not all of those applying were selected to participate. Applicants were primarily evaluated on their access to a diversity of stakeholder groups. Most of the applicants were selected, with only a few being turned down due to duplicative representation from the same affiliated groups; however, those that were not selected have been kept on file should an opportunity become available.

There are 65 CAG members, providing representation from residential and homeowner associations, neighborhood councils, faith-based organizations, business community, labor community, environmental community, and economic development groups in the project corridor. Table 5-6 provides a full listing of the current members.

Table 5-6 List of CAG Members

CAG Members	Affiliation
East Valley CAG	
John Abma	Loma Linda Chamber of Commerce, On Target Auto and RV Service
Mark Adelson	Cal EPA, State Water Resources Control Board
Hamid H. Azhand	California State University, San Bernardino (CSUSB)
Robert Baker	Hill International Contracts (Business)
Carole Beswick	Inland Action, Inc.
Susan Cargill	Individualist
Randall Ceniceros	CJUSD, Board of Education
Carl Dameron	Dameron Communications (Business)
Nick DePasquale	Fairview Ford Sales, Inc. (Business)
Pamela Emenger	Yucaipa Valley Chamber of Commerce
Gary Grossich	Nickelodeon Pizza (Business)
Richard Haller	Santa Ana Watershed Project Authority
Dr. Dan Harris	American Association of Retired Persons (AARP)
Gloria Macias Harrison	San Bernardino Community College District
Val Henry	Devore Rural Protection Association (DRPA)
Gloria Macias Harrison	San Bernardino Community College District (SBCCD)
John Longville	League of Women Voters; San Bernardino Valley Conservation District; SBCCD (Trustee)
John MacMillan	Fontana Police Department
Edward Martinez	Martinez Marketing & Management (Business)
Gail M. McCarthy	Arts Council of Big Bear Valley
Jeffrey McConnell	Lions Club, Grand Terrace
Judi Penman	San Bernardino Area Chamber of Commerce
Richard Prieto	City of Colton - Planning Commission
Concepcion M. Powell	US-Hispanic Women Grocers Association
Cynthia L. Ramirez	City of Colton - Planning Commission
Rebecca Ramon	Media/Social Media – Self-Employed
Eloise Gomez Reyes	Law Offices of Eloise Gomez Reyes (Business)
Frank Reyes	Arrowhead Regional Medical Center (ARMC) Foundation
Christine Roque	Redlands Good Neighbor Coalition

Table 5-6 List of CAG Members

CAG Members	Affiliation
Larry R. Sharp	Retired – CSUSB
William Siegl	CHP
Maureen A. Snelgrove	San Bernardino County, Parks Department
Espartigo (Randy) Sosa	Inland Empire Scholarship Fund
Mark Stanson	Redlands Public Works Commission
Colin Strange	San Bernardino Area Chamber of Commerce - Economic Development and Business Resources
Jeffrey Veik	CAL FIRE, Mountain Division
West Valley CAG	
Dr. Kenneth S. Alpern	The Transit Coalition
Michael P. Biagi	California Polytechnic, Pomona
David Buxbaum	Buxbaum & Chakmak (Business)
Tressey Capps	Self-Employed
Jeff Caldwell	ATU Local 1704
Lina Chu	Asian Real Estate Association of America (AREAA)
Phillip Cothran	Cothran Insurance Agency Inc. (Business)
Lynda Gonzalez	M.A.S. Auto & Truck Electric Corp. (Business)
Dennis Gutierrez	Inland Empire Hispanic Leadership Council
John Husing	Economics and Politics, Inc.
John Heimann	BIA
Michael (Mike) James	Ceramic Tile Contractor (Business)
Beth Kranda	Valley Transportation Services (VTrans)
Michael Krouse	Ontario Convention Center and Visitors Bureau
Toni Levyssohn	Community Senior Services
Jonnie Long	Retired, Inland Empire resident for 65 years (Business)
Roy Mabry	Association of Black Correctional Workers (ABCW)
Danny Marquez	San Bernardino County Veterans Advisory Board / Veterans Partnering with Communities
Tony Martinez	Instructor – University of California, Riverside
Loree Masonis	Home Healthcare Worker
Penny Newman	Center for Community Action and Environmental Justice (CCAEJ)
Christine C. Pham	Victoria Gardens
Linda Sargent	ThorneSarge Consulting (Business)
Faiz Shah	Islamic Center
Marie E. Shahani	Fontana Community Senior Center
Matthew Slowik	Retired - Land Use Services Department, San Bernardino County

Table 5-6 List of CAG Members

CAG Members	Affiliation
Dr. D. C. Nosakhere Thomas	Rainbow Community Praise Center
Luis Vaquera	Fontana Unified School District
William Waddingham	Rotolo Chevrolet (Business)

These CAGs have enabled consistent high-quality interaction and feedback from representative voices for both corridors. It is important to note that not all CAG members reside in adjacent communities along the I-10 corridor because it is important to generate regionwide involvement from stakeholders representing interests that are far reaching beyond the subject corridors, including the surrounding counties. All feedback received from the CAG members has been documented and posted on the Web site (http://www.1015projects.com/) in the form of CAG meeting minutes.

5.1.7.1 General Responses from CAG

The CAGs meet approximately 3 or 4 times a year. To date, there have been 20 CAG meetings for the project. Table 5-7 displays the date, location, and topic for each meeting.

Table 5-7 Date, Location, and Topics of CAG Meetings

<table>
<tr><th>CAG Meeting</th><th>Date</th><th>Location</th><th>Topics</th></tr>
<tr><td>West Valley
CAG Meeting #1</td><td>2/21/2013</td><td>Anthony Munoz Community Center, Ontario</td><td rowspan="2">• Grassroots canvassing
• CAG roles and responsibilities, protocols, objectives
• CAG Meeting schedule
• Overview of I-10 and I-15 projects
• Introduction to managed lanes
• Overview of environmental process
• SBCTA’s outreach program for corridor projects
• Questions and answers/general team discussion
• Introduction
• Identification of community groups for grassroots
• Introduction to Express Lane concept</td></tr>
<tr><td>East Valley
CAG Meeting #1</td><td>2/19/2013</td><td>Gonzales Community Center, Colton</td></tr>
<tr><td>West Valley
CAG Meeting #2</td><td>5/16/2013</td><td>Ontario Convention Center, Ontario</td><td>• CAG member reports
• Update on outreach activities</td></tr>
</table>

Table 5-7 Date, Location, and Topics of CAG Meetings

CAG Meeting	Date	Location	Topics
East Valley CAG Meeting #2	5/14/2013	Gonzales Community Center, Colton	• SBCTA Board updates • Demystifying Express Lanes • Overview of I-10 and I-15 corridor geometrics • Traffic and revenue study and financial analysis overview • Overview of environmental activities
West Valley CAG Meeting #3	9/9/2013	Victoria Gardens Main Offices, Rancho Cucamonga	• CAG member reports • Guest Speaker Stephanie Wiggins, EO and Project Director of LA County Congestion Reduction Program for LA Metro – presentation on Metro Express Lanes • SBCTA Board updates • Traffic and revenue study and financial analysis update • Revised I-10 and I-15 corridor Express Lanes alternatives • Public outreach update
East Valley CAG Meeting #3	9/10/2013	Gonzales Community Center, Colton	
West Valley CAG Meeting #4	10/17/2013	Victoria Gardens Main Offices, Rancho Cucamonga	• CAG Member reports • SBCTA Board updates • I-10 and I-15 project design updates • Public outreach update • Equity Study • Traffic and Revenue Study results • Financial Analysis results • Project summary update
East Valley CAG Meeting #4	10/15/2013	Gonzales Community Center, Colton	
West Valley CAG Meeting #5	11/21/2013	Etiwanda Gardens, Rancho Cucamonga	• CAG Member reports • Summary on feedback on Equity Study • Breakout sessions – discuss and capture feedback regarding project elements presented to date • Breakout groups reconvene • Next steps • SBCTA Board updates • I-10 and I-15 project design updates • Public outreach update • Equity Study • Traffic and Revenue Study results • Financial Analysis results • Project summary update
East Valley CAG Meeting #5	11/19/2013	Gonzales Community Center, Colton	
West Valley CAG Meeting #6	3/20/2014	Victoria Gardens Main Offices, Rancho Cucamonga	• Summary of 12/4/13 SBCTA Board meeting • Express Lanes review and upcoming SBCTA Board actions

