REDLANDS
Passenger Rail Project

FINAL

Environmental Impact Statement and Record of Decision/ Environmental Impact Report

SCH No. 2012041012

- *University of Redlands*
- *Downtown Redlands*
- *New York Street*
- *Tippecanoe Avenue*
- *E Street*

February 2015

DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA

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REDLANDS
Passenger Rail Project

San Bernardino County, California

FINAL ENVIRONMENTAL IMPACT STATEMENT AND RECORD OF DECISION/ENVIRONMENTAL IMPACT REPORT

PREPARED PURSUANT TO:

National Environmental Policy Act of 1969, § 102 (42 United States Code [USC] § 4332); Federal Transit Law (49 USC Chapter 53); Public Law 112-141, 126 Statute 405, Section 1319(b); 49 USC § 303 (formerly Department of Transportation Act of 1966 § 4[f]); National Historic Preservation Act of 1966, § 106 (16 USC § 470f); Clean Air Act (42 USC § 7401 et seq.); Clean Water Act, Section 404 (33 USC § 1344); Endangered Species Act (7 USC § 136; 16 USC § 1531 et seq.); 49 Code of Federal Regulations (CFR) § 622.101; 23 CFR Parts 771 and 774; 40 CFR Parts 1500-1508; Executive Order 11990 (Protection of Wetlands); Executive Order 11988 (Floodplain Management); Executive Order 12898 (Environmental Justice); California Environmental Quality Act (CEQA), Public Resources Code § 21000 et seq.; and the State of California's CEQA Guidelines, California Administrative Code, § 15000 et seq.

The Federal Transit Administration (FTA) may issue a single Final Environmental Impact Statement and Record of Decision document pursuant to Pub. L. 112-141, 126 Stat. 405, Section 1319(b) unless FTA determines statutory criteria or practicability considerations preclude issuance of the combined document pursuant to Section 1319.

by the

FEDERAL TRANSIT ADMINISTRATION
U.S. DEPARTMENT OF TRANSPORTATION

and the

SAN BERNARDINO ASSOCIATED GOVERNMENTS, acting in its capacity as the San Bernardino County Transportation Commission

Leslie T. Rogers Regional Administrator, Region IX Federal Transit Administration	FEB 17 2015 Date of Approval
Mitchell Alderman Director of Rail and Transit San Bernardino Associated Governments	FEB 17 2015 Date of Approval

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ABSTRACT

The Federal Transit Administration (FTA), Region 9, and the San Bernardino Associated Governments (SANBAG) acting in its role capacity as the San Bernardino County Transportation Commission, have prepared a Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the Redlands Passenger Rail Project located in San Bernardino County, California. The Redlands Passenger Rail Project would encompass passenger rail operations along an approximately nine-mile corridor extending east from the City of San Bernardino to the City of Redlands. The Project proposes local and express train service via five station stops located at E Street, Tippecanoe Avenue (or Waterman Avenue), New York Street, Orange Street (Downtown Redlands), and University Street (University of Redlands). SANBAG proposes the replacement of the existing railroad tracks and ties, reconstruction or rehabilitation of existing bridge structures, construction of station platforms and a train layover facility, and auxiliary improvements such as parking, at-grade roadway crossings, and pedestrian access. Project operations would start in 2018. Trains would operate every 30 minutes in the peak periods and every hour in the off-peak period.

A more detailed description of the Redlands Passenger Rail Project along with a discussion of potential environmental effects and mitigation measures is provided in this Final EIS/EIR.

FOR ADDITIONAL INFORMATION CONCERNING THIS DOCUMENT, CONTACT:

Dominique Paukowits
Community Planner
Federal Transit Administration, Region 9
201 Mission Street, Suite 1650
San Francisco, CA 94105

Mitchell A. Alderman
Director of Transit & Rail Programs
San Bernardino Associated Governments
1170 W. 3rd St, 2nd Floor
San Bernardino, CA 92410

The Redlands Passenger Rail Project Draft EIS/EIR was made available to the public and agencies for review and comment on August 6, 2014 in accordance with the National Environmental Policy Act and the California Environmental Quality Act. The comment period closed on September 29, 2014. Two public meetings were at held on September 4 and 9, 2014 to receive public input on the Draft EIS/EIR. Written comments were received from federal, state, regional and local agencies, as well as from organizations and individuals; comments were also received during the public meetings. SANBAG and FTA considered the comments received on the Draft EIS/EIR.

The Final EIS/EIR consists of the entire revised Draft EIS/EIR (Volumes I through IX), the comments, responses to comments, and revisions to the Draft EIS/EIR (Volume X), the Mitigation Monitoring and Reporting Program (MMRP), and Record of Decision (ROD) (Volume XI). This is a single document that combines the Final EIS and ROD pursuant to the Moving Ahead for Progress in the 21st Century Act (Public Law 112-141, 126 Stat. 405, Section 1319[b]).

The Final EIS/EIR document is available for review and download on SANBAG's website (www.sanbag.ca.gov) and/or CD-ROM by request. Printed copies are available at SANBAG's Offices at 1170 W. 3rd St., 2nd Floor, San Bernardino, CA.

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CHAPTER ES EXECUTIVE SUMMARY

ES.1 INTRODUCTION

This document is a joint Environmental Impact Statement/Environmental Impact Report (EIS/EIR) and Record of Decision (ROD) intended to comply with both the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). This EIS/EIR has been prepared by the Federal Transit Administration (FTA), Region 9, as Federal lead agency under NEPA and the San Bernardino Associated Governments (SANBAG), as lead agency under CEQA. This EIS/EIR has been prepared as a "project" EIS/EIR to evaluate the environmental impacts or effects associated with implementing the Redlands Passenger Rail Project (RPRP or Project).

On August 6, 2014, SANBAG released the Draft EIS/EIR for public review and comment. The comment period closed on September 29, 2014. The Draft EIS/EIR evaluated the potential environmental effects of the Project and considered three alternatives, three design options, and three vehicle technology options. Two public meetings were held on September 4 and 9, 2014 to receive public input on the Draft EIS/EIR. Written comments were received from federal, state, regional and local agencies, as well as from organizations and individuals; comments were also received during the public meetings. SANBAG and FTA considered the comments received on the Draft EIS/EIR.

The Final EIS/EIR consists of the entire Draft EIS (Volumes I through IX), the comments, responses to comments, and revisions to the Draft EIS/EIR (Volume X), the Mitigation Monitoring and Reporting Program (MMRP), and Record of Decision (ROD) (Volume XI).

ES.2 PURPOSE AND NEED

SANBAG, acting in its role as the San Bernardino County Transportation Commission, is proposing the RPRP to address the transportation needs of the Redlands Corridor as identified in SANBAG's Measure I Strategic Plan and the Southern California Association of Governments' (SCAG) Regional Transportation Plan (RTP) (2012). The Project is needed to address existing and future traffic congestion within the cities of San Bernardino and Redlands. The overall purpose of the Project is to provide a cost-effective, alternative travel option for communities situated along the Redlands Corridor in a way that improves transit mobility, travel times, and corridor safety while minimizing adverse environmental effects. Additionally, the RPRP represents a strategic project for both SCAG and SANBAG in their efforts to meet the air pollution and greenhouse gas emission reduction targets mandated under Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, and Senate Bill (SB) 375, California's Sustainable Communities and Climate Protection Act of 2008.

ES.3 PROJECT OBJECTIVES

The Project objectives are integral to SANBAG's selection and consideration of alternatives. SANBAG's objectives for the Project are outlined below.

- Implement new transit service consistent with the Measure I Strategic Plan and the RTP (2012) to reduce travel time between residential areas, employment centers, and major activity centers;

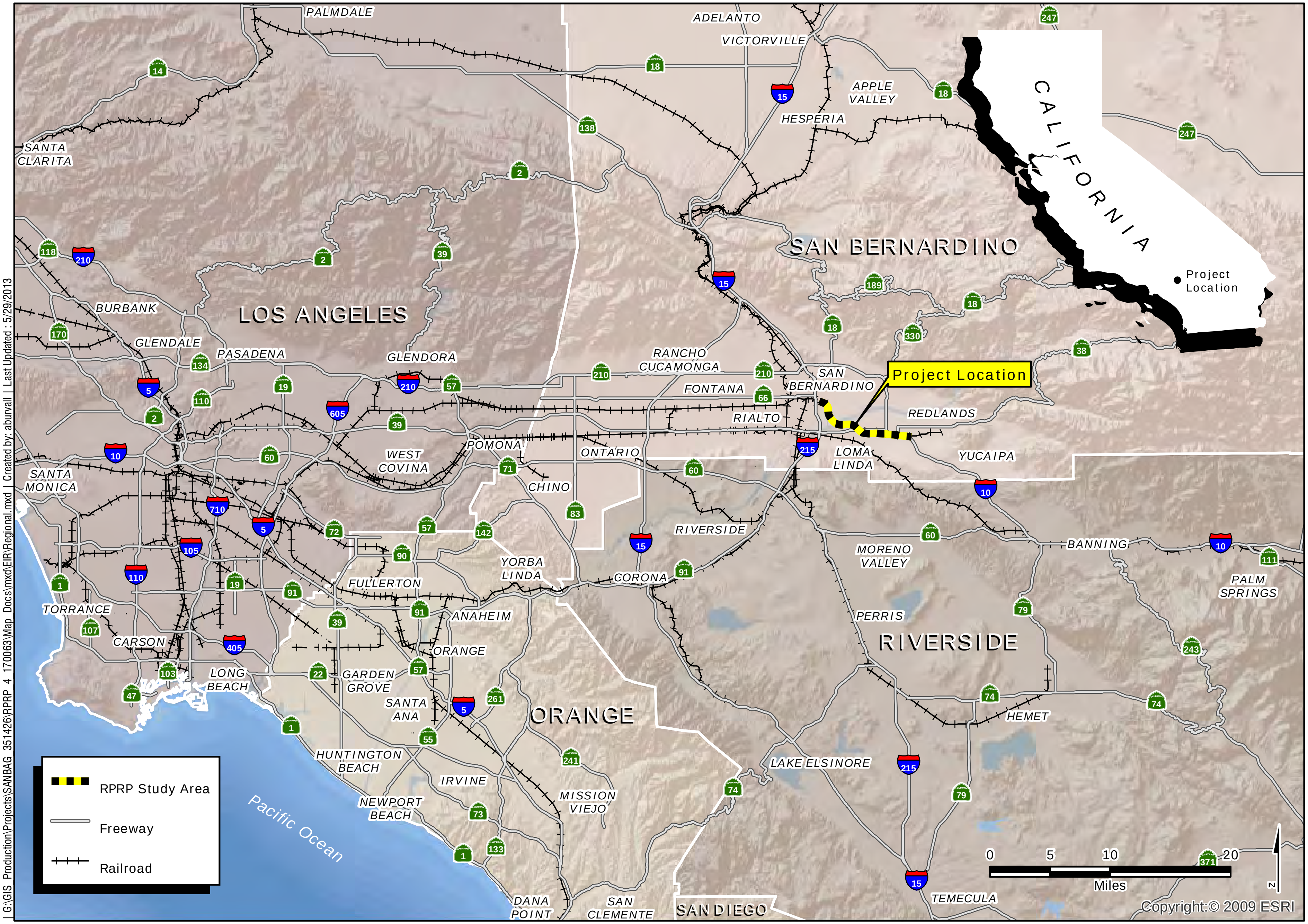
- Develop necessary rail infrastructure to facilitate passenger service between the cities of San Bernardino and Redlands and maximize opportunities to accommodate track built-out in the future;
- Implement a transit project capable of helping to achieve regional and state goals to reduce greenhouse gases while supporting opportunities for future compact development as required under AB 32 and SB 375;
- Maximize opportunities for revitalization of the Redlands Corridor by linking transit service along the railroad corridor to intermodal hubs, such as the Omnitrans Bus Facility in the City of San Bernardino and Transit Villages planned by the City of Redlands and University of Redlands;
- Implement safety improvements that will benefit both existing freight and proposed passenger operations per Federal Railroad Administration (FRA) safety guidelines and SANBAG's purchase agreement with Burlington Northern and Santa Fe Railway (BNSF); and
- Utilize the existing railroad corridor and right of way to the extent feasible, thereby minimizing potential impacts to sensitive resources as well as minimizing potential adverse effects to the surrounding communities.

Overview of the Project

The RPRP encompasses an approximately nine-mile corridor extending east from the City of San Bernardino to the City of Redlands within the southwestern corner of County of San Bernardino, California (see Figure ES-1). Figure ES-2 provides an overview map of the Study Area considered in this EIS/EIR. The Project extends along an existing railroad right-of-way (ROW) owned by SANBAG and commonly referred to as the Redlands Corridor.

The Project proposes the operation of passenger rail service between E Street in the City of San Bernardino and the University of Redlands, in the City of Redlands. Passenger rail service would be facilitated via five station stops. Four new station stops would be constructed in conjunction with the Project. These include one station located at Tippecanoe Avenue or Waterman Avenue within the City of San Bernardino and New York Street, Orange Street, and University Street within the City of Redlands. The fifth station would be constructed at E Street and is associated with a different project—the Downtown San Bernardino Passenger Rail Project (DSBPRP). SANBAG also proposes the replacement of the existing railroad tracks and ties, reconstruction or rehabilitation of existing bridge structures, construction of a new train layover facility, and auxiliary improvements such as at-grade roadway crossings and safety improvements, new parking facilities, and improvements to pedestrian access. Construction of these various improvements is planned to start in 2015.

During SANBAG's initial alternatives analysis, multiple transit modes and supporting transit infrastructure were considered. These transit modes included diesel and battery powered locomotives, bus rapid transit (BRT), light rail transit (LRT), and diesel multiple units (DMU). As described in more detail in Chapter 2.0 Alternatives Considered, transit modes that would require the construction of a separate, parallel track system, which would double the size of the Project's physical footprint, were not carried forward in favor of transit modes that could operate on the rehabilitated track infrastructure. Through this screening process, the use of diesel-powered locomotives or a DMU were determined to be vehicle options that would satisfy the requirement to operate on the rehabilitated track infrastructure.



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Regional Location Map

Figure ES-1

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

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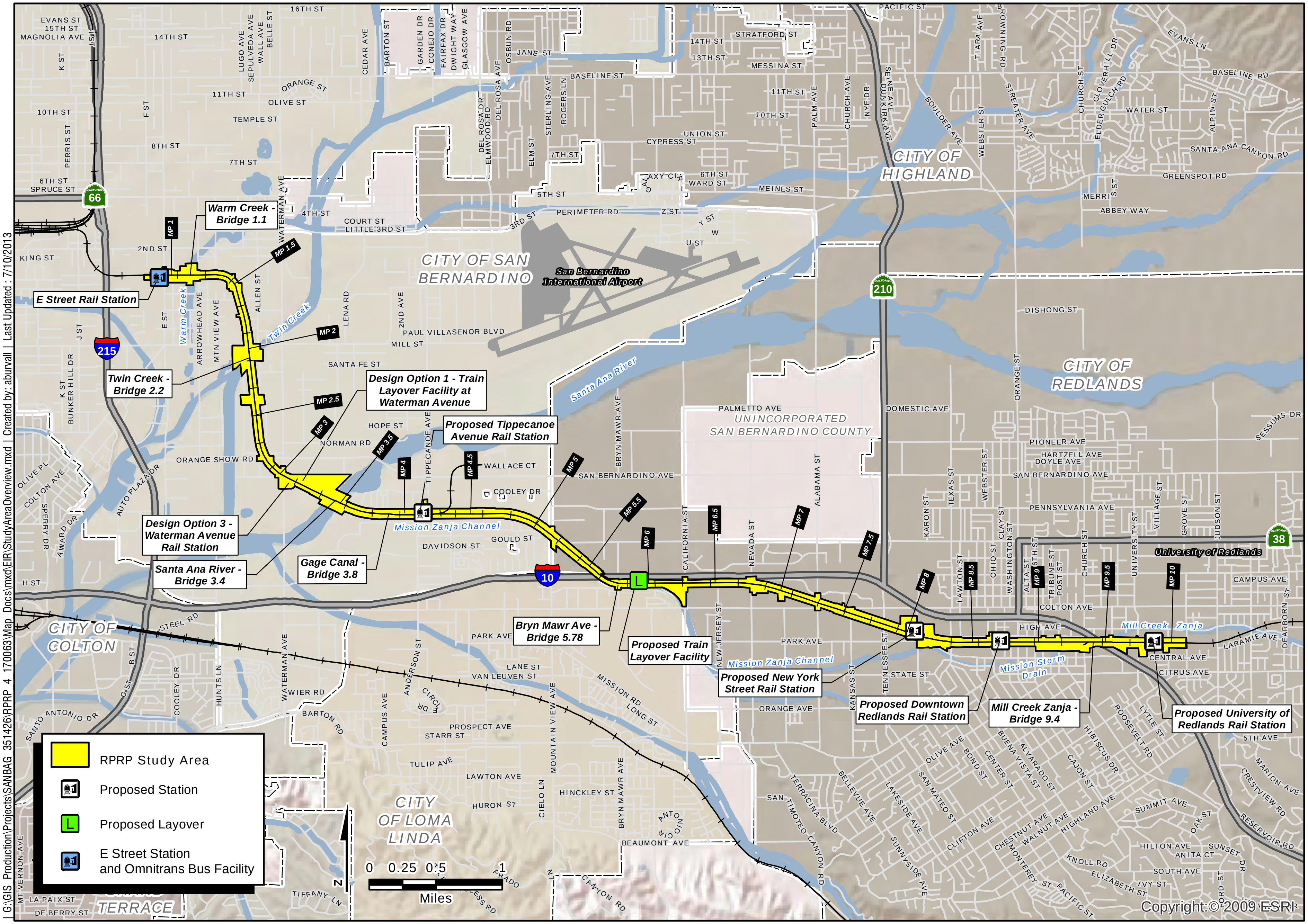

RPRP Study Area Overview

Figure ES-2

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

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This EIS/EIR considers three vehicle options for Project operations: two (2) diesel-powered locomotives, (an MP-36 or F-59), and a DMU. Of the vehicle types under consideration, the vehicle type selected the Project would meet Tier 4 requirements[1]. Functionality would be built into the system to allow for up to two Metrolink express trains during the AM and PM peak periods. Project operations would commence in 2018.

ES.4 ALTERNATIVES CONSIDERED IN THE EIS/EIR

Consistent with the requirements of both NEPA and CEQA, this EIS/EIR considers several alternatives and design options to the Preferred Project, including a No Build Alternative. Improvements associated with these alternatives and design options are outlined below and described in more detail in Chapter 2.0.

Alternative 1, No-Build. Under the No Build Alternative, SANBAG would not implement passenger rail service. Routine maintenance of the existing track alignment and corresponding improvements at existing bridge structures and at-grade roadway crossings would still be necessary to facilitate continued freight service.

Alternative 2, Preferred Project. The Preferred Project would involve the implementation of passenger rail service between E Street in the City of San Bernardino and the University of Redlands in the City of Redlands. Major components included as part of the Preferred Project include: reconstruction of tracking, at-grade roadway crossings, and existing bridge crossings; construction of four new rail stations; various drainage and roadway improvements, and a new train layover facility. Passenger train operations would include local transit service, which would operate on 30-minute headways during peak hours and one-hour headways during non-peak hours during weekdays, and up to two express trains during the AM and PM peak hours.

Alternative 3, Reduced Project Footprint. This alternative would include the development of the Preferred Project within a reduced footprint with the primary objective of minimizing disturbance to biological and historic resources that border and intersect the railroad corridor. Train operations and the remaining track infrastructure under this alternative would be the same as those identified for the Preferred Project. The changes in the Project’s footprint under Alternative 3 would occur at the following locations:

- Alternative design for Bridge 3.4 at the Santa Ana River;
- Reduced length of bank improvements along the Mission Zanja Channel;
- Reduced construction limits at the California/I-10 Citrus Grove; and
- Reduced roadway improvements at Sylvan Park.

Design Option 1, Train Layover Facility (Waterman Avenue). Under Design Option 1, the proposed train layover facility would be constructed at an alternate site located in the City of San Bernardino, east of Waterman Avenue and immediately north of the existing railroad ROW. Train operations and the remaining track and station infrastructure under this alternative would be similar as those identified for the Preferred Project.

Design Option 2, Use of Existing Train Layover Facilities. Under Design Option 2, Project-related layover operations would be integrated with existing layover operations at Metrolink’s Eastern Maintenance Facility (EMF) and Inland Empire Maintenance Facility (IEMF). Train

[1] Tier 4 locomotives and locomotive engines are required to meet applicable standards set by the U. S. EPA at the time of original manufacture and each subsequent remanufacture. Emission regulations for locomotive engines are contained in the US Code of Federal Regulations, 40 CFR Parts 85, 89 and 92.

operations and the remaining track and station infrastructure under this alternative would be similar to those identified for the Preferred Project.

Design Option 3, Waterman Avenue Rail Station. Under Design Option 3, the rail station located at Tippecanoe Avenue would be relocated to a vacant site just east of Waterman Avenue and south of the railroad ROW. The remaining track and station infrastructure under this alternative would be the same as those identified for the Preferred Project. Train operations would be similar to the Preferred Project with train stops occurring at Waterman Avenue instead of Tippecanoe Avenue.

ES.5 ALTERNATIVES REJECTED

The following alternatives were initially considered but rejected from further consideration in the EIS/EIR along with the supporting rationale:

Light Rail Transit (LRT). An LRT mode alternative would not be capable of operating on the same track infrastructure as existing freight traffic. This in turn would increase the ROW requirements thereby substantially increasing the number of full property takes in addition to resulting in greater impacts to historical properties/resources, biological resources, and jurisdictional waters.

Battery Powered Locomotives. No commercially ready vehicles are currently available for procurement. Additionally, battery operated vehicles come with considerable limitations such as reduced travel speed and limited travel distance before requiring DC power.

Bus Rapid Transit (BRT). A BRT mode alternative would not be capable of operating on the same track infrastructure as existing freight traffic. This would result in extensive ROW requirements, which would result in a substantial increase in full property takes and result in greater impacts to historic properties, biological resources, and jurisdictional waters. Additionally, traffic signals, not crossing gates, are used to protect the road crossings for BRT systems; thus, buses would have to slow at each intersection thereby contributing to a substantially longer travel time than any of the rail modes considered.

New Rail Alignment Alternatives. The acquisition of a new ROW required to secure a new rail alignment would result in substantial displacements of existing residential and commercial uses within the cities of Redlands and San Bernardino and substantially greater physical impacts to local resources (e.g., biological resources).

ES.6 LOCALLY PREFERRED ALTERNATIVE

SANBAG has considered comments received on the Draft EIS/EIR and, where appropriate, made minor updates to the description of the Preferred Project Alternative, its anticipated impacts, and proposed mitigation measures as reflected in the Final EIS/EIR. The Preferred Project Alternative, as described in the Final EIS/EIR with the integration of Design Options 2 (Use of Existing Layover Facilities) and 3 (Waterman Avenue Station), is SANBAG's Locally Preferred Alternative (LPA) that will be carried forward for approval in conjunction with the certification of the Final EIR by SANBAG and issuance of the Final EIS and Record of Decision (ROD) by FTA. Based on a combination of public comment and SANBAG's consideration of environmental effects as provided in the Final EIS/EIR, SANBAG has selected the Diesel Multiple Unit (DMU) as the locally preferred vehicle option for the LPA. Additionally, SANBAG has selected to implement quiet zones as the preferred noise mitigation for the LPA per the

Memorandum of Understanding (MOU) it has executed with the cities of Redlands and San Bernardino on February 4, 2015.

ES.7 AREAS OF CONTROVERSY KNOWN TO THE LEAD AGENCY

CCR Section 15123 of the State CEQA Guidelines and 40 CFR Section 1502.12 of the NEPA regulations require that a summary of an EIS/EIR identify areas of controversy known to the lead agency, including issues raised by agencies and the public. During the public comment period for the notice of preparation/notice of intent, various comment letters were received regarding the Project. Appendix A of the EIS/EIR includes a summary of the public scoping process as well as summaries of the comments received in writing and at the public meetings held on April 24, May 2, September 25, and September 27, 2012. In general, areas of potential controversy known to the SANBAG and FTA include biological and cultural resources, circulation (traffic and public transit), noise, flooding, safety, environmental justice, and acquisition/displacements of private property. These issues were considered in the preparation of this EIS/EIR and, where appropriate, are addressed in the environmental impact analyses presented in Chapters 3, 4, and 5, and briefly summarized below.

- ***Biological Resources*.** The Project would include construction activities within the vicinity of the Santa Ana River. The Santa Ana River includes suitable habitat for federally listed species, including least Bell's vireo, and is identified as critical habitat for federally listed species including the San Bernardino kangaroo rat and Santa Ana sucker. SANBAG and FTA are currently in consultation with the U. S. Fish and Wildlife Service (USFWS) and attempting to avoid or minimize potential adverse effects to listed species. USFWS provided its biological opinion for the Project on February 9, 2015.
- ***Cultural Resources*.** Multiple cultural resources are located within the Area of Potential Effect (APE) for the Project. These resources include, but are not limited to, the Redlands Santa Fe Depot, Second Baptist Church, and Redlands Chinatown. SANBAG and FTA are currently in consultation with the California State Historic Preservation Officer (SHPO) and attempting to avoid or minimize potential adverse effects to local cultural and historic resources. SHPO provided its concurrence with the eligibility determinations and findings of effect provided in Section 3.12 on August 14, 2014.
- ***Transit Service Funding*.** Omnitrans submitted comment letters to SANBAG and FTA dated May 10, 2012 and October 10, 2012 identifying concerns relating to the Project's potential to impact funding sources currently allocated for local bus service in San Bernardino County. In response to this concern, SANBAG worked collaboratively with Omnitrans to complete a Comprehensive Operating Analysis (COA), which identified an operating deficit and a capital surplus through Fiscal Year 2020. The Omnitrans Board of Directors addressed this funding gap by reorganizing the management structure, changing the insurance and liability management policy, and implementing fare increases earlier than previously planned. These decisions were memorialized by the Omnitrans Board of Directors via the Fiscal Year 2015 Budget and Fiscal Year 2015-2020 Short Range Transit Plan, approved in May and June 2014, respectively.

  Funding to operate RPRP will come from Measure I Metrolink/Passenger Rail Program funds; a portion of the local sale tax measure specifically designated for rail use, which cannot be transferred to Omnitrans to offset operational expenses. Based on the fact that Omnitrans has a capital surplus and the funds used for the Project operations are statutorily exempt from use by Omnitrans, no decrease in future bus service is anticipated as a result of the Project. For more information, see Section 2.6, page 2-60.

- ***Road Closures*.** SANBAG is proposing the closure of up to four at-grade crossings as part of the Project. The effects to traffic circulation as a result of these roadway closures are considered in this EIS/EIR.
- ***Noise*.** The Project would increase ambient noise levels as a result of passenger train operations along the nine-mile railroad corridor. Multiple forms of noise mitigation are considered and discussed in this EIS/EIR, including the implementation of quiet zones and/or construction of sound barriers. In considering the future implementation of these measures, this EIS/EIR acknowledges that SANBAG may not have complete control over their implementation (e.g., quiet zones) and/or the measures trigger other indirect environmental effects (e.g., sound barriers). Based on these circumstances, this EIS/EIR identifies a full range of noise mitigating measures for the Project. As described under ES-6, SANBAG has proposed the implementation of corridor-wide quiet zones per the executed MOU (February 4, 2015) and Mitigation Measure NV-3 combined with the selection of the DMU vehicle option as part of the LPA.
- ***Flooding*.** The placement of Project facilities including track infrastructure, bridges, new station structures, and layover facilities would be constructed within a delineated 100-year flood hazard area. Although multiple drainage improvements are contemplated by other agencies (e.g., San Bernardino County Flood Control District) that would effectively reduce the threat of flooding throughout the Study Area, the timing of these projects is unknown and their implementation is outside SANBAG's control. Based on this context and the fact that operations would likely start in advance of the completion of the necessary flood control projects, rail operations could be affected by flooding until these improvements are completed.
- ***Improvements Along the Mission Zanja Flood Control Channel*.** The railroad corridor parallels the Mission Zanja Flood Control Channel (Mission Zanja Channel) for approximately 2.5 miles east of the Santa Ana River. SANBAG's ROW overlaps with the northern section of the Mission Zanja Channel with the remaining portions under the ownership of the San Bernardino County Flood control District (SBCFCD). SBCFCD is responsible for maintenance of the Mission Zanja Channel. Due to the deteriorated condition of the northern bank of the Mission Zanja Channel, stabilization of the bank is contemplated as part of the Project. However, the entity responsible for implementing these improvements remains unresolved and will be determined as part of final design.
- ***Environmental Justice*.** The railroad corridor is bordered by census tracts and census block groups containing both low-income and minority populations. These populations are collectively referred to as environmental justice (EJ) populations. Based on this circumstance, adverse effects associated with the Project along with the corresponding benefits would occur to EJ populations bordering the railroad corridor.
- ***Acquisition of Private Property*.** The Project would require the full or partial acquisition of a limited number of private properties. The full or partial acquisition of these properties would occur in compliance with the Uniform Relocation Assistance and Real Property Acquisition Act and the California Relocation Act.

ES.8 SIGNIFICANT AND UNMITIGABLE IMPACTS

CEQA Guidelines Section 15093 requires the Lead Agency to balance, as applicable, the economic, legal, social, technological, and/or other benefits of the Project against its unavoidable environmental risks when determining whether to approve the Project. Significant and unmitigated impacts have been identified for the Preferred Project. Under both NEPA and CEQA, the following environmental issue areas would remain significant after mitigation:

- Land Use and Planning (Physical division of communities from placement of sound barriers)
- Visual Quality and Aesthetics (Changes to visual character or quality from placement of sound barriers in the absence of quiet zones)
- Noise (Permanent increase in ambient noise from passing trains and temporary construction noise)
- Floodplains and Hydrology (Placement of transportation infrastructure within a 100-year Flood Zone)

If SANBAG approves the Project with significant and unmitigated impacts, SANBAG is required under CEQA to prepare a Statement of Overriding Considerations.

ES.9 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Of the Build Alternatives and Design Options considered in the EIS/EIR, the No Build Alternative would initially avoid construction-related adverse effects. However, given that the No Build Alternative would entail various maintenance activities along the ROW (e.g., bridge replacement), adverse construction-related effects would not be completely avoided. Additionally, although the No Build Alternative would avoid several of the identified significant and unmitigable adverse effects identified for the Build Alternatives and Design Options, this alternative would be inconsistent with SCAG's RTP/SCS (2012). This inconsistency would be a significant and unmitigable adverse effect that would otherwise not occur under the Build Alternatives and Design Options. Additionally, the No Build Alternative would not satisfy SANBAG's goals and objectives and, therefore, the No Build Alternative is not considered environmentally superior. Table 5-2 in Chapter 5 provides additional comparison amongst the alternatives considered.

Of the Build Alternatives and Design Options considered, Alternative 3, Reduced Project Footprint, would minimize adverse effects to biological resources, including those in the vicinity of the Mission Zanja Flood Control channel. Although Design Option 2 would relocate the Project layover facilities at locations outside the 100-year floodplain, other Project-facilities would continue to remain subject to inundation from flooding (e.g., tracks and rail stations). Additionally, Design Option 2 would not result in the avoidance of any of the significant and unmitigable adverse effects identified for the Preferred Project. For these reasons, Alternative 3, Reduced Project Footprint is considered the environmentally superior alternative for the purposes of CEQA.

ES.10 SECTION 4(F) RESOURCES

This EIS/EIR includes a discussion and analysis of resources within and adjacent to a broader Planning Area for the Project that qualify for consideration per the requirements of Section 4(f) of the Department of Transportation Act of 1966 (Section 4(f)). All potential park and recreational Section 4(f) resources within and adjacent to the Planning Area are identified in Table ES-1. Direct uses, temporary occupancies, or constructive uses as attributable to the Build Alternatives and Design Options were then considered for each resource listed in Table ES-1. Section 3.16 also considers potential direct use, temporary occupancies, and constructive uses for the cultural and historic resources identified and discussed in Section 3.12, Cultural and Historic Resources (see Tables 3.12-3, 3.12-4, and 3.12-5).

Table ES-1. Findings of the Section 4(f) Analysis

Resource Name	Section 4(f) Use	Findings and Mitigation Recommendation (if necessary)
Park and Recreation Areas Analyzed for Section 4(f) Use		
Meadowbrook Park	None	No mitigation is required due to these recreational areas being located approximately 0.20 miles and 0.09 miles away from SANBAG's ROW, respectively. Additionally, both sites are buffered by land uses within the existing urban built environment.
Meadowbrook Fields	None	
Franklin Elementary School	None	The large fields at this school are buffered from the Project footprint by a distance of approximately 0.11 miles.
Jennie Davis Park	None	No direct use would result because the project would not require the permanent incorporation of park land. No temporary occupancy of the park property is proposed during construction. Through the implementation of Mitigation Measure TR-1, access to the park would be maintained during construction. With the implementation of Mitigation Measure NV-2, potential construction-related impacts would be minimized. Moreover, no constructive use of the park property would result because train operation would occur at a distance of over 100 feet from the park, at its nearest point. As a result, the protected activities, features, or attributes of the park would not be substantially impaired.
Orangewood High School	None	No direct use would result because the proposed improvements near this park are within SANBAG's ROW. As a result, the project would not require the permanent incorporation of park land. No temporary occupancy of park property is required during construction. Potential construction related impacts are minimized with the implementation of Mitigation Measures TR-1, NV-1 and NV-2. Moreover, no constructive use would result because operational noise impacts would not substantially impair the protected activities, features, or attributes of the park.
Santa Ana River Trail	None	Through the implementation of Mitigation Measure PCS-1, the Project would not result in a use of the SAR Trail under Section 4(f).
Victoria Elementary School and Park	Direct Use (De minimis impact) Temporary Occupancy[1, 2]	The implementation of Mitigation Measure NV-3 would avoid a direct use, temporary occupancy, and constructive use of this park. If Mitigation Measure NV-4 is required, sound barriers would be constructed on park property along its northern border, resulting in a direct use. However, that direct use would have a di minimis impact because it would not adversely affect the protected features, attributes, or activities of the park. Further, if

Table ES-1. Findings of the Section 4(f) Analysis

Resource Name	Section 4(f) Use	Findings and Mitigation Recommendation (if necessary)
		a sound barrier is constructed, a TCE on park property would be required. The TCE would be a temporary occupancy of park property. Potential impacts that could result from the TCE would be minimized through the implementation of Mitigation Measures LU-1, TR-1, NV-1, and NV-2. Moreover, with the implementation of Mitigation Measures NV-3, or, if needed, NV-4 and/or NV-6, and VQA-3, and VQA-4, there would be no constructive use because the project's proximity impacts would not be so severe that the protected activities, features, and attributes of the park would be substantially impaired.
Sylvan Park	Direct Use (De minimis impact) Temporary Occupancy[1, 2]	Roadway improvements to Park Avenue at the southwest and southeast corners of the park would require acquisition of a partial fee or an easement that would account for 0.02 percent of the total park area, resulting in a direct use. However, such direct use would be a di minimis impact because the roadway improvements at issue would not adversely affect the protected features, attributes, or activities of the park, and any impacts would be further minimized during final design through the implementation of Mitigation Measures LU-1 and NV-3 (Quiet Zones). If the implementation of Mitigation Measure NV-4 (Sound barriers) is required, sound barriers would be constructed on park property along its southern portion, resulting in a direct use. However, that direct use would have a di minimis impact because it would not adversely affect the protected features, attributes, or activities of the park. Further, if Mitigation Measure NV-4 is needed, a TCE on park property would be required during construction of the sound barriers. The TCE would be a temporary occupancy of park property. Potential impacts from the TCE would be minimized through the implementation of Mitigation Measures LU-1, TR-1, NV-1, and NV-2. With the implementation of LU-1, NV-3 and VQA-1, or, if needed, NV-4, NV-5, and/or NV-6, and VQA-3 and VQA-4 there would be no constructive use of the park because its protected activities, features, or attributes would not be substantially impaired.
Cultural and Historic Resources Analyzed for Section 4(f) Use		
Redlands Santa Fe Depot Historic District	None	The Project would not result in a direct or constructive use of this historic resource. Properties contributing to the District's historic significance are discussed below. SHPO concurred on August 14, 2014 the Project would have no adverse effect.
Redlands Santa Fe Depot Station (36-017106) [3]	Temporary Occupancy [1]	With the implementation of Mitigation Measures LU-1, TR-1, CUL-1 and NV-1, the temporary occupancy associated with construction would be minimal. The Project would not result in a direct or constructive use of this historic resource.

Table ES-1. Findings of the Section 4(f) Analysis

Resource Name	Section 4(f) Use	Findings and Mitigation Recommendation (if necessary)
Cope Commercial Company Warehouse (36-017477)[3]	Temporary Occupancy [1]	With the implementation of Mitigation Measures LU-1, TR-1, CUL-1 and NV-1, the temporary occupancy associated with construction would be minimal. The Project would not result in a direct or constructive use of this historic resource.
Redlands Board of Trade / Redlands Chamber of Commerce [3]	None	The Project would not result in a direct or constructive use of this historic resource.
Haight Packing House (36-017046)[3]	Temporary Occupancy [1]	With the implementation of Mitigation Measures LU-1, TR-1, CUL-1 and NV-1, the temporary occupancy associated with construction would be minimal. The Project would not result in a direct or constructive use of this historic resource.
Palace Livery[3]	None	The Project would not result in a direct or constructive use of this historic resource.
Pioneer Transfer[3]	None	The Project would not result in a direct or constructive use of this historic resource.
Packard Motor Company Sales Office[3]	None	The Project would not result is a direct or constructive use of this historic resource.
Redlands City Transfer (36-017107)[3]	Temporary Occupancy [1]	With the implementation of Mitigation Measures LU-1, TR-1, CUL-1 and NV-1, the temporary occupancy associated with construction would be minimal. The Project would not result in a direct or constructive use of this historic resource.
Single family residence (620 New York Street)	None	The Project would not result in a direct or constructive use of this historic resource.
Single family residence (337 North Cook Street)	None	The Project would not result in a direct or constructive use of this historic resource.
Brick Warehouse (440 Oriental Avenue)[3]	Temporary Occupancy [1]	With the implementation of Mitigation Measures LU-1, TR-1, CUL-1 and NV-1, the temporary occupancy associated with construction would be minimal. The Project would not result in a direct or constructive use of this historic resource.
Victoria Elementary School	Direct Use (De minimis impact) Temporary Occupancy[1, 2]	The implementation of Mitigation Measure NV-3 would avoid a direct use, temporary occupancy, and constructive use of this property. If Mitigation Measure NV-4 is required, sound barriers would be constructed on school property along its northern border, resulting in a direct use. However, that direct use would have a di minimis impact because the project would have no adverse effect on this historic property. Further, if Mitigation Measure NV-4 is needed, a TCE on school property would be required during construction of the sound barriers. The TCE would be a temporary occupancy of property. Potential impacts from the TCE would be minimized through the implementation of Mitigation Measures LU-1, TR-1, NV-1, and NV-2.

Table ES-1. Findings of the Section 4(f) Analysis

Resource Name	Section 4(f) Use	Findings and Mitigation Recommendation (if necessary)
		Moreover, with the implementation of Mitigation Measures NV-3, or, if needed, NV-4 and/or NV-6, and VQA-3, and VQA-4, there would be no constructive use of this historic resource because the project's proximity impacts would not be so severe that the protected activities, features, and attributes of the school would be substantially impaired. SHPO concurred on August 14, 2014 the Project would have no adverse effect.
Van Dorin Motor Company	None	The Project would not result in a direct or constructive use of this historic resource.
Single family residence (510 East Stuart Avenue)	None	The Project would not result in a direct or constructive use of this historic resource.
Single family residence (610 East Stuart Avenue)	None	The Project would not result in a direct or constructive use of this historic resource.
Redlands Lawn Bowling Club (411 North University Street)	Temporary Occupancy [1, 2]	Through the implementation of Mitigation Measure NV-3 (quiet zones), no direct use, temporary occupancy, or constructive use would result. If Mitigation Measure NV-4 (sound barriers) is required, a TCE of the southern edge of the Lawn Bowling Club would be required during construction of the sound barriers. The TCE would be a temporary occupancy of property. Potential impact of the TCE would be minimized through implementation of Mitigation Measures LU-1, TR-1, NV-1, and NV-2. Moreover, with the implementation of Mitigation Measures NV-4, NV-5, and/or NV-6 and LU-1, VQA-3, VQA-4 and CUL-2a, the project would not result in a constructive use because the protected activities, features, or attributes of this historic property would not be substantially impaired. SHPO concurred on August 14, 2014 the Project would have no adverse effect.
Second Baptist Church (420 East Stuart Avenue).	Temporary Occupancy [1, 2]	The implementation of Mitigation Measure NV-3 (Quiet Zones) would avoid a direct use, temporary occupancy, and constructive use of this resource. If Mitigation Measure NV-4 (Sound Barriers) is required, a TCE will be needed during construction of the sound barriers. The TCE would be a temporary occupancy of the property. Potential impact from the TCE would be minimized with the implementation of Mitigation Measures LU-1, TR-1, NV-1 and NV-2. Implementation of Mitigation Measure NV-4 at this location presents three options for sound barrier configurations. All of those options do not permanently incorporate church property into a transportation use; thus, the Project would not result in a direct use.

Table ES-1. Findings of the Section 4(f) Analysis

Resource Name	Section 4(f) Use	Findings and Mitigation Recommendation (if necessary)
		With the implementation of Mitigation Measures NV-1, NV-2, NV-3 and, if needed, NV-4, LU-1, TR-1, CUL-2a and CUL-2b, the project will not result in a constructive use because the protected activities, features, or attributes of this historic resource would not be substantially impaired. SHPO concurred on August 14, 2014 the Project would have no adverse effect.

[1] No direct, permanent or constructive use would result.
[2] With the adoption of the MOU for the implementation of quiet zones, sound barriers in the vicinity of the Section 4(f) resource would not be constructed under the Preferred Project Alternative.
[3] Listed as part of the Redlands Santa Fe Depot National Register Historic District.

With the implementation of the proposed mitigation, no direct use or constructive use would occur to the Redlands Santa Fe Historic District, properties contributing to the District's historic significance, or (including the Redlands Santa Fe Depot, Cope Commercial Company Warehouse, Haight Packing House, Redlands City Transfer, and the brick warehouse at 440 Oriental Avenue), or the Second Baptist Church. Temporary construction easements (TCE) would be required for construction access at Redlands Santa Fe Depot, Cope Commercial Company Warehouse, Haight Packing House, Redlands City Transfer, and the brick warehouse at 440 Oriental Avenue. These temporary occupancies would be minimized through the application of mitigation measures. Three other contributing properties to the Redlands Santa Fe Depot Historic District (Redlands Board of Trade / Redlands Chamber of Commerce; Palace Livery; and Pioneer Transfer are located far from enough away from the project ROW such that the Build Alternatives will not result in a direct use, or constructive use, or temporary occupancy of these properties.

As shown, with the implementation of the proposed mitigation, the Build Alternatives would not result in a constructive use of 4(f) park and recreational resources. If required, the displacement of existing improvements (e.g. fencing) by sound barriers at Victoria Elementary School and Park and Redlands Lawn Bowling Club (at Sylvan Park) would result in a direct use with de minimis impacts. The temporary occupancy of these resource sites, if required for the construction of sound barriers, would be minimized through mitigation proposed by SANBAG.

On August 14, 2014, SHPO concurred that the Project would have no adverse effect the Redlands Santa Fe Historic District and contributing properties, including the Redlands Santa Fe Depot (located within the Santa Fe Historic District). Additionally, SHPO concurred with the eligibility determinations and findings of effect for the Second Baptist Church, Victoria Elementary School and Redland Lawn Bowling Club.

ES.11 ENVIRONMENTAL JUSTICE

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of agency programs, policies, and activities on minority populations and/or low-income populations. Through a systematic delineation of low-income and minority populations within the Study Area, a high concentration of minority and/or low-income populations were identified along the railroad corridor within the cities of San Bernardino, Loma Linda, and Redlands.

Section 3.17 of the EIS/EIR provides a discussion of the adverse effects that could be predominately experienced by these populations. Following the application of mitigation measures proposed in Chapter 3 of this EIS/EIR, adverse direct and indirect effects to these populations would remain with regard to noise, division of established communities, and visual resources and aesthetics. Other alignment alternatives beyond SANBAG's ROW were determined to not be practicable because they would require acquisition of new right-of-way in a new corridor, which would result in greater social, environmental, and economic effects than the Build Alternatives and Design Options, which follow the existing railroad corridor.

The Build Alternatives and Design Options would also provide benefits to for minority and low-income populations as discussed in Section 3.17, which include a new and improved regional transit service, as well as air quality improvements and enhanced employment opportunities. These benefits would be the most pronounced for those living closest to the railroad corridor. In view of the anticipated adverse effects, mitigation measures proposed, and the off-setting benefits, the Build Alternatives and Design Options would not result in disproportionately high and adverse effects on low-income or minority populations.

ES.12 PUBLIC PARTICIPATION IN THE CEQA/NEPA REVIEW PROCESS

This Final EIS/EIR is being distributed to interested agencies, stakeholder organizations, and individuals who commented on the Draft EIS/EIR. This distribution ensures that interested parties have an opportunity to express their views regarding the environmental effects of the Project, and to ensure that information pertinent to permits, authorizations, and approvals is provided to decision makers for the lead agencies and CEQA responsible and trustee agencies. This document is available for review by the public during normal business hours at SANBAG's Office during normal business hours. The document will also be available on SANBAG's website at: http://sanbag.ca.gov/projects/redlands-transit.html.

Two public meetings were held during the Draft EIS/EIR public review period:

1. September 4, 2014, 5:00–7:00 PM, at the ESRI Café, 380 New York Street, Redlands, CA 92373; and
2. September 9, 2014, 5:00–7:00 PM, at the Hotel, 285 East Hospitality Lane, San Bernardino, CA 92408

SANBAG and FTA have reviewed and assembled all of the comments received on the Draft EIS/EIR, including those received at the public meetings, and prepared responses to address significant environmental issues raised in the comments. These responses are included in Appendix P and summarized in Chapter 7 of the EIS/EIR.

Following completion and publication of the Final EIR, the SANBAG Board of Directors will hold a public hearing to consider certification of the EIR and to decide whether or not to approve the LPA, at which time the public and interested agencies and organizations may comment on the project. SANBAG's Board of Directors will consider certification of the Final EIR, including the findings of effect, and adoption of the Project's mitigation monitoring and reporting program (MMRP) at its regularly scheduled meeting at 10:00 AM, Wednesday, March 4, 2015. A notice of determination (NOD) will then be filed. If the Board approves the LPA (or another alternative), it will adopt written findings of fact for each significant environmental impact identified in the EIR; a statement of overriding considerations, if needed; and a MMRP. The proposed MMRP is included as Appendix Q.

After consideration of the comments received on the Draft EIS/EIR, FTA decided to issue a single document that combines the Final EIS and ROD pursuant to the Moving Ahead for Progress in the 21st Century Act (Public Law 112-141, 126 Stat. 405, Section 1319[b]). NEPA regulations require that the federal agency prepare a concise public record of its decision (40 code of Federal Regulations [CFR] Section 1505.2). The ROD notifies the public of the agency's selection of an alternative to be carried forward for more detailed engineering and design, and the rationale for that decision. The ROD is included in the Final EIS/EIR as Appendix R.

ES.13 SUMMARY OF ADVERSE EFFECTS AND MITIGATION MEASURES

Table ES-2 summarizes environmental effects, mitigation measures, and level of significance after mitigation associated with RPRP. Detailed analyses of these topics are included within each corresponding section contained within this document.

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
Land Use and Planning				
Effect 3.2-1: Physically Divide an Established Community or Physically Disrupt Community Cohesion. The Project would divide established communities and disrupt community cohesion during construction.	Adverse / Significant	**TR-1: Prepare a Traffic Management Plan** **VQA-4: Sound Barrier Screening and Surface Treatments**	Adverse	Significant and Unmitigable
Effect 3.2-2: Create Incompatibility with On-site or Adjacent Land Uses and Zoning. The Project could be incompatible with on-site and adjacent land uses and/or zoning.	Adverse / Significant	**TR-1: Prepare a Traffic Management Plan** **VQA-1: Screening of Construction Staging Areas** **VQA-2: Enhance Exterior Appearance of Structural Facilities** **VQA-3: Tree Replacement** **VQA-4: Sound Barrier Screening and Surface Treatments** **VQA-5: Minimize Exterior Lighting in Adjacent Uses** **NV-1: Employ Noise-Reducing Measures during Construction** **NV-2: Prepare a Community Notification Plan for Project Construction** **NV-3: Establish Quiet Zones** **NV-4: Construct Sound Barriers** **NV-6: Use Ballast Mats, Resiliently Supported Ties, or Measures of Comparable Effectiveness on Portions of the Rail near Sensitive Receivers**	Not Adverse	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
Effect 3.2-3: Result in Conflict or Inconsistency with any Applicable Land Use Plan, Policy, or Regulation of an agency with Jurisdiction over the Project. The Project would be generally consistent with applicable local land use plans, policies, and regulations.	No Adverse Effect / Less than Significant	No mitigation is proposed.	Not Adverse	Less than Significant
Effect 3.2-4: Degrade the Social or Physical Character of the Community or Quality of Life of Nearby Neighborhoods. The Project would result in possible adverse and beneficial effects on the character of a community and the quality of life of nearby neighborhoods.	Adverse / Significant	**TR-1: Prepare a Traffic Management Plan** **VQA-1: Screening of Construction Staging Areas** **NV-2: Prepare a Community Notification Plan for Project Construction** **NV-3: Establish Quiet Zones**	Not Adverse	Less than Significant
Effect 3.2-5: Displacement of Residences and Businesses. The Project would result in the displacement of substantial number of existing structures.	Adverse / Significant	**LU-1: Minimize Project Land Requirements and Comply with Federal and State Relocation Laws.** As part of final design, SANBAG shall maximize opportunities to minimize the Project's land requirements and associated property acquisition. In instances where avoidance is not feasible, SANBAG shall provide just compensation consistent with the requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act and California Relocation Act. If the acquisition of one or more properties requires	Not Adverse	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		relocation of existing residences or businesses, SANBAG shall provide relocation assistance to residential and business tenants prior to the start of construction.		
Transportation				
Effect 3.3-1: Impact Local Traffic Plans, Policies, and Standards. The Project would result in conflicts with applicable ordinances and policies regarding the performance of the circulation system, including, but not limited to, intersections, streets, highways and freeways.	Adverse / Significant	**TR-1: Prepare a Traffic Management Plan.** SANBAG shall prepare a Traffic Management Plan prior to the start of construction, and the provisions of the Traffic Management Plan shall be implemented prior to, and during construction, as appropriate, to address traffic considerations of pedestrian and bicycle access and safety, and vehicular flow. The objective of the Traffic Management Plan will be to reduce construction related effects to traffic, non-motorized forms of transportation (e.g., bicycle and pedestrians), and existing public transit (e.g., buses) and will include the following: • Construction detour plans and designated construction truck access routes for each phase of construction; • Maintain maximum travel lane capacity to the greatest extent possible during construction periods and provide advanced notice to drivers or roadway changes or closures; • Signage indicating the construction limits, access routes, and entrances to individual business sites and community facilities that may be affected by construction activities. In addition, the construction contractor would supply “open for business” signs to encourage normal business activity during construction; • Pre-planning, outreach, and signage indicating pedestrian and bicycle routes detours;	Not Adverse	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		• Coordination with public transit service providers, as necessary; • Heavy trucks and other construction transport vehicles shall avoid the busiest commute hours to the greatest extent possible (weekdays 7 a.m. to 8 a.m. and 5 p.m. to 6 p.m.) and high traffic intersections ((Greater than 10,000 ADT) – 6:30 a.m. to 8:30 a.m. and 4:30 p.m. to 6:30 p.m.); • Early notification to emergency service providers and area drivers of any road closures or detours and the timeframes of the closures or detours. This information will be posted in a local newspaper, via SANBAG's web site and will be updated on a monthly basis; • Coordination with the cities of San Bernardino, Loma Linda, and Redlands for community events in the area to accommodate crowds and road closures; • Pavement damage resulting from project construction will be repaired prior to the completion of construction; and • SANBAG shall maximize opportunities for coordinated construction and installation of improvements that occurs outside the SANBAG ROW with the cities of San Bernardino, Loma Linda, and Redlands to the greatest extent practicable. **TR-2: Existing LOS and V/C Year 2018 and 2038 Impact Roadway Improvements.** As part of the Project construction, SANBAG shall coordinate with the appropriate agency in which the intersection improvement		

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		is located (Cities of San Bernardino, Loma Linda, Redlands, or Caltrans) to pay SANBAG's "fair share" of the identified roadway improvements prior to the start of operations of the Project in 2018: • **California Street and I-10 Eastbound Off-Ramp –** SANBAG shall coordinate with Caltrans to fund its fair share of construction for a ramp improvement to include a right-turn pocket. The existing right-turn lane will become a shared right-turn lane to accommodate the high number of right turns. The improvements will include replacing existing pedestrian and bicycle facilities, where present. SANBAG shall provide its fair share for the funding of the following improvements prior to the year 2038: • **California Street and I-10 West On-Ramp –** SANBAG shall coordinate with Caltrans to fund its fair share to the construction of a dual southbound right and a dual northbound left turn pocket. The improvements will include replacing existing pedestrian and bicycle facilities, where present. • **Alabama Street and Industrial Avenue –** SANBAG shall coordinate with the City of Redlands to stripe an exclusive westbound right turn lane with 50-feet of storage to accommodate a high number of right turns. The improvements will include replacing existing pedestrian and bicycle facilities, where present.		

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
Effect 3.3-2: Conflict with an Applicable Congestion Management Program. The Project would conflict with the County CMP during construction.	Adverse / Significant	**TR-1: Prepare a Traffic Management Plan**	Not Adverse	Less than Significant
Effect 3.3-3: Create or Increase Hazards from Project Design Features. The Project could create or increase hazards on local roadways (e.g., sharp curves or dangerous intersections).	Adverse / Significant	**TR-1: Prepare a Traffic Management Plan** **TR-3: Approval from CPUC for Grade Crossings and Safety Measures.** SANBAG shall coordinate with the CPUC prior to the start of construction for re-design and/or closure of all grade crossings to ensure that all grade crossings and safety improvements comply with CPUC standards. SANBAG shall provide verification to the CPUC that all rail safety measures identified in the hazard analysis as part of the "formal application" or "GO 88-B" authorization” from CPUC have been installed. **TR-4: Recommended Pre-Signals for Queuing.** Prior to the start of operations (as determined through reevaluation in 5-year increments, pre-signals shall be implemented at the following grade crossing locations and shall be operational prior to the start of 2018: • Eastbound I-10 Ramps and California Street crossing; • Industrial Park Avenue and Alabama Street crossing; and • Redlands Boulevard and Tennessee Street crossing. Prior to 2038 and if warranted based on future intersection operations (as determined through reevaluation in 5-year increments by SANBAG following procedures in the Los Angeles Metropolitan	Not Adverse	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		Transportation Authority (MTA) Grade Crossing Policy for Light Rail Transit), pre-signals will be implemented at the following grade crossing locations: • Waterman Avenue and Orange Show Road Crossing (Northbound Approach); • Orange Show Road and Waterman Avenue Crossing (Eastbound Approach; • Redlands Boulevard and California Street Crossing; and • Redlands Boulevard and Alabama Street Crossing.		
Effect 3.3-4: Impacts to Emergency Response and Access. The Project could adversely affect emergency access.	Adverse / Significant	**TR-1: Prepare a Traffic Management Plan** **TR-2: Existing LOS and V/C Year 2018 and 2038 Impact Roadway Improvements** **TR-3: Approval from CPUC for Grade Crossings and Safety Measures** **TR-4: Recommended Pre-Signals for Queuing**	Not Adverse	Less than Significant
Effect 3.3-5: Adversely Effect Alternative Forms of Transit, including Non-Motorized Facilities. The Project could conflict with plans or policies related to alternatives forms of transit including public transit, bicycle or pedestrian facilities, and otherwise decrease the performance or safety of non-motorized facilities (e.g., pedestrian walkways).	Adverse / Significant	**TR-1: Prepare a Traffic Management Plan** **TR-5: Transit Operations Realignment.** SANBAG will work with affected transit service providers as part of their service realignment process (or major service change) to maximize transit efficiencies offered by interfacing existing transit service with Project operations. SANBAG shall develop a transit integration plan in coordination with local transit service providers to establish a framework for service integration. The plan shall, at a minimum, include an approach or strategy for coordinating existing transit scheduling with proposed train operations, maximizing route interfaces with the proposed station locations, and	Not Adverse	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		optimizing existing transit routes to minimize duplication in service. **PCS-1: Coordinate Trail Planning with Local Jurisdictions.**		
Visual Quality and Aesthetics				
Effect 3.4-1: Changes to Visual Character or Quality. Implementation of the Project could substantially degrade the existing visual character or quality of the Study Area and its surroundings.	Adverse / Significant	**VQA-1: Screening of Construction Staging Areas.** For construction staging areas within 500 feet of a residence, park, or educational facility, the contractor will be required to shield the staging area to the extent feasible and coordinate with the local jurisdiction regarding the type and method of screening, which may include but is not limited to, the use of fence slats, netting, or mesh or tarps. SANBAG shall limit construction to daylight hours to the extent possible. If nighttime lighting or construction is necessary, the SANBAG shall ensure that unshielded lights, reflectors, or spotlights are not located and directed to shine toward or be directly visible from adjacent properties or streets. To the extent possible, SANBAG shall minimize the use of nighttime construction lighting within 500 feet of existing residences. This measure shall be identified on grading plans and in construction contracts. **VQA-2: Enhance Exterior Appearance of Structural Facilities.** The external appearance of the stations and layover facility, including the choice of color and materials, shall seek to reduce the visual impact of these facilities on adjacent land uses. Bright reflective materials and colors shall be avoided. As appropriate, the exterior design of these facilities should follow design guidelines provided in applicable land use plans. Minimum exterior design requirements shall include, but are not limited to, the following:	Adverse	Significant and Unmitigable

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		• Painting (with earth-colored tones) of structural façades to blend with surrounding land uses; • Maximize the use of textured or other non-reflective exterior surfaces and non-reflective glass to prevent glare; • Use of fencing or structural materials, shall be similar to those used by nearby land uses and compatible with surrounding architecture; • Development of a landscaping plan for each station and layover facility site that uses a combination of locally derived native vegetation, earthen features (e.g., boulders), and, if appropriate, topographical separations (e.g., berms) to maximize site appearance and shield the new facilities from nearby sensitive receptors to the extent feasible; and • Clustering of structural facilities to maximize open space buffering. SANBAG shall coordinate final design plans with the cities of San Bernardino and Redlands prior to final approval. **VQA-3: Tree Replacement.** Prior to construction, SANBAG shall have a registered arborist conduct a tree survey to identify native and ornamental trees requiring removal outside SANBAG's ROW. The arborist will identify measures to avoid and minimize indirect impacts on trees, where feasible, and develop a plan for the replacement of trees that cannot be avoided. The plan will include planting and irrigation design details and a weaning schedule for the establishment period. Trees with a diameter at breast height of 6 inches or greater will		

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		be replaced at a minimum ratios of 1:1 and consistent with City of Redlands and San Bernardino standards. **VQA-4: Sound Barrier Screening and Surface Treatments.** To reduce effects associated with the sound walls, where SANBAG ROW widths allow, drought tolerant landscaping (i.e., trees, vines, and/or shrubs) shall be provided. If the SANBAG ROW width is insufficient to permit landscaping or if landscaping cannot adequately reduce visual impacts, surface treatments that are compatible with surrounding architecture shall be applied to the outside of the sound walls (residential or school facing side). Architectural detailing such as pilasters, wall caps, interesting block patterns, and offset wall layouts shall be used to add visual interest and reduce apparent height of the walls. SANBAG shall coordinate the final design plans with the cities of San Bernardino and Redlands, as applicable, prior to final approval.		
Effect 3.4-2: New Sources of Nighttime Lighting and Glare. The Project would create new sources of light and glare, which could adversely affect day or nighttime views in the Study Area.	Adverse / Significant	**VQA-1: Screening of Construction Staging Areas** **VQA-3: Tree Replacement** **VQA-5: Minimize Exterior Lighting in Adjacent Uses.** To prevent unintended spillover of lighting, lighting fixtures constructed or relocated as part of the Project shall be oriented and focused onto the specific on-site location intended for illumination (e.g., parking lots) and shielded away from adjacent sensitive uses (e.g., schools, residential properties) and public rights of way to minimize light spillover onto off-site areas. New driveways shall be located and oriented into parking lots, to the extent feasible, in a manner that will not result in headlights from vehicles entering or exiting the parking areas oriented directly at off-site sensitive uses. SANBAG	Not Adverse	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		shall coordinate the final design plans with the cities of San Bernardino and Redlands, as applicable, prior to final approval.		
Air Quality and Global Climate Change				
Effect 3.5-1: Conflict with an Air Quality Plan. Implementation of the Project would not result in a conflict or obstruction of an applicable air quality plan.	No Adverse Effect / Less than Significant	No mitigation is proposed.	No Adverse Effect	Less than Significant
Effect 3.5-2: Violate Air Quality Standards. Implementation of the Project would not result in a violation of any air quality standard or contribute substantially to an existing or projected air quality violation.	No Adverse Effect / Less than Significant	No mitigation is proposed.	No Adverse Effect	Less than Significant
Effect 3.5-3: Possible Risk to Sensitive Receptors. Implementation of the Project would not expose sensitive receptors to substantial pollutant concentrations.	No Adverse Effect / Less than Significant	No mitigation is proposed.	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
Effect 3.5-4: Create Objectionable Odors. Implementation of the Project would not create objectionable odors that would affect a substantial number of people.	No Adverse Effect / Less than Significant	No mitigation is proposed.	No Adverse Effect	Less than Significant
Effect 3.5-5: Generate Greenhouse Gas. Implementation of the Project would not generate greenhouse gas emissions, either directly or indirectly, that would have an adverse effect on the environment, or conflict with any greenhouse gas applicable plan, policy, or regulation.	No Adverse Effect / Less than Significant	No mitigation is proposed.	No Adverse Effect	Less than Significant
Noise and Vibration				
Effect 3.6-1: Permanent Increase in Ambient Noise Levels. The Project would result in a permanent increase in ambient noise levels in the Study Area.	Adverse / Significant	**NV-1: Employ Noise-Reducing Measures during Construction.** SANBAG shall require its construction contractors to employ measures to minimize and reduce construction noise. Noise reduction measures that shall be implemented to reduce construction noise to acceptable levels may include but are not limited to the following: • Use available noise suppression devices and techniques, including: – Equipping all internal combustion engine-driven equipment with mufflers, air-inlet silencers, and any other shrouds, shields,	Adverse	Significant and Unmitigable

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		or other noise-reducing features that are in good operating condition and appropriate for the equipment (5 to 10 dB reduction possible). – Using “quiet” models of air compressors and other stationary noise sources where such technology exists. – Using electrically powered equipment instead of pneumatic or internal combustion-powered equipment, where feasible. – Using noise-producing signals, including horns, whistles, alarms, and bells, for safety-warning purposes only. – Locating stationary noise-generating equipment, construction parking, and maintenance areas as far as reasonable from sensitive receivers when sensitive receivers adjoin or are near the construction Project APE. – Prohibiting unnecessary idling of internal combustion engines (i.e., in excess of 5 minutes). – Placing temporary soundwalls or enclosures around stationary noise-generating equipment when located near noise-sensitive areas (5 to 15 decibel reduction possible). – Ensuring that project-related public address or music systems are not audible at any adjacent receiver.		

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		– Notifying adjacent residents in advance of construction work. **NV-2: Prepare a Community Notification Plan for Project Construction.** The construction contractor shall prepare and maintain a community notification plan to address project construction issues the community may have during construction. Components of the plan may include construction phasing to minimize the duration of noise or vibration at any one location. Initial information packets shall be prepared and mailed to all residences within a 500-foot radius of project construction, with updates prepared as necessary to indicate new scheduling or processes. A project liaison shall be identified who will be available to respond to questions from the community or other interested groups. **NV-3: Establish Quiet Zones.** At-grade crossings shall be designed and constructed to be compatible with the formation of Quiet Zones. Prior to the operation, SANBAG shall coordinate with the City of San Bernardino, City of Loma Linda, and the City of Redlands, to construct and establish quiet zones at the following grade crossings • South Arrowhead Avenue; • South Sierra Way; • West Central Avenue; • East Orange Show Road; • South Waterman Avenue; • South Tippecanoe Avenue; • South Richardson Street; • Mountain View Avenue; • West Colton Avenue; • Alabama Street • Tennessee Street;		

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		• Church Street; and • North University Street **NV-4: Construct Sound Barriers.** SANBAG shall install up to 12-foot in height sound barriers at priority locations along portions of the rail corridor to reduce noise levels at receivers identified with severe noise impacts following the application of quiet zones. **NV-5: Wayside Rail Lubrication.** SANBAG shall install wayside applicators for all tight-radius curves on the project alignment prior to the start of Project operations. If the wayside applicators are not sufficient to reduce squeal to an acceptable level, additional reduction may be required through customized profiling of the rail to reduce the forces required for trains to negotiate the curve. **NV-7: Provide Building Noise Insulation to Severe- and Moderate-Impact Residences.** For the ten residential structures represented by Receivers 3, 22, and 41, SANBAG will offer to install sound insulation. Treatments may include sealing and relocating vents, caulking and sealing gaps in the building façade and installing new doors and windows that are specially designed to meet acoustical transmission-loss requirements. Acoustical performance ratings are published in terms of Sound Transmission Class (STC) for these special windows. A minimum STC rating of 39 will be used on any window exposed to the noise source.		
Effect 3.6-2: Create Excessive Groundborne Vibration or Noise. Project-related construction and operation would	Adverse / Significant	**NV-1: Employ Noise-Reducing Measures during Construction** **NV-2: Prepare a Community Notification Plan for**	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
generate groundborne vibration or noise that would potentially affect sensitive land uses (e.g., residences).		**Project Construction** **NV-6: Use Ballast Mats, Resiliently Supported Ties, or Measures of Comparable Effectiveness on Portions of the Rail near Sensitive Receivers.** SANBAG shall install track design specifications as part of project design to include the use of ballast mats or resiliently supported ties on portions of the track near sensitive receivers to minimize project-related ground-borne vibration and wheel rail noise generated when the trains pass sensitive receivers. The actual measures and their corresponding placement will be determined following more detailed vibration testing and analysis during final engineering design. **CUL-1: Structural Evaluations**		
Biological and Wetland Resources				
Effect 3.7-1: Loss and Degradation of Habitat for Special-Status Wildlife Species and Potential Direct Take of Individuals. The Project would modify habitats within the Study Area resulting in direct and indirect effects on sensitive or special status wildlife species, including those listed as a candidate, sensitive, or special-status by California Department of Fish and Wildlife (CDFW) and U. S. Fish and Wildlife	Adverse / Significant	**BIO-1: Pre-Construction Survey - Conduct Preconstruction Survey for Special Status Plants and Wildlife and, if Found, Implement Avoidance and Compensation Measures.** Prior to construction, a qualified biologist retained by SANBAG shall conduct pre-construction surveys for special status plant species including woolly star, slender-horned spineflower, smooth tarplant, and salt spring checkerbloom. Pre-construction surveys will also be required for special status wildlife species including least Bell's vireo, southwestern willow flycatcher, San Bernardino kangaroo rat, yellow-billed cuckoo, burrowing owl, and western spadefoot toad to verify presence or absence in the Project area. If one or more species are detected, then SANBAG shall consult with the USFWS (or CDFW if appropriate) to develop additional minimization measures prior to project	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
Service (USFWS).		construction (if necessary). These additional measures may include construction timing restrictions and/or construction monitoring. **BIO-2: Least Bells Vireo (LBV).** The following measures will be implemented to minimize direct and indirect impacts to LBV during construction: a. Impacts associated with clearing and grubbing of Southern Cottonwood Willow Riparian Forest (SCWRF) and Southern Willow Scrub (SWS) will be timed to avoid the breeding season of the least Bell's vireo (March 15 to September 15), unless SANBAG provides survey documentation to USFWS that confirms the riparian habitat in not occupied by LBV. b. Temporary impact areas will be restored to pre-grade contours following bridge construction. Natural recruitment is anticipated to occur rapidly due to the large amount of intact native riparian habitat that will remain as a seed source. Additionally, the riparian habitat being impacted is adapted to frequent disturbance. The individual species making up the community tend to have large quantities of seeds and very rapid growth that promote rapid re-establishment. Container planting and seeding has not been proposed due to potential conflicts with County Flood Control Maintenance requirements, high risk of plant material being washed out during subsequent storm events and potential conflicts with future Santa Ana River Trail construction. For erosion control purposes, temporarily impacted areas outside of the active floodplain will be hydroseeded with native grasses and shrubs. i. The temporarily impacted SCWRF and SWS		

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		habitat will be monitored annually for five years, until LBV is documented using the re-established habitat or until habitat attains 80 percent cover including both shrub and overstory stratum. If recruitment of SCWRF and SWS species is not evident within two years of project construction or habitat has not attained 60 percent cover within three years, impacts will be treated as permanent and additional mitigation for areas not meeting success criteria shall be provided through in-lieu fee payment to an appropriate mitigation bank for enhancement, restoration or establishment of LBV habitat at a ratio of 1:1. ii. Temporary direct impacts to potentially suitable LBV habitat will be mitigated as follows: The temporal loss of occupied LBV habitat resulting from temporary removal of SCWRF associated with the Mission Zanja Channel shall be mitigated through in-lieu fee payment to an appropriate mitigation bank for enhancement, restoration or establishment of LBV habitat at a ratio of 3:1. The temporal loss of suitable unoccupied LBV habitat resulting from temporary removal of SCWRF and SWS shall be mitigated through in-lieu fee payment to an appropriate mitigation bank for enhancement, restoration or establishment of LBV habitat at a ratio of 2:1. c. Permanent direct impacts to occupied LBV habitat (SCWRF) shall be mitigated at a ratio of 3:1 through in-lieu fee payment to an appropriate mitigation bank for enhancement, restoration and/or creation of LBV		

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		habitat within the Santa Ana River watershed. d. If active LBV nests are identified during pre-construction surveys and noise levels at the nest exceed 60 dBA Leq, noise attenuation structures will be placed or other noise attenuation measures (e.g., reducing the number of construction vehicles or using different types of construction vehicles) will be implemented to reduce noise levels at the nest to 60 dBA Leq (or ambient noise level if greater than 60 dBA Leq). During construction adjacent to these areas, noise monitoring shall occur during the LBV breeding season and be reported daily to USFWS. Construction activities that create noise in excess of the aforementioned levels will cease operation until effective noise attenuation measures are in place to the extent practicable. **BIO-3: MBTA Covered Species.** Prior to habitat removal during the avian breeding season (February 15-August 31), a qualified biologist shall conduct a pre-construction nest survey (in suitable areas) no more than 3 days prior to ground disturbing activities for migratory birds. Pre-construction surveys will be preformed year-round between MP 3.3 and 4.0 with the timing and implementation done in coordination with the CDFW and USFWS. Should an active nest of any MBTA covered species occur within or adjacent to the project impact area, a 100-foot buffer (300 feet for raptors) shall be established around the nest and no construction shall occur within this area until a qualified biologist determines the nest is no longer active or the young have fledged. **BIO-4: Protection of Sensitive Plants and Habitats.** SANBAG shall require the construction contractor to		

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		implement the following measures to protect sensitive plants and habitats during project-related construction. • SANBAG shall designate an approved biologist (project biologist) who will be responsible for overseeing compliance with protective measures for the biological resources during clearing and work activities within and adjacent to areas of native habitat. The project biologist will be familiar with the local habitats, plants, and wildlife and maintain communications with the contractor to ensure that issues relating to biological resources are appropriately and lawfully managed. The project biologist will review final plans, designate areas that need temporary fencing, and monitor construction. The biologist will monitor activities within designated areas during critical times such as vegetation removal, the installation of Best Management Practices (BMPs) and fencing to protect native species, and ensure that all avoidance and minimization measures are properly constructed and followed. • Project employees and contractors that will be on-site shall complete environmental worker-awareness training conducted by the project biologist. The training will advise workers of potential impacts to the sensitive habitat and listed species and the potential penalties for impacts to such habitat and species. At a minimum, the program will include the following topics: occurrences of the listed species and sensitive vegetation communities in the area, a physical description and their general ecology, sensitivity of the species to human activities, legal protection		

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		afforded these species, penalties for violations of Federal and State laws, reporting requirements, and work features designed to reduce the impacts to these species; and to the extent practicable, promote continued successful occupation of areas adjacent to the work footprint. Included in this program will be color photos of the listed species, which will be shown to the employees. Following the education program, the photos will be posted in the contractor and resident engineer's office, where they will remain through the duration of the work. Photos of the habitat in which sensitive species are found will also be posted on-site. The contractor will be required to provide SANBAG with evidence of the employee training (e.g., sign in sheet or stickers) upon request. Employees and contractors will be instructed to immediately notify the project biologist of any incidents, such as construction vehicles that move outside of the work area boundary. The project biologist will be responsible for notifying the USFWS within 72 hours of any similar incident. • Prior to construction, SANBAG shall delineate the construction area (including staging and laydown areas) between Mile Posts 3.3 and 4.0 and erect exclusionary construction fencing along the perimeter of the identified construction area to protect adjacent sensitive habitats (SWS, SCWRF, RAFSS, and Santa Ana wooly star). Limits of the exclusionary fencing shall be confirmed by the project biologist prior to habitat clearing. Exclusionary fencing shall be maintained throughout the duration of construction work from		

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		Mile Posts 3.3 to 4.0. Exclusionary fencing can be removed at the conclusion of construction work as approved by the project biologist. All construction-related vehicles and equipment storage shall occur in the construction area and/or previously disturbed areas as approved by the project biologist. Project-related vehicle traffic shall be restricted to established access roads, construction areas, storage areas, and staging and parking areas. If construction activity extends beyond the exclusionary fencing into sensitive vegetation communities, areas of disturbance shall be quantified and an appropriate restoration approach shall be developed in consultation with USFWS and CDFW. For example, if construction extends beyond the limits of the exclusionary fencing, temporarily disturbed areas shall be restored to the natural (preconstruction) conditions, which may include the following: salvage and stockpiling of topsoil, re-grading of disturbed sites with salvaged topsoil, and re-vegetation with native locally available species. **BIO-5: Burrowing Owl.** SANBAG will conduct take avoidance (pre-construction) surveys for burrowing owl within 30 days prior to initiating ground disturbance activities. These surveys will be completed in no less than 14 days prior to construction. If burrowing owl is identified, the following shall apply: • If burrowing owl is identified during the breeding season (February 1 through August 31) then an appropriate buffer will be established by the		

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		biological monitor in accordance with the 2012 Staff Report on Burrowing Owl Mitigation (CDFW 2012). Construction within the buffer will be avoided until a qualified biologist determines that burrowing owl is no longer present or until young have fledged and a CDFW-approved exclusion plan has been implemented. In addition to avoidance of the occupied habitat, off-site mitigation will be provided as described below: – Replacement of occupied habitat with occupied habitat: 1.5 times 6.5 (9.75) acres per pair or single bird. – Replacement of occupied habitat with habitat contiguous to currently occupied habitat: 2 times 6.5 (13.0) acres per pair or single bird. – Replacement of occupied habitat with suitable unoccupied habitat: 3 times 6.5 (19.5) acres per pair or single bird. • If burrowing owl is identified during the non-breeding season (September 1 through January 31), then a 50 meter buffer will be established by the biological monitor. Construction within the buffer will be avoided until a qualified biologist determines that burrowing owl is no longer present or until a CDFW-approved exclusion plan has been implemented. **HWQ-2: Prepare and Implement a SWPPP** **HWQ-3: Prepare and Implement a Flow Diversion Plan for Construction**		

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
Effect 3.7-2: Loss and Degradation of Habitat for Special-Status Plant Species and Potential Direct Take of Individuals. The Project would modify habitats within the Study Area resulting in direct and indirect effects on sensitive or special status plant species, including those listed as a candidate, sensitive, or special-status by CDFW and USFWS.	Adverse / Significant	**BIO-1: Pre-Construction Survey - Conduct Preconstruction Survey for Special Status Plants and Wildlife and, if Found, Implement Avoidance and Compensation Measures** **BIO-4: Protection of Sensitive Plants and Habitats** **BIO-7 Reseeding for Wooly Star.** Seeds from the closest known occurrences of woolly-star plants found both upstream and downstream of Bridge 3.4 shall be collected in the fall prior to construction of the SAR crossing. If construction activities require the loss of the single wooly-star at the SAR crossing, the collected seeds will be broadcast in the temporary impact areas, near the impacted woolly-star plant, after construction activities are complete and soils have been restored to pre-Project contours. 1. Seed collection and broadcast methodologies will be proposed by a qualified seed collector approved by the Service prior to seed collection in a Santa Ana Woolly-Star Management Plan. 2. Seed harvest shall be from a minimum of three plants per collection location, limited to no more than 50 percent of the available seeds from any one woolly-star plant. 3. Seeds shall be held at the appropriate temperature and humidity for the shortest length of time necessary prior to planting. 4. Planting of seeds shall be coordinated to occur prior to the first rains of the season, typically during early fall.	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		5. If the woolly-star plant known in the Project area is avoided, collected seeds will be hand broadcast near the parental plants where they were collected. If SANBAG confirms that removal of an individual is required during final design, SANBAG will purchase ILF or mitigation credits from a qualified mitigation program to address the Project's temporal affect on woolly-star during the up to three-year construction period. Credits will be purchased to cover affects to the on-site individual and off-site parental plants.		
Effect 3.7-3: Loss and Degradation of Waters of the U.S., including Wetlands, and Waters of the State. Construction of the Project has the potential to result in substantial adverse effects to federally and state-protected wetlands (including, but not limited to, seasonal wetlands) through direct fill or excavation, hydrological interruption, or other indirect impacts.	Adverse / Significant	**BIO-6: Secure Clean Water Act (CWA) Section 404 Permit and Implement All Permit Conditions to Ensure No Net Loss of Functions of Wetlands, Other Waters of the U.S., and Waters of the State).** Before the approval of grading or other ground disturbing activities within 50 feet of jurisdictional areas, SANBAG shall obtain a CWA Section 404 permit, Section 401 water quality certification, and CDFW 1602 Streambed Alteration Agreement. As part of the Section 404 permitting process, if the USACE (and/or CDFW) requires compensatory mitigation, a draft wetland mitigation and monitoring plan (MMP) shall be developed for the selected Build Alternative. The MMP shall be consistent with USACE's and EPA's April 10, 2008 Final Rule for Comp Compensatory Mitigation for Losses of Aquatic Resources (33 CFR Parts 325 and 332 and 40 CFR Part 230). Potential mitigation for impacts to federal and state jurisdictional areas may occur at the following ratios:	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		• USACE Wetland – Permanent: 3:1 – Temporary: restoration (in-kind) • USACE Waters – Permanent: 1:1 – Temporary: restoration (in-kind) • CDFW Riparian – Permanent: 3:1 (SWS and SCWRF) – Permanent: 1:1 (unvegetated stream bank) – Temporary: restoration (in-kind) **HWQ-2: Prepare and Implement a SWPPP** **HWQ-3: Prepare and Implement a Flow Diversion Plan for Construction**		
Effect 3.7-4: Potential Interference with Wildlife or Fisheries Movement. Construction and operation of the Build Alternatives would not interfere substantially with the movement of native resident or migratory fish or within established native resident or migratory wildlife corridors.	No Adverse Effect / Less than Significant	No mitigation is proposed.	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
Effect 3.7-5: Loss of Sensitive Natural Communities. Construction and operation of the Project has the potential to have a substantial adverse effect on local riparian and woodland habitats.	Adverse / Significant	**BIO-4: Protection of Sensitive Plants and Habitats** **BIO-7. Reseeding for Wooly Star** **HWQ-2: Prepare and Implement a SWPPP**	No Adverse Effect	Less than Significant
Effect 3.7-6: Conflict with Local Ordinances and Policies Protecting Biological Resources. The Project would not conflict with the cities of San Bernardino and Redlands tree ordinances.	No Adverse Effect / Less than Significant	No mitigation is proposed.	No Adverse Effect	Less than Significant
Floodplains, Hydrology, and Water Quality				
Effect 3.8-1: Alteration of Drainage Patterns Resulting in Off-Site Flooding. The Project could result in the alteration of existing drainage patterns in a manner that could result in substantial on- or offsite flooding.	Adverse / Significant	**HWQ-1: Prepare Drainage Plan(s) for Structural Facilities.** SANBAG shall prepare a site specific Drainage Plan for all major structural facilities constructed in conjunction with the Project, including stations and parking areas, track improvements, and the proposed layover facility. The Final Drainage Plan shall incorporate measures to maintain on-site runoff during peak conditions to pre-construction discharge levels. Design specifications for the detention and/or infiltration facilities shall provide sufficient temporary storage capacity to attenuate runoff to pre-Project conditions. These improvements will be coordinated with the applicable jurisdictions, including the cities of Redlands and San Bernardino and the SBCFCD, as appropriate.	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		HWQ-2: Prepare and Implement a SWPPP. The construction contractor will develop a SWPPP that complies with the requirements of the NPDES General Construction Permit (Order 2009-0009-DWQ as amended by Order No. 2010-0014-DWQ and 2012-0006-DWQ) for Risk Level 2 projects and implement the BMPs described in the SWPPP. The SWPPP shall identify specific actions and BMPs relating to the prevention of stormwater pollution from project-related construction sources by identifying a practical sequence for site restoration, BMP implementation, contingency measures, responsible parties, and agency contacts. The SWPPP shall reflect localized surface hydrological conditions and shall be reviewed and approved by SANBAG prior to commencement of work and shall be made conditions of the contract with the contractor. The SWPPP shall be prepared by a qualified SWPPP developer with BMPs selected to achieve maximum pollutant removal and that represent the best available technology that is economically achievable. Emphasis for BMPs shall be placed on controlling discharges of oxygen-depleting substances, floating material, oil and grease, acidic or caustic substances or compounds, and turbidity. BMPs for soil stabilization and erosion control practices and sediment control practices will also be required. Performance and effectiveness of these BMPs shall be determined either by visual means where applicable (i.e., observation of above-normal sediment release), or by actual water sampling in cases where verification of contaminant reduction or elimination, (inadvertent petroleum release) is required to determine adequacy of the measure.		

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		Following construction, SANBAG will ensure the provision of sufficient drainage inlet and outlet protection through the use of energy dissipaters, vegetated riprap, and/or other appropriate BMPs to slow runoff velocities and prevent erosion at discharge locations from the rail station and parking areas.		
Effect 3.8-2: Exceeding the Capacity of Existing or Planned Drainage Systems. The Project could result in the contribution of runoff water exceeding the capacity of existing or planned stormwater drainage systems.	Adverse / Significant	**HWQ-1: Prepare Drainage Plan(s) for Structural Facilities** **HWQ-2: Prepare and Implement a SWPPP**	No Adverse Effect	Less than Significant
Effect 3.8-3: Placement of Structures or Encroachment within a 100-Year Floodplain. The Project would include the placement of structures within a 100-year flood hazard area, which could result in damage to proposed structures, existing structures downstream, or redirection of flood flows and corresponding inundation depths.	Adverse / Significant	**HWQ-3: Prepare and Implement a Flow Diversion Plan for Construction.** SANBAG or SANBAG's construction contractor shall develop a Flow Diversion Plan(s) for in-channel construction activities proposed within Warm Creek (Historic)(Bridge 1.1); Twin Creek (Bridge 2.2), SAR (Bridge 3.4), Zanja Channel (Bridges 3.9, and 5.8, and bank improvements), and Mill Creek Zanja (Bridge 9.4). SANBAG's contractor shall incorporate measures to minimize changes to flood flow elevation(s) during construction, address accumulation of floating debris, provide measures that minimize sedimentation to surface waters, and include contingency measures in the event of substantial rainfall. **HWQ-4: Prepare a Natural Hazard Management Plan.** SANBAG shall develop a Natural Hazard Management Plan for the Project. The Natural Hazard Management Plan will include a flood monitoring and evacuation plan for all Project infrastructure located within a delineated	Adverse	Significant and Unmitigable

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		100-year flood zone based on the most recent FEMA mapping. The Plan shall include protocols and procedures for emergency response in the event of a flood, the investigation and repair of track, station, and bridge facilities following inundation, and the provision of interim transit until Project operations resume. **HWQ-5: Flood-Proofing of Critical Infrastructure.** Where feasible, stations and building pads for the proposed train layover facility shall be designed such that the finished floor elevation will be one-foot above the base 100-year flood elevation, where established.		
Effect 3.8-4: Violation of Water Quality Standards. The Project would generate discharges to surface water resources that would potentially violate water quality standards or waste discharge requirements.	Adverse / Significant	**HWQ-1: Prepare Drainage Plan(s) for Structural Facilities** **HWQ-2: Prepare and Implement a SWPPP** **HWQ-3: Prepare and Implement a Flow Diversion Plan for Construction** **HWQ-6: Incorporate Post-Construction Runoff BMPs into Project Drainage Plan, Final WQMP, and Industrial SWPPP.** The Project Drainage Plan, Final WQMP, and the NPDES Industrial SWPPP shall demonstrate treatment, control, and management of the on- and off-site discharge of stormwater to existing drainage systems or drainage features. The final Drainage Plan shall provide both short- and long-term drainage solutions to ensure the proper sequencing of drainage facilities and the final WQMP will ensure sufficient treatment of runoff generated from Project impervious surfaces prior to off-site discharge. SANBAG shall ensure the provision of sufficient outlet protection through the use of energy dissipaters, vegetated rip-rap, soil protection, and/or other appropriate	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		BMPs to slow runoff velocities and prevent erosion at discharge locations for the station platforms, parking areas, and layover facility. A long-term maintenance plan shall be developed and implemented to support the functionality of drainage control devices. The layover facility layout(s) shall also include sufficient container storage and on-site containment and pollution-control devices for drainage facilities to avoid the off-site release of water quality pollutants, including, but not limited to oil and grease, fertilizers, treatment chemicals, and sediment. These measures shall be reflected in the final Industrial SWPPP and WQMP for applicable facilities. The NPDES Industrial SWPPP shall incorporate required maintenance practices and housekeeping to maximize the long-term effectiveness of post-construction BMPs.		
Effect 3.8-5: Alteration of Drainage Patterns Resulting in Off-Site Erosion and Sedimentation. The Project would result in the alteration of existing drainage patterns, in a manner that would result in substantial erosion or siltation on- or offsite.	Adverse / Significant	**HWQ-2: Prepare and Implement a SWPPP** **HWQ-6: Incorporate Post-Construction Runoff BMPs into Project Drainage Plan, Final WQMP, and Industrial SWPPP**	No Adverse Effect	Less than Significant
Effect 3.8-6: Contribute Substantial Sources of Polluted Runoff. The Project would create or contribute to sources of polluted runoff, which would result in the degradation of receiving waters	Adverse / Significant	**HWQ-2: Prepare and Implement a SWPPP** **HWQ-3: Prepare and Implement a Flow Diversion Plan for Construction** **HWQ-6: Incorporate Post-Construction Runoff BMPs into Project Drainage Plan, Final WQMP, and Industrial SWPPP**	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
downstream or otherwise substantially degrade water quality.				
Geology, Soils, and Seismicity				
Effect 3.9-1: Possible Risks to People and Structures Caused by Strong Seismic Ground Shaking and Liquefaction. The Project could result in possible risks to people and structures related to seismic ground shaking and related secondary geologic hazards including liquefaction.	Adverse / Significant	**GEO-1: Prepare Final Geotechnical Report for the Project and Implement Recommended Measures.** A Final Geotechnical Report shall be prepared to verify conditions identified in the Preliminary Geotechnical Evaluation prepared for the Project and to support the refinement of the Project's final design. Facility design for all Project components along the alignment shall comply with the site-specific design recommendations as provided by a licensed geotechnical or civil engineer to be retained by SANBAG. The final geotechnical and/or civil engineering report shall address and make recommendations on the following: • Site preparation; • Soil bearing capacity; • Appropriate sources and types of fill; • Liquefaction; • Lateral spreading; • Settlement; • Landslides (with emphasis on improvements that border the Mission Zanja Flood Control Channel); • Hydroconsolidation; • Compressible/Collapsible soils; • Corrosive soils; • Structural foundations; and • Grading practices.	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		In addition to the recommendations for the conditions listed above, the geotechnical report shall include subsurface testing of soil and groundwater conditions, and shall determine appropriate foundation designs that are consistent with the latest version of the CBC, as applicable at the time building and grading permits are pursued. All recommendations contained in the final geotechnical engineering report shall be implemented by SANBAG.		
Effect 3.9-2: Possible Risks to People and Structures Caused by Landslides. Implementation of the Project would result in possible risks to people and structures from landslides associated with bank failures along the Mission Zanja Flood Control Channel.	Adverse / Significant	**GEO-1: Prepare Final Geotechnical Report for the Project and Implement Recommended Measures**	No Adverse Effect	Less than Significant
Effect 3.9-3: Substantial Soil Erosion or Loss of Topsoil. Project implementation would involve grading and soils movement, which could result in substantial soil erosion or loss of topsoil.	Adverse / Significant	**HWQ-2: Prepare and Implement a SWPPP**	No Adverse Effect	Less than Significant
Effect 3.9-4: Unstable Geologic Conditions. The Project is located on a geologic unit or soil that is unstable, or that would become unstable and would	Adverse / Significant	**GEO-1: Prepare Final Geotechnical Report for the Project and Implement Recommended Measures**	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
result in settlement, lateral spreading, liquefaction, or soil collapse.				
Effect 3.9-5: Exposure to Potential Hazards from Problematic Soils. The Project would expose infrastructure and structures to corrosive soils.	Adverse / Significant	**GEO-1: Prepare Final Geotechnical Report for the Project and Implement Recommended Measures**	No Adverse Effect	Less than Significant
Hazardous Waste and Materials				
Effect 3.10-1: Possible Risk to the Environment Through the Routine Transport of Hazardous Materials. The Project Alternatives and Design Options would result in a hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	Adverse / Significant	**HAZ-1: Prepare and Implement a Construction Hazardous Materials Management Plan and Operational Hazardous Materials Business Plan.** Prior to operation, SANBAG shall prepare and implement a Hazardous Materials Management Plan (HMMP) and Hazardous Materials Business Plan (HMBP) for the Project. The HMMP shall provide for safe storage, containment, and disposal of chemicals and hazardous materials related to Project construction, including the proper disposal of waste materials. The HMBP will provide for safe storage, containment, and disposal of chemicals and hazardous materials related to Project operations. The HMMP and HMBP shall include, but shall not be limited to, the following: • A description of hazardous materials and hazardous wastes used; • A description of handling, transport, treatment, and disposal procedures, as relevant for each hazardous material or hazardous waste; • Preparedness, prevention, contingency, and emergency procedures, including emergency contact information;	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		• A description of personnel training including, but not limited to: (1) recognition of existing or potential hazards resulting from accidental spills or other releases; (2) implementation of evacuation, notification, and other emergency response procedures; (3) management, awareness, and handling of hazardous materials and hazardous wastes, as required by their level of responsibility; • Instructions on keeping Materials Safety and Data Sheets (MSDS) on-site for each on-site hazardous chemical; and • Identification of the locations of hazardous material storage areas, including temporary storage areas, which shall be equipped with secondary containment sufficient in size to contain the volume of the largest container or tank.		
Effect 3.10-2: Possible Risk to the Environment Through an Accidental Release. An accidental release of hazardous materials into the environment could result from Project related construction and operational activities.	Adverse / Significant	**HAZ-1: Prepare and Implement a Construction Hazardous Materials Management Plan and Operational Hazardous Materials Business Plan** **HAZ-2: Pre-Demolition Investigation.** Prior to the demolition of any structures within the Project footprint, a survey shall be conducted for the presence of hazardous building materials such as asbestos-containing materials, lead based paints, and other materials falling under Universal Waste requirements. The results of this survey shall be submitted to SANBAG and the City of San Bernardino's Department of Environmental Health or City of Redlands Department of Environmental Health, as applicable. If any hazardous building materials are discovered, a plan for there proper removal shall be	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		prepared in accordance with applicable requirements of the California Division of Occupational Safety and Health and the County of San Bernardino Environmental Health Services. The contractor performing the work will be required to have a license in the State of California, and possess a C-21, A or B classification. Further and if required, the contractor or their subcontractor will be required to possess a California Contractor License (ASB) to perform any asbestos related work. Prior to any demolition activities, the contractor will be required to secure the site and ensure the disconnection of utilities.		
Effect 3.10-3: Hazardous Emissions Within Close Proximity of a School Site. The Project could result in the emission or use of hazardous or acutely hazardous materials, substances, or waste within a ¼ mile of an existing or proposed school facility.	Adverse / Significant	**HAZ-1: Prepare and Implement a Construction Hazardous Materials Management Plan and Operational Hazardous Materials Business Plan** **HAZ-2: Pre-Demolition Investigation**	No Adverse Effect	Less than Significant
Effect 3.10-4: Disturbance to Known Hazardous Materials Sites. During construction, the Project would create an adverse hazard to the environment as a result of disturbance to identified hazardous materials sites.	Adverse / Significant	**HAZ-3: Prepare Phase I and/or Phase II ESA for Indeterminate or High-Risk Sites.** Prior to grading, further investigation at any of the identified sites of concern with an indeterminate or high risk-ranking shall be conducted, if it is known that ground disturbance at those sites would exceed 18 inches within 50 feet of the site of concern. The additional investigation shall be in the form of a site-specific ASTM-compliant Phase I ESA investigation. The Phase I ESA recommendation would determine if a Phase II Preliminary Site Investigation (drilling and sampling) would be required, as appropriate.	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		Both the Phase I and Phase II ESA investigations would be completed prior to parcel acquisition (therefore, prior to any construction activity). The Project shall comply with recommendations provided in the Phase I ESA and/or Phase II ESA(s). **HAZ-4: Halt Construction Work if Potentially Hazardous Materials are Encountered.** All construction contractors shall immediately stop all subsurface activities in the event that potentially hazardous materials are encountered, an odor is identified, or considerably stained soil is visible. Contractors shall follow all applicable local, state, and federal regulations regarding discovery, response, disposal, and remediation for hazardous materials encountered during the construction process.		
Effect 3.10-5: Possible Impediment to Emergency Plans. The Project would interfere with an adopted emergency response plan or emergency evacuation plan.	Adverse / Significant	**TR-1: Prepare a Traffic Management Plan**	No Adverse Effect	Less than Significant
Effect 3.10-6: Possible Risk to People of Wildland Fires. The Project is located in an area susceptible to wildland fires that would expose people or structures to a considerable risk of loss, injury, or death.	Adverse / Significant	**HAZ-5: Keep Construction Area Clear of Combustible Materials.** SANBAG shall ensure, through the enforcement of contractual obligations that during construction, staging areas, welding areas, or areas slated for development using spark-producing equipment shall be cleared of dried vegetation or other materials that could serve as fire fuel. The contractor shall keep these areas clear of combustible materials in order to maintain a firebreak. Any construction equipment that normally includes a spark arrester shall be equipped with an arrester in good working order. This includes, but is not limited to, vehicles, heavy equipment, and chainsaws.	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		HAZ-6: Provide Accessible Fire Suppression Equipment. Work crews shall be required to have sufficient fire suppression equipment readily available to ensure that any fire resulting from construction activities is immediately extinguished. All off-road equipment using internal combustion engines shall be equipped with spark arrestors.		
Energy				
Effect 3.11-1: Conflict with Adopted Energy Conservation Plans, including Executive Order 13514. The Project would not conflict with any adopted energy conservation plan, including Executive Order 13514.	No Adverse Effect / Less than Significant	No mitigation is proposed.	No Adverse Effect	Less than Significant
Effect 3.11-2: Use non-renewable resources in a wasteful and inefficient manner. The Project would not use non-renewable resources in a wasteful and inefficient manner.	No Adverse Effect / Less than Significant	No mitigation is proposed.	No Adverse Effect	Less than Significant
Cultural and Historic Resources				
Effect 3.12-1: Impacts to Historical Resources Listed Under the NRHP. The Project would cause a substantial adverse change in the significance of a	Adverse / Significant	**CUL-1: Structural Evaluations.** In order to determine the structural stability of the Redlands Depot, Cope Commercial Company Warehouse, Haight Packing House, Redlands City Transfer, and the brick warehouse at 440 Oriental Avenue, structural evaluations shall be prepared by a qualified engineer for these five buildings	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
historical resource listed on or eligible for the NRHP.		prior to the commencement of construction. The structural evaluations will also address maximum allowable levels of vibration during construction and, if appropriate, will recommend reduced levels of stabilization in conjunction with vibration monitoring. Qualified recommendations within the structural evaluation shall be adhered to, as appropriate. Permanent stabilization will follow the Secretary of the Interior's guidelines for the treatment of historic properties; if the buildings are temporarily stabilized for the duration of construction activities, when removed, the buildings will be restored to their pre-construction condition when the stabilization measures are removed. **CUL-2a: Minimize Indirect Visual Effects of Potential Sound Barriers.** Visual surface treatments and drought-tolerant landscaping will be implemented as necessary to minimize indirect effects on the setting and feeling of the Redlands Lawn Bowling Club portion of Sylvan Park and the Second Baptist Church from introduction of sound barriers (if constructed). The surface treatments and landscaping for the sound barrier at the Redlands Lawn Bowling Club will be designed and implemented to harmonize the barrier with the surrounding pastoral park landscape. If a sound barrier is necessary at the Second Baptist Church, surface treatments will be designed and implemented to harmonize the barrier with the Spanish Colonial Revival architecture of the church building. Drought tolerant landscaping will be incorporated into the design of the barrier at the church as needed. **CUL-2b: Conduct Potential Noise Insulation Work at Second Baptist Church in Accordance with Secretary of Interior Standards and Guidelines and Applicable**		

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		Preservation Briefs. Sound-attenuating insulation may be necessary for the Second Baptist Church building. If sound-attenuating insulation measures are implemented at the church building, the work will be conducted in accordance with the Secretary of the Interior's Standards for Rehabilitation with Guidelines for Applying the Standards (Hume et al. 1990) and applicable National Park Service preservation briefs, including #3 (Improving Energy Efficiency in Historic Buildings); #22 (The Preservation and Repair of Historic Stucco); #24 (Heating, Ventilating, and Cooling Historic Buildings: Problems and Recommended Approaches); and # 30 (The Preservation and Repair of Historic Clay Tile Roofs). SANBAG will select and implement the recommended insulation measures in coordination with the property owner and SHPO. **NV-1: Minimize Construction-Related Noise;** and **NV-3: Establish Quiet Zones**.		
Effect 3.12-2: Impacts to Historical Resources Listed Under the CRHP. The Project would cause a substantial adverse change in the significance of a historical resource listed on the CRHP.	Adverse Effect / Significant	**CUL-3: Off-Site Replacement of Citrus Trees Removed from California/I10-Grove.** SANBAG shall coordinate with the City of Redlands, including the Citrus Preservation Commission, to provide for the planting of citrus trees at properties within the Redlands Historical Preserve of Citrus to compensate for the trees removed from the California/I-10 Grove in association with the Preferred Project Alternative. The number of citrus trees planted will be equal to the number of trees removed from the California/I-10 Grove. The types of trees to be planted will be determined through consultation between SANBAG and the City of Redlands, including the Citrus Preservation Commission.	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
Effect 3.12-3: Adverse Effects to Archaeological Resources. The Project could cause a substantial adverse change in the significance of an archaeological resource.	Adverse / Significant	**CUL-4: Construction Monitoring.** Full-time monitoring for archaeological deposits will be conducted in the Project APE in the vicinity of the Redlands Chinatown site (and a 50-foot buffer on each side of the site boundary) during ground disturbing construction activities. Monitoring will be conducted in accordance with a Construction Monitoring and Discovery Plan to be prepared for the project. Monitoring will occur under the supervision of an archaeologist who meets the Secretary of the Interior's Professional Qualifications Standards. *Unanticipated Discoveries*. In the event an unanticipated discovery of archaeological resources occurs during construction, the following measures will be implemented immediately following the discovery: • All construction within a 50-foot radius of the resource will be halted until a qualified archaeologist can evaluate the resource. • FTA and SHPO will be notified in the event of an unanticipated discovery. • If the discovery is determined to be significant or potentially significant by the qualified archaeologist, the adverse effects under Section 106 to portions of archeological resources determined to be eligible for the NRHP would be resolved in consultation with SHPO through the following tasks: – Discussion with project engineers to determine if impacts can be avoided/minimized, including consideration of preservation in place – Recovery and analysis of archaeological material and associated data	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		– Preparation of a data recovery report or other reports – Recovered archaeological material shall be provided to an accredited archaeological repository. Archaeological monitor qualification requirements, detailed approaches to archaeological monitoring of various project elements, and the procedures to follow in the event that unanticipated archaeological resources or human remains are discovered will be defined in the Construction Monitoring and Discovery Plan. *Stop Work if Unanticipated Human Remains Are Encountered*. If human remains are exposed during construction, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the county coroner has made the necessary findings as to origin and disposition pursuant to PRC 5097.98. If the coroner determines the remains to be Native American, the coroner must contact the Native American Heritage Commission and the Project must comply with state laws relating to the disposition of Native American burials that are under the jurisdiction of the Native American Heritage Commission (PRC Section 5097). Construction must halt in the area of the discovery of human remains, the area must be protected, and consultation and treatment would occur as prescribed by law.		