Table 5-7 Date, Location, and Topics of CAG Meetings

<table>
<tr><th>CAG Meeting</th><th>Date</th><th>Location</th><th>Topics</th></tr>
<tr><td>East Valley CAG Meeting #6</td><td>3/18/2014</td><td>Gonzales Community Center, Colton</td><td>• I-10 and I-15 project design updates
• CAG activities 2014 and beyond
• Questions and answers
• SBCTA Program – 10-Year Delivery Plan</td></tr>
<tr><td>West Valley CAG Meeting #7</td><td>11/13/2014</td><td>Goldy S. Lewis Community Center, Rancho Cucamonga</td><td rowspan="2">• Updated CAG charge
• Public participation and education
• Roles, responsibilities, and composition
• I-10 and I-15 project design updates
• CAG discussion: questions and comments
• Express Lanes policy overview</td></tr>
<tr><td>East Valley CAG Meeting #7</td><td>11/20/2014</td><td>Gonzales Community Center, Colton</td></tr>
<tr><td>West Valley CAG Meeting #8</td><td>3/19/2015</td><td>Goldy S. Lewis Community Center, Rancho Cucamonga</td><td>• Educational materials review and input (branding and logos, brochure draft, website draft)
• Recommendations of new CAG members</td></tr>
<tr><td>East Valley CAG Meeting #8</td><td>3/18/2015</td><td>Gonzales Community Center, Colton</td><td>• Educational materials review and input (branding and logos, brochure draft, website draft)
• Recommendations of new CAG members</td></tr>
<tr><td>West Valley CAG Meeting #9</td><td>6/15/2015</td><td>Goldy S. Lewis Community Center, Rancho Cucamonga</td><td>• Project updates
• CAG outreach updates
• Recommitment of CAG membership
• Educational materials
• Increasing outreach</td></tr>
<tr><td>East Valley CAG Meeting #9</td><td>6/16/15</td><td>Rialto Senior Center, Rialto</td><td>• Project updates
• CAG outreach updates
• Recommitment of CAG membership
• Educational materials
• Increasing outreach</td></tr>
<tr><td>West Valley CAG Meeting #10</td><td>9/15/15</td><td>Goldy S. Lewis Community Center, Rancho Cucamonga</td><td>• Project updates
• CAG charge for November Milestone
• Summary of technical studies
• CAG input on alternatives</td></tr>
<tr><td>East Valley CAG Meeting #10</td><td>9/14/15</td><td>Rialto Senior Center, Rialto</td><td>• Project updates
• CAG charge for November Milestone
• Summary of technical studies
• CAG input on alternatives</td></tr>
</table>

5.1.8 Briefings

Numerous briefings have been conducted with key stakeholders, including local governments (elected officials and City staff), boards, committees, community-based groups, and other entities. Audience sizes ranged from 10 to 100 people; however, on average the briefings were held in front of approximately 30 people, with some of the briefings to city councils televised on public access channels. The briefings were executed as an opportunity-based approach to grassroots outreach to target stakeholder groups. The briefings provided SBCTA an opportunity to educate organized stakeholder groups on the I-10 CP. The objective of the briefings was to foster awareness of the project generate public input, and encourage the stakeholder groups to distribute project information and future public involvement opportunities to their constituencies.

As part of the stakeholder interviews that were conducted from May to August 2012, some of the SBCTA Board Members requested that SBCTA staff and its consultants participate at their respective city council meetings and/or other community forums to present status updates on the I-10 CP, particularly on the Express Lanes concept that is being explored for both projects. This request was addressed by offering briefings at local community meetings held by SBCTA Board Members and other local elected officials. Additional opportunities were through CAG members' affiliated groups and other target community groups (e.g., chambers of commerce, rotary clubs, Kiwanis clubs, neighborhood committees, educational facilities).

Table 5-8 provides a full listing of all briefings that were conducted by SBCTA.

Table 5-8 List of Briefings Conducted for the I-10 Corridor Project

Organization	Date	Location
Rotary Club of Fontana	January 28, 2013	Fontana, CA
SBCTA: Technical Advisory Committee	February 4, 2013	SBCTA
Rialto Transportation Commission	February 6, 2013	Rialto, CA
SBCTA: City/County Manager's Technical Advisory Committee (CCM TAC)	February 7, 2013	San Bernardino, CA (SBCTA office)
Oak Hills Property Owners Association Public Board Meeting	February 7, 2013	Oak Hills, CA
Inland Empire Chamber Legislative Alliance (IE-CLA) (Member chambers: Upland, Montclair, Highland, Ontario, Chino Valley)	February 11, 2013	Montclair, CA
Hispanic Chamber of Commerce	February 12, 2013	San Bernardino, CA
Inland Action	February 19, 2013	San Bernardino, CA
City of Montclair Council Meeting	February 19, 2013	Montclair, CA
Grand Terrace Lions Club	February 20, 2013	Grand Terrace, CA
YMCA - Silver Sneakers Pot Luck	February 22, 2013	San Bernardino, CA
SBCTA's All Staff Meeting	March 5, 2013	SBCTA
Bloomington Municipal Advisory Councils (MAC)	March 5, 2013	Bloomington, CA
East Rialto Kiwanis	March 6, 2013	Rialto, CA

Table 5-8 List of Briefings Conducted for the I-10 Corridor Project

Organization	Date	Location
City of Yucaipa Council Meeting	March 11, 2013	Yucaipa, CA
City of Upland Council Meeting	March 11, 2013	Upland, CA
Highland Chamber of Commerce, Quarterly Breakfast	March 12, 2013	Highland, CA
Meadow Brook Neighborhood Association	March 12, 2013	San Bernardino, CA
City of Rialto Council Meeting	March 12, 2013	Rialto, CA
City of Loma Linda Council Meeting	March 12, 2013	Loma Linda, CA
American Legion / Ladies Auxiliary Club / SAL – Meetings are three-in-one	March 14, 2013	Rialto, CA
Caltrans Management	March 18, 2013	San Bernardino, CA
City of San Bernardino, Council Meeting	March 18, 2013	San Bernardino, CA
Rialto Rotary Club	March 19, 2013	Rialto, CA
City of Colton, Council Meeting	March 19, 2013	Colton, CA
Terrace West Neighborhood Association	March 27, 2013	San Bernardino, CA
Rialto Chamber of Commerce	March 28, 2013	Rialto, CA
Ontario Hispanic Chamber of Commerce	March 28, 2013	Ontario, CA
City of Redlands, Council Meeting	April 2, 2013	Redlands, CA
City of Hesperia, Council Meeting	April 2, 2013	Hesperia, CA
Upland Rotary Club	April 3, 2013	Upland, CA
City of Ontario Council Transportation Workshop	April 5, 2013	Ontario, CA
San Bernardino Neighborhood Association Presidents Club	April 6, 2013	San Bernardino, CA
City of Fontana Council Meeting	April 9, 2013	Fontana, CA
Montclair Chamber of Commerce: Spotlight Breakfast	April 11, 2013	Montclair, CA
Rotary Club of Redlands	April 11, 2013	Redlands, CA
Kiwanis Club, San Bernardino	April 16, 2013	San Bernardino, CA
City of Rancho Cucamonga Council Meeting	April 17, 2013	Rancho Cucamonga, CA
Inland Empire Hispanic Leadership Council	April 18, 2013	Ontario, CA
Fontana Historical Society – Quarterly Meeting	April 27, 2013	Fontana, CA
Citizens for Colton First	May 4, 2013	Colton, CA
Ontario Cinco de Mayo Festival	May 5, 2013	Ontario, CA
YMCA-Redlands (Seniors Meeting/Potluck)	May 10, 2013	Redlands, CA
San Bernardino County Farm Bureau	May 14, 2013	Rialto, CA
Community Action Partnership of San Bernardino County (CAPSBC) Board	May 21, 2013	San Bernardino, CA
CSUSB Transportation Planning & Policy	May 21, 2013	San Bernardino, CA
Arrowhead Regional Medical Center	June 17, 2013	Colton, CA

Table 5-8 List of Briefings Conducted for the I-10 Corridor Project

Organization	Date	Location
Kiwanis Club of Redlands	June 25, 2013	Redlands, CA
East Valley Association of REALTORS® - General Membership Meeting	July 10, 2013	Redlands, CA
Victor Valley Association of REALTORS®	March 26, 2014	Hesperia, CA
Transportation Technical Advisory Committee	September 8, 2014	San Bernardino, CA (SBCTA office)
Freeway Forum	September 17, 2014	Ontario, CA
SCAG Regional Coordination Meeting	October 20, 2014	Los Angeles, CA
San Gabriel Valley COG Transportation Committee	February 19, 2015	Monrovia, CA
Rotary Club of Victorville	April 28, 2015	Victorville, CA
Fontana Chamber of Commerce	May 8, 2015	Fontana, CA
High Desert Hispanic Chamber of Commerce	May 12, 2015	Victorville, CA
Hesperia Chamber of Commerce	May 18, 2015	Hesperia, CA
San Gabriel Valley COG Public Works Directors Technical Advisory Committee	May 18, 2015	Monrovia, CA
San Bernardino Area Chamber of Commerce	May 20, 2015	San Bernardino, CA
Veterans Housing and Transportation Expo	May 22, 2015	Fontana, CA
Rialto Rotary Club	June 2, 2015	Rialto, CA
Fontana Community Meeting	June 2, 2015	Fontana, CA
Kiwanis Club of San Bernardino	June 10, 2015	San Bernardino, CA
Kiwanis Club of Redlands	June 18, 2015	Redlands, CA
Highland Area Chamber of Commerce	June 23, 2015	Highland, CA
Business Development Association	June 23, 2015	Ontario, CA
Highland Kiwanis Club	June 25, 2015	Highland, CA
San Bernardino County Board of Supervisors: Rep for Janice Rutherford	June 26, 2015	Lake Arrowhead, CA
Colton Rotary Club	June 26, 2015	Colton, CA
Kiwanis Club of Yucaipa Valley	July 1, 2015	Yucaipa, CA
Pomona Chamber of Commerce	July 8, 2015	Pomona, CA
Auto Club Speedway	July 8, 2015	Fontana, CA
Apple Valley Chamber of Commerce	July 15, 2015	Apple Valley, CA
Rancho Cucamonga Chamber of Commerce	July 16, 2015	Rancho Cucamonga, CA
Ontario Mills	July 17, 2015	Ontario, CA
Crafton Hills College	July 21, 2015	Yucaipa, CA
Claremont Rotary Club	July 24, 2015	Claremont, CA
Rotary Club of Fontana	July 27, 2015	Fontana, CA
Redlands Kiwanis Club	July 30, 2015	Redlands, CA

Table 5-8 List of Briefings Conducted for the I-10 Corridor Project

Organization	Date	Location
Apple Valley Kiwanis Club	July 31, 2015	Apple Valley, CA
Redlands Rotary Club	August 6, 2015	Redlands, CA
Fontana Unified School District	August 10, 2015	Fontana, CA
Wrightwood Chamber of Commerce	August 11, 2015	Wrightwood, CA
Adelanto Chamber of Commerce	August 12, 2015	Adelanto, CA
Crestline/Lake Gregory Chamber of Commerce	August 18, 2015	Crestline, CA
San Bernardino Sunset Rotary Club	August 19, 2015	San Bernardino, CA
Caltrans 8: Professional Liaison Committee	August 20, 2015	San Bernardino, CA
Big Bear Lake Rotary Club	August 20, 2015	Big Bear Lake, CA
Crest Forest MAC	September 1, 2015	Crestline, CA
Rialto Transportation Commission	September 2, 2015	Rialto, CA
Municipal Advisory Committee – Lake Arrowhead	September 3, 2015	Lake Arrowhead, CA
San Bernardino County Farm Bureau	September 8, 2015	San Bernardino, CA
Running Springs Area Chamber of Commerce	September 8, 2015	Running Springs, CA
Montclair Chamber of Commerce	September 10, 2015	Upland, CA
Fontana Unified School District	September 10, 2015	Fontana, CA
Construction Management Association of America	September 10, 2015	Los Angeles, CA
American Society of Civil Engineers	September 11, 2015	San Bernardino, CA
Downtown San Bernardino Rotary Club	September 15, 2015	San Bernardino, CA
Kiwanis Club of Claremont	September 17, 2015	Claremont, CA
Ontario-Montclair School District	September 22, 2015	Ontario, CA
Rotary Club of Rancho Cucamonga	September 22, 2015	Rancho Cucamonga, CA
ACEC – Orange County	September 23, 2015	Newport Beach, CA
Big Bear Visitors Bureau	September 24, 2015	Big Bear Lake, CA
Lake Arrowhead Mountain Sunrise Rotary Club	September 30, 2015	Lake Arrowhead, CA
Rialto Historical Society	October 3, 2015	Rialto, CA
Yucaipa Rotary	October 6, 2015	Calimesa, CA
Ontario Convention Center & Visitors Bureau	October 6, 2015	Ontario, CA
Colton Joint Unified School District	October 7, 2015	Colton, CA
Hesperia Unified School District	October 8, 2015	Hesperia, CA
California State University, San Bernardino	October 8, 2015	San Bernardino, CA
Victoria Gardens	October 13, 2015	Rancho Cucamonga, CA
Rialto Kiwanis Club	October 13, 2015	Rialto, CA

The input generated through the briefings to date was utilized to develop a Frequently Asked Questions (FAQs) document. The FAQs raise concern over environmental, HOV lanes, Express Lanes, other alternatives, and project design. Please refer to the FAQs document (see Appendix G) to review specific FAQs asked and the response for each question.

5.1.9 Grassroots Canvassing

The grassroots canvassing efforts encompassed physical visits to each of the cities and communities along the I-10 corridor. SBCTA retained Lee Andrews Group, Inc. (LA Group) and later Westbound Communications for the development and implementation of stakeholder outreach services, including grassroots canvassing. Sites visited included ‘downtown’ districts and small business strips, as well as public attractions within that community (e.g., city halls, libraries, senior centers, community centers). The purpose of these visits was to reach members in the communities that may not otherwise be reached via conventional and electronic outreach methods. The objective of the canvassing efforts is to distribute general project information and collect additional stakeholder data that would otherwise not be available. Locations included, but were not limited to, city halls, libraries, community centers, senior centers, cultural institutions, ‘downtown’ districts, businesses (e.g., shopping centers, small businesses, coffee shops, markets), and other sites that attract visitors. CAG members also played an active role in identifying communities that should be canvassed, including the communities that they represent and the surrounding areas.

Prior to beginning this exercise, a thorough investigation was also conducted to identify key public sites with the use of digital maps. These contents were then enhanced by physically visiting key community areas along the I-10 corridor. As the visits to pre-identified locations were performed, additional sites were documented and incorporated into the digital maps. The information that was collected included the name of the location, address, and contact information (i.e., contact person, phone number, and e-mail address, if available).

Personnel distributing project information also encouraged designated site representatives to distribute or post information for their patrons. The distributed materials included fact sheets for the I-10 corridor projects, as well as project business cards containing contact information and the I-10 CP Web site address. A Quick Response (QR) code was also incorporated into the business card for ease of access to the project Web site.

By distributing printed information, additional stakeholders will be reached after the visit through the availability of the project information. This physical distribution of information enables an additional layer of grassroots outreach through one-on-one interactions with the community stakeholders while additional data is being collected.

All information collected through the canvassing exercise was documented on a digital map with the exact locations that LA Group visited. In total, 641 sites were canvassed along the I-10 CP limits. Each of the canvassed locations was documented on Google Maps to provide a geographical representation of the areas that were covered, as shown in Figure 5-2.