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
Effect 3.12-4: Adverse Effects to Buried Human Remains. Ground-disturbing activities associated with the Project could inadvertently disinter and/or destroy buried human skeletal remains.	Adverse / Significant	**CUL-4: Construction Monitoring**	No Adverse Effect	Less than Significant
Parklands, Community Services, and Other Public Facilities				
Effect 3.13-1: Physical Impacts or Alterations to Government Facilities. Implementation of the Project could result in adverse physical impacts or alterations to parklands and government facilities.	Adverse / Significant	**PCS-1: Coordinate Trail Planning with Local Jurisdictions.** SANBAG will implement the following activities to minimize Project-related conflicts with proposed trails: • Santa Ana River Trail - SANBAG shall coordinate final design and construction of Bridge 3.4 with the San Bernardino County Department of Public Works, Transportation Design Division, and Parks and Recreation Department to integrate the trail as contemplated in the SANBAG's Non-Motorized Transportation Plan (2011) (NMTP), so as to maintain it's planned future continuity along the Santa Ana River. If the trail is constructed and operational in advance of the bridge structure, SANBAG will maintain trail access during the course of construction, to the extent feasible. In instances, where trail closures are required the construction contractor will be required to minimize the duration of the closure and support the County with any noticing, outreach, or implementation of temporary detours.	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		• Orange Blossom Trail - SANBAG shall update the NMTP (2011) as part of it's next cycle update, to include the realignment of the trail segment of the Orange Blossom Trail that is currently shown as being located within the railroad right-of-way, so as to not conflict with the proposed project. SANBAG will coordinate with the City of Redlands and the County Flood Control District to determine available rights-of-way for the placement of the trail and, if necessary, realign the trail to take advantage of connections via existing roadway and other public right-of-ways. **TR-1: Prepare a Traffic Management Plan** **TR-3: Approval from CPUC for Grade Crossings and Safety Measures** **TR-4: Recommended Pre-Signals for Queuing** **VQA-3: Tree Replacement** **VQA-4: Sound Barrier Screening and Surface Treatments** **NV-2: Prepare a Community Notification Plan for Project Construction** **NV-3: Establish Quiet Zones** **NV-4: Construct Sound Barriers** **NV-5: Wayside Rail Lubrication** **NV-6: Use Ballast Mats, Resiliently Supported Ties, or Measures of Comparable Effectiveness on Portions of the Rail near Sensitive Receivers**		

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
Effect 3.13-2: Impact to Service Ratios, Response Times, or Other Performance Objectives. Implementation of the Project could result in potential adverse effects to service ratios and response times for local agencies.	Adverse / Significant	**TR-1: Prepare a Traffic Management Plan**	No Adverse Effect	Less than Significant
Economic and Fiscal Impacts				
Effect 3.14-1: Employment, Income, and Tax Revenues. The Project could result in changes to the Planning Area's employment, income, and tax revenues.	Beneficial / N/A	No mitigation is proposed.	Beneficial	N/A
Safety and Security				
Effect 3.15-1: Increased Pedestrian and/or Bicycle Safety Risks. The Project would result in the potential for increased pedestrian and/or bicycle safety risks.	Adverse / Significant	**SS-1: Develop Safety and Security Management Plan.** Prior to construction, SANBAG shall coordinate and consult with local safety and crime prevention authorities to develop a Safety and Security Management Plan (SSMP) for the track alignment, bridges, parking facilities, and station areas. The SSMP shall include a station surveillance element to be developed in coordination with the local jurisdiction and private properties owners, as applicable. If a non-FRA compliant DMU vehicle type is selected for the Project, the SSMP shall include a plan element that includes appropriate levels of safety as may be necessary to facilitate a shared-use operation. **TR-1: Prepare a Traffic Management Plan**	No Adverse Effect	Less than Significant

Table ES-2. Summary of Preferred Alternative Effects and Proposed Mitigation Measures

Potential Environmental Impacts	Effect/Significance Determination Prior to Mitigation NEPA/CEQA	Proposed Mitigation Measures	NEPA Effect After Mitigation	CEQA Impact Level After Mitigation
		TR-3: Approval from CPUC for Grade Crossings and Safety Measures		
Effect 3.15-2: Substantial Adverse Safety Conditions Related to Accidents. Implementation of the Project could result in a potential for adverse safety conditions, including station accidents, boarding and disembarking accidents, right-of-way accidents, collisions, fires, and major structural failures.	Adverse / Significant	**SS-1: Develop Safety and Security Management Plan** **TR-1: Prepare a Traffic Management Plan** **TR-3: Approval from CPUC for Grade Crossings and Safety Measures** **GEO-1: Prepare Final Geotechnical Report for the Project and Implement Recommended Measures.**	No Adverse Effect	Less than Significant
Effect 3.15-3: Potential for Adverse Security Conditions. Implementation of the Project could result in the potential for adverse security conditions, including incidents, offenses, and crimes.	Adverse / Significant	**SS-1: Develop Safety and Security Management Plan** **SS-2: Fencing.** SANBAG's contractor shall erect temporary fencing and visual screening for staging areas and provide security personnel during construction to minimize trespassing and vandalism throughout the duration of construction.	No Adverse Effect	Less than Significant

CHAPTER 1.0 PURPOSE AND NEED

1.1 INTRODUCTION

The Federal Transit Administration (FTA), Region 9, is the lead agency under the National Environmental Policy Act (NEPA) and has prepared an Environmental Impact Statement (EIS) for the Redlands Passenger Rail Project (RPRP or Project). This document constitutes a joint EIS/Environmental Impact Report (EIR) prepared by the San Bernardino Associated Governments (SANBAG) and FTA (see California Code of Regulations (CCR), Title 14, Division 6, Chapter 3 (State California Environmental Quality Act [CEQA] Guidelines), Section 15222 ("Preparation of Joint Documents"); and Code of Federal Regulations (CFR), Title 40, Sections 1502.25, 1506.2, and 1506.4 (authority for combining federal and state environmental documents).

SANBAG, acting in its role as the San Bernardino County Transportation Commission, is proposing the RPRP to address the transportation needs of the Redlands Corridor. SANBAG is the lead agency under CEQA and has prepared this EIS/EIR to disclose the potential environmental effects of the Project. Based on the need to prepare an EIS and EIR, FTA and SANBAG have elected to prepare a joint NEPA/CEQA document.

The Project is located within the eastern portion of the San Bernardino Valley, within the southwestern corner of the County of San Bernardino, California (see Figure 1-1, Regional Location Map). The Project would consist of the construction of transit infrastructure and operation of passenger rail service between E Street in the City of San Bernardino and the University of Redlands in the City of Redlands. Passenger rail service would be facilitated via five station stops at E Street; Tippecanoe Avenue (or Waterman Avenue); New York Street; Orange Street (Downtown Redlands); and University Street (University of Redlands). SANBAG proposes the replacement of the existing rail line, reconstruction of existing bridge structures, construction of new stations and a train layover facility, and auxiliary improvements such as parking, drainage infrastructure, grade crossings, and pedestrian access as part of the Project.

1.2 ORGANIZATION OF THE EIS/EIR

This EIS/EIR is comprised of ten chapters with supporting appendices. The purpose and need of the Project is outlined in this chapter (Chapter 1). The alternatives and design options considered in the environmental analysis along with those rejected from further environmental analysis are discussed in Chapter 2, *Alternatives Considered*. Chapter 3 provides an environmental analysis of the environmental issue areas. Chapter 4 provides a discussion of the cumulative effects that could result from the Project in conjunction with other reasonably foreseeable projects. Chapter 5 provides a discussion of the other statutory considerations pursuant to CEQA and NEPA. Chapter 6 outlines the public and agency outreach efforts by SANBAG and FTA, Chapter 7 provides a summary of the comments received on along with the minor changes and edits to the Draft EIS/EIR, and Chapters 8 through 11 include the references, list of preparers, acronyms and abbreviations, and an index.

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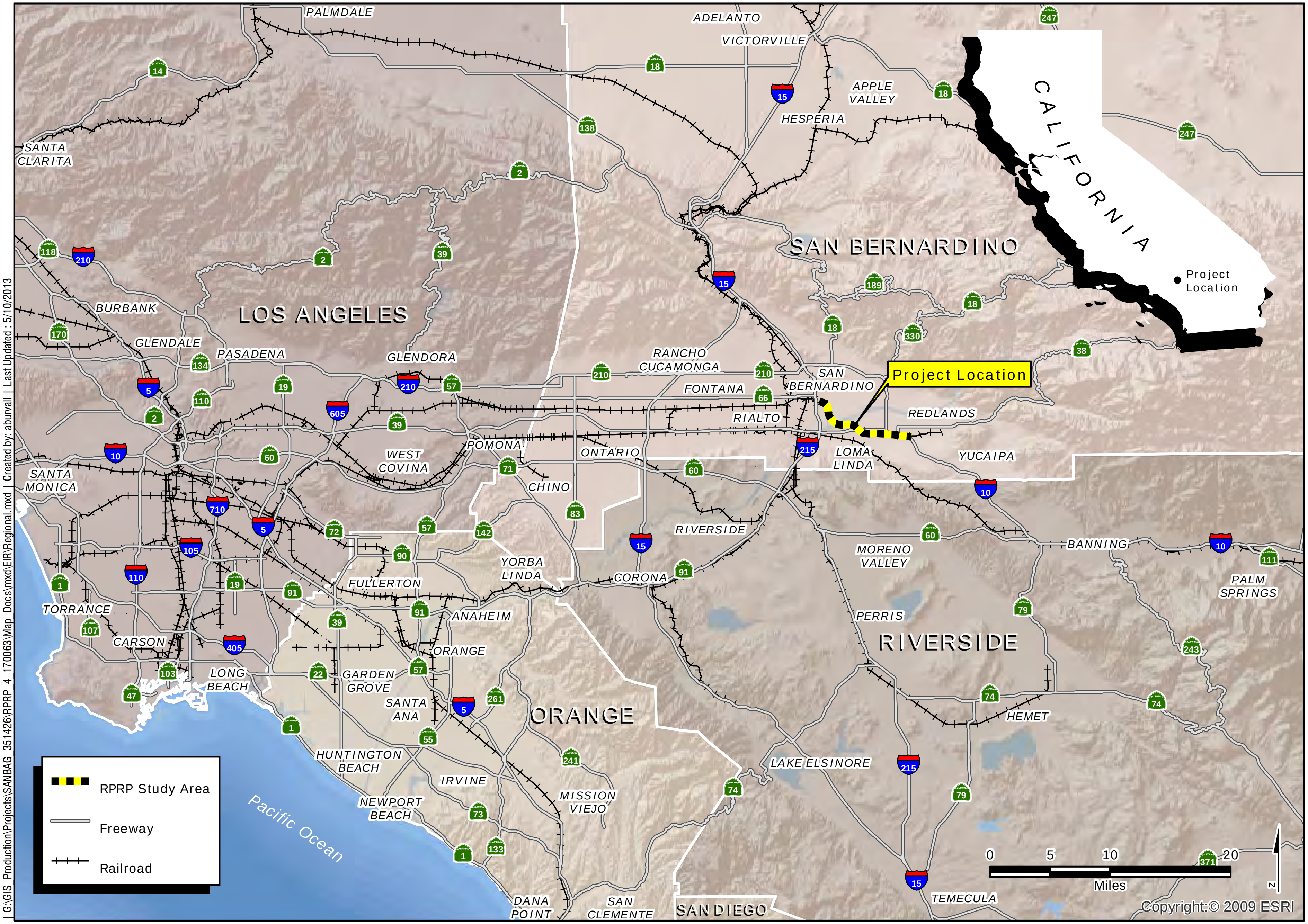

Regional Location Map

Figure 1-1

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

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Appendices A through O provide public outreach and notification materials and technical data, studies, and reports used in support of the environmental analysis. Appendix P contains a complete list of letters received on the Draft EIS/EIR and responses to individual comments. Appendix Q contains SANBAG's proposed Mitigation Monitoring and Report Program (MMRP). Appendix R contains FTA's Record of Decision (ROD) document.

1.3 INTENDED USES OF THE EIS/EIR

This EIS/EIR is an informational document intended to inform agencies and the public of potential significant environmental effects associated with the Project, describe and evaluate reasonable build alternatives and design options, and propose mitigation measures that would avoid or reduce the Project's significant effects.

This EIS/EIR will be used by SANBAG, as the lead agency under CEQA, and by FTA, as the lead agency under NEPA, when making decisions regarding approval of the Project and its implementation. Also, CEQA responsible and trustee agencies (i.e., local jurisdictions and state agencies) will need to utilize this document as part of their respective approvals. The information in this EIS/EIR may also be used by other agencies when deciding whether to grant the permits or approvals necessary to construct or operate portions of the Project.

1.4 NEED FOR THE PROJECT

Estimated Population and Employment Growth

The need for the Project is multifaceted and in response to growing travel demand as evidenced in the current population and employment forecasts that estimate significant growth in southwestern San Bernardino County from now through 2035. The Redlands Corridor is projected to serve as a critical transit linkage for large population, activity, and employment centers situated along the corridor. From now to 2035, employment growth within San Bernardino and Redlands is projected to increase by 22 percent. Over that same period, population growth will increase by 12 percent in San Bernardino and 14 percent in Redlands. In San Bernardino, much of this growth is projected to occur around existing activity centers including, the San Bernardino Transit Center, the Tippecanoe Strategic Area, and the Southeast Industrial Strategic Area. In Redlands, this projected growth would occur at activities centers within the East Valley Corridor, Downtown Redlands, and the University of Redlands. Future employment and population growth will likely result in increased travel demand along the corridor. The Project is needed to accommodate current and future travel demand.

Existing Transportation Options/Modes and Travel Times

This anticipated growth will further affect existing transit travel speeds and reliability as a result of continued decline in the performance of the regional transportation system. Currently, travel times for existing bus transit service routes range between 45 to 60 minutes between Redlands and San Bernardino, depending on the bus route used. Due to existing roadway congestion along these routes, the current on-time performance for transit bus service averages approximately 70%. The Project is needed to improve mobility options for the traveling public and reduce travel delays. The operation of passenger rail service along a dedicated transit route would improve transit reliability and on-time performance when compared to existing transit service, which operates in mixed-flow traffic. Implementation of the Project would reduce transit travel times along the nine-mile Redlands Corridor to approximately 17 minutes, thereby substantially reducing existing transit travel times.

Among the many challenges facing the San Bernardino region is the continued growth in travel demand that for many years has outpaced the region's capacity to expand transportation facilities. The region's major highways have limited expansion potential, due in large part to constrained rights-of-way and the cost of right-of-way acquisition. However, the region's highways are heavily relied upon by commuters to access major employment centers west of the Redlands Corridor in Orange and Los Angeles Counties. For example, Interstate 10 (I-10) the main east-west travel thoroughfare through the Redlands Corridor, has a limited number of access points from major arterial streets. Physical features within the Redlands Corridor constrain the expansion potential for the transportation network. The physical geography of the Redlands Corridor, which is bisected by numerous waterways including the Santa Ana River, has resulted in a discontinuous street network. Given the constraints of the existing transportation network, the Project is needed to provide a mobility alternative to travel on congested roadways and to improve connections to the regional multimodal transportation system.

The Project is identified as a critical transportation need for the region and represents a critical first step in the implementation of transportation solutions as identified in the following planning documents prepared by the Southern California Association of Governments (SCAG):

- Federally Approved Transportation Improvement Program (FTIP), 2013;
- Regional Transportation Improvement Program (RTIP), 2009;
- Regional Comprehensive Plan and Guide (RCPG), 2008; and
- Regional Transportation Plan (RTP) and Sustainable Communities Strategy (SCS), 2012 (see Redlands Rail on pages 98 and 310 of the RTP Project List).

1.5 PURPOSE OF THE PROJECT

In 1989, San Bernardino County voters approved Measure I to ensure that needed transportation projects were implemented countywide through 2010. In 1992, SANBAG purchased a freight rail corridor that extends from San Bernardino to Redlands from the Atchison Topeka & Santa Fe Railroad (AT&SF), predecessor to the Burlington Northern Santa Fe Railway (BNSF) with a vision to implement future passenger rail service in the Redlands Corridor. In 2001, SCAG initiated a visioning process, known as the Compass Blueprint Program, resulting in a regional strategy to accommodate projected growth in Southern California. As part of this visioning process, SANBAG prepared various planning studies and reports to explore the feasibility of establishing passenger rail service between the City of San Bernardino and the City of Redlands, while identifying transportation alternatives, potential rail station locations, and multi-modal transit development opportunities along the Redlands Corridor. The Project would implement SANBAG's vision for the Redlands Corridor in accordance with the previous actions and planning studies that provide the basis for passenger rail service along the railroad corridor including:

- Voter approval of Measure I, November 1989
- Purchase of the Redlands Subdivision right-of-way from the AT&SF Railroad in 1992 from downtown San Bernardino to the vicinity of the University of Redlands
- Redlands Passenger Rail Feasibility Report, August 2003
- Measure I Reauthorization by Voters, 2004

- SANBAG Draft Redlands Passenger Rail Station Area Plans, January 2007
- Redlands Subdivision Study of Operating Alternatives and Infrastructure Requirements, October 2007
- Measure I 2010–2040 Strategic Plan, April 2009
- Long Range Transit Plan, Interim Project Report, 2009
- SANBAG Draft Definition of Alternatives Report, October 2009
- Redlands Passenger Rail Project Final Report, November 2011
- 2012-2035 Regional Transportation Plan (RTP) and Sustainable Communities Strategy (SCS) Final Program EIR, April 2012

The construction and operation of new passenger rail service from San Bernardino to Redlands is identified as a key project in the *Measure I 2010–2040 Strategic Plan*. The RPRP would address the transportation needs of the Redlands Corridor as identified in SANBAG's *Measure I Strategic Plan* and SCAG's *2012-2035 RTP/SCS*, which also identifies the Project as a means to address regional travel patterns within a delineated High Quality Transit Area. SANBAG has also worked to identify and evaluate potential transit investments in the Redlands Corridor to integrate the planned extension of Metrolink services from the San Bernardino Depot to the Downtown San Bernardino and the Omnitrans Bus Facility (see Downtown San Bernardino Passenger Rail Project under Section 3.1.3, Documents Incorporated by Reference).

The overall purpose of the Project is to provide a cost-effective, alternative travel option for communities located along the Redlands Corridor in a way that maintains freight service and improves transit mobility, travel times, and corridor safety while minimizing adverse environmental impacts. The Project would provide travelers and commuters with a new mobility option within a dedicated right-of-way (ROW) that would be capable of achieving shorter travel times than automobiles while facilitating the continuation of existing freight service along the rail corridor consistent with SANBAG's purchase agreement with the BNSF Railroad. Through implementation of the Project, SANBAG would provide new passenger rail service through the communities of Redlands, Loma Linda, and San Bernardino.

The Project would assist SANBAG and the State of California in meeting the air pollution and greenhouse gas emission reduction targets as mandated under Assembly Bill (AB) 32, known as the Global Warming Solutions Act of 2006, and, Senate Bill (SB) 375, known as the California's Sustainable Communities and Climate Protection Act of 2008. These two laws establish the basis for both SCAG and SANBAG to accommodate regional growth through increased access to alternative modes of transit for local communities.

1.6 PROJECT GOALS AND OBJECTIVES

These Project goals and objectives are integral to SANBAG's selection and consideration of alternatives as described further in Chapter 2 of this EIS/EIR. SANBAG's goals and objectives for the Project are outlined below:

- Implement new local transit service consistent with the Measure I Strategic Plan and the RTP to reduce travel time between residential areas, employment centers, and major activity centers;

- Develop necessary rail infrastructure to facilitate passenger service between the cities of San Bernardino and Redlands and maximize opportunities to accommodate track built-out in the future;
- Implement a transit project capable of helping to achieve regional and state goals to reduce greenhouse gases while supporting opportunities for future compact development as required under AB 32 and SB 375;
- Maximize opportunities for revitalization of the Redlands Corridor by linking transit service along the railroad corridor to intermodal hubs, such as the Omnitrans Bus Facility in the City of San Bernardino and Transit Villages planned by the City of Redlands and University of Redlands;
- Implement safety improvements that will benefit both existing freight and proposed passenger operations per Federal Railroad Administration (FRA) safety guidelines and SANBAG's purchase agreement with BNSF; and
- Utilize the existing railroad corridor and right of way to the extent feasible, thereby minimizing potential impacts to sensitive resources, as well as minimizing potential adverse effects to the surrounding communities.

CHAPTER 2.0 ALTERNATIVES CONSIDERED

2.1 HISTORY OF ALTERNATIVES ANALYZED

In early 2009, SANBAG acting in its role as the San Bernardino County Transportation Commission, embarked on an effort to prepare an Alternatives Analysis (AA) with the goal of identifying a Locally Preferred Alternative (LPA) that would qualify for FTA Section 5309 New Starts/Small Starts funding. At the time, the immediate goal was to define a fixed-guideway transit project that could be designed, implemented, funded, and operated. Numerous options were discussed to minimize capital costs (such as reducing trackwork, stations, and vehicles) and operating costs (such as reducing service frequencies and hours of operation).

As part of the AA, a screening methodology and evaluation was developed and conducted for each of the alternatives evaluated including Diesel Multiple Unit (DMU), Light Rail Transit (LRT), Passenger Rail (extension of Metrolink service), and Bus Rapid Transit (BRT). The process focused on the consistency of each transit mode with the Project's purpose and need, as described in Chapter 1, application of the primary FTA New Starts/Small Starts project justification criteria, and identification of environmental issues that could affect the viability of the alternatives. As a result of the AA process, SANBAG determined that the Project would not meet FTA's criteria for New Starts/Small Starts funding. After careful consideration of other viable funding options without using FTA New/Small Starts funding, SANBAG concluded it was necessary to maintain existing freight operations and develop compatible transit infrastructure to allow for the use of multiple funding mechanisms.

SANBAG is proposing the Redlands Passenger Rail Project (RPRP or Project) as the means to implement a new mode of transit service to serve key markets in the Redlands Corridor while still accommodating freight service in the corridor and is considering several alternatives and design options for the Project in this EIS/EIR. SANBAG and FTA released the Draft EIS/EIR for public review and comment on August 6, 2014. The public and agency review and comment period closed on September 29, 2014. This final EIS/EIR has been prepared to respond to comments received on the draft EIR/EIS for the Project per the requirements of NEPA (40 CFR 1503(a) and CEQA (CEQA Guidelines, Section 15008(c).

2.2 PROJECT OVERVIEW

This chapter describes the Project components and construction and operational activities associated with the Build Alternatives and Design Options considered by SANBAG for the Project. SANBAG proposes the introduction of passenger rail service on an existing railroad right-of-way (ROW) in need of improvements between the City of San Bernardino and the City of Redlands in San Bernardino County. This EIS/EIR considers the No Build Alternative, two Build Alternatives, and three Design Options for the Project. The alternatives and design options considered are described as follows: Alternative 1 – No Build; Alternative 2 – Preferred Project; Alternative 3 – Reduced Project Footprint; Design Option 1 – Train Layover Facility (Waterman Avenue); Design Option 2 – Use of Existing Train Layover Facilities; and Design Option 3 – Waterman Avenue Rail Station. These alternatives and design options are considered at an equal level of detail in this EIS/EIR consistent with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

The Build Alternatives and Design Options would include replacement of rail infrastructure along a nine-mile section of railroad owned by SANBAG and is part of the former Atchison, Topeka and Santa Fe (AT&SF) Railroad's Redlands Subdivision; commonly referred to as the "Redlands Branch,, "Short Line," or "Redlands Spur." Each of the Build Alternatives would include passenger rail operations along the existing rail corridor with stops at five locations. Two of the five stops proposed would be located at E Street and either Tippecanoe Avenue or Waterman Avenue in the City of Bernardino; and the remaining three stops would be located within the City of Redlands at New York Street, Orange Street (Downtown Redlands), and University Street (University of Redlands). Each of the Build Alternatives would also include track and subgrade improvements, new rail stations, and improvements to existing bridge structures and at-grade highway-rail crossings. A train layover facility is also proposed as part of the Project; and the Design Options considered provide for flexibility in its location.

2.3 PROJECT LOCATION AND STUDY AREA

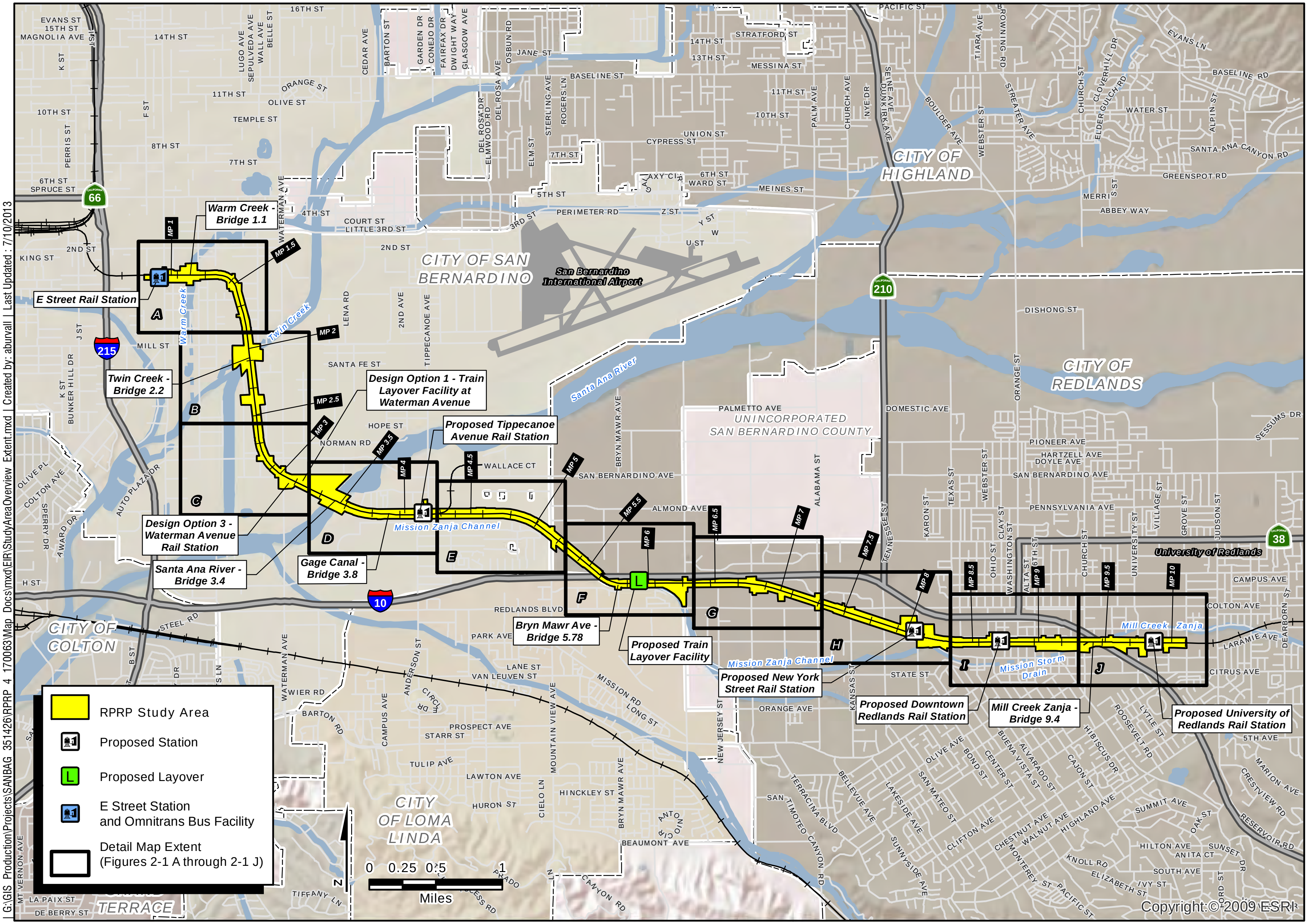
Figure 2-1 provides an overview map of the Study Area for the Project considered in this EIS/EIR. Figures 2-1A through 2-1J, *RPRP Study Area Detail*, identify the location of physical disturbance associated with the Project footprint that would occur for the Preferred Project as described in Section 2.6 below. For the purposes of this EIS/EIR, the Study Area for the Project extends a minimum of 200 feet in either direction from the centerline of the existing railroad ROW for the entire length of the corridor. Additional areas beyond this 200-foot limit are included, as appropriate, to facilitate consideration of related facilities including, but not limited to new stations, potential parking areas, train layover facilities, at-grade crossings, drainage improvements, and bridge improvements that may extend outside the existing railroad ROW.

The Study Area follows the Redlands Subdivision, which extends east of the San Gabriel Subdivision. The "Redlands Branch" was originally constructed in the 1880's by predecessors to the AT&SF Railway Company. The AT&SF divested its assets in 1992 and the physical railroad ROW was purchased by SANBAG while the freight rights and operations over the railroad were purchased by (merged into) the BNSF. The BNSF now provides freight access to existing freight customers along the ROW. The Study Area includes the easternmost nine miles of the 10-mile long Redlands Subdivision and extends along the existing SANBAG ROW that ranges between 50 to 100 feet in width through the cities of San Bernardino and Redlands. In some areas, the SANBAG ROW is restricted to less than 38 feet (e.g., downtown Redlands).

The Study Area description is presented according to mile post (MP) from west to east. The Study Area starts just west of MP 1, east of E Street within the City of San Bernardino and ends at MP 10.1 at the University of Redlands.

MP 1 to 3.2 (see Figures 2-1A, 2-1B, and 2-1C). The Build Alternatives and Design Options all originate at or about the railroad crossing at E Street, just west of MP 1[1], and extend east approximately 1/2 mile before turning southward. Track improvements are proposed eastward from the planned E Street Rail Station proposed in conjunction with the Downtown San Bernardino Passenger Rail Project (DSBPRP) immediately adjacent to and west of E Street.

[1] References to mile posts are based on the Track Chart for the Redlands Spur – San Bernardino, CA (MP 0.0) to Redlands, CA (MP 9.5) – prepared by the BNSF, dated October 1, 2004. This EIS/EIR uses mile post references to describe existing conditions along the rail corridor.



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RPRP Study Area Overview

Figure 2-1

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

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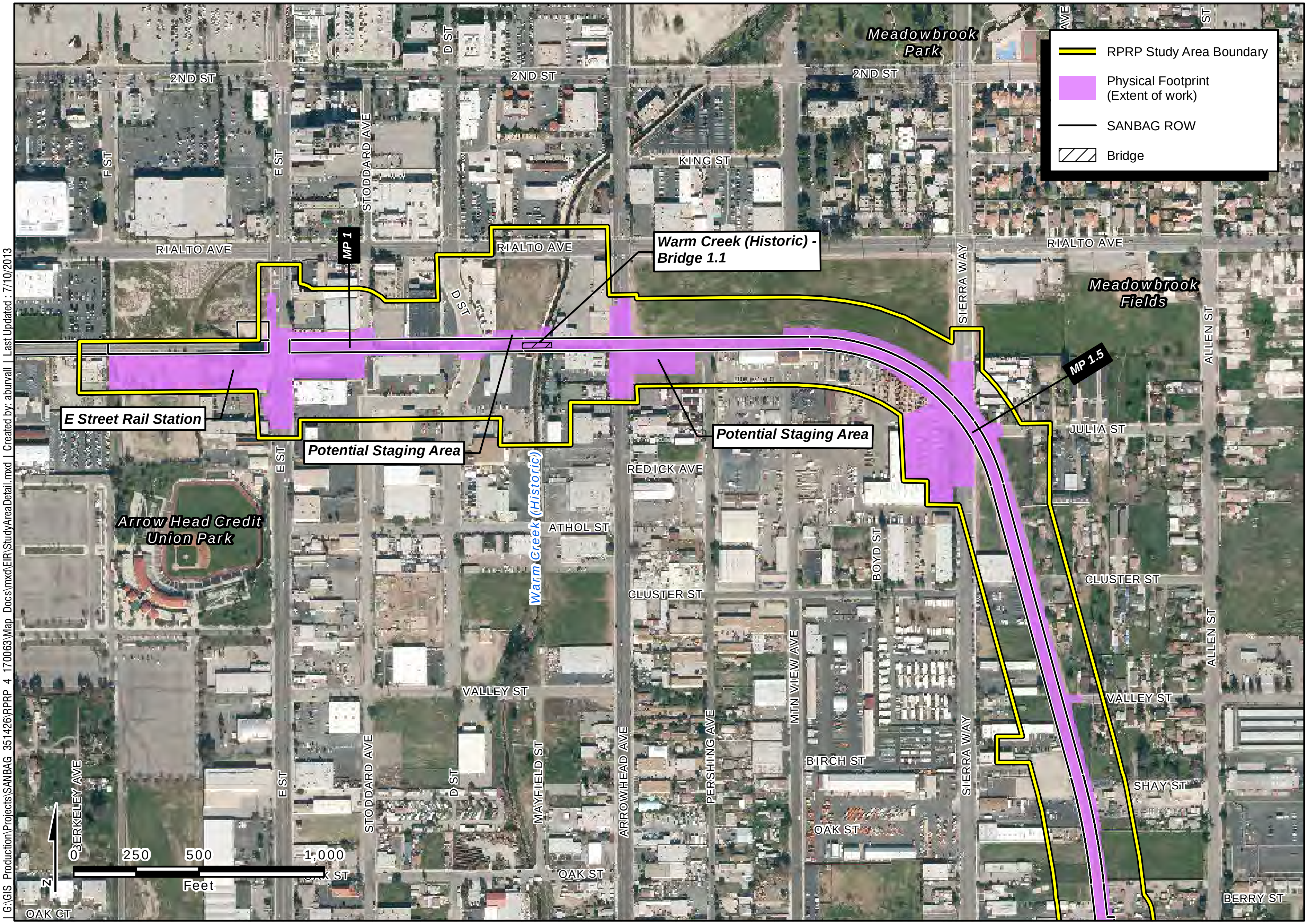

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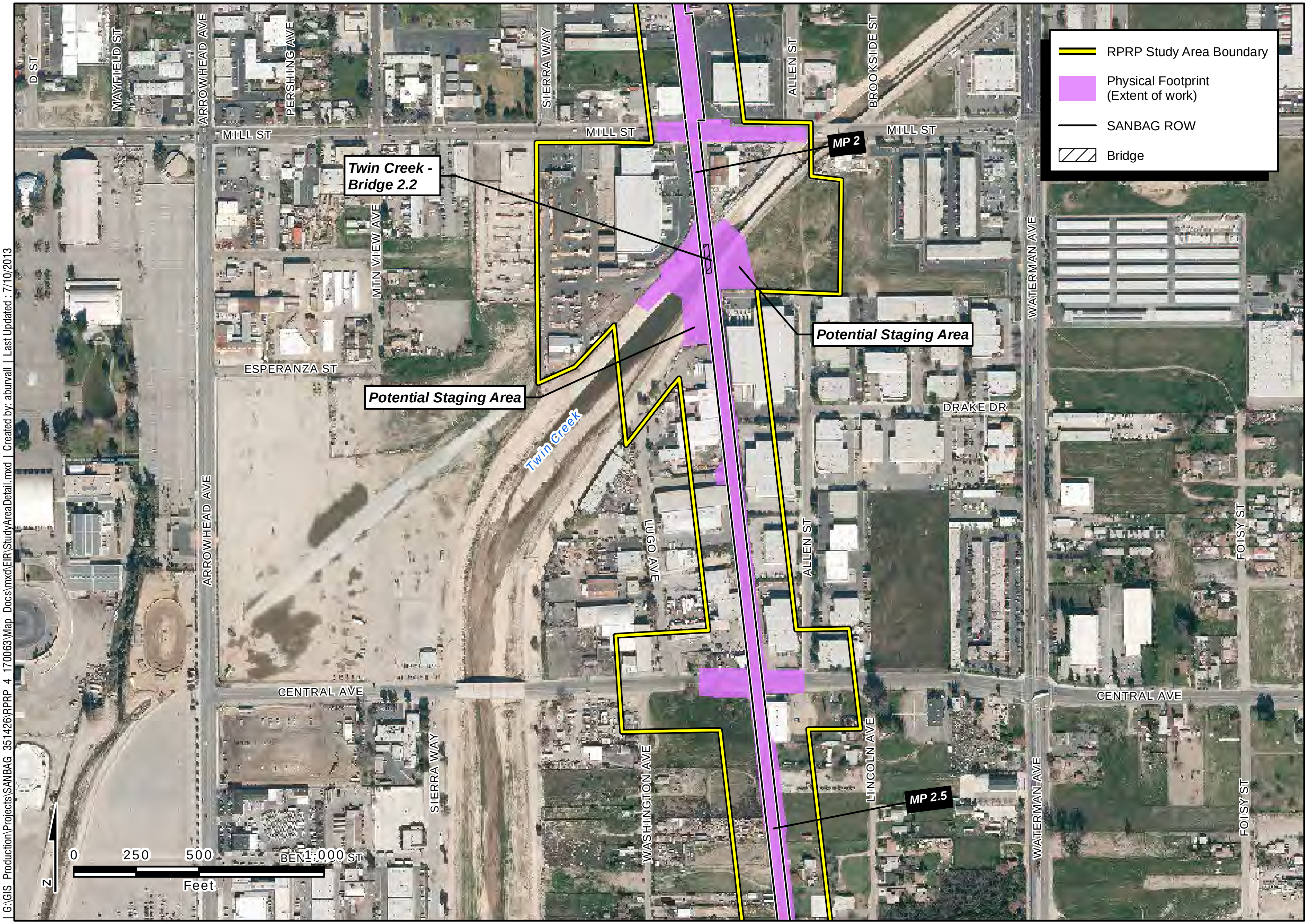
RPRP Study Area Detail – MP 1 to MP 1.8

Figure 2-1 A



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RPRP Study Area Detail – MP 1.9 to MP 2.6

Figure 2-1 B

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

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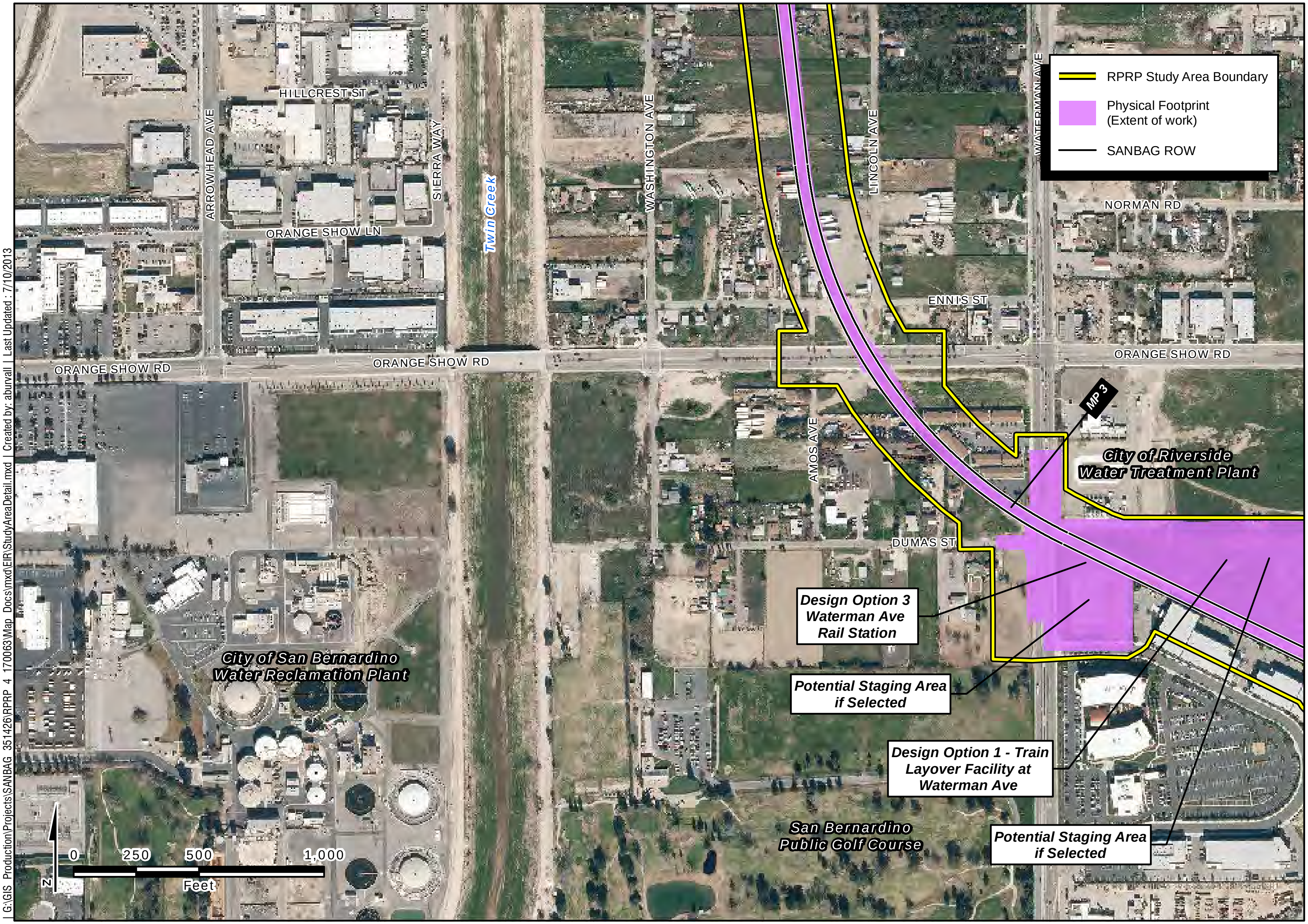

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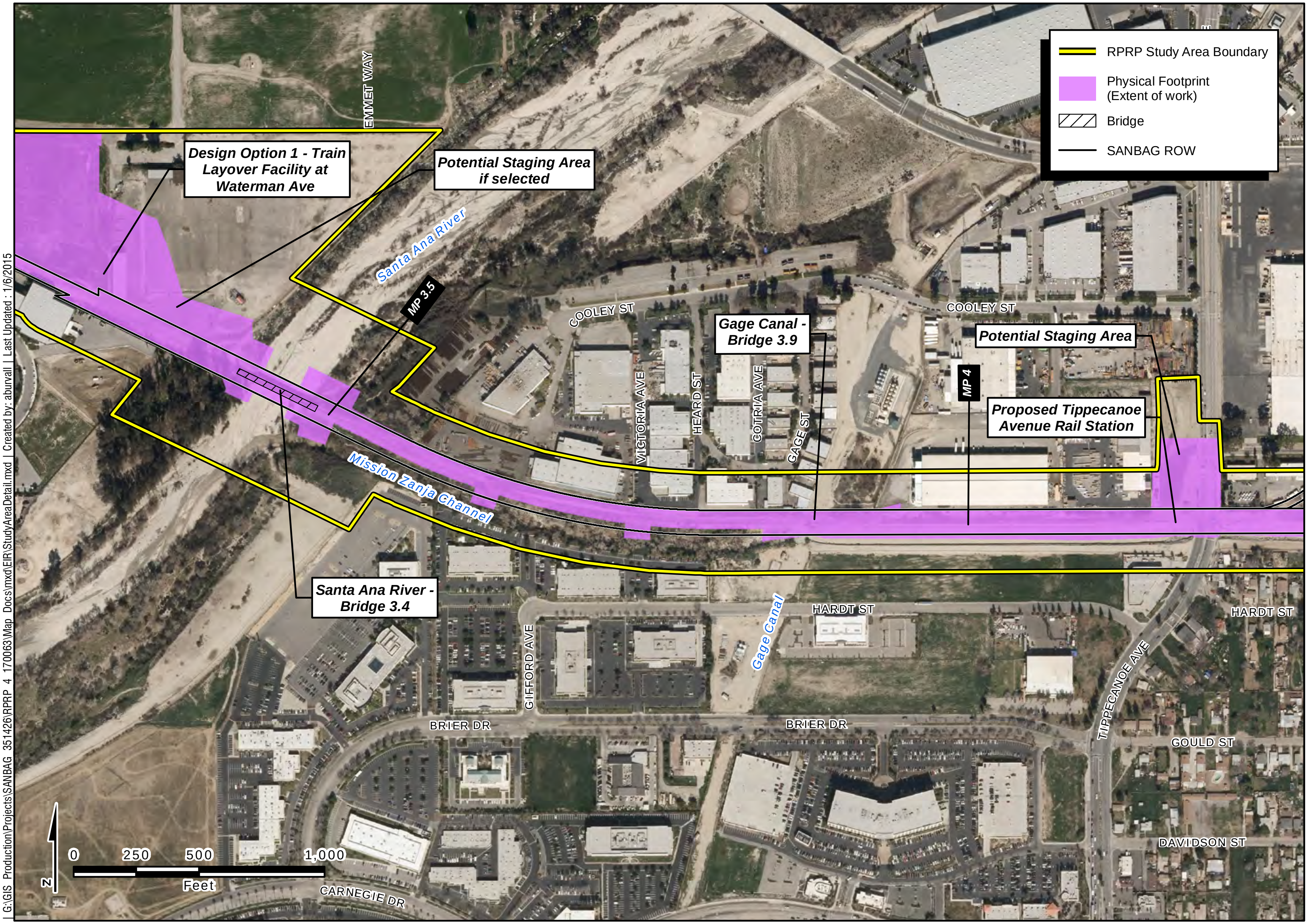
RPRP Study Area Detail – MP 2.7 to MP 3.2

Figure 2-1 C



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RPRP Action Area Detail – MP 3.3 to MP 4.2

Figure 2-1 D (Revised)

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

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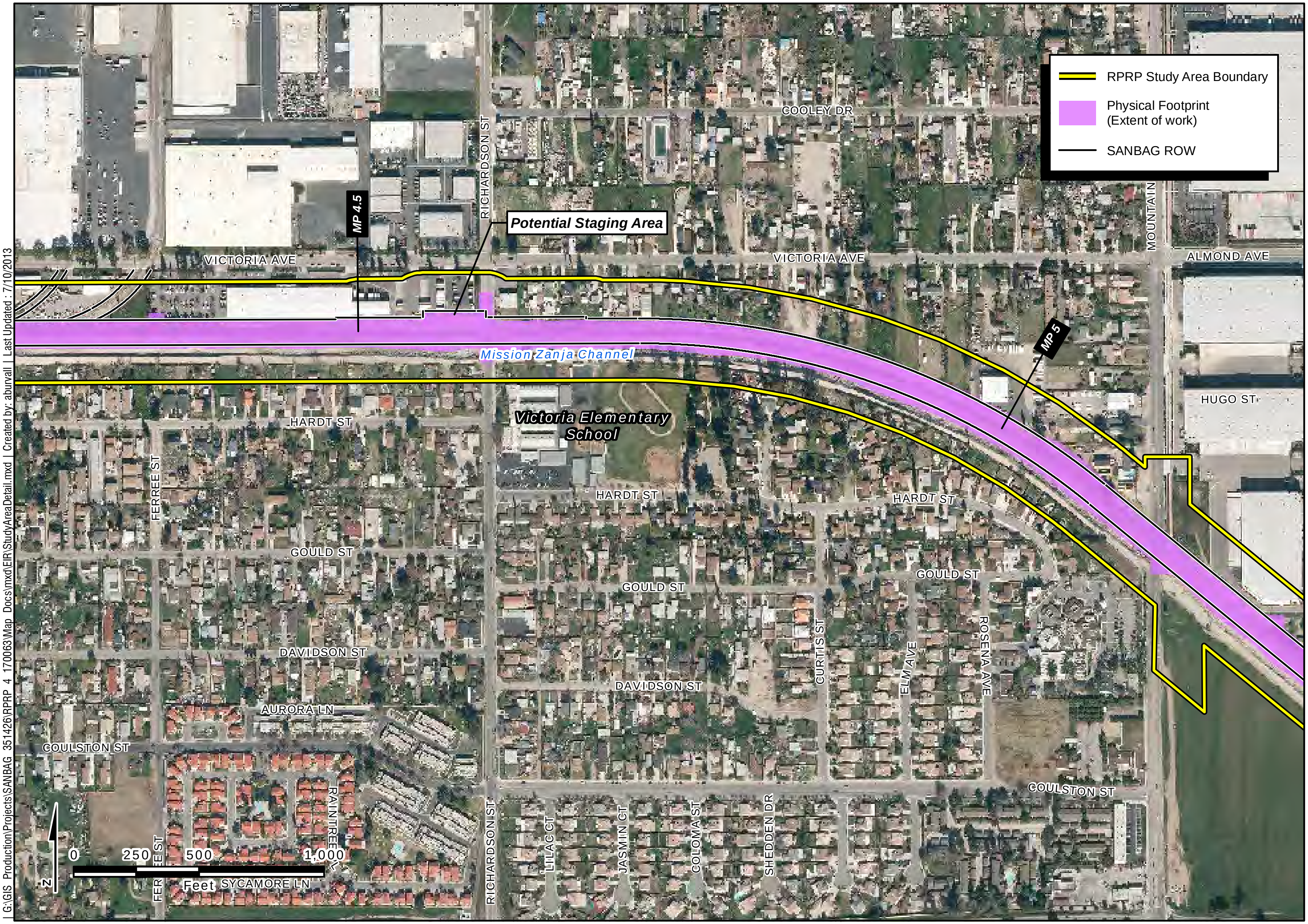

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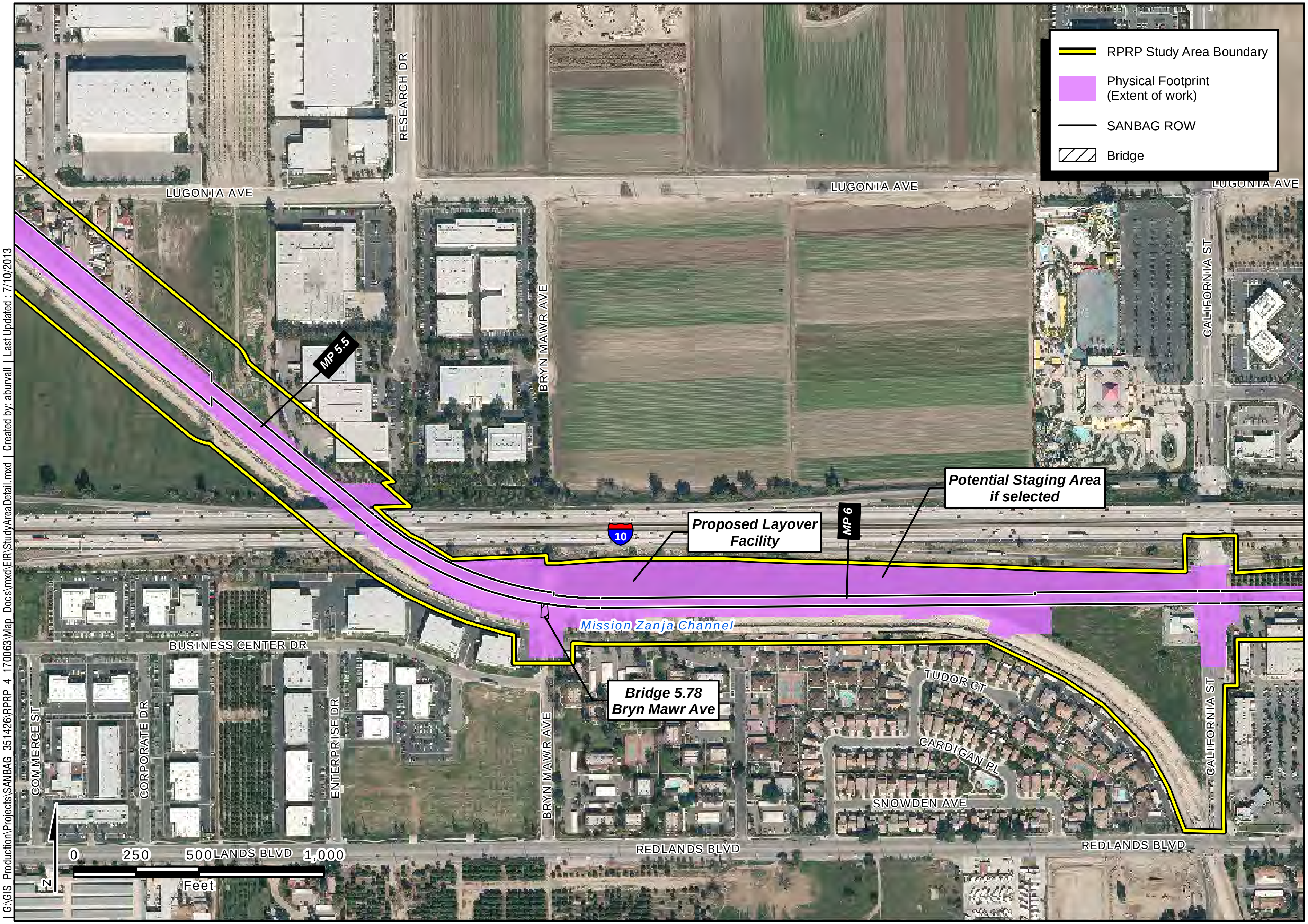
RPRP Study Area Detail – MP 4.3 to 5.2

Figure 2-1 E



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RPRP Study Area Detail – MP 5.3 to MP 6.3

Figure 2-1 F

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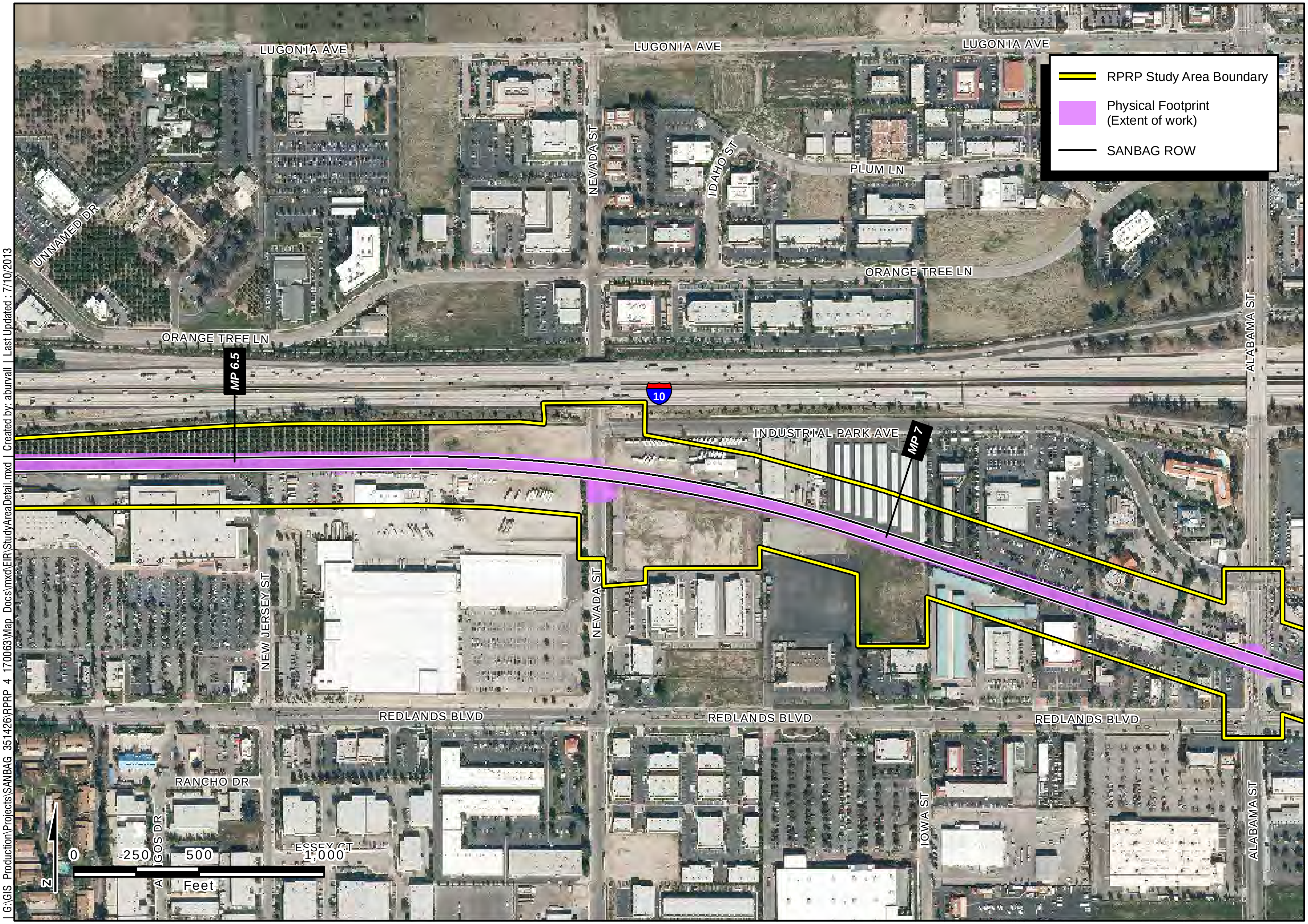

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RPRP Study Area Detail – MP 6.4 to MP 7.3

Figure 2-1 G

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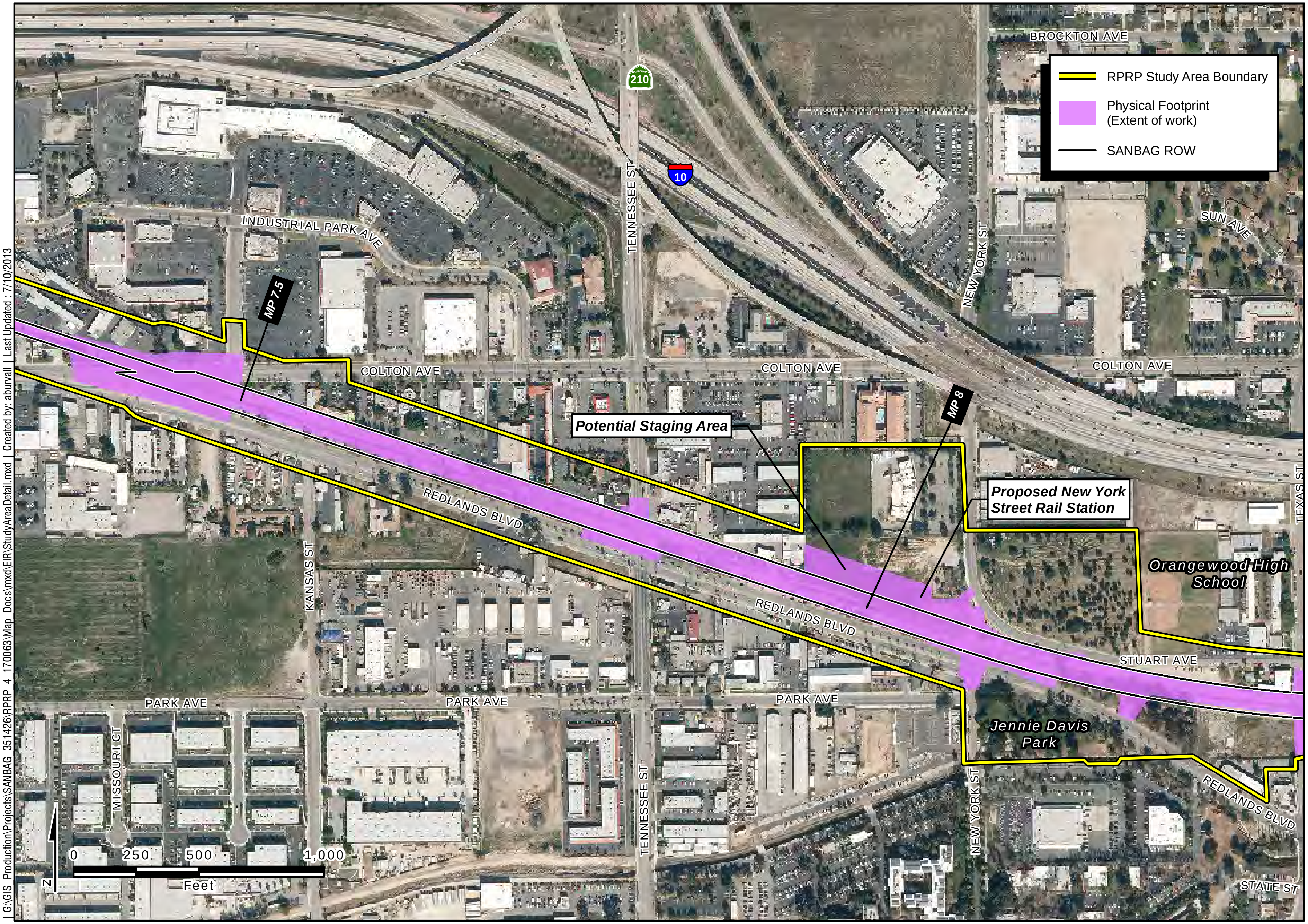

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RPRP Study Area Detail – MP 7.4 to MP 8.3

Figure 2-1 H

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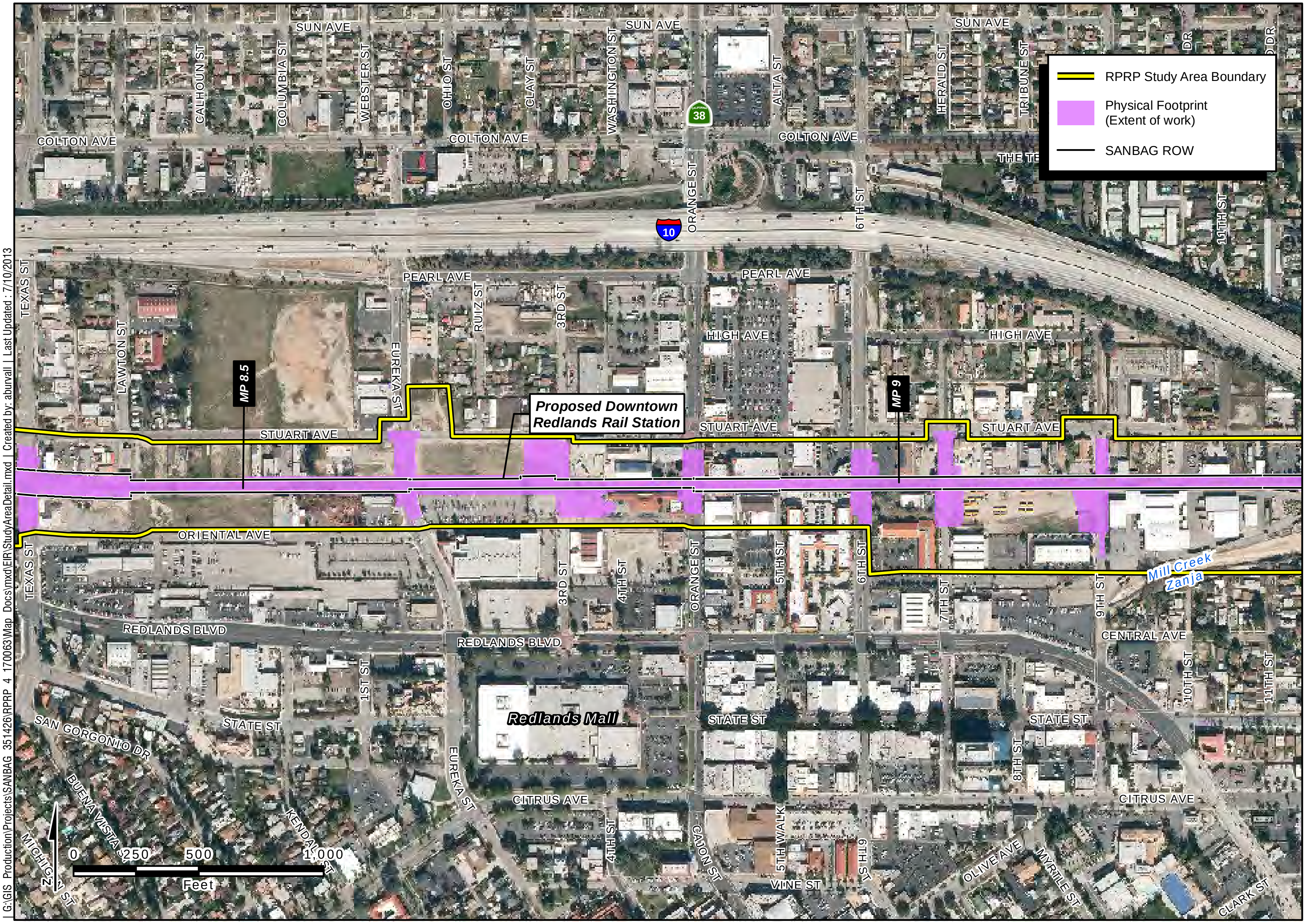

RPRP Study Area Detail – MP 8.4 to MP 9.3

Figure 2-1 I

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

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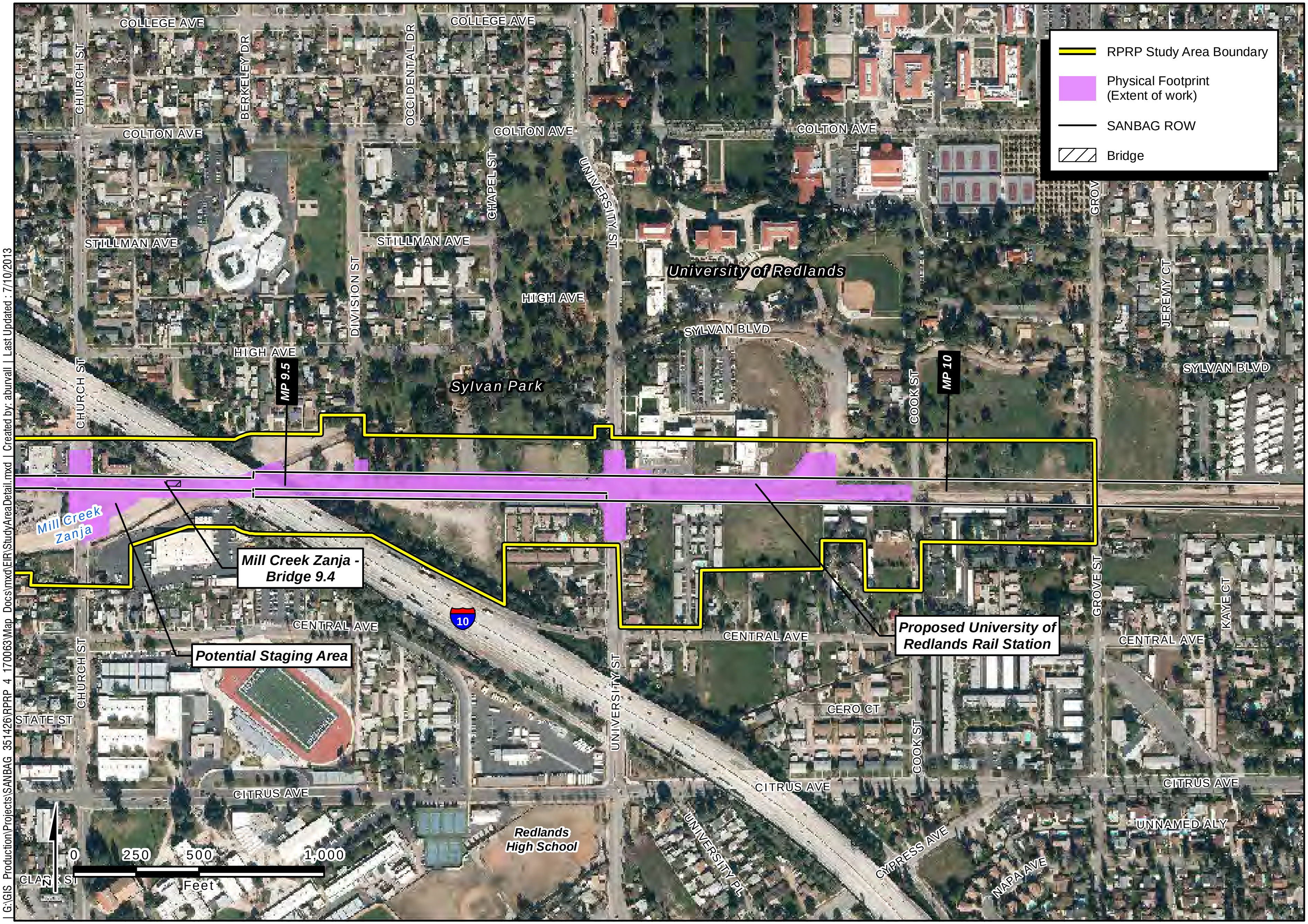

RPRP Study Area Detail – MP 9.4 to MP 10.1

Figure 2-1 J

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Major roadways east of E Street are illustrated in Figure 2-1A and include D Street, Arrowhead Avenue, and Sierra Way. The Study Area begins transitioning south immediately before Sierra Way. This section of the Study Area traverses Warm Creek, which runs north to south, just east of D Street. This segment of the Study Area is generally bordered by existing industrial and commercial development with some isolated vacant parcels. Residential uses are concentrated to the east along Dorothy Avenue.

Immediately after MP 2, the Study Area crosses Mill Street, then continues south for approximately one mile crossing Central Avenue and Orange Show Road before transitioning back to the east at MP 3, just west of Waterman Avenue. This section of the Study Area traverses Twin Creek, which generally runs northeast to southwest through the Study Area. Industrial and commercial uses generally border this section of the Study Area north of Central Avenue. South of Central Avenue, land uses bordering the Study Area transition to residential with large lots. East of Waterman Avenue, adjacent land uses transition back to industrial.

MP 3.2 to 5.2 (see Figures 2-1D and 2-1E). As illustrated in Figure 2-1D, at MP 3.5 the Study Area crosses the Santa Ana River (SAR). This crossing occurs at an existing railroad trestle bridge which is approximately 365 feet in length. East of the SAR, the Study Area continues east, paralleling the Mission Zanja Flood Control Channel (Mission Zanja Channel) for approximately 2.6 miles, and crossing the Gage Canal before MP 4. Along this section of the Study Area, major features crossed include the Gage Canal, Tippecanoe Avenue, Richardson Street, and Mountain View Avenue prior to entering an existing bridge and overhead structure at U.S. Interstate 10 (I-10) (see Figure 2-1F).

Tippecanoe Avenue marks a land use transition from commercial and industrial uses to the west and varying densities of residential development to east. At Mountain View Avenue, the Study Area exits the City of San Bernardino and enters the City of Redlands. Mountain View Avenue marks another significant transition in land use with residential use predominately to the west and commercial and industrial uses to the east.

MP 5.2 to 8.3 (see Figures 2-1F, 2-2G, and 2-1H). After crossing to the south of I-10 just prior to MP 5.7 and Bryn Mawr Avenue, the Study Area borders the northern limits of the City of Loma Linda and continues east parallel and to the south of I-10. I-10 is located immediately north with a cluster of residential land uses located further south of the Mission Zanja Channel. Further to the east, the Study Area crosses California, Nevada, and Alabama Streets where land use transitions to a combination of office, commercial, and manufacturing uses (see Figure 2-1G). At approximately MP 7, or just west of Nevada Street, the Study Area transitions to the east-southeast, and parallels Redlands Boulevard between Alabama Street and New York Street.

Once oriented parallel to Redlands Boulevard, the Study Area crosses Colton Avenue and Tennessee Street prior to reaching New York Street. Commercial and office uses generally border this portion of the Study Area (see Figure 2-1H). To the east of New York Street, the railroad ROW diverts away from Redlands Boulevard and parallels Stuart Avenue to the south.

MP 8.3 to 10 (see Figures 2-1I and 2-1J). At approximately MP 8.25, the Study Area enters downtown Redlands at Texas Street (as defined by the Downtown Redlands Specific Plan). At approximately MP 8.8, the Downtown Redlands Rail Station is proposed west of Orange Street, just south of the railroad ROW on an approximate 2.6-acre site (see Figure 2-1I). The existing Historic Redlands Station is located just east of the proposed rail stations. Along this section of the Study Area, the railroad ROW crosses Eureka Street, Orange Street, 6th, 7th, and 9th Streets, and Church Street. This section of the railroad ROW is bordered by a combination of residential, commercial, office, and retail uses.

Just east of MP 9.4 and Church Street, the Study Area crosses over Mill Creek Zanja and I-10 before entering the University of Redlands. East of I-10, the Study Area parallels Park Avenue with Sylvan Park located adjacent and to the north. Further east, the Study Area ends just west of Cook Street. Land uses bordering the rail corridor east of I-10 generally consist of residential uses to the south of varying densities and the University of Redlands to the north.

2.4 ALTERNATIVES AND DESIGN OPTIONS CONSIDERED

During SANBAG's initial alternatives analysis, multiple transit modes and supporting transit infrastructure were considered. Several key factors narrowed the range of build alternatives for consideration in this EIS/EIR. Of these factors, SANBAG's need to facilitate continued freight movements along the railroad corridor, minimization of property acquisitions through the use of SANBAG's existing ROW, and avoidance of environmental resources were the most critical. As described in more detail in Section 2.5, transit modes that would require the construction of a separate, parallel track system, which would double the size of the Project's physical footprint, were not carried forward in favor of transit modes that could operate on the same track infrastructure. Through this screening process, the use of diesel-powered locomotives or a DMU were determined to be vehicle options that would satisfy this requirement. This EIS/EIR considers the following build alternatives and design options with the operation of one of these compatible vehicle technologies:

- Alternative 1 – No Build
- Alternative 2 – Preferred Project
- Alternative 3 – Reduced Footprint Alternative
- Design Option 1 – Train Layover Facility (Waterman Avenue)
- Design Option 2 – Use of Existing Train Layover Facilities
- Design Option 3 – Waterman Avenue Station

Each of these alternatives and design options are described in further detail under the following subheadings.

2.4.1 Alternative 1 - No Build

This EIS/EIR considers the No Project Alternative, as required by CEQA, and the No Action Alternative, as required by NEPA, as a single alternative to the Preferred Project. Under the No Build Alternative, SANBAG would not implement the Project and passenger rail service would not be extended from San Bernardino east to the University of Redlands. Additionally, the No Build Alternative would not include: (1) improvements to or reconstruction of rail infrastructure to accommodate passenger rail service; (2) roadway closures; (3) rail station improvements; or (4) a train layover facility. Existing conditions within the rail corridor would remain unchanged, and the rail line east of E Street would continue to be used for low-speed, local freight service and maintained as a Class 1 railroad track consistent with BNSF's existing operating plans with no corresponding potential for passenger rail service along the eastern nine miles of the Redlands Subdivision. Future freight train activity along the entire railroad corridor is plausible; however, to an undetermined extent.

Under the No Build Alternative, SANBAG would still be required to perform regularly scheduled maintenance of the existing track and corresponding improvements at grade crossings and bridges to facilitate continued freight service per SANBAG's obligations with BNSF. As a result, the No Build Alternative assumes that some renovation and rehabilitation projects would be required within the next 10 years to facilitate continued freight operations. These maintenance improvements may occur along the existing track alignment and may extend throughout the railroad corridor to Redlands. This may include maintenance of existing bridges including Bridges 1.1 (Historic Warm Creek), 2.2 (Twin Creek), and 3.4 (SAR); and improvements to the crossing at MP 3.9 (Gage Canal). Complete replacement of nearly all existing grade crossings may also be required.

These maintenance improvements may not occur until required and programmed into SANBAG's annual budget based on available funding. For the purposes of analysis, this EIS/EIR assumes that these improvements may occur incrementally over the next 10 years and may require construction activities within the existing ROW. These activities would be contained within the existing ROW and would not require acquisition of adjacent property.

Existing bus service operated by Omnitrans would continue to provide the main source of transit service between San Bernardino and Redlands. This would include Omnitrans' bus routes 8 and 9 that operate at 60-minute headways, but are offset by 30 minutes with transit times ranging from 45 to 50 minutes between San Bernardino and Redlands. Route 15, operated at a 30-minute headway, also serves both downtown areas, but travels north to the City of Highland thereby increasing the travel time up to 60 minutes between San Bernardino and Redlands. Routes 2 and 19 do not provide direct connections and would require transfers to travel between downtown San Bernardino and Redlands, thereby resulting in travel times of up to 60 minutes. Section 3.3, Transportation provides a description of the existing transit services that would continue to operate under the No Build Alternative.

2.4.2 Alternative 2 – Preferred Project

The Preferred Project would involve the implementation of rail improvements along the Redlands Corridor to facilitate passenger rail service between E Street in the City of San Bernardino and the University of Redlands in the City of Redlands. Major physical components part of the Preferred Project and described in this chapter include: track improvements; improvements to or replacement of existing bridges; roadway at-grade crossings improvements; new stations; a train layover facility; property acquisitions and relocations; utility replacement and relocation; and drainage improvements.

The five station stops proposed in conjunction with the Project would be located at E Street and Tippecanoe Avenue within the City of San Bernardino and New York Street, Orange Street, and University Street within the City of Redlands. Service would be provided by up to two passenger trainsets composed of up to two cars and one diesel locomotive or two DMUs shuttling between downtown San Bernardino and the University of Redlands on 30-minute headways during the peak morning and evening periods, and on one hour headways during off peak hours and weekends. Up to two Metrolink express trains would also run westbound in the AM peak period and eastbound in the PM peak period, originating/terminating at the Downtown Redlands Rail Station and may be composed of a typical Metrolink trainset. With the exception of the express train, daily operations would not interline with Metrolink's Los Angeles Union Station line (Metrolink San Bernardino Line) or Inland Empire to Orange County line (Metrolink IEOC line). Rather, the RPRP would interface with Metrolink's IEOC and San Bernardino Lines at E Street to facilitate passenger rail service to Downtown Los Angeles, to the west. The Project does not include any corresponding increase in freight service.

The overall Project and major components are described in Sections 2.4.2.1 through 2.4.2.15 below, and are generally illustrated in Figure 2-1A through Figure 2-1J.

2.4.2.1 Description of Passenger Rail Operations

The Project would incorporate the use of previously owned or new passenger rail locomotives or new DMUs with operations commencing in early 2018. The vehicle type purchased by SANBAG proposed for the Project would meet Tier 4 requirements[2]. Three types of vehicle options were considered for the Project's vehicle fleet: two (2) diesel-powered locomotives, (an MP-36 or F-59), and a DMU. Functionality would be built into the system to allow for up to two Metrolink express trains during the AM and PM peak periods to interline with the Project and extend Metrolink service to Downtown Redlands. A summary of the estimated operating characteristics of the Project is provided in Table 2-1.

Table 2-1. Project Operating Characteristics (Average)

	Day of Week	Frequency (minutes)	Hours
Service Frequency and Hours of Operation:	Weekday	30 minutes – peak	6:00 a.m. – 9:00 a.m. 3:00 p.m. – 7:00 p.m.
		60 minutes – off peak	5:00 a.m. – 6:00 a.m. 9:00 a.m. – 3:00 p.m. 7:00 p.m. – 10:00 p.m.
	Weekend	60 minutes	5:00 a.m. – 10:00 p.m.
Vehicle Capacity	Each vehicle accommodates 132-162 seats (coaches and cab cars). The maximum capacity of the vehicle is greater than the number of seats due to standing room on the trains.*		
Train Consist	2-car trains during the entire span of service (1 locomotive with 2 cars)		
Vehicle Fleet Requirement	6 Total Fleet (including 3 locomotives and 6 cars)		
Route Length	9.11 miles		
Average Station Spacing	2.3 miles		
Average Speed	37.6 miles per hour		
Maximum Speed	55 miles per hour		
Run Time Estimate (E Street to Univ. of Redlands	Approximately 17 minutes (run time estimate includes actual run time and stations dwell time)		
Local Train Mileage (Daily)	481.7 miles		
Express Train Mileage (Daily)	36 miles**		

Note: *Metrolink Coaches and Cab Cars (Bombardier). Load standard assumes 100% of seats.
**Mileage only includes additional express train miles traveled along rail corridor and not west of E Street.
Source: HDR Engineering 2013

[2] Tier 4 locomotives and locomotive engines are required to meet applicable standards set by the U. S. EPA at the time of original manufacture and each subsequent remanufacture. Emission regulations for locomotive engines are contained in the US Code of Federal Regulations, 40 CFR Parts 85, 89 and 92.

Local rail service would operate between the E Street and University of Redlands Rail Stations with stops at each of the station stops along the route. Trains would operate every 30 minutes in the peak periods and every hour in the off-peak period. This would translate to 25 average daily round trips during weekdays. Typical weekday operations are summarized in Table 2-2. Of these total daily trips, up to two AM peak period trains and two PM peak period trains would interline with Metrolink at E Street. These interlined trains would operate as express runs to/from the Downtown Redlands Station to Los Angeles Union Station. During weekday operations, up to 16 employees may be present at any given time, including security personnel. SANBAG may employ one Operations Manager to manage the contracted operation of the system.

Table 2-2. Project Weekday Operations

Route Segment	Average Speed (mph)	Travel Time (minutes)	Distance (miles, approx.)
Eastbound Operations			
EB: 1 - E Street to Tippecanoe	32.43	6.09	3.29
EB: 2 - Tippecanoe to New York	35.87	6.59	3.94
EB: 3 - New York to Downtown Redlands	19.40	2.07	0.67
EB: 4 - Downtown Redlands to University of Redlands	34.12	1.84	1.05
Average/Total/Total	**30.5**	**16.6**	**9**
Westbound Operations			
WB: 1 - University of Redlands to Downtown Redlands	22.60	2.79	1.05
WB: 2 - Downtown Redlands to New York	19.72	2.04	0.67
WB: 3 - New York to Tippecanoe	36.91	6.40	3.94
WB: 4 - Tippecanoe to E Street	36.62	5.40	3.29
Average/Total/Total	**29**	**16.6**	**9**

Source: HDR Engineering 2013

Ridership forecasts were prepared by Cambridge Systematics, Inc. (2013), for a year 2038 horizon year and are based on the transit operating plans as described in the Project's Ridership Study (see Appendix C). The daily-unlinked transit ridership[3] forecasts for the Project indicates that up to 820 daily riders may use the new passenger rail service at opening day in 2018 (see Appendix C). Daily ridership in the future is contingent on many factors including, but not limited to, regional growth patterns and future land use projections. Ridership projections in future conditions (2038) would increase to 1,330 daily trips (see Appendix C). Projections beyond these initial estimates based on future cumulative projects are discussed in Chapter 4, Cumulative Effects. These ridership projections assume no changes in existing bus routes.

An initial control point[4] at the entry to the rail corridor, east of the E Street Rail Station, would allow entry of trains into the rail corridor from the station tracks to the west and would be controlled by Southern California Regional Railroad Authority (SCRRA) centralized train control

[3] Unlinked trips (passenger boardings) are used to describe the relative amount of activity on transit routes and at transit stations for the alternatives.

[4] Train movements generally occur between control points or interlockings, which are controlled by a centralized controller or dispatcher.

and dispatch. After passenger rail operations are secured in the evening, the once weekly or bi-weekly local freight services would be allowed to enter the branch line to service shippers. Scheduling would be coordinated with other local transit service providers to optimize the Project's inter-linkage with other transit modes.

2.4.2.2 Track Improvements

The Project would utilize the railroad ROW owned by SANBAG, which varies from 38 to 100 feet in width. In most instances, this ROW is sufficient to accommodate the Project. In instances where the ROW is 50 feet or less, temporary construction activities could extend up to an additional 10 feet on each side of the ROW. For example, the track subgrade may require cut and fill that extends beyond the current railroad ROW; however, these activities may be contained within the 10-foot (+/-) temporary construction ROW and balanced through the use of retaining structures, engineered slopes, or permanent improvements within the 50-foot ROW. Existing grades along the rail corridor would be consistent in the post-construction condition to reduce changes to existing drainage patterns.

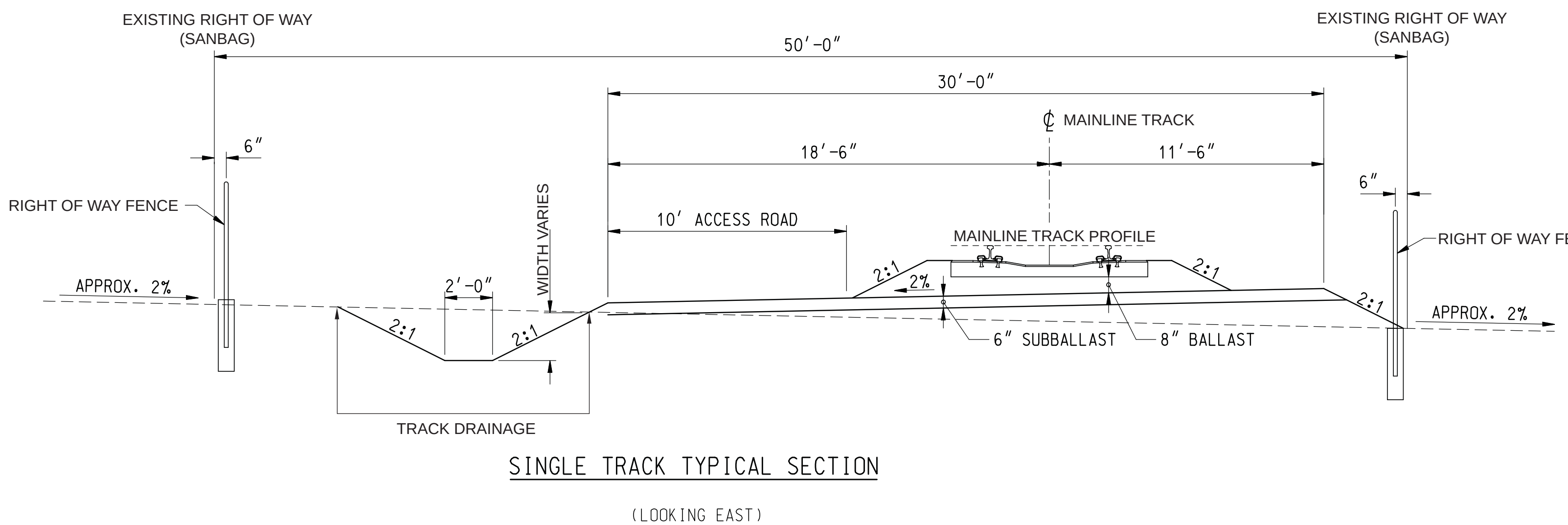
The Project includes the construction of track improvements to facilitate train movements along a single track through the rail corridor with an approximately 10,000-foot-long section of passing track or siding, from just west of Richardson Street to just east of California Street (MP 5.5 to MP 7.4). The proposed track ballast and sub-grade along the nine-mile corridor would generally be constructed to 50 feet in width and would require demolition and replacement of the existing track. Existing ballast and sub-grade materials would be reused to the extent possible and may serve as fill material to raise the site of the proposed layover facility. The track improvements would include the installation of new continuously welded rail on concrete ties and new ballast and sub-ballast sections throughout the rail corridor.[5]

Figures 2-2A through 2-2C illustrate three typical cross-sections of the proposed track improvements along the railroad corridor, which may include a new single track, with drainage improvements and maintenance road where feasible, a siding track cross-section, and constrained right-of-way track cross-section through downtown Redlands.

2.4.2.3 Structural Crossings and Bridges

The Project would require the replacement or retrofitting of up to six existing structural bridge crossings to facilitate the loading requirements of the passenger and freight trains and track foundation. The location of each of these proposed structural replacements/retrofits is illustrated in Figure 2-1. Five of the six structural crossings consist of existing bridge structures at water crossings including Warm Creek, Twin Creek, SAR, Mission Zanja Flood Control Channel (at Bryn Mawr Avenue), and Mill Creek Zanja. As currently proposed, the bridge replacements could include the installation of new concrete aprons, new parapet walls, in-fill walls, concrete abutments, and/or placement of new concrete foundations. Temporary shoring may be used to support the affected portion of the bridge during construction. For each bridge crossing, Table 2-3 provides additional details regarding each of the proposed replacements/retrofits for each of the structural crossings.

[5] These improvements would adhere to typical railroad standards like those established by the BNSF and Southern California Regional Railroad Authority (SCRRA) for the rail, rail ties, ballast and subballast materials, grade crossing panels, placement of drainage structures and retaining walls, and horizontal and vertical clearances.