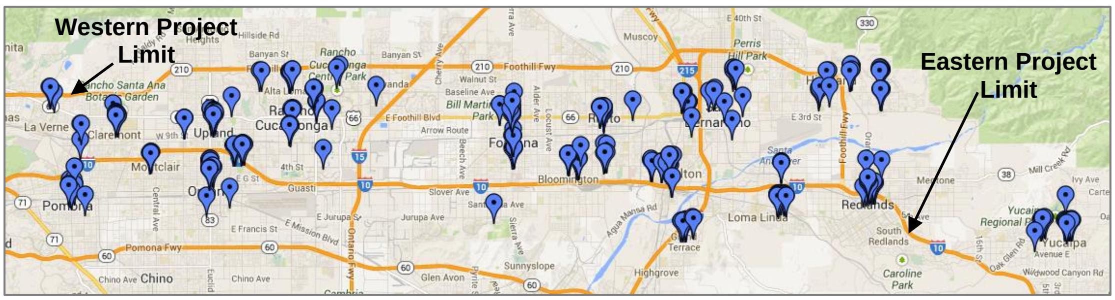


Figure 5-2 Locations Visited through Canvassing

5.1.10 Public Review of the Draft Environmental Document

The initial public review period of the draft environmental document was originally scheduled for April 25 to June 8, 2016, but Caltrans elected to extend the public review period by an additional 5 days to June 13, 2016. The public review period lasted for 50 days.

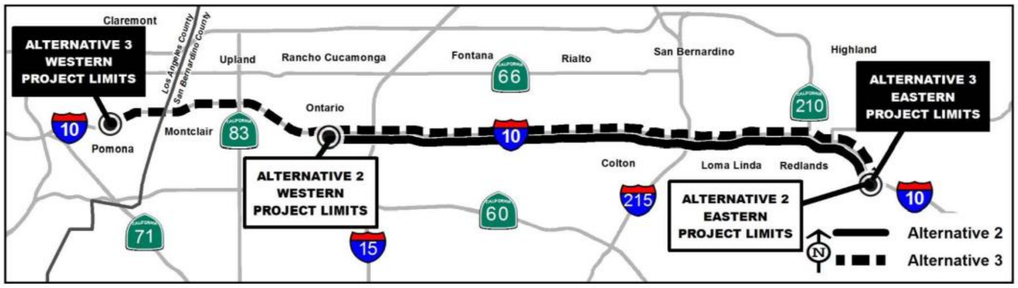
During this period, Caltrans and SBCTA commenced a robust public outreach program. The Notice of Availability for the draft environmental document and notice of public hearings were sent to property owners, residents, business owners, and other interested individuals living within 0.25 mile of the build alternatives. A total of 19,105 notices were mailed via United States Postal Service (USPS). Mailers were also sent to cooperating agencies, participating agencies, State and federal agencies, and other various agencies.

Figure 5-3 shows the public notice that was published in English regarding the public review period. The public notice was also provided on Caltrans' and SBCTA's websites. The public notice was prepared in English and Spanish.

PUBLIC NOTICE

Interstate 10 Corridor Project

Announcement of Availability of Draft Environmental Impact Report/ Draft Environmental Impact Statement and Opportunity to Comment on a Section 4(f) De Minimis Impact Finding



WHAT IS BEING PLANNED?

The California Department of Transportation (Caltrans) is proposing to improve Interstate 10 (I-10) by constructing freeway lane(s) and other improvements through all or a portion of the 33 mile long segment of the I-10 from the Los Angeles/San Bernardino (LA/SB) County line to Ford Street in San Bernardino County. The project limits, including transition areas, extend from approximately 0.4 mile west of White Avenue in the city of Pomona to Live Oak Canyon Road in the city of Yucaipa. The I-10 Corridor Project (I-10 CP) consists of a No Build Alternative (Alternative 1) and two build alternatives (Alternatives 2 and 3). Alternative 2 would extend the existing HOV lane in each direction of I-10 from Haven Avenue in Ontario to Ford Street in Redlands. Alternative 3 would provide two Express Lanes in each direction of I-10 from the LA/SB County line to California Street in Redlands and one Express Lane in each direction from California Street to Ford Street in Redlands. Implementation of the build alternatives would reduce congestion, increase throughput, enhance trip reliability, and accommodate long-term congestion management of the corridor. The project is currently expected to be open to traffic in year 2025.

WHY THIS NOTICE?

Caltrans has studied the effects this project may have on the environment and has completed the Draft Environmental Impact Report/Environmental Impact Statement (DEIR/EIS), which evaluates the potential impacts of a No-Build Alternative and two build alternatives (Alternatives 2 and 3). This notice is to tell you a DEIR/EIS has been prepared, it is available for you to read, and to notify you about a public meeting. The proposed project also requires an action that is subject to the U.S. Department of Transportation Act of 1966. Section 4(f) of this legislation seeks to protect publicly owned parks and recreation areas, waterfowl and wildlife refuges, and historic sites considered to have national, state, or local significance. De minimis impacts are defined as those that do not adversely affect the activities, features and attributes for which the property qualifies as a 4(f) resource.

WHAT IS AVAILABLE?

The DEIR/DEIS and the related technical studies are now available for public review from April 25, 2016 to June 8, 2016 at Caltrans District 8, 464 W. 4th Street, San Bernardino, CA 92401. Maps and other information are also available. There are also copies of the DEIR/DEIS available at A.K. Smiley Public Library, 125 West Vine St., Redlands, CA 92373; Loma Linda Branch Library, 25581 Barton Rd., Loma Linda, CA 92354; Norman F. Feldheym Central Library, 555 West 6th St., San Bernardino, CA 92410; Colton Public Library, 656 North 9th St., Colton, CA 92324; Rialto Branch Library, 251 West 1st St., Rialto, CA 92376; Fontana Lewis Library & Technology Center, 8437 Sierra Ave., Fontana, CA 92335; Paul A. Biane Library, 12505 Cultural Center Dr., Rancho Cucamonga, CA 91739; Upland Public Library, 450 North Euclid Ave., Upland, CA 91786; Ovitt Family Community Library, 215 East "C" St., Ontario, CA 91764; and Montclair Branch Library, 9955 Fremont Ave., Montclair, CA 91763. The report can also be accessed from the Caltrans website: http://www.dot.ca.gov/d8/index.html and from the San Bernardino Associated Governments (SANBAG) website at http://www.sanbag.ca.gov/projects/mi_fwy_I-10-corridor.html.

WHERE YOU COME IN

Have the potential impacts been addressed? Do you have additional information that should be considered for the proposed project? Your comments will be a part of the public record. If you wish to make a comment on the DEIR/EIS and Section 4(f) de minimis finding you may submit your written comments or request until June 8, 2016. Your input is important for us to finalize the environmental document and potential mitigation measures. We encourage you to review and comment on the DEIR/EIS. You may send your comments to Aaron Burton, Branch Chief, Caltrans District 8, "Attn: I-10 CP Draft EIR/EIS Comment Period," 464 W. 4th Street, San Bernardino, CA 92401, or via email to i10corridorproject@dot.ca.gov. You may also call (909) 884-8276, attention Tim Watkins, Chief of Legislative and Public Affairs. Public meetings will be held between 4:30 PM and 7:30 PM at the following locations: DoubleTree Hotel, 285 East Hospitality Lane, San Bernardino, CA 92408 (May 17, 2016); Bloomington Senior Center, 18313 Valley Blvd., Bloomington, CA 92316 (May 18, 2016) and the Ontario Airport Hotel, 700 North Haven Ave., Ontario, CA 91764 (May 19, 2016).

SPECIAL ACCOMMODATIONS

For individuals who require special accommodations (American Sign Language or other lingual interpreter, accessible seating, documentation in alternate formats, etc), contact (877) 726-2241. TDD users may contact the California Relay Service TDD line at 1-800-735-2929.

Figure 5-3 Public Notice for Draft EIR/EIS Public Review Period

In addition, notices were published in English in *Redlands Daily Facts, San Bernardino Sun, San Gabriel Tribune, Inland Valley Daily Bulletin, Colton Courier, Rialto Record, Inland Empire Daily,* and *Fontana Herald News* between April 21 and April 28, 2016. Notices in Spanish were published in *El Chicano* and *La Prensa* on April 21 and 22, 2016, respectively. Notices were also posted at the Los Angeles and San Bernardino County Clerk's offices, on Time Warner Cable Television, on access television channels for corridor cities, via social media, and at city council meetings. On April 29, 2016, a Notice of Availability was announced in the *Federal Register*.

The draft environmental document was available on SBCTA's website at: http://www.gosbcta.com/plans-projects/projects-freeway-I-10Corridor.html.

The draft environmental document was also made available for public viewing at the following locations:

- A.K. Smiley Public Library, 125 West Vine Street, Redlands, CA 92373
- Loma Linda Branch Library, 25581 Barton Road, Loma Linda, CA 92354-3125
- Norman F. Feldheym Central Library, 555 West 6th Street, San Bernardino, CA 92410
- Colton Public Library, 656 North 9th Street, Colton, CA 92324
- Rialto Branch Library, 251 West 1st Street, Rialto, CA 92376
- Fontana Lewis Library & Technology Center, 8437 Sierra Avenue, Fontana, CA 92335-3892
- Paul A. Biane Library, 12505 Cultural Center Drive, Rancho Cucamonga, CA 91739
- Upland Public Library, 450 North Euclid Avenue, Upland, CA 91786
- Ovitt Family Community Library, 215 East "C" Street, Ontario, CA 91764-4111
- Montclair Branch Library, 9955 Fremont Avenue, Montclair, CA 91763

The final environmental document will be made available at the same locations and on the SBCTA website.

5.1.11 Public Hearing

Three public hearings were held for the Draft EIR/EIS for the project at the following times and locations:

- May 17, 2016 (4:30 to 7:30 p.m.)
  Doubletree Hotel
  285 East Hospitality Lane, San Bernardino, CA 92408

- May 18, 2016 (4:30 to 7:30 p.m.)
  Bloomington Senior Center
  18313 Valley Boulevard, Bloomington, CA 92316
- May 19, 2016 (4:30 to 7:30 p.m.)
  Ontario Airport Hotel
  700 North Haven Avenue, Ontario, CA 91764

A total of 60 individuals attended the public hearings. The public hearing format consisted of a combination of an open house session and a project presentation. During the open house session, participants had the opportunity to visit the various stations (e.g., noise, visual, design, environmental), view project exhibits, and direct questions to the project team members located at each station. Staff and consultants provided a brief presentation providing an overview of the project, environmental impacts, and construction schedule. A certified court reporter was present during the open house to take verbal comments from participants. Participants were also encouraged to submit their comments in writing during the public hearing, via mail, or by e-mail by the public circulation end date.

A total of 56 comments were received from the general public and local, regional, state, and federal agencies during the public review period. Responses to comments are included in Appendix O of the final environmental document.

5.2 Interagency Coordination Regarding Air Quality

5.2.1 Transportation Conformity Working Group

The proposed project was presented before the Transportation Conformity Working Group (TCWG) on June 24, 2014, and the TCWG determined that the project was a Project of Air Quality Concern (POAQC), which required quantitative particulate matter (PM) hot-spot analysis. On July 10, 2014, a draft quantitative hot-spot modeling protocol was submitted to the TCWG. On December 2, 2014, the TCWG approved the quantitative hot-spot modeling protocol. The TCWG approved the PM hot-spot analysis on February 23, 2016.

5.3 Native American Consultation and Coordination

On August 6, 2008, the Native American Heritage Commission (NAHC) was requested to review its Sacred Lands Files (SLFs) for possible resources in the project's area of potential effect (APE). The NAHC replied on August 12, 2008, stating that the SLF failed to indicate the presence of Native American cultural resources, but still requested that nine Native American Tribes, groups, and individuals be contacted to solicit any concerns regarding cultural resources within the project vicinity. Table 5-9 shows all individuals who were contacted regarding consultation, their title, organization, and their responses to the project.

Table 5-9 Native American Consultation

Name	Title	Organization	Response
Anthony Madrigal, Jr.	Chairperson	Cahuilla Band of Indians	No response.
Joseph Hamilton	Chairman	Ramona Band of Cahuilla Mission Indians	No response.
James Ramos	Chairperson	San Manuel Band of Mission Indians	No response.
Ann Brierty	Policy/Cultural Resources Department	San Manuel Band of Mission Indians	No response.
Anthony Morales	Chairperson	Gabrielino/ Tongva San Gabriel Band of Mission Indians	No immediate concerns regarding the project. Would like to be notified if prehistoric or ethnohistoric resources are discovered during ground-disturbing activities related to the proposed project.
Sam Dunlap	Tribal Secretary/ Cultural Resources Director	Gabrielino Tongva Nation	No response.
John Tommy Rosas	Tribal Administrator	Tongva Ancestral Territorial Tribal Nation	No response. Requested that all construction personnel be aware of Section 106 of the National Historic Preservation Act (NHPA) of 1966 in addition to all other applicable cultural laws relevant. Would like to be notified if prehistoric or ethnohistoric resources are discovered during ground-disturbing activities related to the proposed project.
John Contreras	Cultural Heritage Program Manager	Morongo Band of Mission Indians	No immediate concerns regarding the project. Would like to be notified if prehistoric or ethnohistoric resources are discovered during ground-disturbing activities related to the proposed project.
Goldie Walker	Chairwoman	Serrano Nation of Mission Indians	No immediate concerns regarding the project. Would like to be notified if prehistoric or ethnohistoric resources are discovered during ground-disturbing activities related to the proposed project and requested a copy of the Final Environmental Document(s).

As a result of expansion of the proposed project to include consideration of Alternative 3: Two Express Lanes in Each Direction, a supplemental SLF search was requested on May 28, 2014, from the NAHC. The NAHC responded on June 13, 2014, stating that the SLF failed to indicate the presence of Native American cultural resources within the expanded project area. The NAHC provided a current Native American contact list and requested that the 11 Native American individuals and/or organizations be contacted to solicit any concerns regarding cultural resources within the project vicinity. Table 5-10 shows all of the individuals who were contacted regarding consultation.

Table 5-10 Supplemental Native American Consultation

Name	Title	Organization	Response
Paul Macarro	Cultural Resources Manager	Pechanga Band of Mission Indians	No response.
Anthony William Madrigal, Jr.	Chairperson Cultural Resources Manager	Cahuilla Band of Indians Morongo Band of Mission Indians.	Mr. Madrigal asked if any culturally significant resources had been found in the project area. He also requested that Caltrans initiate government-to-government consultation with the Morongo Band of Mission Indians. Gary Jones, Caltrans District 8 Native American Coordinator, initiated formal government-to-government Native American consultation with Mr. Madrigal on November 12, 2014. A copy of the Draft ASR was submitted to Mr. Madrigal for review, and comments were requested. A follow-up e-mail was sent on January 27, 2015, to Denisa Torres of the Morongo Band of Mission Indians to inform her of previous government-to-government consultation efforts with Mr. Madrigal and to request comments on the project from the tribe. No comments were received. An additional follow-up e-mail was sent to Ms. Torres on January 28, 2015, to inform her that Caltrans is assuming she has no comments on the project and that Caltrans is moving forward with the Section 106 process. Copies of the Final ASR will be sent to tribal representatives when they are transmitted to the Office of Historic Preservation for review by the SHPO.
Joseph Hamilton	Chairman	Ramona Band of Cahuilla Mission Indians	No response.

Table 5-10 Supplemental Native American Consultation

Name	Title	Organization	Response
Lynn Valbuena	Chairwoman	San Manuel Band of Mission Indians	Ms. Ann Brierty, Policy Cultural Resources Department, responded on behalf of Ms. Valbuena and the San Manuel Band of Mission Indians. Ms. Brierty stated that the San Manuel Band of Mission Indians had concerns regarding Native American resources that may be located in the portion of the I-10 corridor east of San Timoteo Wash. She noted several Native American resources may be found south of the I-10 corridor in this area, including the ethnohistoric village of Guachama, the Mission Zanja, and the San Bernardino Asistencia. In addition, she also noted that the site of Crystal Springs, which contains prehistoric remains, is located within the eastern end of the I-10 corridor. Ms. Brierty stated that given the cultural sensitivity of these areas, a Native American monitor should be present during ground-disturbing activities. She requested that the tribe be contacted if there are any inadvertent discoveries during construction. In addition, Ms. Brierty stated that San Manuel should be given copies of all of the relevant environmental documents and technical reports associated with the project and that Caltrans should initiate government-to-government consultation with the tribe. In response to the concerns raised by Ms. Brierty (San Manuel), it was determined that the Mission Zanja crosses the I-10 corridor in Redlands, but it will not be directly affected by this project because the I-10 corridor crosses over the Zanja on a bridge and no improvements are planned at this location. Caltrans will monitor construction to ensure that there are no inadvertent impacts to the Zanja. Additionally, the village of Guachama, the Asistencia, and Crystal Springs Ranch (CA-SBR-2316; P-36-02316) are all located outside of the I-10 corridor and will not be affected.
Daniel McCarthy	Director of CRM Department	San Manuel Band of Mission Indians	Ms. Brierty initially responded on Daniel McCarthy's behalf. Response noted in the above statement. Gary Jones, Caltrans District 8 Native American Coordinator, initiated formal government-to-government Native American consultation with Mr. McCarthy on November 12, 2014. A copy of the Draft ASR was submitted to Mr. McCarthy for review, and comments were requested. No comments were received from Mr. McCarthy. A follow-up e-mail from Mr. Jones was sent on January 27, 2015, to notify Mr. McCarthy that Caltrans is assuming the tribe has no comments on the project and that Caltrans is moving forward with the Section 106 process. Copies of the Final ASR will be sent to tribal representatives when they are transmitted to the Office of Historic Preservation for review by the SHPO.