Typical Cross Section (Single Track, 50 foot ROW)

Figure 2-2A

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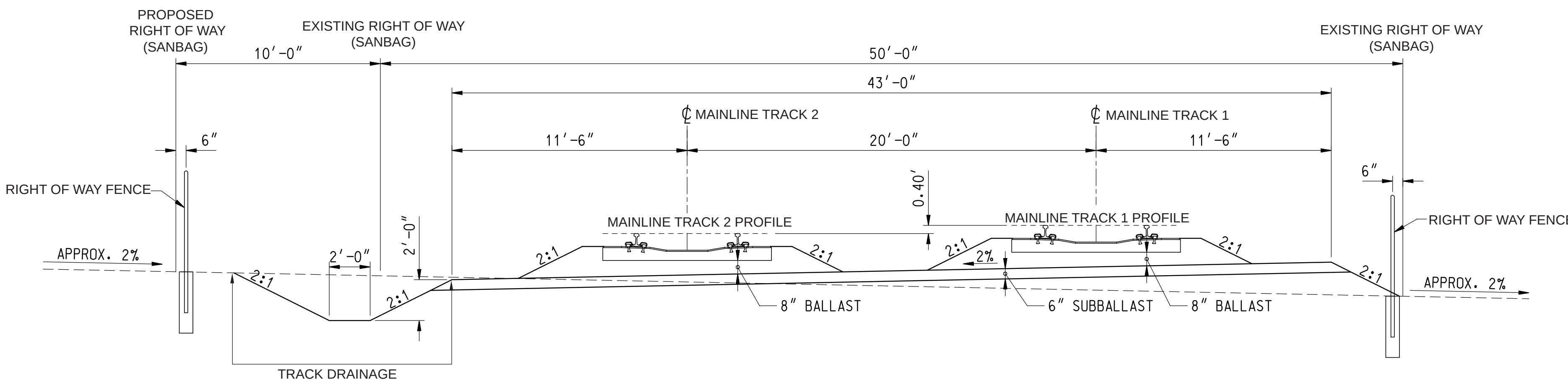

DOUBLE TRACK TYPICAL SECTION

(LOOKING EAST)

Typical Cross Section (with Siding Track, 60 foot ROW)

Figure 2-2B

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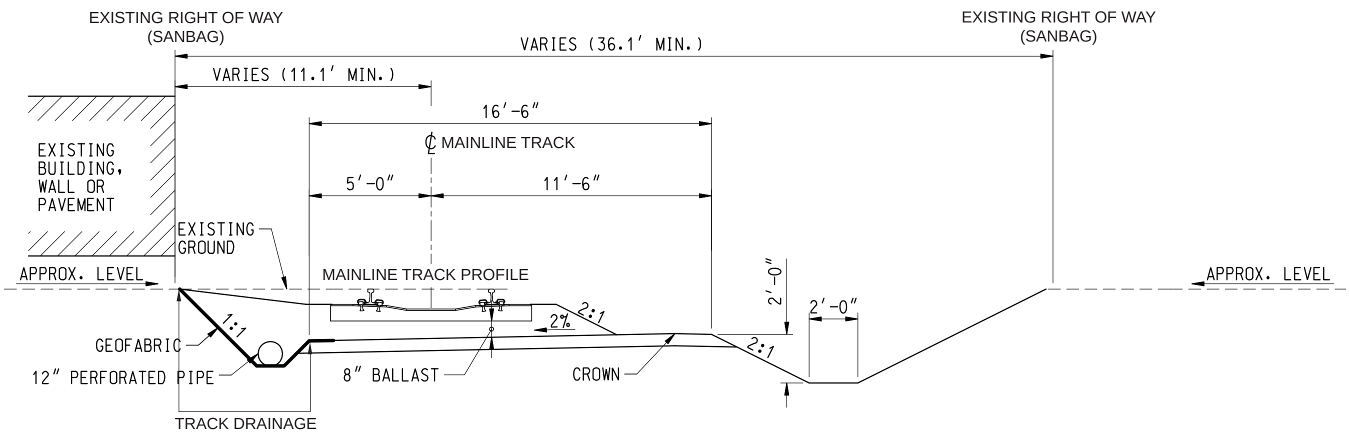


DOWNTOWN REDLANDS SINGLE TRACK TYPICAL SECTION

(LOOKING EAST)

Typical Cross Section (Downtown Redlands, 38 foot ROW)

Figure 2-2C

Table 2-3. Preferred Project-Related Structural Crossing Improvements

Bridge (Br)	Replacement (Yes/No)	Dimensions	Design Features
Br. 1.1 – Warm Creek Bridge	Yes	Up to 90 feet in length and 28 feet in width. Note: Current bridge is 117 feet in length	• Two Design Options under consideration: (A) concrete box girder with a shorter span (up to 70 feet) and walkways or (B) a ballast deck concrete slab bridge with a longer span (up to 90 feet). • No permanent fill required. • Staging may occur to the west of Warm Creek and north of the railroad ROW, and on Hilda Street. • May be constructed off-line, within 5 to 6-months construction window that may include mobilization and removal of the existing bridge (portion). • All work would occur within footprint identified in Figure 2-1A.
Br. 2.2 – Twin Creek Bridge Retrofit	No	Up to 148 feet in length and 20 feet in width	• Existing bridge to remain with speed restriction across it. • Replacement of timber and sidewalk elements, shore up structurally and repaint. • Minor mitigation may be needed if existing paint is found to be lead based. • Limited track outage required; up to a 3-month construction window. • All work would occur within footprint identified in Figure 2-1B.
Br. 3.4 – Santa Ana River Bridge	Yes	Up to 365 feet in length and 20 feet in width	• Steel beam bridge to be constructed in line of the existing structure. • Construction access/staging may occur from the north end of the western bank. Access to the eastern bank may occur via a temporary bridge crossing (earthen fill) from the west. • Five (5) new pier structures spaced at 62 feet; pile installation and work zone isolation proposed via steel sleeve (or cast-in-steel shell [CISS]) pile method or traditional cofferdam. • Existing bridge foundations and piers may be removed to a minimum depth below the existing surface after installation of new bridge foundation. • Channel banks underneath bridge to be excavated to maintain channel capacity. • Proposed design may accommodate Santa Ana River Trail along the eastern bank. • 30-month construction window may be required. • 85% of substructure work may occur without any track outage to replace existing superstructure. • All work would occur within footprint identified in Figure 2-1D. • Additional armoring is proposed along the planned abutment embankment on the north side of the proposed replacement.

Table 2-3. Preferred Project-Related Structural Crossing Improvements

Bridge (Br)	Replacement (Yes/No)	Dimensions	Design Features
Br. 3.9 – Gage Canal Crossing	Yes	Up to 28 feet in length	• Potential modification of channel hydraulic grade structure as part of improvements to Mission Zanja Channel. • A new pier bridge structure or backfilling of the existing structure are under consideration. • Up to a 2-month construction window. • All work would occur within footprint identified in Figure 2-1D.
Br 5.78 - Bryn Mawr Bridge	Yes	Up to 40 feet in length	• Construct a new single span bridge structure to facilitate private access to proposed train layover facility. • Realignment and increase of the capacity of the existing channel under the new bridge. • All work would occur within footprint identified in Figure 2-1F.
Br. 9.4 – Mill Creek Zanja Bridge	Yes	Up to 42 feet in length and 45 feet in width	• Pier bridge consisting of a 14-inch pre-stressed slab girder placed on a cast-in-place (CIP) abutment. • Four (4) rows of six (6) 30-inch cast-in-drilled-hole (CIDH) piles spaced a 13 to 14 feet. • Up to a one (1) month construction window. • All work would occur within footprint identified in Figure 2-1J.

Source: HDR Engineering 2013

2.4.2.4 Roadway Grade Crossings and Signaling Devices

The Project traverses 30 existing roadway crossings. Two of these consist of grade separations at the I-10, and two crossings located at Bryn Mawr and New York Street were officially closed before the consideration of this Project. Each at-grade crossing improved as part of the Project would also include corresponding improvements to adjoining roadway segments, where required, to maintain safety for both motorized and non-motorized forms of transportation.

The Project proposes upgraded safety improvements at 22 of the existing at-grade crossings, and the closure of five at-grade crossings to roadway traffic. Safety improvements would be implemented in accordance with California Public Utility Commission (CPUC) General Orders. Several of the existing at-grade crossings are equipped with modern constant warning time device systems for train detection, including conventional relay logic networks, motion detection equipment, and more sophisticated microprocessor equipment. SANBAG will reuse the existing modern signal equipment and warning devices to the greatest extent feasible. Crossings may be re-designed to include raised medians, widened sidewalks, traffic striping, flashing lights, pedestrian gate arms, and swing gates where appropriate, or where requested by the CPUC. New warning devices would include passive railroad crossing signs, a simple bell, flashing light signals, and flashing light signals with gates. Lamp units on flashing light signals consist of incandescent lamps or light emitting diode (LED) lamps.

The road closures proposed as part of the Project include D Street, Stuart Avenue, 7th Street, and 9th Street, which would require a formal application to CPUC and the Surface

Transportation Board (STB). An existing private at-grade crossing that provides access to the Caliber Collisions business near New York Street would be closed. Bryn Mawr would also be re-opened as part of the Project to provide private access to the proposed layover facility site but would not require a formal application with the CPUC.

Hilda Street (adjacent to Arrowhead Road) may also be closed, and Dorothy Street (east of Sierra Way) may be modified to become a one-way right turn out only roadway. Park Avenue within the City of Redlands may be converted to an improved, two-lane roadway south of Sylvan Park and the University of Redlands. Table 2-4 provides details for each roadway at-grade crossing and Figures 2-3A and 2-3B identify the intersections that may be closed, improved, or reconfigured to accommodate the Project.

Table 2-4. Roadway Grade Crossings

Existing Grade Crossing	Mile Post	Condition of Existing Crossing	Length (feet)[1]	Project Design Features	Pedestrian Access	Closed or Open After Project
E Street	1.0	At-grade with crossing gates	400	Precast concrete panels; relocate crossing signals; extend/reconfigure existing raised median; pedestrian gates and channelization on west and possibly east side.	Sidewalks	Open
D Street	1.1	At-grade with crossing gates	520	Close existing crossing and install wooden barricades and fencing.	Sidewalks	Closed
Arrowhead Avenue	1.2	At-grade with crossing gates	400	Replace existing crossing gates; install precast concrete panels; extend/reconfigure existing raised median; pedestrian channelization; potential closure of adjacent Hilda Street intersection and conversion to a cul-de-sac.	Sidewalks	Open[2]
South Sierra Way	1.5	At-grade with crossing gates	620	Replace existing warning devices; reconfigure intersection tie in to Julia and Dorothy Streets; closure of San Bernardino Street Division yard driveway south of the tracks; new concrete panels and crossing gates.	Sidewalks	Open
Mill Street	2.0	At-grade with crossing gates	290	Replace existing warning devices; install new concrete panels; install raised median; install new crossing gates; pedestrian improvements both sides of the crossing.	Sidewalks	Open
Central Avenue	2.4	At-grade	500	Install new concrete panels; new crossing gates; and raised median.	Sidewalk on north side of roadway	Open

Table 2-4. Roadway Grade Crossings

Existing Grade Crossing	Mile Post	Condition of Existing Crossing	Length (feet)[1]	Project Design Features	Pedestrian Access	Closed or Open After Project
Orange Show Road	2.8	At-grade with crossing gate	100	Maintain existing precast concrete panels and crossing gates.	Sidewalks	Open
Waterman Avenue	3.0	At-grade with crossing gate	620	Install new precast concrete panels; extend/reconfigure existing raised median; replace existing warning devices; convert Dumas Street to a right in right out configuration; pedestrian channelization.	Sidewalk only on eastside of roadway south of tracks	Open
Tippecanoe Avenue	4.2	At-grade with crossing gate	275	Install new precast concrete panels, install raised median replace existing crossing gates; potential pedestrian gates and channelization.	Sidewalks	Open
Richardson Street	4.6	At-grade	220	Install new precast concrete panels; replace existing crossing gates; install raised median; pedestrian gates on east side; double track crossing location.	Sidewalks	Open
Mountain View Avenue	5.2	At-grade with crossing gate	380	Future project by others to install precast concrete panels; double track crossing location.	Sidewalks may be barricaded	Open
I-10 (BR 5.65)	5.65	Underpass	--	Construct 248 feet of pier protection wall at Bridge 5.65.	--	Open
Bryn Mawr Avenue	5.78	Crossing is officially closed	150	New private at grade crossing to provide access to the proposed layover facility site.	--	Open
California Street	6.3	At-grade with crossing gate	410	Install new precast concrete panels and relocate crossing gates; double track crossing; potential pedestrian gates on both sides; and traffic signal preemption.	Sidewalks	Open
Nevada Street	6.8	At-grade with wig-wag signal	360	Install new precast concrete panels and crossing gates.	Sidewalks	Open
Alabama Street	7.3	At-grade with crossing gates	500	Future project by others to install new precast concrete panels and crossing gates; potential pedestrian gates for all four quadrants; and traffic signal preemption.	Sidewalks	Open

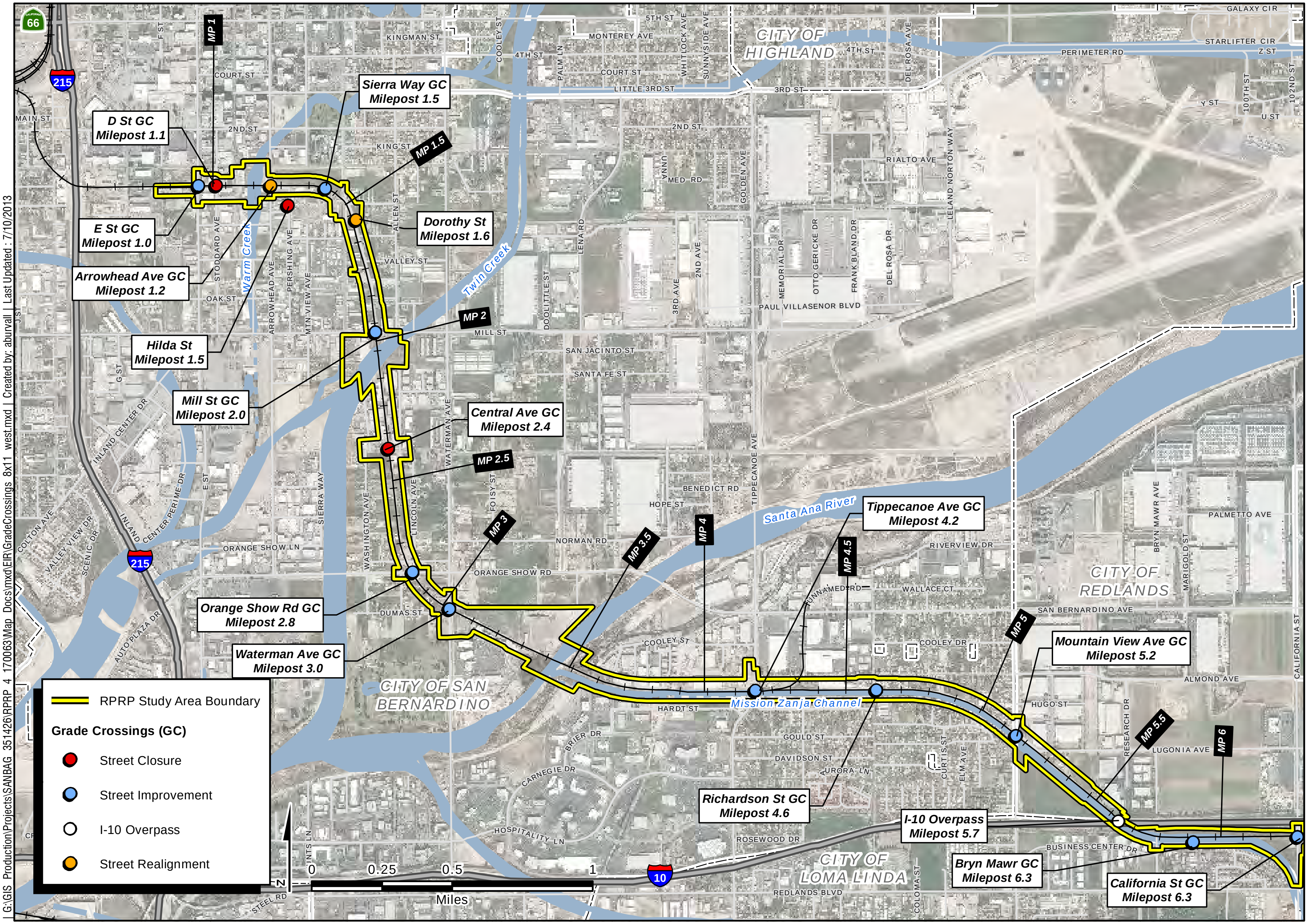
Table 2-4. Roadway Grade Crossings

Existing Grade Crossing	Mile Post	Condition of Existing Crossing	Length (feet)[1]	Project Design Features	Pedestrian Access	Closed or Open After Project
Redlands Boulevard/ Colton Avenue	7.4	At-grade	200	Future project by others to relocate Colton Avenue Crossing and create T-intersection with Redlands Boulevard; and traffic signal preemption.	Sidewalks	Open
Tennessee Street	7.8	At-grade with railroad crossing gate	210	Install precast concrete panels; install warning devices; install raised median; traffic signal preemption.	Bike Lane/ Sidewalks	Open
Caliber Collision Center	7.9	Private crossing	--	Potential crossing closure. Access to existing business may need to be rerouted.	--	Closed
New York Street	8.1	Crossing is officially closed	--	Existing closure to be maintained; New pedestrian crossing would be provided to facilitate access to the ESRI complex.	--	Open
Stuart Avenue	8.2	At-grade	200	Potential crossing closure, removal of pavement and extension of curb on Stuart Avenue and Redlands Boulevard to prevent vehicular access.	Sidewalks	Closed
Texas Street	8.4	At-grade with railroad crossing gate	350	Install new precast concrete panels and crossing gates; install raised medians; replace warning signal configuration; potential pedestrian gates and channelization for both sides of the crossing; traffic signal preemption.	Sidewalks	Open
Eureka Street	8.6	At-grade with crossing gate	340	Install new precast concrete panels; minor repairs to existing crossing equipment; potential pedestrian gates and channelization for both sides of the crossing; and traffic signal preemption.	Sidewalks	Open
Orange Street	8.8	At-grade with crossing gate	250	Install precast concrete panels; potential median; modification of existing sidewalk to accommodate median mounted crossing signals; potential pedestrian gates for both sides of the crossing; traffic signal preemption.	Sidewalks	Open

Table 2-4. Roadway Grade Crossings

Existing Grade Crossing	Mile Post	Condition of Existing Crossing	Length (feet)[1]	Project Design Features	Pedestrian Access	Closed or Open After Project
6th Street	9.0	At-grade with crossing gates	300	Install precast concrete panels, install raised medians; install crossing gates; replace warning signals; potential pedestrian gates and channelization for all four quadrants.	Sidewalks	Open
7th Street	9.1	At-grade crossing with post sign	--	Close existing crossing; create cul-de-sac on south side of crossing; install guard post barricades on north side of crossing, and fencing; maintain pedestrian access.	Pedestrian gate	Closed
9th Street/ Stuart Avenue	9.2	At-grade Railroad post sign	--	Close existing crossing; create cul-de-sac on south side of crossing that maintains access to existing business located on southeast quadrant of crossing; install guard post barricades on north side of crossing.	Sidewalks	Closed
Church Street	9.3	At-grade with crossing gate	275	Install precast concrete panels; install raised median; potential pedestrian gates and channelization for all four quadrants; potential replacement of warning signals.	Sidewalks	Open
I-10 (BR 9.48)	9.48	Underpass	--	Construct 285 feet of pier protection wall at Bridge 9.48; Unauthorized dirt road crossing to be closed.	--	Open
University Street/Park Avenue	9.8	At-grade with crossing gate	360	Install precast concrete panels with crossing gates; potential median on north side of crossing; potential pedestrian gates and channelization for all four quadrants; install exit gates for residential driveways in the SW and SE quadrants; replace warning signals.	Bike Lane/ Sidewalks	Open

[1] Length of roadway improvements at grade crossing.
[2] Potential closure of Hilda Street at intersection of Arrowhead Avenue and conversion to a cul-de-sac.
Source: HDR Engineering 2013



Roadway Grade Crossings - Western Study Area

Figure 2-3A

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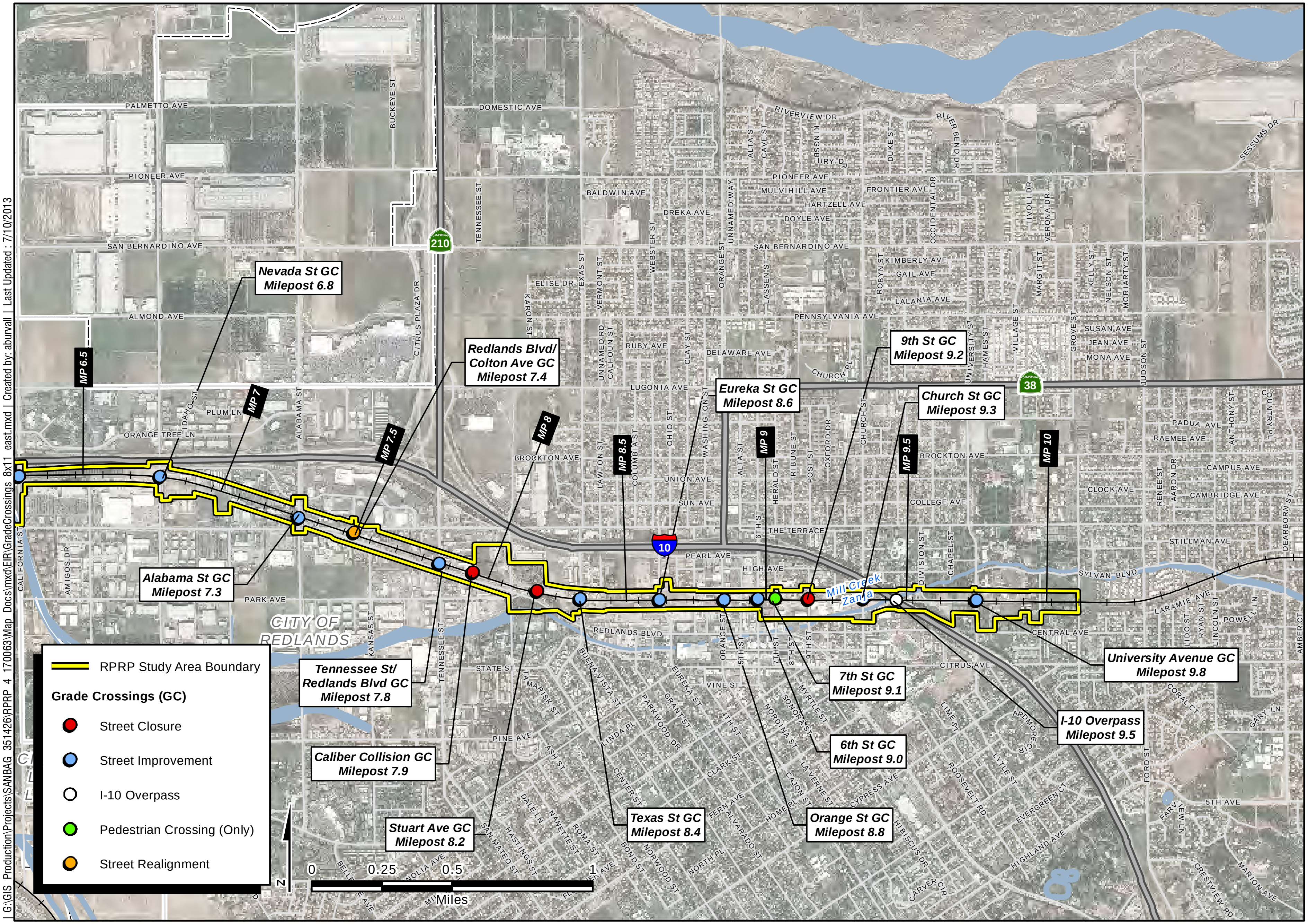

Roadway Grade Crossings - Eastern Study Area

Figure 2-3B

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There are approximately seven existing traffic signals that fall within 200 feet of railroad at-grade crossings. Railroad preemption signals would be installed at these locations.[6] Two of these occur in the City of San Bernardino and the other five are located in the City of Redlands (see Table 2-4). SANBAG would consult with local jurisdictions to coordinate the traffic signal operations including: preemption signal, signal wire, conduit, and other infrastructure required for the signal preemption.

SANBAG proposes to develop infrastructure that is consistent with and would not preclude the final development of Quiet Zones along the railroad corridor. Upon completion of the Project, each city would be required to complete the Quiet Zone Creation Process in accordance with the regulations, policies and procedures established by the FRA in their Train Horn Final Rule as amended on August 17, 2006 (49 CFR Part 222). SANBAG has entered into a Memorandum of Understanding (MOU) dated February 4, 2015, with the cities of San Bernardino and Redlands that outlines each entities roles and responsibilities to facilitate the implementation of "corridor-wide" quiet zones.

Pier protection walls may also be constructed for each of the two I-10 freeway bridges and overhead structures. Pier protection walls would be designed using American Railway Engineering and Maintenance-of-Way Association (AREMA) and BNSF/Union Pacific (UP) Standards. Table 2-4 provides additional details on the pier protection walls.

2.4.2.5 Proposed Rail Stations[7]

There are five (5) station stops proposed for the Project with new rail stations proposed at four (4) locations. Two (2) station stops (E Street and Tippecanoe Avenue or Waterman Avenue) would be located in the City of San Bernardino, while the other three (3) (New York Street, Downtown Redlands, and the University of Redlands) would be located in the City of Redlands. As previously indicated, the station improvements at E Street would be constructed in conjunction with the DSBPRP and, therefore, only track improvements would be required west of E Street to align the Project tracks with the planned rail station associated with the DSBPRP. Each station would be less than 200 feet in length and constructed within SANBAG's ROW.

Ticket vending machines would be located near or on stations. Standard station amenities including canopies, benches, variable message signs, lighting, closed-circuit television security cameras, ticket vending machines, and trash receptacles may all be provided. Shade structures (or canopies) would be provided to individually distinguish each rail station and to compliment the contextual surroundings. A representative example of the three (3) optional canopy structures under consideration for each of the station stops is provided in Figure 2-4A. Landscape planters or other features may be used to separate stations from open areas, adjacent uses, and walkways. Bicycle storage lockers may also be provided at certain locations as may be consistent with bicycle use planning for the corridor. Pedestrian crossovers[8] would be provided where required at each station area with accessible path of travel and parking provided adjacent to pedestrian crossovers.

[6] Preemption signals would help to prevent collisions, and allow the trains to have priority access through intersections to ensure they remain on schedule and improve commute times.
[7] Stations consist of a rail platform, canopy, parking, and related amenities.
[8] Pedestrian crossovers may consist of at-grade, below grade (e.g., underpass), or above grade crossings (e.g., overpass) pending final design.

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Option A

Option B

Option C

Optional Canopy Structures

Figure 2-4A

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2.4.2.6 E Street Rail Station

The Project would utilize the rail platforms, parking area, and optional canopy structures proposed in conjunction with SANBAG's DSBPRP. The Project would include new track to the south of the E Street rail platform; and this EIS/EIR incorporates by reference the previously prepared EA/EIR for DSBPRP. Figure 2-4B illustrates the layout for the proposed rail station at E Street and parking lot proposed as part of the DSBPRP. New pedestrian connections would be constructed from the station to connect with existing routes. Table 2-5 provides additional details on the proposed station improvements at E Street.

2.4.2.7 Tippecanoe Avenue Rail Station

The Tippecanoe Avenue rail platform would be constructed at a location just west of Tippecanoe Avenue and north of the tracks, inside the existing railroad ROW (see Figure 2-4C). The station improvements and parking area at this location, including new tracking, would include a physical footprint of up to 1.1 acres, and includes portions of SANBAG's ROW. Table 2-5 provides additional details on the proposed station improvements at Tippecanoe Avenue.

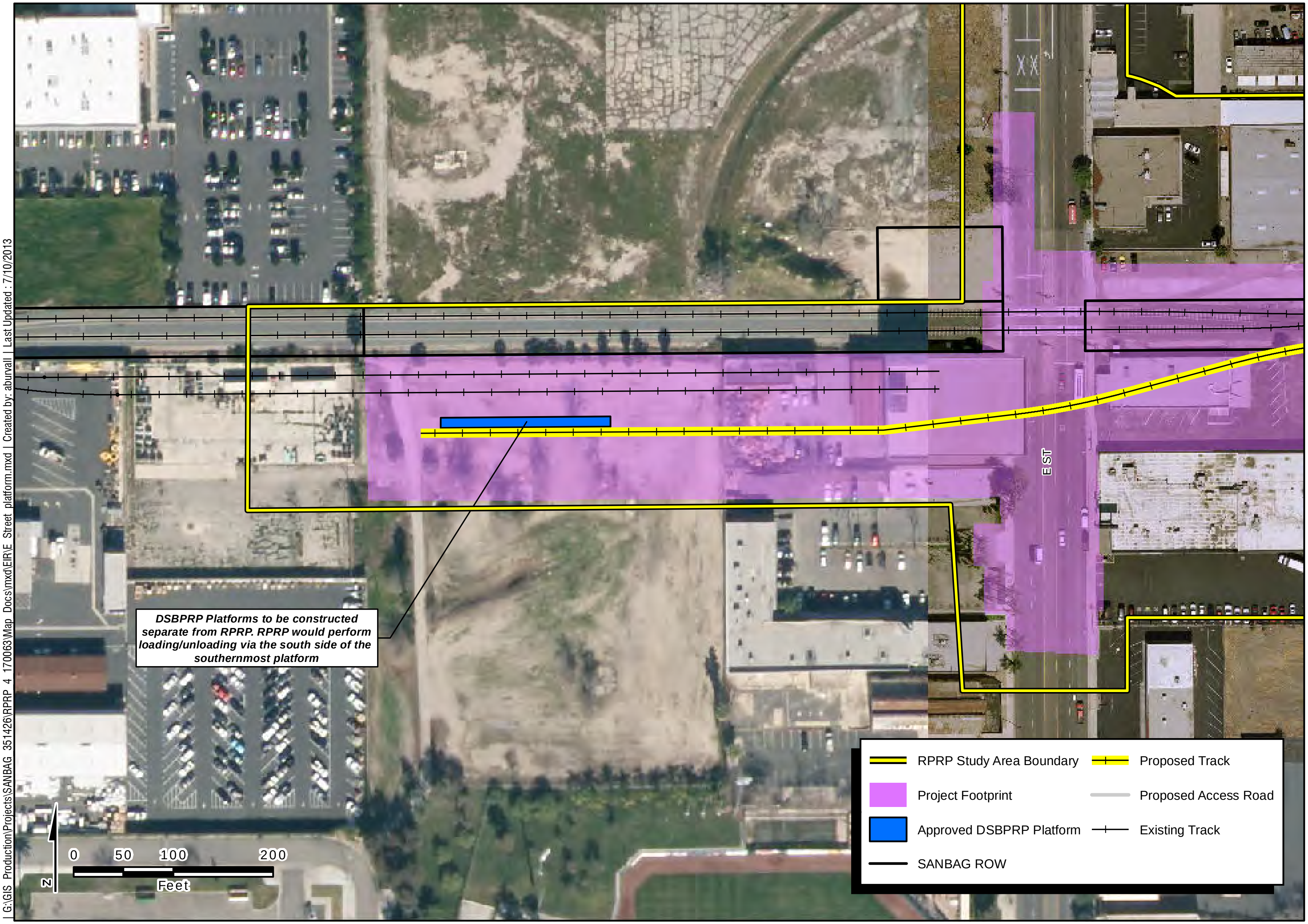
2.4.2.8 New York Street Rail Station

The New York Street rail platform would be constructed at a location just north of Redlands Boulevard and within the existing railroad ROW (see Figure 2-4D). The station improvements at this location, including new tracking, would include a physical footprint of up to 3.6 acres. New pedestrian facilities are proposed south of the station to provide a connection with existing pedestrian walkways south of Redlands Boulevard. Table 2-5 provides additional details on the proposed station improvements at New York Street.

2.4.2.9 Downtown Redlands Rail Station

New station facilities would be constructed within the existing railroad ROW to the west of Orange Street and the existing Downtown Redlands Santa Fe Depot, a registered historic place, and north of the track (see Figure 2-4E). The station improvements at this location, including new tracking, would include a physical footprint of up to 2.6 acres. Pedestrian connections from the station platform would be constructed to connect with existing walkways, including the grand plaza, which provides connectivity to Orange Street. No alterations to the existing Redlands Santa Fe Depot are proposed as part of the Project. Table 2-5 provides additional details on the proposed station improvements in Downtown Redlands.

Per an existing agreement between SANBAG and the City of Redlands, the City of Redlands would provide up to 200 parking spaces to support the parking needs for Downtown Redlands. As a result, the parking structure's planned capacity would also be sufficient to accommodate the Project. The parking structure is not proposed as part of the Project and, therefore, if for whatever reason the parking structure is not constructed, SANBAG would construct a reduced, at-grade parking area to the north of the station platform. The at-grade parking area would be constructed at the same location with sufficient capacity to accommodate up to 70 parking stalls. Pedestrian access would also be provided via an at-grade crossing.



E Street Rail Platform

Figure 2-4B

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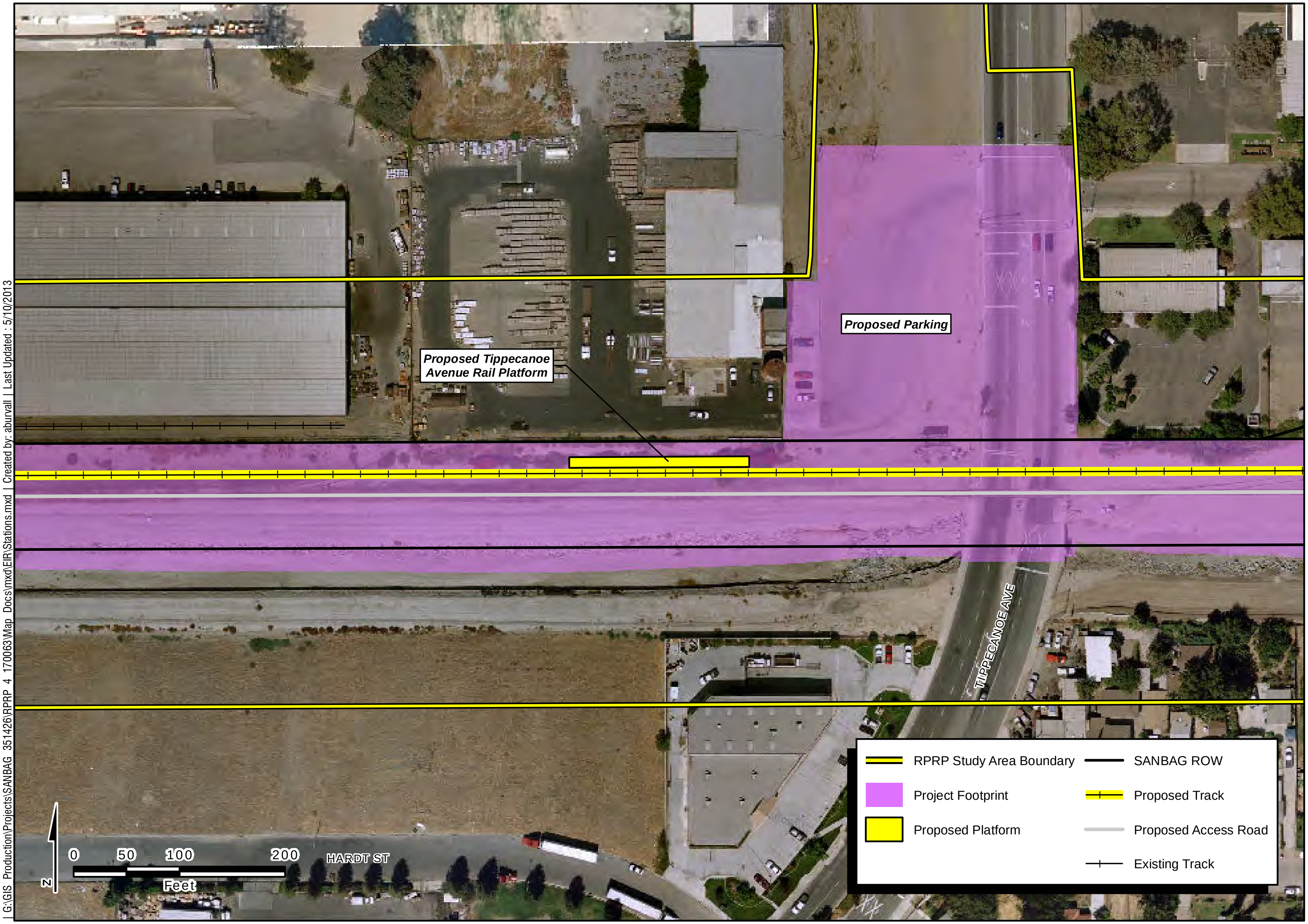

Tippecanoe Avenue Rail Station

Figure 2-4 C

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Table 2-5. Rail Station Characteristics

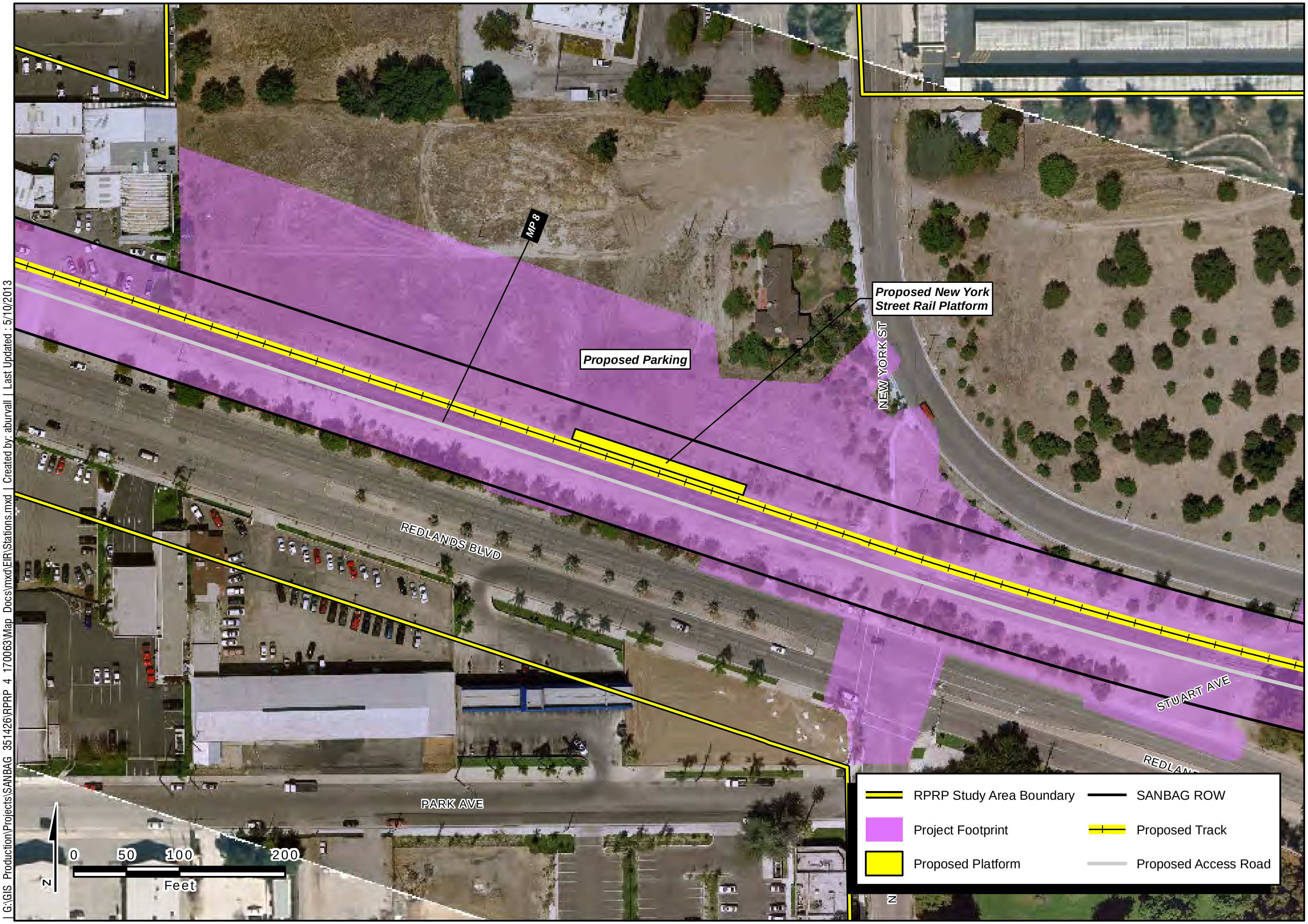
Station Name	APN(s)[1]	Station and Building Characteristics	Pedestrian Crossing	Parking[2] and Vehicular Access	Number of Bike Lockers	Development Lead(s)
E Street	13602113	• Single platform approximately 170 feet long and 10 feet wide, north of the proposed tracks. • No additional structures proposed as part of RPRP.	At-Grade	• Up to 100 parking spaces of the 265-space parking lot proposed in conjunction with the DSBPRP would be for RPRP travelers.	Up to 12	SANBAG
Tippecanoe Avenue	28103121 28104129 28104113	• Single platform approximately 170 feet long and 10 feet wide, north of the proposed tracks. • Security and equipment storage buildings.	At-Grade	• Up to 20 parking spaces may be provided north of the station on the southeast corner of APN: 281-041-29). • Park and ride and bus stop amenities are proposed within the vicinity of the station.	Up to 10	SANBAG
New York Street	16925104	• Single platform approximately 170 feet long and 10 feet wide to the south of the proposed track and within the existing railroad ROW. • Security and equipment storage buildings.	At-Grade	• Up to 30 parking spaces are proposed by the developer east of the stations in a triangular area just north of the railroad ROW if consistent with land use plans. • Parking may also be provided along the northern portion of the railroad ROW, east of New York Street. • Park and ride and bus stop amenities are proposed within the vicinity of the station.	Up to 10	SANBAG and ESRI

Table 2-5. Rail Station Characteristics

Station Name	APN(s)[1]	Station and Building Characteristics	Pedestrian Crossing	Parking[2] and Vehicular Access	Number of Bike Lockers	Development Lead(s)
Downtown Redlands	16928136	• Single platform approximately 170 feet long and 10 feet wide to the north of the proposed track and within the existing railroad ROW. • No additional structures required.	At-Grade (potential future overpass)	• Up to 70 parking spaces via an at-grade surface parking lot (if required). • A 400-space parking structure is currently planned immediately north of and adjacent to the passenger platforms on an approximate 2-acre site by the City of Redlands as part of the "Park Once" project. Up to 200-parking spaces would be allocated to the Project. The timing of construction for this facility is unknown.	Up to 10	City of Redlands
University of Redlands	17020131 17018149	• Two platforms approximately 200 feet long and 10 feet wide. • Security and equipment storage buildings.	At-Grade	• Up to 40 parking spaces. • Based on existing agreements between SANBAG and the City of Redlands, up to 100 parking spaces at the University would be provided by the City.	Up to 20	University of Redlands

Source: HDR Engineering 2013

Notes: [1] Assessor Parcel Numbers (APNs) outside SANBAG's ROW. See Section 3.3, Land Acquisitions, Displacements, and Relocations for more detail.
[2] The Ridership Study (Appendix C, Conceptual Engineering Documents) was used to determine parking space quantities for each rail station.



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New York Street Rail Station

Figure 2-4 D

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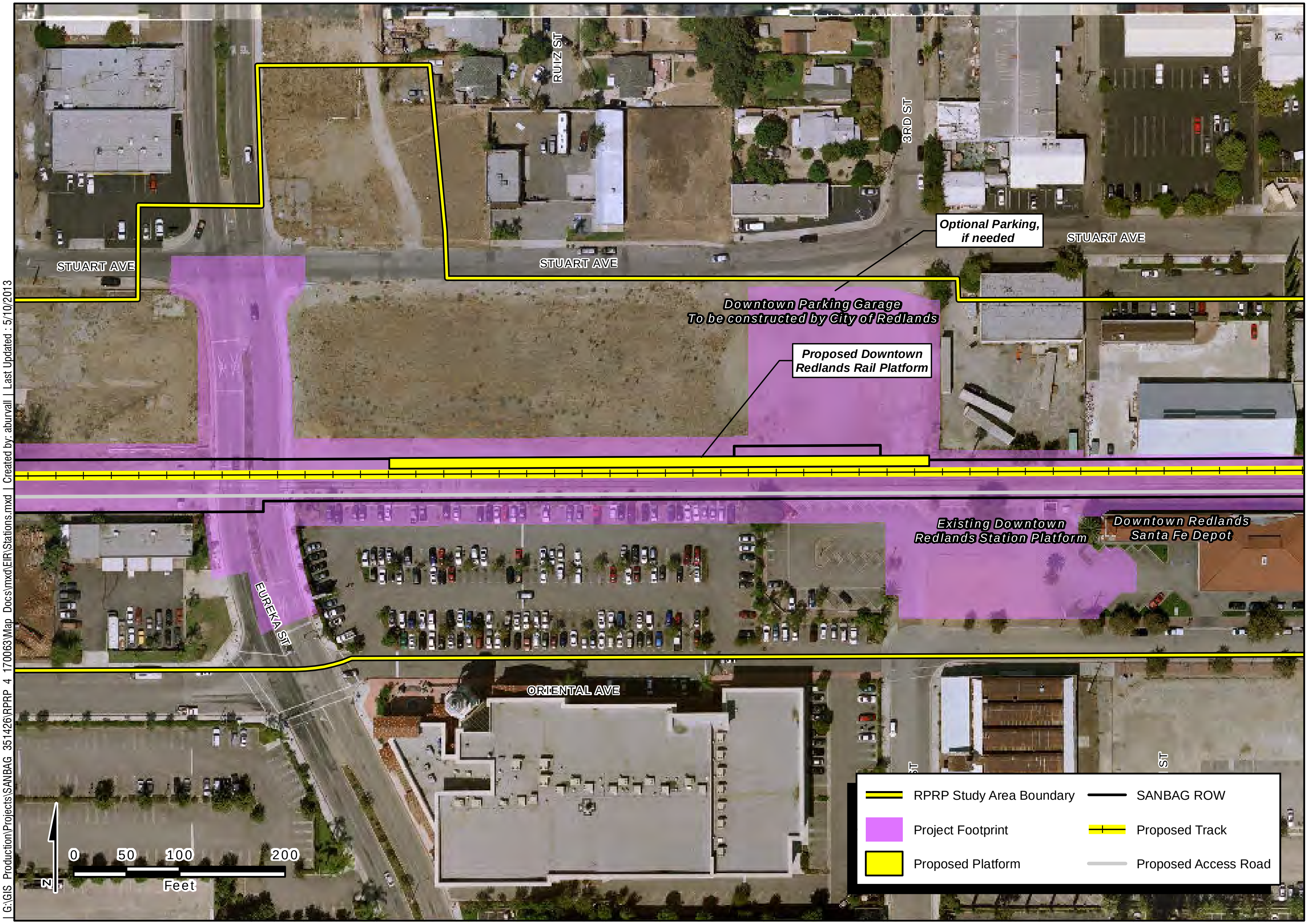

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Downtown Redlands Rail Station

Figure 2-4 E

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2.4.2.10 University of Redlands Rail Station

The University of Redlands Rail Station would consist of new station facilities constructed to the east of University Street (see Figure 2-4F). The station improvements at this location, including new tracking, would include a physical footprint of up to 4.4 acres. Table 2-5 provides additional details on the proposed station improvements at University Avenue.

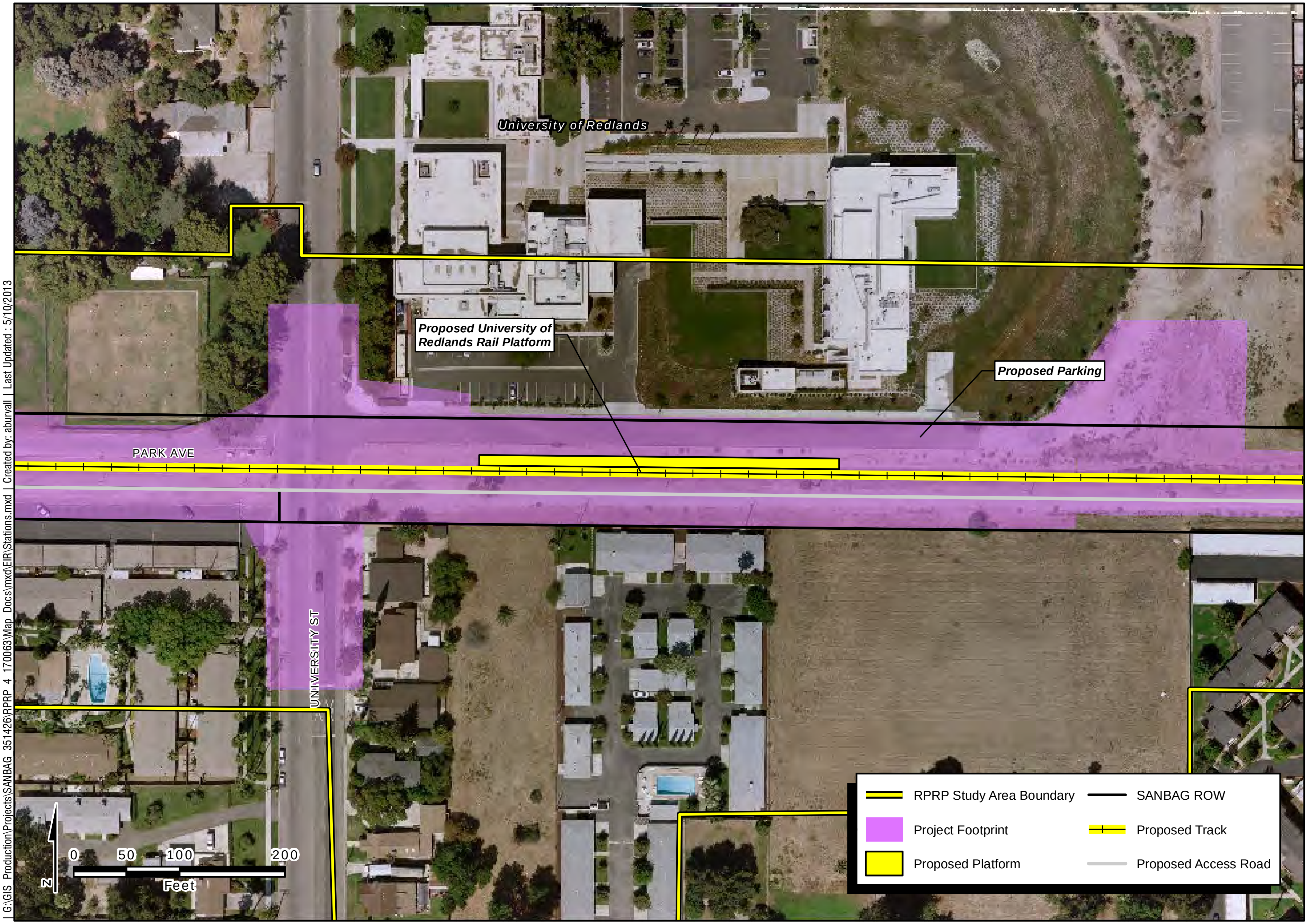
Per an existing agreement between SANBAG and the City of Redlands, the City of Redlands would provide up to 100 parking spaces to support the parking needs for the area surrounding the University. Off-site parking is not proposed as part of the Project and, therefore, if these parking spaces are not provided in time for opening day, SANBAG would provide up to 40 parking spaces east of University Avenue, north of the tracks, and within SANBAG's ROW.

2.4.2.11 Train Layover Facility

The Project would require the development of a new train layover facility that would include sufficient tracks for light maintenance activities and operational activities including storage of trains. Other on-site facilities would include but not be limited to offices, training rooms, and a crew break room. The estimated total building square footage at the facility is approximately 3,000 square feet. The train layover facility is proposed on a long narrow site immediately south of I-10 and west of California Street (see Figure 2-5) and would contain up to seven tracks. The facility site is comprised of four parcels, including Assessor's parcel numbers (APNs) 292-035-01, 292-034-02, -05, and -08, with the physical footprint of the facility at approximately 7.8 acres. The train layover facility components would include the following:

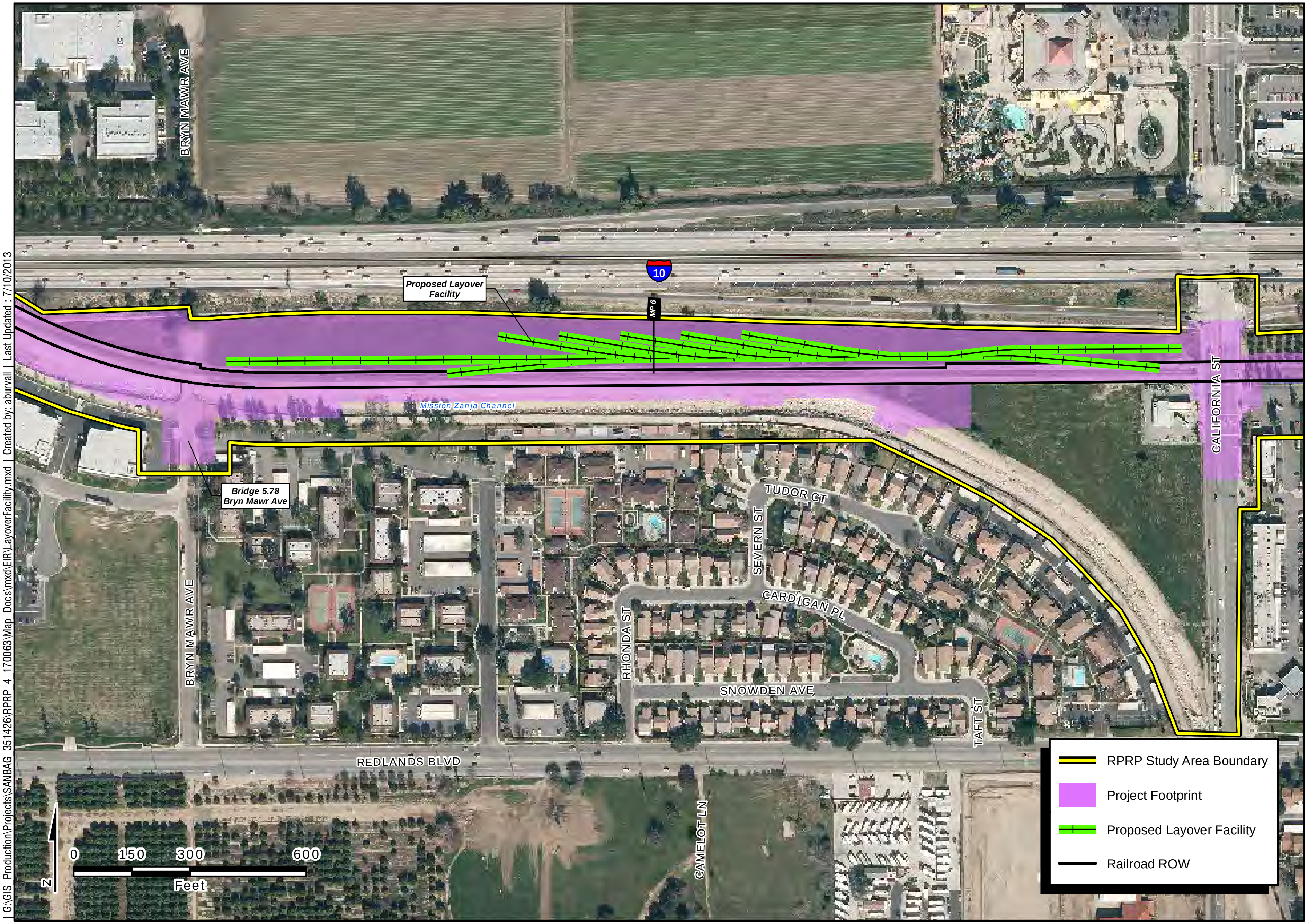
- Compressed air, potable water, flushing stations, toilet dump stations, ground power, and wayside power;
- Service tracks with inspection pits contained within an enclosed canopy (or train shed);
- A portable fueling and containment equipment area;
- Site lighting for servicing equipment and operations at night;
- A secured materials storage yard;
- An employee parking lot accessible from Bryn Mawr Avenue;
- A separator for collection of industrial waste from the service pit. Industrial waste would be collected and routed through a grit trap and oil/water separator prior to discharge to the sanitary sewer collection system; and
- Track drip pans where locomotives are stored.

Excess ballast materials from along the railroad ROW would be reused to raise the site and provide for the foundation of the proposed layover facility.



University of Redlands Rail Station

Figure 2-4 F



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Proposed Layover Facility

Figure 2-5

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2.4.2.12 Property Acquisitions and Relocations

The Project requires acquisition of new railroad ROW along the constrained sections of the existing railroad ROW, at the proposed layover site, and at areas near the proposed rail stations, with the exception of E Street.

The physical improvements associated with the Project may require up to 58 partial property acquisitions, up to four full property acquisitions, up to 32 roadway easements (roadway, temporary construction, sidewalk, utility, and alley vacations), and potentially two (2) business relocations. Both private and public properties could be affected by the Project. It is anticipated that the majority of properties affected would be subject to temporary construction easements (TCEs) (up to 60 properties), which may be established for appropriate lengths of time within the approximate 24 to 36-month construction period.

2.4.2.13 Utility Replacement/Relocation and Railroad Signal/Communications Equipment

The Project would require the relocation of some of the existing subsurface and overhead crossing utilities (i.e., water, sewer, storm drain, power, gas, fiber optic, and telephone lines) in accordance with applicable utility design criteria and engineering standards. These utilities would be evaluated for conformance with applicable standards for underground and overhead utility crossings. Critical subsurface utilities located within the railroad ROW would be exposed and surveyed during the final design phase of the Project to verify location, size, and material type. Railroad signal houses and street lights may also be relocated or replaced, as necessary, to accommodate the track improvements.

A new fiber optic cable and network would be installed within the railroad ROW along all or a portion of the alignment to facilitate communications between various signal and systems related equipment associated with the project. Antennas would be installed as a radio backup in the event the fiber optic is destroyed. The antennas would be mounted on mono pole towers (50' maximum) at each station, and at each control point. The first control point is at the E Street station area. The second control point is at the beginning of the siding between Tippecanoe Avenue and Richardson Street. The third control point is at the end of the siding west of Nevada Street. The final control point would be constructed at the University of Redlands station and located on the microwave tower.

Drainage

Improvements to existing drainage facilities along the railroad corridor would be necessary as part of the Project. It is anticipated that a majority of the storm drain facilities would be protected in place and would not need to be lowered to meet minimum depth requirements. Most of the existing culverts under the tracks would be reconstructed as part of the Project. Some existing facilities that were constructed by other agencies may also need to be reconstructed. Finally, some new drainage facilities would be added to improve drainage along the railroad ROW. All drainage improvements would be coordinated with the cities of San Bernardino and Redlands along with San Bernardino County Flood Control District (SBCFCD) and Caltrans.

Mission Zanja Flood Control Channel. The Mission Zanja Flood Control Channel (Mission Zanja Channel) runs parallel to the rail line from the SAR to approximately 900 feet west of California Street for a distance of approximately 2.6 miles where it diverges from the Study Area to the south. At approximately milepost 9.4 (Bridge 9.4), the creek rejoins the railroad further east, as Mill Creek Zanja, where it passes under the railroad just west of the I-10 bridge and overhead crossing. The Mission Zanja Channel is characterized as an improved, trapezoidal earthen channel with some segments including wire revetment (USACE 1994). The capacity of the open channel ranges from 1,400 to 6,000 cubic feet per second (cfs). Several of the roadway bridges along the Mission Zanja Channel limit the flow-carrying capacity to less than 1,500 cfs along portions that parallel the rail corridor.

Channel reconfiguration of the Mission Zanja Channel may be proposed from the Gage Canal to Tippecanoe Street to increase the channel capacity. This may include a combination of channel deepening and widening and, potentially, modification to the Gage Canal cascade structure. To ensure the structural integrity of the track improvements along sections of Mission Zanja Channel and maximize the use of SANBAG's ROW, the Project would include bank stabilization improvements (e.g., armoring) to portions of the northern bank of the Mission Zanja Channel, from MP 3.5 to just east of MP 6. At this time, SANBAG is proposing the use of an articulated concrete block (ACB) to support the armoring at these locations, which would allow for the growth of limited vegetation. These improvements would be constructed and coordinated with the SBCFCD, which maintains the channel.

Additionally, reconfiguration of the existing channel from MP 3.9 to 4.2 in the vicinity of the Gage Canal may be necessary and could include, but is not limited to, modifications to the existing hydraulic grade structure, construction of a short floodwall, or other improvements to minimize scour of the tracks. At Bridge 5.78 in the vicinity of Bryn Mawr Avenue, the Mission Zanja Channel would be realigned slightly to the south to accommodate the bridge improvement and improve existing channel hydraulics. The channel realignment would extend up to 700 feet along the length of the existing channel.

Regional Flood Control Improvements. The City of Redlands in cooperation with SBCFCD is planning several projects, which collectively, would reduce existing flood hazards within the railroad corridor in western Redlands. The City of Redlands recently initiated a Storm Drain Master Plan process to assess a combination of regional detention projects and conveyance capacity upgrades to alleviate flooding concerns in the City of Redlands, including the downtown area. However, the timing of these improvements in conjunction with other related projects under the jurisdiction of the SBCFCD is uncertain. For this reason, this EIS/EIR assumes that Project operations would be discontinued in the event of flooding conditions and, operations would not occur until flood levels recede, an assessment for any flood-related damage along the rail corridor is completed, and any necessary repairs are completed.

2.4.2.14 Maintenance

Maintenance of the railroad ROW, known as MOW, is the responsibility of SANBAG, as owner of the railroad, but is currently being performed by BNSF via an agreement with SANBAG. This includes routine maintenance of the track, grade crossings, drainage facilities, and signal system. Vegetation management and weed abatement would also be required along the railroad ROW. Each station would also require routine landscaping and facility maintenance (e.g., replacement of lighting fixtures, cleaning, etc.).

SCRRA owns a fleet of locomotives and coaches that are maintained at the Central Maintenance Facility (CMF) in Los Angeles and at the EMF in Colton. Routine vehicle inspection and light repair is also performed at the Inland Empire Maintenance Facility (IEMF) located approximately one mile west of E Street in San Bernardino in addition to other layover sites throughout the SCRRA rail system. Heavy maintenance or repair activities for the train vehicles would be completed at SCRRA's existing Eastern Maintenance Facility (EMF) in the City of Colton or at another regionally accessible facility. Throughout operation, typical railroad maintenance and inspections would be conducted in accordance with SCRRA/Metrolink and BNSF standard practices and may be completed by a contractor hired by SANBAG.

2.4.2.15 Construction

Construction of the Project may begin in 2015 and take up to 36 months to complete. Construction would proceed generally from the west of E Street to the SAR and similarly from the SAR east to the University of Redlands. In total, the anticipated construction disturbance area is estimated at 134.9 acres. Of this total construction area, up to 10 acres could be subject to disturbance during the course of construction on any given day.

A description of anticipated construction activities sequenced over the course of Project construction is provided as follows:

- Demolition, clearing and grubbing, and removal of existing track;
- Relocate, extend, or encase utilities, as appropriate, to remove conflicts;
- Construct embankments, culvert extensions, and retaining walls throughout the rail corridor, as necessary;
- Construct improvements at each station location and layover facility; and
- Construct new continuous welded rail track, roadway grade crossings, and install pedestrian access improvements and landscaping, where appropriate.

Staging areas for construction equipment and materials would be located primarily within the SANBAG ROW to the extent feasible. Other staging areas may be acquired, as necessary, by the construction contractor and, to the extent feasible, may include vacated roadway ROW (e.g. Hilda Street). The location of the staging areas would depend on the rail segment, bridge, and station location being constructed. In addition, a part of the proposed layover facility may be used as a centralized construction staging area for heavy equipment due to its centralized location along the rail corridor.

Construction operations in conjunction with the Project may require the discontinuation of freight train movements along the western three miles of the rail corridor (MP 1 to MP 4) during construction. This may require existing material transports along the rail corridor to be transloaded west of the Study Area and re-routed by haul truck to their intended destination. These additional truck trips would be routed along existing truck routes to the extent feasible. SANBAG has calculated that this operational change would result in an average increase of up to 10 haul truck trips on a daily basis during the duration of the track outage.

Construction Related Trips and Fleet Mix

During peak construction where multiple construction activities would occur, this EIS/EIR assumes that up to 100 construction workers or up to four construction crews, including supervisory staff and inspectors, would be active at any given time. The Project is expected to require material imports for ballast and subgrade materials to achieve the necessary grades for the proposed track foundation. Several material sites may be used depending on the type of material involved. For the purposes of analysis, an average haul truck trip distance of 25 miles was assumed based on the proximity of those under consideration. Old ballast materials would be recycled and incorporated into the proposed embankments to the extent feasible with the remaining materials being used for the foundation of the layover facility, or hauled to the nearest certified disposal or reuse facility.

Total construction material imports are estimated at up to 10 daily haul truck trips assuming the use of 20 cubic yard capacity trucks or 65-foot flatbed trailers with equipment or materials. These trips would be distributed primarily over the second two years of construction. Other construction materials, such as asphalt, concrete, drainage pipe, metal handrails and fences, and other specialty items would most likely be provided from local vendors whenever possible and would likely be delivered to the site via truck. When combined, up to 30 daily truck trips would occur on an average worst-case day during the course of construction. These truck trips would be distributed throughout the local circulation network depending on their origin and destination.

The typical construction vehicle fleet would include a combination of the equipment identified below. This typical construction fleet would be used interchangeably on any given day based on the actual phase of construction (e.g., grading verses rail installation) and actual equipment needs.

- Excavator(s)
- Backhoe(s)
- Grader(s)
- Crane(s)
- Scraper(s)
- Compactor(s)
- Boring machine/drill rig(s), as necessary
- Dump trucks
- Bulldozers
- Front-end loader(s)
- Water truck(s)
- Paver and roller compactor
- Flat-bed delivery truck(s)
- Forklift(s)
- "Redimix" concrete truck(s)
- Compressors/jack hammers/saws

Structural Improvements at Water Crossings

Construction of the structural crossings at local waterways, including the SAR, may require the isolation of the work zone through the installation of a cofferdam and/or construction work pads within the wet area. The Storm Water Pollution Prevention Plan (SWPPP) prepared for the Project would identify Best Management Practices (BMPs) to address potential short-term impacts and post-construction (long-term) measures to minimize water quality impacts.

New structural supports may be constructed behind an encircling temporary cofferdam constructed of sheet piling or similar method, such as the use of cast-in-steel-shell (CISS) piles. The foundation would consist of reinforced concrete supported by piling, with conventional reinforced concrete piers extending up to the bridge decks. To minimize the potential for falling debris into local waterways during bridge construction, a debris containment system would be installed under the bridge to catch any falling debris. If flow is present and as an additional precaution, a boom would be strung across the water feature to keep any material that escapes the containment system from being carried down stream.

2.4.3 Alternative 3 – Reduced Project Footprint

The Reduced Project Footprint Alternative (or Alternative 3) would include the development of the Project within a reduced footprint in order to minimize disturbance of biological and historic resources that border and/or intersect with the railroad corridor. The major reductions or changes in the Project's footprint under Alternative 3 would occur at the following locations:

- Alternative design for Bridge 3.4 at the Santa Ana River;
- Reduced length of bank improvements along the Mission Zanja Channel;
- Reduced construction limits at the California/I-10 Citrus Grove; and
- Reduced roadway improvements at Sylvan Park.

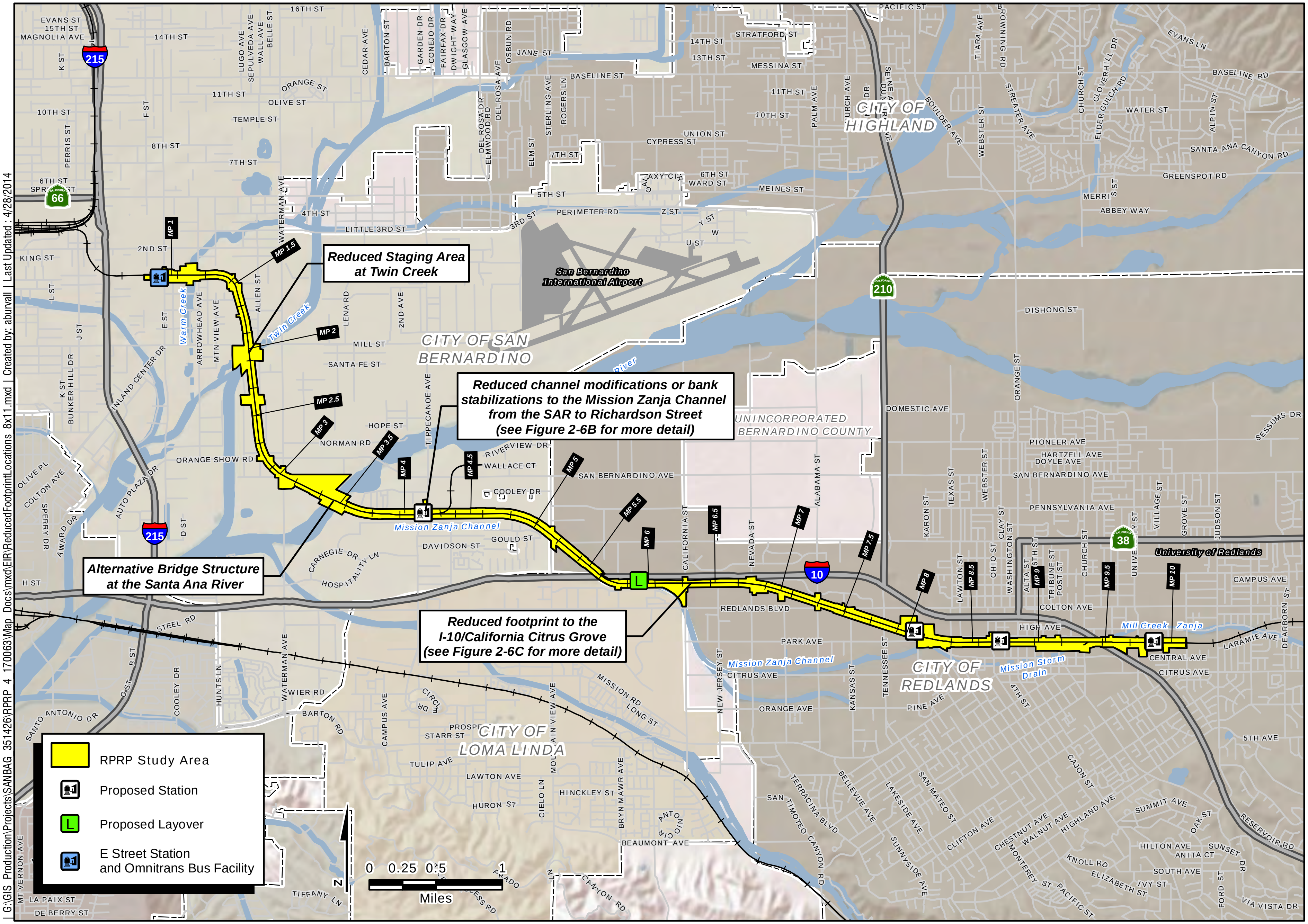
Similar to the Preferred Project, Alternative 3 would involve the construction of new track and grade crossing improvements, replacement or retrofit of existing bridges, and the development of rail station improvements at Tippecanoe Avenue, New York Street, Downtown Redlands, and the University of Redlands. In addition, the train layover facility immediately south of I-10 and west of California Street as described under the Preferred Project would be constructed as part of Alternative 3. The locations where the physical footprint is reduced under this alternative are reflected in Figure 2-6A. Train operations under this alternative would be the same as those identified for the Preferred Project.

Compared to the Preferred Project, this alternative would result in a reduction of the physical disturbance area associated with the Project to avoid direct impacts to local waterways. Under this alternative, channel modifications and stabilization improvements (e.g., armoring) to the northern bank of the Mission Zanja Channel would not be implemented from MP 3.5 to MP 4.5, just west of Richardson Street. The reduced disturbance area along this section of the Zanja Channel is illustrated in Figure 2-6B. To minimize safety concerns associated with the existing channel bank, the track alignment along this section would be shifted further north (e.g., 25 to 30 feet) and away from the existing slope embankment.

An alternative bridge structure is proposed at Bridge 3.4 (SAR) to further minimize the placement of permanent structures within waters of the U. S. Table 2-6 provides a description of the alternative bridge structure that would be employed under this alternative. The design and construction of Bridges 1.1 (Warm Creek), 2.2 (Twin Creek), 5.78 (Bryn Mawr), and 9.4 (Mill Creek Zanja) would be the same as described for the Preferred Project; with the exception of a smaller staging area at Twin Creek (Bridge 2.2).

To minimize potential effects to an existing Orange Grove (local open space resource) that is located adjacent to and north of the railroad ROW, drainage improvements east of California Street would be contained within the railroad ROW (see Figure 2-6C). More specifically, a large-diameter, under-drain pipe would be installed within the railroad ROW to convey runoff from a large catchment area to the north of the ROW as opposed to an open ditch that would be constructed north of the ROW under the Preferred Project. This change in design would avoid the partial property take and TCE required under the Preferred Project, however, at a substantial increase in cost.

With a reduced construction area up to 7.2 acres, direct impacts attributable to the Reduced Project Footprint would be reduced to approximately 130.1 acres. Figure 2-6A illustrates the locations of where reductions in direct physical impacts would occur under Alternative 3.



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Alternative 3 - Reduced Project Footprint

Figure 2-6A

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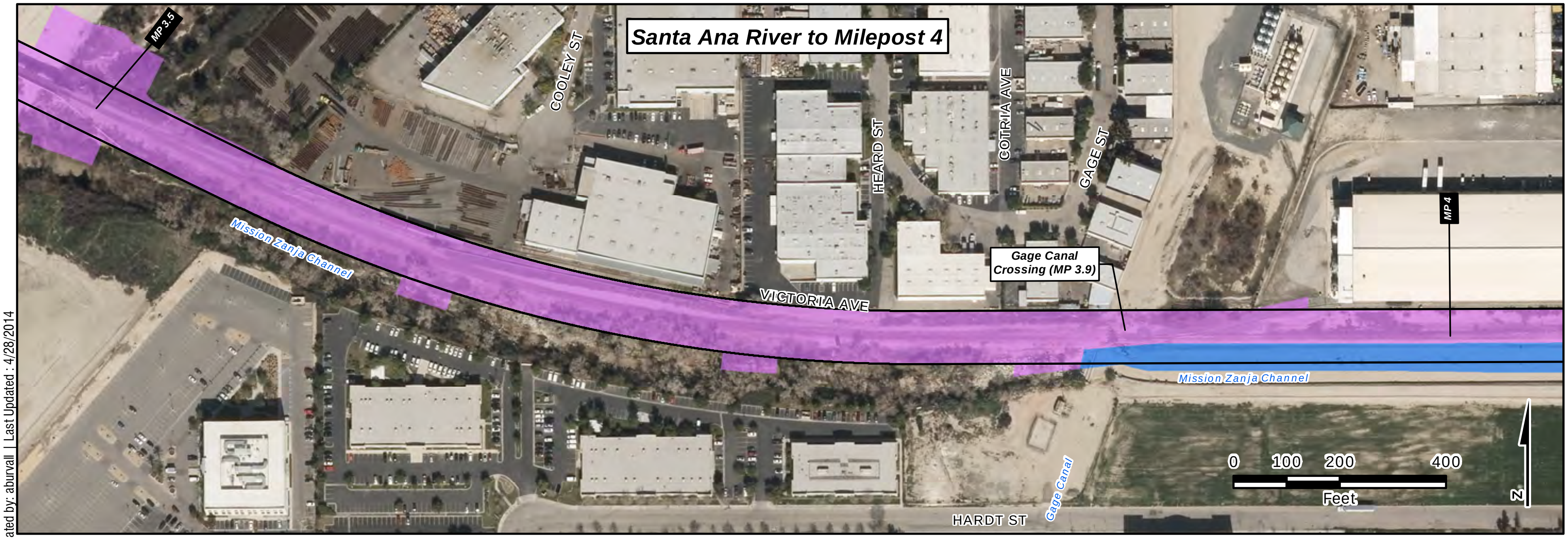

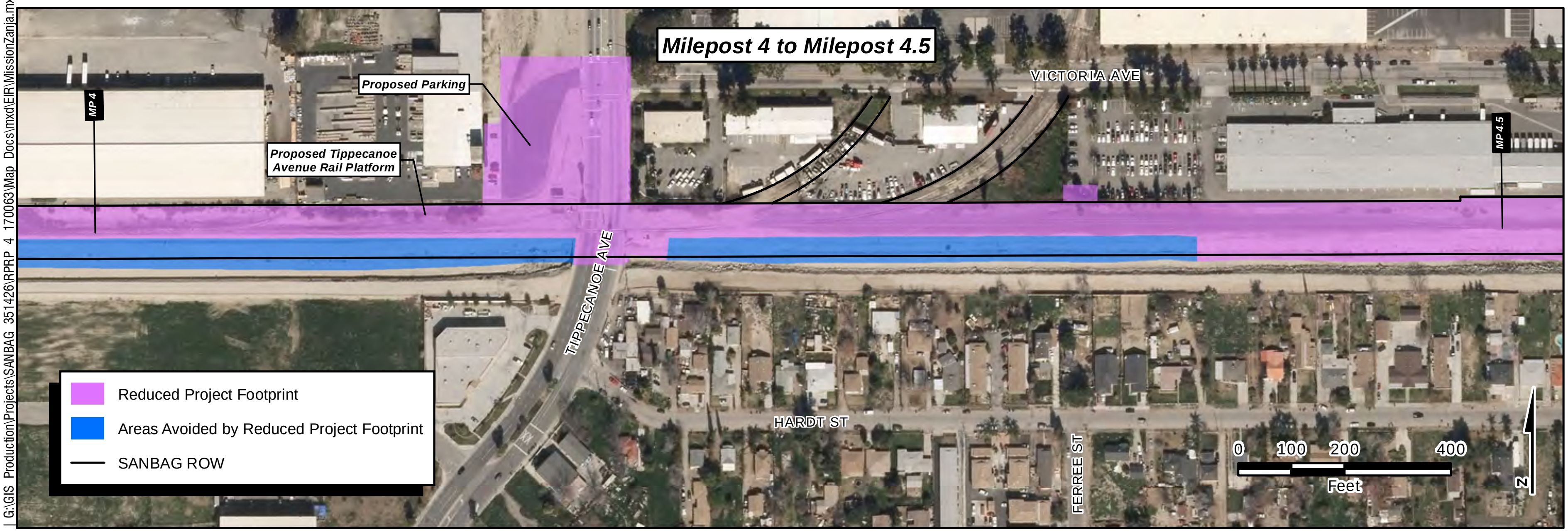

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Mission Zanja Flood Control Channel (Reduced Project Footprint)

Figure 2-6B (Revised)

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Table 2-6. Alternative 3- Reduced Project Footprint Bridge Improvements

Bridge (Br)	Replacement (Yes/No)	Length (feet)	Temporary and Permanent Impact Areas (acres)	Design Features
Br. 3.4 – Santa Ana River Bridge	Yes	Up to 365 feet in length	Temporary: 1.88 acres Permanent: 0.02 acres	• Through plate girder bridge. • In-channel construction work required. • Construction access/staging may occur from the north end of the western bank. Access to the eastern bank may occur via construction of temporary bridge crossing (earthen fill). • Pile installation and work zone isolation proposed via steel sleeve (or CISS pile) method or traditional cofferdam depending on contractor preference. • Existing bridge and bridge piles would be removed after installation of new bridge bents. • Three new pier structures spaced at 90 feet and modify ground surface at banks. • Six (6) 30-inch CIDH piles may be constructed at both bridge abutments. • Accommodates Santa Ana River Trail along the eastern bank. • Up to 30-month construction period (includes cofferdam construction).

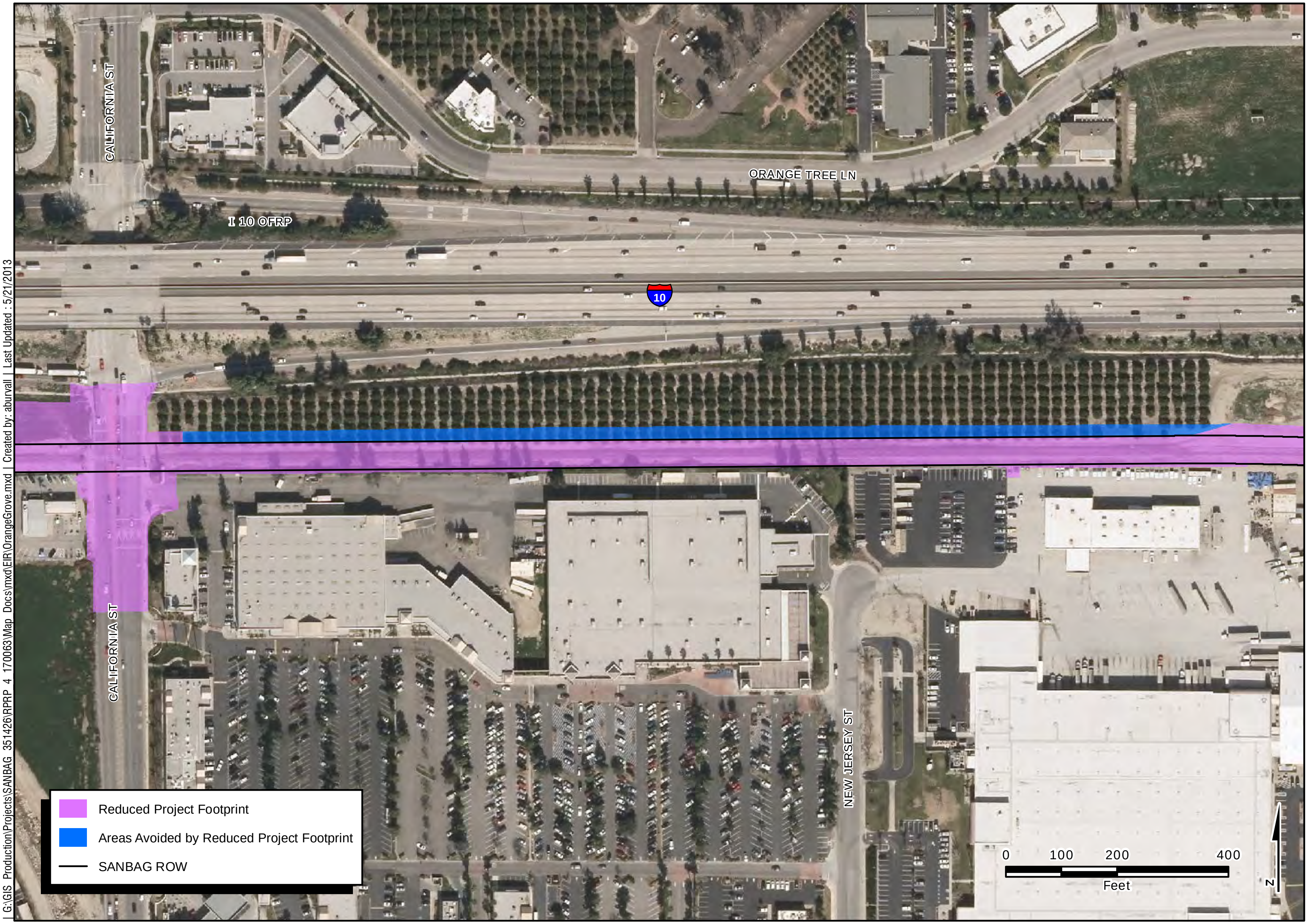
Source: HDR Engineering 2013

2.4.4 Design Option 1 – Train Layover Facility (Waterman Avenue)

Under Design Option 1, SANBAG would construct proposed facilities as described under the Build Alternatives; including construction of new track and grade crossing improvements, replacement or retrofit of existing bridges, and station improvements at Tippecanoe Avenue (or Waterman Avenue), New York Street, Downtown Redlands, and the University of Redlands.

The main distinguishing feature under Design Option 1 that differentiates it from the Build Alternatives is the optional location of the proposed train layover facility at an alternate site located in the City of San Bernardino, west of the SAR along land immediately north of the existing railroad ROW (see Figure 2-7). More specifically, Design Option 1 would include the train layover facility at a location to the south of East Orange Show Road, east of South Waterman Avenue and adjacent and to the west of the SAR. Design Option 1 would require the acquisition of the southern portions of three properties, APN 281-021-49, 281-021-47, and 281-011-61, which total approximately 13.6 acres. Access to the site would be provided via an easement that enters the subject property from the north (see Figure 2-7).

Under Design Option 1, the construction footprint for the Project facilities and alternate train layover facility would be approximately 140.9 acres. As with the Build Alternatives, heavy maintenance or repair activities for the train vehicles would be completed at the existing EMF facility in the City of Colton or at another regionally accessible facility.



I-10 - California Street Orange Grove (Reduced Project Footprint)

Figure 2-6C

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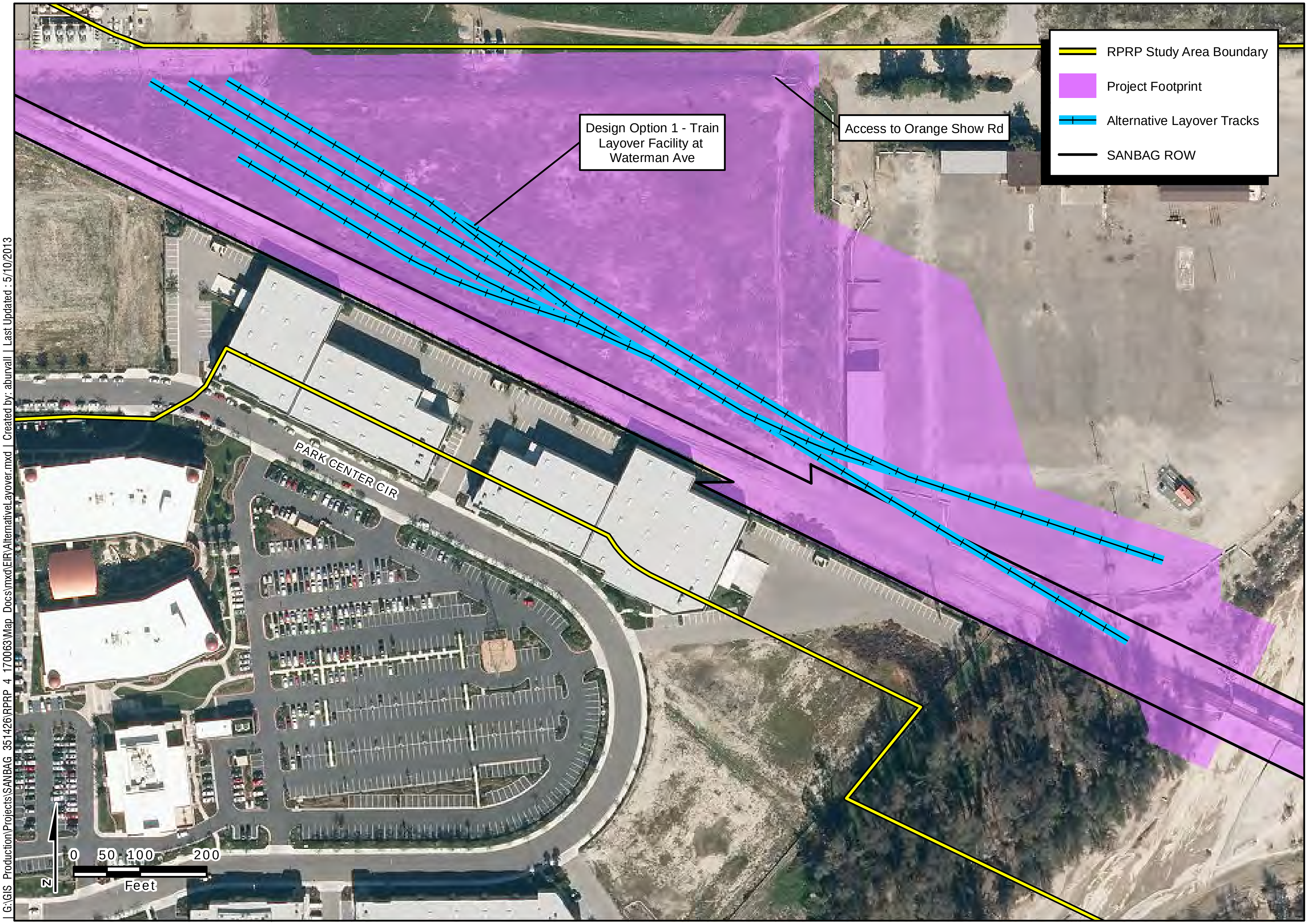

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Design Option 1 -Train Layover Facility (Waterman Avenue)

Figure 2-7

The main reason for identifying an alternate train layover facility at this location is the property's current industrial zoning and the general absence of sensitive land uses within close proximity of the alternative layover site. The physical layout of the proposed layover facility and components of the train layover facility associated with the Build Alternatives would be similar under this design option. The change in location of the layover facility would not cause any large functional changes to passenger rail operations because the same number of trains would operate daily and total train miles would average approximately 481.7 miles for local trains and 36 miles for the express trains.

2.4.5 Design Option 2 – Use of Existing Train Layover Facilities

Under Design Option 2, SANBAG would construct proposed facilities as described under the Build Alternatives; including construction of new track and grade crossing improvements, replacement or retrofit of existing bridges, and station improvements at Tippecanoe Avenue (or Waterman Avenue), New York Street, Downtown Redlands, and the University of Redlands.

Under Design Option 2, rather than constructing a new layover facility as described for the Build Alternatives and Design Option 1, Design Option 2 would fully integrate Project-related layover operations with existing Metrolink layover operations at two existing facilities. More specifically, this design option would integrate Project-related layover operations with existing train layover operations at Metrolink's EMF or IEMF. The EMF would not need to be expanded to accommodate Project-related layover operations, and the reconfiguration of IEMF to facilitate increased train storage was already considered in the EA/EIR prepared by SANBAG for the DSBPRP, which is incorporated by reference into this EIS/EIR. For this reason, construction activities associated with the IEMF is not considered further in this document. As with the Build Alternatives, heavy maintenance or repair activities for the train vehicles would be completed at the existing EMF facility in the City of Colton or at another regionally accessible facility.

Integration of the Project with existing layover facilities would increase the length of train operations by 10.5 miles to allow for train layover operations to occur at these existing facilities, which are located to the west of E Street. Figure 2-8 illustrates the location of EMF and IEMF in relation to the Study Area. This design option would avoid the need to construct new layover facilities as proposed under the Build Alternatives and Design Option 1; and therefore, under Design Option 2 the construction footprint would be reduced to approximately 127.1 acres. The change in the layover facility would not cause any large functional changes to passenger rail operations because the same number of trains would operate daily, and total revenue miles would average approximately 491.7 miles for local trains and 36 miles for the express trains.

2.4.6 Design Option 3 – Waterman Avenue Rail Station

Under Design Option 3, SANBAG would construct proposed facilities as described under the Build Alternatives; including construction of new track and grade crossing improvements, a layover facility, replacement or retrofit of existing bridges, and the development of station improvements at New York Street, Downtown Redlands, and the University of Redlands. The main distinguishing feature under Design Option 3 from the Preferred Project is that rather than constructing new station improvements at Tippecanoe Avenue, SANBAG would construct station improvements at Waterman Avenue. Operations would be similar to the Preferred Project with a minor change in the travel times between E Street and Waterman Avenue and Waterman Avenue and New York Street as reflected in Table 2-7.

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Design Option 2 - Use of Existing Layover Facilities

Figure 2-8

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

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Table 2-7. Project Weekday Operations under Design Option 3

Route Segment	Average Speed (mph)	Travel Time (minutes)	Distance (miles, approx.)
Eastbound Operations			
EB: 1 - E Street to Waterman	29.06	4.91	2.38
EB: 2 - Waterman to New York	39.32	7.40	4.85
EB: 3 - New York to Downtown Redlands	25.19	1.60	0.67
EB: 4 - Downtown Redlands to University of Redlands	24.98	2.52	1.05
Average/Total/Total	**29.6**	**16.4**	**9**
Westbound Operations			
WB: 1 - University of Redlands to Downtown Redlands	20.64	3.05	1.05
WB: 2 - Downtown Redlands to New York	26.73	1.50	0.67
WB: 3 - New York to Waterman	38.90	7.48	4.85
WB: 4 – Waterman to E Street	35.85	3.98	2.38
Average/Total/Total	**30.53**	**16.01**	**9**

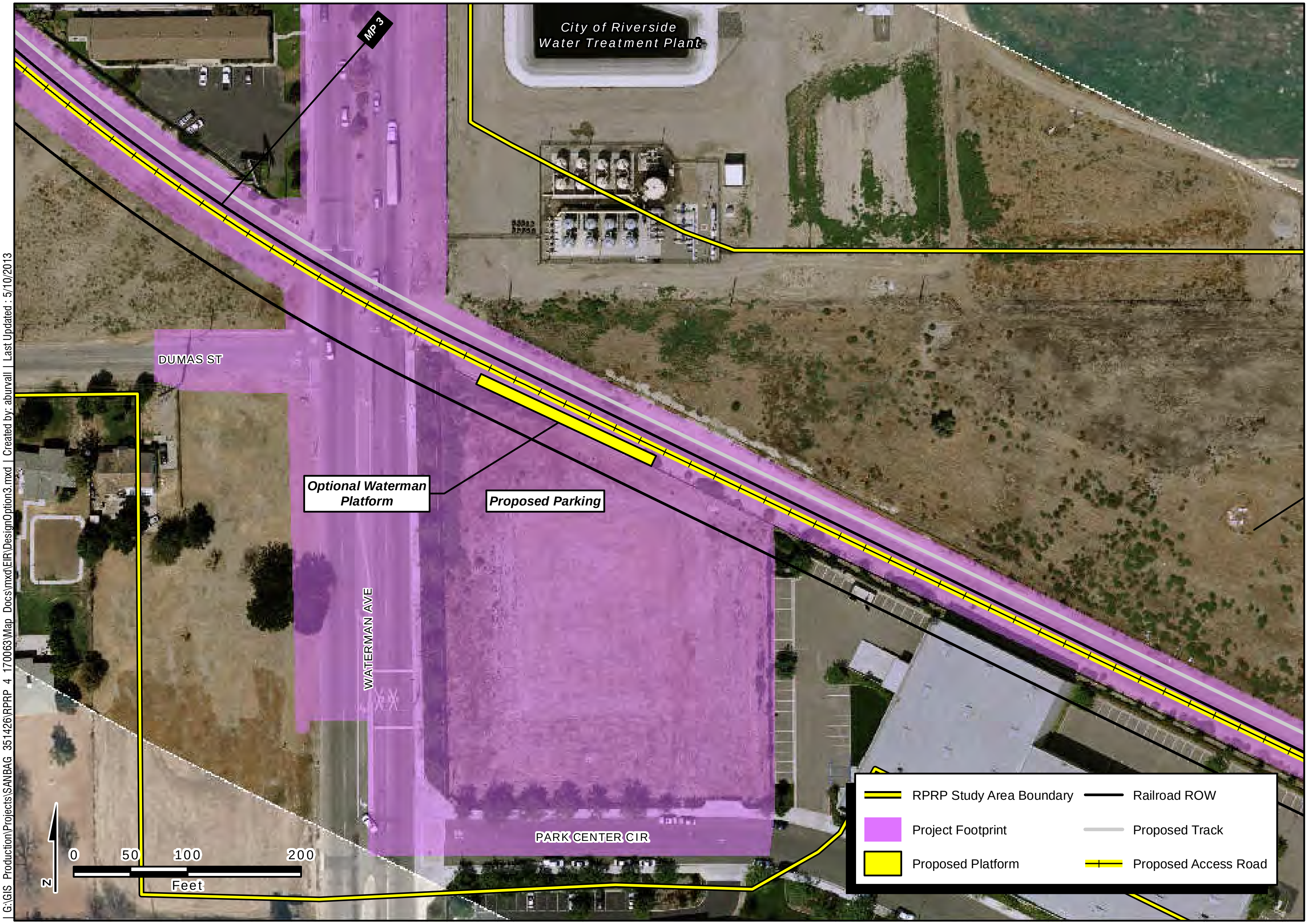
Source: HDR Engineering 2013

The Waterman Avenue rail station would be constructed on the northern portion of an undeveloped, two-acre parcel (APN 028-141-101) located immediately north of the intersection of Park Center Circle and Waterman Avenue and south of the existing railroad ROW (see Figure 2-9). The southern portion of the property would be made available for future development consistent with the site's current zoning. The station improvements proposed at this location would be similar to those described for Tippecanoe Avenue for the Preferred Project with the platform measuring approximately 170 feet in length. This optional station would include up to 20 parking spaces to the south of the station. Vehicle and pedestrian access to the station would occur via Park Center Circle. Design Option 3 would entail a total construction footprint of up to 136.6 acres.

With the placement of the rail station at Waterman Avenue (as opposed to Tippecanoe Avenue), projected ridership for the Project at opening day is estimated at up to 820. In assuming a flat increase in ridership for future conditions, up to 1,330 riders, could be expected in future years under this design option. Similar to the Project, numerous other factors could contribute to higher ridership levels in the future under this design option.

2.5 ALTERNATIVES CONSIDERED BUT REJECTED

Section 15126.6(c) of the CEQA Guidelines states that alternatives may be eliminated from detailed consideration in the EIR if they fail to meet most of the project objectives, are infeasible, or do not avoid any significant environmental effects. Similarly, NEPA requires a brief discussion of the reasoning for eliminating those alternatives in the EIS that have been rejected for further detailed study (40 CFR 1502.14). The following sections identify the alternatives that were considered but rejected from further consideration in the EIS/EIR.



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Design Option 3 - Waterman Avenue Rail Station

Figure 2-9

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

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2.5.1 Alternative Mode Technologies

In conjunction with SANBAG's and FTA's consideration of alternative forms of transportation for the Preferred Project, several train technologies were initially considered in addition to the use of passenger rail type equipment, as proposed under the Preferred Project. These other technologies included light-rail transit, battery powered/hybrid propulsion locomotives, and bus rapid transit. The main reason for the elimination of these alternative technologies is that these technologies would be unable to operate on existing freight lines and would require a separate parallel track system along the railroad ROW, which could result in greater impacts to adjacent uses as compared to the Preferred Project. Based on these considerations, these alternative technologies would be unable to accomplish the basic goals and objectives of the Preferred Project and were not carried forward for additional consideration in the EIS/EIR.