Table 5-10 Supplemental Native American Consultation

Name	Title	Organization	Response
Anthony Morales	Chairperson	Gabrielino/ Tongva San Gabriel Band of Mission Indians	Stated that during construction, areas of ground disturbance should be spot checked for archaeological resources; he requested that if Native American archaeological remains were encountered during construction, Caltrans should contact the appropriate Native American groups.
Sandonne Goad	Chairperson	Gabrielino/ Tongva Nation	No response.
Sam Dunlap	Tribal Secretary/ Cultural Resources Director	Gabrielino Tongva Nation	No response.
Ernest H. Siva	Elder	Morongo Band of Mission Indians	No comments or concerns regarding the proposed project.
Goldie Walker	Chairwoman	Serrano Nation of Mission Indians	Requested that if any cultural resources or human remains are encountered that may be related to the Serrano Nation, that the tribe should be contacted.
Joseph Ontiveros	Cultural Resources Department	Soboba Band of Luiseño Indians	Requested that Caltrans initiate government-to-government consultation with the Soboba Band of Luiseño Indians in accordance with Section 106. In addition, they stated that: 1) The Soboba Band of Luiseño Indians should continue to act as a consulting tribal entity; 2) A Native American monitor from the Soboba Band of Luiseño Indians should be present during ground-disturbing activities; and 3) Proper procedures should be taken and requests of the tribe be honored.

Chapter 6 List of Preparers

This Final Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) was prepared by the California Department of Transportation (Caltrans) District 8 and San Bernardino County Transportation Authority (SBCTA) with the assistance of Parsons.

The following individuals were involved in the preparation of this Final EIR/EIS:

Caltrans

Akhter, Mahmuda, Transportation Engineer
Contribution: Reviewed Traffic Study, EIR/EIS, and Project Report

Aranguiz, Maria Sole, Senior Transportation Engineer
Contribution: Approved Traffic Study

Bishop, Miriam, Landscape Associate
Contribution: Reviewed Visual Impact Assessment (VIA), EIR/EIS, and Project Report

Burton, Aaron, Branch Chief, Environmental Studies B
Contribution: Reviewed EIR/EIS

Chandan, Meenu, Transportation Engineer, Civil
Contribution: Reviewed Noise Study Report (NSR), Noise Abatement Decision Report (NADR), EIR/EIS, and Project Report

Den Hartog, Jonathan, Transportation Engineer, Civil
Contribution: Reviewed Project Report

Duff, Gabrielle, Branch Chief, Cultural Studies
Contribution: Approved Historic Property Survey Report (HPSR), Archaeological Survey Report (ASR), Historical Resources Evaluation Report (HRER), Finding of Effect (FOE)

Fard, Ferry R., Transportation Engineer (Civil)
Contribution: Reviewed Traffic Study, EIR/EIS, and Project Report

Guirado, Rebecca, Senior Right-of-Way Agent
Contribution: Approved Relocation Impact Statement (RIS); Reviewed EIR/EIS and Project Report

Heidelberg, Kurt, Branch Chief, Environmental Studies D
Contribution: Approved Paleontological Identification and Paleontological Evaluation Report (PIR/PER)

Jaffrey, Edison, Transportation Engineer, Civil
Contribution: Reviewed Air Quality Report, EIR/EIS, and Project Report

Jones, Gary, Associate Environmental Planner Archaeology
Contribution: Reviewed ASR, EIR/EIS, and Project Report

Karimi, Bahram, Associate Environmental Planner/Paleontologist
Contribution: Reviewed PIR/PER, EIR/EIS, and Project Report

King, Roy, Associate Transportation Engineer
Contribution: Reviewed Floodplain Evaluation Report, EIR/EIS, and Project Report

Louka, Tony, Branch Chief, Environmental Engineering
Contribution: Approved Air Quality Study, NSR, NADR, and Initial Site Assessment (ISA)

Mariscal, Eva, Transportation Engineer (Civil)
Contribution: Reviewed Traffic Study, EIR/EIS, and Project Report

Oriaz, Shawn, Associate Environmental Planner
Contribution: Reviewed Water Quality, Section 4(f), Community Impact Assessment (CIA), and EIR/EIS

Paez, Jesus, Project Director
Contribution: Reviewed Project Report

Panganiban, Rodrigo, Transportation Engineer, Civil
Contribution: Reviewed NSR, NADR, EIR/EIS, and Project Report

Pham, Hoang, Associate Transportation Engineer, Civil
Contribution: Reviewed NSR, NADR, EIR/EIS, and Project Report

Radhakrishnan, Raghuram, Senior Transportation Engineer
Contribution: Project Manager

Roa, Rosanna, Transportation Engineer, Civil
Contribution: Reviewed ISA, EIR/EIS, and Project Report

Rogers, John, Branch Chief Hydraulics
Contribution: Approved Floodplain Evaluation Report

Segura, Denesse, Associate Environmental Planner, Natural Sciences
Contribution: Reviewed Natural Environment Study (NES), EIR/EIS, and Project Report

Stanton, John, Senior Landscape Architect
Contribution: Approved VIA

Thornton, Rusty, Associate Transportation Engineer
Contribution: Reviewed Traffic Study, EIR/EIS, and Project Report

Walters, Andrew, M., Principal Architectural Historian (PQS)/Associate Environmental Planner
Contribution: Reviewed HPSR, EIR/EIS, and Project Report

Wentworth, Craig, Branch Chief, Biology
Contribution: Approved NES

Yahya, Haissam S., Senior Transportation Engineer
Contribution: Reviewed Traffic Study, EIR/EIS, and Project Report

SBCTA

Beauchamp, Paula, Director of Project Delivery
Contribution: Project oversight

Costello, Chad, Project Manager
Contribution: Project oversight

Meier, John, Project Director I-10 and I-15 Corridor Projects
Contribution: Project oversight

Parsons and Subconsultants

Parsons

Blanco, Stephanie, Environmental Project Manager

Contribution: Assisted in preparation of EIR/EIS

Carbone, Jobe, Modeler/Illustrator

Contribution: Provided assistance with VIA

Chau, Raizalyn, Traffic Engineer

Contribution: Prepared Traffic Study and assisted in preparation of EIR/EIS

Corpuz, Monica, Environmental Planner

Contribution: Assisted in preparation of EIR/EIS

Denno, Neal, Project Manager

Contribution: Prepared Traffic Study and assisted in preparation of EIR/EIS

Dillon, David, Graphic Artist

Contribution: Provided assistance with VIA

Duan, June, Traffic Engineer

Contribution: Prepared Traffic Study and assisted in preparation of EIR/EIS

Gaddi, Elvira, Professional Engineer

Contribution: Prepared ISA

Gharabegian, Areg, Principal Project Manager

Contribution: Prepared and managed Noise Technical Reports

Gonzalez, Portia, Senior Drainage Engineer

Contribution: Prepared Hydraulic Location Map/Floodplain Evaluation

Hinds, Christopher, CPESC, CPSWQ, QSD

Contribution: Prepared Water Quality Assessment Report

Hoyt, Emily, Environmental Planner

Contribution: Assisted in preparation of CIA, NADR, NADR Addendum, and EIR/EIS

Koos, Liz, Lead Technical Editor

Contribution: Provided technical editing for EIR/EIS

Lormand, Jeffrey, Principal Landscape Architect

Contribution: Prepared VIA

Malone, Robert, Project Planner

Contribution: Assisted in preparation of EIR/EIS, response to comments

Menegazzo, Bryan, Environmental Planner

Contribution: Assisted in preparation of CIA and EIR/EIS and provided geographic information system (GIS) support

Meyer, Martin, Noise Control Specialist

Contribution: Prepared Noise Technical Reports

Miles, Alexa, Landscape Architect-in-Training

Contribution: Provided assistance with VIA

Nguyen, Sonny, Drainage Engineer

Contribution: Prepared Hydraulic Location Map/Floodplain Evaluation

Noonan, Sean, Environmental Planner

Contribution: Prepared NES, RIS, Section 4(f) Report, and EIR/EIS; provided GIS support and assisted in preparation of CIA

Ogden, Jason, Noise and Vibration Specialist

Contribution: Preparation of Noise Technical Reports

Preite, Arianne, Principal Scientist

Contribution: Provided technical review of biological technical studies and EIR/EIS

Provenzano, Leslie, Environmental Planner

Contribution: Prepared CIA and assisted in preparation of EIR/EIS, response to comments.

Rodriguez, Julio, Environmental Planner

Contribution: Assisted in preparation of CIA and provided GIS support

Santos, James, Principal Environmental Planner

Contribution: Preparation of EIR/EIS, response to comments.

Schnapp, Angela, Environmental Planner
    Contribution: Prepared ISA

Schuck, Jobe, Modeler/Illustrator
    Contribution: Provided assistance with VIA

Seyde, Veronica, CPESC, CPSWQ, QSD, Project Scientist
    Contribution: Prepared Water Quality Assessment Report and assisted in preparation of EIR/EIS

Speirs, David, Project Manager
    Contribution: Project management

Teshale, Surafael, Deputy Project Manager
    Contribution: Provided engineering support

Tiberi, Patti, Senior Project Engineer
    Contribution: Provided engineering support

Tong, Vincent, Associate Environmental Planner
    Contribution: Assisted in preparation of EIR/EIS, response to comments

Vu, Uyenlan, Senior Environmental Planner
    Contribution: Assisted in preparation of EIR/EIS, response to comments

Applied EarthWorks, Inc.

Chasteen-Elfarra, Carrie, Senior Architectural Historian
    Contribution: Prepared HPSR, HRER, and FOE

Clark, Tiffany, Senior Archaeologist and Principal Investigator
    Contribution: Prepared ASR

Eddy, John J., Cultural Resources Project Manager and Principal Investigator
    Contribution: Cultural Resources Project Manager and Principal Investigator

Horne, Melinda, Principal Investigator
    Contribution: Prepared ASR

McDougall, Dennis, Field Supervisor
    Contribution: Field supervisor for Cultural Studies

Cogstone Resources Management, Inc.

Gust, Sherri M., Project Manager and Principal Paleontologist

Contribution: Prepared PIR/PER

Richards, Courtney, Paleontologist

Contribution: Assisted in field surveys for PIR/PER

Scott, Kim, Field & Lab Director for Paleontology

Contribution: Field survey director for PIR/PER

Simmons, Andre, Archaeologist and Cross-trained Paleontologist

Contribution: Created exhibits for PIR/PER

Earth Mechanics, Inc.

Cheang, Lino, Project Manager

Contribution: Prepared Preliminary Geotechnical Report (PGR)

Gunaranjan, G.J. (Ranjan), Project Engineer

Contribution: Prepared PGR

Environmental Science Associates

Todaro, Ryan, Environmental Project Manager

Contribution: Managed preparation of Technical Studies and EIR/EIS

ECORP Consulting, Inc.

Cornell, Kevin, Assistant Biologist

Contribution: Field Assistance and reporting for NES and JD

Goodlett, Gilbert, Biologist

Contribution: Focused wildlife surveys and reporting for NES

Guidry, Marc, GIS Specialist

Contribution: Data analysis, mapping, and database management for NES and JD

Haley, Brad, Senior Biologist

Contribution: Focused wildlife surveys and reporting for NES

Shaffer, Shannan, Biologist

Contribution: Focused wildlife surveys and reporting for NES

Smith, Ben, Biologist

Contribution: Focused wildlife surveys and reporting for NES

Swager, Jeff, GIS Analyst/Arborist

Contribution: Data analysis, mapping, and database management for NES

Taylor, Scott, Inland Empire Biology Manager

Contribution: Prepared the NES, JD, and Biological Assessment (BA)

Walker, Krissy, Associate Biologist

Contribution: Focused plant surveys, JD, and reporting for NES and JD

ITERIS

Devlin, Chris, Senior Transportation Planner

Contribution: Prepared traffic forecasts for Traffic Study and provided data for Air Quality Studies

Terry A. Hayes Associates, Inc.

Hosseini, Ehsan, Environmental Scientist

Contribution: Prepared air quality technical studies and energy analysis

Silverman, Sam, Air Quality Specialist

Contribution: Prepared air quality technical studies and energy analysis

VCS Environmental

Mostafavi, Essra, Senior Project Manager

Contribution: Reviewed technical reports and EIR/EIS

Son, Jessica, GIS Specialist

Contribution: Reviewed technical reports and EIR/EIS

Vandermost Beeman, Julie, President

Contribution: Reviewed technical reports and EIR/EIS

Chapter 7 Distribution List

This Final Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) will be distributed to the State, regional, and local agencies listed in this section. Distribution of the Final EIR/EIS may be by hard copy, electronic media, reference to the Web site in which the document is available, or a combination of these. In addition, notices were sent to interested parties who attended public meetings on the project or requested to be added to a notification list for the project. The document will also be available for public view at http://www.gosbcta.com/plans-projects/projects-freeway-I-10Corridor.html and http://www.dot.ca.gov/d8/index.html.

Federal Agencies

United States Army Corps of Engineers
Attn: Veronica Li
915 Wilshire Boulevard
Los Angeles, CA 90017

Environmental Protection Agency, Region 9
Attn: Clifton Meek
75 Hawthorne Street
San Francisco, CA 94105

Environmental Protection Agency, Region 9
Attn: Debbie Lowe Liang
75 Hawthorne Street
San Francisco, CA 94105

United States Fish & Wildlife Service
Attn: Karin Cleary-Rose
777 E. Tahquitz Canyon Way
Suite 208
Palm Springs, CA 92262

U.S. Department of Agriculture
Natural Resources Conservation Service
Attn: Anita Brown
430 G Street #4164
Davis, CA 95616-4164

United States Department of the Interior, Pacific Northwest Region
Attn: Patricia Sanderson Port
333 Bush Street, Suite 515
San Francisco, CA 94104

Federal Highway Administration
Attn: Zylkia Martin-Yambo
888 S. Figueroa Street, Suite 750
Los Angeles, CA 90017

Federal Energy Regulatory Commission
Attn: Kimberly Bose
888 First Street, NE
Washington, D.C. 20426

National Parks Service
Attn: Jill Jensen
324 S. State Street, Suite 200
Salt Lake City, UT 84111

Federal Elected Officials

Honorable Dianne Feinstein
U.S. Senator
11111 Santa Monica Boulevard
Suite 915
Los Angeles, CA 90025

Honorable Kamala Harris
U.S. Senator
312 N. Spring Street, Suite 1748
Los Angeles, CA 90012

Honorable Norma Torres
U.S. Representative
35th District
3200 Inland Empire Boulevard
Suite 200B
Ontario, CA 91764

Honorable Judy Chu
U.S. Representative
27th District
415 W. Foothill Boulevard
Suite 122
Claremont, CA 91711

Honorable Pete Aguilar
U.S. Representative
31st District
685 E. Carnegie Drive, Suite 100
San Bernardino, CA 92408

State Agencies

California Department of Transportation
District 7
Attn: Carrie Bowen
100 S. Main Street
Los Angeles, CA 90012