2.5.1.1 Light Rail Transit

Light rail transit (LRT) is an electrically powered urban rail system running mostly in exclusive rights-of-way. LRT has a lower capacity and lower speed than heavy rail systems, but higher capacity and higher speed than street-running systems. LRT receives its power from an overhead catenary system. The main reason LRT was rejected for additional consideration in the EIS/EIR was due to the additional costs for LRT over the Preferred Alternative. The associated ROW requirements would also result in a substantial increase of full property takes for LRT implementation. An LRT alternative would be required to operate on a separate track along the freight ROW and would require, at minimum, a 60-foot ROW to allow for the additional tracking and placement of an overhead catenary. The total ROW requirements could extend upwards of 80 feet. Likewise, a LRT system would require the installation of traction power substations that would likely require additional off-site electrical improvements and even additional ROW beyond the necessary 60-foot ROW required to house the LRT and overhead catenary systems. An LRT alternative would not comply with FRA crash standards prohibiting the ability to operate on shared track with freight trains, as opposed to passenger rail service equipment. This could in turn result in the requirement for new gauntlet tracks requiring more ROW to meet level boarding and Americans with Disabilities Act (ADA) requirements.

LRT implementation would require permanent ROW takes for over 350 properties thereby substantially increasing the cost of property acquisition for the RPRP. Several of these property takes would occur along the constrained portions of the existing railroad ROW in downtown Redlands and would require impact or demolition to structures listed in the National Register of Historic Places (NRHP). Additionally, the installation of a 20-foot catenary system would increase the potential to adversely affect integrity of historic properties/resources outside the 60-foot ROW. Further, the requirement for an additional 60-foot ROW would result in substantially greater impacts to the biological resources and Waters of the U. S. both at the Santa Ana River crossing (Bridge 3.4) and along the Mission Zanja Channel.

These factors led SANBAG to reject this mode as a potential alternative for consideration and environmental analysis in the EIS/EIR.

2.5.1.2 Battery Powered Locomotives

Several new technology developments are yielding alternatives to providing energy to a streetcar/light rail via overhead wires. These include inductive energy transfer, on-board fuels such as hydrogen, hydrogen fuel cells, diesel-electric hybrids, and combined battery and capacitor systems. Each of these technologies has been initiated by individual manufacturers, and as such, each technology is considered "proprietary", in that the respective design features of that technology are protected by patent, and are available only from that manufacturer. SANBAG considered each of the technologies for the RPRP.

Based on SANBAG's review of these various technologies, the battery/capacitor powered LRT technology remains in the developmental stages and is several years out from being ready to service a rail system similar to the RPRP. The maximum possible distance to travel without requiring DC power is usually in the range of 1 to 1.5 miles for most manufacturers. Additionally, battery operated vehicles come with considerable limitations such as reduced travel speed. Further, there would be a limited order (amount) of vehicles that would be required to service the RPRP. The relatively small number of vehicle sets required to serve RPRP would potentially deter manufacturers from developing or providing battery operated light rail vehicles as it would not be cost beneficial to them.

Based on these considerations, the battery powered/hybrid propulsion locomotive alternative was not carried forward as a potential alternative for consideration and environmental analysis in this EIS/EIR due to a lack of commercially ready vehicles for procurement in time for the desired opening day of this Project.

2.5.1.3 Bus Rapid Transit

SANBAG initially considered the use of bus rapid transit (BRT) between the City of San Bernardino and the City of Redlands; however, BRT is not freight compatible and a portion of the existing alignment currently provides for rail freight operations precluding the ability to place the BRT system within the railroad ROW. Maintaining freight service along this section of the alignment is mandatory. If freight service is discontinued, removal of freight operations would require abandonment of the railroad and supporting ruling by the STB, financial compensation to BNSF who enjoys an exclusive freight easement along the RPRP corridor, and payment to each of the shippers along the line (existing shippers and others who might claim to have intentions of shipping). If freight service is maintained in conjunction with new BRT service, property takes would be extensive because of the physical separation required for freight railroad operations and a new BRT system; and the keen economic advantage of using the existing railroad ROW is not realized with the BRT mode alternative. A ROW of 90 feet (at minimum) would be required to serve both modes; and as mentioned previously, the narrow width of the existing railroad ROW (40 to 50 feet) limits the ability to accommodate an additional non-freight compatible mode of transit (e.g., BRT, LRT) within the existing railroad ROW.

Along the alignment, implementation of a BRT system would result in greater restrictions for existing vehicle movements at each of the at grade crossing intersections when compared to passenger rail service and presumably greater impacts to roadway/intersections operating conditions along the entire corridor. Traffic signals, not crossing gates are used to protect the road crossings for BRT systems; thus, buses would have to slow at each intersection thereby contributing to a substantially longer travel time than any of the rail modes considered. Even if the two cities approve bus priority traffic signal operations, it is anticipated the operation would not be a full and true priority, but more likely a coordinated signal. The buses would likely have some amount of delay at many of the crossings to allow for signal phase changes, etc. Assuming a minimum 30-second delay to allow for signal phase changes at each of the at-grade crossings; this would result in an additional 13 minutes to the trip time from end to end on the system. The trip time for the Preferred Project is only 24 minutes, and considering the additional 30-second delay, a 50 percent increase to the total trip time would be realized. Furthermore, many of these crossings are less than 100 feet from major intersections complicating traffic signal design and operations for implementation of BRT service. Additionally, safety concerns associated with at-grade BRT crossings include the fact that motorists, bicyclists, and pedestrians do not expect infrequent bus travel along the narrow railroad ROW and the intersections are not as visible. Thus, accident potential increases due to the difference of vehicle sizes.

Lastly, in order to maximize the potential for reduced vehicle miles traveled (VMT) and associated air quality benefits, SANBAG is proposing overlapping passenger service via Metrolink trains from downtown Redlands to LA, and BRT would not allow for overlapping extension of express passenger service via Metrolink because Metrolink trains would be unable to operate on a BRT line. Based on these considerations, SANBAG did not carry BRT forward as a potential alternative for consideration and environmental analysis in the EIS/EIR.

2.5.2 New Rail Alignment Alternatives

SANBAG did not consider the acquisition of additional railroad ROW due to its pre-existing ownership of the Redlands Branchline. The acquisition of a new ROW required to secure a new rail alignment would result in substantial displacements of existing residential and commercial uses within the cities of Redlands and San Bernardino, thereby increasing land use and community/neighborhood impacts resulting from the Project. A new railroad ROW would no longer take advantage of the existing rail corridor thereby resulting in additional direct impacts to existing drainage crossings, including the Santa Ana River, and associated environmental impacts to biological resources and fisheries. A new ROW could also result in an additional encroachment into the Santa Ana River, which is a designated floodway, and corresponding indirect impacts to the adjacent floodplain. Additionally, the construction of a new ROW could contribute to greater cumulative impacts to local and regional traffic circulation compared to the Preferred Project.

Beyond the operational and physical impacts, a new ROW and additional property acquisition would add substantially to the cost of this alternative. Based on the added ROW requirements, the additional cost would render this alternative cost-prohibitive. Further, the completion of the property acquisition process for securing the necessary ROW would not guarantee SANBAG a secured ROW within the timeframe required for approval of the RPRP.

Based on these circumstances, a New Rail Alignment Alternative would be less certain when compared to use of SANBAG's existing ROW as proposed under the Preferred Project. For these collective reasons, alternative new rail alignment was not carried forward as a potential alternative for consideration and environmental analysis in this EIS/EIR.

2.6 COST AND FINANCING INFORMATION

SANBAG envisions a pay-as-you-go funding scenario for the RPRP with initial capital construction costs estimated at approximately $202 million in (2012) year dollars. This capital cost estimate would generally apply to the Preferred Project, Reduced Project Footprint, Alternative, and Design Option 1 – Train Layover Facility (Waterman Avenue). The capital cost for Design Option 2 – Use of Existing Train Layover Facilities would be slightly less at $197 million by eliminating the need for a new train layover facility. The capital cost for the No Build Alternative is estimated at $30 million to fund needed track and bridge upgrades. The Project would be funded by a variety of federal, state, and local funds available to SANBAG. These funding sources are listed below with the federal funding share estimated at just under $72 million and the remaining funds comprised of state and local funding sources.

- Federal Transit Administration: State of Good Repair Rail
- Federal Transit Administration: Urbanized Area Formula Grant
- Federal Congestion Mitigation and Air Quality
- State Transit Assistance Fund – Population
- Measure I Senior & Disabled Transit Service: (8% of Valley subarea revenue)
- Measure I Metrolink/Rail Service – For Rail Projects (8% of Valley subarea revenue)
- Public Transportation, Modernization, Improvement, and Service Enhancement Account Program
- Prop 1B Security – Transit System Safety, Security, and Disaster Response Account

The initial operation and maintenance (O&M) costs developed for the RPRP are approximately $7.9 million (2010 year dollars), and based on expenses associated with one year of operations at the anticipated level of service. Operations would be funded through Measure I Metrolink/Rail Service.

Transit Funding

The SANBAG Board of Directors adopted a Valley Transit and Rail Conceptual Funding Strategy in May 2013 that identifies funding through 2020 for planned transit services based on current revenue projections. The Funding Strategy includes a combination of federal, state, and local funding sources that total just under $1.5 billion for 2013 through 2020. SANBAG currently plans to allocate a total of $552.4 million to Omnitrans bus operations between Fiscal Year 2014 and 2020 (see Table 2-8). Omnitrans projects an additional $129.1 million for capital projects over that time with total revenues estimated at $681.5 million (see Table 2-9). Based on a Comprehensive Operational Analysis (COA) recently completed for Omnitrans, which was adopted by the SANBAG Board of Directors on November 6, 2013 and the Omnitrans Board of Directors on December 4, 2013, there is a projected annual operating deficit of approximately $0.5 million in 2015 which increases to $3 million in 2020 (see Table 2-8). This shortfall is attributed to operating expenses growing at a faster rate than projected revenue.

The Omnitrans Board of Directors addressed this funding gap by reorganizing the management structure, changing the insurance and liability management policy, and implementing fare increases earlier than previously planned. These decisions were memorialized by the Omnitrans Board of Directors via the Fiscal Year 2015 Budget and Fiscal Year 2015-2020 Short Range

Transit Plan, approved in May and June 2014, respectively. In addition, if actual revenues come in higher than what has been projected, these additional funds could be allocated to Omnitrans to help further offset the operational shortfall. The Omnitrans COA also projected an average annual surplus of capital dollars of $1.5 million for a total projected surplus of capital dollars between 2014 and 2020 of $10.5 million (Table 2-9). Omnitrans plans to continue to maximize the use of Section 5307 capital funds by annually allocating $10.9 million for preventative maintenance or state of good repair on capital assets, which helps to offset operational costs (see Table 2-8).

Table 2-8. Omnitrans COA Revenue / Operating Expense Projections

Operating Projections (in millions)								
	Fiscal Year							
Operating Revenue Sources	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**Total**
LTF	$36.35	$37.44	$38.56	$39.72	$40.91	$42.14	$43.40	$278.53
Measure I – BRT	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Measure I –S&D	$5.10	$5.30	$5.60	$5.80	$6.10	$6.40	$6.70	$41.00
STA – Operator	$1.10	$0.90	$0.91	$0.90	$0.90	$0.90	$0.90	$6.51
STA – Population[1]	$2.98	$3.10	$3.10	$3.10	$3.10	$3.10	$3.10	$21.58
FTA Section 5307	$10.90	$10.90	$10.90	$10.90	$10.90	$10.90	$10.90	$76.30
Other	$0.39	$0.70	$0.70	$0.70	$0.70	$0.70	$0.70	$4.59
Fares	$14.76	$17.20	$17.40	$17.70	$18.70	$18.90	$19.20	$123.86
Total Operating Revenue	**$71.58**	**$75.54**	**$77.17**	**$78.82**	**$81.31**	**$83.04**	**$84.91**	**$552.37**
Omnitrans Costs[2]	**$71.58**	**$76.00**	**$79.30**	**$81.10**	**$83.70**	**$85.60**	**$87.90**	**$556.18**
Operating Deficit	**$0.00**	**-$0.46**	**-$2.13**	**-$2.28**	**-$2.39**	**-$2.56**	**-$2.99**	**-$12.81**

Source: AECOM, 2013

1. Use of STA – Population funds for operations requires compliance with efficiency standards defined in CPUC Section 99314.6.
2. Starting in Fiscal Year 2015, $1 million is deducted from fixed route operating costs to reflect reduced service on Route 2, which shadows the sbX route.

The largest source of flexible funding available for operating expenses in the San Bernardino Valley is Local Transportation Funds (LTF). Historically, LTF has been used to fund both capital and operating expenses. As a result of the COA, SANBAG determined that LTF should be reserved for funding operations; and a sustainable rate of allocation should be adhered to in an effort to maintain current levels of transit service throughout the Valley. The Valley Transit and Rail Conceptual Funding Strategy included approximately 78-80% of the annual Valley LTF allocations being made to Omnitrans and 22-20% to Metrolink for their annual operating subsidy. In order to have a sustainable rate of LTF expenditures, and to plan for fiscal years when LTF revenues decline, SANBAG plans to maintain the LTF allocation to Omnitrans at a 3% annual growth rate and the combined LTF and State Transit Assistance Fund – Operator allocation to Metrolink at 3% annual growth rate. The SANBAG Board of Directors approved these growth rates for Omnitrans and Metrolink for Fiscal Year 2015 at their June 2014 meeting as part of the Fiscal Year 2015 SANBAG Budget.

Table 2-9. Omnitrans COA Revenue / Capital Expense Projections

Capital Projections (in millions)								
	Fiscal Year							
Capital Revenue Sources	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**Total**
FTA Section 5307	$6.04	$6.04	$6.04	$6.04	$6.04	$6.04	$6.04	$42.28
FTA Section 5310	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
FTA Section 5339	$3.53	$1.76	$1.76	$1.76	$1.76	$1.76	$1.76	$14.09
CMAQ	$5.20	$5.15	$5.18	$6.66	$5.56	$5.47	$7.62	$40.84
STA - Population	$0.17	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.17
Prop. 1B - PTMISEA	$7.90	$4.05	$4.22	$2.94	$4.34	$4.67	$2.72	$30.84
Prop. 1B – TS	$0.13	$0.13	$0.13	$0.13	$0.13	$0.13	$0.13	$0.91
Measure I - BRT	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total Capital Revenue	**$22.97**	**$17.13**	**$17.33**	**$17.53**	**$17.83**	**$18.07**	**$18.27**	**$129.13**
Omnitrans Costs	**$20.34**	**$15.73**	**$15.93**	**$16.13**	**$16.43**	**$16.93**	**$17.13**	**$118.62**
Capital Surplus	**$2.63**	**$1.40**	**$1.40**	**$1.40**	**$1.40**	**$1.14**	**$1.14**	**$10.51**

Source: AECOM, 2013

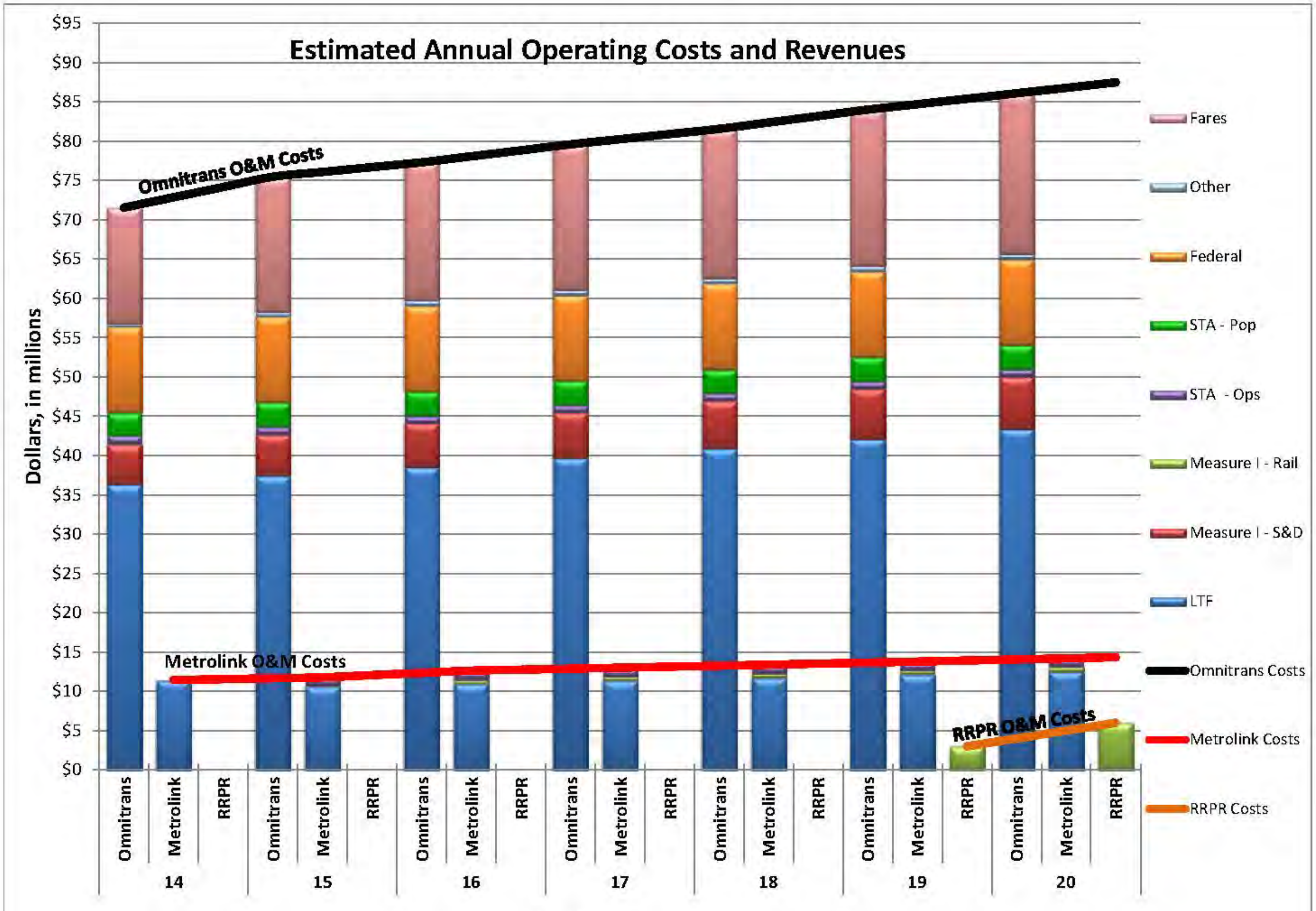
Funding to operate RPRP will come from Measure I Metrolink/Passenger Rail Program funds; a portion of the local sale tax measure specifically designated for rail use, which cannot be transferred to Omnitrans to offset operational expenses. Figure 2-10 depicts the type and estimated amount of operating revenues versus the projected operating costs for Omnitrans, Metrolink, and RPRP for Fiscal Year 2014 through 2020.

Capital funding for the construction and implementation of RPRP comes from a number of sources, which do not affect Omnitrans due to its capital dollar surplus. Since Omnitrans has a surplus of capital dollars and the sources of funding proposed to cover RPRP operating expenses are not available statutorily for Omnitrans' use, sufficient funding is currently allocated for the planned implementation and operation of RPRP.

2.7 ANTICIPATED AGENCY APPROVALS AND PERMITS

The State CEQA Guidelines require that an EIR identify the regulatory approvals that are anticipated for a project. This includes a list of responsible agencies other than the lead agency, which have discretionary approval authority over the project. The Build Alternatives and Design Options would require the involvement of multiple governmental entities at the local, state, and federal levels as part of the project delivery process. A summary of the anticipated agency approvals, both discretionary and ministerial, are identified in Table 2-10.

Figure 2-10. Estimated Annual Operating Revenues and Costs (Revised)



Source: Omnitrans 2014

Table 2-10. Anticipated Agency Approvals and Permits

Agency	Approval/Permit	Jurisdiction/Purpose
Federal Agencies		
U.S. Department of Defense, Army Corps of Engineers (USACE)	Section 404 of the Clean Water Act Permit (Stream Crossings) and track improvements	The USACE is responsible for approving permits under Section 404 of the Clean Water Act (CWA) for discharges of dredge or fill material into waters of the U.S. or jurisdictional wetlands.
U.S. Fish and Wildlife Service (USFWS)	Section 7 Consultation (Endangered Species Act)	The USFWS is responsible for administering the federal ESA. In this capacity, USFWS supports other federal agencies (e.g., FTA, USACE) through ESA consultation, preparation of a biological opinion, and issuance of incidental-take authorization for the take of federally listed endangered and threatened species. For the Project, both FTA and USACE are required to consult with the USFWS pursuant to Section 7 of the federal ESA.
U.S. Environmental Protection Agency (USEPA)	None	The USEPA is responsible for reviewing the EIS, filing, and noticing of the Project. USEPA is also responsible for providing concurrence with Section 404 CWA permits issued by USACE.
Federal Railroad Administration	Waiver	The selection of a Non-FRA Compliant DMU would require a waiver for certain sections of 49 CFR Part 21.
State Agencies		
State Historic Preservation Officer (SHPO)	State Level Review of Section 106 Compliance	The SHPO is responsible for the operation and management of the California State Office of Historic Preservation, as well as long-range preservation planning. Both FTA and USACE are required to consult with SHPO to support their compliance with Section 106 of the National Historic Preservation Act (NHPA), which requires a review of a project's impacts that will affect register eligible cultural and historical resources.
California Department of Transportation (Caltrans)	Encroachment Permit (Crossing of State Highways)	The Study Area is within Caltrans District 8, an area that covers Riverside and San Bernardino Counties in Southern California. Encroachments across the I-10 ROW are expected to require an encroachment permit from Caltrans.

Table 2-10. Anticipated Agency Approvals and Permits

Agency	Approval/Permit	Jurisdiction/Purpose
California Public Utilities Commission (CPUC)	Grade crossing approvals	The CPUC regulates privately-owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. All proposed at-grade crossings and associated safety improvements will require the approval of the CPUC.
Regional Water Quality Control Board, Santa Ana Region (RWQCB)	National Pollution Discharge Elimination System (NPDES) Permit Stormwater Discharge Permit CWA 401 Water Quality Certification	The State Water Resources Control Board (SWRCB) through the RWQCB, Santa Ana Region, would require SANBAG's construction contractor to file a notice of intent to comply with the National Pollution Discharge Elimination System (NPDES), general stormwater permit for construction activities and, if applicable, the NPDES general stormwater permit for industrial activity. The Project will be covered according to its Standard Industrial Classification (SIC), Railway Maintenance and Operations (SIC 4113). Additionally, the RWQCB retains approval authority over the issuance of a water quality certification, which is required under Section 401 of the CWA.
California Department of Fish and Wildlife (CDFW)	Compliance with CA Endangered Species Act Section 1600, Streambed Alteration Agreement	The CDFW has jurisdiction over the conservation, protection, and management of wildlife, native plants, and habitat necessary to maintain biologically sustainable populations. CDFW is responsible for consultation with lead and responsible agencies to provide the requisite biological expertise to review and comment on environmental documents, including impacts arising from project activities to species listed as endangered or threatened under the California Endangered Species Act. CDFW would have approval authority of potential streambed alteration agreements, pursuant to Sections 1600 of the Fish and Game Code, for bridge replacements at the Santa Ana River along with other potential impacts to Waters of the State along the Study Area.
Local Agencies		
San Bernardino Associated Governments (SANBAG)	Certification of the EIR	SANBAG is the CEQA lead agency for the Project. In conjunction with the project's approval, SANBAG will be required to certify the EIR, adopt any associated findings and overriding considerations, and adopt a MMRP.

Table 2-10. Anticipated Agency Approvals and Permits

Agency	Approval/Permit	Jurisdiction/Purpose
South Coast Air Quality Management District (SCAQMD)	Transportation Conformity Determination	SCAQMD is part of the Transportation Conformity Work Group and is responsible for evaluating and determining whether the transportation project is defined as a project of air quality concern (POAQC).
City of San Bernardino	Encroachment Permits Parcel Map, if applicable General Plan Amendment for Roadway Closures	The Study Area extends through the southeastern part of the City. The City has primary land use authority within the San Bernardino city limits. The exception to this occurs within existing BNSF railroad ROW, now under SANBAG ownership, which is under the jurisdiction of the Surface Transportation Board (STB). The City's approval will be required for encroachments into the City's roadway ROW. Roadway closures proposed in conjunction with the Project may also require an amendment to the circulation element of the City's General Plan.
City of Redlands	Encroachment Permit Parcel Map, if applicable General Plan Amendment for Roadway Closures, if applicable	The Study Area extends through western portions of the City of Redlands. The City has primary land use authority within the city limits, with the exception of existing BNSF railroad ROW, now under SANBAG ownership, under the jurisdiction of the STB. The City's approval will be required for encroachment into the City's roadway ROW. Roadway closures proposed in conjunction with the Project may also require an amendment to the circulation element of the City's General Plan.
San Bernardino County Flood Control District (SBCFCD)	Flood Control Permit(s)	The SBCFCD requires a Flood Control Permit for work within flood control easements that are owned and maintained by the County. The RPRP is expected to require a Flood Control Permit for corresponding drainage improvements that would occur within or adjacent to lands within the SBCFCD's jurisdiction.
City of Riverside	Encroachment Permit	The City of Riverside owns and operates the Gage Canal, which crosses the Study Area just east of the SAR crossing. The redesign for the Gage Canal would need to be coordinated with and approved by the City of Riverside.

Source: HDR Engineering, Inc. 2013

CHAPTER 3.0 ENVIRONMENTAL ANALYSIS, CONSEQUENCES, AND MITIGATION

3.1 INTRODUCTION TO THE JOINT NEPA/CEQA ANALYSIS

3.1.1 Joint NEPA/CEQA Documentation

This environmental document is a joint Environmental Impact Statement/Environmental Impact Report (EIS/EIR) intended to comply with both the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). This EIS/EIR has been prepared to evaluate the potential environmental effects (synonymous with project "impact" under CEQA) associated with implementing the RPRP. In considering the range of potential environmental effects, this EIS/EIR differentiates the way significance is determined in accordance with the requirements of CEQA and NEPA as provided below.

NEPA Provisions

Under NEPA, the determination of significance is based on context and intensity (Council on Environmental Quality [CEQ] regulations [40 CFR Sections 1500–1508]). Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant or "adverse" under NEPA. Additionally, NEPA does not require that a significance determination be stated in the environmental document. Under NEPA, an EIS is required when the lead agency determines the proposed federal action (a project) as a whole has the potential to "significantly affect the quality of the human environment." The process for complying with NEPA is defined in the joint *Federal Highway Administration/FTA Environmental Impact and Related Procedures* (23 CFR 771).

CEQA Provisions

All discretionary projects in the State of California are required to undergo environmental review in accordance with CEQA if implementation of the project has the potential to result in either a direct physical change to the environment or a reasonably foreseeable indirect physical change to the environment. More specifically, a project requires environmental review if it incorporates a discretionary action undertaken by a public agency; is an activity that is supported in whole or in part through public agency contracts, grants, subsidies, etc.; or is an activity requiring a public agency to issue a lease, permit, license, certificate, or other entitlement. If the project may have a "significant" impact on any environmental resource, then an EIR must be prepared. In accordance with Section 15121(a) of the CEQA Guidelines (California Administrative Code, Title 14, Division 6, Chapter 3), the purpose of an EIR is as follows:

> *An EIR is an informational document which will inform public agency decision makers and the public generally of the significant environmental effect of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project.*

The RPRP constitutes a "project" within the meaning of Public Resources Code 21065 and, therefore, consistent with Section 15161 of the CEQA Guidelines, SANBAG is preparing this EIS/EIR as a "project" EIR to consider the environmental effects for the construction and operation of the Project. The analysis contained in this EIS/EIR reflects the level of detail necessary for SANBAG and the FTA to evaluate the potential environmental effects of the alternatives considered for the Project, including a No Build Alternative. This EIS/EIR focuses on the direct, indirect, and cumulative effects that may be expected with the approval of and the subsequent implementation of the Project.

3.1.2 Organization of Environmental Issue Areas

Chapter 3, Environmental Analysis, Consequences, and Mitigation consists of this overview and 17 individual resource sections that describe the potential "effects" (synonymous with project "impacts" under CEQA) and proposed mitigation measures for the Build Alternatives, the No Build Alternative, and Design Options for the RPRP, as described in Chapter 2, Alternatives Considered. Chapter 3 provides an environmental analysis for the environmental issue areas that FTA and SANBAG determined could result in significant impacts with approval and implementation of the RPRP. Chapter 4 provides the analysis of cumulative effects based on the project-level findings and determinations in Chapter 3.

The following environmental issue areas are included in Chapter 3:

- Section 3.2: Land Use, Planning, and Communities
- Section 3.3: Transportation
- Section 3.4: Visual Quality and Aesthetics
- Section 3.5: Air Quality and Global Climate Change
- Section 3.6: Noise and Vibration
- Section 3.7: Biological and Wetland Resources
- Section 3.8: Floodplains, Hydrology, and Water Quality
- Section 3.9: Geology, Soils, and Seismicity
- Section 3.10: Hazardous Waste and Materials
- Section 3.11: Energy
- Section 3.12: Cultural and Historic Resources
- Section 3.13: Parklands, Community Services, and Other Public Facilities
- Section 3.14: Economic and Fiscal Impacts
- Section 3.15: Safety and Security
- Section 3.16: Section 4(f) Resources
- Section 3.17: Environmental Justice

3.1.3 Geographic Areas Defined for the Analysis

As presented in Table 3-1, this EIS/EIR uses specific terminology in defining the geographic area involved in the assessment of impacts for the Build Alternatives and Design Options considered. In distinguishing between the geographic areas considered in the environmental analysis, it is important to note that the Affected Environment for the majority of environmental issue areas within Chapter 3 of the EIS/EIR is characterized in terms of the RPRP Study Area. However, for some environmental issue areas, a larger study area (i.e., Planning Area) is considered for the resource analyzed based on direct or indirect effects that may extend beyond the primary Study Area.

Table 3.1-1. Definitions and Distinctions for Geographic Areas used for the Environmental Analysis

Area Title	Area Description	Figure Reference
Rail Corridor	Existing railroad ROW within the RPRP Study Area. Synonymous with the Redlands Corridor, Redlands Subdivision, Redlands Spur, and SANBAG ROW.	Figure 2-1, RPRP Study Area Overview and Figures 2-1A through 2-1J, RPRP Study Area Detail
Study Area	The geographic area used for defining the Affected Environment. The Study Area is approximately 534 acres.	
Project Footprint	Area within the Study Area where physical disturbance will occur as a result of the Project. The footprint will be the subject of project-related direct effects, and is generally defined by a 50-foot permanent ROW and a temporary construction easement (TCE), where necessary, along the rail corridor. The geographic extent of the project footprint differs between the alternatives and design options considered for the project as described in Section 2.3.	Figures 2-1A through 2-1J, RPRP Study Area Detail
Community Planning Area	Area within ¼-mile of the rail corridor and ½-mile of the station areas. The Community Planning Area (Planning Area) is identified for the analysis of indirect land use effects relative to transit oriented development and effects on Section 4(f) resources.	Figure 3.2-1, General Plan Land Uses
Cumulative Study Area	Referred to throughout Chapter 4 as part of the evaluation of cumulative effects. This area was developed based on the forecasting tool for the RPRP and subsequent phases of development based on the San Bernardino Valley Focus Model.	Figure 4-1, Cumulative Study Area
State Historic Preservation Office (SHPO) Area of Potential Effect (APE)	Area delineated by complete parcel boundaries of properties potentially affected by the project. The SHPO APE is only relevant in terms of cultural resource evaluation, and includes areas potentially having permanent and temporary effects in accordance with Section 106 of the National Historic Preservation Act.	Figure 3-1A through 3-1J, SHPO APE (see Appendix N)

3.1.4 Format and Content of the Environmental Analysis

For each environmental issue area considered in Chapter 3, the basic format for the environmental analysis is as follows:

- Regulatory Framework;
- Affected Environment;
- Environmental Impacts/Environmental Consequences;
- Mitigation Measures; and
- Effects After Mitigation.

The content for each of these sections is described below under the following headings.

Regulatory Framework

This discussion describes the regulatory context of the resource being analyzed, including any applicable Executive Orders, and other federal, state, and local regulations, policies, and laws relative to the Project.

Affected Environment

This discussion provides a description of the existing physical environment and baseline setting within the Study Area as described in Chapter 2 in accordance with NEPA regulations (40 CFR 1502.10) and 14 CCR Section 15125. For the purpose of this document and pursuant to the CEQA Guidelines (Section 15125(a)), the environmental setting is used to determine the impacts associated with the Build Alternatives and Design Options and is based on the environmental conditions that existed in the Study Area at the time the Notice of Preparation (NOP) was published (April 10, 2012). The baseline physical conditions as required under CEQA are applied similarly under NEPA to establish the “Affected Environment.” This approach is used to avoid confusion that might result from using different baselines for CEQA and NEPA purposes.

Environmental Impacts/Environmental Consequences

Changes that would result from the Build Alternatives and Design Options under consideration were evaluated relative to the affected environment and existing environmental conditions within the Study Area as defined in Chapter 2 and illustrated in Figures 2-1A through 2-1J.

The impacts are listed numerically and sequentially throughout each section. For example, Effect Criteria in Section 3.2 are identified as 3.2-1, 3.2-2, and so on. For each Effect Criteria, the discussion is sub-divided, as appropriate, to differentiate between the direct and indirect environmental effects for each of the Project Alternatives and Design Options as described in Chapter 2, Alternatives Considered:

- Alternative 1 – No Build Alternative
- Alternative 2 – Preferred Project
- Alternative 3 – Reduced Project Footprint
- Design Option 1 – Train Layover Facility (Waterman Avenue)
- Design Option 2 – Use of Existing Train Layover Facilities
- Design Option 3 – Waterman Avenue Rail Station

Where similar environmental impacts would occur for multiple Alternatives and/or Design Options, the impact discussion is consolidated under a single heading (e.g., Build Alternatives and Design Options or Alternatives 2 and 3, Preferred Project and Reduced Project Footprint, etc.). Likewise, in instances where impacts would be different for one or more Alternatives or Design Options, the discussion is separated accordingly to distinguish between key differences in the level of impact. Subheadings and sub-numbering is used, where appropriate, for transitions between major topics and particular distinctions in impact determinations for sub-issues covered by the Effect Criteria. Where mitigation is proposed, the analysis clearly indicates to which Alternative and Criteria it would apply.

The analysis of potential effects is provided at an equal level of detail for each of the Build Alternatives and Design Options considered.

Effect Criteria

This discussion describes the criteria by which an adverse effect (or impact under CEQA) is declared and, therefore, in need of mitigation (i.e., an action to avoid, minimize, or compensate for the effect). These criteria are largely based on criteria identified in FTA’s NEPA regulations, criteria based on factual or scientific information, criteria based on regulatory standards of local, state, and/or federal agencies, and professional practice. Where appropriate, criteria are based on state or federal standards (e.g., air quality significance criteria based on state and federal ambient air quality standards, noise significance criteria based on FTA criteria). Also, where appropriate, CEQA significance thresholds presented in Appendix G of the CEQA Guidelines are also used to supplement the FTA criteria to address the full realm of potential effects resulting from the Build Alternatives and Design Options considered.

Methodology

This discussion describes the methods, process, procedures, and/or assumptions used to characterize existing environmental conditions and evaluate the potential for adverse effects on the human and natural environment. This includes the methods used in identifying and considering the range of direct and indirect effects for each environmental issue area. Project effects fall into the following three categories:

- *Direct Effects* – These effects would be caused as a direct result of implementing the proposed action and would occur at the same time and place as the action. The environmental analysis addresses potential direct effects of temporary construction activities within the physical footprint of the Build Alternatives and Design Options. Direct effects include, but are not limited to, demolition of existing structures and buildings, effects associated with site development and required on- and off-site infrastructure and roadway improvements, and construction impacts associated with the proposed construction staging areas, fill activities, and construction traffic. An analysis of direct effects resulting from long-term operations is also provided for each environmental issue area and Effect Criteria.

  While federal and state law generally require only consideration of effects caused by the project on the environment around it, the effects caused by surrounding environmental conditions upon the Project are matters of concern to both the public and the decision makers considering the Project and were included in the analysis for that reason. Therefore, direct effects considered include those resulting from the Project or effects that could otherwise affect the Project and its operations (e.g. earthquakes, flooding, etc.).

- *Indirect Effects* – These effects are anticipated to occur later in time or are farther removed in distance from the physical footprint of the Build Alternatives and Design Options, but are reasonably foreseeable as a result of Project implementation. Examples of indirect effects include growth-inducing effects and other effects related to changes in land use patterns, population density, or growth rate, and related effects on the physical environment. Effects associated with potential mitigation measures not specifically proposed as part of the Project are considered indirect.
- *Cumulative Effects* – A cumulative effect is an impact that would result from the incremental impact of the action when compounded with other past, present, and reasonably foreseeable future actions. Cumulative effects associated with the Project are discussed and analyzed in Chapter 4 of the EIS/EIR.

The analysis provides an evaluation of the potential direct and indirect effects resulting from temporary construction activities and long term operations.

Mitigation Measures

This discussion identifies proposed mitigation measures to avoid, minimize, rectify, reduce, or compensate for adverse effects of the Build Alternatives and Design Options in accordance with NEPA regulations (40 CFR Part 1508, Section 20) and the CEQA Guidelines (14 CCR Sections 15370, 15002[a][3], 15021[a][2], and 15091[a][1]), where feasible. No mitigation is proposed for adverse effects identified for the No Build Alternative.

Effects After Mitigation

This section includes an explanation of how the applied mitigation measure(s) reduces the impact in relation to the Effect Criteria. If the impact remains adverse (i.e., at or above the Effect Criteria) additional discussion is provided to indicate why no mitigation is available or why the applied mitigation is not effective in reducing the adverse under NEPA or significant under CEQA.

3.1.5 Project Effects and Terminology Used in the Analysis

As presented above, Project-related environmental effects are organized into three categories: direct, indirect, and cumulative impacts. The standard format of the analysis includes a statement of “effect” followed by a discussion of the project-specific environmental effect. Conclusions on the level of effect (or impact) are made using the effect criteria as described above for both NEPA and CEQA. For the purposes of NEPA, the conclusion includes consideration of the “context” of the action (40 CFR 1508.27). The analysis provides an assessment of whether the Build Alternatives and Design Options would have: 1) no effect; 2) an adverse effect; or 3) a beneficial effect on environmental resources. Further description for each type of effect used in the NEPA analysis is provided below.

- **No Effect** – The Build Alternative or Design Option would not alter the environmental status quo.
- **No Adverse Effect** – The Build Alternative or Design Option would result in an effect to the environmental resource; however, the effect would not be adverse and no mitigation would be proposed.
- **Adverse Effect** – The Build Alternative or Design Option would negatively affect the environmental resource value or quality as it exists prior to the project. This finding would require proposed mitigation to avoid, minimize, rectify, reduce, or compensate for adverse effects.
- **Beneficial Effect** – The Build Alternative or Design Option would result in improvement of the environmental issue area or quality as it exists prior to implementation.

It is important to note that in instances where adverse effects are identified under the No Build Alternative, no mitigation is proposed since no action would be implemented as a result of selecting the No Build Alternative. Rather, the assessment of the No Build Alternative is intended to provide a comparative analysis with that of the Build Alternatives and Design Options.

For the purposes of CEQA, this analysis uses the following terminology to denote the significance of environmental impacts identified for the Build Alternatives and Design Options.

- **No Impact** – No impact indicates that the construction, operation, and maintenance of the project would not have any direct or indirect effects on the environment. It means no change from existing conditions. This impact level does not need mitigation.
- **Less than Significant Impact** – A less than significant impact is one that would not result in a substantial or potentially substantial adverse change in the physical environment. This impact level does not require mitigation, even if feasible, under CEQA.

- **Significant Impact** – A significant impact is defined by CEQA Section 21068 as one that would cause "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project." Levels of significance can vary by project, based on the change in the existing physical condition. Under CEQA, mitigation measures or alternatives to the project must be provided, where feasible, to reduce the magnitude of significant impacts.
- **Significant and Unmitigable Impact** – A significant unmitigable impact is one that would result in a substantial or potentially substantial adverse effect on the environment, and that could not be reduced to a less than significant level even with any feasible mitigation. Under CEQA, a project with significant and unmitigable impacts could proceed, but the lead agency would be required to prepare a "statement of overriding considerations" in accordance with State CEQA Guidelines CCR Section 15093, explaining why the lead agency would proceed with the project in spite of the potential for significant impacts.

Levels of significance can vary by the components of the Build Alternatives and Design Options, based on the change in the existing physical condition. This fact is noted where applicable.

3.1.6 Documents Incorporated by Reference

This EIS/EIR incorporates by reference several previously prepared environmental documents and technical reports. The documents are identified below, along with a brief discussion as to how they relate to the RPRP.

SANBAG, Downtown San Bernardino Passenger Rail Project EIR/EA, State Clearinghouse (SCH) #2011051024

The Downtown San Bernardino Passenger Rail Project (DSBPRP) was approved in 2012 and is currently under construction. DSBPRP will extend Metrolink regional passenger rail service one mile east from its current terminus at the existing Santa Fe Depot to a new Metrolink commuter rail station near the intersection of Rialto Avenue and E Street in the City of San Bernardino, California (ICF 2012). The proposed DSBPRP's primary features include: construction of a second track, rail stations, parking lots, an Omnitrans Bus Facility, and grade crossing improvements to support Quiet Zones; railroad signalization; and roadway closures. Proposed secondary features include: construction of drainage improvements, utility accommodation, and implementation of safety controls (ICF 2012).

This EIS/EIR incorporates by reference the previously certified Environmental Impact Report/Environmental Assessment (EIR/EA) prepared for the DSBPRP. That previously certified EIR/EA analyzes the potential physical environmental effects of constructing and operating the DSBPRP, which includes the E Street Rail Station and associated parking area to the south. The western extent of the RPRP Study Area overlaps with this portion of the DSBPRP Study Area. This RPRP EIS/EIR incorporates by reference the analysis of the E Street rail stations and parking facilities; and does not revisit issues associated with the construction or operation of the E Street rail stations and parking area associated with the DSBPRP. A detailed description of DSBPRP facilities at E Street is provided in Chapter 2, "Alternatives" of the DSBPRP EIR/EA. A description of the Project components SANBAG is proposing to integrate into at this location as part of the RPRP is provided in Chapter 2, Alternatives Considered of this EIS/EIR. The complete DSBPRP EIR/EA may be downloaded from http://www.sanbag.ca.gov/projects/ redlands-transit.html.

SCAG Regional Transportation Plan (RTP) and Sustainable Communities Strategy (SCS), Program EIR, State Clearinghouse (SCH) #2011051018

The Regional Transportation Plan (RTP) is a long-range transportation plan that is developed and updated by SCAG every four years. The RTP provides a vision for transportation investments throughout the region. Using growth forecasts and economic trends that project out over a 20-year period, the RTP considers the role of transportation in the broader context of economic, environmental, and quality-of-life goals for the future, identifying regional transportation strategies (SCAG 2011). Senate Bill (SB) 375 was enacted to reduce greenhouse gas emissions from automobiles and light trucks through integrated transportation, land use, housing and environmental planning. Under the law, SCAG is tasked with developing a Sustainable Communities Strategy (SCS), a newly required element of the 2012 RTP that provides a plan for meeting emissions reduction targets set forth by the California Air Resources Board (CARB). On September 23, 2010, ARB issued a regional 8 percent per capita reduction target for the planning year 2020, and a conditional target of 13 percent for 2035 (SCAG 2011).

The 2012 RTP/SCS calls for the expansion of transit facilities and service over the next 25 years. Table 2-10 of the Program EIR identifies major transit projects contemplated in the 2012-2035 RTP/SCS and includes the RPRP. In this context, this EIS/EIR incorporates by reference the RPRP's consistency with the 2012 RTP/SCS and related policies and does not revisit the issue. Additionally, the policies at the foundation of the 2012-2035 RTP/SCS encourage changes to the urban form that improve accessibility to transit, and create more compact development, thereby yielding a number of transportation benefits to the region. These include reductions in travel time, vehicle miles traveled (VMT), vehicle hours traveled (VHT), and vehicle hours of delay. To this end, this EIS/EIR incorporates by reference the SCS's emphasis on directing new growth to High Quality Transit Areas (HQTA)[1] and areas with opportunities for transit oriented development (TOD) and the corresponding potential for secondary or indirect effects as they relate to new growth. The complete RTP/SCS Program EIR may be downloaded from http://rtpscs.scag.ca.gov/Pages/Draft-2012-PEIR.aspx.

City of Redlands Downtown Specific Plan No. 45 Amendments Program EIR, SCH #2007051066

The City of Redlands Downtown Specific Plan No. 45 Amendments (SPA No. 45 Amendments) considers passenger rail service in conjunction with the RPRP to occur in the next ten years (City of Redlands 2011). To this end, the SPA No. 45 Amendments envision a rail station in the Downtown area adjacent to the historic Santa Fe Depot between Orange Street and Eureka Street. The SPA No. 45 Amendments propose a street entrance frontage to the rail station along Stuart Avenue between Orange Street and Eureka Street with Stuart Avenue providing vehicular access to the rail station along with bus access for transit passengers. The SPA No. 45 Amendments identifies the need for up to 300 parking spaces at the rail station and contemplates a parking structure adjacent to the rail station (City of Redlands 2011).

More specially, the SPA No. 45 Amendments contemplate the future provision of City (or joint public-private) parking garages within Downtown Redlands to support the park once plan. Public garages are proposed to facilitate shared parking and parking management. Parking garages are anticipated at two locations within the RPRP Study Area. These include an approximate 900-space parking garage at the southeast corner of Eureka Avenue and Stuart Avenue and a

[1] An HQTA is generally a walkable transit village or corridor, consistent with the adopted RTP/SCS, that has a minimum density of 20 dwelling units per acre and is within a mile of a well-serviced transit stop with 15-minute or less service frequency during peak commute hours.

720-space parking garage at the southwest corner of Orange Street and Oriental Avenue (City of Redlands 2011).

The SPA No. 45 Amendments also contemplate several infrastructure improvements that would facilitate overall development within the boundaries of the SPA No. 45 Amendments. Two major storm drain projects are planned as part of the SPA No. 45 Amendments to ensure that stormwater runoff is adequately conveyed off the properties in Downtown and into the Mission-Zanja Creek System (City of Redlands 2011). The first includes the installation of a storm drain beginning at 9th Street and ending to the east of Texas Street that would run parallel to Redlands Boulevard and Oriental Avenue. The second project would include the installation of a storm drain beneath 6th Street from the SANBAG railroad ROW to the previously mentioned proposed storm drain. However, due to current economic conditions, the City does not have sufficient funds to undertake either project at this time.

This RPRP EIS/EIR incorporates by reference the previously certified EIR prepared for the SPA No. 45 Amendments. The SPA No. 45 Amendments EIR programmatically analyzes the potential physical environmental effects of constructing and operating the parking garages and storm drain improvements within the downtown area. The RPRP Study Area traverses through the central portion of the amended SPA. This EIS/EIR incorporates by reference the program analysis of these parking and drainage facility improvements and the associated adverse impacts to air quality relative to regional construction emissions, regional operational emissions, and cumulative emissions; and traffic level-of-service under the General Plan standards. A description of the Project components SANBAG is proposing to integrate into the Downtown Redlands area is provided in Chapter 2, Alternatives Considered of this EIS/EIR. The complete SPA No. 45 Amendments EIR may be downloaded from http://ci.redlands.ca.us/community/PDFs/DowntownEIR/.

San Bernardino General Plan Update and Associated Specific Plans Environmental Impact Report and Addendum, SCH #2004111132

This RPRP EIS/EIR incorporates by reference the City of San Bernardino’s General Plan Update EIR (SBGPU EIR 2005) and Supporting Addendum for San Bernardino’s Transit Overlay District. These two environmental documents are incorporated by reference into this EIS/EIR analysis for different reasons. The SBGPU EIR considers impacts associated with the build-out of San Bernardino’s General Plan through 2025. The SBGPU considers this build-out in the context of approximately 10,044 acres devoted to flood control facilities and ROW associated with local roadways and rail lines, including portions of the rail corridor being considered in this EIS/EIR. In this context, the SBGPU EIR considers the environmental effects associated with the build-out of land uses adjacent to the rail corridor in the context of existing freight operations. Based on this circumstance, the SBGPU EIR already considers the project-level and cumulative effects associated with the No Build Alternative for portions of the rail corridor that traverse the City of San Bernardino. That analysis is hereby incorporated by reference into this EIS/EIR. The complete SBGPU EIR (2005) may be downloaded from http://www.ci.san-bernardino.ca.us/pdf/DevSvcs/FINAL%20EIR.pdf.

In addition to the SBGPU EIR, this EIS/EIR incorporates by reference an Addendum to the SBGPU EIR that was approved in 2012 for San Bernardino’s proposed Transit Overlay District (TD) zoning designation and associated development standards and design guidelines for areas surrounding the transit stations. The TD zoning designation and its regulations are proposed in order to implement the City’s General Plan policies promoting transit-oriented development within San Bernardino and apply to 13 individual transit stations along the San Bernardino bus rapid transit (sbX BRT) corridor, which in the case of the E Street and Tippecanoe Rail Station, would be shared facilities. This EIS/EIR incorporates by reference the previously approved Addendum, which considers the effects of implementing a TD zoning designation on lands adjacent to rail corridor. The Addendum to the SBGPU EIR is located at http://www.ci.san-bernardino.ca.us/civica/filebank/blobdload.asp?BlobID=12560.

3.2 LAND USE, PLANNING, AND COMMUNITIES

This section provides an analysis of potential effects of the Project on existing and planned land uses within the Study Area, established neighborhoods and communities along the Redlands Corridor, and adjacent properties. This evaluation includes consideration of short-term construction and long-term operational effects to established communities and community cohesiveness, effects related to incompatibility with adjacent land uses, as well as the Project's overall consistency with relevant planning documents and goals. Potential effects to communities and neighborhoods analyzed in this section include: community mobility; viability of existing businesses; emergency services; community resources and events; and population, housing, and employment characteristics. The analysis of plan consistency is based on the findings and conclusions summarized in the Land Use Technical Memorandum (see Appendix D1). In addition, this section analyzes the potential displacements, including temporary construction easements (TCE), permanent roadway ROW easements, partial and full private property acquisitions (see Appendix D2).

3.2.1 Regulatory Framework

Table 3.2-1 identifies and summarizes federal, state, and local laws, regulations, and plans that are applicable to the Project.

3.2.2 Affected Environment

Existing Land Use

The Study Area is characterized by a diverse mix of land uses including low and medium-density residential neighborhoods, retail and office commercial centers, highway commercial areas, and light and heavy industrial properties and associated warehouses. Numerous undeveloped or vacant land areas are scattered throughout the Study Area; however, in general, the Study Area is planned for urban land uses. The Santa Ana River cuts across the central portion of the Study Area and creates a natural barrier that restricts travel movements east-to-west. Highway commercial and light industrial land uses are clustered along U.S. Interstate 10 (I-10) and I-215, with retail and office commercial space concentrated in the downtown areas of San Bernardino and Redlands.

The existing land uses within the Study Area are more fully described in the Land Use Technical Memorandum (Appendix D1) and is Section 2.3 of Chapter 2.

City of San Bernardino General Plan and Zoning

The City of San Bernardino uses a single land use map system, and therefore, the general plan land use designations coincide with the established zoning districts, and are one in the same. The City of San Bernardino land use designations/zoning contained within the Study Area are illustrated in Figure 3.2-1a and include the following:

- Residential Suburban (RS)
- Residential Medium High (RMH)
- Residential Urban (RU)
- Commercial General (CG-1)
- Central City South (CCS-1)
- Commercial Heavy (CH)
- Office Industrial Park (OIP)
- Light Industrial (IL)
- Heavy Industrial (IH)

Table 3.2-1. Pertinent Laws, Regulations, and Plans for Land Use and Planning

Law, Regulation, or Plan	Summary and Project Nexus
Federal	
Surface Transportation Board – Preemption of Railroad Rights of Way	The Surface Transportation Board (STB) is an independent decision-making body that was created by the Interstate Commerce Commission Termination Act (ICCTA) in 1995. The STB retains jurisdiction over railroad rate and service issues and rail restructuring transactions, including mergers, line sales, line construction, and line abandonments. Section 10501(b) of the ICCTA gives STB exclusive jurisdiction over “transportation by rail carriers” and expressly preempts any state law remedies with respect to rail transportation with the term “transportation” broadly defined to include all of the related facilities and activities that are part of rail transportation. The exclusive jurisdiction of the Project under STB precludes enforcement local land use, permitting, and/or environmental regulations on Project-related activities.
Moving Ahead for Progress in the 21st Century Act (MAP-21)	MAP-21 was adopted in July 2012 and creates a statewide planning process that establishes a cooperative, continuous, and comprehensive framework for making transportation investment decisions throughout each State. Oversight of the process is a joint responsibility of the Federal Highway Administration (FHWA) and FTA. Additional detail on MAP-21 is provided in Section 3.3.
Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970	The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act), mandates that certain relocation services and payments be made available to eligible residents, businesses, and nonprofit organizations displaced as a direct result of projects undertaken by a federal agency or with federal financial assistance. The Uniform Act provides for uniform and equitable treatment for persons displaced from their homes and businesses and establishes uniform and equitable land acquisition policies. Where acquisition and relocation are unavoidable, owners of private property have federal constitutional guarantees that their property would not be taken or damaged for public use unless they first receive just compensation. Any Project-related private property acquisitions, if necessary, would be required to follow the requirements of the Uniform Act.
Americans with Disabilities Act of 1990	The Americans with Disabilities Act (ADA) of 1990 ensures equal rights to all those with disabilities. The regulations implementing this Act (49CFR38) outline specific requirements for buses and light rail vehicles, including access ramps, handrails, priority seating for persons with disabilities, auditory and visual warnings for door closings, and minimum door widths to ensure persons with disabilities can safely use public transit facilities. Stations associated with the Project would be designed to provide access consistent with the ADA.
State	
State Planning and Zoning Laws (California Government Code Section 65300)	California Government Code Section 65300 et seq. establishes the obligation of cities and counties to adopt and implement general plans. The State Zoning Law (California Government Code Section 65800 et seq.) establishes that zoning ordinances, which are laws that define allowable land uses within a specific zone district, are required to be consistent with the general plan and any applicable specific plans. A specific plan is another planning device that governs a smaller land area than the general plan, but must be consistent with the overarching general plan. Specifically, it implements the general plan in a particular geographic area. (California Government Code, Section 65450.) Although construction and operation of Project-related facilities falls under the Federal STB, the Planning Commission and City Council for the cities of San Bernardino and Redlands, respectively, ultimately retain authority for the determination of the Project’s consistency with local plans and policies.

Table 3.2-1. Pertinent Laws, Regulations, and Plans for Land Use and Planning

Law, Regulation, or Plan	Summary and Project Nexus
Sustainable Communities and Climate Protection Act of 2008 (Sustainable Communities Act, Senate Bill 375. Chapter 728, Statutes of 2008	State Senate Bill 375 of 2008 (SB 375) provides for greater coordination of state housing, and environmental and transportation laws and requires a regional Metropolitan Planning Organization (MPO) to develop a Sustainable Communities Strategy (SCS) as part of the Regional Transportation Plan (RTP). The Southern California Association of Governments (SCAG) is the MPO for the Redlands Corridor. SCAG develops its SCS and RTP with input from SANBAG.
California Relocation Act	The provisions of the California Relocation Act (California Act) apply if a public entity undertakes a project for which federal funds are not present. In this case, the public entity must provide relocation assistance and benefits to any private property acquisitions. As stated above under federal regulations (Uniform Act), owners of private property have similar state constitutional guarantees regarding property acquisitions, damages, and just compensation. For Project-related acquisitions, if funding is not available through federal sources, the provisions of the California Act would ensure compensation be provided.
Local	
SCAG Regional Comprehensive Plan and Guide	SCAG's Regional Comprehensive Plan (RCP) adopted in 2008 provides a 20-year framework for local and regional development. The Vision of the RCP is "To foster a Southern California region that addresses future needs while recognizing the interrelationship between economic prosperity, natural resource sustainability and quality of life." The RPRP would assist local governments in meeting the land use goals from the RCP, including focusing growth in existing and emerging centers and along major transportation corridors.
SCAG Regional Transportation Plan/Sustainable Communities Strategy	The 2012 RTP/SCS incorporates an added emphasis on sustainability and integrated planning than ever before. The RPRP is within a High Quality Transit Area (HQTA)[1] which relative to the RPRP, is defined as a generally walkable transit corridor, consistent with the adopted RTP/SCS, with 15-minute or less service frequency during peak commute hours. Applicable mitigation measures from the RTP/SCS PEIR are incorporated into the Project design, as appropriate.
SCAG Compass Blueprint 2% Strategy	The implementation framework known as the *2% Strategy: Shared Values, Shared Future*, part of SCAG's visioning initiative known as the *Southern California Compass*, seeks to assist cities and counties develop strategies to accommodate future growth while promoting SCAG's regional principles of Mobility (improve mobility for all residents), Livability (foster livability in all communities), Prosperity (enable prosperity for all people), and Sustainability (promote sustainability for future generations). The majority of the Study Area is located within a Compass 2% Strategic Opportunity Area; specifically, the portion the railroad corridor from E Street (MP 1) east to the City of Redlands near Mountain View Avenue (approximately MP 6).[2]

1. See Exhibit 4.9, High Quality Transit Areas SCAG Region
2. http://www.compassblueprint.org/files/sanbag.pdf

The City of San Bernardino has established Strategic Areas as part if its General Plan, which are intended "to achieve a fundamental change in the land use pattern or quality of development." The Strategic Areas traversed by the Project include:

- Tippecanoe Strategic Area - The goal of the Strategic Area is to address the area's infrastructure needs, to help the area to capitalize upon adjacent economic opportunities, such as the San Bernardino International Airport, improve the area's aesthetics, improve the circulation system, to redevelop vacant and underutilized lands into their highest potential, and to capitalize upon the presence of the Santa Ana River.
- Southeast Industrial Strategic Area - The goal of this Strategic Area is to protect the industrial job base, help improve residential conditions, and to help mitigate impacts to adjacent residences.
- Southeast Strategic Area - This goal of this Strategic Area is to improve the conditions and accessibility of its residential neighborhoods. Homes in this Strategic Area are in need of rehabilitation, should be separated from the surrounding industrial areas with berming and buffers, and should be connected physically and socially with the rest of the City.

City of Loma Linda General Plan and Zoning

The City of Loma Linda General Plan land use designations within the Study Area are illustrated in Figure 3.2-1b and include the following:

- Business park
- Medium Density Residential (MDR)
- High Density Residential (HDR)
- Special Planning Area D

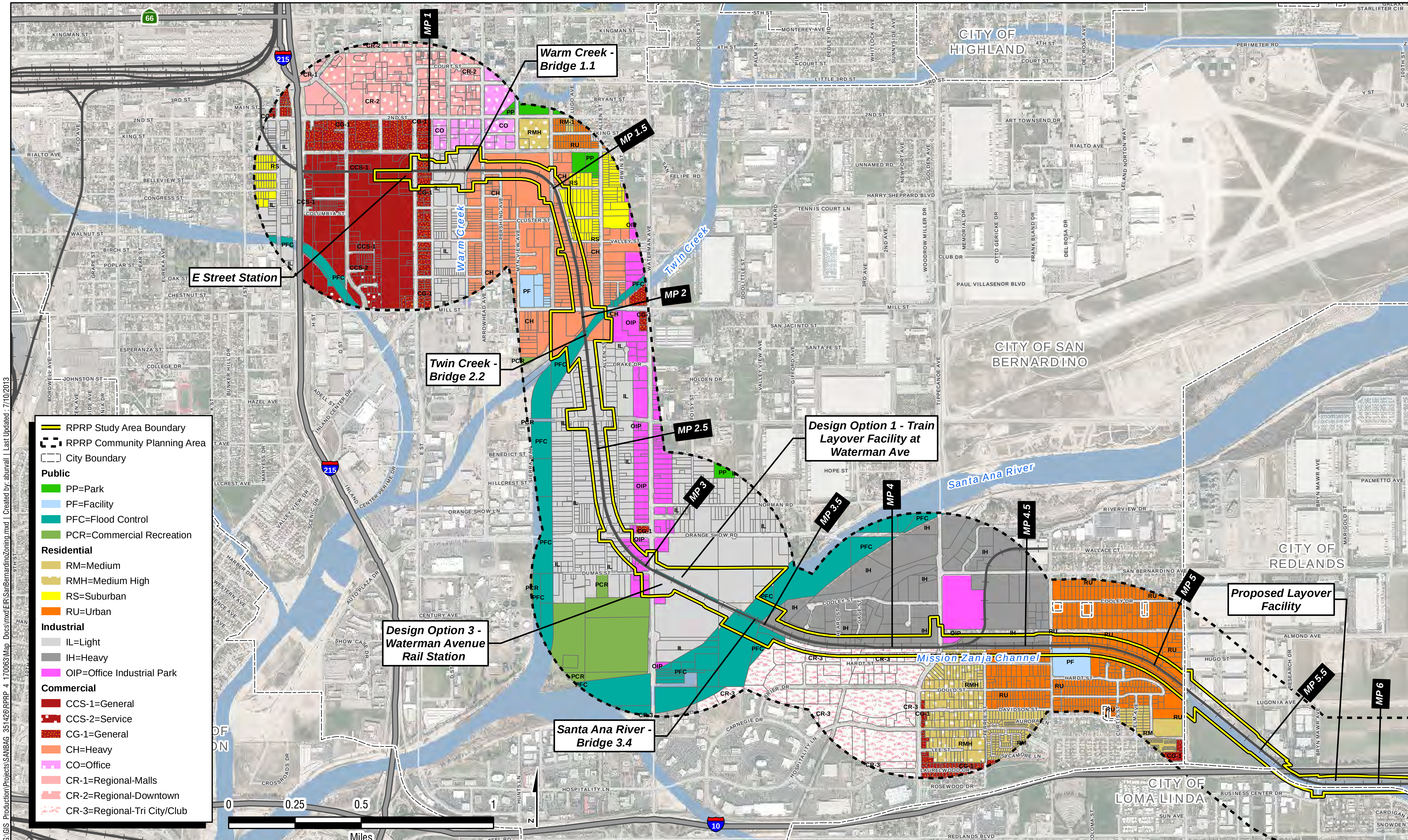
Zoning designations within the City of Loma Linda are consistent with the adopted general plan land use designations for the city and are shown in Figure 3.2-2. No permanent facilities are proposed within the City of Loma Linda as part of the Project.

City of Redlands General Plan and Zoning

The City of Redlands General Plan land use designations (including Specific Plan Areas) within the Study Area are illustrated in Figure 3.2-1b and include the following:

- Commercial/Industrial (CI)
- Commercial (C)
- Agriculture (A)
- Public Institutional (PI)
- Light Industrial
- Parks/Golf Courses
- Medium Density Residential (MDR)
- High Density Residential (HDR)

Zoning designations within the City of Redlands are shown in Figure 3.2-2. The majority of the Study Area that traverses through Redlands is within the boundaries of two specific plans (EVCSP and the DRSP). The boundaries of the EVCSP and the DRSP and associated land uses function as the zoning within these areas are shown in Figures 3.2-3 and 3.2-4, respectively.



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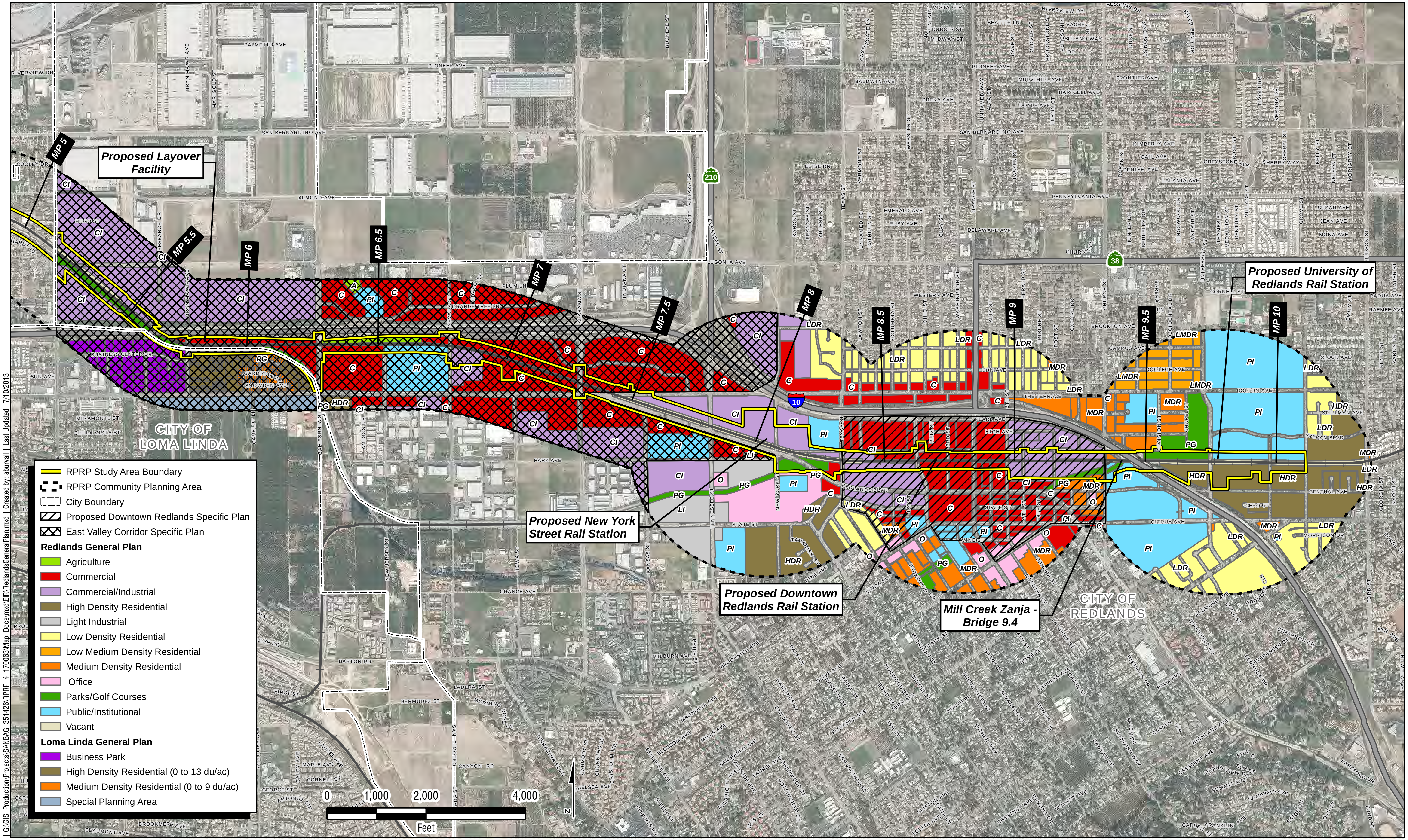
City of San Bernardino General Plan Land Use and Zoning Designations

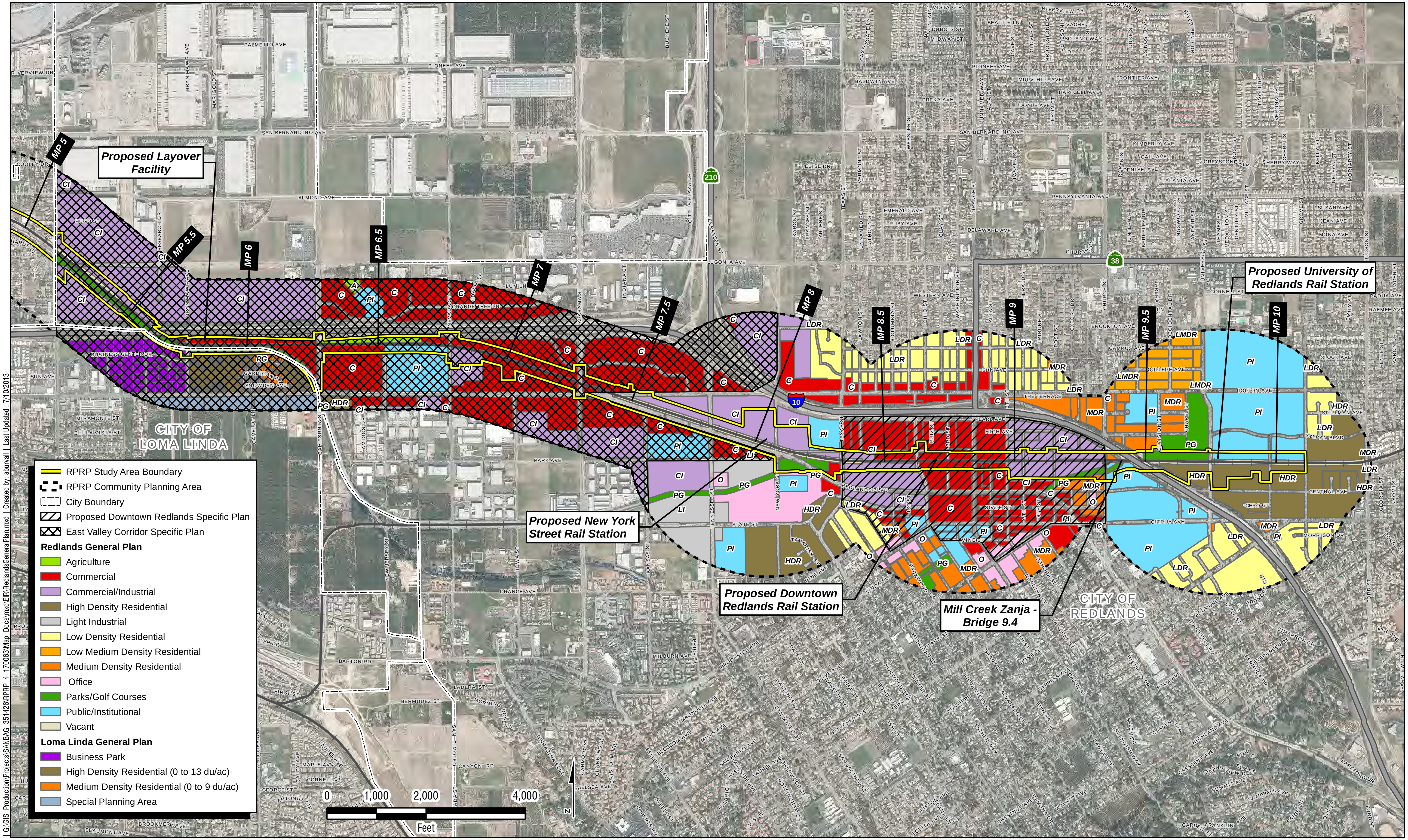
Figure 3.2-1A

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR



City of Redlands and Loma Linda General Plan Land Use

Figure 3.2-1B



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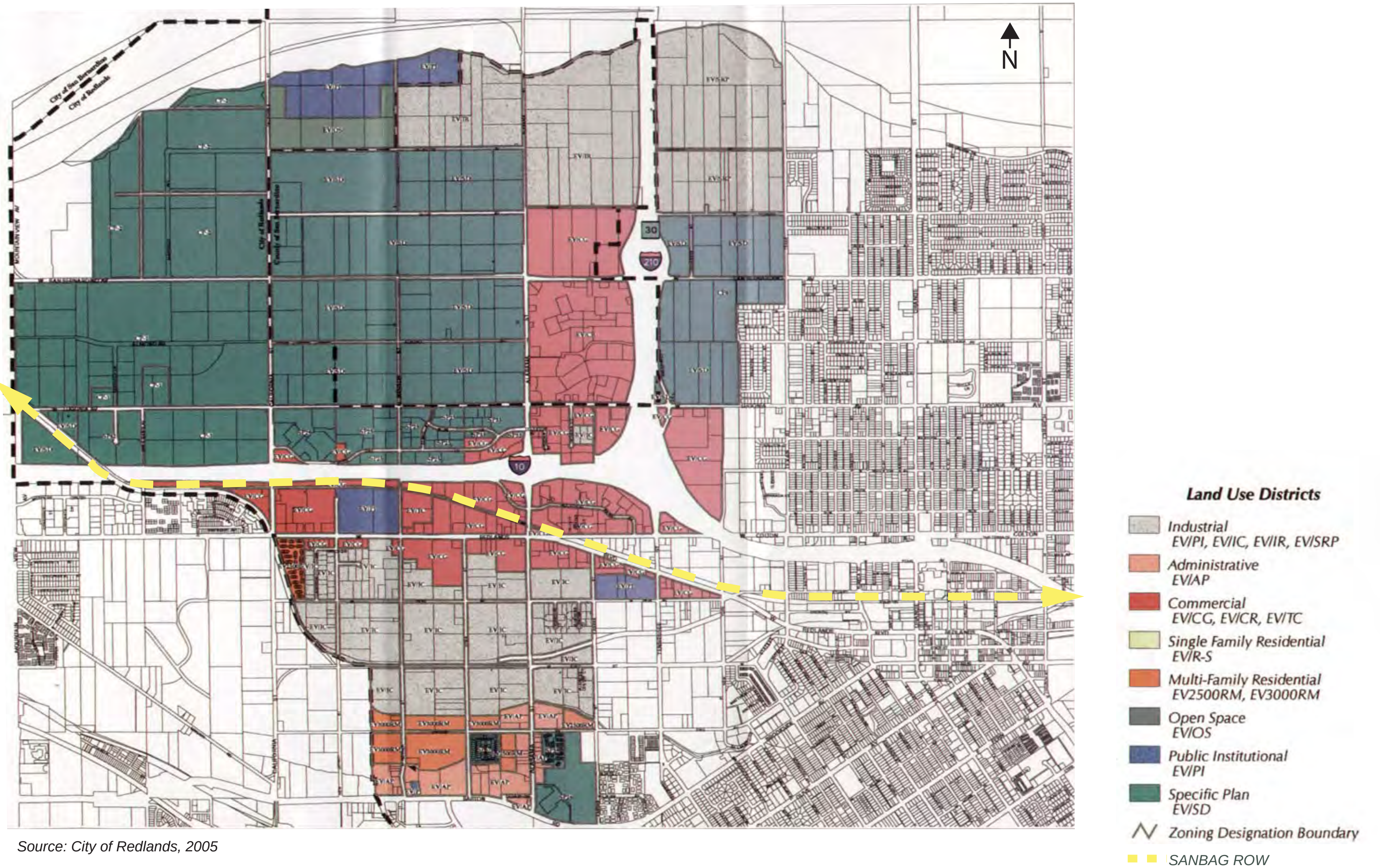
City of Redlands and Loma Linda General Plan Land Use

Figure 3.2-1B



Source: City of Redlands, 2005

City of Redlands: East Valley Corridor Specific Plan

Figure 3.2-3

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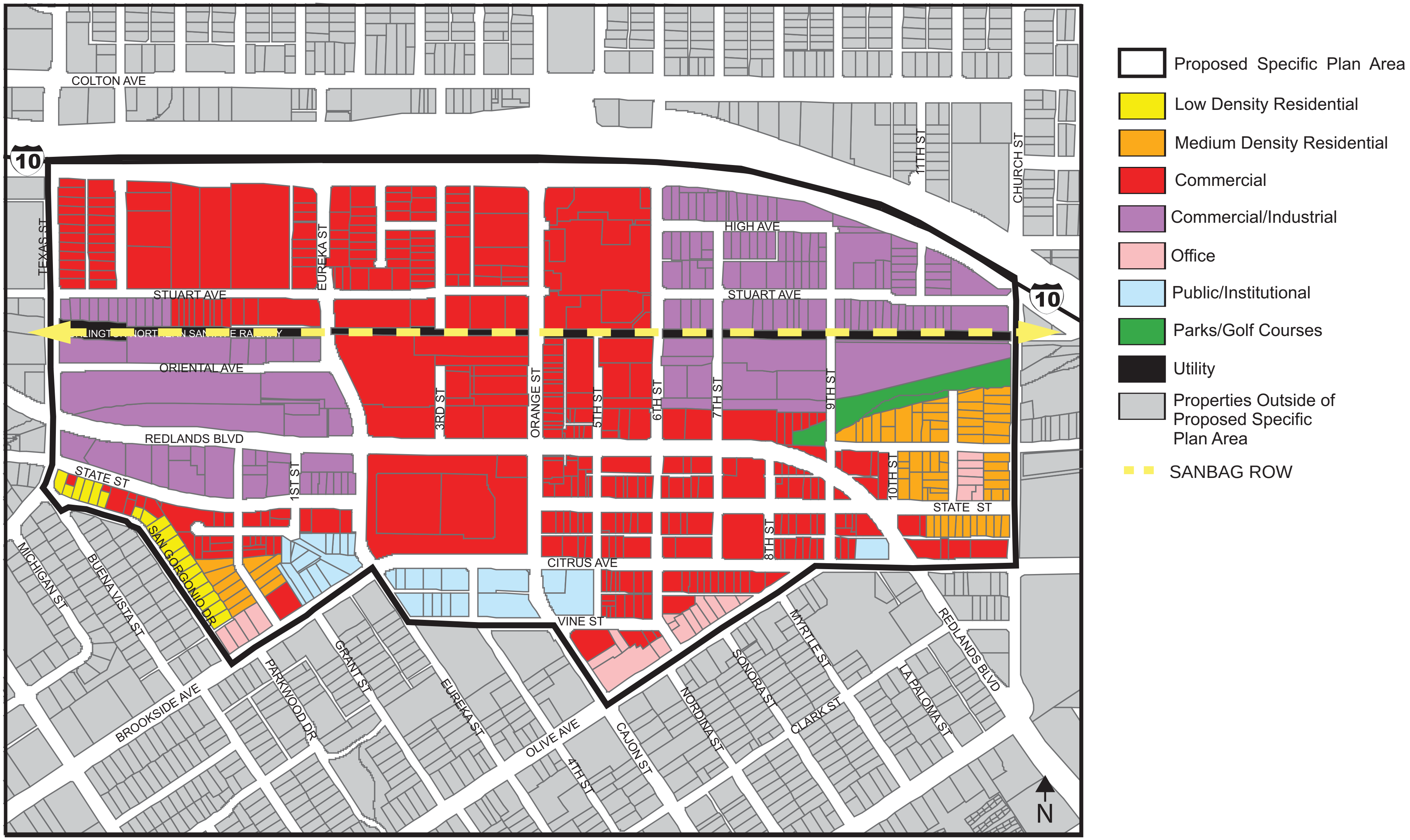

Source: DRSP Amendment #6, March 2011

Downtown Redlands Specific Plan

Figure 3.2-4

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Communities and Neighborhoods

The RPRP Community Planning Area or "Planning Area" defines the geographic scope for the communities and neighborhoods considered in this EIS/EIR, and includes all of the areas within one-quarter mile of the railroad corridor and one-half mile of the proposed station areas. The communities in the Planning Area are referred to as Neighborhood Clusters for the City of San Bernardino and Planning Sectors for the City of Redlands (City of Redlands 1995). The communities that are located adjacent within the delineated Planning Area for the RPRP include:

- Stadium West
- Show Place
- Valley View
- Riverview
- North Loma Linda
- West Redlands
- North Redlands
- South Redlands

These communities and neighborhoods include the following census tracts: 49, 57.01, 58, 72, 73.06, 78, 80.02, 81, 82, 84.01, 84.02, 84.03, 84.04, and 124 (US Census Bureau 2010). Figures 3.2-5A and 3.2-5B illustrates the census tracts within the Planning Area that were included as part of this analysis.

Population and Housing

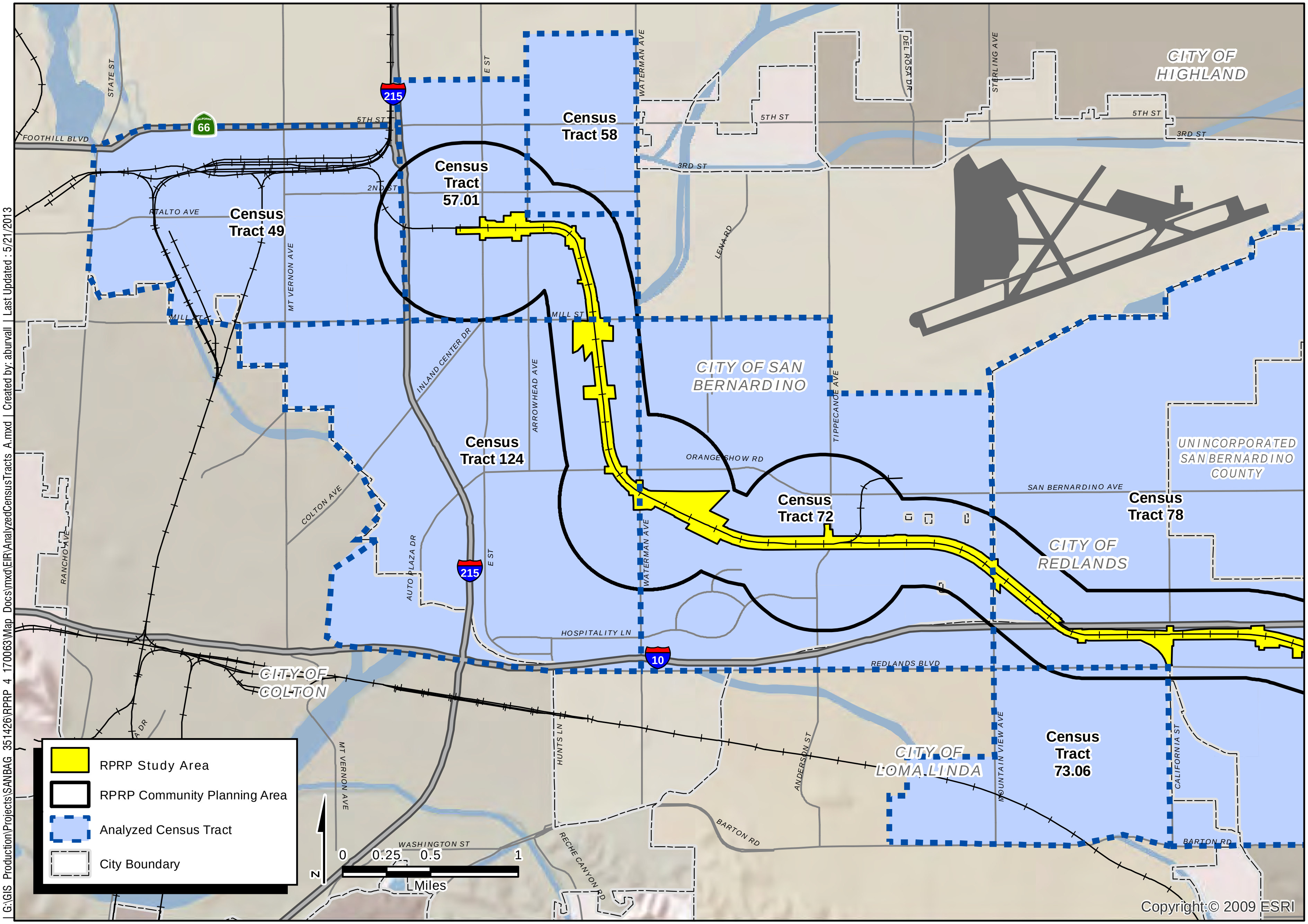
As shown in Table 3.2-2, the cities within the Planning Area experienced varying rates of population growth between 2000 and 2010. In descending order, the City of Loma Linda grew by 24.5 percent (4,580 persons), the City of San Bernardino grew by 13.2 percent (24,523 persons), and the City of Redlands grew by 8.1 percent (5,156 persons).

Table 3.2-2. Population Growth by City

City	2000 Census	2010 Census	2000-2010 Growth (Persons)	Percent Change (2000-2010)	Average Annual Rate of Change
City of San Bernardino	185,401	209,924	24,523	13.2%	1.3%
City of Loma Linda	18,681	23,261	4,580	24.5%	2.5%
City of Redlands	63,591	68,747	5,156	8.1%	0.8%

Source: U.S. Census Bureau 2010.

As shown in Table 3.2-3, the total population in 2010 for the communities and neighborhoods near the railroad corridor was approximately 84,000 persons. There were also a total of 26,995 households and 29,470 housing units estimated within this same area (U.S. Census Bureau 2010).



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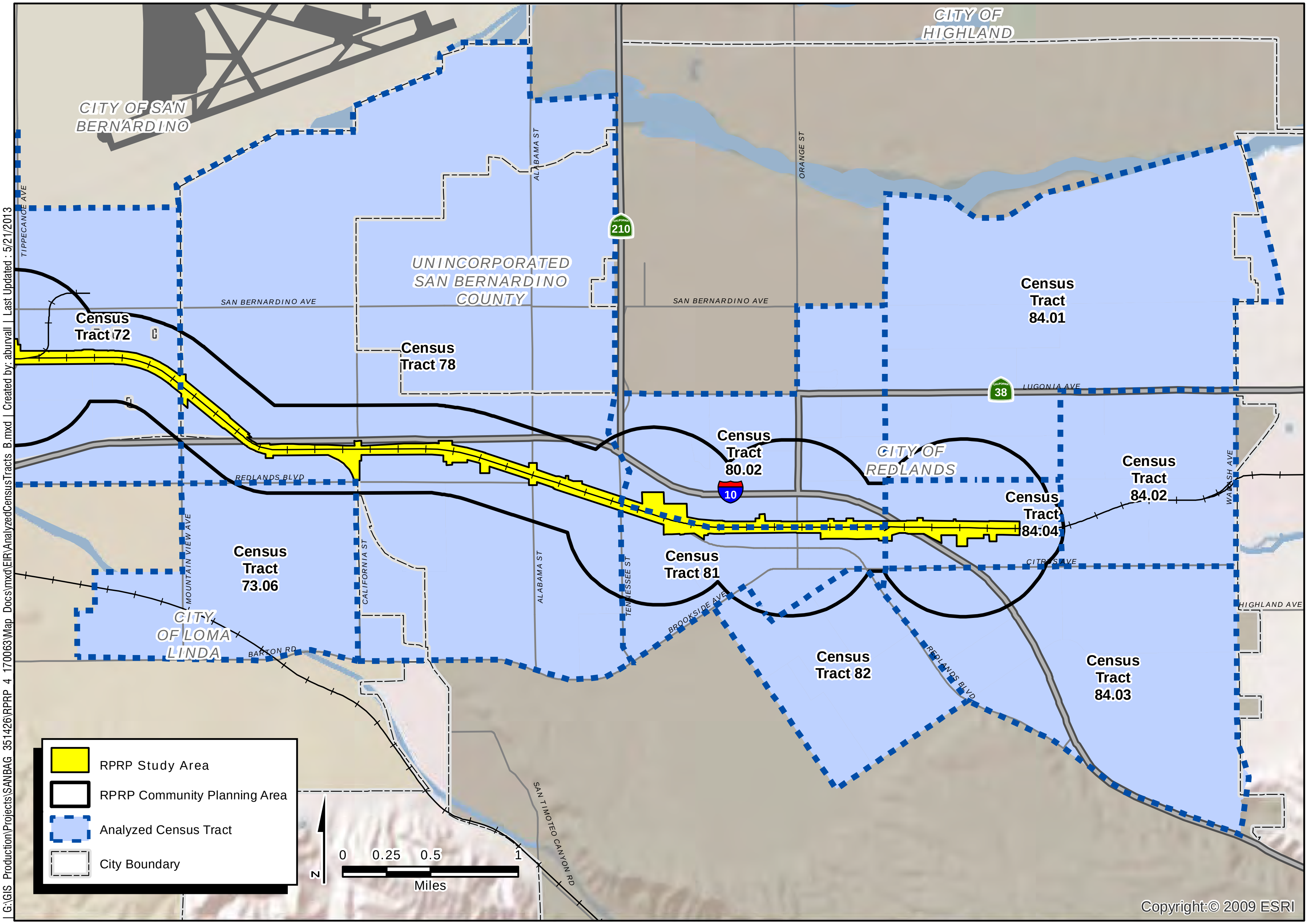
Census Tracts Analyzed (2010) - Western Study Area

Figure 3.2-5A

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

HDR ONE COMPANY | *Many Solutions*℠



Census Tracts Analyzed (2010) - Eastern Study Area

Figure 3.2-5B

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

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Table 3.2-3. Population, Households, and Housing Units in the Planning Area

Census Tract	Population	Households	Housing Units
Census Tract 49	7590	1768	1987
Census Tract 57.01	2216	845	954
Census Tract 58	3981	1208	1409
Census Tract 72	6798	1789	1950
Census Tract 73.06	5859	2250	2423
Census Tract 78	4912	2119	2322
Census Tract 80.02	7256	2076	2290
Census Tract 81	3182	1460	1606
Census Tract 82	5147	2452	2709
Census Tract 84.01	9953	3014	3193
Census Tract 84.02	6448	2209	2317
Census Tract 84.03	5833	2066	2157
Census Tract 84.04	2729	1039	1184
Census Tract 124	3617	933	1019
Total	**83,907**	**26,995**	**29,470**

Source: U.S. Census Bureau 2010, Summary File 1.

The age of the population for the communities and neighborhoods along the railroad corridor varies considerably throughout each different community. In 2010, six of the areas analyzed reflected a relatively younger population, with a median age of 25 or younger. Table 3.2-4 shows the median age of the population within the Planning Area.

Table 3.2-4. Median Age of Population

Census Tract	Both Sexes	Male	Female
Census Tract 49	24.7	24.3	25.2
Census Tract 57.01	33.2	36.5	24.9
Census Tract 58	26.6	25.9	28.7
Census Tract 72	28.2	25.4	29.7
Census Tract 73.06	27.4	27.3	28.0
Census Tract 78	26.8	28.0	26.7
Census Tract 80.02	25.7	29.1	25.3
Census Tract 81	26.6	26.6	26.6
Census Tract 82	25.5	25.1	39.5
Census Tract 84.01	23.5	23.1	24.4
Census Tract 84.02	36.8	38.6	35.7
Census Tract 84.03	44.6	36.1	48.6
Census Tract 84.04	18.0	14.1	21.6
Census Tract 124	24.2	19.4	29.9

Source: U.S. Census Bureau 2010, American Community Survey: Median Age by Sex.

Employment

As shown in Table 3.2-5, the cities of San Bernardino, Loma Linda, and Redlands showed net gains in jobs between 2000 and 2011. The City of San Bernardino and Redlands had a six percent increase in total employment between 2000 and 2011, while the total employment in Loma Linda increased by seven percent.

Table 3.2-5. Total Employment by City

City	2000	2011	2000-2011 Growth (Jobs)	Percent Change (2000-2011)
City of San Bernardino	66,100	70,100	4,000	6%
City of Loma Linda	8,700	9,300	600	7%
City of Redlands	31,200	33,100	1,900	6%

Source: California Employment Development Department 2011.

Growth Projections

Table 3.2-6 shows the 2035 population and employment projections for the cities within the Planning Area. The population is expected to increase by 11 to 17 percent in the surrounding areas from the year 2010 to 2035. Employment could increase up to 28 percent during that same time (SCAG 2012). Population growth and employment growth are fairly similar in the cities of San Bernardino and Redlands, with higher population and employment growth projected for the City of Loma Linda.

Table 3.2-6. Population and Employment Growth Forecasts

City	Population Growth			Employment Growth		
	2010	2035	2010-2035 (% Change)	2010	2035	2010-2035 (% Change)
City of San Bernardino	231,200	261,400	11.6%	113,400	145,300	22%
City of Loma Linda	26,700	31,700	15.8%	23,300	32,600	28.5%
City of Redlands	75,500	87,900	14.1%	46,700	60,100	22.1%
San Bernardino County	2,268,000	2,750,00	17.5%	810,000	1,059,00	23.5%

Source: SCAG 2012.

Community Mobility

According to the U.S. Census Bureau 2009 estimates, the Riverside-San Bernardino metropolitan area is ranked 14th in population nationally and ranks 32nd among large metropolitan areas in the Texas Transportation Institute's Travel Time Index. The Travel Time Index is a measure of congestion based on the ratio of travel time for trips made in the peak period as compared to travel times under free-flowing conditions (Texas Transportation Institute, *Urban Mobility Report*, 2010).[1] Previously, the region ranked 35th among large metropolitan areas in the Travel Time Index. With the forecasted population and employment growth of San Bernardino County over the next 25 years, traffic volumes along the major and minor arterial roadways are anticipated to significantly increase.

[1] The Texas Transportation Institutes *2010 Urban Mobility Report* reviews and ranks metropolitan areas using data compiled for the previous calendar year. In this case, rankings refer to year 2009 data.

Transit service in the Planning Area is currently provided by five local bus routes operated by Omnitrans: Routes 2, 8, 9, 15, and 19. Three of these local bus routes (8, 9, and 15) provide single-seat service between downtown San Bernardino (at the Fourth Street Transit Mall) and Redlands Mall, but none of these routes provide “direct” connectivity between the two cities. Omnitrans Routes 2 and 19 also serve the communities of the Planning Area, but neither provides a direct connection between downtown Redlands and downtown San Bernardino.

The Southern California Regional Rail Authority (SCRRA), also known as Metrolink, provides passenger rail service throughout Southern California. Two Metrolink lines provide all day service to San Bernardino, terminating west of the I-215 freeway and downtown San Bernardino. The Inland Empire-Orange County Line operates daily and extends from Oceanside in San Diego County north through Anaheim and Riverside into San Bernardino to the Depot.

The existing transit service operating in the Planning Area serves two very distinct transit markets, best described by the mode of transit service that they use: local bus riders on Omnitrans and passenger rail riders on Metrolink. There are several key differences between these travel markets according to the *SANBAG Profile of Transit Riders in San Bernardino County Final Report* (Parsons 2007)*:*

Local bus riders:

- Are generally low income, with a median household income of less than $20,000 annually;
- Mostly walk to transit with only 5 percent driving or getting a ride to the bus;
- Are transit dependent since fewer than 20 percent have an automobile available;
- Use the local bus for a wide range of trip purposes including 40 percent for work trips; and
- Make relatively short trips, with an average trip length of approximately 5 miles.

Metrolink riders:

- Are generally higher income, with a median annual income of over $60,000;
- Mostly drive to transit with 90 percent driving or getting a ride to the train;
- Are choice riders as 75 percent have an automobile available;
- Use Metrolink almost exclusively for commuting with over 85 percent making work trips; and
- Make relatively long trips, with an average trip length of over 25 miles, with most riders continuing to Union Station and beyond.

Non-motorized travel (bicycle trails and pedestrian sidewalk networks) is generally limited to the urban areas where residential neighborhoods or retail and office commercial land uses are most prevalent. Portions of the Planning Area that contain agricultural uses or light industrial and warehousing activities typically do not have sidewalk infrastructure; thereby limiting the connectivity of sidewalks. Striped bicycle lanes are provided on certain streets in and around San Bernardino and Redlands. Section 3.3, Transportation, provides additional detail on transportation patterns within the Planning Area.

Community and Neighborhood Events

There are many important community events that occur in the Planning Area each year, including music and cultural festivals, parades, arts/theatre performances, and exhibitions. These events often attract hundreds of people to these areas. Table 3.2-7 lists community events in the Planning Area that were scheduled for 2012.

Table 3.2-7. Community Events

Event	Description
Stater Bros. Route 66 Rendezvous	The City of San Bernardino's signature event held annually in downtown on the third weekend in September
Professional Baseball Games – Inland Empire 66ers	San Bernardino's single A minor league baseball team in the California League home games are played at Arrowhead Credit Union Park
National Orange Show Festival	The National Orange Show Festival has some of the finest family entertainment in the Inland Empire (i.e., rides, exhibits, entertainment, contests, farm animals, and carnivals).
Grapes & Gourmet Wine & Food Festival	Wine tasting, gourmet food, live and silent auctions and live music at the County Government Center
Redlands Summer Bowl Festival	Performances are Tuesday and Friday evenings through August in downtown Redlands
Redlands Bicycle Classic	This bicycle race covers more than 350 miles throughout San Bernardino and Riverside counties. The race starts and finishes in Redlands
Redlands 4th of July Parade	The parade begins at Franklin School at 850 E. Colton Avenue and ends around Sylvan Park
Saturday Morning Farmers Market	Year round farmers market at Redlands & 5th Avenue
Feast of Lights	Annual ceremony held at the University of Redlands
Christmas Parade	Sponsored by Redlands Noon Kiwanis Club, the parade is held in downtown Redlands

Source: San Bernardino Convention & Visitors Bureau 2005.

Land Ownership and Easements

The railroad corridor, originally built by AT&SF, was constructed in 1883 (see Appendix N) and the associated ROW, purchased by SANBAG in 1992 from BNSF, pre-dates the formation of much of the adjacent private properties along the railroad corridor. Additionally, SANBAG's ROW pre-dates the utility and roadway easements that currently cross the railroad corridor.

Acquisition of private property for public projects, if necessary, is required to follow the requirements of the Uniform and California Relocation Acts as described in Table 3.2-1. Land acquisitions may be required for a variety of reasons, including but not limited to, ensuring compatible land use, safety, or project development. Land acquisitions may be full (if the majority of a property needs to be acquired for project development) or partial (if only a portion of a parcel of land is required to accommodate project development). Easements (i.e., land that is used or restricted for stated purposes but not owned) may be implemented in place of acquiring all or a portion of a property. As with land acquisitions, easements may be partial or full. Easements may also be temporary (e.g., if needed only during construction) or permanent (e.g., if needed for operations). Table 3.2-8 provides a breakdown of the types of acquisition identified in this EIS/EIR along with a description of the general causes or need for these types of acquisitions.

Table 3.2-8. Type of Land Acquisitions

Reason	Type of Acquisition	Cause/Process
Proposed ROW Limits	Full	• Inadequate ROW width for construction and operation of passenger rail service, stations, and/or parking areas • Loss of access that reduces the useful operation (e.g., driveway access to a property is eliminated) of the property
Proposed ROW Limits	Partial	• Minor encroachments into adjacent private property, but functionality of the existing use is not diminished as a result of the land requirements
Intersection improvements/ reconfigurations	Permanent Roadway Easement	• Grade crossing and intersection improvements • Widening intersections is often required to add left-turn lanes • Street widening may be necessary when the existing horizontal alignment contains insufficient right-of-way
Driveway reconfiguration; sidewalk and alley vacations; Property line improvements (e.g. fencing)	Temporary Easement	• Additional area to maintain traffic volumes, turn lanes, or stations • Additional construction area required to complete Project-related improvements that occur along or on property lines

3.2.3 Environmental Impacts/Environmental Consequences

3.2.3.1 Effect Criteria

The Build Alternatives and Design Options would have an adverse effect on land use, planning, and communities if it would:

- Physically divide an established community or physically disrupt community cohesion;
- Conflict or be incompatible with adjacent and surrounding land uses;
- Result in conflict or inconsistency with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project; or
- Conflict with any applicable habitat conservation plan or natural community conservation plan.
- Degrade the social or physical character of the community or quality of life of nearby neighborhoods by:
  - Reducing mobility (pedestrian, bicycle, or vehicle) in and between communities or neighborhoods;
  - Adversely affecting viability of local businesses or community centers (through loss of parking, re-routing of vehicles, decreasing pedestrian access, relocation);

- Adversely affecting important community resources and events (such as festivals, parades, landmarks, parks, or community centers); and
- Substantially changing the population or employment of the area

- Displace substantial numbers of existing housing, businesses, and/or people, thereby necessitating the relocation of businesses and residences.

3.2.3.2 Methodology

Both direct and indirect effects to land use would occur with the implementation of the Project. Direct effects in terms of land use conflicts and adjacent land use compatibility were analyzed by identifying the location of the proposed improvements and, considering the existing and planned on-site and adjacent land uses for each component of the Project (e.g., stations). A similar approach was employed in the consideration of indirect effects. This evaluation also considers the overall Project consistency in relation to local planning documents based on a comprehensive evaluation of the Project, which is contained in Appendix D1 and summarized in this section. Background regarding the Study Area was obtained through a combination of field reconnaissance to verify existing land use and review of pertinent planning documents, including, but not limited to: the General Plans for the cities of San Bernardino and Redlands, SCAG's Regional Transportation Plan, and local specific plan documents (e.g., EVCSP and DRSP). The standard for consistency used here is based on *The Planners Guide to Specific Plans* (OPR 2001): "An action, program, or project is consistent with the general plan if, considering all its aspects, it will further the objectives and policies of the general plan and not obstruct their attainment."

The analysis of impacts on existing communities and neighborhoods was conducted according to the "Community Impact Assessment: A Quick Reference for Transportation" (FTA 1996). The analysis includes a consideration of the Project's effects on the community profile in terms of population, housing, and employment characteristics; unique community features and events; community linkages and mobility; crime; and important emergency responders in the community. These community profiles have been established using the General Plans for the cities within the Planning Area, site visits, U.S. Census Bureau statistics, SCAG and SANBAG data, information from local neighborhood organizations, and public comments and input received on the Project from ongoing meetings and outreach activities. The significance of each impact is determined based on the effect criteria listed above, the nature of the impact (temporary or permanent), and the extent of the impact across one or more local communities or neighborhoods.

Preliminary engineering plans described in Chapter 2 were used to develop a physical footprint for the Project (see Figures 2-1A through 2-1J). The resulting footprint for the Build Alternatives and Design Options were then compared to assessor's parcel information generated by San Bernardino County using geographic information systems (GIS) to assess the types of potential acquisition and displacement that could occur to adjacent private and public properties. Based on the corresponding GIS output, limited site reconnaissance was completed, particularly for properties that could experience full or partial acquisitions, to determine the need for relocation of existing businesses or residences. A complete listing of public and private properties potentially subject to acquisition as a result of the Project is provided in Appendix D2[2].

[2] Note that the methods used to determine potential acquisitions, displacements, and relocations as part of the EIS/EIR are conservative based on the availability of preliminary design plans. As a result, the number of properties affected identified may not accurately characterize the actual number of properties following final design (i.e., the actual number of properties may be less than analyzed in the EIS/EIR).

3.2.3.3 Criteria Requiring No Further Evaluation

Conflicts with Habitat Conservation Plans. The Study Area is not located within an area with an adopted Habitat Conservation Plan (HCP); therefore, a discussion of the Project's effects or potential conflicts with an adopted HCP, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan is not carried forward in this analysis.

3.2.3.4 Assessment of Environmental Effects

EFFECT 3.2-1	**Physically Divide an Established Community or Physically Disrupt Community Cohesion.** The Project would divide established communities and disrupt community cohesion during construction.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under this alternative, maintenance improvements required to facilitate continued freight movements would occur within the SANBAG ROW and not involve the placement of new facilities or structures that could result changes or divisions to established communities. Therefore, no effect under NEPA would occur. No impact would occur under CEQA.

Direct Effects from Long-Term Operations

The No Build Alternative would not result in any changes to existing land uses within the Study Area. As a result, the No Build Alternative would not result in the physical division of a neighborhood or disruption of an existing community and, therefore, no effect under NEPA would occur. No impact would occur under CEQA.

Indirect Effects

There are no indirect effects associated with the No Build Alternative. No effect under NEPA would occur. No impact under CEQA would occur.

ALTERNATIVES 2 AND 3 - PREFERRED PROJECT AND REDUCED PROJECT FOOTPRINT AND DESIGN OPTION 3 – WATERMAN AVENUE RAIL STATION

Direct Effects from Temporary Construction

Construction of the Project would occur within and along SANBAG's existing ROW and would extend beyond the railroad corridor at major intersections, stations, and the proposed layover facility. Direct effects to adjacent properties would occur as a result of access disruptions to established neighborhoods; however, these disruptions would be temporary in duration. Track and road improvements would be constructed to facilitate safe egress for pedestrians in the vicinity of SANBAG's ROW; although, in some instances, these improvements, including street closures, could limit pedestrian and vehicle access in the vicinity of the railroad corridor. Additionally, these restrictions could alter vehicular access to businesses during construction. Given that temporary access restrictions would result over the three year duration of project construction, there is a potential that construction could impact the physical cohesion of nearby neighborhoods. This is considered an adverse effect under NEPA and a significant impact under CEQA. Mitigation Measure TR-1 (Prepare a Traffic Management Plan), as described in Section 3.3 Transportation, is proposed to mitigate this construction-related effect.

Construction is not expected to result in changes to existing land uses along the railroad corridor. Existing land uses would remain contiguous in nature on both sides of the railroad corridor consistent with existing development pasterns that have occurred over the last 100 years. No adverse effect would occur under NEPA. Impacts to existing land use patterns would be less than significant under CEQA.

Direct Effects from Long-Term Operations

The existing SANBAG ROW is an established feature and transportation route throughout this portion of the East Valley and has been in existence for over 100 years. Development patterns along the railroad corridor are partly a consequence of the railroad's presence with the history of the communities of San Bernardino, Loma Linda, and Redlands closely tied to the railroad corridor. As described in Chapter 2, the Project improvements would be constructed to maintain existing freight service and, therefore, this continued use of the railroad corridor would not be adversely affected by the Project.

The rail improvements would be configured to maintain regional circulation throughout the Study Area, while restricting pedestrians and other travelers from entering the SANBAG ROW through the use of fencing or similar means. Access to local businesses located along the railroad corridor would be maintained through re-routing of traffic to other local streets and no changes to adjacent land use designations are contemplated.

The proposed station areas are intended to serve as a focal point for local and regional transit riders and would contribute to the physical cohesiveness of the surrounding communities. The Project would enhance pedestrian connectivity with nearby neighborhoods to encourage non-motorized forms of transportation; and would not result in long-term access restrictions or in the physical division of existing communities. The reconfiguration or creation of new parking areas would occur adjacent to the existing SANBAG ROW in cooperation with adjacent landowners, and these improvements would not restrict or prohibit safe pedestrian and vehicular access to and from these areas.

Under the Build Alternatives, the train layover facility is proposed at MP 6, west of California Street. The existing Mission Zanja Flood Control Channel at this location provides a natural, physical separation between the railroad corridor to the north and existing low and medium density residential land uses to the south and within the City of Loma Linda. I-10 provides a similar physical separation from uses to the north. Given these site characteristics, it is unlikely the proposed train layover facility would divide an established community or disrupt community cohesion.

Based on the circumstances described above, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

Indirect Effects

Implementation of the Project could require the implementation of noise mitigation, which could include the installation of sound barriers at one or more locations along the railroad corridor (see Section 3.6, Noise and Vibration). The physical scale of the sound barriers at these locations would create a new obstruction between existing land uses surrounding the railroad corridor. The installation of thousands of feet of up to 12-foot tall sound barriers would create a distinct and significant physical and visual change to the community character in the immediate Study Area adjacent to the railroad corridor. Based on the extensive length of the sound barriers, these mitigation features would effectively result in the division of multiple established communities along the railroad corridor. In San Bernardino, these communities would include residential areas along Dorothy Street, west of Waterman and south of Central Avenue, and areas to the north and south of the railroad corridor between Tippecanoe Avenue and Mountain View Avenue. Further east within the City of Redlands, areas potentially affected would include commercial areas within downtown Redlands and areas east of I-10 within the vicinity of the University of Redlands. This is considered an adverse indirect effect under NEPA. Under CEQA, this indirect impact would be significant. Mitigation Measure VQA-4 (Sound Barrier Screening and Surface Treatments), as described in Section 3.4 Visual Quality and Aesthetics, is proposed to mitigate this indirect effect.

Design Option 1 - Train Layover Facility (Waterman Avenue)

Direct Effects from Temporary Construction

Acquisition of the optional site location for the layover facility is not expected to divide established neighborhoods or disrupt community cohesion within the Study Area. The SAR is located east of this site location and the Riverside Water Treatment Plant is located to the north. Access to these uses would be maintained. Construction-related effects on these uses would be temporary and localized and are not expected to divide established communities or physically disrupt community cohesion. In this context, no adverse effect would occur under NEPA for this Design Option. A less than significant impact would occur under CEQA.

Other Project-related components (track and road improvements) combined with Design Option 1 could result in temporary access restrictions and, therefore, an adverse effect would occur under NEPA. This is considered a significant impact under CEQA. Mitigation Measure TR-1 is proposed to mitigate this construction-related effect.

Direct Effects from Long-Term Operations

Adjacent land uses to the optional train layover facility site include the San Bernardino Regional Complex south of SANBAG's ROW, undeveloped lands and the Riverside Water Treatment Plant to the north along Orange Show Road, and the Santa Ana River to the south and east. The subject property for the alternate layover facility site is generally isolated from the remainder of the community and, the use of this alternate site location would not restrict or prohibit safe pedestrian and vehicular access to established land uses nearby or impede upon the use of adjacent lands for their planned purposes. All other facility-related effects would be similar to those described for the Preferred Project. Based on these considerations, no effect under NEPA would occur. No impact under CEQA would occur.

Indirect Effects

There are no indirect effects related to the physical division of an established community or disruption of community cohesion by locating the layover facility at Waterman Avenue. Other indirect Project-related components (i.e., installation of sound barriers) would create a distinct and significant physical change to the community character in the immediate Study Area, which would effectively result in the division of one or more established communities along the railroad corridor. This is considered an adverse effect under NEPA. Under CEQA, this impact would be significant. Mitigation Measure VQA-4 is proposed to mitigate this indirect effect.

DESIGN OPTION 2 - USE OF EXISTING TRAIN LAYOVER FACILITIES

Direct Effects from Temporary Construction

The use of existing train layover facilities within an existing railroad corridor would result in the fewest Project-related construction impacts to adjacent land uses and community cohesion. Design Option 2 is not expected to result in the physical division of an established community or physically disrupt community cohesion because the existing train layover facilities are already constructed. No effect would occur under NEPA for Design Option 2. No impact would occur under CEQA.

Other Project-related components (track and road improvements) combined with Design Option 2 could result in temporary disruptions in community cohesion or connectivity thereby resulting in an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measure TR-1 is proposed to mitigate this effect.

Direct Effects from Long-Term Operations

The land uses adjacent to the existing Inland Empire Maintenance Facility (IEMF) include the I-215 Freeway to the east, the existing SANBAG ROW to the south, and an existing SCRRA rail yard to the north and west of the existing facility. The Eastern Maintenance Facility is also surrounded by existing transportation and industrial uses. Both layover facilities are located on industrially-zoned properties, and are already established uses present at these sites. Design Option 2 would not restrict or prohibit pedestrian or vehicular access to established facilities nearby or physically disrupt community cohesion. In consideration of these factors, no adverse effect under NEPA would occur. A less than significant impact would occur under CEQA.

Indirect Effects

There are no indirect effects on the physical division of an established community or community cohesion associated with the Design Option 2 because existing layover facilities would be used.

Other indirect Project-related components (i.e., installation of sound barriers) would create a distinct and significant physical and visual change to the community character of the immediate Study Area adjacent to the railroad corridor and would effectively result in the division of one or more established communities along the railroad corridor. This is considered an adverse effect under NEPA. Under CEQA, this impact would be significant. Mitigation Measure VQA-4 is proposed to mitigate this indirect effect.

EFFECT 3.2-2	**Create Incompatibility with On-site or Adjacent Land Uses and Zoning.** The Project could be incompatible with on-site and adjacent land uses and/or zoning.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

The No Build Alternative would involve maintenance activities necessary to facilitate continued freight operations. Although maintenance activities occurring without the Project would involve the use of construction equipment and, potentially, construction-related nuisance effects (e.g., noise, air quality, and traffic), these effects would be temporary and unlikely to result in longer-term incompatibilities with adjacent uses. In this context, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

Direct Effects from Long-Term Operations

The existing land uses within the Study Area, including those adjacent to the railroad corridor, would remain similar to the conditions described in the "Affected Environment." In this context, no effect would occur under NEPA as a result of the No Build Alternative. No impact would occur under CEQA.

Indirect Effects

The No Build Alternative would result in no alterations to existing land uses within or adjacent to the railroad corridor. As a result, opportunities for transit-oriented development, compact development patterns, and progress toward more walkable communities would not be realized. Given that this alternative would not deviate from existing environmental conditions, no indirect effect would occur under NEPA as a result of the No Build Alternative. No impact would occur under CEQA.

ALTERNATIVES 2 AND 3 - PREFERRED PROJECT AND REDUCED PROJECT FOOTPRINT AND DESIGN OPTION 3 – WATERMAN AVENUE RAIL STATION

Direct Effects from Temporary Construction

A majority of the track and bridge improvements would occur within the existing railroad corridor and, in limited instances, adjacent parcels where the railroad infrastructure has long been part of the local community setting. During construction, the proposed improvements would be constructed mostly in the existing SANBAG ROW and across existing roadways. Staging areas and construction in general may require temporary, intermittent street and sidewalk closures in the immediate vicinity of the railroad corridor. This could temporarily inhibit, but not eliminate, access to the adjacent parcels.

Construction staging areas could be perceived as incompatible with adjacent land uses based on anticipated nuisance-type effects, such as construction-related traffic, noise, and/or deterioration of local aesthetics. Although these effects would be temporary, their use could occur over the three year duration of project construction, which would result in an adverse effect under NEPA. This impact is considered significant under CEQA. Mitigation Measures TR-1, VQA-1(Screening of Construction Staging Areas) (as described in Section 3.4 Visual Quality and Aesthetics), in addition to NV-1 (Employ Noise-Reducing Measures during Construction) and NV-2 (Prepare a Community Notification Plan for Project Construction) (as described in Section 3.6 Noise and Vibration) are proposed to mitigate these adverse effects.

Direct Effects from Long-Term Operations

Existing and planned land uses within the Study Area are generally urban in nature and compatible with the proposed transit facilities; although, some uses (e.g., residences and schools) would be more sensitive to the effects of passenger rail operations than others (e.g., industrial uses). In general, these effects (e.g., noise and vibration, visual quality and aesthetics) are analyzed in the applicable resource sections of Chapter 3 (Section 3.6 and Section 3.4, respectively). From a land use perspective, SANBAG's ROW is an established railroad corridor within the Study Area, and adjacent land uses (residential, commercial and industrial) have been planned for and built up around the railroad corridor over the last 100 years. The majority of the proposed improvements would occur within SANBAG's ROW and would be compatible to those established uses already in existence.

Adjacent land uses including the University of Redlands, nearby schools, Sylvan Park, and low to high-density residential areas may experience nuisance-related effects (e.g., noise and vibration, aesthetics and visual quality) as a result of passenger rail operations, which may result in a potential incompatibility with existing and planned land uses in the Project vicinity.

The train layover facility is proposed on a long narrow site south of I-10 (zoned for commercial use) and north of an existing residential area in the City of Loma Linda. The proposed layover facility is generally characterized as an industrial use and, therefore, the proposed use may result in an incompatibility with surrounding land uses. The Mission Zanja Channel provides a physical separation between the proposed layover facility and the residential areas to the south; however, industrial operations at the train layover facility would cause nuisance-related effects, including noise to some degree from layover operations and nighttime lighting, which could adversely affect residential areas in the City of Loma Linda to the south. For these reasons, the proposed train layover facility would not be compatible with land uses in the area. Further discussion of Project elements compatibility with surrounding land uses is provided in the Land Use Technical Memorandum (Appendix D1).

Based upon the considerations above for Project-related facilities, an adverse effect would occur under NEPA. This is considered a significant impact under CEQA. Mitigation Measures VQA-2 (Enhance Exterior Appearance of Structural Facilities) (as described in Section 3.4 Visual Quality and Aesthetics), VQA-3 (Tree Replacement) (as described in Section 3.4 Visual Quality and Aesthetics); VQA-4 and VQA-5, in addition to NV-3 (Establish Quiet Zones) (as described in Section 3.6 Noise and Vibration) are proposed to mitigate this adverse effect.

Indirect Effects

The proposed station stops would encourage intensification of land use and transit-oriented development in surrounding areas because of improved access to these portions of the community. This indirect effect of the stations is consistent with existing forms of urban development within the Study Area and expectations for the types of uses that can be supported in the respective communities. Once constructed, use of the lands adjacent to the SANBAG ROW would likely intensify in response to growth and transit-oriented development opportunities. Both the cities of San Bernardino and Redlands allow for mechanisms to support growth and land use intensification where appropriate along the railroad corridor and the Project is consistent with the Cities' plans and policies encouraging downtown revitalization. Future land use intensification and transit-oriented development at or near proposed station locations would be compatible with the Project thereby providing desirable benefit and no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

DESIGN OPTIONS 1 AND 2 - TRAIN LAYOVER FACILITY (WATERMAN AVENUE) AND USE OF EXISTING TRAIN LAYOVER FACILITIES

Direct Effects from Temporary Construction

Temporary construction activities may cause nuisances to nearby land uses; although no sensitive receptors are in the immediate vicinity of the train layover facility at Waterman Avenue under Design Option 1 as with the Build Alternatives; thereby resulting in fewer project-related construction effects. Construction activities will be temporary in duration, and are not anticipated to cause conflict with the operational use of adjacent properties near the layover facility at Waterman Avenue during construction.

No temporary construction associated with the layover facility would occur under Design Option 2 because the layover facilities are already in place. Due to the fact construction activities associated with a layover facility would not occur under Design Option 2, adverse nuisance-related effects under NEPA relative to compatibility with adjacent land uses would be reduced.

Similar to the Build Alternatives, Design Options 1 and 2 would require construction staging for other Project-related components (track and road improvements) that could result in nuisance-type effects, such as construction-related traffic, noise, and/or deterioration of local aesthetics thereby resulting in an adverse effect under NEPA. This impact is considered significant under CEQA. Mitigation Measures TR-1, VQA-1, in addition to NV-1 and NV-2 are proposed to mitigate this effect.

Direct Effects from Long-Term Operations

The land uses adjacent to the alternate train layover facility include the Waterman Business Park to the south, undeveloped lands, and the headquarters for the San Bernardino Inland Regional Center, a complex that cares for people with developmental disabilities. North of the SANBAG ROW, there is an existing industrial facility accessed off Emmet Way and undeveloped lands primarily along Orange Show Road. The Santa Ana River is located adjacent to the south and east. These surrounding land uses are more compatible with a train layover facility than the residential land uses to the south of the proposed location for the train layover facility under the Build Alternatives. The Inland Regional Center or other nearby uses are not expected to be incompatible with the train layover facility; and therefore, there is a greater potential for land use compatibility under Design Option 1.

The land uses adjacent to the existing train layover facilities under Design Option 2 are industrial in nature and compatible with the existing transportation-related facilities. No adverse effects on land use compatibility would occur from Design Option 2 because the facilities already exist and are established uses within existing transportation corridors.

Based upon the considerations above for other Project-related facilities that may result in nuisance-related effects thereby causing potential incompatibilities with adjacent land uses, an adverse effect would occur under NEPA. This is considered a significant impact under CEQA. Mitigation Measures VQA-2, VQA-4, and VQA-5, in addition to NV-3, NV-4, and NV-6 are proposed to mitigate this effect.

Indirect Effects

Implementation of Design Option 1 or Design Option 2 would entail desirable benefits similar to the Build Alternatives and, no indirect effects under NEPA would occur. No impact under CEQA would occur.

EFFECT 3.2-3	**Result in conflict or inconsistency with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project.** The Project would be generally consistent with applicable local land use plans, policies, and regulations.

Pursuant to Section 10501(b) of the ICCTA, the Surface Transportation Board has exclusive jurisdiction over the construction and operation of the Project and related activities. Although the SANBAG ROW traverses portions of the City of San Bernardino and City of Redlands, the Project is not subject to local land use polices of the Cities' General Plans or associated zoning ordinances contained within each of the Cities' Municipal Codes. Notwithstanding these circumstances, an evaluation of the Project was conducted in the context of whether the Project meets the overall intent of the jurisdiction's applicable planning documents. As provided in the analysis below, the Project is generally consistent with the plans and policies that provide for alternative modes of transportation. Furthermore, the Project achieves one of the Vision statements of the City of San Bernardino Circulation Element by capitalizing upon the freight and passenger rail operations to stimulate economic growth, and also achieves the City of Redlands Guiding Policy 5.40b by promoting local and regional public transit serving Redlands.

For the purposes of this analysis, the proposed construction and operational activities associated with the Project was compared to the goals and policies associated with transportation improvement projects (Appendix D1). Although an analysis of local plans and policies is provided, the local agencies do not retain jurisdiction over the Project, or Project-related activities.

ALTERNATIVE 1 – NO BUILD

Direct Effects from Temporary Construction

Maintenance activities required over the next 10 years for continued freight service would be contained within SANBAG's ROW and would not be expected to conflict with applicable goals and policies of an agency with jurisdiction over such activities. No adverse effect under NEPA is anticipated. Under CEQA a less than significant would occur.

Direct Effects from Long-Term Operations

The No Build Alternative would not be consistent with federal, state, regional, and local land use plans policies and regulations that promote integration of transportation and land use planning together to create more sustainable communities. In particular, the No Build Alternative is inconsistent with the regional land use and transportation goals of the 2012 RTP/SCS, which identifies the railroad corridor as a high quality transit corridor and specifically call for passenger rail service between the City of San Bernardino and Redlands. Because the RTP predicts that traffic will continually worsen in the absence of additional capacity, the No Build Alternative would contribute to deteriorating access and mobility within the San Bernardino region and further increase congestion in the Study Area. The No Build Alternative would not promote modes of transportation other than the automobile or enhance accessibility to neighborhoods and community and regional centers. Based on this inconsistency with the regional plan for transportation and land use, an adverse effect under NEPA would result. This is considered a significant impact under CEQA. No mitigation is proposed beyond the implementation of one of the Build Alternatives.

Indirect Effects

Under the No Build Alternative, station areas and associated amenities would not be established along the railroad corridor that could otherwise serve as focal points in the community and provide a catalyst for future growth and transit oriented development. The No Build Alternative would not promote integration of land use and transportation nor would it recognize the land use benefits typical of high-capacity transit projects, including encouragement of compact transit-oriented development or support land uses that are environmentally sustainable and foster livable communities or increase economic vitality within the Study Area. Based on these considerations, an indirect adverse effect would occur under NEPA in relation to plan consistency within the Study Area. This is considered a significant impact under CEQA. No mitigation is proposed beyond the implementation of one of the Build Alternatives.

ALTERNATIVES 2 AND 3 – PREFERRED PROJECT AND REDUCED PROJECT FOOTPRINT AND DESIGN OPTION 3 – WATERMAN AVENUE RAIL STATION

Direct Effects from Temporary Construction

Construction of the Project would be conducted in accordance with all applicable land use plans, policies, and regulations with jurisdiction over the Project. After completion of construction, parcels utilized for construction staging would be returned to pre-construction conditions with the exception of the proposed layover facility site and no substantial changes to existing land use would occur. In this context, Project construction would result in no effect under NEPA. Under CEQA, no impact would occur.

Direct Effects from Long-Term Operations

Project improvements constructed within the existing SANBAG ROW are not subject to local land use policies and regulations. From an overall regional perspective, the Project would introduce a new alternative transportation use within the Study Area that would be constructed within and adjacent to an existing railroad ROW under the ownership of SANBAG. The railroad corridor is identified as a high quality transit area within the RTP/SCS (2012) recently adopted by SCAG with the Project specifically identified as a future transit improvement for the region. In this context, the Project would specifically support RTP/SCS Policies 1 and 3 by establishing the transit service within the railroad corridor. Likewise, the project would facilitate the implementation of the vision contained in SANBAG's Long-Range Transit Plan, and is an eligible expenditure in the Measure I 2010-2040 Strategic Plan. Based on these considerations, the Project would entail desirable benefits in relation to regional plans and policies.

The land use designations surrounding the existing railroad corridor accommodate a variety of uses; and the Project would maximize the placement of Project-related improvements within SANBAG's ROW where an existing railroad already exists. The Project would serve to implement local land use and transportation goals for the Redlands Corridor by implementing passenger rail service and providing an alternative transportation option between San Bernardino and Redlands. Overall, the Project is generally consistent with local plans and policies that promote sustainable development and encourage the use of alternative modes of transportation. The provision of transit service within an existing transportation corridor to major activity centers along the railroad corridor would be consistent with the City of San Bernardino's General Plan policy of sensitively integrating regionally beneficial land uses into the community (General Plan Policy 2.2.3). The Project also provides an alternative travel mode to supplement the private automobile (Redlands General Plan Policy 4.62aa), and will encourage the use of public transportation and emphasize pedestrian circulation throughout the downtown area (DRSP Policy 1.5). In this context, Project operations would result in no adverse effect under NEPA. A less than significant impact would occur under CEQA.

Indirect Effects

Once constructed, the Project could induce residential and commercial infill development, by providing an economic driver for such development (e.g., stations). Chapter 4 discusses the project's effects on regional growth, including indirect impacts related to the Project's potential to induce growth. Induced growth may be inconsistent with currently adopted plans, thereby requiring amendments to existing planning documents. However, indirect effects on surrounding land uses (induced growth) could also be beneficial by encouraging sustainable communities and more efficient land use patterns that are consistent with regional transportation planning goals for Redlands and San Bernardino. In this context, the Project would result in no adverse effect under NEPA. A less than significant impact would occur under CEQA

DESIGN OPTIONS 1 AND 2 –TRAIN LAYOVER FACILITY AT WATERMAN AVENUE AND USE OF EXISTING TRAIN LAYOVER FACILITIES

Direct Effects from Temporary Construction

Construction-related effects associated with Design Options 1 and 2 (and other project related components) would be similar to those identified for the Build Alternatives. In this context, Project construction would result in no adverse effect under NEPA. A less than significant impact would occur under CEQA.

Direct Effects from Long-Term Operations

Under Design Option 1, the train layover facility would be located east of Waterman Avenue and south of Orange Show Road adjacent to the Santa Ana River. It is expected the alternate train layover facility would be purchased by SANBAG and incorporated into the SANBAG ROW. Design Option 1 would not result in a conflict or inconsistency with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project and no effect under NEPA would occur. No impact under CEQA would occur.

Implementation of Design Option 2 is not expected to result in conflicts with existing land use plans and policies because the IEMF and EMF are established uses. The existing facilities were constructed in accordance with all local, state, and federal policies and regulations and the facilities are compatible with adjacent land uses. Based on these considerations, no adverse effect under NEPA would occur. Under CEQA, the impact would be less than significant.

Indirect Effects

The indirect effects associated with plan consistency are similar to those associated with the Build Alternatives and the Project would result in no adverse effect under NEPA. A less than significant impact would occur under CEQA.

EFFECT 3.2-4	**Degrade the social or physical character of the community or quality of life of nearby neighborhoods.** The Project would result in possible adverse and beneficial effects on the character of a community and the quality of life of nearby neighborhoods.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, minor construction activities associated with maintenance of the existing tracks and bridges would occur along the railroad corridor incrementally over the foreseeable future. These activities would be limited in extent and duration and are expected to result in no adverse effect under NEPA to community mobility, viability of existing businesses, emergency services, public health and safety, community events, and population, housing employment. Under CEQA, the impact would be less than significant.

Direct Effects from Long-Term Operation

Community Mobility

Under the No Build Alternative, community mobility in the Planning Area would be expected to degrade in parallel with increased region-wide traffic congestion. Future increases in the area's population and employment would cause more vehicle and pedestrian traffic. Increased roadway congestion would likely reduce mobility in certain communities, especially during peak commute hours.

As suggested in the Redlands and San Bernardino General Plans, some improvements may occur to encourage pedestrian movement through the various communities and neighborhoods in each city, but no substantial changes in pedestrian movement in the Planning Area is expected. As a result, the connectivity of the Planning Area to other parts of the San Bernardino region or from the region to downtown San Bernardino and Redlands would likely remain unchanged. No adverse effect would occur under NEPA due to a general continuation of existing conditions. Similarly, a less than significant impact would occur under CEQA.

Viability of Existing Businesses

The viability of existing businesses is expected to remain similar under the No Build Alternative when compared to current conditions. No substantial transportation improvements (besides rail maintenance projects for continued freight operations) are planned that would result in long-term effects that could adversely affect the viability of businesses in the Planning Area. Businesses in close proximity to the railroad corridor would not benefit from enhanced access and patronage potentially afforded by the Build Alternatives. In this context, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

Community Resources and Events

Community resources and events are not expected to change in the future if the Project was not implemented. Although enhanced access to events from around the region, potentially provided by Build Alternatives, would not occur, no effect would occur under NEPA. No impact would occur under CEQA.

Population, Housing, and Employment

Future growth projections for population, housing, and employment would remain unchanged without Project implementation. In this context, no effect to population, housing, and employment would occur under NEPA. No impact would occur under CEQA.

Indirect Effects

Under the No Build Alternative, no changes to existing environmental conditions would occur. In this context, no indirect effects would occur that could otherwise result in degradation of the social or physical character of the community or quality of life of nearby neighborhoods. Therefore, no effect would occur under NEPA. Under CEQA, no impact would occur.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Construction of the Build Alternatives and Design Options would have the potential to temporarily affect community mobility, viability of local businesses, community resources and events, population, housing, and employment. Although temporary, construction-related direct effects would extend over a three-year duration and throughout the railroad corridor. Potential adverse effects to communities and neighborhoods are further described and evaluated for each of these considerations below.

Community Mobility

Construction would require temporary sidewalk and street closures. Temporary sidewalk and street closure locations have not yet been defined at the current stage of design and, therefore, it is possible that some locations may be subject to prolonged closures that could range from a few days to several weeks. As a result, mobility would be temporarily reduced in these areas during construction. Alternative methods of providing people access to the homes and businesses along the sidewalks and streets that may be closed would be provided as part of Mitigation Measure TR-1.

The Build Alternatives and Design Options would include upgraded safety improvements at 21 of the existing at-grade crossings, and road closures. The majority of these locations have some form of pedestrian access and/or bicycle lanes that could be temporarily affected by construction. As a result, Project implementation could temporarily reduce pedestrian and vehicle mobility between San Bernardino and Redlands, specifically on the north-south roadways along the railroad corridor. Temporary road or lane closures in these areas would likely redirect traffic to the surrounding streets, which could temporarily add congestion and reduce mobility to surrounding streets in nearby communities. Additional details regarding congestion and existing traffic patterns are further discussed in Section 3.3, Transportation.

Although these effects would be limited in duration and localized to specific sections (or intersections) of the railroad corridor at any one time, Project-related construction carries the potential to result in an adverse effect under NEPA. Similarly, this impact would be considered significant under CEQA. For these reasons, Mitigation Measures TR-1 and NV-2 are proposed to reduce construction-related effects of the Project.

Viability of Existing Businesses

Construction of the Project carries the potential to negatively affect local businesses located in close proximity to the railroad corridor. In particular, access disruptions to active businesses during construction could cause temporary reductions in patronage thereby resulting in temporary declines in revenue. More specifically, roadway and grade crossing improvements could require modifications to existing approach and departure patterns to existing businesses thereby resulting in more difficult access. These types of effects would be distributed throughout the railroad corridor within both the cities of San Bernardino and Redlands. Additionally, construction-related nuisance effects, such as noise, dust, and the presence of construction equipment, could also disrupt existing business by encouraging existing customers to shop at locations further from the railroad corridor where there is no construction activity. All attempts would be made to provide adequate detours and minimize lane or road closures that may affect local businesses, including advanced notification. Nonetheless, these effects are considered adverse under NEPA. Under CEQA, these impacts are considered significant. Mitigation Measures TR-1, NV-2, NV-3, and VQA-1 are proposed to reduce construction-related effects of the Project.

Community Resources and Events

The proposed project would involve road and sidewalk closures and would also add construction vehicles and equipment to streets in downtown San Bernardino, downtown Redlands, and surface streets along the railroad corridor. Construction of the Build Alternatives and Design Options has the potential to adversely affect annual festivals and events in the affected communities if construction occurs within close proximity and within the same time frame as the community events. Construction could also disrupt traffic patterns and make public access to certain community resources more difficult. Under NEPA, construction-related effects to community resources and events would be adverse. This impact is considered significant under CEQA. Mitigation Measures TR-1 and NV-2 are proposed to mitigate this effect.

Population, Housing, and Employment

The Build Alternatives and Design Options would provide new construction jobs during the 36-month timeframe for construction of the Project. On average, up to 100 construction jobs would be required during the peak of Project construction. San Bernardino County has a large pool of construction labor from which to draw upon with an estimated 23,900 employed in the construction industry in 2010 (US Census 2010). Therefore, most construction workers would be expected to commute from the surrounding areas and would not permanently relocate to the Planning Area. As a result, area housing and population would not be affected from the anticipated work force during the construction phase of the Project. The creation of up to 100 new jobs in the region would entail desirable benefits as it relates to employment and, therefore, a beneficial effect would occur under NEPA (see Section 3.14, Economics and Fiscal Impacts). Impacts under CEQA would be beneficial.

Direct Effects from Long-Term Operations

Operation of the Project under the Build Alternatives and Design Options considered could result in direct and indirect effects associated with community mobility, viability of existing businesses, community resources and events, and population and housing. These potential effects are explored and described in detail under the following sub-headings.

Community Mobility

Implementation of the Project would provide a new transit connection between downtown San Bernardino and the University of Redlands. The connection at E Street would also provide a transit link from the Planning Area to outside communities in Los Angeles, Orange, and Riverside Counties via the Metrolink System. This increase in mobility, both from communities within the Planning Area and to the outside communities would result in a beneficial effect under NEPA. Under CEQA, this impact would be beneficial.

Upon Project implementation, pedestrian crossings along the corridor would generally be limited to traffic signal-controlled intersections. Additional pedestrian-only at-grade crossings may be installed at critical points along the railroad corridor, including at stations, to facilitate pedestrian movements safely across the railroad. Signal queuing would be modified to provide adequate time for trains to safely cross and adequate space for vehicles stopped at the intersection. Effects due to grade crossing queuing are specifically addressed in Section 3.3. With the provision of adequate pedestrian crossings at all traffic signal-controlled intersections along the railroad corridor, pedestrian mobility would not be restricted once operational. Based on these considerations, no adverse effect would occur under NEPA. Impacts under CEQA would be less than significant.

Access to existing parking areas, loading docks and commercial frontage would be affected by implementation of the Build Alternatives and Design Options. Access and egress to some parking lots along the railroad corridor (including the existing approach/departure and traffic patterns around parking sites) may be modified as a result of Project implementation. Section 3.3, Transportation contains additional details regarding modification of automobile access to parking lots adjacent to the SANBAG ROW. In general, no adverse effect would occur under NEPA. Impacts under CEQA would be less that significant.

As described in Chapter 2, the station areas would be designed to comply with the ADA to ensure accessibility to all persons. As required by ADA law, several seats on each of the trains would be designated for persons with disabilities. In this context, no adverse effects to disabled persons would occur under NEPA. Under CEQA, this impact is considered less than significant.

Viability of Existing Businesses

With the implementation of the Project, there would be a high likelihood for increased accessibility and transit availability to businesses situated in close proximity to the railroad corridor. Businesses in the general vicinity of the proposed station locations would be most likely to benefit from implementation of the Project as a result of increased exposure to transit riders and employees. In addition, by providing a new means of public transportation in the Planning Area, the Project would likely increase the number of pedestrians around each of the new station areas and those businesses is close proximity. This new access could potentially increase the pool of customers for local businesses, resulting in a beneficial effect under NEPA. Impacts under CEQA would be beneficial.

Community Resources and Events

Once operational, the Build Alternatives and Design Options would likely provide desirable benefits for community resources and events because the Project would provide an efficient public transportation option for people traveling to and from the Planning Area. Major events, particularly in the downtown San Bernardino and Redlands would require coordination with SANBAG to maintain safety during large events; especially those in close proximity to the railroad corridor. Coordination with local law enforcement would also be required. Because the Project would run at-grade, temporary service interruptions may be necessary to accommodate large crowds during community events to maintain safety. However, these interruptions would likely have minimal effect on these events but could cause rail system delays. Such delays would result in no adverse effect under NEPA. Impacts would be less than significant under CEQA.

Population, Housing, and Employment

Easements and properties acquired under the Build Alternatives and Design Options would not result in long-term changes to population, housing, or employment within the Planning Area.

As described in Chapter 2, the Project is anticipated to provide up to 16 new jobs to area residents throughout operations, including security personnel. This number of additional jobs is not a significant amount that would cause people to move to this area, or result in a substantial increase in population that would create a housing shortage. Based on these considerations, no adverse effect would occur under NEPA. Similarly, under CEQA, these impacts would be less than significant.

Indirect Effects

Community Mobility

Effects related community mobility would generally be confined to the immediate vicinity of the railroad corridor and community mobility would likely experience minimal change. In this context, no adverse, indirect effects on community mobility are anticipated under NEPA. Similarly, impacts to community mobility under CEQA would be less than significant.

Viability of Existing Businesses

Indirect effects to businesses may occur as part of the Project. Most businesses in the general vicinity of the railroad corridor and proposed station locations would likely experience desirable benefits from the implementation of the Project. By providing a new means of public transportation through the Planning Area, it is likely that the Project could increase the number of pedestrians around each of the new station areas. This new access could increase customers for local businesses thereby indirectly increasing the number of businesses located along the railroad corridor; especially in close proximity to the stations. In this context, a beneficial effect would occur under NEPA. Impacts under CEQA would be beneficial.

Community Resources and Events

No indirect effect on community resources and events are anticipated under the Build Alternatives and Design Options under NEPA. Under CEQA, no impact would occur

Population, Housing, and Employment

Over the long-term, the presence of new passenger rail service may attract new residents to the general vicinity because of the easy accessibility to the proposed transit system. As the cities of San Bernardino and Redlands continue to encourage public transportation and transit-oriented growth, new developments, including additional housing units, may occur around transit stations. Although the transportation improvements could indirectly lead to an increase in area population, no major shifts in population are expected as a direct result of the Project.

The Build Alternatives and Design Options could indirectly increase employment within the Planning Area. This possibility is further explored and discussed in Section 3.14 of this chapter and Chapter 5. Overall, operation of the Project is expected to contribute to decreases in commute times and could encourage people in the surrounding communities to seek employment along the railroad corridor and its immediate environs. In this context, a beneficial effect would occur under NEPA. Impacts under CEQA would be beneficial.

EFFECT 3.2-5	**Displacement of Residences and Businesses.** The Project would result in the displacement of substantial number of existing structures.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Alternative 1 assumes that the Project would not occur and the existing conditions of the rail corridor would remain. Maintenance activities required under the No Build Alternative would generally be restricted to SANBAG's existing ROW and, therefore, temporary easements would not be required for construction. Based on these circumstances, no effect under NEPA would occur under this Alternative. No impact would occur under CEQA.

Direct Effects from Long-Term Operations

Under the No Build Alternative, existing freight service would not necessitate any permanent parcel acquisitions or require new roadway easements. Therefore, no effect under NEPA would occur. No impact would occur under CEQA.

Indirect Effects

No indirect construction or operational-related displacement of existing housing or business would occur under the No Build Alternative because there would be no change in the current ROW. Therefore, no effect would occur under NEPA. No impact would occur under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTION 1

Table 3.2-9 summarizes the property acquisitions and easements required for the Project Alternatives and Design Options during construction and operation of the Project. Appendix D2 provides detailed information related to each of the potential acquisitions and easements that may occur with implementation of the Project Alternatives and Design Options.

Table 3.2-9. Summary of Acquisitions and Relocations by Alternative and Design Options

	Alternative 1 (No Build)	Alternative 2 (Preferred Project)	Alternative 3 (Reduced Project Footprint)	Design Option 1 (Train Layover Facility - Waterman Avenue)	Design Option 2 (Existing Layover Facilities)	Design Option 3 (Waterman Avenue Rail Station)
TCEs*	0	60	60	60	60	60
Easements (Roadway)	0	32	32	32	32	32
Partial Acquisition	0	58	58	58	58	57
Full Acquisition	0	4	4	2	1	5
Relocations (Business)	0	2	2	2	2	2

* Note that of the total number of TCEs would increase up to an additional 110 for installation of sound barriers.

Direct Effects from Temporary Construction

Project construction is anticipated to occur over the course of a three-year duration with construction activities distributed throughout the length of the railroad corridor at any given time. Properties along the railroad corridor include private properties including commercial, businesses, residences, and vacant lands along with public properties generally consisting of schools and parks. The physical improvements associated with the Build Alternatives, Design Option 1 and the associated ROW that would be required could potentially require both partial and full property acquisitions as identified in Table 3.2-9 in addition to TCEs.

None of the potential full property acquisitions would require a relocation of an existing business or residence. However, the Build Alternatives and Design Option 1 would result in the displacement of numerous structures or facilities during the construction phase to accommodate TCEs or the Project's ROW requirements. Additionally, easements may be necessary from adjacent landowners to facilitate access following the closure of one or more at-grade crossings. Under NEPA, these effects are considered adverse. Under CEQA, this impact is considered significant. Mitigation Measure LU-1 (Minimize Project Land Requirements and Comply with Federal and State Relocation Laws) is proposed to mitigate this construction-related effect.

Direct Effects from Long-Term Operations

Once constructed and operational, no additional property acquisitions, roadway easements, and/or TCEs would be required. All property acquisition and easements would need to be finalized and agreed upon by SANBAG prior to the start of construction. Based on these circumstances, no effect related to land acquisitions would result under NEPA. Under CEQA, no impact would occur.

Indirect Effects

Acquisitions and easements that could result indirectly from the Project would come in the form of off-site facilities or mitigation requirements that could otherwise require TCEs and/or permanent easements over adjacent properties. In one example, multiple roadway improvements would be required at proposed at-grade crossings that would extend outside of SANBAG's ROW and into adjacent City or private property. Similarly, to improve drainage along the railroad, drainage connections would be required that extend both into public ROWs (e.g. Caltrans, city, etc.) and private property.

Additionally, if fully implemented, Mitigation Measure NV-4 would include the construction of sound barriers along private properties to reduce noise levels associated with long-term train operations. The construction of sound barriers would require up to 110 TCEs, 4 roadway easements, and 30 partial acquisitions that would otherwise not be required for Project construction. In many instances, the construction of noise barriers would also require the removal or displacement of existing improvements (e.g. fencing, landscaping, etc.) and would require the placement of a permanent easement to facilitate long-term access. These effects would be adverse under NEPA. Under CEQA, this impact is considered significant and Mitigation Measure LU-1 is proposed to mitigate this indirect effect.

DESIGN OPTION 2 – USE OF EXISTING TRAIN LAYOVER FACILITIES

Direct Effects from Temporary Construction

Under Design Option 2, rather than constructing a new layover facility as described for the Build Alternatives and Design Option 1, Design Option 2 would integrate Project-related layover operations with existing Metrolink layover operations. As such, construction related acquisitions would not be required for the layover facility under Design Option 2. As shown in Table 3.3-3, Design Option 2 would result in a similar number of TCEs and roadway easements, and less full acquisitions as a result of the removal of the four properties (or parcels) that comprise the proposed layover facility at California Street. Based on these considerations, although the effects are slightly reduced under Design Option 2, effects related to land acquisition would still occur. Similar to the Build Alternatives and Design Option 1, no adverse effect would occur under NEPA because SANBAG is required to comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act. Under CEQA, this impact is considered significant. Mitigation Measure LU-1 is proposed to mitigate this effect.

Direct Effects from Long-Term Operations

Similar to the Preferred Project, all property acquisitions, roadway easements, and temporary construction easements would have been finalized and agreed upon by SANBAG and affected property owners prior to construction of the Project. Therefore, no effect would occur under NEPA. No impact would occur under CEQA.

Indirect Effects

Similar to the Preferred Project, Design Option 2 would result in adverse, indirect effects associated with land acquisitions and displacements of existing uses under NEPA. Under CEQA, a significant impact would occur and Mitigation Measure LU-1 is proposed to mitigate this effect.

DESIGN OPTION 3 - WATERMAN AVENUE RAIL STATION

Direct Effects from Temporary Construction

Under Design Option 3, rather than constructing a station at Tippecanoe Avenue, Design Option 3 includes development of a station at Waterman Avenue. As a result, a partial acquisition would not be required at the property for the Tippecanoe Avenue Station. As shown in Table 3.2-9, with the exception of one less partial acquisition and one additional full acquisition, the number of land acquisitions would be similar to those listed under Alternative 2 (Preferred Project Alternative). As a result, an adverse effect would occur under NEPA. Under CEQA, this impact is considered significant. Mitigation Measure LU-1 is proposed to mitigate this effect.

Direct Effects from Long-Term Operations

Similar to the Preferred Project, all property acquisitions, roadway easements, and temporary construction easements would have been finalized and agreed upon by SANBAG and affected property owners prior to construction of the Project. Therefore, no effect would occur under NEPA. No impact would occur under CEQA.

Indirect Effects

Similar to the Preferred Project, with implementation of Design Option 2 an indirect, adverse effect would occur under NEPA for land acquisitions and displacements of existing uses. Under CEQA, a significant impact would occur and Mitigation Measure LU-1 is proposed to mitigate this effect.

3.2.4 Mitigation Measures

The following mitigation measures are proposed to address potential adverse effects to land use, planning, and communities as a result of the Build Alternatives and Design Options.

LU-1 **Minimize Project Land Requirements and Comply with Federal and State Relocation Laws.** As part of final design, SANBAG shall maximize opportunities to minimize the Project's land requirements and associated property acquisition. In instances where avoidance is not feasible, SANBAG shall provide just compensation consistent with the requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act and California Relocation Act. If the acquisition of one or more properties requires relocation of existing residences or businesses, SANBAG shall provide relocation assistance to residential and business tenants prior to the start of construction.

The following mitigation measures as proposed in other sections of Chapter 3 of this EIS/EIR would minimize adverse effects related to land use, planning, and communities:

- TR-1: Prepare a Traffic Management Plan;
- VQA-1: Screening of Construction Staging Areas;
- VQA-2: Enhance Exterior Appearance of Structural Facilities;
- VQA-3: Tree Replacement;
- VQA-4: Sound Barrier Screening and Surface Treatments;
- VQA-5: Minimize Exterior Lighting in Adjacent Uses;
- NV-1: Employ Noise-Reducing Measures during Construction;
- NV-2: Prepare a Community Notification Plan for Project Construction;
- NV-3: Design the Project to the Quiet Zone ready;
- NV-4: Construct Sound Barriers; and

- NV-6: Use Ballast Mats, Resiliently Supported Ties, or Measures of Comparable Effectiveness on Portions of the Rail near Sensitive Receivers

3.2.4.1 Effects after Mitigation

Following the application of the proposed mitigation measures, adverse effects to land use compatibility, communities and neighborhoods, and land acquisitions would be minimized under NEPA. Significant impacts identified under CEQA would be reduced to a less than significant level. However, with the implementation of Mitigation Measure NV-4, indirect adverse effects related to the division of established communities would not be fully minimized. The presence of noise barriers would contribute to the division of established communities through the physical separation of SANBAG's ROW on one or both sides from adjacent lands uses. These impacts would be most significant in downtown Redlands and the University of Redlands, to a lesser extent, in the Victoria Park area of San Bernardino. These effects would be minimized by VQA-4; however, an adverse effect would remain under NEPA. Under CEQA, this indirect impact would not be fully minimized through the application of VQA-4 and, therefore, a significant and unmitigable impact would result.

3.3 TRANSPORTATION

This section provides an analysis of transportation related effects within the Planning Area resulting from the implementation of Build Alternatives and Design Options considered as part of the RPRP. Transportation effects considered in the analysis include the following; existing freight operations, circulation/travel patterns including traffic level-of-service (LOS) and traffic queuing, evacuation routes, and alternative transportation modes (bus facilities and operations, pedestrian, and bicycle).

The traffic analysis and supporting information presented within this section is based on the Redlands Passenger Rail Project Traffic Report (Traffic Report), December 2013, presented in Appendix E. Traffic conditions were modeled and evaluated for years 2011 (Existing Conditions), 2018 (Opening Year), and 2038 (Forecast Year), with and without Project. Ridership information within this section is based on the Redlands Passenger Rail Project Model Application and Ridership Forecasts – Phase 1 Project Technical Memorandum presented in Appendix C.

3.3.1 Regulatory Framework

Table 3.3-1 identifies and summarizes federal, state, and local laws, regulations, and plans that are applicable to the Project.

3.3.2 Affected Environment

This section provides a description of existing environmental conditions both from a regional perspective and at a localized scale within the Planning Area. The transportation network in the vicinity of the Planning Area accommodates a variety of transportation modes, including: vehicular, passenger rail, bus, non-motorized travel (roadway bicycle and pedestrian routes), in addition to parking. The roadway network throughout the Planning Area is presented in Figures 2-1A through 2-1J. Existing roadway grade crossings (and proposed improvements) are identified in Figure 2-3.

Existing Roadway Network

The Planning Area is served by Interstate 10 (I-10) with freeway access provided at Waterman Avenue (eastbound and westbound on and off ramps), Tippecanoe Avenue/Anderson Avenue (eastbound and westbound on and off ramps), California Street (eastbound and westbound on and off ramps), Alabama Street (eastbound and westbound on and off ramps), Eureka Street (eastbound off ramp), 6th Street (eastbound on ramp and westbound off ramp), and University Street (eastbound off ramp and westbound on ramp). The area considered for the traffic analysis is based on the San Bernardino Valley Focus Model (SBVFM), a focused version of SCAG's regional model. The intersections analyzed identified and characteristics of the primary roadways in the Planning Area are described in more detail in the Traffic Report (Appendix E).

Table 3.3-1. Pertinent Laws, Regulations, and Plans for Transportation

Law, Regulation, or Plan	Summary and Project Nexus
Federal	
Transportation Equality Act	Intended to protect and enhance communities and the natural environment. Includes planning factors to protect and enhance the environment, promote energy conservation and quality of life consistent with federal, state, and local energy goals.
Moving Ahead for Progress in the 21st Century Act (MAP-21)	Federal Highway Administration funds Transportation Enhancement Activities that are programmed as part of the State Transportation Improvement Plan (STIP). There are 12 transportation enhancement activities or categories. Applicable categories include provision of facilities for pedestrians and bicycles, preservation of abandoned railway corridors, and reduced vehicle-caused mortality as related to surface transportation.
State	
Caltrans Federal Statewide Transportation Improvement Program (FSTIP) and Federal Transportation Improvements Program (FTIP)	The Caltrans Office of Federal Transportation Management Program is responsible for preparing and managing the FSTIP. The FSTIP is a four year statewide intermodal program for transportation projects that is consistent with the statewide transportation plan and planning processes, the metropolitan plans, and the FTIPs. The FSTIP is prepared by Caltrans in cooperation with the Metropolitan Planning Organizations and the Regional Transportation Planning Agencies. The Regional Council of Southern California Association of Governments (SCAG), as the area planning agency is tasked with developing a FTIP every 4 years. The Project is listed in the SCAG 2011 FTIP as the Redlands Rail Project. Implementation of the Project would demonstrate compliance with the FTIP.
California Public Utilities Commission (CPUC)	The CPUC is a state public utilities commission which regulates privately-owned utilities in the state of California. The CPUC is the designated state oversight agency in California, in accordance with the FTA's Final Rule, Title 49 CFR 659, and effective May 5, 2007 (FTA 2006) to regulate household goods movers, passenger transportation companies and grade crossing safety. CPUC's approval of grade crossing improvements along the corridor would be required.
Caltrans	Per the 2002 *Caltrans Guide for the Preparation of Traffic Impact Studies*, Caltrans requires intersections to operate at Level of Service (LOS) C approaching D where the ramp ends. LOS D, E, or F is considered unsatisfactory, as further discussed in Table 3.3-4. If intersections are currently less than the target LOS, maintaining the existing LOS is required by the governing jurisdiction.
Regional	
SCAG Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS) 2012-2035	On April 4, 2012, the SCAG adopted the 2012-2035 *Regional Transportation Plan/Sustainable Communities Strategy: Towards a Sustainable Future*. The RTP emphasizes the importance of system management, goods movement, and innovative transportation financing and identifies a regional investment framework to address the region's transportation and related challenges. The RTP also looks to strategies that preserve and enhance the existing transportation system and integrate land use into transportation planning (SCAG 2012a). SCAG is committed to integrated transportation and land use by creating a SCS as part of the RTP. The SCS integrates transportation, land use, housing, and environmental planning with the goal of reducing regional green house gas (GHG) emissions, specifically to address Senate Bill 375. The RTP/SCS is a long-range regional transportation plan that provides a blueprint to coordinate the regional transportation system by creating a vision for transportation investment

Table 3.3-1. Pertinent Laws, Regulations, and Plans for Transportation

Law, Regulation, or Plan	Summary and Project Nexus
	throughout the region and identifying regional transportation and land use strategies to address mobility needs. SCAG prepared a *Program Environmental Impact Report (PEIR) for the 2012-2035 Regional Transportation Plan and Sustainable Communities Strategy*, which as described in Chapter 1, is incorporated by reference into this EIS/EIR. The Project is listed as "Redlands Rail Project" for rail service expansion from San Bernardino to Redlands as Project number 20061012 (SCAG 2012c). According to the PEIR, key rail projects would reduce the risk of accidents and reduces daily CO_2, NO_x and $PM_{2.5}$ emissions from idling vehicles at-grade crossings.
Regional Transportation Improvement Plan (RTIP)	The RTIP is a capital listing of all transportation projects proposed over a 6-year period for the SCAG region. The projects include: highway improvements; transit, rail, and bus facilities; high-occupancy vehicle lanes; signal synchronization; intersection improvements; and freeway ramps. In the SCAG region, an RTIP update is produced every other year on an even-year cycle. The RTIP is prepared to implement projects and programs listed in the RTP and developed to comply with state and federal requirements. County transportation commissions propose county projects from city and local submittals using the current RTP's policies, programs, and projects as a guide. Locally prioritized project lists are forwarded to SCAG for review. From this list, SCAG develops the RTIP based on consistency with the current RTP, inter-county connectivity, financial constraint, and conformity satisfaction. Identified RTIP/SCAG roadway improvements were assumed in the Traffic Report modeling and are discussed further in Table 3.3-13.
Local	
San Bernardino County Non-Motorized Transportation Plan (NMTP)	The NMTP (March 2011) is a cohesive, integrated plan that identifies a comprehensive network, with a focus on the bicycle system. The NMTP was a collaborative effort between SANBAG and local jurisdictions in San Bernardino County that identifies goals, objectives, and polices for bicycle and pedestrian planning for local jurisdictions within the county. The NMTP includes an inventory of all existing Class I, II, and III bicycle facilities throughout the County. The NMTP will help to meet the initiatives of Senate Bill 375 (SB 375) to reduce vehicle travel and greenhouse gas emissions, and satisfies the State of California requirements of a Bicycle Transportation Plan.
San Bernardino Congestion Management Program (CMP)	Pursuant to Measure I 2010-2040, the County CMP was updated and adopted by SANBAG, acting in its role as the County Transportation Commission, in November 2, 2005. Per the 2005 CMP, the LOS should not be below E or the current level, whichever is lower, with the exception of intersections designated as LOS F in Table 3.3-2. Additionally, any intersections with V/C greater than 1 are designated as LOS F.
City of San Bernardino General Plan	The San Bernardino General Plan was adopted in 2005. Chapter 6 of the General Plan is the Circulation Element. The purpose of the Circulation Element is to design, as well as improve, the circulation system so that it meets the current and future needs of the residents of the City (City of San Bernardino 2005).
City of Redlands 1995 General Plan – Section 5.0 Circulation (Amended 1997)	The City of Redlands General Plan Circulation Element provides guidance for roadway LOS, travel demand management, bikeways, and pedestrian pathways. Per the General Plan, the City of Redlands requires LOS C with intersections operating at LOS D, E, or F considered unsatisfactory. Any increase in V/C greater than 0.01 is considered a significant impact.

Existing Traffic Volumes Level of Service and Volume to Capacity

Operational traffic characteristics and the perception of traffic conditions by both motorists and passengers are assessed in terms of LOS with six LOS designations defined by the Highway Capacity Manual (HCM) (2000), published by the Transportation Research Board (TRB). Each letter designation from A to F, with "A" representing the best condition (free flowing) and "F" representing the worst condition (near or at gridlock). In addition to LOS, Volume to Capacity Ratio (V/C) is used to assess the amount of congestion for the intersection. Any value greater than or equal to 1 indicates that the intersection is operating above capacity. This is a good indication of whether the physical geometry and signal timing provide sufficient capacity for the intersection. The Planning Area contains roadways and intersections that are under the jurisdiction of Caltrans, City of Redlands, City of Loma Linda, and the City of San Bernardino. The specific LOS and V/C methodology are discussed further in Section 3.3.3.2.

The Study Area contains 39 intersections that were analyzed and are located under the jurisdiction of the Caltrans, and the Cities of San Bernardino, Loma Linda, and Redlands. Table 3.3-2 presents the existing (2011) peak LOS for intersections within the Study Area operating at or below LOS or V/C standards. Caltrans requires highways to operate at LOS C and allows LOS D at the ramp terminals; whereas LOS D, E or F is unsatisfactory. The City of San Bernardino requires intersections to operate at LOS D or better; whereas LOS E or F is considered unsatisfactory. The City of Redlands has LOS standard of C; whereas LOS D, E, or F is considered unsatisfactory. The City of Redlands Downtown Specific Plan (not yet adopted) has a modified LOS standard of a LOS E. Given that this plan has not been adopted, the higher level of LOS C was used for this analysis.

Some intersections are identified as CMP intersections, as indicated with an asterisk next to the jurisdiction name. The CMP LOS standard of E supersedes the respective agency standards (Caltrans and Redlands). Additionally, the CMP standard for the intersection of Alabama Street and Redlands Boulevard is designated as LOS F. LOS or V/C indicated in bold presents an unsatisfactory condition under that jurisdiction. As shown in Table 3.3-2, there is one intersection in the AM peak hour and five intersections in the PM peak hour that do not operate within the LOS standards and five intersections operating below V/C standards.

Evacuation Routes

The Planning Area is located adjacent to I-10, which is identified as a primary emergency route. Other secondary roadways located within the Planning Area have been identified in the County of San Bernardino General Plan as "Potential Evacuation Routes." These routes are identified as emergency routes in the event of earthquakes, geologic hazards, floods, and fires. According to the San Bernardino Office of Emergency Services, the County does not identify direct emergency routes as a proactive approach so as not to overload the roadway capacity in an event of a disaster (Miles Wagner, Emergency Services Officer, July 10, 2012 personal conversation).

Existing Transit Travel Patterns

In 2010, as part of the *Inland Empire Annual Survey Final Report* (CSUSB 2010), a random telephone survey was conducted of 1,145 residents within San Bernardino County. Of the people surveyed, 77 percent work within San Bernardino County, compared to only 23 percent that commute outside of San Bernardino County to work.

Table 3.3-2. Peak Hour LOS for Impacted Intersections in Year 2011 (Existing Conditions)

No.	Intersection	Jurisdiction	LOS Standard	Control	AM Peak Hour			PM Peak Hour		
					Delay (sec)	LOS	V/C	Delay (sec)	LOS	V/C
4	Waterman Avenue and Orange Show Road	City of San Bernardino	D	Signalized	24.7	C	0.58	55.4	**E**	0.96
10	Anderson Avenue and I-10 East Ramps	Caltrans*	E	Signalized	25.7	C	0.7	78.1	E	**1.09**
12	California Street and I-10 West Ramps	Caltrans*	E	Signalized	49.5	D	1.0	61.4	E	**1.03**
13	California Street and I-10 East Ramps	Caltrans*	E	Signalized	344.7	**F**	0.9	186.1	**F**	0.96
16	Alabama Street and I-10 West Ramps	Caltrans*	E	Signalized	60.9	E	0.82	74.6	E	**1.04**
17	Alabama Street and I-10 East Ramps	Caltrans*	E	Signalized	23.2	C	0.6	66.5	E	**1.05**
18	Alabama Street and Industrial Avenue	City of Redlands	C	Signalized	12.6	B	0.46	38.2	**D**	0.97
19	Alabama Street and Redlands Boulevard	City of Redlands*	F	Signalized	52.1	D	0.75	88.4	F	**1.07**
23	Eureka Street and Pearl Avenue	Caltrans	C	Signalized	33.5	C	0.52	72.0	**E**	0.77
28	Orange Street and Pearl Avenue	Caltrans	C	Signalized	15.7	B	0.73	76.9	**E**	1.04

Source: HDR Redlands Passenger Rail Project Traffic Report (see Appendix E).
* CMP Intersection (LOS should not be below E or the current level whichever is lower).
Notes: Impacts are indicated in **bold**.
Existing (2011) peak hour LOS for all other intersections is provided in Appendix E.

The *SANBAG Profile of Transit Riders in San Bernardino County* (Parsons 2007) identifies demographic characteristics of riders to measure their opinions regarding their level of satisfaction with transit services and the importance of different aspects of transit services. Of the transit riders surveyed, 87 percent used Metrolink service for work purposes and only 4 percent used Metrolink service for school trips.

Access modes (how riders got from their origin site to their transit stop) for bus riders and Metrolink riders are different. Walking is a much more likely mode of access to transit for bus riders, with approximately 70 percent, compared to Metrolink with only 2 percent. Meanwhile, driving or getting a ride is a much more common mode of access to transit for Metrolink riders, with 90 percent, compared to bus riders with only 5 to 15 percent.

Rail Operations

Freight

In 1992, SANBAG acquired the railroad ROW from the ATSF (who subsequently merged with Burlington Northern Santa Fe railroad (BNSF)). As a condition of the sale to SANBAG, ATSF retained the right to operate freight service on the existing SANBAG ROW within the corridor. As described in Chapter 2, limited freight service is currently provided over a 4.3-mile segment east from downtown San Bernardino to the vicinity of Tippecanoe Avenue.

Amtrak

Amtrak operates 15 long distance routes over 18,500 miles of rail network serving 39 states and the District of Columbia. Amtrak's Southwest Chief runs between Los Angeles and Chicago as a long distance train service with stops in Riverside and Fullerton. This train makes daily stops at the Santa Fe Depot in San Bernardino (one train in each direction). Typical dwell times for Amtrak trains are between 5 and 10 minutes (HDR 2011). The Southwest Chief connects San Bernardino to Los Angeles on the west and many cities and states to the east. Amtrak motor coaches also operate out of the Santa Fe Depot in San Bernardino, providing connections to the Central Valley, Sacramento, and the Bay Area (City of San Bernardino 2005). The Project will not connect directly with Amtrak trains, but will require passengers to connect via Metrolink trains.

Metrolink

The Southern California Regional Railroad Authority (SCRRA) or Metrolink is a joint powers authority established in 1991 to plan, design, build, and operate passenger rail service in the southern California region. Metrolink provides passenger rail service throughout southern California. Metrolink operates 163 trains on seven lines carrying roughly 42,000 passengers on weekdays. Metrolink carried 10.6 million passengers in FY 2011, a 1.6 percent decrease from FY 2010. Ridership has generally increased year over year but has been negatively impacted by the recession. With investments in railroad infrastructure as proposed in the RTP, Metrolink is expected to more than double their ridership by 2035 (SCAG RTP 2012).

Two Metrolink lines, the Inland Empire-Orange County (IEOC) Line and San Bernardino Line, provide all day service to San Bernardino, terminating west of the I-215 freeway at the Santa Fe Depot. The IEOC line operates daily and extends from Oceanside in San Diego County north through Anaheim and Riverside into San Bernardino. Originating at the Santa Fe Depot in San Bernardino, the San Bernardino line trains make multiple round trips between San Bernardino and Los Angeles Union Station (via Fontana). The Project will connect with the DSBPRP that will connect the Metrolink line at the proposed E Street Station.

According to Metrolink, daily ridership on this line exceeds 10,000 persons. Weekend ridership is nearly 3,000 boardings per day, driven largely by beach goers and those attending sporting or cultural events in downtown Los Angeles. A typical profile of Metrolink riders is described in Section 3.2, Land Use, Planning, and Communities.

Bus Facilities and Operations

Bus service in the Planning Area is provided by Omnitrans, which offers bus and paratransit services in a 480 square mile area in San Bernardino Valley. Omnitrans operates 29 bus routes, of which the following five routes intersect with the Planning Area; Route 2, Route 8, Route 9, Route 15, Route 19, as shown in Figure 3.3-1. The majority of the bus stops are located north or south of the roadway grade crossings. The following is a description of the identified bus routes:

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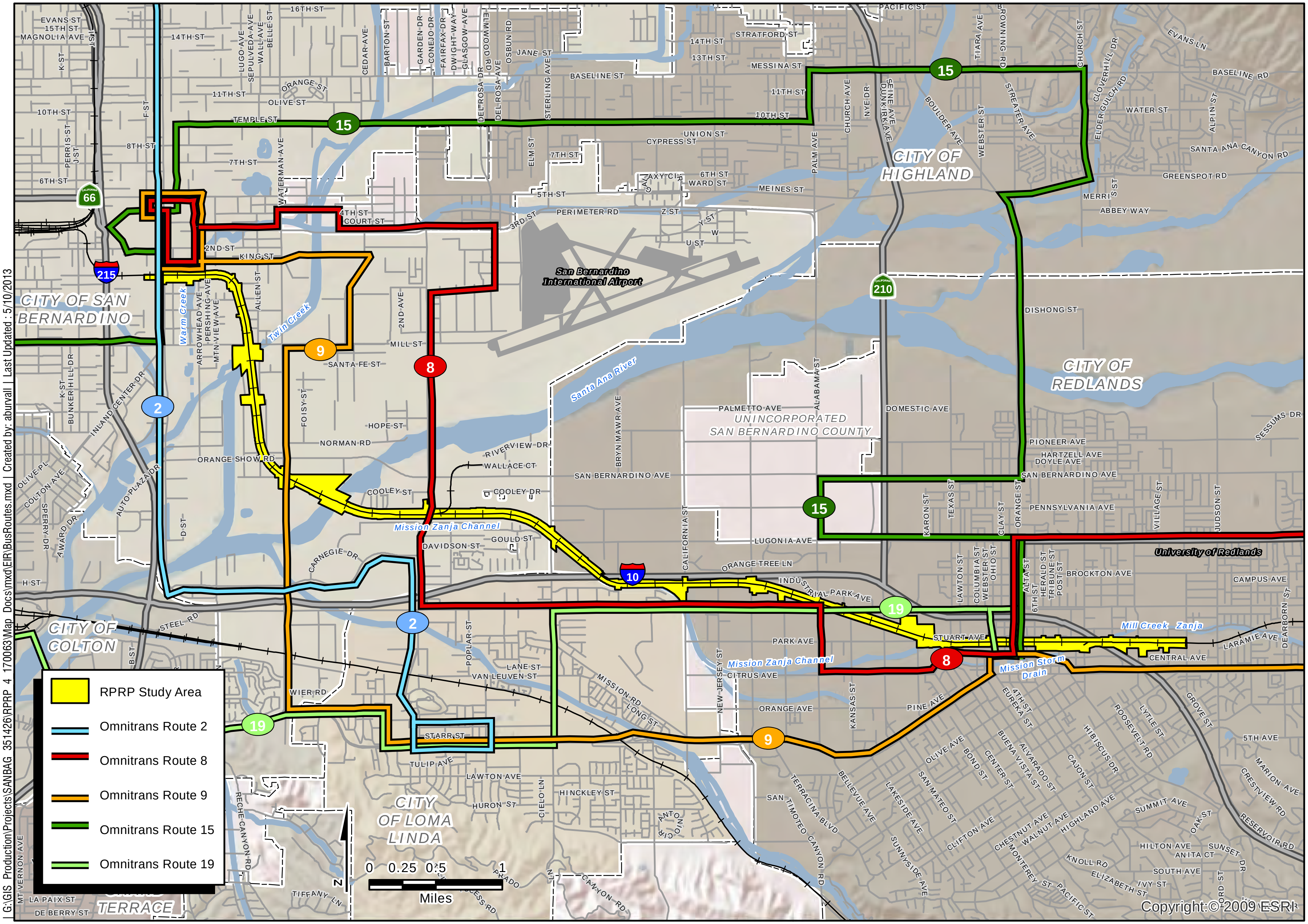

Existing Bus Transit Routes

Figure 3.3-1

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- Routes 8 and 9 both provide single-seat (no transfers required) service between the University of Redlands and downtown San Bernardino. Each of these local bus routes require approximately 55 minutes to connect the end points of the Planning Area. A single-seat ride between downtown Redlands and downtown San Bernardino on either of these routes would require 45 minutes to complete.
- Route 15 connects downtown Redlands to downtown San Bernardino, but follows a much longer path that circles the San Bernardino International Airport and deviates to serve several travel markets along the way. A single-seat ride between downtown Redlands and downtown San Bernardino would require 65 minutes to complete on Route 15.
- Routes 2 and 19 also serve the Planning Area, but neither provides a direct connection between downtown Redlands and downtown San Bernardino. Route 2 connects San Bernardino to the university and medical campuses of Loma Linda University, and Route 19 connects Loma Linda to downtown Redlands. A single transfer trip between downtown Redlands and downtown San Bernardino via Routes 2 and 19 would require approximately 60 minutes, plus transfer time, to complete.

Table 3.3-3 summarizes the performance for the Omnitrans routes serving the Planning Area. Of the five routes examined, Route 2 attracts the highest weekday ridership and carries the largest number of passengers per revenue hour despite its relatively slow speed, which can be attributed to the route's frequent stops. Routes 19 and 15 travel at slightly higher speeds, but carry fewer weekday riders, while Routes 8 and 9 travels at even higher speeds but carry the fewest weekday riders and operate below the standard level of performance in terms of passengers per revenue hour.

Table 3.3-3. Omnitrans Routes Performance

Omnitrans Routes	Weekday Ridership	Passengers/ Revenue Hr	Peak Travel Speed (mph)	Schedule Adherence	Annual Ridership
Route 2: Cal State-E Street-Loma Linda	4,807	38	13.3	73%	1,252,212
Route 19: Redlands-Colton-Fontana	2,640	26	14.9	71%	698,870
Route 15: Fontana-San Bernardino/Highland-Redlands	2,672	23	16.7	68%	750,172
Route 8: San Bernardino-Mentone-Yucaipa	918	20	17.2	72%	339,889
Route 9: San Bernardino-Redlands-Yucaipa	1,103	23	17.2	61%	331,497

Source: Omnitrans (2012). Annual Ridership Source: Sharon Green and Associates (2012).

These data suggest that potential ridership is being suppressed by limited or infrequent headways and lengthy travel times. Weekday ridership and passengers per revenue hour decline with headway frequency. Routes 8 and 9 operate very infrequently at 60-minute peak headways and carry the fewest riders and passengers per revenue hour. Alternatively, Route 2 operates very frequently at 15-minute peak headways and carries the most riders and passengers per revenue hour. Slower speeds associated with Route 2 does not seem to deter riders as long as frequency of service remains high.

A typical profile of local bus riders is described in Section 3.2, Land Use, Planning, and Communities.

Non-Motorized Transportation

Non-motorized travel (bicycle trails and pedestrian sidewalks) are generally limited to the urban areas of the corridor, where residential neighborhoods or retail and office commercial land uses are most prevalent. Sidewalks are also located adjacent to the roadway grade crossings throughout the Planning Area. The portions of the Planning Area that continue to be used for agricultural purposes, light industrial, and warehousing activities typically do not have sidewalk infrastructure. Striped bicycle lanes are provided on certain streets in and around the cities of San Bernardino and Redlands, although none are identified within the Planning Area. The current non-motorized network is limited and disconnected.

Bicycle Facilities

This section presents information regarding roadway bicycle facilities (roadway bike lanes and parking). Discussions regarding off-road bikeways and trails are presented in the Parklands, Community Services, and Other Public Facilities section (Section 3.14). The 2011 Non-Motorized Transportation Plan (NMTP) is an integrated plan to achieve the County's goals for bicycle infrastructure. The NMTP identifies Class I (shared use or bike path; physically separated from any street), Class II (bike lane; portion of roadway designated by striping or signage), and Class III (bike route; any road, street, path specifically designated for bicycle travel regardless of whether such facilities are designated for the exclusive use of bicycles or shared with other transportation modes) facilities across the County.

According to NMTP, the Planning Area crosses bike friendly roads, but does not contain any Class I, II, or III bicycle routes.[1] Future routes adjacent to the SANBAG ROW (e.g., Santa Ana River Trail) are planned, these routes are considered trail bikeways and are discussed in Section 3.14. The NMTP identifies future roadway bike lanes and paths that would intersect the railroad corridor, as presented in Figure 3.3-2.

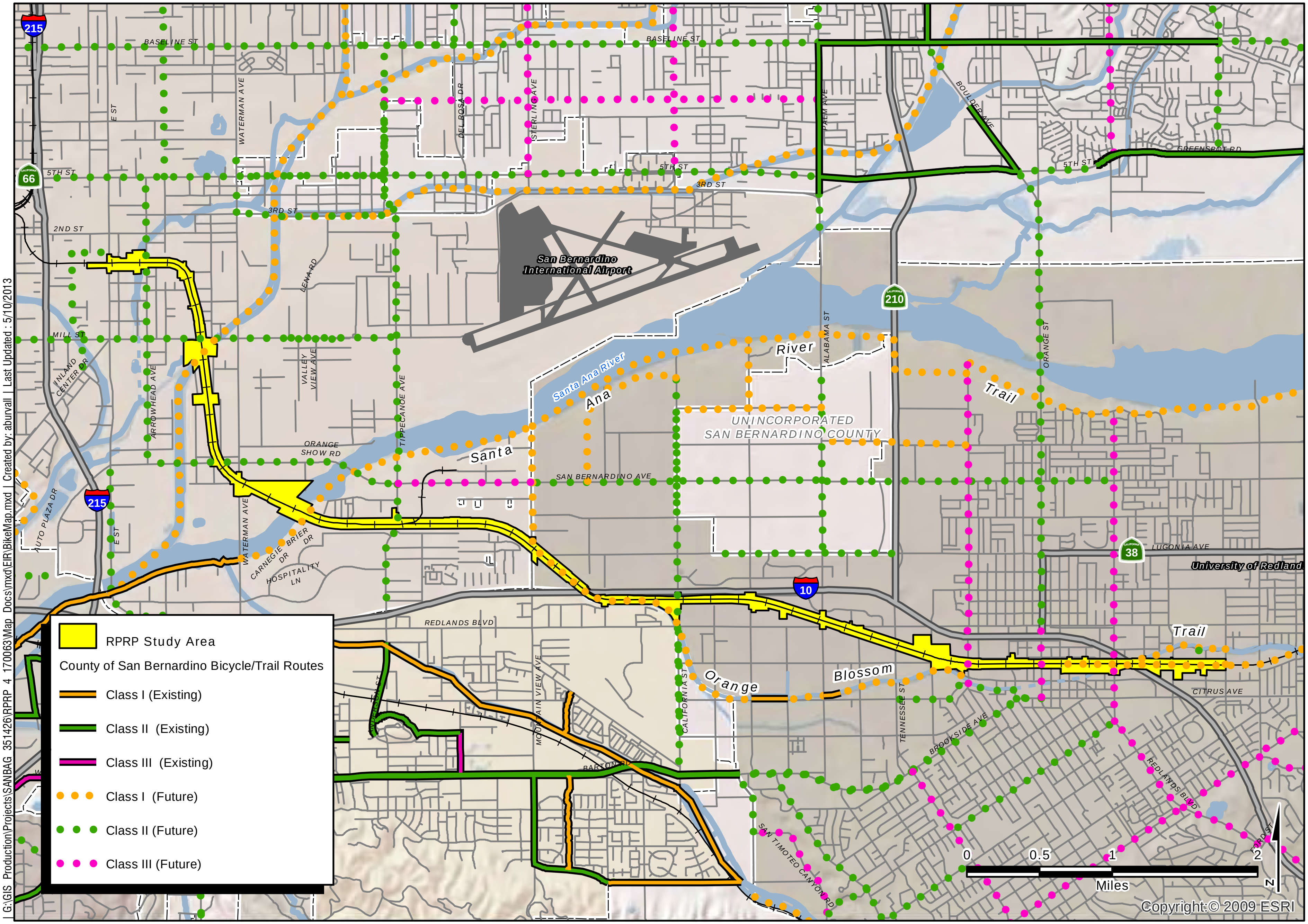
3.3.3 Environmental Impacts/Environmental Consequences

3.3.3.1 Effect Criteria

The Build Alternatives and Design Options would have an adverse effect or impact on transportation facilities if it would:

- Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.
- Conflict with an applicable congestion management program, including, but not limited to, LOS standards and travel demand measures or other standards established by the county congestion management agency for designated county roads.
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

[1] See Figure ES-1, Bicycle Facilities East Valley - http://sanbag.ca.gov/planning/Non-MotorizedTransportationPlan_03-11.pdf



Existing and Future Roadway Bike and Trail Routes

Figure 3.3-2

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- Substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections).
- Impact emergency access.
- Impact plans or policies related to alternative forms of transit including public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of non-motorized facilities (e.g., pedestrian walkways).

3.3.3.2 Methodology

Intersection Level of Service

This traffic and alternative transportation impact analysis is based on the findings of the *RPRP Traffic Report* (see Appendix E). Analysis of the Project's traffic impacts was based on an evaluation of the changes to existing traffic patterns and alternative transportation within the Planning Area as a result from Project implementation.

A vehicle classification count (e.g., passenger vehicle, 2-axle trucks, 3-axle trucks, and 4-axle trucks) was conducted and traffic volumes were obtained from seven of the 39 intersections analyzed, and converted to passenger car equivalent (PCE) volumes based on San Bernardino County's CMP. The remaining 31 intersections were calculated using an average PCE factor and truck percentage based on the data at the seven intersections with classification counts.

The SBVFM (2012), derived from SCAG's Regional Travel Demand Model, was used to develop travel forecasts for the year 2018 and 2038 No Project and With Project conditions to assess future year transit ridership sensitivity. The SBVFM uses the basic structure of the SCAG model and employs the traditional 4-step modeling process used in the SCAG model and includes the following:

- All person trips are modeled (including non-motorized); and
- Vehicle trip data is split into four time periods and converted to origin-destination format using time-of-day models before traffic assignments are made to the network.

The SBVFM model identifies all of the traffic related impacts of the transit alternatives, including mode shifts (e.g., from auto to transit), traffic diversions (e.g., from street closures), and traffic associated with driver access to transit facilities. Five station parking lots and four at-grade street closures (D Street, Stuart Avenue, 7th Street, and 9th Street) were included into the model.

The *Methodology and Assumptions Memorandum*, which included the definition of the Planning Area, was presented at agency coordination meetings held with SANBAG, the City of San Bernardino, and the City of Redlands in December 2011 and subsequent coordination with the City of Redlands February 2012 (correspondence Donald Young, Engineering Manager). The traffic count locations and methodology were approved by the agencies at that time.

The intersection analysis was conducted using Synchro 7.0 with LOS calculations based on the 2000 HCM delay methodology per the request of the City of Redlands. The HCM defines urban arterial LOS in terms of the average delay experienced by vehicles traveling through an intersection. Calculation of influence zone queues, crossing spillback queues, and potential impact of traffic signal pre-emption on progressive traffic movements were based on the procedures in the *Metropolitan Transportation Authority Grade Crossing Policy for Light Rail Transit* (MTA 2003).

The traffic impact analysis evaluated areas of potential Project impacts to intersections in the vicinity of the grade crossings. Intersections were selected in accordance with Appendix C of the *Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County* (County of San Bernardino 2005). The intersections analyzed were selected based on the following criteria:

- CMP intersections that currently operate at LOS D or below within a 1.5 mile radius of the proposed station areas;
- Section 8B.08 of the 2009 Manual on Uniform Traffic Control Devices (MUTCD) which states that "*At a signalized intersection 200 feet from a highway-rail crossing where the intersection traffic control signals are preempted, all existing turning movements toward the grade crossing should be prohibited during preemption*[2]".
  - Signalized intersections for the Project were selected using a distance of 350 feet from the grade crossing locations in order to include any signalized intersections that could potentially be preempted in future conditions; and
- Per recommendations of the City of San Bernardino and City of Redlands.

As stated previously, roadway LOS is a quantitative measurement of operational characteristics of traffic as an indicator if the roadway is operating as free-flowing or near gridlock that motorists and passengers perceive as traffic conditions. There are six levels of service defined by the HCM, published by the Transportation Research Board (TRB). Each level of service is given a letter designation from A to F, with A representing the optimal or best condition and F the worst.

Table 3.3-4 presents LOS and the ranges of delay per vehicle for signalized and unsignalized intersections.

Table 3.3-4. Intersection Level of Service Criteria

LOS	Signalized Delay Per Vehicle (seconds per vehicle)	Unsignalized Delay Per Vehicle (seconds per vehicle)	Description
A	≤ 10	≤ 10	Best, very low delay at signalized intersections (e.g., free-flowing conditions).
B	> 10 and ≤ 20	> 10 and ≤ 15	More vehicles stop than with LOS A, causing higher levels of delay.
C	> 20 and ≤ 35	> 15 and ≤ 25	The number of vehicles stopping is significant, yet many still pass through the intersection without stopping.
D	> 35 and ≤ 55	> 25 and ≤ 35	Influence of congestion more noticeable. Many vehicles stop, and the proportion of vehicles not stopping declines. Cycle failure, where a vehicle has to wait through one or more cycles to pass through the intersection, occurs more frequently.
E	> 55 and ≤ 80	> 35 and ≤ 50	Individual cycle failures are frequent.
F	> 80	> 50	Unacceptable to most drivers; arrival flow rates exceed capacity (e.g., near gridlock).

Source: Appendix E, RPRP Traffic Report.

[2] Preemption is considered the transfer of normal operation of traffic signals to a special control mode.

In addition to the LOS criteria to measure the traffic impacts, the City of San Bernardino Development Services Department Traffic Impact Study Guidelines (2004) was utilized to provide guidelines for traffic generation criteria. According to the Traffic Impact Study Guidelines, any project with initial traffic generation estimates showing that the Project is likely to add 500 or more daily two-way trips and/or like likely to add 50 or more AM or PM peak period two-way trips to the existing circulation system, without consideration of pass-by trip reductions would be considered a significant impact.

In addition to trip generation, the City of San Bernardino requires intersections to operate at LOS D or better. The city also addresses the change in the volume capacity for each LOS. A significant impact would occur when the intersection operations traffic V/C changes between the existing LOS and Project V/C change conditions as in Table 3.3-5.

Table 3.3-5. City of San Bernardino Volume Capacity

Existing LOS	Project V/C Change
C	> 0.04
D	> 0.02
E, F	> 0.01

Source: Appendix E, RPRP Traffic Report.

Queue Safety and Design Hazards

In addition to LOS and V/C effects, the Project has the potential to result in spill back effects otherwise known as “grade crossing queuing.” Considering no passenger rail service currently exists within the Planning Area, implementation of the Project has the potential to create grade-crossing queuing at intersections within the Planning Area. Based on the procedures in the *Grade Crossing Policy for Light Rail Transit* (MTA 2003), queuing was addressed as part of the analysis in the *RPRP Traffic Report* (see Appendix E). By definition, the “Influence Zone Queue” builds from an adjacent signalized intersection towards the grade crossing and the “Crossing Spillback Queue” builds from the gate crossing towards an adjacent roadway intersection.

Transit Ridership

SANBAG modeled the ridership forecasts for the Project in the *Draft Technical Memorandum, Redlands Passenger Rail Project Model Application and Ridership Forecasts – Updated for Phase 1 Project* (2013), presented in Appendix C. The model provided information relative to ridership forecasts for bus and railway facilities in addition to commuter access information to identify how people would commute (walk, vehicle, or transfer) to the future rail stations.

3.3.3.3 Criteria Requiring No Further Evaluation

Based on type of Project facilities being proposed by SANBAG and in consideration of the surrounding environmental conditions, the following criteria are not applicable to the Project or would result in no adverse effects.

Airport Traffic Patterns. The Build Alternatives and Design Options would not include the construction of any structural facilities that would create a runway hazard. Likewise, the Project does not propose any expansion of airport facilities or increase air traffic. Although the Project would involve the construction of rail facilities within two miles of the airport and the associated overflight zone, the placement of these facilities would not differ substantially in terms of its geographic location or height from existing conditions. In this context, the Build Alternatives and Design Options would not require a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks. No effect would occur under NEPA. Likewise, no impact would result under CEQA and, therefore, this issue area is not discussed further.

LOS Impacts to the City of Loma Linda. Although there are intersections located within the City of Loma Linda that are analyzed, there were no intersections with impacted LOS or V/C; therefore, LOS impacts within Loma Linda are not discussed further in the analysis.

3.3.3.4 Assessment of Environmental Effects

EFFECT 3.3-1	**Impact Local Traffic Plans, Policies, and Standards.** The Project would result in conflicts with applicable ordinances and policies regarding the performance of the circulation system, including, but not limited to, intersections, streets, highways and freeways.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Construction

Under the No Build Alternative, SANBAG would still be required to perform regularly scheduled maintenance improvements to at-grade crossings and bridges to facilitate continued freight service. These improvements would generally be isolated to specific sections of the track at any one time as opposed to being distributed throughout the corridor and would involve replacement of the existing track within the SANBAG ROW. Although effects on transportation facilities could occur under the No Build Alternative from construction related disruptions to area roadways, these effects would occur under existing conditions and, therefore no adverse effect would occur under NEPA. Construction-related impacts under CEQA would be less than significant.

Direct Effects from Operations

Under the No Build Alternative the lack of passenger rail service may have a direct effect to area traffic, traffic circulation, and to bus service. Forecasted increases in population would increase demand for existing public transportation services and roadways, thereby decreasing roadway and intersection capabilities and the corresponding LOS. As presented in Table 3.3-6, of the 39 total intersections analyzed, there is one intersection in the AM peak hour and three intersections in the PM peak hour that would experience decreased LOS in the Year 2018 without Project conditions (No Build). In addition, three intersections would experience V/C impacts under Year 2018 No Build conditions in the PM peak hour. Compared to the Year 2011, LOS for the remaining intersections in Year 2018 showed overall improvement. Nonetheless, the deteriorations in LOS and V/C would continue to be considered an adverse effect under NEPA in the absence of the Project. Under CEQA, these impacts are considered significant.

Table 3.3-6. Peak Hour LOS for Impacted Intersections in Year 2018 (No Build)

No.	Intersection	Jurisdiction	LOS Standard	Control	AM Peak Hour			PM Peak Hour		
					Delay (sec)	LOS	V/C	Delay (sec)	LOS	V/C
12	California Street and I-10 West Ramps	Caltrans*	E	Signalized	31.7	C	0.88	65.1	E	**1.09**
13	California Street and I-10 East Ramps	Caltrans*	E	Signalized	33.9	C	0.60	51.6	D	**1.05**
28	Orange Street and Pearl Avenue	Caltrans	C	Signalized	16.2	B	0.79	51.0	**D**	**1.05**
33	6th Street and Pearl Avenue	City of Redlands	C	All Way Stop Control	13.5	B	-	29.6	**D**	-
37	University Street and I-10 West Ramps	City of Redlands	C	One Way Stop Control	25.6	**D**	-	8.4	A	-
38	University Street and I-10 East Ramps	City of Redlands	C	One Way Stop Control	8.0	A	-	25.2	**D**	-

Source: HDR Redlands Passenger Rail Project Traffic Report (see Appendix E)
* CMP Intersection (LOS should not be below E or the current level whichever is lower).
Notes: Impacts are indicated in **bold**.
Year 2018 (No Build) peak hour LOS for all other intersections are provided in Appendix E.

Table 3.3-7 presents the LOS results for the Year 2038 No Build condition. There are a total of 14 intersections out of the 39 intersections analyzed that are experiencing some level of impact. Some of these intersections experience multiple impacts simultaneously (e.g., PM LOS and V/C for California Street). Four intersections in the AM peak hour, and a total of 14 intersections in the PM peak hour are projected to operate at a reduced LOS. In addition, five intersections experience V/C impacts. This represents an increase in four AM peak hour, 11 PM peak hour, and four V/C intersection impacts over Year 2018 conditions. These deteriorations in LOS and V/C would be considered an adverse effect under NEPA. Under CEQA, these impacts are considered significant.

Table 3.3-7. Peak Hour LOS for Impacted Intersections in Year 2038 (No Build)

No.	Intersection	Jurisdiction	LOS Standard	Control	AM Peak Hour			PM Peak Hour		
					Delay (sec)	LOS	V/C	Delay (sec)	LOS	V/C
4	Waterman Avenue and Orange Show Road	City of San Bernardino	D	Signalized	50.5	D	0.94	131.7	**F**	1.43
8	Tippecanoe Avenue and Hospitality Lane	City of San Bernardino	D	Signalized	24.8	C	0.87	124.6	**F**	1.31
10	Anderson Avenue and I-10 East Ramps	Caltrans*	E	Signalized	25.6	C	0.84	102.3	**F**	**1.20**
12	California Street and I-10 West Ramps	Caltrans*	E	Signalized	196.2	**F**	**1.58**	323.3	**F**	**2.04**
13	California Street and I-10 East Ramps	Caltrans*	E	Signalized	301.4	**F**	**1.09**	155.0	**F**	**1.64**
16	Alabama Street and I-10 West Ramps	Caltrans*	E	Signalized	76.4	E	1.07	120.7	**F**	**1.29**
17	Alabama Street and I-10 East Ramps	Caltrans*	E	Signalized	18.3	B	0.60	88.9	**F**	**1.24**
18	Alabama Street and Industrial Avenue	City of Redlands	C	Signalized	8.3	A	0.45	70.6	**E**	1.31
27	Orange Street and Colton Avenue	Caltrans	C	Signalized	23.2	C	0.85	41.6	**D**	1.34
28	Orange Street and Pearl Avenue	Caltrans	C	Signalized	36.1	**D**	0.97	233.8	**F**	1.70
29	Orange Street and Stuart Avenue	City of Redlands	C	Signalized	7.7	A	0.50	45.4	**D**	1.04
32	6th Street and I-10 West Ramps	City of Redlands	C	Two Way Stop Control	20.9	B	-	25.6	**D**	-
33	6th Street and Pearl Avenue	City of Redlands	C	All Way Stop Control	25.5	**D**	-	140.9	**F**	-
38	University Street and I-10 East Ramps	City of Redlands	C	One Way Stop Control	6.9	A	-	82.9	**F**	-

Source: HDR Redlands Passenger Rail Project Traffic Report (see Appendix E)
* CMP Intersection (LOS should not be below E or the current level whichever is lower).
Notes: Impacts are indicated in **bold**.
Year 2038 (No Build) peak hour LOS for all other intersections are provided in Appendix E.

Indirect Effects

Under NEPA, no indirect effects to existing transportation facilities would occur under the No Build Alternative. No impact would occur under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Under the Build Alternatives and Design Options, construction-generated traffic would be temporary, approximately 36 months in duration, and therefore would not result in any long-term degradation in operating conditions or LOS on any roadways within the Planning Area. The primary impacts from construction would include temporary, short-term, and intermittent reductions of roadway capacities in varying degrees for the All Build Alternatives and the Design Options associated with the movement of construction equipment along the railroad corridor. The Project includes safety improvements at 22 of the existing at-grade crossings and closure of four at-grade roadway crossings. In accordance with CPUC requirements, upgrades would be made to several existing at-grade crossings along the railroad corridor to improve public safety. Construction of the improvements proposed under the Project would require temporary roadway closures and possible detours adjacent to the at-grade crossings. The temporary road closures would disrupt flows of traffic resulting in a reduction of traffic LOS and an increase in V/C. As a result, the Project would result in temporary impacts to traffic LOS and V/C due to at-grade crossing construction work.

Construction would affect the roadway network in two ways. Construction would cross local roadway ROW and, as a result, portions of the roadway that would normally be used for traffic circulation would be temporarily unavailable. This displacement could block two travel lanes, one travel lane and the adjacent shoulder/parking area, or just the shoulder/parking area, depending upon the placement of Project-related improvements within the roadway ROW. It is estimated that lane blockages would last for durations varying between a few days to a few weeks for perpendicular encroachments. These are considered adverse, direct effects under NEPA and Mitigation Measure TR-1 (Prepare a Traffic Management Plan) is proposed to minimize adverse effects related to lane blockages. These impacts are considered significant under CEQA.

In addition to the above impacts, the use of large trucks to transport equipment and material to and from the Project work site(s) could affect road conditions on the access routes by increasing the rate of road wear. The degree to which this impact would occur depends on the design (pavement type and thickness) and the existing condition of the road. Major arterials and collectors are designed to accommodate a mix of vehicle types, including heavy trucks. The potential impacts are expected to be negligible on those roads. However, lower-capacity roadways could be significantly impacted by construction equipment within the roadway. Therefore, this is considered an adverse, direct effect under NEPA. Under CEQA, this impact is considered significant and Mitigation Measure TR-1 is proposed to minimize impacts related to construction equipment on roadways.