California Transportation Commission
Attn: Susan Bransen
1120 N Street, MS-52
Sacramento, CA 95814

California Highway Patrol
Attn: Ed Krusey
411 N. Central Avenue
Glendale, CA 91203

Regional Water Quality Control Board, Region 4
Attn: Samuel Unger
320 West Fourth Street, Suite 200
Los Angeles, CA 90013

Regional Water Quality Control Board, Region 8
Attn: Wanda Cross
3737 Main Street, Suite 500
Riverside, CA 92501

California Department of Fish and Wildlife
Inland Deserts Region
Attn: Joanna Gibson
3602 Inland Empire Boulevard
Suite C-220
Ontario, CA 91764

California Department of Water Resources
Attn: Leroy Ellinghouse
1416 Ninth Street, Room 641-2
Sacramento, CA 95814

South Coast Air Quality Management District
Attn: Daniel Garcia
21865 Copley Drive
Diamond Bar, CA 91765

Public Utilities Commission Policy and Planning Division
Attn: Marzia Zafar
San Francisco Office
505 Van Ness Avenue
San Francisco, CA 94102

California Department of Conservation,
Division of Land Resources Protection
Attn: John Lowrie
801 K Street, MS 14-15
Sacramento, CA 95814

Office of State Historic Preservation
Attn: Julianne Polanco
1725 23rd Street, Suite 100
Sacramento, CA 95816

Department of Parks and Recreation
Attn: Kelly Elliott
17801 Lake Perris Drive
Perris, CA 92571

Southern California Edison
Attn: Jeanette Bachelder
Transmission Project Management
300 N. Pepper Avenue – Bldg B
Rialto, CA 92376

Southern California Gas Company
Attn: James Chuang
Natural Resources & Land Planning
555 W. 5th Street
Los Angeles, CA 90013-1036

Metropolitan Water District of Southern California
Environmental Planning Team
Attn: Deirdre West
700 North Alameda Street
Los Angeles, CA 90012

Selected Elected Officials

Honorable Freddie Rodriguez
State Assembly, 52nd District
13160 7th Street
Chino, CA 91710

Honorable Chris Holden
State Assembly, 41st District
415 W. Foothill Boulevard, Suite 124
Claremont, CA 91711

Honorable Marc Steinorth
State Assembly, 40th District
7211 Haven Avenue
Alta Loma, CA 91701

Honorable Eloise Gomez Reyes
State Assembly, 47th District
290 North D Street, Suite 903
San Bernardino, CA 92401

Native American Organizations

Native American Heritage Commission
Attn: James Ramos
1550 Harbor Boulevard, Suite 100
West Sacramento, CA 95691

Native American Heritage Commission
Attn: Cynthia Gomez
1550 Harbor Boulevard, Suite 100
West Sacramento, CA 95691

Cahuilla Band of Indians
Attn: Andreas Heredia
52701 Hwy 371, Suite B-1
Anza, CA 92539

Ramona Band of Cahuilla Mission Indians
Attn: Joseph Hamilton
56310 Highway 371, Suite B
Anza, CA 92539

San Manuel Band of Mission Indians
Attn: Lynn Valbuena
26569 Community Center Drive
Highland, CA 92346

Gabrielino/Tongva San Gabriel Band of Mission Indians
Attn: Anthony Morales
1999 Avenue of Stars, Suite 1100
Los Angeles, CA 90089

Gabrielino Tongva Nation
Attn: Sam Dunlap
P.O. Box 86908
Los Angeles, CA 90089

Tongva Ancestral Territorial Nation
Attn: John Tommy Rosas
578 Washington Boulevard #384
Marina Del Rey, CA 90292

Morongo Band of Mission Indians
Attn: Robert Martin
12700 Pumarra Road
Banning, CA 92220

Serrano Nation of Mission Indians
Attn: Goldie Walker
P.O. Box 343
Patton, CA 92369

Pechanga Band of Mission Indians
Attn: Mark Macarro
12705 Pechanga Road
Temecula, CA 92592

Soboba Band of Mission Indians
Attn: Joseph Ontiveros
23906 Soboba Road
San Jacinto, CA 92583

Local Government – City/County

Southern California Association of Governments
Attn: Naresh Amatya
818 W. 7th Street, 12th Floor
Los Angeles, CA 90017

Southern California Regional Rail Authority
Attn: Roderick Diaz
One Gateway Plaza, Floor 12
Los Angeles, CA 90012

County of Los Angeles Department of Regional Planning
Attn: Patricia Hachiya
320 W. Temple Street, Room 1346
Los Angeles, CA 90012

Los Angeles County Metropolitan Transportation Authority
Attn: Bryan Pennington
One Gateway Plaza
Los Angeles, CA 90012-2952

Los Angeles County Metropolitan Transportation Authority
Attn: Stephanie Wiggins
One Gateway Plaza
Los Angeles, CA 90012-2952

County of San Bernardino,
Land Use Services Department
Attn: Tom Hudson
385 North Arrowhead Avenue
San Bernardino, CA 92415

County of San Bernardino Department of Public Works
Attn: Mazin Kasey
825 E. Third Street
San Bernardino, CA 92415

County of San Bernardino,
Regional Parks
Attn: AJ Gerber
777 East Rialto Avenue
San Bernardino, CA 92415

City of Redlands, Municipal Utilities and Engineering Department
Attn: Chris Diggs
35 Cajon Street, Suite 15-A
Redlands, CA 92372

City of Loma Linda
Attn: Konrad Bolowich
25541 Barton Road
Loma Linda, CA 92354

City of Grand Terrace
Attn: Sandra Molina
22795 Barton Road
Grand Terrace, CA 92313

City of San Bernardino
Attn: Oliver Mujica
300 N. D Street, 3rd Floor
San Bernardino, CA 92418

City of Colton
Attn: Mark Tomich
160 South 10th Street
Colton, CA 92324

City of Rialto
Attn: Robb Steel
131 S. Palm Avenue
Rialto, CA 92376

City of Fontana
Attn: Zai AbuBakar
8353 Sierra Avenue
Fontana, CA 92335

City of Ontario
Attn: Scott Murphy
303 East B Street
Ontario, CA 91764

Ontario Fire Department
Attn: Rob Elwell
425 East "B" Street
Ontario, CA 91764

City of Rancho Cucamonga
Attn: Candyce Burnett
10500 Civic Center Drive
Rancho Cucamonga, CA 91730

City of Rancho Cucamonga
Engineering Services Department
Attn: Jason Welday
10500 Civic Center Drive
Rancho Cucamonga, CA 91730

City of Upland
Attn: Rosemary Hoerning
460 N. Euclid Avenue
Upland, CA 91786

City of Montclair,
Community Development Department
Attn: Marilyn J. Staats
5111 Benito Street
Montclair, CA 91763

City of Montclair
Public Works Department,
Engineering Division
Attn: Michael Hudson
5111 Benito Street
Montclair, CA 91763

City of Claremont
Attn: Brian Desatnik
207 Harvard Avenue
Claremont, CA 91711

City of La Verne
Attn: Hal G. Fredericksen
3660 D Street
La Verne, CA 91750

City of Pomona
Attn: Brad Johnson
505 South Garey Avenue
Pomona, CA 91769

City of Pomona
Public Works Department
Attn: Ronald Chan
505 South Garey Avenue
Pomona, CA 91769

City of San Dimas
Attn: Larry Stevens
245 East Bonita Avenue
San Dimas, CA 91773

Pomona Unified School District
Maintenance and Operations
Attn: Adriana Castaneda
800 S. Garey Avenue
Pomona, CA 91766

Claremont Unified School District
Attn: James Elsasser
170 W. San Jose Avenue
Claremont, CA 91711

Ontario-Montclair School District
Facilities Planning and Operations
Attn: Craig Misso
950 W. D Street
Ontario, CA 91762

Upland Unified School District
Attn: Gary Hall
390 N. Euclid Avenue
Upland, CA 91786

Colton Joint Unified School District
Attn: Jerry Almendarez
1212 Valencia Drive
Colton, CA 92324

Redlands Unified School District
Attn: Joe Aceto
20 W. Lugonia Avenue
Redlands, CA 92374

San Bernardino City Unified School District
Attn: John Peukert
777 North F Street
San Bernardino, CA 92410

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