Direct Effects from Long-Term Operations

According to the Project's projected ridership (Appendix C), the Project is anticipated to have 820 total daily passenger rail boardings in the year 2018 between the five proposed stations, including express train service provided by Metrolink at the Downtown Redlands and E Street stations. A breakdown of the boardings per station is presented in Table 3.3-8. Up to two express trains would run in the AM peak period westbound and two express trains in the PM peak period eastbound to interface with Metrolink's IEOC and San Bernardino Lines at E Street for rail service to downtown Los Angeles Union Station. In addition, up to two Metrolink express trains will also run westbound in the AM peak period and eastbound in the PM peak period to the Downtown Redlands Rail Station. Transit riders would access rail stations by walking, driving, or by transfer either by bus or other rail routes. As provided in the affected environment, 90 percent of commuters that use the Metrolink Express Service would be expected to drive a vehicle or get a ride to access the Downtown Redlands and E Street stations.

Table 3.3-8. Projected Project Daily Transit Boardings for 2018

Station	Daily Transit Boardings*
San Bernardino Transit Center	350
Tippecanoe Avenue	80
New York Street	60
Downtown Redlands	210
University of Redlands	120
Total	**Up to 820**

Source: RPRP Model Application and Ridership Forecasts Memorandum (see Appendix C1).

***** Numbers are assumed, station not included in the RPRP Model Application and Ridership Forecasts Memorandum.

These trips are generally considered existing roadway trips that are redistributed as a result of new transit opportunities offered by the Project. An additional five percent of the Express Train riders are expected to arrive via existing bus service. Based on these ridership estimates, only five percent of the trips are considered as "new."

The access modes for the Metrolink have a relatively high percentage of people using vehicles as stated in Section 3.3.2, however, the Project is projected to have a higher percentage of people transferring or walking, as presented in Table 3.3-9. The difference in access is attributed to the functionality of the proposed local transit service, which would shuttle people between the E Street Station and the University of Redlands to access other connections. According to the *Ridership Study* (see Appendix C), walking would be the most popular access. The trend would increase slightly for transfer access for the local transit service (e.g., from bus) accounting for 41 percent of the total station access in 2018 and increasing to 46 percent in 2018. The Downtown Redlands station would account for the highest percentage of transfer, ranging from 68 percent in 2018 and increasing to 70 percent in the year 2038, as presented in Table 3.3-9.

Table 3.3-9. Projected Station Transit Access (by percentage)

Station	2018		
	Walk	**Vehicle**	**Transfer**
San Bernardino Transit Center	52	1	47
Tippecanoe Street	55	0	45
New York Street	99	0	0
Downtown Redlands	32	0	68
University of Redlands	84	16	0
Total (Aggregate)	**56**	**3**	**41**

Source: RPRP Model Application and Ridership Forecasts Memorandum (see Appendix C).

According to the modeling conducted in the Ridership Study, only three (3) percent of the commuters would utilize vehicles to access the stations, with the highest percentage people commuting by vehicles going to the Downtown Redlands Station. In this context, the Project would not result in a substantial increase in the amount of trips generated due to the low percentage of vehicle use by projected riders. In addition, these commuters are anticipated to consist of existing single occupancy vehicle users or rail users who are currently using other Metrolink stations. The Project would provide sufficient parking capacity at each station to accommodate those patrons who are anticipated to use vehicles to access transit. Based on these considerations, the Project would result in no adverse effect to existing travel patterns under NEPA. Impacts related to ridership under CEQA would be less than significant.

Operation of the Build Alternatives and Design Options have the potential to affect existing traffic and transportation as a result of trip generation from the train layover facility, train operations, and changes to existing travel patterns as a result of a redistribution of car trips for people traveling to the proposed stations. The train layover facility and train operations overall are projected to have up to 16 employees at any given time. This level of trip generation is negligible and is considered insignificant in terms of traffic generation within the local roadway network. In this context, the City of San Bernardino Development Guidelines states that any project that adds 50 or more AM or PM peak period two-way trips to the existing circulation system would be considered an adverse effect and requires a Traffic Impact Analysis (TIA). The County's CMP provides a similar threshold of 50 or more trips to a CMP arterial. However, in contrast, the City of Redland's General Plan states that only "larger and very large projects" are required to prepare a TIA and, thus, are subject to interpretation. Based on these guidelines, the additional employees anticipated for Project operations are below the City of San Bernardino Development Guidelines and the CMP's threshold. In this context, no adverse effect would occur under NEPA. Under CEQA, the impact is considered less than significant.

Lastly, as provided in Chapter 2, there are approximately seven existing traffic signals along the corridor that fall within 200 feet of the railroad at-grade crossings that will receive preemption signals from the railroad. In addition, four existing roadway at-grade crossings would be closed. These physical changes to the circulation system in conjunction with the operation of new railroad signaling equipment in tandem with changes to the signalization of existing roadway intersections would result in changes to overall roadway circulation and operation. These changes are evaluated below in the context of roadway intersection LOS conditions for Year 2011 (Existing With Project), for opening day in Year 2018 (With Project), and in the forecast Year 2038 (With Project).

Year 2011 (Existing With Project) Intersection LOS and V/C. Per direction provided by the Cities of San Bernardino and Redlands, 39 existing conditions (2011) intersections were modeled with the operation of the Project. As shown in Table 3.3-10 indicated in bold, of the 39 intersections modeled, one intersection, California Street and I-10 East Ramps would operate at a LOS of F in the AM and PM peak hours with the Project. In addition, California Street and Redlands Boulevard would operate at below the V/C standard. The remaining four PM peak hour and five V/C impacts show an overall improvement from the 2011 existing conditions to 2011 with Project conditions. Based on these results, the Project would result in an overall improvement to the LOS and V/C to the surrounding area. Therefore, no adverse effect would occur under NEPA and a less than impact would occur under CEQA.

Year 2018 (With Project) Intersection LOS and V/C. At opening day for the Project in 2018 and as shown in Table 3.3-11, once operational of the 39 intersections analyzed, two intersections (Orange Street and Pearl Avenue and 6th Street and Pearl Avenue), would not operate at satisfactory LOS in the PM peak hour (LOS D or E). Additionally, the V/C for two intersections (California Street and I-10 West Ramps and California Street and I-10 East Ramps) would exceed V/C thresholds (1.08 V/C and 1.10 V/C, respectively). Projected deterioration in LOS and V/C in Year 2018 would be an adverse effect under NEPA. Under CEQA, this impact is significant and Mitigation Measure TR-2 (Existing LOS and V/C 2018 and 2038 Impact Roadway Improvements) is proposed to minimize Project-related deteriorations in LOS.

Forecast Year 2038 (With Project) Intersection LOS and V/C**.** Under the forecast Year 2038, train operations are assumed to be similar to those proposed in 2018. Table 3.3-12 presents the Year 2038 scenario for traffic intersection impacts resulting from the Project of the 39 intersections analyzed. As shown in Table 3.3-12, under 2038 conditions with the Project, a total of 14 intersections are experiencing multiple peak hour impacts (e.g., AM LOS, PM LOS, and V/C). A total of four intersections in the AM peak hour and 14 intersections in the PM peak hour intersections would operate at an unsatisfactory LOS. A total of 11 intersections would have an unsatisfactory V/C in the PM peak hour and two intersections in the AM peak hour under 2038 conditions with the Project.

Of the V/C impacts identified many impacts improve from the Year 2038 projections without the Project condition (No Build), with intersection V/C slightly increasing V/C for four intersections in the PM hour; although the majority are marginal (difference of 0.01 change). These intersection impacts are considered an adverse effect under NEPA. These impacts are significant under CEQA and Mitigation Measure TR-2 is proposed to minimize Project-related deterioration in LOS.

Indirect Effects

As described in the affected environment, there are projected LOS and V/C impacts without the Project, which are the responsibility of local jurisdictions. As presented in Table 3.3-13, some roadway and intersection improvements are forecasted for Year 2018 and 2038 as part of the RTIP, of which SANBAG would not have the responsibility of implementing. However, many of the identified intersection improvements would require improvements that are not currently programmed by local jurisdictions. Given that these unsatisfactory operating conditions are out of the control of SANBAG, not associated with the Project, and would occur under existing and future conditions with or without the Project, no indirect adverse effect would result under NEPA. This impact would be less than significant under CEQA.

Other indirect effects resulting from the Project could include a re-distribution of traffic along existing roadways as result of the proposed road closure. Beyond the peak hour impacts identified in Tables 3.3-11 and 3.3-12, off-peak traffic could also be affected, especially as a result of event-related traffic associated with the National Orange Show Events Center. The resulting impacts could be comparable to peak hour events and, therefore, are considered adverse under NEPA and significant under CEQA. The implementation of Mitigation Measure TR-2 is proposed to minimize this effect.

Table 3.3-10. Peak Hour LOS for Impacted Intersections in Year 2011 (Existing With Project)

No.	Intersection	Jurisdiction	LOS Standard	Control	AM Peak Hour			PM Peak Hour		
					Delay (sec)	LOS	V/C	Delay (sec)	LOS	V/C
13	California Street and I-10 East Ramps	Caltrans*	E	Signalized	305.7	**F**	0.79	179.7	**F**	0.93
15	California Street and Redlands Boulevard	City of Redlands*	F	Signalized	21.9	C	0.60	51.4	D	**1.06**

Source: HDR Redlands Passenger Rail Project Traffic Report (see Appendix E).
*CMP Intersection
Notes: Impacts indicated in **bold**.
Year 2011 (Existing with Project) peak hour LOS for all other intersections are provided in Appendix E.

Table 3.3-11. Peak Hour LOS for Impacted Intersections in Year 2018 (With Project)

No.	Intersection	Jurisdiction	LOS Standard	Control	AM Peak Hour			PM Peak Hour		
					Delay (sec)	LOS	V/C	Delay (sec)	LOS	V/C
12	California Street and I-10 West Ramps	Caltrans*	E	Signalized	26.7	C	0.84	75.9	E	**1.08**
13	California Street and I-10 East Ramps	Caltrans*	E	Signalized	22.7	C	0.64	47.5	D	**1.10**
28	Orange Street and Pearl Avenue	Caltrans	C	Signalized	16.2	B	0.79	53.3	**D**	1.07
33	6th Street and Pearl Avenue	City of Redlands	C	Two Way Stop Control	13.8	B	-	29.9	**D**	-

Source: HDR Redlands Passenger Rail Project Traffic Report (see Appendix E).
*CMP Intersection
Notes: Impacts indicated in **bold**.
Year 2018 (Existing with Project) peak hour LOS for all other intersections are provided in Appendix E.

Table 3.3-12. Peak Hour LOS for Impacted Intersections in Year 2038 (With Project)

No.	Intersection	Jurisdiction	LOS Standard	Control	AM Peak Hour			PM Peak Hour		
					Delay (sec)	LOS	V/C	Delay (sec)	LOS	V/C
4	Waterman Avenue and Orange Show Road	City of San Bernardino	D	Signalized	72.6	**E**	0.96	129.2	**F**	**1.35**
8	Tippecanoe Avenue and Hospitality Lane	City of San Bernardino	D	Signalized	22.5	C	0.83	113.0	**F**	**1.27**
10	Anderson Avenue and I-10 East Ramps	Caltrans*	E	Signalized	24.1	C	0.85	102.7	**F**	**1.20**
12	California Street and I-10 West Ramps	Caltrans*	E	Signalized	200.0	**F**	**1.60**	326.4	**F**	**2.05**
13	California Street and I-10 East Ramps	Caltrans*	E	Signalized	290.2	**F**	**1.06**	154.6	**F**	**1.63**
16	Alabama Street and I-10 West Ramps	Caltrans*	E	Signalized	76.6	E	1.07	121.5	**F**	**1.29**
17	Alabama Street and I-10 East Ramps	Caltrans*	E	Signalized	17.9	B	0.62	89.4	**F**	**1.24**
18	Alabama Street and Industrial Avenue	City of Redlands	C	Signalized	7.9	A	0.44	76.6	**E**	**1.39**
27	Orange Street and Colton Avenue	Caltrans	C	Signalized	23.2	C	0.85	42.1	**D**	**1.35**
28	Orange Street and Pearl Avenue	Caltrans	C	Signalized	38.4	D	0.98	259.5	**F**	**1.69**
29	Orange Street and Stuart Avenue	City of Redlands	C	Signalized	7.7	A	0.49	52.3	**D**	**1.05**
32	6th Street and I-10 West Ramps	City of Redlands	C	Two Way Stop Control	22.4	C	-	25.2	**D**	-
33	6th Street and Pearl Avenue	City of Redlands	C	All Way Stop Control	28.7	**D**	-	134.4	**F**	-
38	University Street and I-10 East Ramps	City of Redlands	C	One Way Stop Control	6.8	A	-	74.7	**F**	-

Source: HDR Redlands Passenger Rail Project Traffic Report (see Appendix E).
*CMP Intersection
Notes: Impacts indicated in **bold**.
Year 2038 (Existing with Project) peak hour LOS for all other intersections are provided in Appendix E.

Table 3.3-13. RTIP/SCAG Planned Improvements

ID	Year Forecasted	Description
44810-44811	2018	Add EB off ramp auxiliary lane from I-10 ramp to Tippecanoe off-ramp and widen bridge.
200625	2018	E Street Transit Corridor (SBx) – From San Bernardino to Loma Linda.
4A07017	2018	Widen Alabama from Lugonia Ave. to Barton Rd. from 4 to 6 lanes.
4A01239	2018	Widen Church St from Colton Ave. to Redlands Blvd. from 1 to 2 lanes.
SBD031294	2018	Widen intersection of Redlands Blvd. at California St. and install traffic signals, drainage, curb and gutters.
SBD31876	2018	Widen California St./Barton Rd. to Redlands Blvd., widen from 2 to 4 lanes.
4GL04	2018	I-10/Alabama and Redlands Blvd. and Alabama/Colton intersection – widen intersection approaches on all four legs. Add dual left turn lanes.
4A07017	2038	Widen California Street from Redlands Blvd. to I-10 from 5 to 6 lanes.
4120178	2038	Widen Redlands Blvd. at intersections of Alabama St. and Colton Ave.
-	2038	Widen Tippecanoe Ave. from 4 to 6 lanes.

Source: HDR Redlands Passenger Rail Project Traffic Report (see Appendix E).

EFFECT 3.3-2	**Conflict with an Applicable Congestion Management Program.** The Project would conflict with the County CMP during construction.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

The No Build Alternative would generally preserve the existing track infrastructure and bridge infrastructure subject to periodic and incremental maintenance. In this context, minimal changes to existing conditions would occur along the nine-mile railroad corridor and no effect would occur under NEPA. Under CEQA, no impact would occur.

Direct Effects from Long-Term Operation

Under the No Build Alternative, the lack of additional passenger rail service would have a direct effect to overall traffic circulation resulting in reduced LOS and increased V/C. Increases in delay as a result of decreases in the roadway intersection LOS and V/C would create an inconsistency with the City of San Bernardino standards, the Redlands General Plan, and the CMP. Based on these considerations, the No Build Alternative would result in an adverse effect under NEPA. This plan inconsistency would be significant under CEQA.

Indirect Effects

No adverse, indirect effects would occur under the No Build Alternative. Impacts under CEQA would be less than significant

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

The Project would have the same effects due to temporary construction as previously described in Effect 3.3-1. These are considered adverse, direct effects under NEPA. These impacts are considered significant under CEQA and Mitigation Measure TR-1 is proposed to minimize traffic disruption during construction.

Direct Effects from Long-Term Operations

As stated previously for the Year 2018 conditions, the Planning Area would experience intersection LOS and V/C impacts without the Project. With the Project, intersection LOS and V/C would initially improve by implementing passenger rail service that would in turn result in desirable benefits to travel demand and local circulation.

The Build Alternatives and Design Options would result in changes to V/C in Years 2018 and 2038. The identified changes do not occur at intersections that are identified under CMP jurisdiction; therefore, no impacts are identified. Based on these considerations, the Project would be consistent with the CMP and no adverse effect would occur under NEPA. Impacts under CEQA would be less than significant.

Indirect Effects

The Project is anticipated to be constructed and operational by the year 2018. As presented in Section 3.2, the land uses in the Planning Area could change to higher densities, which would result in corresponding impacts to roadways and intersections. In general, transit oriented forms of development would favor increased ridership for the Project and, over time, would likely contribute to decreases in congestion on local roadways and intersections. However, given that land use changes are subject of the local governing entities, any changes in land use and the corresponding indirect changes to roadway circulation are considered speculative. As a result, no adverse effect would occur under NEPA. Impacts under CEQA would be considered less than significant.

EFFECT 3.3-3	**Create or Increase Hazards from Project Design Features.** The Project could create or increase hazards on local roadways (e.g., sharp curves or dangerous intersections).

ALTERNATIVE 1 – NO BUILD

Direct Effects from Temporary Construction

As stated previously, the No Build Alternative would preserve existing conditions along the railroad corridor. In this context, minimal changes to existing conditions would occur along the nine-mile railroad corridor and no effect would occur under NEPA. Under CEQA, no impact would occur.

Direct Effects from Long-Term Operation

Existing freight operations would continue under this alternative. As a result, minimal changes to existing conditions would occur along the nine-mile railroad corridor and no effect would occur under NEPA. Under CEQA, no impact would occur.

Indirect Effects

With a continuation of existing conditions, no indirect effects would occur under NEPA. Under CEQA, no impact would occur.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

The construction of the bridge improvements, layover facilities, and station improvements would result in construction temporary effects to the area. Existing roadways, intersections, and at-grade crossings may be subject to temporary detours and lane blockages. These would be considered an adverse effect under NEPA. Under CEQA, these impacts would be significant and Mitigation Measure TR-1 is proposed to minimize roadway-related hazards during the course of construction.

Direct Effects from Long-Term Operations

The construction of the track improvements, grade crossings, and road closures would not create sharp curves or dangerous intersections. The proposed track and bridge improvements would be engineered to comply with applicable BNSF and SCRRA standards to ensure railway safety. Concrete panels and crossing gates for pedestrians and automobiles would be installed for at-grade crossing as described in Chapter 2. In addition, safety precautions would be taken to reduce potential hazards during roadway closures.

Existing roadway grade crossings are listed in Table 2-4 and identified in Figure 2-3 that identifies intersections that would be closed, improved, or re-configured to accommodate the Project. These roadway closures are necessary to implement the Project while ensuring public safety throughout operations. There are approximately seven existing traffic signals along the RPRP that fall within 200 feet of the railroad at-grade crossings that will receive preemption signals from the railroad as per the MUTCD. Two of these occur in the City of San Bernardino and the other five are located in the City of Redlands. SANBAG would consult with local jurisdictions to coordinate the traffic signal operations including; preemption signal, signal wire, conduit, and other infrastructure required for the data signal transfer. To assess safety concerns associated with passing trains, a queuing analysis was conducted to determine if sufficient queuing distance is available between existing signalized intersections and adjacent grade crossings to minimize the potential for blockage of the grade crossing. The Traffic Report provided in Appendix E includes a summary of the grade crossing influence zone queue analysis. Based on the analysis of Project operations, the projected queues from the following intersections exceed the available storage distance from an adjacent signalized intersection towards the grade crossing under the Year 2018 (With Project) conditions:

- EB I-10 Ramps and the California Street crossing (AM Peak Hour);
- Redlands Boulevard and the Alabama Street (AM Peak Hour);
- Redlands Boulevard and the Tennessee Street (AM Peak Hour);
- EB I-10 Ramps and the California Street (PM Peak Hour);
- Industrial Park Avenue and the Alabama Street (PM Peak Hour);
- Redlands Boulevard and the Alabama Street (PM Peak Hour); and
- Redlands Boulevard and the Tennessee Street (PM Peak Hour).

Safety hazards would also be created as a result of spillback from at-grade crossings. As indicated in the Traffic Report (see Appendix E), the queues, which build from the gate crossing(s) towards adjacent roadway intersection could potentially block intersections. During the AM peak hour the following intersections would include:

- Dumas and the Waterman Avenue;
- Victoria Avenue at Tippecanoe Avenue;
- EB I-10 Ramps and the California Street;
- Redlands Boulevard and the Tennessee Street;
- Redlands Boulevard and the Alabama Street; and
- Oriental Avenue and the Orange Street.

In addition, during the PM peak hour, the following intersections would experience excess spillback:

- Dumas and the Waterman Avenue;
- Victoria Avenue at Tippecanoe Avenue;
- EB I-10 Ramps and the California Street;
- Industrial Park Avenue and the Alabama Street;
- Redlands Boulevard and the Alabama Street;
- Redlands Boulevard and the Tennessee Street; and
- Oriental Avenue and the Orange Street.

Under NEPA, these exceedances in the available storage distance would represent an adverse effect. Under CEQA these impacts would be significant and Mitigation Measures TR-3 (Approval from CPUC for Grade Crossings and Safety Measures) and TR-4 (Recommended Pre-Signals for Queuing) are proposed to minimize impacts to traffic safety and passenger train operations.

Under future conditions (Year 2038) with the Project, the traffic analysis (see Appendix E), projects that seven intersections would exceed the influence zone queue for available storage between the signalized intersection and the grade crossing. These intersections include the following:

- Orange Show Road and Waterman Avenue;
- Waterman Avenue and Orange Show Road;
- California Street and EB I-10 Ramp;
- California Street and Redlands Boulevard;
- Alabama Street and Industrial Park Avenue;
- Alabama Street and Redlands Boulevard; and
- Tennessee Street and Redlands Boulevard.

An adverse effect would occur under NEPA at these intersections in 2038 in addition to those identified in 2018. Under CEQA, this impact would be significant and Mitigation Measures TR-3 and TR-4 are proposed to minimize impacts to traffic safety and passenger train operations.

Indirect Effects

With the incorporation of pier protection walls at both of the I-10 bridge crossings at MP 5.5 and 9.4, no indirect, adverse effect to other existing transportation infrastructure within the Study Area is expected with the implementation of the Project. No adverse effect would occur under NEPA and a less than significant impact would occur under CEQA.

EFFECT 3.3-4	**Impacts to Emergency Response and Access**. The Project could adversely affect emergency access.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, SANBAG would still be required to perform regularly scheduled maintenance improvements to at-grade crossings and bridges to facilitate continued freight service. Although minor and incremental maintenance activities would be required, no changes to existing roadways, at-grade crossings, or the existing track alignment would occur. In this context, the level of improvements that would occur is not expected to result in inadequate emergency access. No effect would occur under NEPA and no impact would occur under CEQA.

Direct Effects from Long-Term Operation

No changes to existing roadways, at-grade crossings, or the existing track alignment would occur under the No Build Alternative. Existing freight operations would continue. In this context, no impacts to emergency access are expected. No effect would occur under NEPA and no impact is expected under CEQA.

Indirect Effects

With a continuation of existing conditions, there would be no indirect effects to emergency response and access issues. In this context, no indirect adverse effects would occur under NEPA. Under CEQA, this impact is considered less than significant.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

The Planning Area contains some “potential” evacuation routes along the railroad corridor and adjacent to I-10, which is an identified evacuation route as identified by the County of San Bernardino General Plan Safety Element. The Office of Emergency Services does not identify direct emergency routes as a proactive approach to not overload roadway capacities in the event of an emergency. For this reason, all roadways with freeway access would be considered as “potential” options for emergency access. Although construction would require some temporary roadway closures, not all of the roadway closures would occur at the same time and other roadways would be available for evacuation. Notwithstanding these circumstances, without mitigation an adverse effect would occur under NEPA. Under CEQA, this impact is considered significant and Mitigation Measure TR-1 is proposed to minimize impacts to emergency response during construction.

Direct Effects from Long-Term Operations

Implementation of the Build Alternatives and Design Options would involve new passenger rail operations that would result in LOS and V/C deficiencies and queuing impacts at intersections and at-grade crossings. These Project-related effects could interfere with emergency response and would be considered adverse under NEPA. Under CEQA, these impacts would be significant and implementation of Mitigation Measures TR-2, TR-3, and TR-4, are proposed to minimize impacts to emergency response services during operations.

Indirect Effects

The Project would not have any long-term, indirect effects to emergency routes or access to the surrounding area. No effect would occur under NEPA and no impact is expected under CEQA.

EFFECT 3.3-5	**Adversely Effect Alternative Forms of Transit, including Non-Motorized Facilities.** The Project could conflict with plans or policies related to alternatives forms of transit including public transit, bicycle or pedestrian facilities, and otherwise decrease the performance or safety of non-motorized facilities (e.g., pedestrian walkways).

ALTERNATIVE 1 – NO BUILD

Direct Effects from Temporary Construction

Minimal changes to existing local forms of alternative transportation (e.g., bike lanes, bus service, etc.) would occur as a result of the No Build Alternative. Incremental maintenance and bridge replacement activities would present temporary obstructions and detours for existing trails; however, these effects would be isolated to a few specific sections along the railroad corridor and spread out over a long duration. In this context, no adverse effect would occur under NEPA. Under CEQA, this impact less than significant.

Direct Effects from Long-Term Operation

Under the No Build Alternative, the existing bus transit service provider (e.g., Omnitrans) would continue to provide fixed route bus service; although indirectly between the Cities of Redlands and San Bernardino. Existing and planned opportunities for non-motorized forms of transportation would be implemented pending the availability of funding. Under this alternative, the existing railroad corridor would not be used to enhance local opportunities for alternative transportation. For this reason, SANBAG would be unable to expand local transit and the existing railroad ROW would continue to be an under-utilized public asset. This would be a conflict with the adopted RTIP, RTP, and San Bernardino County NMTP. In this context, an adverse effect would occur under NEPA. Under CEQA, this impact is considered significant.

Indirect Effects

No operational changes would occur along the railroad corridor under the No Build Alternative and the railroad corridor would likely be used similar to existing conditions with random trespassing occurring and no changes to unauthorized crossings. The continuation of these conditions is not expected to indirectly conflict with adopted policies, plans, or programs supporting the provision of alternative transportation sources. No adverse effect would occur under NEPA. Under CEQA, this impact is less than significant.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Freight

Currently, freight service is provided to three customers by BNSF as the common carrier that operates within the freight easement under the shared-use agreement with SANBAG. With the retention of the existing Santa Ana River bridge during construction, live freight would be allowed to continue for the duration of construction with the exception of a two-month period. During this time, freight trains would not be able to pass over the SAR and material shipments would be transloaded for the duration of the track outage under an agreement between SANBAG and BNSF. In addition to the reconstruction of existing bridges, construction at a total of six at-grade crossings (including Tippecanoe) would be affected, which could also potentially disrupting existing freight operations. However, through a combination of construction scheduling and, in limited circumstances transloading, existing freight deliveries would be handled consistent with existing agreements between SANBAG and BNSF. In this context, no adverse effect would occur under NEPA. Under CEQA, this impact is less than significant.

Bus

During Project construction, temporary detours and road closures could disrupt bus operations at existing bus stops and along routes in close proximity to the SANBAG ROW. Although there are no identified bus stops adjacent to the at-grade crossings, several bus routes including Routes 2, 8, 9, 15, and 19 intersect with the railroad corridor. As a result, the Project has the potential to affect bus schedules for these routes through a combination of detours, temporary road closures, and changes in scheduling. This is considered an adverse effect under NEPA. Under CEQA, this impact is significant and implementation of Mitigation Measure TR-1 is proposed to minimize impacts to bus service during construction.

Pedestrian and Bicycle

Under existing conditions, only Class III bicycle routes and pedestrian sidewalks intersect with the Planning Area and railroad corridor. The construction of the Build Alternatives and Design Options would result in temporary construction impacts to all crossings along the entire railroad corridor. Pedestrian and bicycle routes may be temporarily affected due to track improvements during construction; especially at locations where they intersect at-grade crossings. As a result, temporary detours for existing bicycle and pedestrian routes may be required to accommodate non-motorized forms of transportation similar to existing bus routes. These direct effects would be adverse under NEPA. Under CEQA, these impacts would be significant and would require the implementation of Mitigation Measure TR-1.

Direct Effects from Long-Term Operations

Freight

Implementation of the Project would not prohibit existing freight service along the corridor. With the operation of passenger rail service along the corridor, temporal separation between freight and passenger rail operations will be required by FRA and FTA. As a result, freight use would be limited to that period of time outside of the hours scheduled for passenger rail service (currently envisioned to be approximately 5 a.m. to 10 p.m. daily). Based on the limited number and frequency of freight trips to the east of E Street under existing conditions, minor scheduling adjustments would be sufficient in minimizing disruptions to existing customers. Additionally, the Project does not include any corresponding increase in freight service, which could otherwise affect existing freight service. In this context, no adverse effect would occur under NEPA. Under CEQA, the corresponding impact would be less than significant.

Bus

As stated previously, the majority of transit access would occur from walking or transfers, with the transfers trending higher from year 2018 to 2038. Upon implementation of the Project, changes in bus ridership may occur based on the availability of passenger rail service and the functionality of the Project's interface with the Metrolink; although specific numbers cannot be determined at this time. This could result in potential changes to existing bus service through a consolidation of existing bus routes, route eliminations, or less frequent bus service. Bus stops in close proximity to the Project at-grade crossings would be avoided as to avoid safety hazards. The station areas provided by the Project would give additional options to people commuting in the area and provide an opportunity for existing transit service providers to interface with the station platforms. Without sufficient coordination between existing transit providers and SANBAG, it is possible that existing transit services would not efficiently interface with passenger rail operations, thereby resulting in schedule conflicts and impacts to existing transit ridership. This would be considered an adverse effect under NEPA. Under CEQA, this impact is considered significant and Mitigation Measure TR-5 (Transit Operations Realignment) is proposed to facilitate coordination of the Project's operations with existing transit service.

Pedestrian and Bicycle

The stations as presented in Table 2-4 of Chapter 2 are expected to enhance opportunities for pedestrian and bicycle connectivity in the Planning Area. Improvements include at-grade pedestrian crossings at Tippecanoe Avenue, Downtown Redlands, the University of Redlands, and at New York Street. At-grade crossings would be re-designed in accordance with the latest Grade Crossing Design guidelines that require in certain cases raised medians, widened sidewalks, traffic striping, flashing lights, pedestrian gate arms where requested by the CPUC, and swing gates, thereby further contributing to safe pedestrian connectivity in the railroad corridor. Additionally, the Project would include up to 62 bike lockers along the railroad corridor to encourage use by cyclists. Given that minimal connectivity exists for bicycle and pedestrian in the Planning Area, the additional facilities offered by the Project that would interface with riders using other forms of alternative transportation (e.g., pedestrians, bus service, etc.) would be a desirable benefit of the Project. In this context, no adverse effect would occur under NEPA. Under CEQA, this impact is less than significant.

In addition to existing bike and pedestrian routes within the Planning Area, there are planned non-motorized routes proposed that intersect or parallel the railroad corridor. These routes are depicted in SANBAG's NMTP and may be constructed during construction of the Project or once the Project is operational. Two of the planned trails, including the Santa Ana River Trail and the Orange Blossom Trail (see Figure 3.3-2), could be affected by the Project's installation due to physical limitations with SANBAG's ROW. These limitations could require the realignment of these routes as presented in the NMTP (2011). These limitations are further described for each trail in Section 3.13. Based on the Project's potential to conflict with these planned alignments as depicted in the NMTP (2011), the Project could result in an adverse effect under NEPA. Under CEQA, this impact would be significant and Mitigation Measure PCS-1 (Coordinate Trail Planning with Local Jurisdictions) is proposed to resolve this potential conflict.

Indirect Effects

As mentioned in Section 3.2, Land Use, Planning, and Communities, the Project has the potential to trigger indirect growth through new transit development oriented (TOD) opportunities that could otherwise increase the demand for non-motorized forms of transportation facilities. Such facilities would need to be planned consistent with existing City General Plan policies. TOD also has the potential to increase commuter demands on railway and bus services, with the Project assisting in meeting a portion of that demand. Additionally, these effects would contribute to reductions in the number of vehicles on the roadway and improvements in intersection LOS and V/C. In this context, the Project could result in desirable indirect benefits and no adverse effect would occur under NEPA. Under CEQA, a less than significant impact would occur.

3.3.4 Mitigation Measures

The following mitigation measures are proposed to address potential adverse effects to existing transportation modes and the circulation network as a result of the Build Alternatives and Design Options.

TR-1 **Prepare and Implement a Traffic Management Plan.** SANBAG shall prepare a Traffic Management Plan prior to the start of construction, and the provisions of the Traffic Management Plan shall be implemented prior to, and during construction, as appropriate, to address traffic considerations of pedestrian and bicycle access and safety, and vehicular flow. The objective of the Traffic Management Plan will be to reduce construction related effects to traffic, non-motorized forms of transportation (e.g., bicycle and pedestrians), and existing public transit (e.g., buses) and will include the following:

- Construction detour plans and designated construction truck access routes for each phase of construction;
- Maintain maximum travel lane capacity to the greatest extent possible during construction periods and provide advanced notice to drivers or roadway changes or closures;
- Signage indicating the construction limits, access routes, and entrances to individual business sites and community facilities that may be affected by construction activities. In addition, the construction contractor would supply

"open for business" signs to encourage normal business activity during construction;

- Pre-planning, outreach, and signage indicating pedestrian and bicycle routes detours;
- Coordination with public transit service providers, as necessary;
- Heavy trucks and other construction transport vehicles shall avoid the busiest commute hours to the greatest extent possible (weekdays 7 a.m. to 8 a.m. and 5 p.m. to 6 p.m.) and high traffic intersections ((Greater than 10,000 ADT) – 6:30 a.m. to 8:30 a.m. and 4:30 p.m. to 6:30 p.m.);
- Early notification to emergency service providers and area drivers of any road closures or detours and the time frames of the closures or detours. This information will be posted in a local newspaper, via SANBAG's web site and will be updated on a monthly basis;
- Coordination with the Cities of San Bernardino, Loma Linda, and Redlands for community events in the area to accommodate crowds and road closures;
- Pavement damage resulting from project construction will be repaired prior to the completion of construction; and
- SANBAG shall maximize opportunities for coordinated construction and installation of improvements that occurs outside the SANBAG ROW with the Cities of San Bernardino, Loma Linda, and Redlands to the greatest extent practicable.

TR-2 **Existing LOS and V/C Year 2018 and 2038 Impact Roadway Improvements.** As part of the Project construction, SANBAG shall coordinate with the appropriate agency in which the intersection improvement is located (Cities of San Bernardino, Loma Linda, Redlands, or Caltrans) to pay SANBAG's "fair share" of the identified roadway improvements prior to the start of operations of the Project in 2018:

- ***California Street and I-10 Eastbound Off-Ramp*** – SANBAG shall coordinate with Caltrans to fund its fair share of construction for a ramp improvement to include a right-turn pocket. The existing right-turn lane will become a shared right-turn lane to accommodate the high number of right turns. The improvements will include replacing existing pedestrian and bicycle facilities, where present.

SANBAG shall provide its fair share for the funding of the following improvements prior to the year 2038:

- ***California Street and I-10 West On-Ramp*** – SANBAG shall coordinate with Caltrans to fund its fair share to the construction of a dual southbound right and a dual northbound left turn pocket. The improvements will include replacing existing pedestrian and bicycle facilities, where present.
- ***Alabama Street and Industrial Avenue*** – SANBAG shall coordinate with the City of Redlands to stripe an exclusive westbound right turn lane with 50-feet of storage to accommodate a high number of right turns. The improvements will include replacing existing pedestrian and bicycle facilities, where present.

TR-3 **Approval from CPUC for Grade Crossings and Safety Measures.** SANBAG shall coordinate with the CPUC prior to the start of construction for re-design and/or closure of all grade crossings to ensure that all grade crossings and safety improvements comply with CPUC standards. SANBAG shall provide verification to the CPUC that all rail safety measures identified in the hazard analysis as part of the "formal application" or "GO 88-B" authorization" from CPUC have been installed.

TR-4 **Recommended Pre-Signals for Queuing.** Prior to the start of operations, pre-signals shall be implemented at the following grade crossing locations and shall be operational prior to the start of 2018:

- Eastbound I-10 Ramps and California Street crossing;
- Industrial Park Avenue and Alabama Street crossing; and
- Redlands Boulevard and Tennessee Street crossing.

Prior to 2038 and if warranted based on future intersection operations (as determined through reevaluation in 5-year increments by SANBAG following procedures in the Los Angeles Metropolitan Transportation Authority (MTA) Grade Crossing Policy for Light Rail Transit), pre-signals will be implemented at the following grade crossing locations:

- Waterman Avenue and Orange Show Road Crossing (Northbound Approach);
- Orange Show Road and Waterman Avenue Crossing (Eastbound Approach;
- Redlands Boulevard and California Street Crossing; and
- Redlands Boulevard and Alabama Street Crossing.

TR-5 **Transit Operations Realignment.** SANBAG will work with affected transit service providers as part of their service realignment process (or major service change) to maximize transit efficiencies offered by interfacing existing transit service with Project operations. SANBAG shall develop a transit integration plan in coordination with local transit service providers to establish a framework for service integration. The plan shall, at a minimum, include an approach or strategy for coordinating existing transit scheduling with proposed train operations, maximizing route interfaces with the proposed station locations, and optimizing existing transit routes to minimize duplication in service.

Implementation of following Mitigation Measure would minimize adverse effects to parklands and communities services and facilities:

- PCS-1 (Coordinate Trail Planning with Local Jurisdictions)

3.3.4.1 Effects After Mitigation

Upon the implementation of Mitigation Measures TR-1, TR-2, TR-3, TR-4, TR-5, and PCS-1, no adverse effects to the local transportation network would result from the construction and operation of the Build Alternatives and Design Options under NEPA. Under CEQA, significant impacts to the transportation network would be reduced to a less than significant level.

3.4 VISUAL QUALITY AND AESTHETICS

This section describes the existing visual quality (or character) of the Study Area along with prominent visual features that contribute to the aesthetic values of the railroad corridor and surrounding area. This section also identifies pertinent regulations governing the preservation or enhancement of local visual resources as applicable to the Project. Photo documented viewpoints of the railroad corridor are presented in Appendix F, Exhibits 1A through 1E. The analysis of environmental effects focuses on changes in the visual character of the Study Area as attributable to the Project and mitigation measures are presented, as necessary.

3.4.1 Regulatory Framework

Table 3.4-1 identifies and summarizes federal, state, and local laws, regulations, and plans that are applicable to the Project.

Table 3.4-1. Pertinent Laws, Regulations, and Plans for Visual Quality and Aesthetics

Law, Regulation, or Plan	Summary and Project Nexus
Federal	
Federal Highway Administration Visual Impact Assessment Guidance	The Federal Highway Administration's (FHWA) Visual Impact Assessment (VIA) was used as part of this EIS/EIR visual assessment, and is discussed further in Section 3.4.2.2.
State	
State Scenic Highway Program (SB 1467)	The State Scenic Highway Program seeks to protect and enhance the natural scenic beauty of California highways and adjacent corridors through special conservation treatment. State Scenic Highways are classified as either "eligible" or "officially designated." In the vicinity of the Study Area, portions of I-10 east of Tennessee Street (and SR-210) are designated as an Eligible Scenic Highway by Caltrans.
Local	
City of San Bernardino Development Code	The City of San Bernardino Development Code regulates the location and use of buildings and structures within San Bernardino along with the composition, materials, textures, and colors of new structures.
City of Redlands Zoning Code	The City of Redlands Zoning Code designates, regulates, and restricts the location, appearance, and use of buildings and structures. The objective of the zoning code is to promote the compatibility of new uses with the existing character of adjacent and surrounding developments.

3.4.2 Affected Environment

Regional Setting

The San Bernardino range, trending southeast, forms the eastern limit of the Valley, along with Yucaipa and Crafton Hills and represents the dominant topographical feature in the landscape. The southern limits of the Valley are marked by alluvial highlands extending south from the San Bernardino and the Jurupa Mountains. The Study Area bisects eastern portions of the San Bernardino Valley, which is characteristic of an alluvial river valley dissected by the Santa Ana

River (SAR). This valley landscape contains moderate levels of intactness and unity with the SAR corridor contributing to a vivid and distinctive open space landscape bordered by the urban centers comprising the cities of San Bernardino, Redlands, and Loma Linda. The visual character of the SAR corridor within the Study Area is of generally moderate to high quality and contributes to the unity and intactness of the larger San Bernardino Valley.

Local Setting

The FHWA's VIA guidelines provide a framework for defining the visual setting in terms of landscape units. Landscape units provide a foundation for comparing visual effects for highway or railroad Projects and are particularly useful when a highway or railroad Project traverses visually distinct settings that can be readily defined geographically. Figure 3.4-1 illustrates the primary landscape units identified along the railroad corridor, which include:

- Landscape Unit 1 – San Bernardino
- Landscape Unit 2 – Santa Ana River
- Landscape Unit 3 – Victoria Park
- Landscape Unit 4 – West Redlands
- Landscape Unit 5 – East Redlands

Within landscape units, designated viewpoints capture distinct geographic representations that correspond with various points along a highway or rail Project. The locations of these viewpoints are illustrated in Figure 3.4-1. Ultimately, these viewpoints within each of the corresponding landscape units provide representative examples of the Project viewshed[1]. The limits of a viewshed are defined as the visual limits of the views from the Study Area. The viewshed also includes the locations of viewers likely to be affected by visual changes brought about by the Project. Because it is not feasible to capture and analyze all the views in the Study Area, it is necessary to select a number of key viewpoints that would most clearly display the visual effects of the Project. Key viewpoints also represent the primary viewer groups that would potentially be affected by the Project. For purposes of this EIS/EIR, a view is considered key if at least one of the following circumstances apply:

- Visual resources are present, regardless of the quality of the view. The sensitivity of the affected viewer group is medium or high, and the duration of the view is long-term.
- The quality of the view is medium or high, regardless of whether visual resources are present. The sensitivity of the viewer group is medium or high, and the duration of the view is long-term.
- The view is distinct, clear, and unobstructed from the highway or railroad to adjacent businesses and is viewed regularly by a large number of commuters. In this case, the viewer sensitivity is medium or high, and the view is long-term.

[1] A viewshed comprises all the surface areas visible from an observer's viewpoint.

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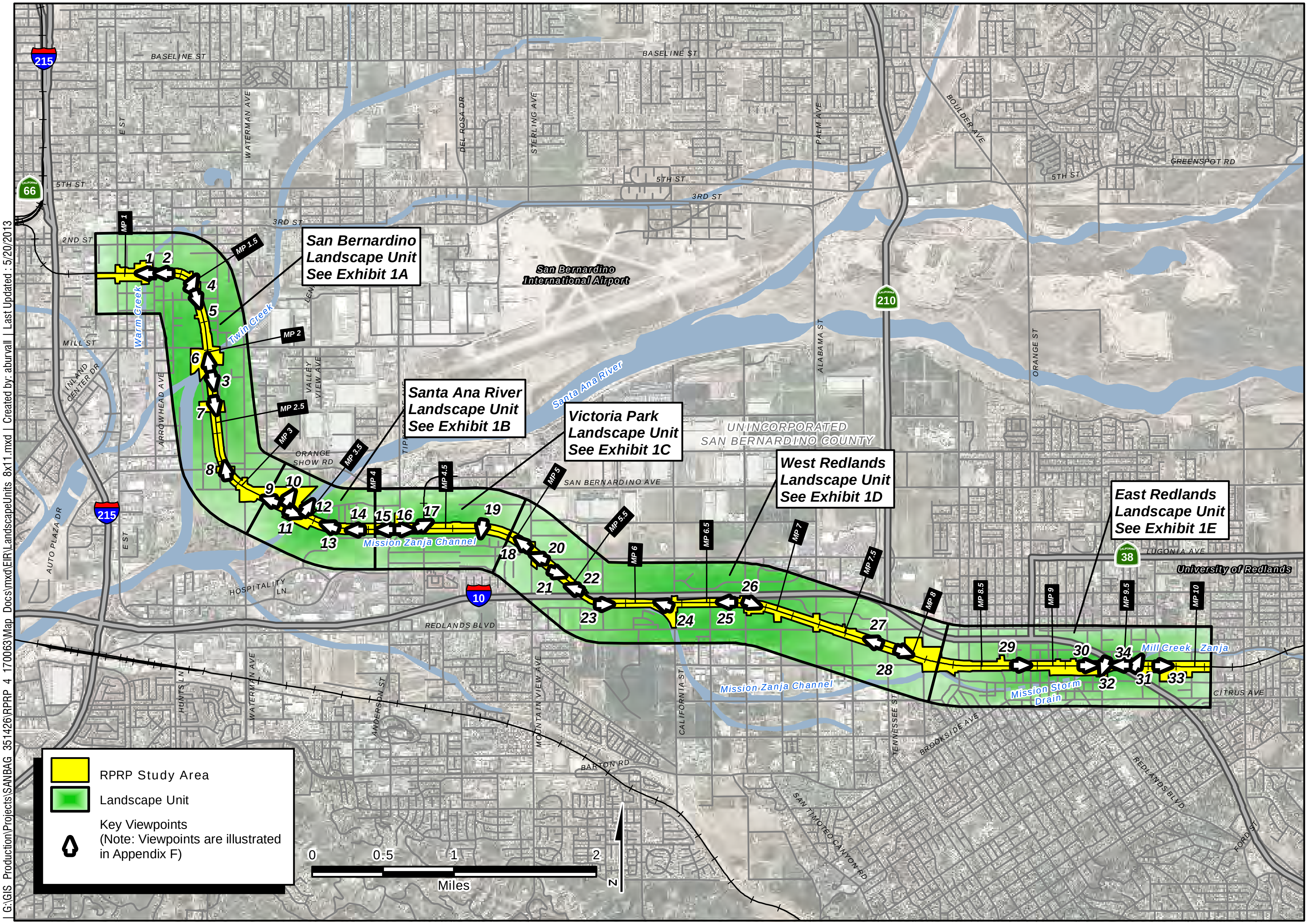

Landscape Unit Overview and Viewpoints

Figure 3.4-1

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The viewer's distance from landscape elements plays an important role in the determination of an area's visual quality. Landscape elements are considered higher or lower in visual importance based on their proximity to the viewer, which contribute to a site's overall viewshed. Generally, the closer a resource is to the viewer, the more dominant, and therefore visually important, it is to the viewer. This EIS/EIR document uses the U.S. Forest Service's (USFS) method of separating landscapes into foreground, middleground, and background views to distinguish distance when describing features, land uses, and geographic points of interests. Generally, the foreground is characterized by clear details (within 0.25 or 0.5 mile from the viewer); the middleground is characterized by loss of clear texture within a landscape creating a uniform appearance (foreground to 3-5 miles in the distance) and the background extends from the middleground to the limit of human sight (USFS 1995). The USFS foreground, middleground, and background view approach is used for describing the relative quality for each of these landscapes.

Based on these criteria, this EIS/EIR identifies 34 specific viewpoints for the five combined landscape units illustrated in Figure 3.4-1 that could be noticeably altered by the Build Alternatives and Design Options. Each of the viewpoints is photo-documented and illustrated in Exhibits 1A through 1E of Appendix F. The viewpoints were selected, as follows:

- To provide a representative cross-section for scenic quality;
- To represent typical views along the railroad corridor; and
- To represent views from a potential nearby sensitive viewer group (i.e., residents and community park patrons).

Viewers in the Project viewshed are primarily industrial (manufacturing, etc.) and commercial viewers (e.g., restaurants, hotels, office, and retail settings). However, several sections of the railroad corridor include residential viewers, existing transit riders, commuting motorists, patrons and visitors of nearby community parks (Meadowbrook Park, Meadowbrook Recreational Park, Mill Park, Victoria Park, and Sylvan Park) golf courses (San Bernardino Golf Club) and trails (i.e., Santa Ana River Trail), and university students (University of Redlands).

Visual Assessment and Visual Quality Criteria

Both natural and created features in a landscape contribute to its visual quality. Landscape characteristics influencing visual quality include geologic, hydrologic, botanical, wildlife, recreation, and urban features. Several sets of criteria have been developed for defining and evaluating visual quality. The criteria developed by the FHWA in 1981, which is used in this analysis, include the concepts of vividness, intactness, and unity. According to these criteria, none of these is itself equivalent to visual quality; all three must be considered high to indicate high quality. These terms are defined as follows:

- ***Vividness*** is the visual power or memorability of landscape components as they combine in distinctive visual patterns.
- ***Intactness*** is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements. It can be present in well-kept urban and rural landscapes, as well as in natural settings.
- ***Unity*** is the visual coherence and compositional harmony of the landscape considered as a whole. It frequently attests to the careful design of individual manmade components in the landscape.

Views of high quality may have topographic relief, a variety of vegetation, rich colors, impressive scenery, and unique natural and/or built features. Views of moderate quality may have interesting but minor landforms, some variety in vegetation and color, and/or moderate scenery. Views of low quality have uninteresting features, little variety in vegetation and color, uninteresting scenery, and/or common elements. The FHWA guidelines explain that all three criteria – vividness, intactness, and unity – must be high to indicate high quality.

Visual character and quality within the Study Area can be generally described as urban and densely developed on relatively flat topography with primarily industrial, commercial, and residential land uses. In order to characterize the visual landscape within the railroad corridor, the following discussion describes the general visual character and quality according to landscape units that correspond with major changes in land use. Figure 3.4-1 illustrates the location and orientation of each photo-documented viewpoint along the railroad corridor. The actual photo-document viewpoints are provided in Exhibits A through E of Appendix F.

Visual Quality of Landscape Units

Landscape Unit 1 – San Bernardino (Mile Post 1 through Mile Post 3)

The western extent of the Study Area starts just west of E Street in downtown San Bernardino at approximately Mile Post (MP) 1 along the railroad corridor. This section of the Study Area overlaps with the E Street parking area and station for the Downtown San Bernardino Passenger Rail Project (DSBPRP), which is scheduled for construction in late 2013. The visual character of the area within the immediate vicinity of the proposed E Street parking lot and station is documented and described in the EA/EIR prepared for the DSBPRP, which is incorporated by reference into this EIS/EIR.

To the east of E Street, the railroad corridor extends east through an area characterized by a combination of industrial land uses, isolated residential and commercial areas, and vacant properties, up to approximately MP 3. This section of the railroad corridor is characterized by foreground views that include a mixture of manmade elements such as commercial and industrial structures of varying sizes (Viewpoints 1, 3, and 7, Exhibit 1A of Appendix F), utility poles, residential uses (Viewpoint 4, Exhibit A of Appendix E) and natural elements dominated by ruderal vegetation along the railroad corridor. At MP 1.1 and 2.2 are the Warm Creek (Viewpoint 2, Exhibit 1A of Appendix F) and Twin Creek Bridges (Viewpoint 6, Exhibit 1A of Appendix F), respectively. Middleground views consist primarily of commercial and industrial buildings intermixed with isolated trees and non-native annual grassland on vacant properties and Meadowbrook Park and Meadowbrook Fields. In the background, the San Bernardino Mountains are visible to the north and east.

As described below, the vividness and intactness of this section of the railroad corridor is considered to be of low visual quality. However, the open space areas provided by adjacent vacant properties combined with distant mountain views (Viewpoint 5 and 8, Exhibit 1A of Appendix F) dilute the imposition of the surrounding manmade elements within the railroad corridor contributing to moderate levels of unity or connectivity with the surrounding landscape. Viewpoints 1 through 8 in Exhibit 1A of Appendix F provide representative photographic illustrations of existing conditions within this landscape unit.

- ***Vividness:*** The foreground is characterized by active commercial and industrial operations with isolated residential neighborhoods (Viewpoint 4, Exhibit 1A of Appendix F) that are fragments by vacant properties of varying sizes. These features in combination with existing roadways physically disrupt the distinctive views of the surrounding mountains in the background. Residents and employees in nearby commercial and industrial uses are likely to take interest in the mountains in the background, but pay minimal attention to features in the foreground and middleground views. Due to the lack of visual coherency between the manmade elements with the natural surrounding landscape, this section of the railroad corridor is considered to have low vividness.

- ***Intactness:*** Existing commercial and industrial structures, utility poles, concrete drainage channels, and roadways, including fencing and private access roads, act as encroachments in the foreground and middleground to the mountains visible in the background to the north and east of the site (Viewpoint 5, Exhibit 1A of Appendix F). The encroachments imposed by the surrounding built forms reduce visual integrity and lack contribution to any visual enhancements. The landscape is generally highly modified from its natural river valley landscape. Because of these major encroachments, this section of the railroad corridor is considered to have low levels of intactness.
- ***Unity:*** The mountains in the background are divided from discernible encroachments within the foreground and middle ground (Viewpoint 6, Exhibit 1A of Appendix F). The visual encroachments imposed by the surrounding manmade elements reduce visual coherency, however, they do not detract from the overall sense of unity exhibited by the natural elements found in middleground and distant views; especially in northern and eastern vantages (Viewpoint 7 and 8, Exhibit 1A of Appendix F) of distant mountain views (Viewpoint 8, Exhibit 1A of Appendix F). Based on these considerations, this landscape unit contains moderate levels of visual unity.

Landscape Unit 2 – Santa Ana River (Mile Post 3 to Mile Post 4)

This landscape unit starts at Mile Post 3 and terminates in the vicinity of MP 4, midway between the SAR and South Tippecanoe Avenue. In contrast to Landscape Unit 1, a majority of Landscape Unit 2 contains open space in the form of vacant or under-developed parcels (Viewpoint 9, Exhibit 1B of Appendix F) intermixed with industrial warehouses (Viewpoint 10 and 14, Exhibit 1B of Appendix F) and agricultural structures. Foreground views are dominated by the riparian corridor associated with the SAR, which intersects the railroad corridor at MP 3.4 (Viewpoint 11, Exhibit 1B of Appendix F).

The SAR includes identifiable natural features such as active point bars, braided channels, and mature vegetation along both banks (Viewpoint 12, Exhibit 1B of Appendix F). Additionally, the flat topography is accented with scattered clusters of dense tree canopies, which contribute to the intactness of the natural features along the SAR. The tracks within this segment are surrounded primarily by sand, evergreen trees, and ruderal vegetation typically found in natural settings surrounded by an urban environment (Viewpoint 13, Exhibit 1B of Appendix F). This natural landscape, which dominates much of the foreground, transitions back to urbanized development east of the SAR with commercial and industrial development located on the either side of the railroad tracks west of MP 4. Other manmade elements include the Gage Canal Crossing at MP 3.9 (Viewpoint 14, Exhibit 1B of Appendix F).

Middleground views consist of commercial and industrial buildings along with landscaped and ornamental vegetation. On clear days, the background views of the San Bernardino Mountains and the Jurupa Mountains to the north and east contribute to high levels of vividness (Viewpoints 10 and 12, Exhibit 1B of Appendix F). Mission Zanja Flood Control Channel, a vegetated channel west of the Gage Canal, generally runs parallel along the southern portion of the railroad tracks. The presence of the SAR and Mission Zanja Flood Control Channel in combination with the tree canopies in the foreground combined with views of the surrounding mountains in the background result in moderate levels of vividness, intactness, and unity.

- ***Vividness:*** The SAR dominates the foreground in the central portion of this landscape unit with the western and eastern ends ultimately transitioning into active commercial and industrial uses at MP 3 and 4, respectively. The natural features provided by the SAR result in visual relief from the previous landscape dominated primarily by active commercial and industrial operations. The strong definition of the surrounding natural landscape in the foreground combined with background views provide a sharp contrast with the existing manmade elements in the middleground. Employees in nearby commercial and industrial uses are likely to take interest in the SAR in the foreground and the surrounding mountain views in the background, but pay minimal attention to features in the middleground, which include commercial and industrial operations. This section of the railroad corridor is considered to have moderate vividness.
- ***Intactness:*** While the existing manmade elements, such as a bridge, the track, utility poles, and some commercial or industrial buildings on either side of the Santa Ana River, present visual encroachments, the level of intactness is moderate due to the integrity of SAR riparian corridor and its visual separation with adjacent urban landscapes. Additionally, in contrast with Landscape Unit 1, visual encroachments are considered relatively low and concentrated at the western and eastern ends of Landscape Unit 2 where the middleground landscape is generally highly modified from its natural river valley landscape. The natural riverine elements contained within the middleground views along central portions of this landscape unit provide continuity with mountain views in the background and are visually separated from urban encroachments to the east and west (Viewpoint 12, Exhibit 1B of Appendix F). As a result, this section of the railroad corridor is considered to have moderate levels of intactness due to the visual integrity of the pattern elements within the various natural landscapes.
- ***Unity:*** The mountains in the background are distinguished from noticeable encroachments within the middleground. These encroachments, however, do not detract from the overall sense of unity, especially in northern and southern vantages where the encroachments are dominated by natural vegetation. Although this landscape unit is essentially surrounded by urbanized development with the exception of the SAR, the resultant coherency between the natural and manmade elements contribute to moderate levels of visual unity.

Landscape Unit 3 – Park (Mile Post 4 to Mile Post 5)

This landscape unit is located in the eastern extent of San Bernardino and starts at MP 4 and terminates at MP 5. Foreground views within this landscape unit include commercial buildings north of the railroad tracks west of Tippecanoe Avenue until Richardson Street (Viewpoint 15, Exhibit 1C of Appendix F), where building types transition into single and multi-family residential dwellings until slightly past MP 5. The portion of the SANBAG ROW adjacent to residential homes contains a variety of tree species, including ornamentals, and ruderal vegetation within the street segments and along the SANBAG ROW (Viewpoint 16, Exhibit 1C of Appendix F). Victoria Elementary School and Victoria Park, which is adjacent to Victoria Elementary School, are located at South Richardson Street and south of the railroad corridor (Viewpoint 19, Exhibit 1C of Appendix F).

The foreground views found within this landscape unit are characterized primarily by manmade elements such as residential homes, utility poles, the existing railroad track, and the earthen channel of Mission Zanja Flood Control Channel. Natural elements within the foreground include ornamental and ruderal vegetation (Viewpoint 17, Exhibit 1C of Appendix F). Middleground views consist primarily of commercial and industrial uses, which are partially obscured by the buildings and vegetation in the foreground (Viewpoint 18, Exhibit 1C of Appendix F). Background views include the San Bernardino and the Jurupa Mountains range to the north and east. Although natural elements dominate background views, various built encroachments within the foreground obstruct these views. Therefore, the levels of vividness, intactness, and unity are considered low.

- ***Vividness:*** Existing residential buildings (Viewpoint 18, Exhibit 1C of Appendix F), utility poles, and the existing railroad tracks dominate foreground views within this landscape unit. Natural elements (e.g., ornamental trees and ruderal vegetation) border residential and commercial uses, including Victoria Elementary School and Park (Viewpoints 15, 18, and 19, Exhibit 1C of Appendix F) within this landscape unit. The manmade features, in combination with existing roadways physically disrupt the distinctive views of the surrounding mountains in the background. Fencing and vegetation typically obstructs direct views of this landscape for residents and employees of local commercial and industrial business. Therefore, due to contrasting visual pattern elements and limited direct visibility, this section of the railroad corridor is considered to have low vividness.
- ***Intactness:*** Existing residential and commercial structures, utility poles, and roadways, including fencing, act as encroachments in the foreground to the mountains visible in the background to the north, east, and south of the site. The visual appearance of the existing structural elements does not contribute to any visual enhancements. The landscape within this segment is generally highly modified from its natural landscape due to urban encroachments and routine maintenance activities for the Mission Zanja Flood Control Channel, which prevent the establishment of riparian vegetation (see Viewpoint 18, Exhibit 1C of Appendix F). For this reason, this portion of the Study Area is considered to have low levels of intactness.
- ***Unity:*** As discussed above, existing residential and commercial structures, utility poles, and roadways, including fencing, act as encroachments in the foreground to the mountains visible in the background to the north, east, and south of the Study Area. These encroachments within the landscape result in an incoherence in the visual pattern between the natural and manmade elements due to the mass and scale of some of the buildings. The railroad corridor is essentially surrounded by urbanized development and, therefore, results in low levels of visual unity.

Landscape Unit 4 – West Redlands (Mile Post 5 through Mile Post 8.5)

This landscape unit begins at MP 5 and terminates at MP 8.5. Mountain View Avenue marks the western extent of the City of Redlands. Foreground views within this landscape unit include single-family residential homes on either side of the Study Area until Mountain View Avenue (Viewpoint 20, Exhibit 1D of Appendix F). East of Mountain View, there is an abrupt transition into commercial and industrial buildings north of the Study Area and a prominent electrical transmission corridor with lattice towers visible at a distance (Viewpoint 21 and 22, Exhibit 1D of Appendix F). Vacant or underutilized parcels covered in ruderal vegetation are the primary land cover south of the railroad tracks. Other natural elements in this landscape unit include the Mission Zanja Flood Control Channel (Viewpoint 21, Exhibit 1D of Appendix F), which generally runs parallel to the southern portion of the railroad tracks until approximately MP 6 where it's course traverses in a southern direction. The proposed location of the layover facility is situated between MP 6 and 6.5 on an existing vacant parcel north of the Study Area (Viewpoints 23 and 24, Exhibit 1D of Appendix F). A citrus grove is located directly east of California Street at MP 6.5 (Viewpoint 27, Exhibit 1D of Appendix F). The site of the proposed New York Street Station is located at MP 8 (Viewpoint 28, Exhibit 1D of Appendix F). Jennie Davis Park, a 5.2-acre neighborhood park with picnic and playground facilities, is located at Redlands Boulevard and New York Street, just east of MP 8.

Commercial buildings and agricultural areas to the north and south of the Study Area dominate middleground views within this landscape unit. However, middleground views are obscured by the manmade and natural elements found within foreground views (Viewpoint 25, Exhibit 1D of Appendix F). Background mountain views are visible on clear days, particularly to the north, east, and south. Because manmade features are the dominant land cover within the foreground views along this landscape unit, visual pattern elements typically found in an urban, built environment, such as straight lines, a monotonous color palette, and smooth textures are found in these views. Therefore, this landscape unit is considered to have low levels of vividness, intactness, and unity.

- ***Vividness:*** Commercial and industrial buildings, utility poles, and the railroad corridor dominate the foreground within this landscape unit. Manicured and maintained ornamental vegetation is found within some of the commercial and residential areas. A small parcel of agricultural land containing a citrus grove is located at MP 6.5. However, there are no prominent natural physical or geographic features within the foreground and middleground; therefore, this area is considered to have low vividness.
- ***Intactness:*** Existing commercial structures, utility poles, and roadways, including fencing, act as encroachments in the foreground to the mountains visible in the background to the north, east, and south of the site (Viewpoint 25, Exhibit 1D of Appendix F). The visual appearance of the existing structural elements does not contribute to any visual enhancements. Isolated areas of natural and ornamental vegetation within residential areas and along the railroad corridor contribute to a complementary landscape. However, due to the imposing nature of existing buildings found along the railroad corridor, numerous encroachments often prevent access to background mountain views (Viewpoint 25 and 26, Exhibit 1E). As a result, this segment of the Study Area is considered to have a low level of intactness.
- ***Unity:*** As discussed above, existing commercial structures, utility poles, and roadways, including fencing, act as encroachments in the foreground to the mountains in the background to the north, east, and south of the site. These encroachments within this landscape unit detract from the overall sense of unity for these vantage points. Because the railroad corridor is surrounded primarily by urbanized development, the landscape is relatively homogenous; therefore, this landscape unit is considered to have low level of visual unity.

Landscape Unit 5 – East Redlands (Mile Post 8.5 through Mile Post 10)

This landscape unit begins at MP 8.5 and terminates at the eastern most boundary of the RPRP Study Area. Foreground views within this landscape unit include commercial, retail, and residential buildings and scattered vacant, light industrial, or underutilized parcels (Viewpoint 30, Exhibit 1E of Appendix F). Older, historic buildings are located starting at approximately MP 8.5 within the Redlands Santa Fe Depot District. The Downtown Redlands

Station (Viewpoint 29, Exhibit 1E of Appendix F) is located midway between MP 8.5 and MP 9 and is listed as a National Registered Historic Site. Sylvan Park (Viewpoint 31, Exhibit 1E of Appendix F) is located on the north side of the railroad tracks east of MP 9.5 and the University of Redlands is located immediately adjacent to Sylvan Park (Viewpoint 31, Exhibit 1E of Appendix F). The Mill Creek Zanja intersects the Study Area at the Mill Creek Zanja Bridge located at MP 9.4 (Viewpoint 34, Exhibit 1E of Appendix F). The proposed site for the University Station is located east of University Street, just north of the railroad tracks. Natural elements within foreground views include ruderal, ornamental, and landscaped vegetation found along the Study Area, in vacant parcels, Sylvan Park and the University of Redlands (Viewpoint 33, Exhibit 1E of Appendix F).

Middleground views consist of residential uses, primarily single family with some multi-family units, retail establishments, and vacant or underutilized parcels. Background views include the mountains to the north, east and south of the Study Area. With the exception of Landscape Unit 2, when compared with previous landscape units, this landscape unit contains less industrial uses and more vegetation that when blended with the local historical architecture result in more textural and pattern variability. Therefore, this segment is considered to have an overall moderate visual quality.

- ***Vividness:*** Although the foreground is characterized by primarily by built forms (industrial, commercial, retail, and residential buildings, utility poles, and roadways, including fencing), several natural elements, including Sylvan and Jennie Davis Parks, ornamental and ruderal vegetation are found along and adjacent to the Study Area. Additionally, although manmade, the architectural elements of the historical buildings within the Santa Fe Depot District result in visual coherency, rather than visual contrast, with the surrounding uses and views. Therefore, the overall vividness for this area is moderate.
- ***Intactness:*** Existing industrial, commercial and retail structures, utility poles, and roadways, including fencing, act as encroachments in the foreground to the mountains visible in the background to the north, east, and south of the site within some segments of the landscape unit. However, the architectural components within the historic district contribute to a more diverse setting and the existing pattern variations result in greater visual order. Additionally, the natural vegetation found within and along Jennie Davis Park, Sylvan Park, and the University of Redlands contributes to visual enhancements; therefore, resulting in a complementary landscape. As a result, this segment of the Study Area is considered to have a moderate level of intactness.
- ***Unity:*** As discussed above, existing industrial, commercial and retail structures, utility poles, and roadways, including fencing, act as encroachments in the foreground to the mountains visible in the background to the north, east, and south of the site within some segments of this landscape unit. However, these encroachments within the landscape do not detract from the overall sense of unity in northern, eastern, and southern vantages and the natural vegetation instead provide visual coherency between manmade and natural elements. The landscape surrounding the Study Area is essentially comprised of urban landscape and, therefore, the Study Area contributes to moderate levels of visual unity.

Viewer Sensitivity

Viewer sensitivity is based on the visibility of resources in the landscape, the proximity of viewers to the visual resource, the relative elevation of viewers to the visual resource, and the types and expectations of individuals and viewer groups. The criteria for identifying the importance of views are related in part to the position of the viewer relative to the resource. Visual sensitivity also depends on the number and type of viewers and the frequency and duration of views. Generally, visual sensitivity increases with an increase in total number of viewers, the frequency of viewing (e.g., daily or seasonally), and the duration of views (i.e., how long a scene is viewed). Most residential viewers are typically sensitive to visual quality and changes in visual quality, due to their familiarity with the view, investment in the area (as, for example, homeowners or long-time residents), and sense of ownership of the view. In a way, the view from residences and their yards represents a visual extension of residents' property, and changes in this view are noticeable and can result in strong positive or negative reactions.

Other non-residential viewers, with exceptions, usually have an average sensitivity to visual quality or change. These include people on the local roadway system, including commuting motorists and pedestrians. However, at those times when these "other" viewers are traveling for pleasure, they may be somewhat more sensitive to their surroundings. Recreationists also have a range of potential sensitivities. Players participating in team sports activities and spectators at such sports events are presumed to have a low to average sensitivity to the visual setting outside the playing field because their attention is generally intently focused on the playfield. By contrast, recreationists engaged in bicycling, hiking and running often have higher levels of sensitivity because they frequently choose settings with more visual appeal for their recreational activities

The Study Area can be seen by three types of sensitive viewer groups: those residing in nearby residential uses, business owners and patrons, and students attending nearby schools.

Scenic Roadway Designation

Interstate 10 (I-10) is designated by Caltrans as an eligible scenic highway starting at the State Route (SR)-210 interchange proceeding south towards and through Riverside County. This portion of I-10 generally runs parallel with the Project railroad corridor until it overpasses the Study Area at the Mill Creek Zanja Bridge (MP 9.4). Additionally, SR-210 and SR-38 are also designated eligible scenic highways. However, due to geographic proximity, both highways are generally outside the viewshed of the Study Area. There are no state designated scenic vistas along the SANBAG ROW; however, portions of the Study Area are visible from scenic vantages to the east in the San Bernardino Mountains.

Light and Glare

The Study Area is located in an urban setting and existing sources of light and glare is associated with surrounding commercial, industrial and residential uses. Sources of light in these areas include exterior and interior building lighting. Additional sources of light include illuminated signs, streetlights, and signals. Sources of glare in the Study Area include windows and reflective building materials such as metal siding or roofs. Mobile sources of light and glare originate primarily from automobiles and buses. Roadways generate glare both during the night hours when cars travel with lights on, and during daytime hours due to the sun's reflection from cars and pavement surfaces.

When light is not sufficiently screened and spills over into areas outside of a particular development area the effect is called "light trespassing." Due to the urban nature of the existing surrounding land uses, the existing railroad corridor experiences light trespassing from the variety of lighting sources generated by surrounding uses. The exception to this occurs in the vicinity of the railroad corridor at Bridge 3.4 where adjacent areas consist of open space associated with the SAR and western extent of the Mission Zanja Flood Control Channel.

3.4.3 Environmental Impacts/Environmental Consequences

3.4.3.1 Effect Criteria

The Build Alternatives and Design Options would have an adverse effect on the visual quality and aesthetics of the Study Area if they would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

3.4.3.2 Methodology

The FHWA's VIA for Highway Projects, March 1981, provides an analytical framework for identifying and assessing qualitative changes to the visual environment that could be introduced as part of a transportation Project. The VIA methodology generally satisfies the requirements of both NEPA and CEQA as they relate to aesthetic and visual resource impacts and, therefore, is applied in this EIS/EIR. This visual impact analysis was based on field observations conducted by HDR staff on November 14, 2011, architectural renderings of the stations and components, where available, and a review of maps (e.g., General Plan Maps) and aerial photographs for the Study Area. The analysis of the Project-related effects was based on an evaluation of the changes to the existing visual resources that would result from Project implementation in the context of existing conditions. In making a determination of the extent and implications of the visual changes, consideration was given to the following:

- Specific changes in the visual composition, character, and valued qualities of the affected environment;
- The visual context of the affected environment;
- The extent to which the affected environment contained places or features that have been designated in plans and policies for protection or special consideration;
- The numbers of viewers, their activities, and the extent to which these activities are related to the aesthetic qualities affected by the Project-related changes.
- Viewer sensitivity, including the following:
    - Visibility of the landscape;
    - Proximity of viewers to the visual resources;
    - Frequency and duration of views;
    - Number of viewers;
    - Types of individuals and groups of viewers; and
    - Viewers' expectations as influenced by their activity.

3.4.3.3 Criteria Requiring No Further Evaluation

The following criteria were determined to have no effects during the construction and operations phases of Build Alternatives and Design Options analyzed. The following discusses the rationale in making this determination.

Changes to Scenic Vistas. The Study Area is located within an urban setting consisting primarily of industrial, commercial, and residential uses. The views along the railroad corridor are of low to moderate quality and visual resources are limited to distant views of San Bernardino and Jurupa Mountain Ranges. There are no scenic vistas present within the Study Area as designated by the State or the cities of San Bernardino and Redlands. Views of the Study Area from adjacent upland areas would be largely unchanged with the addition of the Project and the existing urban character of the valley floor would be maintained. As such, based on the methodology and the applied effect criterion, no construction or operational effects would occur under NEPA. No impact would occur under CEQA.

Changes to Scenic Highways. The Study Area is located within an urbanized setting with relatively level topography and covered predominantly by urban forms of development. The eastern portion of the Study Area, east of California Street, generally runs parallel with the I-10. The easternmost portion of I-10 is designated as eligible for the State Scenic Highway Program. This segment of I-10 is elevated approximately 20 feet above the prevailing ground surface for the Study Area and, therefore, the railroad corridor is generally not directly visible from this segment of I-10. Because construction activities would occur at elevations below the I-10 overpass, the construction of the Project would not interfere with viewsheds visible from the I-10 freeway. Further, passenger rail operations would occur at grade and would generally not be viewable from the I-10. Therefore, no construction or operational effects would occur to scenic highways under NEPA. No impact would occur under CEQA.

3.4.3.4 Assessment of Environmental Effects

EFFECT 3.4-1	**Changes to Visual Character or Quality.** Implementation of the Project could substantially degrade the existing visual character or quality of the Study Area and its surroundings.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, the Project would not occur and the existing conditions of the railroad corridor would remain. No immediate construction activities would occur under this alternative; however, future track maintenance and bridge replacement would be required within the next 10 years. These improvements would be limited to the western three miles of the railroad corridor (e.g., west of Tippecanoe Avenue) and would occur within the existing SANBAG ROW. The No Build Alternative would not include any bridge improvements east of Tippecanoe Avenue or the construction of a new train layover facility. Based on these circumstances and in considering the disturbed nature of the railroad corridor, no adverse effect would occur under NEPA. Under CEQA, the impact would be less than significant.

Direct Effects from Long-Term Operations

Limited freight operations and maintenance activities would continue similar to existing conditions. Under the No Build Alternative, no new structures would be constructed, which could otherwise result in changes to the existing visual character along the railroad corridor. Based on this circumstance, no effect would occur under NEPA. Under CEQA, no impact would occur.

Indirect Effects

Under this alternative, existing conditions would generally be maintained, with albeit some minor changes, along the SANBAG ROW as a result of track maintenance and bridge replacement. It is unlikely that these activities would result in indirect effects to visual resources outside the SANBAG ROW. In this context, no effect to visual quality would occur under NEPA. Under CEQA, no impact would occur.

BUILD ALTERNATIVES

Direct Effects from Temporary Construction

The Study Area is located within an urbanized setting ranging from low to moderate visual quality. Construction impacts along the proposed track alignment would result in short-term visual effects and a temporary alteration of the existing visual quality along the railroad corridor during the construction period as a result of earthmoving and other activities (i.e., staging/stockpiling, presence of construction equipment, and temporary traffic barricades). In addition to short-term visual effects, tree removal would be required due to construction activities in some areas. Although construction would be temporary in duration, these activities would be visible from most of the adjacent commercial/industrial properties, residential properties, and public viewing areas including schools and parks throughout Landscape Units 1, 2, 3, 4, and 5.

Landscape Units 1, 3, and 4

As described in the affected environment, existing visual quality within Landscape Units 1, 3, and 4 is generally low. These landscape units are generally urban in character consisting primarily of commercial, industrial, and residential land uses and minimal open space. Construction activities would result in the temporary obstruction of views to and from the railroad corridor alignment. Staging areas located adjacent to the Warm Creek Bridge and the Twin Creek Bridge (both located in Landscape Unit 1) are surrounded by commercial and/or industrial uses. Commercial and industrial uses are not considered sensitive to changes in the visual setting.

The location of the staging areas at the proposed layover facility (Landscape Unit 4) is adjacent to residential uses to the south. Victoria Park and Victoria Elementary School, located within Landscape Unit 3, are surrounded primarily by residential uses. Residents, schools, and parks fronting the SANBAG ROW would have direct lines of sight of construction activities. Given the subjective sensitivity of individuals to visual changes, especially where these activities are concentrated for longer durations (e.g., staging areas) and the close proximity of existing residences, these changes are considered an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure VQA-1 (Screening of Construction Staging Areas) is proposed to screen construction staging areas from nearby sensitive viewers.

Landscape Units 2 and 5

Overall, visual quality within Landscape Units 2 and 5 is considered to be moderate due to the prevalence of natural elements and architectural diversity, respectively. The staging area located adjacent to the Santa Ana River Bridge (Landscape Unit 2) is adjacent to commercial/industrial uses, which is also visible from the SAR Multi-Use Trail, which follows the eastern bank of the SAR. A similar situation exists within the Landscape Unit 5 where staging is proposed just south of the SANBAG ROW and west of I-10. Construction equipment and materials associated with staging areas that would be located near residential and park uses would temporarily reduce visual integrity during the construction phase of the Project. Residents, schools, and parks fronting the railroad SANBAG ROW would have direct lines of sight of construction activities. As discussed for Landscape Units 1, 3, and 5, the sensitivity of individuals to visual changes in existing residential areas, parks, and schools would result in an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure VQA-1 is proposed to screen construction activities at staging areas over the duration of Project construction.

Direct Effects from Long-Term Operations

Landscape Units 1, 3, and 4

As previously discussed, visual quality within these landscape units is generally characterized as low. Once operational, improvements made to the tracks, bridges and the addition of a new layover facility and stations would conform to the current land use of the area and blend in with existing development. Additionally, the proposed development would serve to upgrade the existing railroad and improve buildings and structural crossings that are of similar height and character to the surrounding and existing structures. For example, the selected canopy structure for the New York Street Station (Landscape Unit 4) would be designed to be visually cohesive with the surrounding visual character of Landscape Unit 4 serving both a functional and an aesthetic purpose. Design Options currently under consideration are illustrated in Figure 2-4A.

Although the station canopies and train layover facilities would be similar to existing architectural elements within the Study Area, the design and layout of one or more of these facilities could be inconsistent with other existing or planned uses. Additionally, given the subjective nature of visual resource effects, it is possible that the proposed uses or certain architectural features associated with these uses could be perceived as adverse by near-by sensitive viewers (e.g., residences and parks), thus resulting in a deterioration of local visual quality. Additionally, the removal of ornamental trees, as required outside SANBAG's ROW, could also contribute to additional deterioration of visual quality. This is considered an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measures VQA-2 (Enhance Exterior Appearance of Structural Facilities) and VQA-3 (Tree Replacement) are proposed to minimize long-term effects to visual quality.

The proposed layover facility would become a prominent new feature within Landscape Unit 4 and, therefore, would result in a modification to the existing visual environment. The proposed layover facility is proposed on a commercially zoned property and, therefore, would introduce an industrial-type use to the landscape that may not blend with adjacent uses. Additionally, the layover facility would be a significant new physical feature within the City of Redland's East Valley Corridor. The Project would convert the vacant land area to a train layover facility, which by some, may be considered less aesthetically desirable than that of the existing viewshed. This is considered an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measures VQA-2 and VQA-3 are proposed to minimize potential adverse effects to visual quality.

Under the Preferred Project Alternative, to prevent scour and to minimize disruption to subgrade track alignment, the northern bank of the Mission Zanja Flood Control Channel would be lined with an Articulated Concrete Block (ACB) structure from the SAR to the site of the proposed layover facility (Landscape Units 2, 3, and 4). However, because the ACB will be located on the northern side of the channel, it would not be easily visible from locations beyond the SANBAG ROW. Additionally, ACB allows for plant growth; similar, to what would naturally occur along the channel under the Reduced Project Footprint in the absence of continued maintenance by SBCFCD. No adverse effect associated with the ACB is anticipated to occur under NEPA. Under CEQA, the impact would be less than significant.

Landscape Units 2 and 5

As previously discussed, overall visual quality within these landscape units is moderate due to the prevalence of natural elements and architectural diversity, respectively. Sensitive land uses within these landscape units include residential (both landscape units) uses, the Santa Ana River Trail (Landscape Unit 2), Sylvan Park (Landscape Unit 5), and the University of Redlands (Landscape Unit 5). The introduction of the stations, bridge improvements, and new tracking would add to the existing built environment within each landscape unit. The more prominent urban form resulting from these improvements would increase the contrast between the railroad corridor and natural elements within each landscape unit. The additional urban forms of development proposed in conjunction with the Project would ultimately modify the existing visual environment within these two landscape units thereby potentially reducing visual vividness. Therefore, an adverse effect would occur under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measures VQA-2 and VQA-3 are proposed to minimize any potential long-term deterioration in visual resources.

Indirect Effects

To minimize noise impacts from passenger rail operations, noise barriers (or sound walls) may be placed along areas adjacent to sensitive land uses (i.e., residential land uses, parks, and schools) along the railroad corridor and within Landscape Units 1, 3, 4, and 5. In addition to residential areas, specific sensitive uses within these landscape units include Victoria Elementary School and Park (Landscape Unit 3), Jennie Davis Park (Landscape Unit 4) and Orangewood Continuation High School (Landscape Unit 4). The physical scale of sound barriers at sensitive receptor locations along the railroad corridor could also be perceived as obstructive to adjacent fore, middle, or background views relative to existing views along the railroad corridor. This would be especially true in instances where no fencing or obstructions currently exist and would be considered an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure VQA-4 (Sound Barrier Screening and Surface Treatments) is proposed to minimize this indirect effect of constructing sound barriers.

Construction and installation of thousands of feet of very tall (up to 12-feet) noise barriers would create a substantial aesthetic change where the noise barriers are not currently present. In particular, the sound barriers with a north-south orientation could obstruct afternoon or morning sunlight to adjacent residences (e.g., along Dorothy Avenue in Landscape Unit 1). In the same context, the Study Area is frequently subject to vandalism (graffiti); therefore, sound barriers would pose a likely target for vandalism that could further contribute to existing urban blight conditions within Landscape Units 1 and 4. Additionally, visual impacts would result for residential viewers in Landscape Unit 3 as a result of the loss of views to the south of the Mission Zanja Flood Control Channel of Victoria Park. Likewise, viewers of Landscape Unit 5 in the vicinity of the University of Redlands would experience obstructed views of Sylvan Park. Sound barriers located near these uses could also obstruct background views of the surrounding mountains from within each of the parks. The placement of new sound barriers would create a manufactured urban built form visually dominating park views and contrasting with the scale of the architectural components found within the parks. These effects would be adverse under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure VQA-4 is proposed to minimize these indirect effects of constructing sound barriers.

DESIGN OPTIONS 1 AND 3

Direct Effects from Temporary Construction

Construction of the Project under these Design Options would involve temporary negative aesthetic effects similar to the Preferred Project, including clearing and grading as well as the presence of construction equipment and materials. These activities would result in temporary exposure of graded surfaces, construction debris, and the presence of construction equipment and heavy truck traffic. These effects would be adverse under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure VQA-1 is proposed to screen construction staging areas over the duration of construction.

Direct Effects from Long-Term Operations

Landscape Unit 2

The main distinguishing feature under Design Option 1 is the relocation of the proposed train layover facility as detailed in Chapter 2. Under Design Option 1, the proposed layover facility would be built on land zoned Light Industrial (IL) in the City of San Bernardino and within Landscape Unit 2 where the visual quality is generally moderate due to the presence of the SAR. Recreational enthusiast visiting and using the SAR would have direct line of sight line views of the layover facility; however, it would be of short duration in the context of the SAR Trail. However, the train layover facility would not be placed near residential uses; hence, there would be a reduction in operational-related visual effects. Similarly, under Design Option 3, SANBAG will develop a station at Waterman Avenue location, instead of at Tippecanoe Avenue. The station at Waterman Avenue would not be visible from the SAR due to distance. Additionally, existing buildings would prevent any potential direct sight line views of the station. Therefore, no adverse effect under NEPA would occur. Under CEQA, a less than significant impact would occur.

Landscape Unit 4

Under Design Option 2, operations of the proposed layover facility would integrate layover operations with existing train layover facilities to the west. As such, operations related effects associated with the layover facility would not occur. Therefore, no effect is anticipated to occur under NEPA. Under CEQA, no impact would occur.

Within the remaining portions of the Study Area, Project-related impacts to overall visual quality would be similar for other Project components proposed within Landscape Units 1, 2, 3, 4, and 5. For this reason, effects to overall visual quality would be adverse under NEPA. Under CEQA, these impacts would be significant. Mitigation Measures VQA-2 and VQA-3 are proposed to minimize any potential long-term deterioration in visual resources.

Indirect Effects

Indirect effects of the proposed layover facility would be minimized under these alternatives. However, indirect effects related to the placement of noise barriers would remain adverse under NEPA. Under CEQA, impacts to visual resources would be significant. Mitigation

Measure VQA-4 is proposed to minimize impacts to visual resources as a result of the placement of sound barriers.

DESIGN OPTION 2

Direct Effects from Temporary Construction

Construction-related effects under this design option would be similar to the Preferred Project, with the exception of a reduced construction area due to the Project's integration with other existing layover facilities. In this context, this design option could result in an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure VQA-1 is proposed to screen construction-related staging.

Direct Effects from Long-term Operation

Under Design Option 2, operations of the proposed layover facility would integrate layover operations with existing train layover facilities to the west. As such, operational related effects associated with the layover facility would not occur, including degrading the visual character of the surrounding landscape. Therefore, no adverse effect is anticipated to occur under NEPA. Under CEQA, a less than significant impact would occur.

Within the remaining portions of the Study Area, Project-related impacts to overall visual quality would be similar for other Project components proposed within Landscape Units 1, 2, 3, 4, and 5. For this reason, effects to overall visual quality would be adverse under NEPA. Under CEQA, these impacts would be significant. Mitigation Measures VQA-2 and VQA-3 are proposed to minimize any potential long-term deterioration in visual resources.

Indirect Effects

Indirect effects associated with Design Option 2 would be similar to those identified for the Preferred Project. The construction of sound barriers would result in an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure VQA-4 is proposed to minimize aesthetic-related effects associated with the placement of sound barriers.

EFFECT 3.4-2	**New Sources of Nighttime Lighting and Glare.** The Project would create new sources of light and glare, which could adversely affect day or nighttime views in the Study Area.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

No immediate construction activities would occur under this alternative; however, future track maintenance and bridge replacement would be required within the next 10 years. These improvements would be limited to the western three miles of the railroad corridor (e.g., west of Tippecanoe Avenue) and would occur within the existing SANBAG ROW. The No Build Alternative would not include any track or bridge improvements east of Tippecanoe Avenue or the construction of a new train layover facility. Hence, no adverse effect is anticipated to occur under NEPA. Under CEQA, the impact would be less than significant.

Direct Effects from Long-Term Operations

Under the No Build Alternative, the Project would not occur and existing freight operations would continue along the railroad corridor. Based on these circumstances and in considering the disturbed nature of the railroad corridor, no effect would occur under NEPA. Under CEQA, no impact would occur.

Indirect Effects

Limited freight operations and maintenance activities would continue similar to existing conditions. Therefore, no indirect effect is anticipated to occur under NEPA. Under CEQA, no impact would occur.

BUILD ALTERNATIVES AND DESIGN OPTIONS 1 AND 3

Direct Effects from Temporary Construction

The Build Alternatives and Design Options 1 and 3 would include construction activities such as grading, routine construction activities, and truck shipments. Sensitive land uses within each of the landscape units include residential uses, visitors at SAR Trail, Jennie Davis Park and Sylvan Park, and students attending Orangewood Continuation High School, and the University of Redlands. There would likely be a high awareness of Project construction from residents and visitors within these sensitive land use areas. During construction, nighttime lighting would predominantly consist of security lighting. All security lights would be directed on-site and would be properly shielded and directed downward. However, sensitive uses in surrounding residential communities and parks exposed to activities for longer durations (e.g., staging areas) could be sensitive to the introduction of new security lighting within construction areas. Therefore, an adverse effect would occur under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure VQA-1 is proposed to help in screening lighting sources from staging areas.

Additionally, at the height of construction, there may be a need for construction activities to occur over the course of nighttime hours thereby necessitating lighting. In most instances, such lighting would not be much greater than lighting generated by surrounding commercial, industrial, and residential uses and street lighting. However, if construction-related lighting were to spill over into adjacent residences, the lighting source would be perceived as a nuisance. This would be considered an adverse effect under NEPA and a significant impact under CEQA. Mitigation Measure VQA-5 (Minimize Exterior Lighting in Adjacent Uses) is proposed to minimize the effects of nighttime lighting.

Streetlights along the tracks and at at-grade crossing intersections along the SANBAG ROW may require relocation and/or replacement to accommodate the proposed rail infrastructure and street improvements. The relocation of streetlights could redirect lighting to sensitive locations thereby resulting in an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure VQA-5 is proposed to minimize spillover of nighttime lighting in adjacent areas.

Direct Effects from Long-Term Operations

Landscape Units 1, 2, 3, and 5

The Build Alternatives and Design Options 1 and 3 would require the replacement or retrofitting of up to six structural crossings to facilitate the loading requirements of the Metrolink trains and track foundation. However, proposed structural improvements are not anticipated to generate new lighting sources nor would they result in the creation of new glare sources. Materials used for the bridge improvements would be consistent with all applicable local standards related to the use of non-reflective materials as outlined in Section 18.12.170 of the Redlands Municipal Code and Article IV, Chapter 19.38 of the San Bernardino Development Code. Therefore, no adverse effect under NEPA would occur. Under CEQA, a less than significant impact would occur.

The Project includes new at-grade crossings. Warning devices include passive railroad crossing signs, a simple bell, flashing light signals, and flashing light signals with gates. Lamp units on flashing light signals consist of incandescent lamps or light emitting diode (LED) lamps. These safety devices would create a new source of light in areas that include residential uses. The signals would mainly operate during daytime hours, with the exception of winter months when operations would overlap with darker hours in the evening. These light sources would operate intermittently in conjunction with passing trains and would be used in an urban area that contains existing lighting sources; and therefore, no adverse effect would occur under NEPA. Under CEQA, this impact is considered less than significant.

Four new stations and adjacent parking areas are proposed to facilitate passenger transfers and accommodate commuters with specific destinations within proximity to corresponding stations. The stations would have shade structures to individually distinguish each station and to compliment contextual surroundings. Figure 2-4A illustrates the optional canopies being considered by SANBAG. It is anticipated that materials used for stations would be consistent with all applicable local standards related to the use of non-reflective materials. Additionally, the new stations would have adequate lighting for station operations, parking lots, and safety of station patrons. SCRRA standard recommendations for station lighting include an average of 5 foot-candles of light for platform stairways and an average of 10-foot candles at all other areas, including station canopies. This would result in new sources of operational lighting at the stations. Therefore, an adverse effect would occur under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure VQA-5 (Minimize Exterior Lighting in Adjacent Uses) is proposed to minimize the spillover of nighttime lighting from stations and parking lots to adjacent areas.

Landscape Unit 4

The train layover facility is proposed on a long narrow site immediately south of I-10 and west of California Street in Landscape Unit 4. It is anticipated that materials used for layover facility would be consistent with Section 18.12.170 of the Redlands Municipal Code. However, site lighting would be provided for servicing the equipment at night and for night operation at the service pit located at the layover facility. This would result in the creation of new nighttime lighting sources at the layover facility that would be visible from residential properties located directly south of the railroad corridor. As such, this new lighting would be considered an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measures VQA-3 and VQA-5 are proposed to minimize the effects of nighttime lighting from the proposed layover facility.

Indirect Effects

The Build Alternatives and Design Options would result in the addition and operations of commuter trains would introduce supplementary sources of light to the area. Light sources from the trains would be mobile, intermittent, and in brief duration. In instances where operations travel through commercial and industrial uses, these effects would be negligible. In residential neighborhoods and, especially in areas with minimal or no lighting, these spillover could result in a substantial increase in light to the surrounding areas. However, given that train operations would generally occur during daytime hours, no adverse effect would occur under NEPA. Under CEQA, this impact is considered less than significant.

DESIGN OPTION 2

Direct Effects from Temporary Construction

With the exception of the location of the layover facility, all other Project components would remain the same for all other landscape units. Construction-related lighting could result in an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measures VQA-1 and VQA-5 are proposed to minimize the effects of nighttime lighting during construction.

Direct Effects from Long-Term Operations

Design Option 2 would integrate Project-related layover operations with existing Metrolink layover operations at existing off-site facilities. Therefore, this design option would not introduce a new source of daytime and nighttime lighting from the proposed layover facility. Therefore, no adverse effect would occur under NEPA. Under CEQA, a less than significant impact would occur.

With the exception of the location(s) of the layover facility, all other Project components remain the same and, therefore, an adverse effect would occur under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measures VQA-3 and VQA-5 are proposed to minimize the effects of nighttime lighting on adjacent areas.

Indirect Effects

Indirect effects from nighttime lighting sources would be similar to the Preferred Project and, therefore, no adverse effect would occur under NEPA. Under CEQA, the impact would be less than significant.

3.4.4 Mitigation Measures

The following mitigation measures are proposed for all the Build Alternatives and Design Options.

VQA-1 **Screening of Construction Staging Areas.** For construction staging areas within 500 feet of a residence, park, or educational facility, the contractor will be required to shield the staging area to the extent feasible and coordinate with the local jurisdiction regarding the type and method of screening, which may include but is not limited to, the use of fence slats, netting, or mesh or tarps. SANBAG shall limit construction to daylight hours to the extent possible. If nighttime lighting or construction is necessary, the SANBAG shall ensure that unshielded lights, reflectors, or spotlights are not located and directed to shine toward or be directly visible from adjacent properties or streets. To the extent possible, SANBAG shall minimize the use of nighttime construction lighting within 500 feet of existing residences. This measure shall be identified on grading plans and in construction contracts.

VQA-2 **Enhance Exterior Appearance of Structural Facilities.** The external appearance of the stations and layover facility, including the choice of color and materials, shall seek to reduce the visual impact of these facilities on adjacent land uses. Bright reflective materials and colors shall be avoided. As appropriate, the exterior design of these facilities should follow design guidelines provided in applicable land use plans. Minimum exterior design requirements shall include, but are not limited to, the following:

- Painting (with earth-colored tones) of structural façades to blend with surrounding land uses;
- Maximize the use of textured or other non-reflective exterior surfaces and non-reflective glass to prevent glare;
- Use of fencing or structural materials, shall be similar to those used by nearby land uses and compatible with surrounding architecture;
- Development of a landscaping plan for each station and layover facility site that uses a combination of locally derived native vegetation, earthen features (e.g., boulders), and, if appropriate, topographical separations (e.g., berms) to maximize site appearance and shield the new facilities from nearby sensitive receptors to the extent feasible; and
- Clustering of structural facilities to maximize open space buffering.

SANBAG shall coordinate final design plans with the cities of San Bernardino and Redlands prior to final approval.

VQA-3 **Tree Replacement.** Prior to construction, SANBAG shall have a registered arborist conduct a tree survey to identify native and ornamental trees requiring removal outside SANBAG's ROW. The arborist will identify measures to avoid and minimize indirect impacts on trees, where feasible, and develop a plan for the replacement of trees that cannot be avoided. The plan will include planting and irrigation design details and a weaning schedule for the establishment period. Trees with a diameter at breast height of 6 inches or greater will be replaced at a minimum ratio of 1:1 and consistent with City of Redlands and San Bernardino standards.

VQA-4 **Sound Barrier Screening and Surface Treatments.** To reduce effects associated with the sound walls, where SANBAG ROW widths allow, drought tolerant landscaping (i.e., trees, vines, and/or shrubs) shall be provided. If the SANBAG ROW width is insufficient to permit landscaping or if landscaping cannot adequately reduce visual impacts, surface treatments that are compatible with surrounding architecture shall be applied to the outside of the sound walls (residential or school facing side). Architectural detailing such as pilasters, wall caps, interesting block patterns, and offset wall layouts shall be used to add visual interest and reduce apparent height of the walls. SANBAG shall coordinate the final design plans with the cities of San Bernardino and Redlands, as applicable, prior to final approval.

VQA-5 **Minimize Exterior Lighting in Adjacent Uses.** To prevent unintended spillover of lighting, lighting fixtures constructed or relocated as part of the Project shall be oriented and focused onto the specific on-site location intended for illumination (e.g., parking lots) and shielded away from adjacent sensitive uses (e.g., schools, residential properties) and public rights of way to minimize light spillover onto off-site areas. New driveways shall be located and oriented into parking lots, to the extent feasible, in a manner that will not result in headlights from vehicles entering or exiting the parking areas oriented directly at off-site sensitive uses. SANBAG shall coordinate the final design plans with the cities of San Bernardino and Redlands, as applicable, prior to final approval.

3.4.4.1 Effect After Mitigation

Upon the implementation of Mitigation Measures VQA-1, VQA-2, VQA-3, VQA-4, and VQA-5, no adverse effect in relation to visual character or quality, and nighttime lighting would result under NEPA. Under CEQA, Project-related impacts visual resources and aesthetics would be reduced to a less than significant level.

With the implementation of Mitigation Measure NV-4, SANBAG may construct sound barriers at one or more locations within Landscape Units 1, 2, 3, 4, and 5. Sound barriers although effective in their reduction of noise levels, also create new long, linear physical obstructions in the landscape that could be considered disruptive visually to one or more individuals by eliminating existing middle or background views of moderate value. Figures 8-2A through 8-2H in Appendix H1 identify the locations of each sound barrier, which total approximately 23,910 linear feet (or 4.5 miles) in the absence of quiet zones (see Mitigation Measure NV-3). Even with the inclusion of surface treatments, the magnitude of these physical features would visually dominate the railroad corridor, in the absence of quiet zones, thereby resulting in an adverse effect under NEPA. Under CEQA, the proposed mitigation would not be sufficient in reducing the indirect impact of sound barriers in the absence of quiet zones and the residual impacts on the visual character of Landscape Units 2 and 5 is considered significant and unmitigable.

With the implementation of quiet zones as proposed in Mitigation Measure NV-3 in combination with other noise mitigation measures, including but not limited to sound barriers, and the vehicle type selected (e.g. DMU verse locomotive) the length of sound barriers would be substantially less. For example, under the locomotive vehicle option, the length of sound barrier would be reduced to 10,740 linear feet (or 2.2 miles) with the sound walls being more evenly distributed throughout the corridor. Under the DMU vehicle option, the length of sound barrier would be further reduced to 5,900 linear feet (or 1.1 mile). In this context and with the implementation of a quiet zone, the magnitude of the sound barriers would be substantially less, such that Mitigation Measure VQA-4 would be effective in minimizing the adverse effects of sound barriers under NEPA. Under CEQA, the visual impact would be reduced to a less than significant level.

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3.5 AIR QUALITY AND GLOBAL CLIMATE CHANGE

This section provides a description of existing air quality conditions within the Study Area and applicable federal, state, and local regulations. Potential adverse effects to air quality and global climate change as a result of the Build Alternatives and Design Options are evaluated and, if necessary, mitigation is proposed. Information contained in this section is summarized from the *Redlands Passenger Rail Project Air Quality and Greenhouse Gas Technical Report* (ICF 2014a – see Appendix G1), *the Redlands Passenger Rail Project Air Quality and Greenhouse Gas Technical Addendum* (ICF 2013 – see Appendix G2), and information produced by local and State agencies.

3.5.1 Regulatory Framework

Table 3.5-1 identifies and summarizes federal, state, and local laws, regulations, and plans that are applicable to the Project.

3.5.2 Affected Environment

Regional Setting

The Study Area is located within the eastern portion of the San Bernardino Valley, which is located within the Southern California Air Basin (SCAB). The SCAB is an area of approximately 6,745 square miles bounded by the Pacific Ocean to the west and south, and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The terrain and geographical location determine the distinctive climate of the SCAB, which is a coastal plain with connecting broad valleys and low hills.

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

The greatest air pollution effects in the SCAB occur from June through September, mainly because of the combination of large amounts of pollutant emissions, light winds, and shallow vertical atmospheric mixing. This frequently reduces pollutant dispersion, causing elevated air pollution levels. Pollutant concentrations in the SCAB vary with location, season, and time of day. Ozone concentrations, for example, tend to be lower along the coast, higher in the near inland valleys, and lower in the far inland areas of the SCAB and adjacent desert (Appendix G1).

Climate

The mean annual temperature in the vicinity of the Study Area is 64.1 degrees Fahrenheit (°F). In the summer, the average temperatures within the Study Area is a high of 93.7°F and a low of 57.6°F, while the average winter temperatures within the Study Area is a high of 67.3°F and a low of 39.4°F, respectively. There is a wide range in seasonal temperatures, with temperatures exceeding 100°F an average of 107 times per year and dropping below 32°F an average of 19 times per year. The average annual rainfall is 16.12 inches, with range of 5.45 inches (low in 1947) to 35.45 inches (high in 1941) (Appendix G1). Wind patterns for 2005 through 2007 within the Study Area display a nearly unidirectional flow, primarily from the southwest, at an average speed of 3.22 miles per hour (Appendix G1).

Table 3.5-1. Pertinent Laws, Regulations, and Plans for Air Quality and Global Climate Change

Law, Regulation, or Plan	Summary and Project Nexus
Federal	
Clean Air Act	The Federal Clean Air Act (CAA), enacted in 1963, established federal air quality standards, known as National Ambient Air Quality Standards (NAAQS); and defines nonattainment areas as geographic regions designated as not meeting one or more of the NAAQS. The CAA also requires that a State Implementation Plan (SIP) be prepared for local areas not meeting these standards (nonattainment area), and a maintenance plan be prepared for each former nonattainment area that subsequently demonstrated compliance with the standards. Title I provisions were established with the goal of attaining the NAAQS for six major pollutants: ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 10 microns in diameter (PM_{10}), ultra-fine particulates less than 2.5 microns in diameter ($PM_{2.5}$), carbon monoxide (CO), lead (Pb). Appendix G includes the NAAQS as well as ambient air quality standards for California, known as the California Ambient Air Quality Standards (CAAQS). Title II provisions require use of cleaner-burning gasoline and other cleaner-burning fuels, such as methanol and natural gas. *Transportation Conformity* Under the 1990 CAA, the U.S. Department of Transportation (DOT) cannot fund, authorize, or approve federal actions to support programs or projects that are not first found to conform to the SIP for achieving the goals of the CAA requirements. Conformity with the CAA takes place on two levels—first at the regional level, and second at the project level. The proposed Project must conform at both levels to be approved. The CAA identified 188 pollutants as being air toxics, which are also known as hazardous air pollutants (HAP).Of these 188 pollutants, 21 were identified by the EPA as mobile source air toxics (MSAT).
EPA Clean Air Non-road Diesel Rule	To reduce emissions from off-road diesel equipment, the EPA established a series of increasingly strict emission standards for locomotive engines. In 2008, the EPA finalized a three part program that has (and will continue to) dramatically reduce emissions from line-haul, switch, and passenger rail diesel locomotives based on the following compliance schedule: Tier 4 Standards – Longer-term standards for newly-built and remanufactured locomotives. Tier 4 standards are expected to require the use of exhaust gas after-treatment technologies, such as particulate filters for PM control, and urea-based (diesel exhaust fluid)-selective catalytic reduction for nitrogen oxide (NO_x) emission control. These standards take effect in 2015.

Table 3.5-1. Pertinent Laws, Regulations, and Plans for Air Quality and Global Climate Change

Law, Regulation, or Plan	Summary and Project Nexus
Greenhouse Gas Regulations	Although climate change and the reduction of greenhouse gas (GHG) emissions are a concern at the federal level, no federal regulations currently exist regarding transportation projects. In *Coalition for Responsible Regulation, Inc., et al. v. EPA*, the United States Court of Appeals upheld the EPA's authority to regulate GHG emissions under the CAA, and the EPA is currently developing regulations under the CAA that may be adopted within the next 2 years.
State	
California Clean Air Act and Ambient Air Quality Standards	The California Clean Air Act (CCAA) designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts explicit authority to implement transportation control measures (TCMs) and regulate indirect sources of air pollution. The CCAA focuses on attainment of the CAAQS which for certain pollutants and averaging periods are more stringent than the comparable federal standards. There are six criteria pollutants which both the CARB and EPA regulate; CO, NO_2, SO_2, O_3, PM_{10}, $PM_{2.5}$, and Pb. CAAQS are generally more stringent than the NAAQS and incorporate additional standards for sulfates, hydrogen sulfide, and vinyl chloride, and visibility-reducing particles.
California Diesel Fuel Regulations	With this rule, CARB set sulfur limitations for diesel fuel sold in California for use in on-road and off-road motor vehicles (Appendix G1). Under this rule, diesel fuel used in motor vehicles except harbor craft has been limited to 500 ppm sulfur since 1993. The sulfur limit was reduced to 15 ppm on September 1, 2006.
Carl Moyer Program	The Carl Moyer Memorial Air Quality Standards Attainment Program is a voluntary program that offers grants to owners of heavy-duty vehicles and equipment. The program is a partnership between CARB and the local air districts throughout the state to reduce ROG, NO_x, and PM air pollution emissions from heavy-duty engines. Locally, the air districts administer the Carl Moyer Program (Appendix G1).
California's Toxic Air Contaminants Regulations	The Tanner Toxic Air Contaminant (TAC) Identification and Control Act (Tanner Act or AB 1807) created California's program to reduce exposure to TACs. The Tanner Act sets forth a formal procedure for the CARB to designate substances as TACs. To date, the CARB has identified 21 TACs, and has also adopted the EPA's list of HAPs as TACs. Since August 1998, Diesel Particulate Matter (DPM) was added to the CARB list of TACs (Appendix G1).
Assembly Bill 32	In 2006, Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006, was adopted and set the 2020 GHG emissions reduction goal into law. CARB is tasked with the responsibility of monitoring and reducing GHG emissions pursuant to the guidelines of AB 32.
Assembly Bill 1493 – Pavley Rules (2002, amendments 2009) / Advanced Clean Cars (2011)	Known as "Pavley I," AB 1493 standards are the nation's first GHG standards for automobiles. AB 1493 required the CARB to adopt vehicle standards that will lower GHG emissions from new light duty autos to the maximum extent feasible beginning in 2009. The EPA and CARB are currently working together on a joint rulemaking to establish GHG emission standards for 2017 to 2025 model year passenger vehicles (Appendix G1).

Table 3.5-1. Pertinent Laws, Regulations, and Plans for Air Quality and Global Climate Change

Law, Regulation, or Plan	Summary and Project Nexus
Senate Bill 97	SB 97, signed in 2007, required the Office of Planning and Research (OPR) to prepare guidelines for the feasible mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions, as required by CEQA, including, but not limited to, effects associated with transportation or energy consumption.
Senate Bill 375	Senate Bill 375 of 2008 (SB 375) that provides for greater coordination of state housing, environmental and transportation laws, and requires MPOs to develop a Sustainable Communities Strategy (SCS) as part of the Regional Transportation Plan (RTP) to help meet California's GHG emission reduction targets established by AB 32 and the CARB. SCAG is the designated MPO for the region; and develops its SCS and RTP with input from SANBAG.
Executive Order S-3-05	Executive Order S-3-05 was issued to reduce California's GHG emissions to: (1) 2000 levels by 2010; (2) 1990 levels by the 2020; and (3) 80 percent below the 1990 levels by the year 2050. Executive orders are binding only on state agencies. Accordingly, EO S-03-05 will guide state agencies' efforts to control and regulate GHG emissions but will have no direct binding effect on local government or private actions.
Executive Order S-1-07	Executive Order S-1-07, the Low Carbon Fuel Standard (LCFS) calls for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020.
Local	
South Coast Air Quality Management District (SCAQMD)	The SCAQMD has jurisdiction over the South Coast Air Basin (SCAB) and Study Area. To ensure continued progress toward clean air and to comply with state and federal requirements, SCAQMD, in conjunction with the CARB, SCAG, and the EPA, updates its air quality management plans (AQMPs) every 3 years. The most recent AQMP is the 2007 update which employs the most up-to-date science and analytical tools and incorporates a comprehensive strategy aimed at controlling pollution from all sources, including stationary sources, on-road and off-road mobile sources, and area sources.
SCAQMD Rule 402 – Nuisance	This rule prohibits discharge of air contaminants or other materials that: • Cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; • Endanger the comfort, repose, health, or safety of any such persons or the public; or • Cause, or have a natural tendency to cause injury or damage to businesses or property.
SCAQMD Rule 403 – Fugitive Dust	This rule prohibits emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area that remains visible beyond the emission source property line. Additional requirements apply to construction projects on property with 50 or more acres of disturbed surface area, or for any earth-moving operation with a daily earth-moving or throughput volume of 5,000 cubic yards or more three times during the most recent 365-day period. These requirements include submittal of a dust control plan, maintaining dust control records, and designating a SCAQMD-certified dust control supervisor.

Table 3.5-1. Pertinent Laws, Regulations, and Plans for Air Quality and Global Climate Change

Law, Regulation, or Plan	Summary and Project Nexus
SCAQMD Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities	The purpose of this rule is to limit emissions of asbestos (a TAC) from structural demolition/renovation activities. The rule requires people to notify the SCAQMD of proposed demolition/renovation activities and to survey these structures for the presence of asbestos-containing materials (ACMs). The rule also includes notification requirements for any intent to disturb ACM; emission control measures; and ACM removal, handling, and disposal techniques. All proposed structural demolition activities associated with Project construction would be subject to the requirements of Rule 1403.
SCAQMD Regulation XXXV	This regulation sets forth rules for railroads and railroad operations, including requiring operators to keep a record of idling events of 30 minutes or more (Rule 3501), idling restriction on freight trains (Rule 3502), and requirements for health risk assessments at rail yards (Rule 3503). Project components, such as train idling and movement, have the potential to result in an increased cancer risk to nearby sensitive receptors. Based on EPA's AERSCREEN dispersion model, localized construction emissions and ultimately Project operations would not exceed established thresholds.

Local Setting

The SCAQMD has divided the SCAB into air monitoring areas and maintains a network of air quality monitoring stations located throughout the SCAB. The Study Area is located in the Central San Bernardino Valley Monitoring Area (Source Receptor Area [SRA] 34) (see Appendix G1). With respect to NAAQS, the Study Area is located in an area designated "extreme nonattainment" for ozone, "nonattainment" for $PM_{2.5}$, "maintenance" for CO and PM_{10}, and "attainment" for NO_2, SO_2, and Pb (see Table 3.5-2). Based on this attainment status, the air pollutants of greatest concern in San Bernardino County are O_3 and PM_{10} and a conformity determination is required for the Project. In general, the worst air quality conditions occurs in the southwestern portion of San Bernardino County, including the Study Area, due to presence of the San Bernardino, San Jacinto, and San Gabriel Mountains, which restrict air movement further east.

Table 3.5-2. Federal and State Attainment Status for the San Bernardino County Portion of the South Coast Air Basin

Pollutants	Federal Classification	State Classification
O_3 (8-hour standard)	Extreme Nonattainment	--
PM_{10}	Attainment/Maintenance	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Serious Maintenance	Attainment
NO_2	Unclassified/Attainment	Attainment
SO_2	Attainment	Attainment
Pb	Unclassified/Attainment*	Attainment*

Source: Appendix G1
Note: While the Los Angeles portion of the SCAB is considered nonattainment with respect to Pb, the San Bernardino County portion of the SCAB is considered attainment.

Existing Health Risk in the Project Vicinity

The SCAQMD completed the Multiple Air Toxics Exposure Study III (MATES III) in 2008, which was an ambient air monitoring and evaluation study conducted in the SCAB. MATES III was a follow up to previous air toxics studies in the SCAB and is part of the SCAQMD Governing Board Environmental Justice Initiative. SCAQMD has initiated the MATES IV study, in which a technical advisory group is currently holding ongoing meetings. The Final draft was delivered to the Governing Board in April 2013.

Ambient levels of selected TACs are measured by both CARB and SCAQMD at several locations throughout the SCAB. According to the most current SCAQMD inhalation cancer risk data (MATES III), the Study Area is located within a cancer risk zone of between approximately 690 to 1,090 cases per million (Appendix G1). For comparison, the average cancer risk in the entire SCAB is 1,194 per million. This cancer risk in the Study Area is largely due to the Study Area's proximity to I-215 freeway, which runs north-south just east of the Project; I-10 freeway, which bisects the Study Area east-west; SR-210, which runs north-south just north of the Study Area; and rail activities associated with the San Bernardino Depot and Metrolink Station, just west of the Study Area. Currently, the highest cancer risks are located in western portions of the Study Area, near I-215 and the existing Depot/Metrolink Station, with lower cancer risks further east along the railroad corridor. For perspective, one out of three Americans will eventually develop cancer, and one out of four will die from cancer. Therefore, the national average background cancer incidence is equivalent to 33,000 chances in a million.

This cancer risk has declined by more than 15 percent over the past 7 years but is still one of the highest in the nation. Mobile sources (e.g., cars, trucks, trains, ships, and aircraft) represent the greatest contributors; and about 83.6 percent of all risk is attributed to DPM emissions. Therefore, health risk studies associated with freeway proximity are primarily concerned with DPM, as it comprises most of the associated health risk. Cancer health risks associated with exposure to diesel exhaust typically are associated with chronic exposure, in which a 70-year exposure period often is assumed. Although elevated cancer rates can result from exposure periods of less than 70 years, acute exposure (i.e., exposure periods of 2 to 3 years) is not anticipated to result in an increased health risk because typically exposure concentrations are too low.

Sensitive Receptors

Some people are particularly sensitive to air pollution, including persons with respiratory illnesses or impaired lung function because of other illnesses, the elderly, and children. Facilities and structures where these people live or spend considerable amounts of time are known as sensitive receptors. Chapter 4 of the SCAQMD's Air Quality Analysis Guidance Handbook defines land uses considered to be sensitive receptors as long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, child care centers, parks and athletic facilities (Appendix G1). The Project is located in an urbanized area of varying land uses that includes residential development, a variety of office uses, commercial, vacant, and occupied commercial and industrial warehouses, and other retail facilities, in addition to scattered undeveloped lots that are also found in the area. Figures 3.5-1A and 3.5-1B show the sensitive receptor locations within the Study Area.

Greenhouse Gases

The principle anthropogenic (human-made) GHGs contributing to global warming are CO_2, methane (CH_4), nitrous oxide (N_2O), and fluorinated compounds, including sulfur hexafluoride

(SF_6), hydrofluorocarbons, and perfluorocarbons, as defined by California law and the State CEQA Guidelines that contain a similar definition of GHGs (Health and Safety Code 38505(g); 14 CCR 15364.5). Water vapor, the most abundant GHG, is not included in this list because its natural concentrations and fluctuations far outweigh its anthropogenic sources. Because construction and operation of transportation projects primarily generate CO_2, CH_4, and N_2O, the analysis of GHGs primarily focuses on these pollutants (see Appendix G1).

3.5.3 Environmental Consequences

This analysis evaluates the potential for the Build Alternatives and Design Options to result in adverse effects related to air quality, greenhouse gases, and global climate change within the Study Area.

3.5.3.1 Effect Criteria

The Build Alternatives and Design Options would have an adverse effect on air quality or global climate change if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including release emissions which exceed quantitative thresholds for O_3 precursors);
- Expose sensitive receptors to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people;
- Generate greenhouse gas emissions, either directly or indirectly, that may have an adverse effect on the environment; or
- Conflict with applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

3.5.3.2 Methodology and Significance Thresholds

The Project-related analysis herein is specific to all the Build Alternative and Design Options in that the air quality impacts would essentially be the same or similar for each based on similar construction fleets, operations, etc. The only exception occurs in the context of the health risk assessment, which also considers the alternate location of the layover facility in Design Options 1 and 2. The following provides a summary of the methodology and significance thresholds to determine Project-related impacts. Cumulative impacts are considered in Chapter 4. For more complete discussions of methodology used for the locomotive driven trainset refer to the *Air Quality and Greenhouse Gas Emissions Technical Report* in Appendix G1. The *Redlands Passenger Rail Project Air Quality and Greenhouse Gas Technical Addendum* (Appendix G2) provides a discussion of the methodology used for the diesel multiple unit (DMU) vehicle option.

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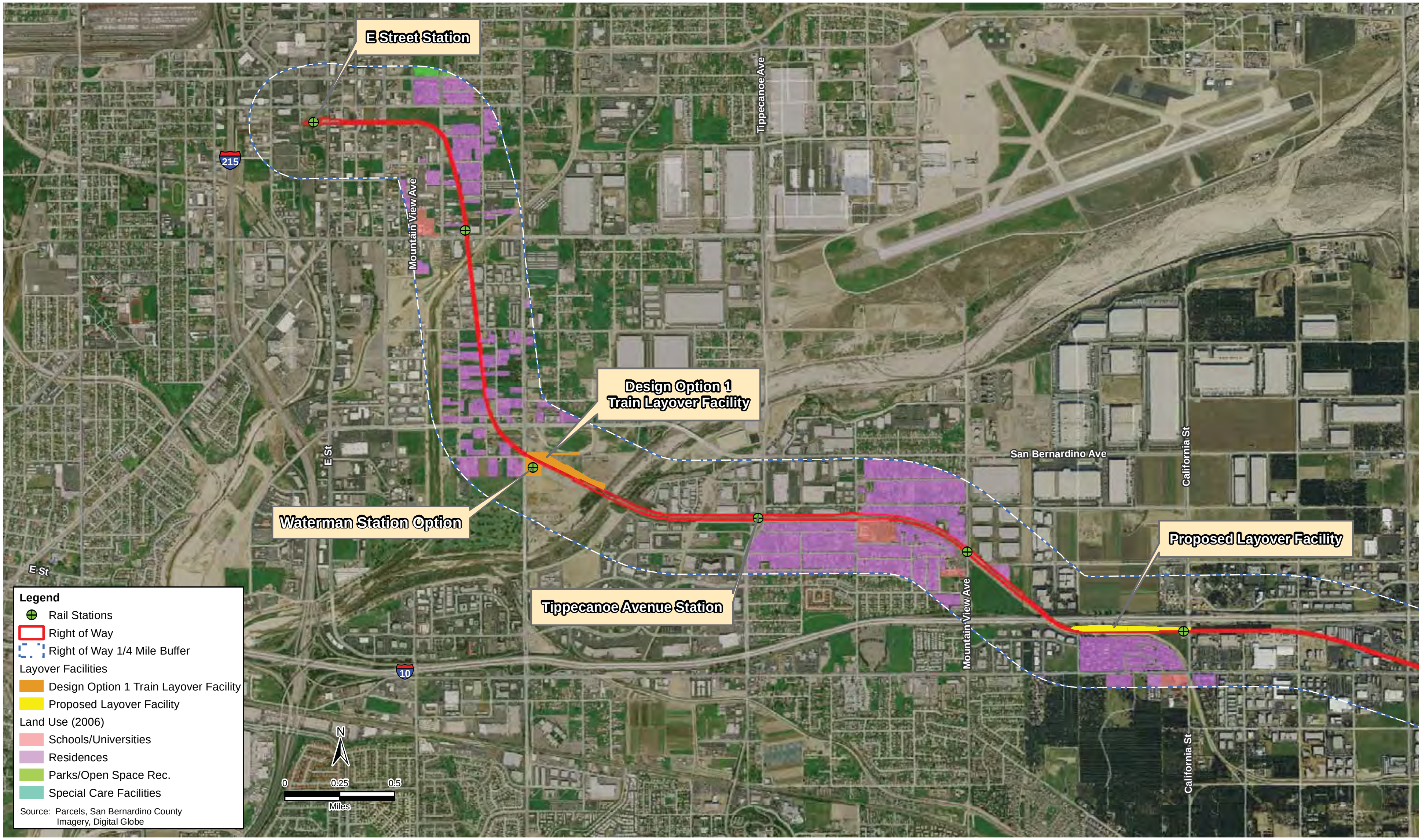


Sensitive Receptors - Western Study Area

Figure 3.5-1A

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

HDR
ONE COMPANY | *Many Solutions* SM

Sensitive Receptors - Eastern Study Area

Figure 3.5-1B

HDR ONE COMPANY | Many Solutions℠

Regional Conformity

If the design and scope of the proposed transportation project are the same as those described in the RTP and Federal Transportation Improvement Program (TIP), a project is deemed to meet regional conformity requirements for purposes of a project-level analysis. In this case, the Project is compared to the project description within SCAG's most recent conforming RTP and FTIP; the 2012 RTP and 2011 FTIP. The 2011 FTIP was adopted by SCAG on September 2, 2010 and was found to conform by FHWA on December 14, 2010. SCAG's draft 2013 FTIP was adopted by SCAG on September 19, 2012. A conformity determination from FHWA is expected in mid-December 2012 (SCAG 2013)[1]. The 2012-2035 RTP was adopted by SCAG on April 4, 2012 and found to conform by FHWA on June 4, 2012.

Project-Level Conformity

To conform at the project level, projects within designated nonattainment or maintenance for CO and/or particulate matter (PM) areas must show that they would not cause or contribute to new air quality violations, worsen existing violations, or delay timely attainment of the relevant CO and/or PM NAAQS or required interim milestones.

CO Hot-Spots

The significance of CO emissions from vehicles was evaluated based on the following criteria: (1) project-generated traffic degrades the level of service (LOS) at intersections to level D or worse, (2) sensitive receptors are nearby, and/or (3) CO hot-spot modeling indicates thresholds would be exceeded. The first criterion is based on whether the traffic associated with the proposed Project would change the LOS of an intersection, and thereby have the potential to generate CO hot spots. If the LOS remained unaffected, it would be assumed that vehicle emissions would not contribute to CO hot spots. This process generally follows the Transportation Project-Level Carbon Monoxide Protocol (CO Protocol) developed for Caltrans (Appendix G1) and is consistent with the assumptions used in the RTP regional emissions analysis.

CO hot-spot impacts were evaluated through CO dispersion modeling using EMFAC (Emission Factors) 2007, the CALINE4 model, and traffic data provided by the traffic engineers. CO emissions were modeled for existing (2012), opening year (2018), and forecast year (2038) no project and with-project conditions at nearby affected intersections. Each intersection was modeled under existing and future no- and with-project traffic conditions to note the projected net change in concentrations. Existing and future year emission factors were generated from the EMFAC2007 model assuming a SCAQMD average fleet with a conservative 1 mph travel speed operating a typical winter morning, using EMFAC2007 winter season emission rates. The above method provides a conservative analysis because vehicle CO emissions rates are highest at both low travel speeds and in cold air temperatures.

PM_{10}/$PM_{2.5}$ Hot-Spots

All projects that are identified as a Project of Air Quality Concern (POAQC) must undergo quantitative PM_{10} and/or $PM_{2.5}$ hot-spot conformity determination. Projects identified as not being a POAQC do not require $PM_{2.5}$ and/or PM_{10} hot-spot analyses. However, because the Project would be located in an area classified as a nonattainment or maintenance area for both

[1] http://www.scag.ca.gov/ftip/2013/final.htm

the PM_{10} and $PM_{2.5}$ standards, a determination must be made as to whether it would result in a PM hot spot.

The FHWA and EPA guidance details a qualitative step-by-step screening procedure to determine whether project-related particulate emissions have a potential to generate new air quality violations, worsen existing violations, or delay attainment of NAAQS for $PM_{2.5}$ or PM_{10}. The *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* was used to determine Project-related impacts (Appendix G1).

Criteria Pollutants and Toxic Air Contaminants

The analysis methodology is based the significance thresholds and analysis methodologies outlined in the SCAQMD CEQA *Air Quality Handbook* (as updated per their website). SCAQMD daily regional significance thresholds are presented in Table 3.5-3.

Table 3.5-3. SCAQMD Daily Regional Significance Thresholds

Criteria Air Pollutant	Construction Threshold (pounds per day)	Operational Threshold (pounds per day)
Volatile Organic Compounds (VOCs)	75	55
NO_X	100	55
CO	550	550
SO_X	150	150
PM_{10}	150	150
$PM_{2.5}$	55	55
Pb	3	3

Source: Appendix G1.

SCAQMD *Localized Significance Threshold Methodology for CEQA Evaluations* and localized significance threshold (LST) lookup tables were used to identify significance thresholds for identifying localized impacts of construction and operational emissions on nearby receptors. Based on the project location (SRA 34, Central San Bernardino Valley, and SRA 35, East San Bernardino Valley), project size that could be active on any given day (assumed to be 10 acres) and distance to the nearest receptor location (assumed to be 25 meters), the appropriate localized significance thresholds during construction and operation was applied based on the thresholds presented in Table 3.5-4. Note that since the project area spans two separate SRAs, the impact analysis herein uses the lower of the LST values (SRA 34) listed for the two SRAs.

In June 2003 (revised July 2008), the SCAQMD developed a methodology to evaluate localized construction impacts on air quality that would account for air dispersion. If the onsite emissions from proposed construction activities are below the LST emission levels found in the LST mass rate look-up tables for the Project site's source receptor area, then Project emissions would not have the potential to cause a significant localized air quality impact.

Table 3.5-4. SCAQMD Localized Significance Thresholds

Criteria Air Pollutant	Construction Threshold (pounds per day)	Operational Threshold (pounds per day)
SRA 34 - NO_x	270	270
SRA 34 - CO	1746	1746
SRA 34 - PM_{10}	14	4
SRA 34 - $PM_{2.5}$	8	2
SRA 35 - NO_x	270	270
SRA 35 - CO	2075	2075
SRA 35 - PM_{10}	14	4
SRA 35 - $PM_{2.5}$	9	3

Source: Appendix G1.

According to guidelines provided in the SCAQMD *CEQA Air Quality Handbook*, the project would have a significant impact from toxic air contaminants if:

- Some TACs increase non-cancer health risk due to short term (acute) or long term (chronic) exposures. The screening risk assessment for those TACs must estimate acute and/or chronic hazard index as applicable. Onsite stationary sources emit carcinogenic or toxic air contaminants that individually or cumulatively exceed the maximum incremental cancer risk (MICR) of 10 in 1 million (1.0 x 10-5) or an acute or chronic hazard index of 1.0 (Appendix G1) based on EPA locomotive emission factors;
- Hazardous materials associated with onsite stationary sources result in an accidental release of air toxic emissions or acutely hazardous materials, posing a threat to public health and safety.

Emissions were estimated using existing conditions information, project construction details, and project operations information, as well a combination of emission factors from the following sources. A detailed discussion of methodology and data information is presented in Appendix G1.

- ARB modeling software CT-EMFAC, EMFAC2011, and OFFROAD2007 for estimating exhaust emissions from off-road construction equipment and on-road motor vehicles;
- EPA re-entrained paved road dust methodology;
- EPA locomotive emission factors for the F-59 and MP-38 locomotive vehicle options and associated methodology;
- EPA's NONROAD Diesel Engine standards for the DMU vehicle option and associated methodology;
- CalEEMod (Version 2011.1.1) model defaults for construction and operation of light industrial land uses associated with the layover facility;
- CalEEMod emission calculation methodologies for construction-related fugitive dust (i.e., grading, bulldozing, truck loading) and paving activities; and

- Sacramento Metropolitan Air Quality Management District's Roadway Construction Emissions Model (February version 7.1.1) model defaults associated with bridge construction activities (Sacramento Metropolitan Air Quality Management District 2012).

Since diesel-related exhaust, specifically DPM, is considered a TAC by the ARB, a human health risk assessment (HRA) was conducted to assess the risk associated with the Build Alternatives and Design Options. An HRA consists of three parts: (1) a TAC emissions inventory, which is described in Section 4.2, (2) air dispersion modeling to evaluate off-site concentrations of TAC emissions, and (3) assessment of risks associated with predicted concentrations. The HRA was conducted using the guidelines provided by the California Office of Environmental Health Hazard Assessment (OEHHA) for the Air Toxics Hot Spots Program and the HRA guidelines developed by the California Air Pollution Control Officers Association (CAPCOA) and SCAQMD (see Appendix G1 and G2).

Generally, worst case for cancer risk is based on 70 years of exposure, but shorter exposure durations are acceptable for non-residential land uses. Worst case for acute adverse health effects is based on the hour with the highest emissions. Worst case for chronic adverse health effects is based on the annual average emissions. For residential land uses, the exposure period is assumed to be 70 years. For sites where workers could be located, the exposure period is assumed to be 40 years. For other land uses, including recreational land uses, the exposure period is assumed to be nine years.

Greenhouse Gas Emissions

CEQA Guidelines Section 15064.4(b) provides that, when assessing the significance of impacts from GHG emissions, a lead agency should consider: (1) the extent to which the project may increase or reduce GHG emissions as compared to existing conditions, (2) whether the project's GHG emissions exceed a threshold of significance that the lead agency determines applies to the project, and (3) the extent to which the project complies with regulations. The analysis of the potential impacts from the project's GHG emissions follows this approach. In addition to the considerations listed above, to provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents, SCAQMD has recommended a threshold of 3,000 metric tons (MT) of CO_2e as a Tier 3 threshold for all residential and commercial land uses and a 10,000 MT of CO_2e as a Tier 3 threshold for stationary/industrial sources.

For the purposes of determining whether or not GHG emissions from affected projects are adverse, SCAQMD specified that project emissions must include direct, indirect, and, to the extent information is available, life cycle emissions during construction and operation. Construction emissions would be amortized over the life of the project (defined as 30 years) added to the operational emissions, and compared to the applicable interim GHG significance threshold tier. If the project exceeds the GHG screening significance threshold and GHG emissions cannot be mitigated to less than the screening level, the project would move to the next tier.

The Project is a transportation project that does not fit into the industrial, commercial or residential project categories. The SCAQMD has not proposed or adopted a threshold level for transportation projects. Thus, for purposes of this analysis, both direct and indirect GHG emissions from the proposed project are discussed with respects to both the 10,000 and 3,000 MT threshold levels. Further, while there are currently no adopted numeric thresholds at the federal level, CEQs reference point of 25,000 MT is used herein in determining whether or not the project would result in a significant impact or effect on the environment due to GHG emissions from a NEPA context. In accordance with scientific consensus regarding the cumulative nature of GHGs[2], the analysis herein analyzes the cumulative contribution of project-related GHG emissions and, therefore, effects are analyzed with respects to cumulative year 2038 emissions only.

3.5.3.3 Assessment of Environmental Effects

EFFECT 3.5-1	**Conflict with an Air Quality Plan.** Implementation of the Project would not result in a conflict or obstruction of an applicable air quality plan.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, the Project would not be implemented and existing conditions along the railroad corridor would remain. To facilitate continued freight service per SANBAG's obligations, maintenance improvements would be required, which could potentially result in temporary impacts to air quality. However, since construction activities are temporary in nature and implementation of best available control measures identified in the SCAQMD Rule 403 for fugitive dust emissions from earth-moving and grading activities are required, continued maintenance activities under the No Build Alternative would not conflict with or obstruct implementation of the regional air quality management plan. There would be no adverse effect under NEPA. Under CEQA impacts would be less than significant.

CO and $PM_{2.5}/PM_{10}$ Conformity

Transportation conformity only applies to operational emissions associated with a project. Section 40 CFR 93.123 of the transportation conformity rule specifies that CO and $PM_{2.5}/PM_{10}$ hot-spot analyses are not required for construction-related activities that are less than 5 years in duration. Therefore, conformity does not apply to construction activities. There is no effect under NEPA and no Impact under CEQA.

Direct Effects from Long-Term Operations

Under the No Build Alternative, there would be no changes to the freight train or alternative transportation network in San Bernardino and Redlands. The No Build Alternative would not reduce regional vehicle miles traveled (VMT) through increased alternative transportation opportunities. Congestion and VMT on the regional roadway network is anticipated to increase without implementation of the Project. The No Build Alternative would be in conflict with the RTP; however, this cannot be directly assumed to be inconsistent with SCAQMD's AQMP. As a result, there would be no adverse effects under NEPA. A less than significant impact would occur under CEQA.

[2] Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants (such as ozone precursors), which are primarily pollutants of regional and local concern. Given their long atmospheric lifetimes (see Table 3.5-2), GHGs emitted by countless sources worldwide accumulate in the atmosphere. No single emitter of GHGs is large enough to trigger global climate change on its own. Rather, climate change is the result of the individual contributions of countless past, present, and future sources. Therefore, GHG impacts are inherently cumulative.

Indirect Effects

There are no adverse indirect effects under NEPA. No impact would occur under CEQA related to conflicts with an applicable air quality plan.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Since construction activities are temporary in nature and with implementation of best available control measures identified in the SCAQMD Rule 403 for fugitive dust emissions from earth-moving and grading activities, construction activities would not conflict with or obstruct implementation of the regional air quality management plan. There would be no adverse effect under NEPA. A less than significant impact would occur under CEQA.

CO and $PM_{2.5}$/PM_{10} Conformity

Transportation conformity only applies to operational emissions associated with a project. Section 40 CFR 93.123 of the transportation conformity rule specifies that CO and $PM_{2.5}$/PM_{10} hot-spot analyses are not required for construction-related activities that are less than 5 years in duration. Therefore, conformity does not apply to construction activities. There is no adverse effect under NEPA. No impact would occur under CEQA.

Direct Effects from Long-Term Operations

Under federal and state mandates, SCAG is tasked with developing a FTIP and RTP every 4 years. The Project, which extends from the San Bernardino Transit Center and E Street Station to the University of Redlands is listed as project number 20131901 within SCAG's 2013 FTIP and RTP ID 4TR0101 in SCAG's 2012 RTP/SCS (Appendix G1). The 2013 FTIP (Amendment #19) was adopted by SCAG on June 16, 2014 and was found to conform by FHWA on July 17, 2014. The 2012-2035 RTP was adopted by SCAG on April 4, 2012 and found to conform by FHWA on June 4, 2012. The Federal Highway Administration and FTA determined that the 2012-2035 RTP/SCS through Amendment No. 1 and the 2013 FTIP through Amendment No. 13-04 (adopted on June 6, 2013) conformed to the SIP on July 15, 2013.

Air quality modeling conducted by SCAG has shown that emissions associated with the RTP and FTIP are within the allowable air pollutant emission budgets. Consequently, the Build Alternatives and Design Options are considered a conforming transportation project. Because the Project conforms with the most recently adopted RTP and FTIP, has not adversely changed in design concept and scope, has been less than three years since the last major conformity milestone, and a supplemental environmental document for air quality purposes has not been initiated, a new conformity determination is not required. Consequently, because the Build Alternatives and Design Options would conform to the RTP and FTIP, which were found to conform to the SIP, the Build Alternatives and Design Options would not obstruct implementation of the air quality management plan (e.g., SIP). There would be no adverse effects under NEPA. A less than significant impact would occur under CEQA.

CO and $PM_{2.5}$/PM_{10} Conformity

Based on CO hot-spot modeling for the years 2012 (Existing), Opening Year 2018, and Forecast Year 2038, the peak hour implementation of the Project is not expected to result in violations of the state or federal 1- or 8-hour CO standards (see Appendix G1). Consequently, the Project would not cause or contribute to new air quality violations, worsen existing violations, or delay timely attainment of CO NAAQS and the effect of traffic conditions from the Project on ambient CO levels are considered not adverse under NEPA. A less than significant impact would occur under CEQA.

The Project involves both a new local transit service along a dedicated roadway and extension of diesel regional passenger rail service. The Project is considered to be a "regionally significant project"[3] under 40 CFR 93.101; however, it would not result in an adverse number of diesel vehicles that would congregate at a single location. Dispersion modeling conducted for the vehicle technologies under consideration for the Project indicates that rail emissions associated with the Build Alternatives and Design Options would not exceed the $PM_{2.5}$ nor would the PM_{10} NAAQS, see Table 3.5-5 below. Interconnecting bus transit is powered by compressed natural gas (CNG) and, therefore, would not represent a significant source of PM_{10} or $PM_{2.5}$ emissions that could incrementally add to the emissions estimates presented in Table 3.5-5.

Table 3.5-5. Modeled PM_{10} and $PM_{2.5}$ Concentrations at Nearby Receptors

Activity	Receptor Location (meters)	Max 1-hour Concentration (μg/m^3)	Scaled 24-hour Concentration (μg/m^3)	Scaled Annual Concentration (μg/m^3)
F-59 and MP-38 Vehicle Options				
Train Idling	25	0.766	0.46	0.077
Train Movement	25	0.0027	0.0016	0.0003
DMU Vehicle Option				
Train Idling	18	0.0444	0.0267	0.0044
Train Movement	25	0.0008	0.0005	0.0001

Source: Appendix G1 and Appendix G2

Note: 24-hour PM_{10} NAAQS is 150 μg/m^3 (microgram per cubic meter), the 24-hour $PM_{2.5}$ NAAQS is 35 μg/m^3, and the annual $PM_{2.5}$ NAAQS is 15 μg/m^3. Modeled 24-hour and annual PM concentrations were estimated based on scaling maximum hourly concentrations from AERSCREEN by 0.6 and 0.1, respectively, per the AERSCREEN users guide, as well as by the time trains are idling and moving throughout the day and year.

Consequently, the Project is not considered a POAQC for PM_{10}/$PM_{2.5}$ and the CAA and 40 CFR 93.116 requirements were met without a hot-spot analysis. Confirmation of this determination was made during SCAG's Transportation Conformity Working Group's (TCWG) interagency consultation (IAC) with the appropriate local, state, and federal agencies on October 3, 2014. There would be no adverse effect under NEPA. A less than significant impact would occur under CEQA.

Indirect Effects

Under the No Build Alternative, SANBAG's ongoing maintenance of the ROW is unlikely to result in nonconformance with regional air quality management plans. In this context, no indirect effect would result under NEPA. No impact under is expected under CEQA.

[3] Regionally significant projects are those projects that serve regional transportation needs. Regionally significant projects can include projects that provide access to areas outside region, such as a highway, major activity centers in region, such as a sports complex, major planned developments, such as a new retail mall, and transportation terminals, such as a train depot.

EFFECT 3.5-2	**Violate Air Quality Standards.** Implementation of the Project would not result in a violation of any air quality standard or contribute substantially to an existing or projected air quality violation.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, the Project would not occur and existing conditions along the railroad corridor would remain. Maintenance of track improvements and bridge improvements could potentially result in temporary impacts to air quality. However, since construction activities are temporary in nature and implementation of best available control measures identified in the SCAQMD Rule 403 for fugitive dust emissions from earth-moving and grading activities are required, continued maintenance activities under the No Build Alternative are not anticipated to violate state or federal air quality standards. There would be no adverse effect under NEPA. A less than significant impact would occur under CEQA.

Direct Effects from Long-Term Operations

Under the No Build Alternative, the Project would not occur and existing conditions along the railroad corridor would remain. The No Build Alternative would not reduce regional criteria pollutant emissions through increased alternative transportation opportunities. Anticipated increased traffic congestion in the Study Area and region would increase vehicle emissions, as indicated in Appendix G1. However, these increases would not exceed SCAQMD thresholds and, therefore, no adverse effect would result under NEPA. A less than significant impact would occur under CEQA.

Indirect Effects

The No Build Alternative would not reduce regional criteria pollutant emissions through increased alternative transportation opportunities; therefore, indirect air quality effects would result. However, these resulting emissions would not exceed applied thresholds and, therefore, no adverse effect would result under NEPA. A less than significant impact would occur under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Construction of the Project has the potential to create air quality impacts through the use of heavy-duty construction equipment, construction worker vehicle trips, material delivery trips, and heavy-duty haul truck trips generated from construction activities. In addition, earthwork activities would result in fugitive dust emissions and paving operations would release ROGs from off-gassing. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions. The assessment of construction air quality impacts considers each of these potential sources. Fugitive PM_{10} and $PM_{2.5}$ emissions estimates take into account compliance with SCAQMD Rule 403. As shown in Table 3.5-6 below, maximum daily project-related criteria pollutant emissions over existing freight activities would not exceed SCAQMD construction-period thresholds for any pollutant during construction activities. Construction of the Project would have no adverse effect under NEPA. This is a less than significant impact under CEQA.

Table 3.5-6. Summary of Modeled Construction-Period Criteria Pollutant Emissions

Scenario	Emissions (Pounds Per Day)					
	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Existing Conditions (Freight Trains)	*0.0*	*1.0*	*0.2*	*0.0*	*0.0*	*0.0*
Project Maximum Daily Construction Emissions	28.6	59.9	215.9	0.1	12.6	4.1
Maximum Daily Net Over Existing	28.6	58.9	215.7	0.1	12.6	4.1
SCAQMD Construction Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Adverse?	***No***	***No***	***No***	***No***	***No***	***No***

Source: Appendix G1.

Notes: All work crews were assumed to work 5 weekdays per work week, except for work crews D2, P2, and T3, which were assumed to work 1 weekend day.

The construction-related effect is based on the emissions within "Maximum Daily Net Over Existing" row, which denoted the project's net change over existing freight activities.

Maximum daily project-related emissions occur when the following work crews are active overlap activities:

- Week 34 of construction for VOC and CO: Work crews C1, C2, D1, E2, IW1, M1, S1, S2, T1, and T2. Weekend crews of P2 and T3 are also active this week, but those activities occur on the weekend and thus do not overlap with weekday activities.
- Week 17 of construction for NO_x and SO_x: C1, D1, P1, S2, T1, T2, T4, W1, and X2. No weekend crews are active this week.
- Week 30 of construction for PM_{10}, and $PM_{2.5}$: C1, C2, D1, IW1, S2, T1, T2, T4, and X2. Weekend crew P2 is also active this week, but those activities occur on the weekend and thus do not overlap with weekday activities.

SCAQMD Localized Significance Thresholds (LST)

When quantifying mass emissions for LST analysis, only emissions that occur on site are considered. Based on the project location (SRA 34, Central San Bernardino Valley, and SRA 35, East San Bernardino Valley), the project size that could be active on any given day is assumed to be 10 acres and distance to the nearest receptor location is assumed to be 25 meters. Consistent with SCAQMD LST guidelines, emissions related to offsite delivery/haul truck activity and employee trips during construction are not considered in the evaluation of localized impacts. As shown in Table 3.5-7, localized emissions during construction would not exceed LSTs for the project area. There would be no adverse effect under NEPA. Under CEQA, the impact would be less than significant.

Table 3.5-7. Modeled Localized Criteria Pollutant Emissions during Construction

Phase	NO_X	CO	PM_{10}	$PM_{2.5}$
Construction				
Max Daily On-Site Emissions	53.0	212.1	7.3	4.3
Localized Significance Thresholds[1]	*270*	*1,746*	*14*	*8*
Exceed Threshold?	***No***	***No***	***No***	***No***

Source: Appendix G1.

[1] The project site is located in SCAQMD SRA's No. 34 and No. 35, and the LSTs shown are the smaller of the LSTs (SRA 34) for the two SRA's. These LSTs are based on the site location SRA, distance to nearest sensitive receptor location from the project site (25 meters), and project area that could be under construction or operation on any give day (five acres).

Direct Effects from Long-Term Operations

Long-term operation of the Project has the potential to create air quality effects associated with increased train activity, maintenance and layover workers, and motor vehicle trips associated with the park and ride lot. According to data produced by SANBAG, only a small portion (5 percent) of trips associated with the Park and Ride lot would be "new" trips (trips that otherwise would not occur), while a majority of the trips would be "re-distributed" trips from passengers that currently commute to their destination in the region, such as Los Angeles (Appendix G1). According to SANBAG's transit ridership information (Parsons Transportation Group 2007, as cited in Appendix G1); existing commuter trips travel an average of 25 miles per one-way trip. For purposes of estimating VMT and emissions associated with these re-distributed trips, it was assumed that existing re-distributed trips that would otherwise drive 25 miles per one-way trip under the No-Project condition would now drive a shorter distance, assumed to be 13.3 miles per one-way trip (Appendix G1). Therefore, a reduction in VMT associated with these re-distributed trips over the No-Project conditions (i.e., the 25 miles per one-way trip for the No-Build Condition would be lowered to 13.3 miles per one-way trip for the build alternatives). These emissions are also treated as a net reduction in emissions for the Build Alternatives and considered a benefit due to the construction of the Project.

There would be up to 160 park and ride parking spaces associated with the project. Assuming a rate of 4.5 trips per parking space (Appendix G1), there would be 720 average daily trips (ADT [160 parking spaced (x) 4.5 ADT per space]) associated with the park and ride lots. For purposes of estimating VMT and emissions associated with "new" trips, it was assumed that "new" trips (36 ADT, or 5 percent of 720 ADT) would travel 13.3 miles per one-way trip. For purposes of estimating VMT and emissions associated with "re-distributed" trips (684 ADT, or 95 percent of 720 ADT) it was assumed that "re-distributed " trips would have traveled 25 miles per one-way trip, which is the average Metrolink rider travel distance, as described previously (see Appendix G1).

Estimates of emissions of ROG, NO_x, CO, PM_{10}, and $PM_{2.5}$ (criteria pollutants) for existing year (2012), opening year (2018), and forecast year (2038) with and without Project conditions with respect to train operations, maintenance and layover workers, park and ride motor vehicle trips, and regional VMT on the roadway network were evaluated. Table 3.5-8 summarizes the incremental daily emissions for the existing plus project scenario compared to existing conditions. As shown in Table 3.5-8, the Project would have a beneficial effect under NEPA on existing conditions (Year 2012). A beneficial impact would occur under CEQA.

Table 3.5-8. Incremental Existing plus Project Daily Operational Emissions Compared to Existing Conditions (Year 2012)

Scenario	Project Element	Pounds Per Day					
		ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Existing	On-Road VMT	122,658	606,953	1,768,809	2,993	23,521	21,454
Existing Plus Project Net Minus Existing	MP36 w/o Express	(21)	(35)	(170)	0	(7)	(4)
	MP36 w/ Express	(21)	(34)	(168)	0	(7)	(4)
	F59 w/o Express	(21)	(29)	(162)	0	(7)	(3)
	F59 w/ Express	(21)	(27)	(160)	0	(7)	(3)
	DMU w/o Express	(20.5)	(61.4)	(179.0)	(0.3)	(7.1)	(3.9)
	DMU w/ Express	(20.4)	(59.7)	(176.8)	(0.3)	(7.1)	(3.8)
SCAQMD Thresholds		*55*	*55*	*550*	*150*	*150*	*55*
Exceed Thresholds?		***No***	***No***	***No***	***No***	***No***	***No***

Table 3.5-9 summarizes the incremental daily operational emissions for the opening year 2018 compared to No Project conditions. As shown in Table 3.5-9, the Project would result in an increase in emissions over the No Project scenario in 2018, except PM_{10}, which would show minor decreases under the "Without Express Service" scenarios. As shown in Table 3.5-9, the DMU vehicle option would result in substantially lower daily operational emissions when compared to the MP36 and F59 locomotives. Notwithstanding this difference and as reflected in Table 3.5-9, the incremental increase in emissions for all the vehicle technologies under consideration for the Project would be below SCAQMD's thresholds of significance. There would be no adverse effect under NEPA. Under CEQA, a less than significant impact would result.

Table 3.5-9. Incremental Opening Year 2018 Daily Operational Emissions Compared to No Project

Scenario	**Project Element**	**Pounds Per Day**					
		ROG	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
No Project	On-Road VMT	84,629	369,785	1,154,378	3,500	20,399	18,860
With Project Net Minus Project	MP36 w/o Express	4	32	55	0	(1)	1
	MP36 w/ Express	25	47	106	1	1	4
	F59 w/o Express	4	38	64	0	(1)	1
	F59 w/ Express	25	54	114	1	1	4
	DMU w/o Express	4.5	5.7	46.5	0.1	(1.7)	0.6
	DMU w/ Express	4.6	7.5	48.7	0.1	(1.7)	0.6
SCAQMD Thresholds		*55*	*55*	*550*	*150*	*150*	*55*
Exceed Thresholds?		***No***	***No***	***No***	***No***	***No***	***No***

Source: Appendix G1 and Appendix G2
Note: Incremental emissions are determined by subtracting the given alternative emissions from the Existing emissions. Emission reductions (beneficial impacts) are shown in parentheses.

Table 3.5-10 summarizes the incremental daily operational emissions for the forecast year 2038 compared to no project conditions. As shown in Table 3.5-10, the Project would result in an increase in emissions over the no project scenario in 2038, with the exception of PM_{10}, which would show minor decreases under the DMU vehicle option. Notwithstanding this minor reduction, the incremental increase in emissions for all vehicle technologies under consideration for the Project would be below SCAQMD's thresholds of significance. There would be no adverse effect under NEPA. A less than significant impact would occur under CEQA.

SCAQMD Localized Significance Thresholds (LST)

The only emissions that would occur onsite during long-term operations would be train-related fuel combustion and area source emissions generated at the layover facility. Other sources of regional operational emissions (motor vehicles operating on the regional network, park and ride lot, and worker commute, specifically) are not included in the LST analysis per SCAQMD guidance. As shown in Table 3.5-11, localized emissions during operations would not exceed LSTs for the Project area. There would be no adverse effect under NEPA. A less than significant impact would occur under CEQA.

Table 3.5-10. Modeled Forecast Year 2038 Operational Emissions

Scenario	Project Element	Pounds Per Day					
		ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
No Project	On-Road VMT	69,358	241,576	830,910	5,328	24,526	22,599
With Project Net Minus Project	MP36 w/o Express	13	45	87	0	0	4
	MP36 w/ Express	3	47	100	1	1	4
	F59 w/o Express	13	53	97	0	0	5
	F59 w/ Express	4	53	108	1	1	4
	DMU w/o Express	12.9	19.1	78.0	0.2	(0.3)	4.1
	DMU w/ Express	13.0	20.8	80.3	0.2	(0.3)	4.2
SCAQMD Thresholds		*55*	*55*	*550*	*150*	*150*	*55*
Exceed Thresholds?		***No***	***No***	***No***	***No***	***No***	***No***

Source: Appendix G1 and Appendix G2
Note: Incremental emissions are determined by subtracting the given alternative emissions from the Existing emissions.

Table 3.5-11. Modeled Localized Criteria Pollutant Emissions during Operations

Phase	NO_X	CO	PM_{10}	$PM_{2.5}$
Operations - Locomotives				
Train Activity (Max of MP36 and F39 locomotives, plus Express Train and Layover Operations, from Table 3.5-10)	37.6	48.2	0.6	0.6
Localized Significance Thresholds[1]	*270*	*1,746*	*4*	*2*
Exceed Threshold?	***No***	***No***	***No***	***No***
Operations - DMU				
Train Activity (Max of DMU, plus Express Train and Layover Operations, from Table 3.5-10)	3.3	28.4	0.1	0.1
Localized Significance Thresholds[1]	*270*	*1,746*	*4*	*2*
Exceed Threshold?	***No***	***No***	***No***	***No***

Source: Appendix G1 and Appendix G2
[1] The Project site is located in SCAQMD SRA's No. 34 and No. 35, and the LSTs shown are the smaller of the LSTs (SRA 34) for the two SRA's. These LSTs are based on the site location SRA, distance to nearest sensitive receptor location from the Project site (25 meters), and Project area that could be under construction or operation on any give day (10 acres).

Indirect Effects

As stated previously, by providing a regional alternative non-automobile form of transportation, the Project would reduce the number of vehicles on the road and indirectly alter regional on-road motor vehicle travel, thereby reducing the VMT in the area. The project would not contribute to a net increase of criteria pollutant emissions above SCAQMD's thresholds. As shown in Table 3.5-8, by providing alternative means of transportation to the region, the Project would have beneficial indirect effect under NEPA over existing conditions. A beneficial impact would occur under CEQA.

EFFECT 3.5-3	**Possible Risk to Sensitive Receptors.** Implementation of the Project would not expose sensitive receptors to substantial pollutant concentrations.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, the Project would not occur and existing conditions along the railroad corridor would remain. Maintenance improvements would be required incrementally and would occur along the existing track alignment. As described under the methodology, when considering chronic health effects, the exposure period is assumed to be 70 years. For sites where workers could be located, the exposure period is assumed to be 40 years. For other land uses, including recreational land uses, the exposure period is assumed to be 9 years. Since maintenance activities are temporary in nature, rarely lastly longer than a few months to a few years, no adverse effect would occur under NEPA. Under CEQA, this impact would be less than significant.

Direct Effects from Long-Term Operations

Under the No Build Alternative, the Project would not occur and existing rail operations (i.e., freight service) would continue to occur. A continuation of existing conditions would result in the generation of similar pollutant levels and the exposure of the same sensitive receptors. As a result, no adverse effects would occur under NEPA. A less than significant impact would occur under CEQA.

Indirect Effects

With a presumed continuation of existing conditions, no indirect, adverse effect would result under NEPA. Under CEQA, the resulting impact is considered less than significant.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

The Project would result in increased diesel-powered Metrolink train activity within the railroad corridor. Mass construction- and train-related DPM emissions were quantified using the methodology described in Appendix G1. EPA's AERSCREEN dispersion model, as described in the methodology, was used to estimate pollutant concentrations at nearby receptor locations. As shown in Table 3.5-12, health risk impacts associated with the sum of short-term construction and long-term operations for all vehicle technologies under consideration would be below SCAQMD thresholds (see Table 3.5-4) for identifying health risk impacts. No adverse effect to localized air quality would occur under NEPA. Under CEQA, the corresponding impact is less than significant.

Table 3.5-12. Summary of Health Risk Associated with Project Construction and Operations

Project Component	Cancer Risk (in a million)	Chronic Non-Cancer Hazard Index
MP36 and F39 Locomotives		
Train Idling	0.57	0.0004
Train Movement	0.14	0.0001
Project Construction	1.05	0.0153
MICR	1.76	0.0158
SCAQMD Risk Thresholds	*10*	*1.0*
Exceed Risk?	***No***	***No***
DMU Option		
Train Idling	0.15	9.56 E-05
Train Movement	0.03	1.69 E-05
Project Construction	1.05	1.53 E
DMU Option Sum	1.23	0.0154
SCAQMD Risk Thresholds	*10*	*1.0*
Exceed Risk?	***No***	***No***

Source: Appendix G1 and Appendix G2

Direct Effects from Long-Term Operations

As shown in Table 3.5-12, the health risks associated with long-term operations would not result in an increased cancer risk to the nearby sensitive receptors. Additionally, as evaluated under Effect 3.5-1 above, the Project is not expected to result in violations of the state or federal 1- or 8-hour CO standards. Dispersion modeling conducted for the Project indicates that rail emissions associated with the Project would not exceed the $PM_{2.5}$ or PM_{10} NAAQS (see Table 3.5-4). Consequently, the Project is not considered a POAQC for PM_{10}/$PM_{2.5}$ and the CAA and 40 CFR 93.116 requirements were met without a hot-spot analysis. Additionally, as analyzed in Effect 3.5-2 and shown in Table 3.5-11, the Project would not exceed LSTs for the Study Area. Based on these results, no adverse effect would occur under NEPA. This impact would less than significant under CEQA.

Indirect Effects

By providing a regional alternative non-automobile form of transportation, the Project would reduce the number of vehicles on the road and indirectly alter regional on-road motor vehicle travel, thereby reducing the VMT in the area. The Project would not contribute to net increases of criteria pollutant and TAC emissions above SCAQMD's thresholds, which could otherwise increase the exposure of sensitive receptors. As shown in Table 3.5-12, the Project would have no indirect adverse effect under NEPA. No impact to sensitive receptors would occur under CEQA.

EFFECT 3.5-4	**Create Objectionable Odors.** Implementation of the Project would not create objectionable odors that would affect a substantial number of people.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, construction activities would be limited to those activities associated with track maintenance and bridge rehabilitation per SANBAG's exiting commitments. Odors resulting from the construction activities are not likely to affect a substantial number of people, due to the fact that construction activities do not usually emit offensive odors. Potential odor emitters during construction activities include asphalt paving and the use of architectural coatings and solvents. SCAQMD Rule 1108 limits the amount of VOCs from cutback asphalt during paving activities. Given mandatory compliance with SCAQMD rules, no construction activities or materials are proposed that would create a considerable level of objectionable odors. As such, there would be no adverse effect under NEPA. A less than significant impact would occur under CEQA.

Direct Effects from Long-Term Operations

Under the No Build Alternative, existing operations would continue within the railroad corridor. As a result, the No Build Alternative would not create or result in a new source of odor that would be considered objectionable to nearby sensitive receptors. As a consequence, there would be no adverse effect under NEPA. Under CEQA, this impact would be less than significant.

Indirect Effects

With a general continuation of existing conditions, no adverse, indirect effects are contemplated under NEPA. Under CEQA, no impact is expected under the No Build Alternative.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

According to the SCAQMD CEQA Air Quality Handbook, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. Odors resulting from the construction activities are not likely to affect a substantial number of people, due to the fact that construction activities do not usually emit offensive odors. Potential odor emitters during construction activities include asphalt paving and the use of architectural coatings and solvents. SCAQMD Rule 1108 limits the amount of VOCs from cutback asphalt during paving activities. Given mandatory compliance with SCAQMD rules, no construction activities or materials are proposed that would create a considerable level of objectionable odors. As such, there would be no adverse effect under NEPA. Impacts under CEQA would be less than significant.

Direct Effects from Long-Term Operations

The Project does not include any uses identified by the SCAQMD as being associated with odors, therefore, it is not anticipated that the Project would not produce objectionable odors. During operations, emissions from train idling (i.e., diesel exhaust and VOCs), could potentially result in objectionable odors, especially at the train layover facilities and stations. However, given that the trains would be “plugged-in” while idle and/or generally in constant motion during operating hours, the potential for odor generation would be intermittent and unlikely. As a result, no adverse effect would occur under NEPA. Under CEQA, the corresponding impact is considered less than significant.

Indirect Effects

Based on the type of Project under consideration (e.g., passenger rail service) and the operational parameters described in Chapter 2, no indirect adverse effects are expected under NEPA. Under CEQA, no impact is anticipated with regards to objectionable odors.

EFFECT 3.5-5	**Generate Greenhouse Gas.** Implementation of the Project would not generate greenhouse gas emissions, either directly or indirectly, that would have an adverse effect on the environment, or conflict with any greenhouse gas applicable plan, policy, or regulation.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, construction activities associated with maintenance activities would be required by SANBAG to safely continue current freight operations within the Study Area. Construction activities would result in an incremental increase in GHG emissions within the area on a temporary basis. However, it is not anticipated that construction under the No Build Alternative would result in a substantial increase in GHG emissions in the region resulting in a conflict with applicable plans, policies or regulations (i.e., AB 32, Climate Action Plans, etc.) given that GHG emissions are exclusively a cumulative effect. Based on a continuation of existing conditions, no adverse effect is anticipated to occur under NEPA. Under CEQA, the corresponding impact is less than significant.

Direct Effects from Long-Term Operations

Under the No Build Alternative, there would be no changes to the existing freight operations or regional roadway network within the Study Area. The No Build Alternative would not improve mobility opportunities for transit-dependent populations in the Cities of San Bernardino and Redlands to employment centers in Los Angeles and Orange counties or support local and regional planning goals of SANBAG for the development of transit corridors in the Inland Empire. As stated previously, anticipated increased traffic congestion in the Study Area and region would increase vehicle emissions (see Appendix G1). Table 3.5-13 show that GHG emissions would exceed SCAQMD’s thresholds for existing conditions, 2012, and future forecast years 2018 and 2038, as well as CEQ’s guideline of 25,000 MT per year. The No Build Alternative would not be consistent with the statewide efforts of promoting alternative forms of transportation around existing and planned future transit-oriented development. Therefore, an adverse effect would occur under NEPA. A significant impact would occur under CEQA.

Indirect Effects

No indirect adverse effects would occur under NEPA. No impact under CEQA is anticipated with regards to generation of greenhouse gas.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Short-term construction activities would result in GHG emissions from fuel combustion within off- and on-road construction equipment and vehicles. Emissions associated with the approximately 30-month construction period are summarized in Table 3.5-13. As shown in the table, construction GHG emissions alone would not exceed the thresholds. However, consistent with SCAQMD draft guidelines, construction emissions are summed and amortized over a 30-year project life, and then added to operational emissions. Therefore, based on the amortized result, no adverse effect is anticipated to occur under NEPA. A less than significant impact is anticipated to occur under CEQA.

Table 3.5-13. Modeling Construction-Related GHG Emissions

Project Element	Metric Tons Per Year			
	CO_2	CH_4	N_2O	CO_2e
Total Construction Emissions	1,800	0.084	0.058	1,820
Amortized Total (30-year Average)	--	--	--	60.67

Source: Appendix G1.

Direct Effects from Long-Term Operations

The Project would provide new mass transit opportunities that would remove a number of single occupancy vehicles within the transportation network, resulting in a decrease in regional VMT for all alternatives except for Forecast Year 2038 Without Express Train (see Table 3.5-14). As shown in Table 3.5-14, GHG emissions would increase with implementation of the Project during 2038 Forecast Year with Project conditions when compared to 2038 No Project conditions. While the Project would reduce regional VMT by approximately 12,815 (0.003 percent decrease) miles per day under the “With Express Train” Scenario, VMT would increase under the “Without Express Train” Scenario by approximately 1,132 (0.0002 percent increase) miles per day (see Appendix G1). As a result, emissions under all 2038 Forecast Year scenarios would increase over 2038 No Project conditions, primarily as a result of increased traffic speeds on the regional network. However, it is important to note that Table 3.5-14 does not account for reductions associated with implementation of national- and state-wide GHG reduction regulations and strategies, including Pavley and LCFS.

SCAQMD currently has no adopted or drafted threshold levels relevant for transportation projects, but has adopted a threshold level for industrial projects (10,000 MT CO_2e (carbon dioxide equivalent)) and drafted a threshold level for commercial and residential projects (3,000 MT CO_2e), which are used in this analysis to evaluated project significance under CEQA. The CEQ recommends a threshold of 25,000 MT CO_2e for applying under NEPA. The net change in emissions under buildout conditions in 2038 are not in excess of the CEQ reference point of 25,000 MTCO_2e/yr. Therefore, the Project would result in no adverse effect under NEPA.

Table 3.5-14. Modeled Forecast Year 2038 No Project and With Project GHG Emissions (With Statewide Reductions)

Project Element		Metric Tons Per Year			
		CO_2	CH_4	N_2O	CO_2e
No Project	**On-Road VMT**	**92,550,173**	**4,871,062**		**97,421,235**
With Project Net Minus Project	MP36 w/o Express	(15,288,774)	(804,797)		(16,093,534)
	MP36 w/ Express	(15,286,675)	(804,694)		(16,091,331)
	F59 w/o Express	(15,288,108)	(804,797)		(16,092,862)
	F59 w/ Express	(15,286,152)	(804,694)		(16,090,803)
	DMU w/o Express	(15,290,382)	(804,807)		(16,095,166)
	DMU w/ Express	(15,288,284)	(804,704)		(16,092,963)
SCAQMD Threshold		--	--	--	*3,000/10,000*
Exceed Threshold?		**--**	**--**	**--**	***No/No***

Source: Appendix G1 and Appendix G2

Notes: Emission reductions (beneficial impacts) are shown in parentheses.
Emissions that exceed SCAQMD thresholds are shown in **bold**.
Total with Project emissions are the sum of operational GHG emissions and amortized construction emissions summarized in Appendix G1. GHG impact determinations are made only for the 2038 forecast year.

For the purposes of CEQA, this analysis assumes that continued implementation of requirements contained in AB 32 will contribute to Project-level GHG reductions. For example, the Pavley standard will improve the efficiency of automobiles and light duty trucks by 17 percent, the Advanced Clean Car Standards will improve the fuel efficiency of light duty vehicles by 2.5 percent, and LCFS will reduce the carbon intensity of diesel and gasoline transportation fuels by 8.9 percent (see Appendix G1). To account for GHG reductions associated with statewide measures (i.e., the Pavley standard, Advanced Clean Car, and LCFS), motor vehicle emissions generated as a result of Project implementation on the regional network and vehicles were calculated using AB 32 Scoping Plan reductions and light and medium duty vehicle fleet percentage information from EMFAC2007 (see Table 3.5-14). These statewide measures do not require additional action on the part of SANBAG and will contribute to GHG emission reductions.

As shown in Table 3.5-14, GHG emissions would be reduced under each scenario relative to the 2038 No Project condition with the inclusion of state mandates. Therefore, emissions would be below SCAQMD's drafted threshold levels of 3,000 MT and 10,000 MT when accounting for statewide measures. Consequently, impacts under CEQA would be less than significant.

The Project would improve mobility opportunities for transit-dependent populations in the Cities of San Bernardino and Redlands to employment centers in Los Angeles and Orange counties and support SANBAG's goals of development of transit corridors in the Inland Empire. The Project would be consistent with statewide efforts by promoting alternative forms of transportation around existing and planned future transit-oriented development. For example, SB 375 calls on SCAG and other MPO's to integrate land use, housing, and transportation planning efforts to achieve the SB 375 regional GHG targets, consistent with the transportation goals of AB 32. The adopted 2012 RTP/SCS multimodal strategy aims to reduce per capita VMT over the next 25 years, with regional passenger rail serving as a means to achieve VMT reductions. SCAQMD has adopted numeric mass emissions thresholds as a method to close the gap between emissions reductions from land-use driven sectors that would occur at the state level (including Pavley, low carbon fuel standard, and Renewable Portfolio Standard, among others) and the emission reductions necessary from land use development projects that have a lower carbon intensity within the region, consistent with the goals of AB 32. Future year project-related emissions would be below SCAQMD numeric thresholds that were adopted to help achieve the reduction goals of AB 32. Thus, the Project would not conflict with AB 32. Additionally, the Project would be below the CEQ's recommended threshold of 25,000 MT. Therefore, no adverse effect is anticipated to occur under NEPA. A less than significant impact is anticipated to occur under CEQA.

Indirect Effects

As stated previously, by providing a regional alternative non-automobile form of transportation, the Project would reduce the number of vehicles on the road and indirectly alter regional on-road motor vehicle travel, thereby reducing the VMT in the area. With implementation of statewide measures to reduce mobile source GHG emissions, GHG Project emissions would be reduced in forecast year 2038 (see Table 3.5-14). The Project would have no indirect adverse effect under NEPA. No impact would occur under CEQA in relation to contributions of GHGs to global climate change.

3.5.4 Mitigation Measures

As provided in the analysis of air quality effects, the Build Alternatives and Design Options would not result in an adverse effect under NEPA or significant impact under CEQA and, therefore, no mitigation measures are proposed.

3.6 NOISE AND VIBRATION

This section describes ambient noise conditions in the Study Area and evaluates the noise and vibration resulting from construction activities and operation of the Build Alternatives and Design Options. The analysis considers changes in ambient noise based on criteria contained in applicable federal, state, and local regulations. The analysis presented in this section is based on the findings and conclusions contained in the *Noise and Vibration Technical Memorandum* (ICF 2014b – see Appendix H1) and the *Noise and Vibration Technical Addendum* (ICF 2014c – see Appendix H2).

Definition of Sound

The most common descriptor of sound and noise associated with community noise measurements is the A-weighted sound pressure level, which is abbreviated as dBA[1]. The term dBA indicates that the decibel level (dB) is A-weighted to approximate the human ear's sensitivity to sounds of different frequencies. The A-weighted sound level of rail noise and other long-term noise-producing activities within and around a community vary with time. Certain noise descriptors are preferred for use in describing community noise environments. These descriptors are based on noise energy and called the equivalent sound level (Leq), and the day-night average sound level (Ldn or DNL). Leq is defined as the continuous steady-state noise level that would have the same total acoustical energy as the real fluctuating noise measured during the same period. Although Leq can be measured or computed for any period, it is typically specified for 1 hour (Leq[h]) or 24 hours (Leq[24h]). Ldn is the same as a 24-hour Leq except that noise occurring during the nighttime hours (10:00 p.m. to 6:59 a.m.) is weighted or penalized by 10 dBA (see Appendix H1). Figures 3.6-1 and 3.6-2 show typical Leq and Ldn, respectively, for transit (rail) and non-transit (non-rail) sources.

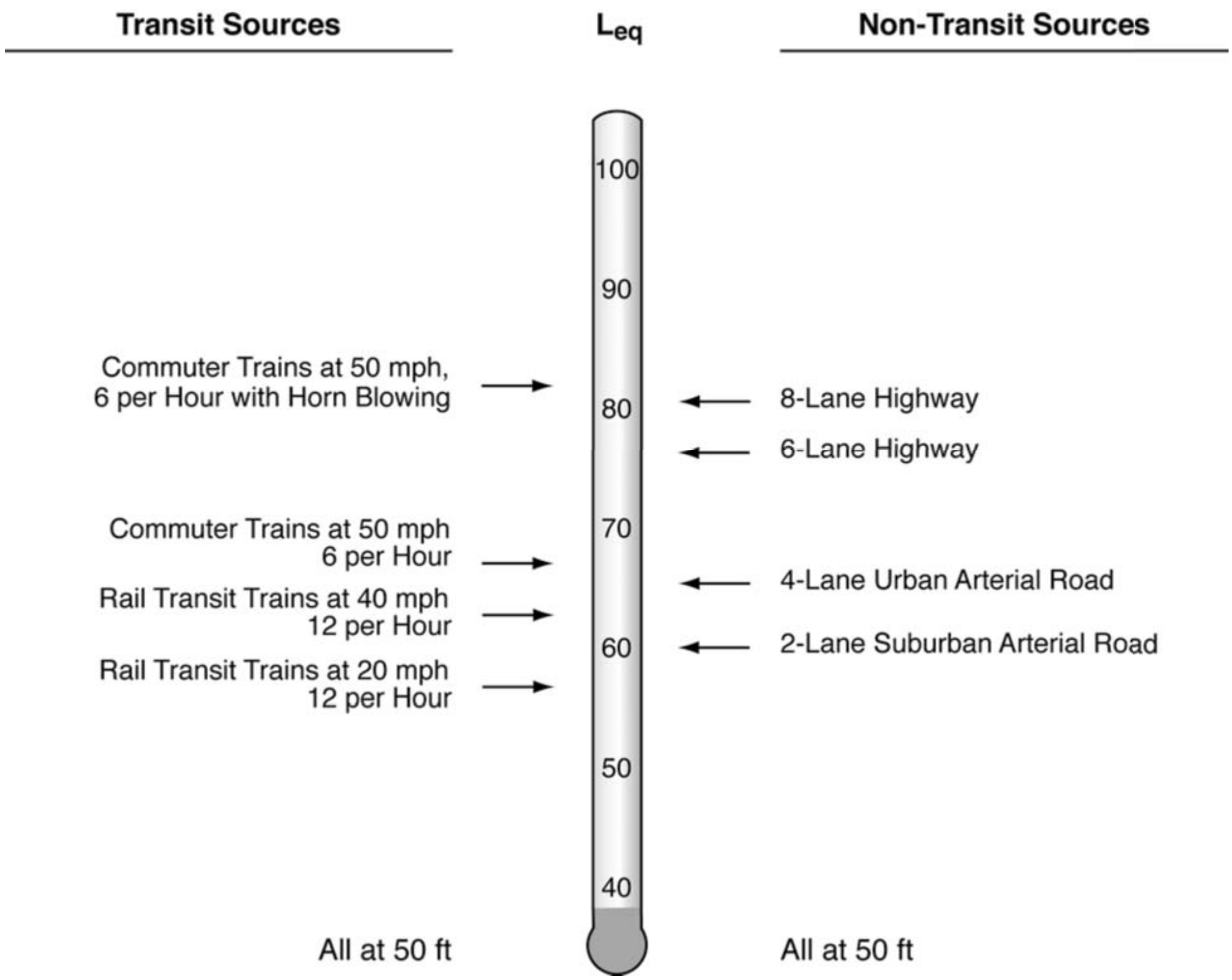
Vibration

Ground-borne vibration is a small, rapidly fluctuating motion transmitted through the ground. The strength of ground-borne vibration diminishes (or attenuates) fairly rapidly over distance. Some soil types transmit vibration quite efficiently; other types (primarily sandy soils) do not. There are several basic measurement units commonly used to describe the intensity of ground vibration. The descriptors used by FTA are peak particle velocity (PPV), in units of inches per second, and the velocity decibel (VdB). The velocity parameter (instead of acceleration or displacement) best correlates with human perception of vibration. Thus, the response of humans, buildings, and sensitive equipment to vibration is described in this section in terms of the root-mean square (RMS) velocity level in VdB units relative to one micro-inch per second. As a point of reference, the average person can just barely perceive vibration velocity levels below 70 VdB (typically in the vertical direction). Typical background vibration levels are between 50 and 60 VdB under normal circumstances, whereas the levels for minor cosmetic damage to fragile buildings or blasting are generally 100 VdB (Appendix H1).

3.6.1 Regulatory Framework

Table 3.6-1 identifies and summarizes federal, state, and local laws, regulations, and plans that are applicable to the Project.

[1] The unit of sound pressure level measurement is the decibel (dB).It is a unit describing the amplitude of sound pressure compared to a reference pressure. Commonly encountered sound levels range from slightly above the threshold of hearing and very quiet (around 20 dB) to very loud sounds at 130 dB.



Source FTA 2006

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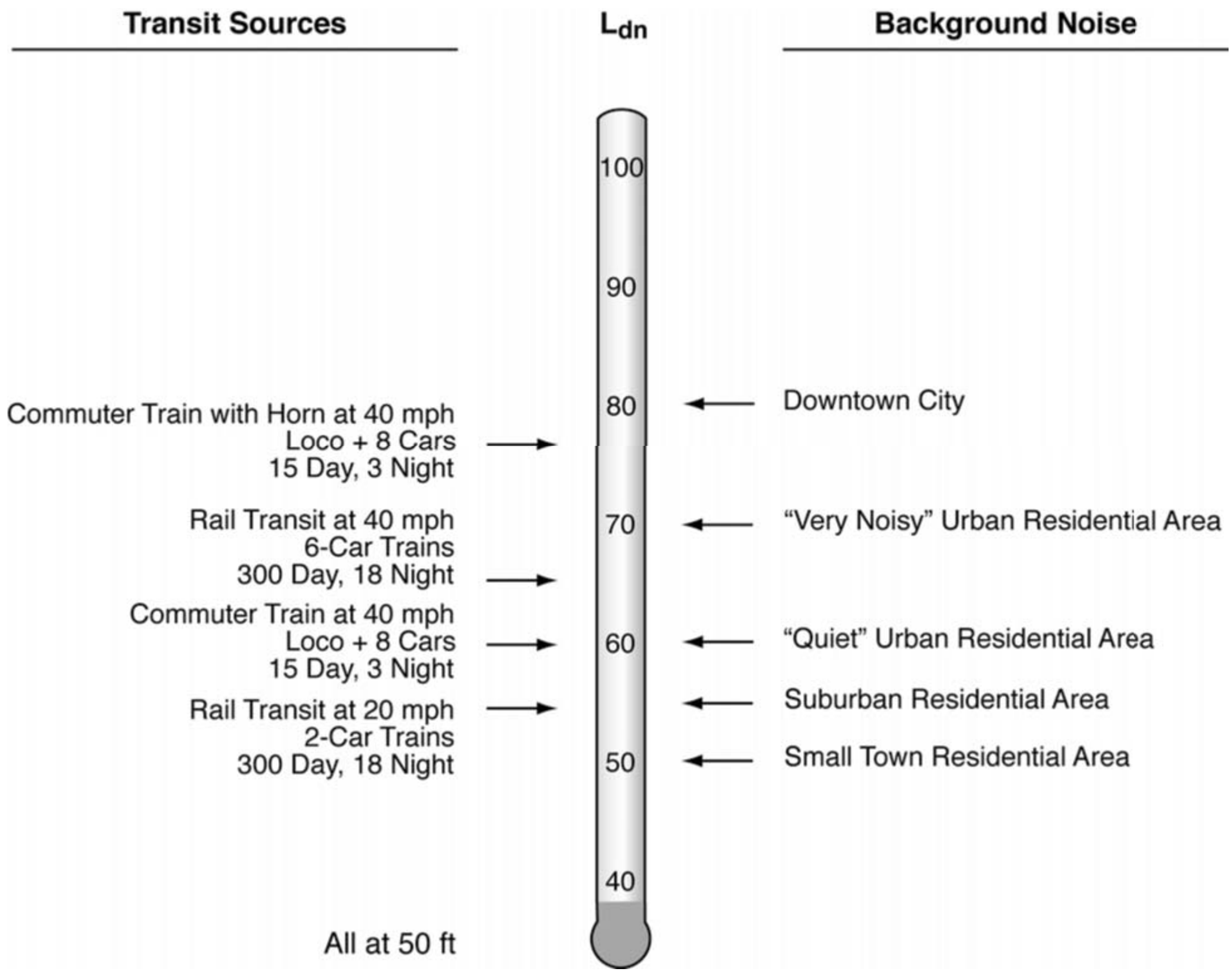
Typical Hourly Leq for Rail Transit and Non-Rail Transit

FIGURE 3.6-1



Source FTA 2006

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Typical Hourly Ldn for Rail Transit and Non-Rail Transit

FIGURE 3.6-2

Table 3.6-1. Pertinent Laws, Regulations, and Plans for Noise and Vibration

Law, Regulation, or Plan	Summary and Project Nexus
Federal	
Noise Control Act of 1972	The Noise Control Act of 1972 (42 USC 4910) was the first comprehensive statement of national noise policy. It declared that "it is the policy of the U.S. to promote an environment for all Americans free from noise that jeopardizes their health or welfare."
The Occupational Safety and Health Administration (OSHA)	OSHA Occupational Noise Exposure Hearing Conversation Amendment (Federal Register [FR] 48 (46), 9738-9785) establishes noise exposure limits for the workplace, specifically relevant during construction.
U.S. Environmental Protection Agency (EPA)	EPA Railroad Noise Emission Standards (40 CFR 201) pertain to noise emissions from railroads. FRA Railway Noise Emission Compliance Regulations (49 CFR 210) prescribe minimum compliance regulations for enforcement of the Railroad Noise Emission Standards as part of 40 CFR 201.
The U.S. Department of Transportation (DOT)	DOT has published impact assessment procedures and criteria pertaining to noise from transportation sources. Noise impact criteria have been adopted by FTA to assess the contribution of noise from conventional rail sources to the existing environment. These guidelines establish methods for analyzing and assessing noise and vibration impacts. The impact criteria are based on the goal of maintaining a noise environment considered acceptable for land uses where noise may have an effect. The noise exposure is measured in terms of Ldn for residential land uses or in terms of Leq for other land uses. In FTA's Transit Noise and Vibration Impact Assessment Manual (FTA 2006), noise impact criteria for construction and operation of rail facilities are based on the change in outdoor noise exposure using a sliding scale with three land use categories and three degrees of impact. For operational rail noise, FTA's three land use categories are as follows: • Noise Land Use Category 1: Tracts of land where quiet is an essential element in their intended purpose, such as outdoor amphitheaters, concert pavilions, and National Historic Landmarks with significant outdoor use. • Noise Land Use Category 2: Residences and buildings where people normally sleep, including homes, hospitals, and hotels. • Noise Land Use Category 3: Institutional land uses (schools, places of worship, libraries) with use typically during the daytime and evening. Other uses in this category can include medical offices, conference rooms, recording studios, concert halls, cemeteries, monuments, museums, historical sites, parks, and recreational facilities.
State	
California Noise Control Act	The California Noise Control Act was enacted in 1973 (Health and Safety Code Section 46010 et seq.). The Office of Noise Control in the Department of Health Services administers the act to provide assistance to local communities developing local noise control programs and the Office of Planning and Research to provide guidance for the preparation of the required noise elements in city and county general plans. The State of California has not adopted specific noise criteria that are applicable to rail projects. Therefore, the noise impact assessment for the Project is based on the guidelines provided by FTA.

Table 3.6-1. Pertinent Laws, Regulations, and Plans for Noise and Vibration

Law, Regulation, or Plan	Summary and Project Nexus
Local	
City of San Bernardino	Local noise standards are addressed in the Noise Element of the City's General Plan (Chapter 14). The Noise Element sets forth goals, policies, and implementation guidelines to ensure land use compatibility with respect to noise.
City of Loma Linda	Local noise standards are addressed in the Noise Element of the City's General Plan (Chapter 7). The General Plan's stated purpose is to limit the community's exposure to excessive noise levels.
City of Redlands	Local noise standards are addressed in the Noise Element of the City's General Plan (Chapter 9). The General Plan's stated purpose is to achieve and maintain land use compatibility within the City.

3.6.2 Affected Environment

The Study Area is located on the east side of the San Bernardino Valley in an urban setting that consists of established commercial and industrial uses along the railroad corridor and scattered residential communities, educational facilities, and recreational centers. The western three mile section of the existing railroad corridor has occasional/intermittent freight traffic. Approximately 150 freight cars per year travel along the railroad corridor between downtown San Bernardino and Tippecanoe Avenue, with no rail service currently east of Tippecanoe Avenue. Roadway traffic from I-10 and regional roadway collectors (e.g., Waterman Avenue) is a prominent source in the ambient noise environment. Identified categories within the Study Area and scattered along the railroad corridor are described in more detail below.

Noise Sensitive Land Uses

For the purpose of the noise and vibration analysis, the Study Area was broken down into MP segments to identify the land uses and potential sensitive receivers within the area. The Study Area does not contain any Category 1 land uses within approximately 1,500 feet of the railroad corridor and, therefore, a majority of sensitive land uses in the Study Area are Category 2 uses with some Category 3 uses. These uses were determined by reviewing the General Plan GIS land use mapping and supplemented by field reconnaissance, and are further described below for each segment of the rail corridor (Appendix H1).

MP 1 to 2. This segment of the Study Area is generally bordered by existing industrial and commercial development with some isolated vacant parcels. Category 2 uses comprised of existing residences are limited to the area immediately east of the railroad corridor along Dorothy Street. This area is planned for and zoned as Residential Suburban (RS), Commercial General (CCS-1), and Commercial Heavy (CH) per the City of San Bernardino General Plan/Zoning map.

MP 2 to 3.5. Industrial and commercial uses generally border this section of the Study Area north of Central Avenue. South of Central Avenue and west of Waterman Avenue, Category 2 land uses bordering the railroad corridor are comprised of existing residences with large lots to the east and west of the railroad corridor until South Waterman Avenue. This area is zoned Light Industrial (LI) and Office Industrial Park (OIP) per the City of San Bernardino General Plan/Zoning map. The existing residential housing in this area is not conforming to the existing land use.

MP 3.5 to 6. Tippecanoe Avenue distinguishes a land use transition from commercial and industrial uses to the west and varying densities of residential development to the east. Category 2 land uses are comprised of existing residences located east of Tippecanoe Avenue and south of the railroad corridor. This area is generally zoned RS and Residential Medium High (RMH) per the City of San Bernardino General Plan/Zoning map. From Richardson Street to Mountain View Avenue, Category 2 land uses are located to the north and south of the railroad corridor and include Victoria Elementary School, zoned as Public Facility (PF) and additional residential areas zoned Residential Urban (RU) per the City of San Bernardino General Plan/Zoning map. A day care facility is also located on the southwest side of the railroad corridor at Mountain View Avenue. Mountain View Avenue demarcates another significant transition in land use with residential use predominately to the west and commercial and industrial uses to the east within the East Valley Corridor Specific Plan.

MP 6 to 8.5. At approximately MP 5.7 and Bryn Mawr Avenue, the Study Area borders the northern limits of the City of Loma Linda, which includes Category 2 uses to the south of the Mission Zanja Flood Control Channel. This area is zoned Medium and High Density Residential (MDR/HDR), per the Loma Linda Zoning map. Further east, the railroad corridor parallels I-10 to the south and includes several Category 2 uses at several locations within commercially zoned areas. These include residential and transient residential (motels) uses to the south of Redlands Boulevard east and west of Kansas Street and to the east of Nevada Street and west of Tennessee Street. Jennie Davis Park is located south of Redlands Boulevard at New York Street. Additional motels are located just west of New York Street along the north side of the railroad corridor, and several residences are located north of Stuart Avenue, east of Texas Street.

MP 8.5 to 10. This portion of the Study Area is comprised mainly of commercial land uses zoned Commercial (C) per the Downtown Redlands Specific plan; however, several residences exist along Stuart Avenue, from east of Eureka Street to Church Street, zoned Medium Density Residential (MDR). A historic church also exists in this area, just west of 9th Street and north of the railroad. Residences also exist to the south of the railroad corridor, along Central Avenue between 9th Street and the I-10, and are zoned MDR per the Redlands Zoning map. Scattered residences are also located north of the railroad along Stuart Avenue, east of 7th Street. East of the I-10, residences of varying densities are located to the north and south of the railroad corridor. Additionally, Sylvan Park and the University of Redlands are located north of the railroad corridor and zoned as Open Space and Public Institutional (PI) per the Redlands Zoning map.

Existing Ambient Noise

To characterize ambient noise conditions within the Study Area, noise levels were collected through monitoring of local neighborhoods and other noise-sensitive uses in close proximity to the railroad corridor. Noise measurements were conducted at eleven (11) locations throughout the Study Area (see Figures 3.6-3A and 3.6-3B). Each of the measurements signifies a “long term” (LT) noise measurement, and collected continuous hour-by-hour sound level data for a minimum period of 24 hours. Eight of the LT noise measurements (LT-1 through LT-5, LT-8, LT-9 and LT-11) were conducted in or adjacent to exterior residential yards adjacent to the railroad corridor. LT-6 was conducted at a motel, and LT-7 and LT-10 were conducted at parks. The LT noise measurement data, including locations, are summarized in Table 3.6-2. Averages range from 52.2 to 71.4 Ldn, 38.8 to 61.1 minimum 1-hour Leq, and 53.7 to 74 maximum 1-hour Leq.

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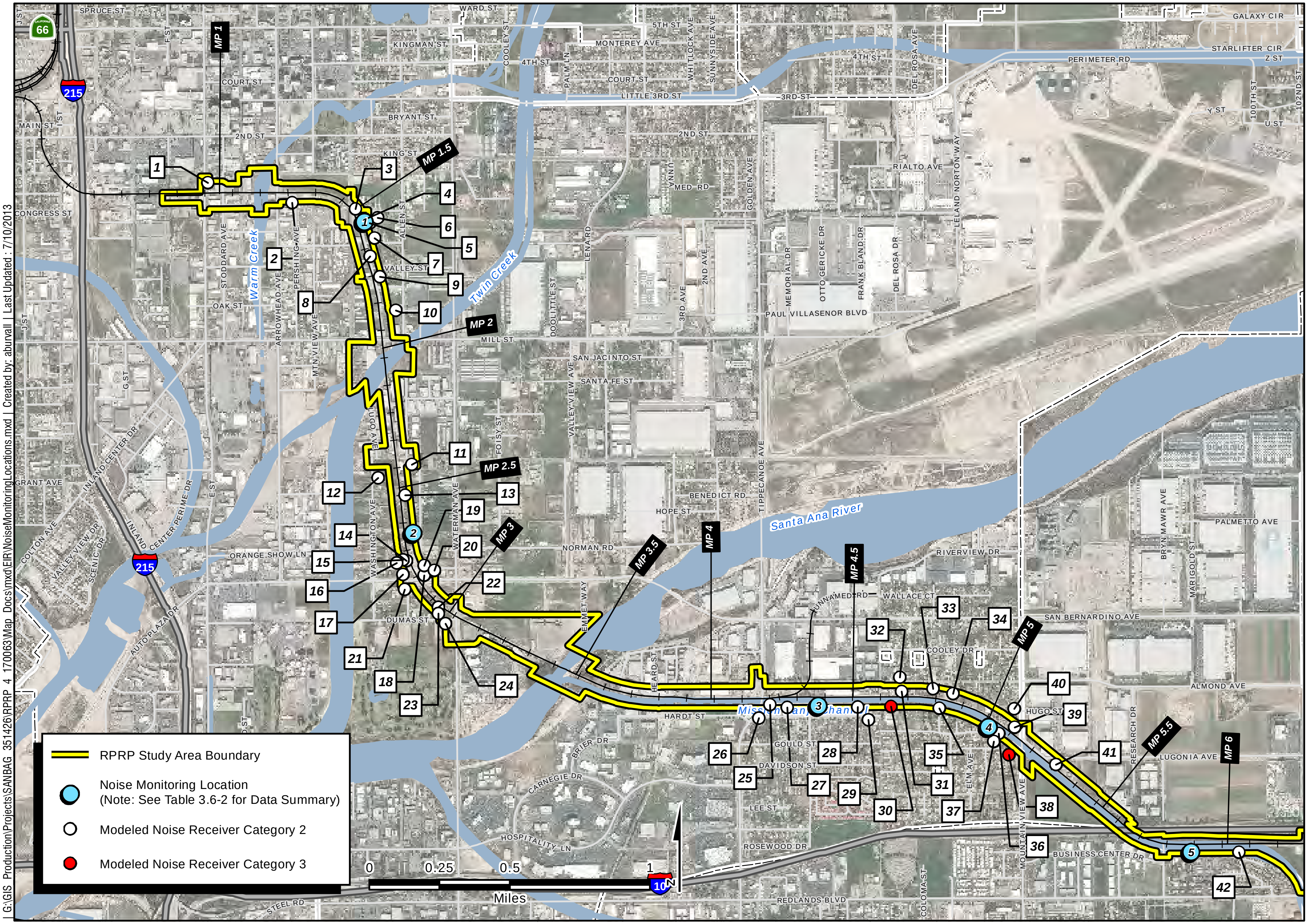

Long Term Noise Monitoring Locations and Modeled Receiver Locations - Western Study Area

Figure 3.6-3 A

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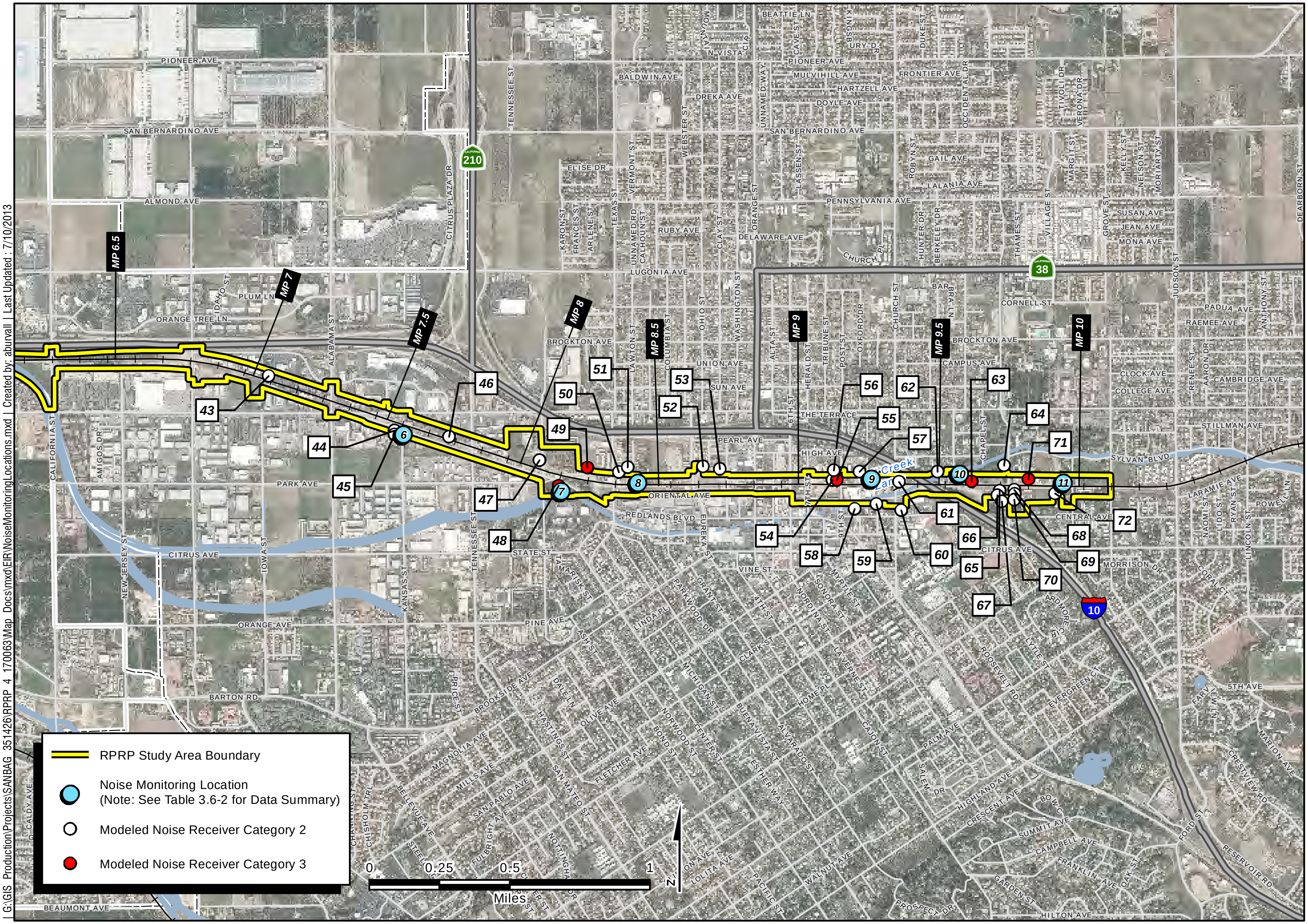
FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR



Long Term Noise Monitoring Locations and Modeled Receiver Locations - Eastern Study Area

Figure 3.6-3 B

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

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Table 3.6-2. Long-Term Noise Measurement Data Summary

Site ID	Location	Noise Measurement Results			
		Measurement Dates/Times	Ldn	Minimum 1-Hour Leq (dBA)	Maximum 1-Hour Leq (dBA)
LT-1	Near residences, in open field behind 134 Julia Street	5/2/2012 11 a.m. to 5/3/2012 10 a.m.	55.2	38.8	55.9
LT-2	Near residences, in open field between 1038 and 1018 Lincoln Street	5/2/2012 12a.m. to 5/3/2012 11 a.m.	52.2	39	53.7
LT-3	Rear yard of 380 Hardt Street	5/3/2012 3 p.m. to 5/4/2012 2 p.m.	63.7	46.2	68.2
LT-4	Rear yard of 1924 East Hardt Street	5/3/2012 3 p.m. to 5/4/2012 2 p.m.	57.9	41.9	62.6
LT-5	Rear of Rosewood Apartments, 26232 Redlands Blvd	5/3/2012 4 p.m. to 5/4/2012 3 p.m.	71.4	61.1	68.4
LT-6	Hanson Motel 1291 Redlands Blvd	5/7/2012 3 p.m. to 5/8/2012 2 p.m.	67.2	53.2	69.8
LT-7	Jennie Davis Memorial Park, New York Street at Redlands Blvd	5/7/2012 3 p.m. to 5/8/2012 2 p.m.	64.4	49.9	74
LT-8	Mixed residential and commercial area, 701 W Stuart Street	5/7/2012 4 p.m. to 5/8/2012 3 p.m.	62.3	50.7	60
LT-9	Near residences, in lot next to 610 Stuart Street	5/9/2012 5 a.m. to 5/10/2012 4 a.m.	66.8	56.6	64.1
LT-10	Sylvan Park, 601 North University Street	5/9/2012 6 a.m. to 5/10/2012 5 a.m.	64.1	52.4	68.6
LT-11	Near residences in lot on University of Redlands Campus, North of the railroad corridor, west of Cook Street	5/9/2012 6 a.m. to 5/10/2012 5 a.m.	60.7	48.5	59

Source: Draft Redlands Passenger Rail Project Noise Technical Memorandum (see Appendix H1).

Given that the existing rail corridor is infrequently used (e.g. fewer than 5 trains per week), vibration measurements were not conducted. Existing vibration sources in the Study Area include motor vehicle traffic along local roads and I-10 and infrequent freight trains on the existing track.

3.6.3 Environmental Impacts/Environmental Consequences

3.6.3.1 Effect Criteria

The Build Alternatives and Design Options would have an adverse noise and vibration effect if they would:

- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

- Result in exposure of persons to or generation of excessive groundborne vibration or ground borne noise levels;
- Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; or
- Expose people residing or working in the project area (located within an airport land use plan, or within two miles of a public or private airport) to excessive noise levels.

3.6.3.2 Methodology

To assess potential noise effects from Project-related construction and operation, methods outlined in U.S. Department of Transportation, FTA's Transit Noise and Vibration Impact Assessment Manual were used to quantify noise and vibration-related impacts from construction, rail and traffic noise, stationary sources, and train-related vibration. These methods are detailed further below.

Construction. Construction noise and vibration would result from operation of heavy equipment and mechanical equipment needed to construct the Project infrastructure. The FTA manual (Chapter 12) contains several sets of tables listing suggested construction noise impact criteria, depending upon the level of detail/understanding of the construction phase. Table 3.6-3 presents the different impact criteria levels for daytime and nighttime construction. Daytime is defined as 7 a.m. to 10 p.m., and nighttime is defined as 10 p.m. to 7 a.m.

Table 3.6-3. Prescriptive FTA Construction Noise Impact Guidelines

Land Use	8-Hour Leq (dBA)		30-Day Average Ldn (dBA)
	Day	Night	
Residential	80	70	75[a]
Commercial	85	85	80[b]
Industrial	90	90	85[b]

Source: FTA 2006.

a. In urban areas with very high ambient noise levels (Ldn > 65 dB), Ldn from construction operations should not exceed existing ambient + 10 dB.

b. 24-hour Leq, not Ldn.

Noise from construction activity is generated by the broad array of powered noise-producing mechanical equipment used in the construction process. This equipment ranges from hand-held pneumatic tools to excavators, loaders, a variety of trucks, and tie and rail handling equipment. A complement of noise-producing construction equipment and construction scheduling (e.g., daily engine-hours) information was developed based on projects of comparable size and magnitude and used to estimate worst-case construction noise levels. The range in noise levels typically generated by the equipment assumed for the analysis ranges from 74 dBA Leq to 90 dBA Leq at a distance of 50 feet. The noise exposure at receiver locations was calculated from the decibel addition of all operating construction equipment (see Appendix H1).

Vibrations resulting from activities with the potential to result in an impact during Project construction were analyzed, using the methodology contained in the FTA Manual. FTA analysis guidelines call for investigation of the potential for vibration-induced damage to "fragile" or "extremely fragile" buildings. Damage to a building is possible (but not necessarily probable) if ground vibration levels exceed the following criteria:

- 0.20-inch-per-second PPV (approximately 100 VdB) for fragile buildings.
- 0.12-inch-per-second PPV (approximately 95 VdB) for extremely fragile buildings.

It is extremely rare for vibration from train operations to cause any sort of building damage, even minor cosmetic damage. However, construction ground-borne vibration can damage buildings depending on the soil in the vicinity and the equipment used. Vibration levels for a variety of typical construction equipment types are presented in Table 3.6-4 in terms of PPV in inches per second at a reference distance of 25 feet from the source and RMS velocity in decibels[2] (VdB) at 25 feet.

Table 3.6-4. Typical Construction Equipment Vibration Levels

Equipment/Source		Peak Particle Velocity at 25 Feet (in/sec)	Approximate L_v[1] at 25 Feet
Pile Driver (Impact)	Upper range	1.518	112
	Typical	0.644	104
Pile Driver (Vibratory)	Upper range	0.734	105
	Typical	0.170	93
Clam Shovel Drop (Slurry Wall)	--	0.202	94
Hydromill (Slurry Wall)	In soil	0.008	66
	In rock	0.017	75
Vibratory Roller	--	0.210	94
Hoe Ram	--	0.089	87
Large Bulldozer	--	0.089	87
Caisson Drilling	--	0.089	87
Loaded Trucks	--	0.076	86
Jackhammer	--	0.035	79
Small Bulldozer	--	0.003	58

Source: FTA manual, Table 12-3, 2006.
1. RMS velocity in decibels (VdB) reference 1 micro-inch per second.
Note: Assumptions for the historic structures analysis for construction activities were as follows: Source vibration level of 0.089 inch per second PPV for a loaded truck or a large bulldozer. Source-receiver distance could be within 5 feet or less of structure. For the purposes of the potential damage assessment, a distance of 5 feet was used.

Rail Noise. Methods contained in the FTA Manual were used for the assessment of rail noise including screening procedures and procedures for the general and detailed noise assessment. Under the noise screening procedure, the Project type was identified (e.g., commuter rail mainline, commuter rail station, light rail transit station, and busway). Project-to-receiver screening distances are given in the manual for each type of project, and adjustments to the generic screening distances are made to suit the project where horns and warning bells are used (as is the case with the Project). If receivers exist within the screening distance, then that distance defines the area for the general and/or detailed noise assessment. Pursuant to the screening method steps, the FTA spreadsheet model and the FRA's horn noise

[2] 1 micro-inch per second.

model were used (see Appendix H1). The screening level area is illustrated in Figures 3.6-4A and 3.6-4B for the F-59 and MP-38 locomotive vehicle options.

In the general noise assessment method, the existing noise level and the Project noise level are estimated and compared with the impact criteria contained in the FTA Manual. The estimations include parameters such as project type and location of alternatives, representative noise-source levels, design speed, and time and frequency of operation. Because severe noise impacts were identified as the general noise assessment for rail noise, the analysis proceeded to the more involved detailed noise assessment. In determining impacts, outdoor hourly Leq applies to Categories 1 and 3, whereas outdoor Ldn, which applies a penalty for nighttime noise events, is used for Category 2 land uses (e.g., , residential) where people normally sleep. The criterion for each degree of impact of a project is based on a "sliding scale" that is dependent on the existing noise exposure and the increase in noise exposure due to the project.

In general, the higher the existing (or ambient) noise level, the less the cumulative noise level due to the project can increase before an impact occurs. Using FTA's methodology, potential noise impacts fall into three types: "No Impact," "Moderate Impact," and "Severe Impact" and are described further below:

- No Impact – A project, on average, will result in an insignificant increase in the number of instances where people are "highly annoyed" by new noise.
- Moderate Impact – The change in cumulative noise is noticeable to most people but may not be sufficient to cause strong, adverse community reactions.
- Severe Impact – A significant percentage of people would be highly annoyed by the noise, perhaps resulting in vigorous community reaction.

The noise impact criteria do not apply to most commercial or industrial uses because in general the activities within these buildings are compatible with higher noise levels. Parks are considered noise-sensitive depending on how they are used. Most parks are for active recreation and not considered noise-sensitive. However, passive recreational areas used for reading, conversation, or meditation, even in dense urban areas, are considered as noise-sensitive. Historical transportation structures, such as terminals and railroad stations are not considered noise-sensitive land uses themselves.

The FTA detailed noise assessment method quantifies noise impacts through an in-depth analysis. The methodologies outlined in Chapter 6 of the FTA manual were used to calculate the Ldn noise levels due to train operations on the railroad corridor under the existing, future-no-project, and future-with-project scenarios. The modeling accounted for the number of trains anticipated to pass along the railroad corridor during daytime and nighttime hours (22 and 3, respectively), the typical train speed along the railroad corridor (20 to 35 miles per hour), the typical future train consist (e.g. one engine and two cars) for local transit operations, a typical Metrolink Express train consist (e.g. two engines and six cars), and the use of locomotive horns at crossings. A reference sound exposure level (SEL) value of 92 dBA was applied for the locomotive driven trainset. For the DMU vehicle option, a reference SEL value of 85 dBA was applied in the noise calculations. Additionally, wayside signal bells at crossings were accounted for as part of the detailed noise analysis. Noise Screening Distances to and from identified streets crossing sections are presented in Appendix H1.

Traffic Noise. Traffic noise associated with the Project was assessed using the FHWA's Traffic Noise Model (TNM), version 2.5. Inputs to the TNM include the locations of roadways, shielding features (e.g., topography and buildings), noise barriers, and receivers as well as ground type. For the purposes of this analysis (i.e., a comparison of potential effects from changes in Project-related motor vehicle traffic volumes on the local roadways), a simple grid-type model was constructed. Shielding effects from structures or topography were not included in the model; however, because most of the exterior use areas have some acoustical shielding from either a fence or a building, a uniform 5 dB reduction was assumed and deducted from all of the modeled results. Distances from receivers to roadways represent typical representative noise-sensitive receiver distances in the Study Area. Posted traffic speed limits were used in the model for all Project scenarios. To be conservative, acoustically "hard" site conditions were assumed. Traffic volumes provided in Appendix E were used to estimate traffic noise levels at noise-sensitive receivers in the Study Area for the following scenarios:

- Existing;
- Future Year 2018 Project-only traffic; and
- Future Year 2038 Project-only traffic.

Rail Operational Vibration. The FTA procedure for a general operational vibration assessment was used for this analysis and requires the following data:

- Number of daily vibration events;
- Receiver land use designation (categories specified above);
- Vibration source levels;
- Distance from source to receiver (building) footprints;
- Train speed, suspension, wheel condition (worn or flat-spots), track condition;
- Number of floors above grade to the receiver;
- Soil characteristics of ground between the vibration source and receiver; and
- Receiver construction/foundation type and description, including whether it is fragile or extremely fragile.

For the operational vibration analysis, the number of daily events was classified as "occasional" because there would be between 30 and 70 vibration events of the same kind per day. Category 2 (for the residences) or Category 3 (parks, schools, churches) land use designations were used for all of the receivers analyzed. The source levels for locomotives were derived from the FTA manual using the curve for "locomotive powered passenger or freight." The FTA Manual does not provide a vibration reference level specific to DMU vehicles. However, the manual states that "self-powered DMU's create vibration levels somewhere between rapid transit vehicles and locomotive-powered passenger trains." Accordingly, a vibration reference level equal to the average of the locomotive and rapid transit reference levels was used. The net effect is that vibration source levels for the DMU vehicle are at least 5 dB less than the source levels used for the locomotive driven trainset (Appendix H2).

The distance between the source (i.e., rail centerline) and the receiver was measured using scaled aerial photographs showing the existing and proposed track alignment. Train speed estimates used are included in Table 2-2 of Chapter 2. Because the train type is a passenger train, the train's wheels were assumed to be in good condition (i.e., no flat spots). Soil propagation characteristics were assumed to be "normal" (rather than "efficient"), and typical vibration-sensitive structures were assumed to be of wood-frame construction, based on field observations. Using the generalized ground surface vibration curve, the RMS velocity level data at the receiver distance of interest is adjusted based on the factors affecting the source, factors affecting the vibration path, and factors affecting the receiver. The calculation spreadsheets are contained in Appendix H1.

Layover Facility Noise. The FTA spreadsheet model was used to identify screening distances for the layover facility, which were then compared to the distances of the nearest noise-sensitive receivers for the Build Alternatives, Design Option 1, and Design Option 2. Design Option 3 was not included in the current modeling. It is assumed that qualitatively the operational speeds would be lower at Waterman Avenue Station and higher at Tippecanoe Avenue Station, thus noise levels would likely experience corresponding changes. However, train operational frequencies would not change from that of the Preferred Project and therefore, minimal changes in hourly Leq would occur.

3.6.3.3 Criteria Requiring No Further Evaluation

Aircraft Noise from Public and Private Airports. The Study Area is located approximately 1.2 miles south of the San Bernardino International Airport. Although the Project is within two miles of an airport, the Project does not include any residential or other sensitive uses that would expose people residing or working in the Study Area to excessive airport noise. Additionally, there are no private airstrips within the vicinity of the Project. In this context, no effect would occur under NEPA. Under CEQA, no impact would result.

Parking Lot Noise. The FTA model was used to arrive at the adjusted screening distances for the respective station stops as follows: 325 feet for E Street, 60 feet for Tippecanoe Avenue, 55 feet for New York Street, 80 feet for Downtown Redlands, 50 feet for University Street. Comparing the resultant adjusted screening distances to the nearest noise-sensitive receiver locations, it was determined that no noise-sensitive receivers are located within the screening area. Therefore, the noise effects due to parking areas were not further analyzed. In this context, no effect would occur under NEPA. Under CEQA, no impact would result.

Conflict with Local Noise Standards. The Project would be constructed and operated within an existing railroad corridor that is subject to the jurisdiction of the Surface Transportation Board (STB) (see Section 3.2, Land Use and Planning). As a result, state and local noise standards are not applicable to the Project. For this reason, no effect would occur under NEPA. Under CEQA, conflicts with local and state noise standards are considered less than significant.

3.6.3.4 Assessment of Environmental Effects

EFFECT 3.6-1	**Permanent Increase in Ambient Noise Levels.** The Project would result in a permanent increase in ambient noise levels in the Study Area.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, existing conditions within the railroad corridor would generally be unaffected. As described in Chapter 2, SANBAG would still be required to perform regularly scheduled maintenance of the existing track and corresponding improvements to the at-grade crossings and bridges to facilitate continued freight service. These improvements would be implemented on an as-needed basis incrementally and would be limited in geographic extent at any given time. In this context, sensitive receivers could be exposed to maintenance-related construction noise and vibration. No adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

Direct Effects from Long Term Operations

With the implementation of the No Build Alternative, the rail corridor would continue to be used for low-speed, local freight service. Although no extension of freight service is proposed east of Tippecanoe Avenue, the extension of such service further east would remain a possibility if new customers request service from BNSF. Other existing modes of alternative transportation (e.g., bus service) would remain unchanged. Based on these considerations, no adverse operational noise effect would occur under NEPA. Under CEQA, operational noise impacts would be less than significant.

Indirect Effects

With the continuation of existing freight service and ongoing maintenance of the railroad corridor, no indirect effect would occur under NEPA. No impact would occur under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

The conventional construction activities for the Build Alternatives and Design Options would require the use of a similar fleet of vehicles and heavy equipment. Appendix H1 includes noise levels typical of various types of conventional construction equipment. The equipment noise levels range from a level of 68 dBA at the low end to pile driving equipment (peaks) up to 107 dBA at a distance of 50 feet. The range in noise levels typically generated by the equipment assumed for the analysis ranges from 74 dBA Leq to 90 dBA Leq at a distance of 50 feet. Given that nighttime construction is also possible, this same noise level is assumed for any construction that could occur during nighttime hours.

Receiver 22 (residences located within an area zoned for an office industrial park) and Receiver 61 (residences located within an area zoned medium density residential) would be the closest receivers to Project construction activities at approximately 50 feet. The remaining impacted receivers are located between 50 feet and 350 feet (Receiver 12, 20, 37, and 40) from the railroad corridor. As presented in Table 3.6-3, land uses in the Study Area such as commercial and industrial have higher noise level thresholds than residential land uses. Based on FTA's criteria, residential uses (or Category 2 uses) have the lowest threshold of 80 dBA during daytime hours and 70 dBA during nighttime hours.

As shown in Table 3.6-5, construction-related noise impacts would occur at Category 2 land uses within approximately 325 feet during daytime construction and 500 feet during nighttime construction. Construction activities would occur within these specified distances as presented in Table 3.6-5 for 13 daytime and 65 nighttime Category 2 receivers (see Appendix H1). These resulting noise levels would be considered an adverse effect under NEPA given the large number of Category 2 land uses potentially affected. Under CEQA, this impact is considered significant. Mitigation Measures NV-1 (Employ Noise-Reducing Measures during Construction) and NV-2 (Prepare a Community Notification Plan for Project Construction) are proposed to minimize the adverse effects of construction-related noise.

Table 3.6-5. Construction Noise Data Summary for Category 2 Land Uses

Receiver Distance (Perpendicular Distance to Alignment [feet])	Estimated Construction Noise Levels 8-Hour Leq	FTA Criteria for Residential Land Uses (8-Hour Leq)		FTA Criteria Exceeded?[1]	
		Day	Night	Day	Night
50	93	80	70	Yes	Yes
75	91	80	70	Yes	Yes
80	91	80	70	Yes	Yes
100	89	80	70	Yes	Yes
125	88	80	70	Yes	Yes
140	86	80	70	Yes	Yes
150	86	80	70	Yes	Yes
175	85	80	70	Yes	Yes
200	84	80	70	Yes	Yes
225	78	80	70	Yes	Yes
250	77	80	70	Yes	Yes
275	77	80	70	Yes	Yes
300	76	80	70	Yes	Yes
325	80	80	70	Yes	Yes
350	80	80	70	No	Yes
375	79	80	70	No	Yes
400	72	80	70	No	Yes
475	72	80	70	No	Yes
500	70	80	70	No	Yes
550	68	80	70	No	No

Source: Draft Redlands Passenger Rail Project Noise Technical Memorandum (Appendix H1).

Direct Effects from Long-Term Operations

Operation of the Build Alternatives and Design Options would result in increased noise levels from sources including train horn noise, traffic noise, and wheel/rail noise from daily passenger rail operations. Project operations would involve new passenger rail service consisting of 22 daily and three evening train trips that would pass along the railroad corridor. As described in Chapter 2, typical train speeds along the railroad corridor would range from 20 to 35 miles per hour. In addition to noise produced as part of the train's movements back and forth along the railroad corridor, operations would involve the use of locomotive horns at at-grade crossings near noise-sensitive land uses and wayside signal bells at crossings. Each of these sources was accounted for as part of the detailed noise analysis (see Appendix H1). The actual rail noise levels experienced at any one receptor is would be dependent on several factors:

- Track condition and gradient;
- Intervening ground surface characteristics, whether acoustically reflective or absorptive (i.e., pavement or vegetation);
- Meteorological factors such as wind and temperature gradient; and
- Shielding due to structures, earthen berms, hills, and the proximity of a roadway.

Table 3.6-6 presents an estimation of existing noise conditions and Project noise impacts using a locomotive driven trainset with and without the implementation of quiet zones based on the methodology presented in Section 3.6.3.2. A complete list of all modeled receivers is presented in Appendix H1. As presented in Table 3.6-6, moderate impacts from rail noise would occur at a total of 21 receivers representing 115 Category 2 land uses, and three Category 3 land uses, including a church, a public park, and the University of Redlands. Severe impacts from rail noise would occur at a total of 22 receivers representing 86 Category 2 land uses. Noise levels with the addition of the Project using a locomotive vehicle type are illustrated in Figures 3.6-4A through 3.6-4B.

As shown in Table 3.6-7, under the DMU vehicle option, moderate impacts from rail noise would occur at a total of 19 receivers representing 104 Category 2 land uses, and three Category 3 land uses. Similar to the locomotive driven trainset severe impacts from rail noise would occur at a total of 22 receivers representing 86 Category 2 land uses. Noise levels for the Project using a DMU vehicle type are illustrated in Figures 3.6-4A through 3.6-4B.

Based on the large number of Category 2 uses adversely affected for both a locomotive driven trainset or DMU, the permanent increases in ambient noise levels are considered an adverse effect under NEPA. Under CEQA, this impact is significant. Mitigation Measures NV-3 (Establish Quiet Zones), NV-4 (Construct Sound Barriers), NV-5 (Wayside Rail Lubrication), and NV-7 (Provide Building Noise Insulation to Severe- and Moderate-Impact Residences) are proposed to minimize operational noise associated with the movement of passenger trains along the rail corridor.

Layover Facility Noise. The FTA model was used to arrive at the adjusted screening distances for Project-related facilities. The adjusted screening distance for the layover facility (85 feet) was compared with the distance to the nearest noise-sensitive receivers for the Build Alternatives and Design Options. Based on the applied screening distance, it was determined that no noise-sensitive receivers are located within the screening area. Therefore, no adverse effect would occur under NEPA. Under CEQA, noise impacts from the layover facility would be less than significant.

Indirect Effects

Implementation of the Project would not result in any corresponding land use changes that could indirectly result in the placement of new noise sensitive land uses or other noise generating sources. In this context, no adverse effect would occur under NEPA. Under CEQA, this impact would be less than significant.

EFFECT 3.6-2	**Create Excessive Groundborne Vibration or Noise.** Project-related construction and operation would generate groundborne vibration or noise that would potentially affect sensitive land uses (e.g., residences).

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

As described in Chapter 2, the No Build Alternative would continue to involve regularly scheduled maintenance of the existing track and corresponding improvements to the at-grade crossings and bridges. Area receivers would likely experience some level of construction nuisance; however, given the limited frequency, duration, and geographic extent of these activities, construction-related vibration impacts are unlikely. In this context, no adverse effect would occur under NEPA. Under CEQA, this impact would be less than significant.

Table 3.6-6. Existing and Projected Noise Levels (Locomotives)

Receiver #	Receiver Location Description	Land Use Category	Jurisdiction General Plan Land Use and Zoning	Number of Noise-Sensitive Sites Represented	Existing Noise Exposure (dBA Ldn)	Closest Distance to Project (Feet)	Project Noise Exposure (dBA Ldn)	FTA Level of Noise Impact without Quiet Zone	Project Noise Exposure (dBA Ldn) With Quiet Zone Implementation	FTA Level of Noise Impact t[3] With Quite zone Implementation
MP 1 to MP 2: E Street to southeast of Sierra Way										
2	200' to 400' s of alignment, w of Pershing Ave	Residential/2	S.B. Commercial Heavy	2	55	200	62	**Severe Impact**	55	No Impact
3	50' to 100' e of alignment, e of Dorothy St	Residential/2	S.B. Commercial Heavy	3	55	75	68	**Severe Impact**	62	**Severe Impact**
4	100 to 200' e of alignment, e of Dorothy St	Residential/2	S.B. Residential Suburban	3	55	150	64	**Severe Impact**	56	**Moderate Impact**
5	200 to 400' e of alignment, e of Dorothy St	Residential/2	S.B. Residential Suburban	32	55	220	61	**Moderate Impact**	54	No Impact
8	50' to 100' e of alignment, e of Dorothy St	Residential/2	S.B. Commercial Heavy	5	55	75	68	**Severe Impac**t	60	**Moderate Impact**
9	100 to 200' e of alignment, e of Dorothy St	Residential/2	S.B. Commercial Heavy	1	55	150	56	**Moderate Impact**	56	**Moderate Impact**
MP 2 to MP 3.5: Southeast of Sierra Way to southeast of South Waterman Avenue										
11	200 to 400' e of alignment, e of Lincoln Ave	Residential/2	S.B. Light Industrial	3	52	275	55	**Moderate Impact**	50	No Impact
12	200' to 400' w of alignment, e of S Washington Ave	Residential/2	S.B. Light Industrial	1	52	350	58	**Moderate Impact**	51	No Impact
13	100 to 200' e of alignment, e of Lincoln Ave	Residential/2	S.B. Light Industrial	6	52	100	66	**Severe Impact**	59	**Moderate Impact**
14	50' to 100' w of alignment, e of S Washington Ave	Residential/2	S.B. Light Industrial	1	52	75	68	**Severe Impact**	61	**Severe Impact**
15	100' to 200' w of alignment, e of S Washington Ave	Residential/2	S.B. Light Industrial	2	52	125	65	**Severe Impact**	57	**Moderate Impact**

[3] Represents FTA Impact criteria.

Table 3.6-6. Existing and Projected Noise Levels (Locomotives)

Receiver #	Receiver Location Description	Land Use Category	Jurisdiction General Plan Land Use and Zoning	Number of Noise-Sensitive Sites Represented	Existing Noise Exposure (dBA Ldn)	Closest Distance to Project (Feet)	Project Noise Exposure (dBA Ldn)	FTA Level of Noise Impact without Quiet Zone	Project Noise Exposure (dBA Ldn) With Quiet Zone Implementation	FTA Level of Noise Impact t[3] With Quite zone Implementation
16	200' to 400' w of alignment, e of S Washington Ave	Residential/2	S.B. Light Industrial	3	52	250	55	**Moderate Impact**	48	No Impact
17	200' to 400' w of alignment, e of S Washington Ave	Residential/2	S.B. Light Industrial	2	52	200	62	**Severe Impact**	55	**Moderate Impact**
18	100' to 200' e of alignment, s of Ennis St	Residential/2	S.B. Light Industrial	1	52	150	64	**Severe Impact**	58	**Moderate Impact**
19	200' to 400' e of alignment, e of Lincoln Ave	Residential/2	S.B. Light Industrial	2	52	200	62	**Severe Impact**	55	**Moderate Impact**
20	200' to 400' e of alignment, e of Lincoln Ave	Residential/2	S.B. Light Industrial	2	52	350	58	**Moderate Impact**	52	No Impact
21	400' to 800' w of alignment, s of Orange Show Rd	Residential/2	S.B. Light Industrial	1	52	325	59	**Moderate Impact**	52	No Impact
22	50' to 100' sw of alignment, n of Dumas St	Residential/2	S.B. Office Industrial Park	1	52	50	71	**Severe Impact**	63	**Severe Impact**
23	100' to 200' sw of alignment, n of Dumas St	Residential/2	S.B. Office Industrial Park	2	52	140	64	**Severe Impact**	57	**Moderate Impact**
24	200' to 400' sw of alignment, n of Dumas St	Residential/2	S.B. Office Industrial Park	4	52	220	61	**Severe Impact**	55	**Moderate Impact**
MP 3.5 to MP 6: Southeast of South Waterman Avenue to Bryn Mawr Avenue										
25	100' to 200' s of alignment, e of Tippecanoe Ave	Residential/2	S.B. Residential Medium High	3	64	140	64	**Moderate Impact**	58	No Impact
27	100' to 200' s of alignment, e of Tippecanoe Ave	Residential/2	S.B. Residential Medium High	8	64	175	63	**Moderate Impact**	55	No Impact
28	100' to 200' s of alignment, w of S Richardson St	Residential/2	S.B. Residential Urban	18	64	175	63	**Moderate Impact**	55	No Impact
31	100' to 200' n of alignment, e of S Richardson St	Residential/2	S.B. Residential Urban	6	58	100	66	**Severe Impact**	59	**Moderate Impact**

Table 3.6-6. Existing and Projected Noise Levels (Locomotives)

Receiver #	Receiver Location Description	Land Use Category	Jurisdiction General Plan Land Use and Zoning	Number of Noise-Sensitive Sites Represented	Existing Noise Exposure (dBA Ldn)	Closest Distance to Project (Feet)	Project Noise Exposure (dBA Ldn)	FTA Level of Noise Impact without Quiet Zone	Project Noise Exposure (dBA Ldn) With Quiet Zone Implementation	FTA Level of Noise Impact t[3] With Quite zone Implementation
33	100' to 200' n of alignment, s of Victoria Ave	Residential/2	S.B. Residential Urban	8	58	150	64	**Severe Impact**	56	No Impact
36	100' to 200' s of alignment, n of E Gould St	Residential/2	S.B. Residential Urban	10	58	150	64	**Severe Impact**	56	No Impact
37	200' to 400' s of alignment, w of Mountain View Ave	Residential/2	S.B. Residential Urban	7	58	350	53	**Moderate Impact**	46	No Impact
39	100' to 200' n of alignment, s of Victoria Ave	Residential/2	S.B. Residential Urban	3	58	125	65	**Severe Impact**	58	**Moderate Impact**
40	200' to 400' n of alignment, s of Victoria Ave	Residential/2	S.B. Residential Urban	3	58	350	58	**Moderate Impact**	51	No Impact
41	50' to 100' n of alignment, e of Mountain View Ave	Residential/2	East Valley Corridor Specific Plan (EVCSP) Commercial/ Industrial	6	58	50	71	**Severe Impact**	63	**Severe Impact**
MP 6 to MP 8.5: Bryn Mawr Avenue to Texas Street										
44	100' to 200' s of alignment, s of Redlands Blvd	Residential/2	EVCSP Commercial	6	67	150	64	**Moderate Impact**	56	No Impact
46	0' to 100' n of alignment, w of Tennessee St	Transient Residential/Commercial (Motel)/2	Redlands Commercial/ Industrial	1	67	75	68	**Severe Impact**	61	No Impact
47	100' to 200' n of alignment, w of New York St	Residential/2	Redlands Commercial/ Industrial	1	62	175	63	**Moderate Impact**	57	No Impact

Table 3.6-6. Existing and Projected Noise Levels (Locomotives)

Receiver #	Receiver Location Description	Land Use Category	Jurisdiction General Plan Land Use and Zoning	Number of Noise-Sensitive Sites Represented	Existing Noise Exposure (dBA Ldn)	Closest Distance to Project (Feet)	Project Noise Exposure (dBA Ldn)	FTA Level of Noise Impact without Quiet Zone	Project Noise Exposure (dBA Ldn) With Quiet Zone Implementation	FTA Level of Noise Impact t[3] With Quite zone Implementation
MP 8.5 to MP 10: Texas Street to east of North University Street (Project End)										
54	50' to 100' n of alignment, w of 9th St	Residential/2	Downtown Redlands Specific Plan (DRSP) Commercial/ Industrial	6	67	75	68	**Severe Impact**	62	No Impact
55	50' to 100' n of alignment, w of 9th St	Church/3	DRSP Commercial/ Industrial	1	61	80	66	**Moderate Impact (Category 3)**	66	No Impact
61	50' to 100' n of alignment, e of Church St	Residential/2	DRSP Medium Density Residential	6	67	50	71	**Severe Impact**	65	**Moderate Impact**
62	200' to 400' n of alignment, n of Sylvan Blvd	Residential/2	Redlands Medium Density Residential	7	64	250	61	**Moderate Impact**	53	No Impact
63	50' to 100' n of alignment, n of Park Ave	Recreation (Park)/3	Redlands Public/ Institutional	1	61	75	68	**Moderate Impact (Category 3)**	63	No Impact (Category 3)
64	100' to 200' s of alignment, w of University St	Residential/2	Redlands Public/ Institutional	1	64	100	62	**Moderate Impact**	55	No Impact
65	100' to 200' s of alignment, w of University St	Residential/2	Redlands High Density Residential	8	64	100	62	**Moderate Impact**	55	No Impact
68	50' to 100' s of alignment, e of University St	Residential/2	Redlands High Density Residential	6	61	75	69	**Severe Impact**	62	**Moderate Impact**
69	100' to 200' s of alignment, e of University St	Residential/2	Redlands High Density Residential	7	61	150	59	**Moderate Impact**	53	No Impact

Table 3.6-6. Existing and Projected Noise Levels (Locomotives)

Receiver #	Receiver Location Description	Land Use Category	Jurisdiction General Plan Land Use and Zoning	Number of Noise-Sensitive Sites Represented	Existing Noise Exposure (dBA Ldn)	Closest Distance to Project (Feet)	Project Noise Exposure (dBA Ldn)	FTA Level of Noise Impact without Quiet Zone	Project Noise Exposure (dBA Ldn) With Quiet Zone Implementation	FTA Level of Noise Impact t[3] With Quite zone Implementation
71	100' to 200' n of alignment, e of University St	School (University of Redlands)/3	Redlands Public/ Institutional	1	54	150	63	**Moderate Impact (Category 3)**	57	No Impact
72	100' to 200' s of alignment, e of Cook St	Residential/2	Redlands Public/ Institutional	6	61	125	60	**Moderate Impact**	53	No Impact

Source: Redlands Passenger Rail Project Noise Technical Memorandum (see Appendix H1)

Table 3.6-7. Existing and Projected Noise Levels (DMU Option)

Receiver #	Receiver Location Description	Land Use Category	Jurisdiction General Plan Land Use and Zoning	Number of Noise-Sensitive Sites Represented	Existing Noise Exposure (dBA Ldn)	Closest Distance to Project (Feet)	Project Noise Exposure (dBA Ldn)	FTA Level of Noise Impact without Quiet Zone	Project Noise Exposure (dBA Ldn) With Quiet Zone Implementation	FTA Level of Noise Impact t[4] With Quite zone Implementation
MP 1 to MP 2: E Street to southeast of Sierra Way										
2	200' to 400' s of alignment, w of Pershing Ave	Residential/2	S.B. Commercial Heavy	2	55	200	62	**Severe Impact**	52	No Impact
3	50' to 100' e of alignment, e of Dorothy St	Residential/2	S.B. Commercial Heavy	3	55	75	68	**Severe Impact**	60	**Moderate Impact**
4	100 to 200' e of alignment, e of Dorothy St	Residential/2	S.B. Residential Suburban	3	55	150	63	**Severe Impact**	53	No Impact
5	200 to 400' e of alignment, e of Dorothy St	Residential/2	S.B. Residential Suburban	32	55	220	61	**Moderate Impact**	51	No Impact
8	50' to 100' e of alignment, e of Dorothy St	Residential/2	S.B. Commercial Heavy	5	55	75	68	**Severe Impac**t	57	**Moderate Impact**
MP 2 to MP 3.5: Southeast of Sierra Way to southeast of South Waterman Avenue										
11	200 to 400' e of alignment, e of Lincoln Ave	Residential/2	S.B. Light Industrial	3	52	275	55	**Moderate Impact**	48	No Impact
12	200' to 400' w of alignment, e of S Washington Ave	Residential/2	S.B. Light Industrial	1	52	350	58	**Moderate Impact**	48	No Impact
13	100 to 200' e of alignment, e of Lincoln Ave	Residential/2	S.B. Light Industrial	6	52	100	66	**Severe Impact**	55	**Moderate Impact**
14	50' to 100' w of alignment, e of S Washington Ave	Residential/2	S.B. Light Industrial	1	52	75	68	**Severe Impact**	57	**Moderate Impact**
15	100' to 200' w of alignment, e of S Washington Ave	Residential/2	S.B. Light Industrial	2	52	125	64	**Severe Impact**	54	No Impact
16	200' to 400' w of alignment, e of S Washington Ave	Residential/2	S.B. Light Industrial	3	52	250	55	**Moderate Impact**	45	No Impact

[4] Represents FTA Impact criteria.

Table 3.6-7. Existing and Projected Noise Levels (DMU Option)

Receiver #	Receiver Location Description	Land Use Category	Jurisdiction General Plan Land Use and Zoning	Number of Noise-Sensitive Sites Represented	Existing Noise Exposure (dBA Ldn)	Closest Distance to Project (Feet)	Project Noise Exposure (dBA Ldn)	FTA Level of Noise Impact without Quiet Zone	Project Noise Exposure (dBA Ldn) With Quiet Zone Implementation	FTA Level of Noise Impact t[4] With Quite zone Implementation
17	200' to 400' w of alignment, e of S Washington Ave	Residential/2	S.B. Light Industrial	2	52	200	62	**Severe Impact**	52	No Impact
18	100' to 200' e of alignment, s of Ennis St	Residential/2	S.B. Light Industrial	1	52	150	64	**Severe Impact**	56	**Moderate Impact**
19	200' to 400' e of alignment, e of Lincoln Ave	Residential/2	S.B. Light Industrial	2	52	200	62	**Severe Impact**	52	No Impact
20	200' to 400' e of alignment, e of Lincoln Ave	Residential/2	S.B. Light Industrial	2	52	350	58	**Moderate Impact**	50	No Impact
21	400' to 800' w of alignment, s of Orange Show Rd	Residential/2	S.B. Light Industrial	1	52	325	59	**Moderate Impact**	50	No Impact
22	50' to 100' sw of alignment, n of Dumas St	Residential/2	S.B. Office Industrial Park	1	52	50	70	**Severe Impact**	60	**Moderate Impact**
23	100' to 200' sw of alignment, n of Dumas St	Residential/2	S.B. Office Industrial Park	2	52	140	64	**Severe Impact**	54	No Impact
24	200' to 400' sw of alignment, n of Dumas St	Residential/2	S.B. Office Industrial Park	4	52	220	61	**Severe Impact**	52	No Impact
MP 3.5 to MP 6: Southeast of South Waterman Avenue to Bryn Mawr Avenue										
25	100' to 200' s of alignment, e of Tippecanoe Ave	Residential/2	S.B. Residential Medium High	3	64	140	64	**Moderate Impact**	55	No Impact
27	100' to 200' s of alignment, e of Tippecanoe Ave	Residential/2	S.B. Residential Medium High	8	64	175	62	**Moderate Impact**	52	No Impact
28	100' to 200' s of alignment, w of S Richardson St	Residential/2	S.B. Residential Urban	18	64	175	62	**Moderate Impact**	52	No Impact
31	100' to 200' n of alignment, e of S Richardson St	Residential/2	S.B. Residential Urban	6	58	100	66	**Severe Impact**	55	No Impact
33	100' to 200' n of alignment, s of Victoria Ave	Residential/2	S.B. Residential Urban	8	58	150	63	**Severe Impact**	52	No Impact

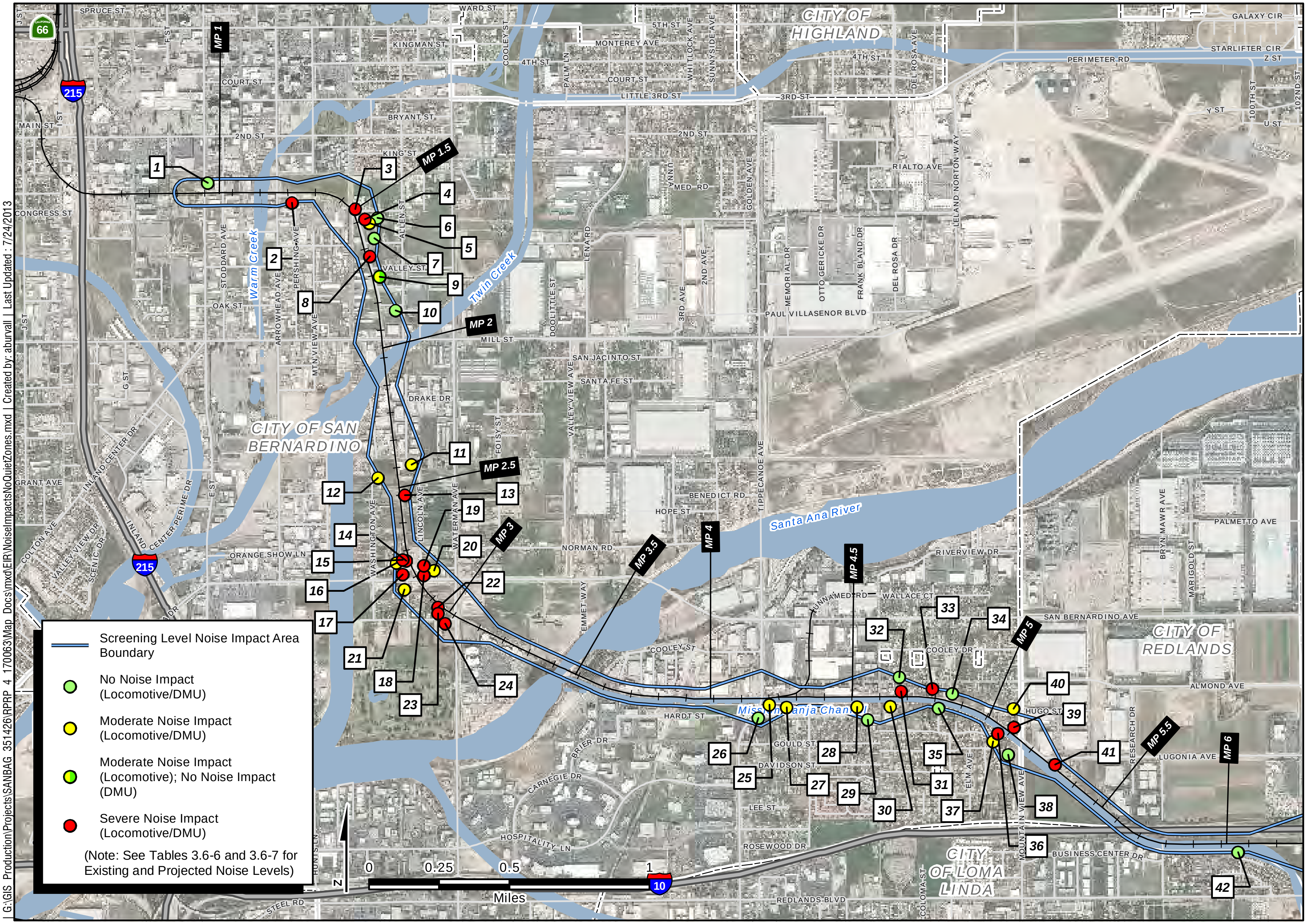
Table 3.6-7. Existing and Projected Noise Levels (DMU Option)

Receiver #	Receiver Location Description	Land Use Category	Jurisdiction General Plan Land Use and Zoning	Number of Noise-Sensitive Sites Represented	Existing Noise Exposure (dBA Ldn)	Closest Distance to Project (Feet)	Project Noise Exposure (dBA Ldn)	FTA Level of Noise Impact without Quiet Zone	Project Noise Exposure (dBA Ldn) With Quiet Zone Implementation	FTA Level of Noise Impact t[4] With Quite zone Implementation
36	100' to 200' s of alignment, n of E Gould St	Residential/2	S.B. Residential Urban	10	58	150	63	**Severe Impact**	53	No Impact
39	100' to 200' n of alignment, s of Victoria Ave	Residential/2	S.B. Residential Urban	3	58	125	65	**Moderate Impact**	54	No Impact
40	200' to 400' n of alignment, s of Victoria Ave	Residential/2	S.B. Residential Urban	3	58	350	58	**Severe Impact**	48	No Impact
41	50' to 100' n of alignment, e of Mountain View Ave	Residential/2	East Valley Corridor Specific Plan (EVCSP) Commercial/ Industrial	6	58	50	70	**Moderate Impact**	60	**Moderate Impact**
MP 6 to MP 8.5: Bryn Mawr Avenue to Texas Street										
44	100' to 200' s of alignment, s of Redlands Blvd	Residential/2	EVCSP Commercial	6	67	150	63	**Moderate Impact**	53	No Impact
46	0' to 100' n of alignment, w of Tennessee St	Transient Residential/Commercial (Motel)/2	Redlands Commercial/ Industrial	1	67	75	68	**Severe Impact**	57	No Impact
47	100' to 200' n of alignment, w of New York St	Residential/2	Redlands Commercial/ Industrial	1	62	175	63	**Moderate Impact**	54	No Impact
MP 8.5 to MP 10: Texas Street to east of North University Street (Project End)										
54	50' to 100' n of alignment, w of 9th St	Residential/2	Downtown Redlands Specific Plan (DRSP) Commercial/ Industrial	6	67	75	68	**Severe Impact**	59	No Impact

Table 3.6-7. Existing and Projected Noise Levels (DMU Option)

Receiver #	Receiver Location Description	Land Use Category	Jurisdiction General Plan Land Use and Zoning	Number of Noise-Sensitive Sites Represented	Existing Noise Exposure (dBA Ldn)	Closest Distance to Project (Feet)	Project Noise Exposure (dBA Ldn)	FTA Level of Noise Impact without Quiet Zone	Project Noise Exposure (dBA Ldn) With Quiet Zone Implementation	FTA Level of Noise Impact t[4] With Quite zone Implementation
55	50' to 100' n of alignment, w of 9th St	Church/3	DRSP Commercial/ Industrial	1	61	80	65	**Moderate Impact (Category 3)**	58	No Impact
61	50' to 100' n of alignment, e of Church St	Residential/2	DRSP Medium Density Residential	6	67	50	71	**Severe Impact**	63	**Moderate Impact**
63	50' to 100' n of alignment, n of Park Ave	Recreation (Park)/3	Redlands Public/ Institutional	1	61	75	68	**Moderate Impact (Category 3)**	53	No Impact (Category 3)
64	100' to 200' s of alignment, w of University St	Residential/2	Redlands Public/ Institutional	1	64	100	61	**Moderate Impact**	51	No Impact
65	100' to 200' s of alignment, w of University St	Residential/2	Redlands High Density Residential	8	64	100	61	**Moderate Impact**	52	No Impact
68	50' to 100' s of alignment, e of University St	Residential/2	Redlands High Density Residential	6	61	75	68	**Severe Impact**	60	**Moderate Impact**
69	100' to 200' s of alignment, e of University St	Residential/2	Redlands High Density Residential	7	61	150	59	**Moderate Impact**	50	No Impact
71	100' to 200' n of alignment, e of University St	School (University of Redlands)/3	Redlands Public/ Institutional	1	54	150	63	**Moderate Impact (Category 3)**	50	No Impact
72	100' to 200' s of alignment, e of Cook St	Residential/2	Redlands Public/ Institutional	6	61	125	60	**Moderate Impact**	49	No Impact

Source: Redlands Passenger Rail Project Noise Technical Addendum (see Appendix H2)

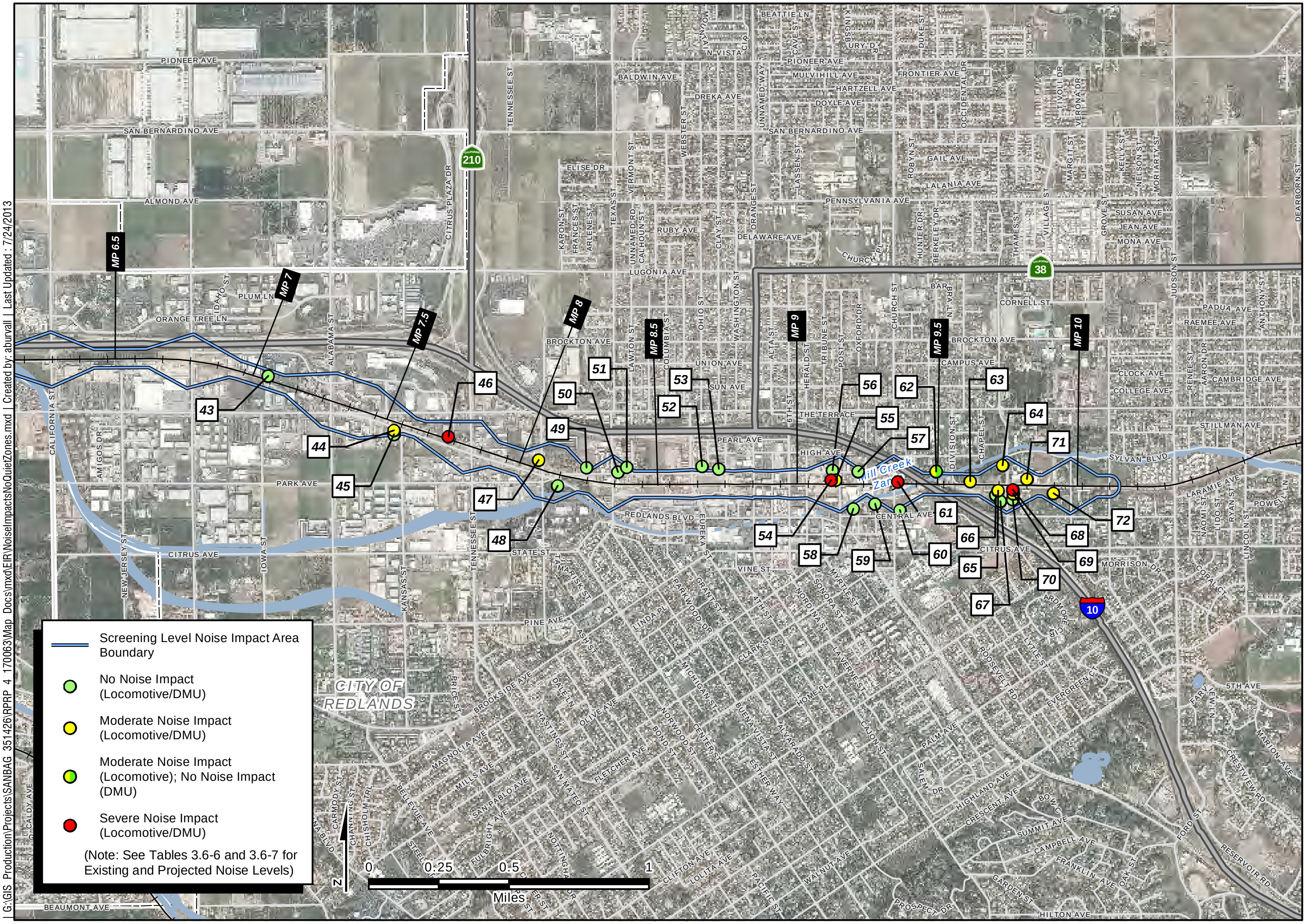


Rail Noise Impact Areas without Quiet Zones - Western Study Area

Figure 3.6-4 A

HDR ONE COMPANY | Many Solutions℠

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR



Rail Noise Impact Areas without Quiet Zones - Eastern Study Area

Figure 3.6-4 B

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

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G:\GIS_Production\Projects\SANBAG_351426\RPRP_4_170063\Map_Docs\mxd\EIR\NoiseImpactsNoQuietZones.mxd | Created by: aburvall | Last Updated : 7/24/2013

Direct Effects from Long-Term Operation

The No Build Alternative would involve a continuation of existing freight service and is not expected to generate vibration levels beyond those associated with existing conditions. In this context, no adverse effect would occur under NEPA. Under CEQA, this impact would be less than significant.

Indirect Effects

With no changes to existing conditions under this alternative, the potential for indirect, noise-related impacts is unlikely. In this context, no indirect effect would occur under NEPA. Under CEQA, no impact would occur.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Construction of the Project would result in temporary vibration-related effects along the railroad corridor from use of heavy equipment and machinery. Construction activities can produce varying degrees of ground vibration depending on the equipment and methods employed and the soil conditions within the area. The construction activities that typically generate the highest levels of vibration are blasting and impact pile driving. Given that these activities would generally not occur in close proximity of existing structures, the source vibration level for a vibratory roller (0.210 PPV) was assumed. This type of equipment would be used in conjunction with construction activities in downtown Redlands, which includes historic structures that are listed on the National Register of Historic Places (NRHP). Based on criteria presented in FTA's Noise and Vibration Manual fragile buildings and extremely fragile buildings are subject to damage when vibration exceeds 0.20 PPV (approximately 100 VdB) and 0.12 PPV (approximately 95 VdB), respectively. Based on construction occurring within a distance of five feet of the Depot, it is possible for vibration levels to exceed these thresholds; especially if the adjacent historic structure is extremely fragile. This is considered an adverse effect under NEPA and Mitigation Measure CUL-1 (Structural Evaluations) is proposed to minimize construction-related vibration effects. Under CEQA, this is considered a significant impact. See Section 3.12 for further discussion.

In addition to exceeding the FTA Damage Criteria threshold for vibration impacts, the Project would also exceed FTA's annoyance criteria at 16 receiver locations representative of 56 Category 2 land uses that include residences and hotels (see Appendix H1). More specially, these vibration annoyance effects occur at the following locations along the railroad corridor:

- MP 1 to MP 2. Impacts are predicted at Receivers 3 and 8, which are representative of eight Category 2 land uses;
- MP 2 to MP 3.5. Impacts are predicted at Receivers 13, 14 and 22, which are representative of eight Category 2 land uses;
- MP 3.5 to MP 6. Impacts are predicted at Receivers 31 and 41, which are representative of 12 Category 2 land uses;
- MP 6 to MP 8.5. Impacts are predicted to occur at Receivers 43 and 46, which are representative of two Category 2 (hotel/motel) land uses; and
- MP 8.5 to MP 10. Impacts are predicted to occur at Receivers 54, 55, 61, 63, 64, 65, and 68, which are representative of 26 Category 2 land uses.

These Project-related effects related to vibration annoyance would be considered adverse under NEPA. Under CEQA, these impacts are considered significant. Mitigation Measures NV-1 and NV-2 are proposed to minimize annoyance at adjacent sensitive receptors from construction-related vibration.

Direct Effects from Long-Term Operations

Over the long-term operation of the Project, passenger train movements back and forth through the railroad corridor would result in ground-borne vibration and/or noise and a corresponding potential for vibration-related damage to occur to adjacent structures within Study Area and in close proximity to the rail corridor. Although no ground-borne noise impacts are predicted from the Project (throughout the Study Area) for either Category 2 or Category 3 land uses, damage from groundborne vibration could occur to structures within 50 feet of the SANBAG ROW. Damage as a result of ground-borne vibration from train operations is extremely rare for new structures and is typically of greatest concern for older structures. Considering the railroad corridor has been used previously over the course of many years since the construction of the Redlands Santa Fe Depot, it is unlikely that this historic building would suffer any structural damage due to Project-related ground vibration. As shown in Table 6-5 of Appendix H1, the predicted vibration level from rail pass-bys at the Redlands Depot would be approximately 74 VdB, which would be substantially lower than the corresponding damage criteria level of 90 VdB (see Appendix H1). Therefore, operational vibration levels would not exceed the criteria threshold for fragile structures. There would be no adverse effect under NEPA and no impact under CEQA.

In relation to operational vibration and human response to passenger train operations, no ground-borne noise impacts are predicted from the Project (throughout the Study Area) for either Category 2 or Category 3 land uses. Also, no Project-related vibration annoyance impacts are predicted at Category 3 land uses along the entire railroad corridor. However, vibration-related annoyance impacts are predicted to occur at Category 2 land uses as a result of Project-related ground-borne vibration. Groundborne operational vibration would result in severe impacts to eight receivers, representing a total of 24 Category 2 land uses. These impacts are specified by mile post below:

- MP 1 to MP 2. Impacts are predicted to occur at Receivers 3 and 8, which are representative of eight Category 2 land uses.
- MP 2 to MP 3.5. Impacts are predicted to occur at Receivers 14, and 22, and a total of two Category 2 land uses.
- MP 3.5 to MP 6. Impacts are predicted to occur at Receiver 41, which is representative of six Category 2 land uses.
- MP 6 to MP 8.5. Impacts are predicted to occur at Receivers 43 and 46, which are representative of two Category 2 (hotel/motel) land uses.
- MP 8.5 to MP 10. Impacts are predicted to occur at Receiver 61, which are representative of six Category 2 land uses.

Groundborne operational vibration effects are considered adverse under NEPA. Under CEQA, these impacts are considered significant. Mitigation Measure NV-6 is proposed to minimize operational vibration along the rail corridor.

Indirect Effects

Operation of the Project is unlikely to result in indirect effects related to groundborne vibration that would result in damage to adjacent structures or vibration-related annoyance impacts. As previously indicated in Section 3.2, although land use changes could occur indirectly as a result of the Project, these changes would need to be approved by local jurisdictions and would be subject to environmental review. This would include any new development proposed along the railroad corridor that might otherwise be sensitive to operational sources of vibration. No adverse effects would occur under NEPA. Under CEQA, impacts are less than significant.

3.6.4 Mitigation Measures

The following mitigation measures are proposed to avoid, minimize, or reduce adverse noise and vibration effects from the Build Alternatives and Design Options.

NV-1 **Employ Noise-Reducing Measures during Construction.** SANBAG shall require its construction contractors to employ measures to minimize and reduce construction noise. Noise reduction measures that shall be implemented to reduce construction noise to acceptable levels may include but are not limited to the following:

- Use available noise suppression devices and techniques, including:
  - Equipping all internal combustion engine-driven equipment with mufflers, air-inlet silencers, and any other shrouds, shields, or other noise-reducing features that are in good operating condition and appropriate for the equipment (5 to 10 dB reduction possible).
  - Using “quiet” models of air compressors and other stationary noise sources where such technology exists.
  - Using electrically powered equipment instead of pneumatic or internal combustion-powered equipment, where feasible.
  - Using noise-producing signals, including horns, whistles, alarms, and bells, for safety-warning purposes only.
  - Locating stationary noise-generating equipment, construction parking, and maintenance areas as far as reasonable from sensitive receivers when sensitive receivers adjoin or are near the construction project area of potential effect (APE).
  - Prohibiting unnecessary idling of internal combustion engines (i.e., in excess of 5 minutes).
  - Placing temporary soundwalls or enclosures around stationary noise-generating equipment when located near noise-sensitive areas (5 to 15 dB reduction possible).
  - Ensuring that project-related public address or music systems are not audible at any adjacent receiver.
  - Notifying adjacent residents in advance of construction work.

NV-2 **Prepare a Community Notification Plan for Project Construction.** The construction contractor shall prepare and maintain a community notification plan to address project construction issues the community may have during construction. Components of the plan may include construction phasing to minimize the duration of noise or vibration at any one location. Initial information packets shall be prepared and mailed to all residences within a 500-foot radius of project construction, with updates prepared as necessary to indicate new scheduling or processes. A project liaison shall be identified who will be available to respond to questions from the community or other interested groups.

NV-3 **Establish Quiet Zones.** At-grade crossings shall be designed and constructed to be compatible with the formation of Quiet Zones. Prior to the operation, SANBAG shall coordinate with the City of San Bernardino, City of Loma Linda, and the City of Redlands, to construct and establish quiet zones at the following grade crossings:

- South Arrowhead Avenue;
- South Sierra Way;
- West Central Avenue;
- East Orange Show Road;
- South Waterman Avenue;
- South Tippecanoe Avenue;
- South Richardson Street;
- Mountain View Avenue;
- West Colton Avenue;
- Alabama Street
- Tennessee Street;
- Church Street; and
- North University Street.

NV-4 **Construct Sound Barriers.** SANBAG shall install up to 12-foot in height sound barriers at priority locations along portions of the rail corridor to reduce noise levels at receivers identified with severe noise impacts following the application of quiet zones.

NV-5 **Wayside Rail Lubrication.** SANBAG shall install wayside applicators for all tight-radius curves on the project alignment prior to the start of Project operations. If the wayside applicators are not sufficient to reduce squeal to an acceptable level, additional reduction may be required through customized profiling of the rail to reduce the forces required for trains to negotiate the curve.

NV-6 **Use Ballast Mats, Resiliently Supported Ties, or Measures of Comparable Effectiveness on Portions of the Rail near Sensitive Receivers.** SANBAG shall install track design specifications as part of project design to include the use of ballast mats or resiliently supported ties on portions of the track near sensitive receivers to minimize project-related ground-borne vibration and wheel rail noise generated when the trains pass sensitive receivers. The actual measures and their corresponding placement will be determined following more detailed vibration testing and analysis during final engineering design.

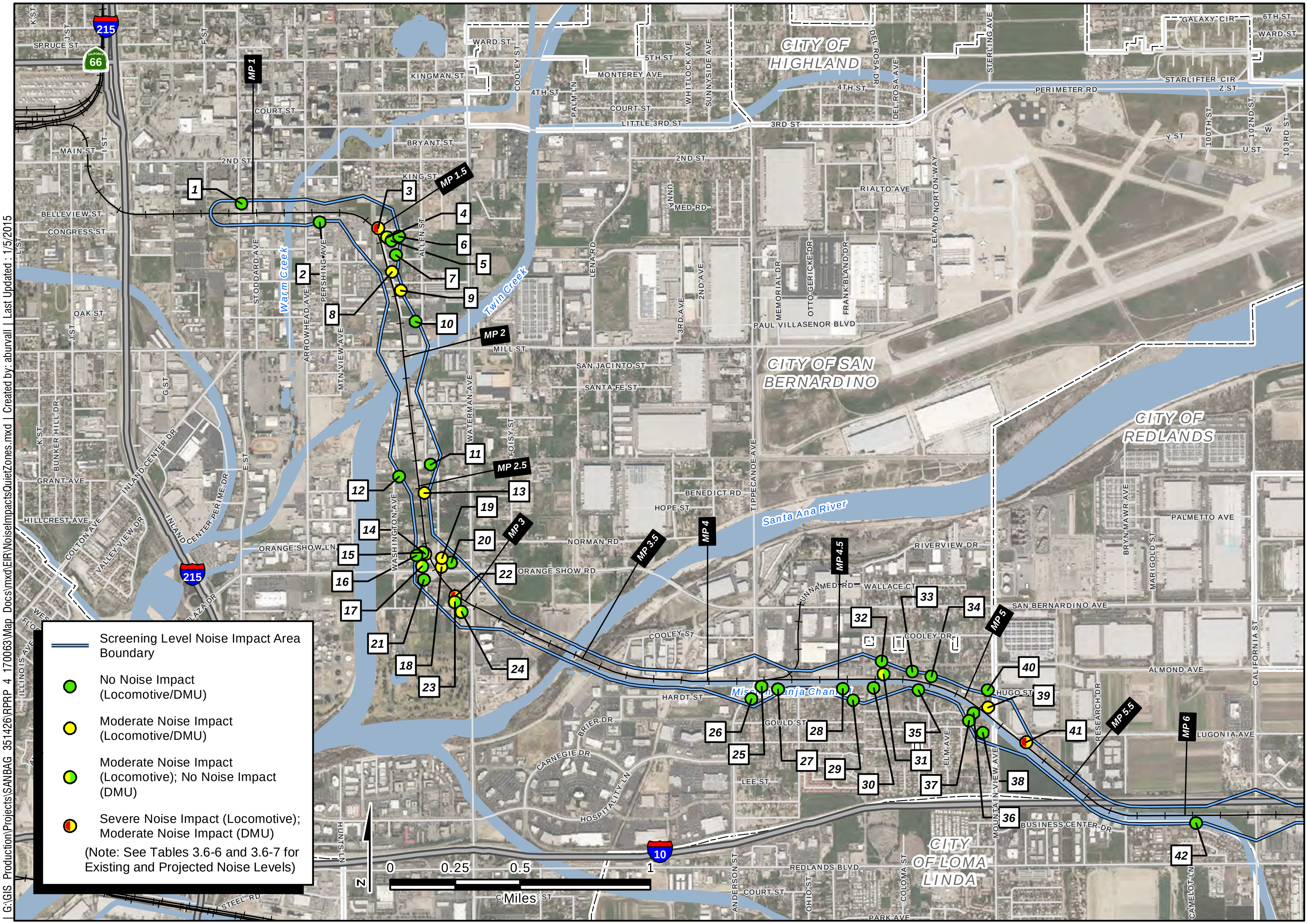
NV-7 Provide Building Noise Insulation to Severe- and Moderate-Impact Residences. For the ten residential structures represented by Receivers 3, 22, and 41, SANBAG will offer to install sound insulation. Treatments may include sealing and relocating vents, caulking and sealing gaps in the building façade and installing new doors and windows that are specially designed to meet acoustical transmission-loss requirements. Acoustical performance ratings are published in terms of Sound Transmission Class (STC) for these special windows. A minimum STC rating of 39 will be used on any window exposed to the noise source.

Implementation of Mitigation Measure CUL-1 (see Section 3.12.4) is proposed to minimize construction-related vibration damage to historic structures.

3.6.4.1 Effects After Mitigation

Implementation of Mitigation Measures NV-1 to employ noise-reducing measures during construction and NV-2 to prepare a community awareness program would reduce impacts associated with temporary, short-term exposure of sensitive receivers to increased equipment noise, groundborne noise, and vibration from Project construction. However, given that some of the construction activities could occur during nighttime hours and the proximity of construction could be close to one or more sensitive receiver locations, these activities would conflict with local noise ordinances and municipal codes. Additionally, noise levels would exceed FTA criteria for nighttime construction. Therefore, even following the application of the proposed mitigation, an adverse effect under NEPA would remain. Under CEQA, this impact would be significant and unmitigable.

The Build Alternatives and Design Options would result in a permanent increase in ambient noise levels as a result of passenger train operations. Implementation of Mitigation Measure NV-3 would require SANBAG to design 13 grade crossings for quiet zones as a means to reduce locomotive horn noise at crossings. Designing the at-grade crossing for the application of quiet zones would reduce moderate impacts at 14 receivers representing 49 Category 2 land uses and severe impacts at four receivers representing 14 Category 2 land uses for a locomotive driven trainset. Noise levels following the implementation of quiet zones for a DMU vehicle option would reduce moderate impacts at an additional 10 receivers representing 27 Category 2 land uses and severe impacts at an additional four receivers representing 11 Category 2 land uses. Noise levels with Project operations and following the implementation of quiet zones is illustrated in Figures 3.6-5A through 3.6-5B. As a result, Mitigation Measure NV-3 would be capable of achieving desired reductions in operational noise but would ultimately require the approval of the City of San Bernardino and the City of Redlands to adopt the quiet zones at each of these locations. Hence, the implementation of the measures is partly beyond SANBAG's jurisdiction and, thus, full implementation cannot be assumed for the purposes of this analysis. For this reason, SANBAG has entered into a Memorandum of Understanding (MOU), dated February 4, 2014, with the cities of San Bernardino and Redlands to memorialize each agency's roles and responsibilities towards the implementation of quiet zones.



Rail Noise Impact Areas with Quiet Zones - Western Study Area

Figure 3.6-5 A (Revised)

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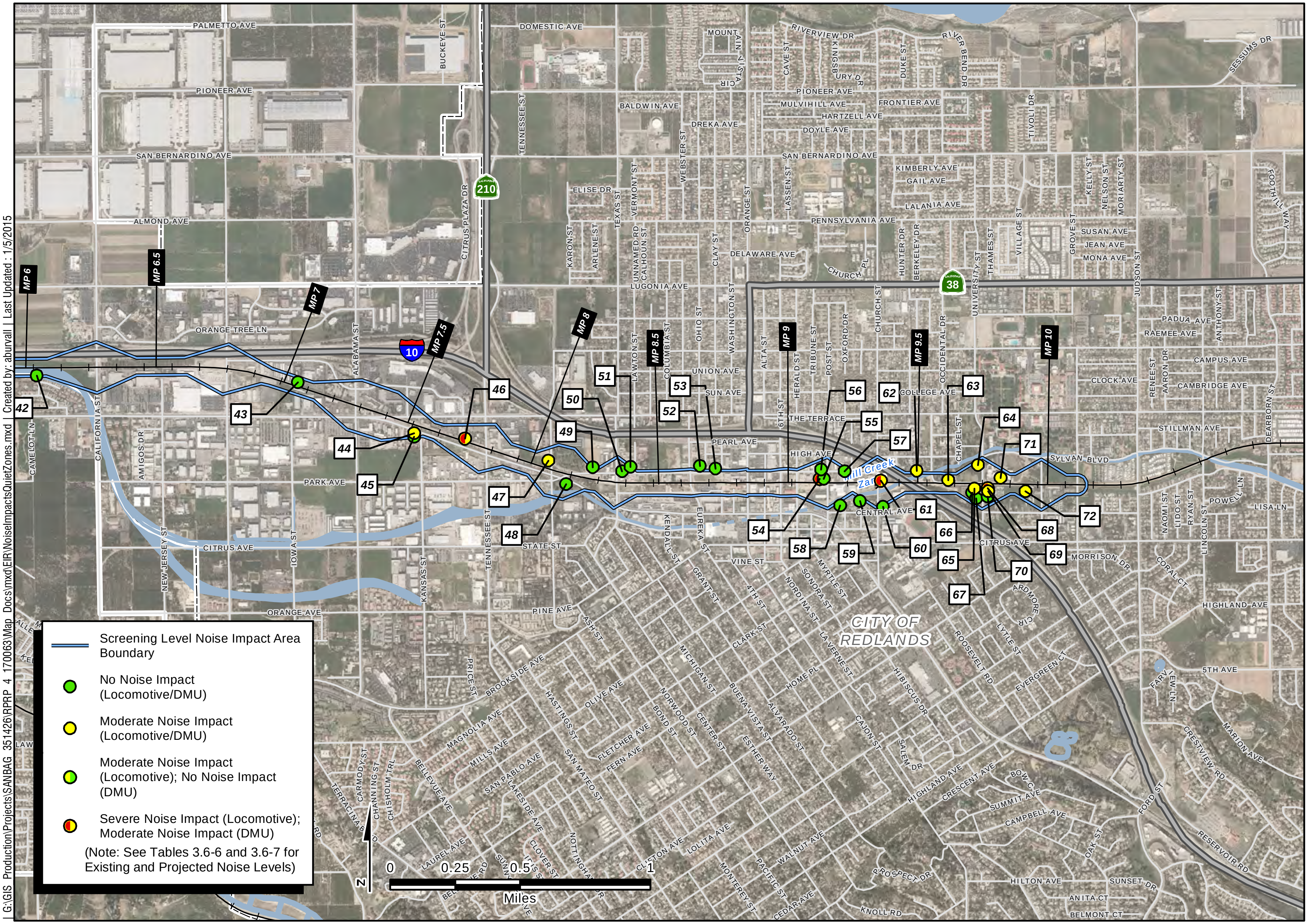

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Rail Noise Impact Areas with Quiet Zones - Eastern Study Area

Figure 3.6-5 B (Revised)

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

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In addition to Mitigation Measure NV-3, Mitigation Measure NV-4 proposes the construction of sound barriers to further minimize operational noise effects. With the implementation of quiet zones, the installation of up to 10,740 linear feet of sound barriers for receivers 3, 4, 8, 9, 13, 14, 15, 17, 18, 19, 22, 23, 24, 31, 39, 41, 61, and 68 (representing 60 Category 2 land uses) would further reduce operational noise effects. The locations of the noise barriers are illustrated in Figures 8-2A through 8-2J of Appendix H1 and Figures 1A through 1F of Appendix H2 for sound barrier locations without implementation of quiet zones for the locomotive driven trainset and DMU, respectively. Figures 8-3A through 8-3J of Appendix H1 and Figures 1A through 1F of Appendix H2 illustrate the location of sound barriers with implementation of quiet zones for the locomotive driven trainset and DMU, respectively. Under a DMU with quiet zone scenario, the total length would be reduced to 5,900 linear feet.

Although the sound barriers would further reduce operational noise impacts, there are other factors that need to be considered if they are proposed as mitigation along the railroad corridor. For example, the physical scale of the sound barriers at several of the locations (e.g., downtown San Bernardino and University of Redlands) would make them an unusual feature relative to the existing land uses surrounding the railroad corridor. Construction of sound barriers and the installation of thousands of feet of tall (up to 12-foot in height) walls would create a distinct and significant aesthetic change to the community character of the area as addressed in Section 3.4 and may also result in a significant and adverse effects on adjacent land uses such as the division of an established community as address in Section 3.2. As discussed in Section 3.2, the construction of noise barriers would also incrementally add numerous TCEs and permanent easements along private properties. As a result, sound barriers in some locations may result in greater direct and indirect impacts that otherwise outweigh their noise reduction benefits and, thus, may otherwise not be constructed. In these instances, Mitigation Measure NV-7 may be more appropriate to implement.

Further, in the event that quiet zones are not implemented, noise impacts would be greater, thus requiring the construction of sound barriers in more locations. The number of sound barriers would increase from 10 sound barriers to 23, thereby more than doubling the Project's potential financial expenditure for sound barriers. In total, up to 23,910 linear feet of sound barrier would be required for a locomotive or DMU in the absence of quiet zones. The increased number and length of sound barriers without the implementation of quiet zones would likely be cost prohibitive and would require the prioritization of impacted sensitive uses for the application of sound barriers based on the level of impact (e.g., moderate verses severe) and the type of use (e.g., church verses residences). Additionally, nearly half of the impacted receivers are considered non-conforming land uses in relation to their existing commercial or industrial zoning and, therefore, it may not be appropriate to construct sound barriers in all locations based on contemplated land uses. Based on these circumstances and the financial reality of mitigating noise impacts for all receivers, long-term noise impacts would remain adverse under NEPA. Under CEQA, the impact of long-term noise is considered significant and unmitigable.

3.7 BIOLOGICAL AND WETLAND RESOURCES

This section evaluates the effects of the Build Alternatives and Design Options on biological resources, including impacts on federal and state-listed threatened and endangered species. Potential effects to natural vegetation communities and waters of the U.S., including wetlands, are also considered. The information and findings contained in this section are based on a Biological Resources Technical Report (BTR; Appendix I1), Wetland Delineation and Preliminary Jurisdictional Determination (Appendix I2), Biological Assessment (BA; Appendix I3), and correspondence with the U. S. Fish and Wildlife Service (USFWS; Appendix I4)..

3.7.1 Regulatory Framework

Table 3.7-1 identifies and summarizes federal, state, and local laws, regulations and plans that are applicable to the Project.

Table 3.7-1. Pertinent Laws, Regulations, and Plans for Biological and Wetland Resources

Law, Regulation, or Plan	Summary and Project Nexus
Federal	
Federal Endangered Species Act	The Federal Endangered Species Act (ESA) defines and lists species as “endangered” or “threatened” and provides regulatory protection for the listed species. Listed species were detected during focused species surveys within the Study Area and, therefore, consultation with U. S. Fish and Wildlife Service (USFWS) under Section 7 will be required for the Project. FTA initiated formal Section 7 consultation with the USFWS on January 21, 2014. The USFWS concurred with FTA’s effects determinations and issued a Biological Opinion (BO) on February 9, 2015. Refer to Appendix I6 for additional information.
Migratory Bird Treaty Act	The Migratory Bird Treaty Act (MBTA) makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 Code of Federal Regulations (C.F.R.) Part 10. Suitable habitat for migratory birds is located within the Study Area and, therefore, adverse effects to MBTA species are further considered in the analysis of environmental effects.
Section 404 of the Clean Water Act	Section 404 of the Clean Water Act establishes a program to regulate the discharge of fill materials into waters of the U.S., including wetlands. The Section 404 permit program authorizes discharges to waters of the U.S. through the USACE Nationwide Permit or Individual Permit Programs based on the area affected by temporary and permanent impacts. Potential permitting requirements for the Project under Section 404 are considered further in the analysis of environmental effects.
Section 401 of the Clean Water Act, Water Quality Certification	Section 401 of the Clean Water Act protects water quality by regulating the dumping or flow of pollutants into streams, lakes, and rivers. A water quality certification, obtainable through the State Water Resources Control Board (SWRCB) or Regional Water Quality Control Boards (RWQCB), must be obtained in order to receive a 404 permit or be authorized under the 404 nationwide permits (USEPA 2011). Based on the Project’s need for a Section 404 authorization, a water quality certification under Section 401 would also be required.

Table 3.7-1. Pertinent Laws, Regulations, and Plans for Biological and Wetland Resources

Law, Regulation, or Plan	Summary and Project Nexus
State	
California Endangered Species Act	The California ESA prohibits the *take* of listed species, except as otherwise provided in state law. Due to the potential presence of state-listed rare, threatened, endangered, or candidate species within the Study Area (e.g., least Bell's vireo, San Bernardino kangaroo rat, etc.), compliance with the California ESA was considered in the evaluation of the Project.
Section 2080 and 2081 of the State Fish and Wildlife Code	Section 2080 of the State Fish and Wildlife Code (Code) states that no person shall import into this state [California], export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission [State Fish and Wildlife Commission] determines to be an endangered species or threatened species, or attempt any of those acts, except as otherwise provided in this chapter [Chapter 1.5, Endangered Species], or the Native Plant Protection Act, or the California Desert Native Plants Act.
Sections 3503 and 3503.5 of the State Fish and Wildlife Code	These sections of the Code provide regulatory protection to resident and migratory birds and all birds of prey within the State of California. Due to the presence of resident and migratory nesting birds within the Study Area, Sections 3503 and 3503.5 of the Code were considered in the evaluation of the Project.
Sections 1600 to 1603 of the State Fish and Wildlife Code	All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California are subject to the regulatory authority of the CDFW pursuant to Sections 1600 through 1603 of the Code and require preparation of a Streambed Alteration Agreement. Due to the presence of ephemeral streams within the Study Area, Sections 1600 through 1603 of the Code were considered in the evaluation of the Project.
Local	
City of San Bernardino Tree Ordinance	Section 19.28.090, Removal or Destruction of Trees, of the City of San Bernardino's municipal code discourages the removal of healthy, shade providing, and aesthetically valuable trees. More specifically, in the event that more than five trees are to be cut down, uprooted, destroyed or removed within a 36-month period, the City will require the securing of a tree removal permit.
City of Redlands Tree Ordinance	Section 12.52.140, Work on Public Trees, of the Redlands municipal code requires that no person plant, chemically spray, fertilize, preserve, prune, remove, cut or otherwise disturb any public tree without first procuring a permit from the City.

3.7.2 Affected Environment

3.7.2.1 Vegetation Communities

Vegetation types or plant communities are assemblages of plant species that usually coexist in the same area. The classification of vegetation communities is based upon the life form of the dominant species within that community and the associated flora. Vegetation was classified using the R.F. Holland system of natural communities (Appendix I1).

As identified in Table 3.7-2, the Study Area[1] supports 14 distinct vegetation communities, with urban/developed as the predominant land cover. The majority of the Study Area is made up of paved roadways, man-made structures, adjacent lands that are unvegetated and landscaped parcels. The sensitive vegetation communities (e.g., southern cottonwood willow riparian forest and southern willow scrub) within the Study Area occur primarily within the SAR corridor. Figure 3.7-1 depicts the location of the vegetation communities within the SAR. The BTR (Appendix I1) provides a detailed discussion of the vegetation communities and contains maps depicting the location of the 14 vegetation communities that occur within the nine-mile Study Area.

Table 3.7-2. Existing Vegetation Communities within the Project Study Area

Vegetation Communities	Study Area Acreage
Disturbed Habitat	24.50
Disturbed Wetland	0.02
Eucalyptus Woodland	2.78
Flat-top Buckwheat Scrub (disturbed)	0.91
Mulefat Scrub	0.04
Non-Jurisdictional Ditch	1.31
Non-Native Grassland	61.90
Non-Vegetated Channel	29.22
Oak Woodland	9.62
Orchards and Vineyards	5.28
Southern Cottonwood Willow Riparian Forest	8.21
Southern Willow Scrub	0.64
Tamarisk Scrub	0.47
Riversidean alluvial fan sage scrub	0.10
Urban/Developed	388.88
Total	**534**

Source: Appendix I1

3.7.2.2 Botanical Species

Sensitive plants include those listed by USFWS and CDFW as threatened or endangered, candidates for listing by the USFWS and CDFW, and/or are considered sensitive by CDFW and/or the California Native Plant Society (CNPS). California Natural Diversity Database (CNDDB) record searches indicated 26 known occurrences of rare or sensitive botanical species surrounding the Study Area. Most of the suitable habitat for sensitive plants is located within the vicinity of the SAR crossing. These habitats include Southern Cottonwood Willow Riparian Forest (SCWRF) and Southern Willow Scrub (SWS). Table 3.7-3 identifies the sensitive botanical species with a moderate to high potential to occur within the Study Area. A complete list of all the sensitive plant species with potential for occurrence are provided in Appendix I1.

[1] The Study Area as defined in Section 3.1-1 is equivalent to the survey area as used in the Biological Technical Report (Appendix I1).

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Vegetation Communities and Sensitive Species - Santa Ana River

Figure 3.7-1 (Revised)

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Table 3.7-3. Sensitive Botanical Species with Potential to Occur within Study Area

Species	Sensitivity Status	Potential for Occurrence
Santa Ana River woolly star	FE SE CNPS: 1B.1	High – An individual plant was observed within a portion of the Study Area located within the SAR during 2012 rare plant surveys.
Slender-horned spineflower	FE SE CNPS: 1B.1	Moderate – Study Area supports potentially suitable habitat.
Smooth tarplant	CNPS: 1B.1	High – Suitable habitat occurs throughout the Study Area. An individual plant was observed within the SANBAG ROW in 2010.
Salt Spring checkerbloom	CNPS: 2.2	Moderate – Study Area supports potentially suitable habitat.

Source: Appendix I1
CNPS = California Native Plant Society listing.
List 1B.1 = List 1b: Rare, threatened, or endangered in California and elsewhere. 0.1: Seriously endangered in California.
List 2.2 = List 2: Rare, threatened, or endangered in California, but more common elsewhere. O.2: Fairly endangered in California

Notes: FE = Federally Endangered
SE = State Endangered

3.7.2.3 Wildlife Species

Sensitive animals are species or subspecies listed as threatened, endangered, or candidate for listing by the USFWS or by the CDFW, and/or considered sensitive by the CDFW. A sensitive designation includes those listed as rare or “Special Concern,” and includes a number of migratory bird species protected under the MBTA. CNDDB record searches indicated 32 known occurrences of rare or sensitive zoological species within nine quadrangles surrounding the Study Area (see Appendix I1). Species not considered federally or state sensitive were removed from further consideration. Table 3.7-4 identifies the sensitive zoological species with a moderate to high potential to occur within the Study Area. Appendix I1 provides a detailed discussion of each species’ historical range, habitat, and general characteristics.

Migratory Birds

Migratory birds are protected under the MBTA. Several migratory bird species were observed in the Study Area including the lesser goldfinch (*Carduelis psaltria*), bushtit (*Psaltriparus minimus*), red-tailed hawk (*Buteo jamaicensis*), loggerhead shrike (*Lanius ludovicianus*), and yellow warbler (*Dendroica petechia*). Suitable habitat that would support breeding, roosting, and foraging migratory birds occurs throughout the Study Area, on and off-site. Suitable habitat includes mature trees (>24-inch diameter), ornamental vegetation, utility poles, and building rafters and eves.

Table 3.7-4. Sensitive Zoological Species with Potential to Occur within Study Area

Species	Sensitivity Status	Observed On Site	Potential for Occurrence
Least Bell's vireo	FE, SE	Yes	High – Several individuals observed during 2012 general biological surveys within the Study Area.
Southwestern willow flycatcher	FE, SE	No	Moderate – Riparian forest habitat associated with SAR and Mission Zanja Channel provides suitable habitat.
San Bernardino kangaroo rat	FE, SSC	No	Moderate – Suitable habitat occurs within Study Area.
Santa Ana Sucker	FT, SSC	No	Moderate – The Study Area supports suitable habitat.
Western spadefoot toad	SSC	No	Moderate – Suitable habitat occurs within the Study Area.
Loggerhead shrike	SSC MBTA	Yes	High –Observed within the Study Area during 2012 surveys.
Western Burrowing Owl	SSC	No	Moderate – Nesting habitat occurs throughout Study Area. Wintering owl observed north of E Street Station.
Western yellow-billed cuckoo	Federal candidate for listing, SE	No	Moderate – Riparian forest habitat associated with SAR and Mission Zanja Channel provides suitable habitat.
Yellow breasted chat	SSC – Breeding MBTA	No	High – Suitable habitat occurs within the Study Area.
Yellow warbler	SSC MBTA	Yes	High – Observed within the Study Area.

Source: Appendix I1
Notes: FE = Federally Endangered
FT = Federally Threatened
MBTA = Protected under the MBTA
SE = State Endangered
SSC = State Species of Concern

3.7.2.4 Jurisdictional Areas

A jurisdictional delineation was conducted to identify the limits of waters of the U.S., including wetlands pursuant to the Clean Water Act and subject to USACE jurisdiction as well as wetlands and non-wetland waters subject to CDFW jurisdiction pursuant to Section 1600 of the California Fish and Wildlife Code. A detailed discussion of jurisdictional wetlands and waterways is provided in Appendix I2. A total of five major offsite drainage features either cross or are located longitudinally to the railroad corridor. These crossings include Warm Creek (Historic), Twin Creek, the SAR, and Mill Creek Zanja. The Mission Zanja Flood Control Channel parallels the railroad corridor adjacent and to the south from MP 3.5 to just west of MP 6**.**

Federal Wetlands and Waters of the U.S.

Suspected jurisdictional areas were field checked for the presence of an Ordinary High Water Mark (OHWM), definable channels and/or wetland vegetation, soils and hydrology. Where distinct boundaries between wetland vegetation communities, those that are dominated by obligate species, and upland vegetation communities, those dominated by facultative upland or upland species, wetland limits were delineated and mapped accordingly. Where the presence of wetlands was suggested by either hydrophytic vegetation or indicators of hydrology, a soil pit was established (see Appendix I2). In some instances, soils pits were not conducted even with the presence of the hydrophytic vegetation and hydrology, such as in the SAR and Mission Zanja Channel, because the presence of a well drained sandy substrate would prohibit the development of hydric soils. Four soil pits were conducted within the Study Area. Appendix I2 provides a detailed discussion of the results of for each of the four soil pits.

The Study Area primarily supports federal waters of the U.S. and several small areas of federal wetlands. Within the Study Area, approximately 16.75 acres of waters of the U.S. and wetlands are under the jurisdiction of the USACE. Of this, 0.05 acres are jurisdictional wetland. Federal jurisdictional areas mapped within the Study Area are summarized in Table 3.7-5.

Table 3.7-5. USACE Jurisdictional Areas within the Study Area

Jurisdiction	Existing Acreage within the Study Area
USACE Waters of the U.S.	16.7
USACE Wetlands	0.05
Total	**16.75**
Non-Jurisdictional Ditch	1.39

Source: Appendix I2

State Wetlands

All USACE jurisdictional drainages within the Study Area are considered jurisdictional by the CDFW. CDFW jurisdiction is similar to that of USACE jurisdiction, but also extends to the top of the bank and encompasses riparian vegetation when present. Within the Study Area, approximately 38.61 acres are under the jurisdiction of the CDFW. CDFW jurisdictional areas occurring within the Study Area are summarized in Table 3.7-6.

Table 3.7-6. CDFW Jurisdictional Areas within the Study Area

Jurisdiction	Existing Acreage within the Study Area
CDFW Riparian	8.77
CDFW Un-vegetated Streambed*	29.84
Total	**38.61**
Non-Jurisdictional Ditch	1.39

Source: Appendix I2
* This includes DH, non-vegetated channel, and UD.

3.7.2.5 Wildlife Dispersal Corridors or Linkages

Wildlife movement corridors, also called dispersal corridors or landscape linkages, are linear features primarily connecting at least two significant habitat areas. Wildlife corridors and linkages are important features in the landscape, and the viability and quality of a corridor or linkage are dependent upon site-specific factors. Topography and vegetative cover are important factors for corridors and linkages. These factors should provide cover for both predator and prey species. They should direct animals to areas of contiguous open space or resources and away from humans and development. The corridor or linkage should be buffered from human encroachment and other disturbances (e.g., light, loud noises, domestic animals) associated with developed areas that have caused habitat fragmentation. Wildlife corridors and linkages may function at various levels depending upon these factors and, as such, the most successful wildlife corridors and linkages will accommodate all or most of the necessary life requirements of predator and prey species.

The majority of the Study Area occurs within an urban area, except for a portion which occurs within the SAR. Within the Study Area, the SAR supports mature and successional riparian habitat which provides cover, breeding, and foraging habitat for wildlife species. In addition, the river functions as a wildlife corridor that connects the San Bernardino National Forest and Cleveland National Forest. Several other drainages transect the Study Area, such as Twin Creek, Warm Creek, and the Mission Zanja Channel. However, these drainages are completely channelized, concrete-lined or maintained, and except for the lower 2,100 feet of the Mission Zanja Channel, they are nearly or entirely devoid of native vegetation. These drainages do not provide substantial cover, foraging, or breeding habitat for wildlife species. Although felids such as bobcat (*Lynx rufus*) and mountain lion (*Felix concolor*) were not observed directly, there is a low potential for these species to occur along the SAR within the Study Area.

3.7.2.6 Habitat Conservation Plan

The Project does not occur within an approved Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan. The nearest adopted HCP area, which is located east and north of the Study Area in the cities of Highland and Redlands, is part of the Upper Santa Ana River Wash Land Management and Habitat Conservation Plan.

USFWS in cooperation with the San Bernardino Valley Municipal Water District (and other stakeholders) are proposing the implementation of a mitigation and conservation strategy for the Upper Santa Ana River HCP. To date, most of the focus on mitigation and conservation related to this HCP has been on the Santa Ana sucker (ICF 2014). Possible Santa Ana sucker restoration sites and translocation sites have been identified and will be further evaluated to be included as a part of the mitigation and conservation strategy. None of these contemplated restoration sites occur with the Project Study Area.

3.7.3 Environmental Impacts/Environmental Consequences

3.7.3.1 Effect Criteria

The Build Alternatives and Design Options would have an adverse effect on biological and wetland resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or U.S. Fish and Wildlife Service (USFWS);

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS (including protections provided pursuant to Section 1600 et seq.);
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited, to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

3.7.3.2 Methodology

This analysis is based on the findings of the BTR (Appendix I1) and BA (Appendix I3) prepared for the Project. The findings contained in the BTR and BA are based on multiple surveys for biological resources within the Study Area including: (1) a general vegetation and habitat survey; (2) a springtime rare plant survey; (3) focused sensitive species survey for Least Bell's vireo (LBV), Southwestern willow flycatcher (SWFL), Western burrowing owl (BUOW), Santa Ana sucker, and San Bernardino kangaroo rat (SBKR); and (4) a jurisdictional wetland delineation (Appendix I2). Effects associated with Project construction and operations were evaluated based on observed site conditions and proximity of sensitive vegetation communities, sensitive species, and jurisdictional areas to direct and indirect impacts. In conducting the following impact analysis for biological resources, three principal factors were taken into consideration when determining the significance of the project:

- Level of the impact (e.g., substantial/not substantial);
- Uniqueness of the affected resource (i.e., rarity of the resource); and
- Resource sensitivity.

The significance evaluation considers the interrelationship of these three components. For example, a relatively small magnitude impact to a state or federally listed species or associated habitat would be considered significant if the species is very rare and is believed to be very susceptible to disturbance (e.g., LBV). Conversely, common wildlife species found in urban areas are not rare or sensitive to disturbance. Therefore, a much larger magnitude of impact would be required to result in a significant impact.

3.7.3.3 Criteria Requiring No Further Evaluation

The following criteria is either not applicable to the Project or the Project would result in no effect.

Habitat Conservation Plan. The Study Area is not contained within an established HCP, NCCP, or other approved local, regional, or state habitat conservation plan. In this context, the implementation of the Project would not conflict with the provision of an adopted HCP or other approved local, regional, or state habitat conservation plan and no effect would occur under NEPA. No impact would occur under CEQA.

3.7.3.4 Assessment of Environmental Effects

EFFECT 3.7-1	**Loss and Degradation of Habitat for Special-Status Wildlife Species and Potential Direct Take of Individuals.** The Project would modify habitats within the Study Area resulting in direct and indirect effects on sensitive or special status wildlife species, including those listed as a candidate, sensitive, or special-status by CDFW and USFWS.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, the Project would not be implemented and existing conditions along the railroad corridor would remain. To facilitate continued freight service per SANBAG's obligations, maintenance improvements would be required along the existing track alignment over the next 10 years. These activities would include bridge replacement and rehabilitation. Sensitive wildlife species are documented along the SAR and Mission Zanja Channel and, therefore, these species would be subject to potential direct effects during construction. In this context, there is a potential that maintenance activities could result in effects to sensitive wildlife species as a result of construction activities in the future. These activities would be subject to federal and state permitting requirements and associated authorizations prior to the start of construction. With no mitigation program in place governing the methods and construction timing, direct, adverse effects to species could occur under NEPA. Under CEQA, this is considered a significant impact.

Direct Effects from Long-Term Operations

Operational effects to sensitive biological resources under the No Build Alternative would be limited to the continuation of existing freight service. Existing biological resources along the existing track alignment are presumably well adapted to these activities and, therefore, a continuation of existing conditions is expected to result in no effect under NEPA. No impact would occur under CEQA.

Indirect Effects

Indirect effects to sensitive zoological species and migratory birds would generally be attributed to temporary construction-related dust, water quality effects, and noise. These effects would be subject to federal and state permitting requirements. The potential for indirect effects to suitable habitat as a result of in-channel and upland construction would be considered an adverse effect under NEPA. Under CEQA, this is considered a significant indirect impact.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

As shown in Table 3.7-4, ten special-status terrestrial wildlife species were identified as having a moderate to high potential to occur within the Study Area. These species include the federally endangered least Bell's vireo (LBV), the federally and state endangered southwestern willow flycatcher, the federally endangered San Bernardino kangaroo rat, the federally threatened Santa Ana sucker, and the yellow-billed cuckoo, which has been proposed for listing under the federal ESA. In addition, state designated species of concern including the western burrowing owl, loggerhead shrike, yellow-breasted chat, yellow warbler, and western spadefoot toad have a moderate to high potential to occur within the Study Area. Construction of the track and bridge improvements under the Build Alternatives and Design Options may result in direct or indirect impacts to wildlife species listed in Table 3.7-4. Specific impacts to each special-status species are described below.

Least Bell's vireo. Four LBV territories (five individuals; four males and one female) were mapped within the vicinity of the Study Area of the SAR and the confluence of the Mission Zanja Channel with the SAR (see Figure 3.7-1). Of these, one breeding pair of LBV was observed within the Mission Zanja Channel, approximately 110 feet from the project centerline but outside of the direct impact footprint (Appendix I1). Given that Project construction in the vicinity of the SAR and Mission Zanja Channel could occur year round, construction activities would coincide with the LBV breeding season (March 15-September 15) and could result in direct effects to the species (e.g., nest abandonment). This is considered an adverse effect under NEPA and Mitigation Measures BIO-1 (Pre-Construction Survey), BIO-2 (LBV), BIO-3 (MBTA Covered Species), and BIO-4 (Protection of Sensitive Plants and Habitats) are proposed to mitigate this effect. Under CEQA, this is considered a significant impact.

Southwestern Willow Flycatcher. No SWFL were observed within the Study Area during focused surveys, therefore, direct effects to this species are not likely (Appendix I1). However, given the presence of suitable habitat and the duration of time prior to Project construction, it is possible that SWFL could occur within the Project footprint. Therefore, the potential exists for an adverse effect to occur under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure BIO-1 is proposed to mitigate this effect.

San Bernardino Kangaroo Rat. Based on the completion of focused surveys for SBKR, no evidence of their presence was documented (Appendix I1). However, the Study Area at the SAR overlaps with Unit 1 of designated SBKR critical habitat. Temporary effects to 2.15 acres and permanent effects to 0.70 acres of the 8,935 acres of the total designated SBKR critical habitat within Unit 1 would not result in an adverse modification to critical habitat as designated within Unit 1. Furthermore, the Project will not change the hydrologic processes in any way that will contribute to further loss of primary constituent elements (PCEs) identified for SBKR within the SAR. However, given the duration of time prior to Project construction (2015) and the presence of marginally suitable habitat, it is possible that SBKR could occur within the Project footprint and be affected by Project construction. Based on this context, an adverse effect under NEPA would occur. Under CEQA, this is considered a significant impact. Mitigation Measure BIO-1 is proposed to mitigate this effect.

Santa Ana Sucker. Due to a number of barriers that occur downstream of the Study Area in the vicinity of the SAR, there is no risk of direct take of individual Santa Ana sucker in conjunction with implementing the Project. Although the Project will not likely result in the loss of a federally listed species, it would affect critical habitat through the disruption of the channel bed and banks. This would include the temporary placement of both the proposed bridge supports along side of the existing bridge supports until they can be removed. These effects would be temporary and are not expected to result in direct take of SAS and, therefore, no adverse effect would occur under NEPA. This is considered a less than significant impact under CEQA.

Yellow Billed Cuckoo. No yellow billed cuckoo were observed within the Study Area, therefore, direct impacts to this species are not likely (Appendix I1). However, given the presence of suitable habitat and the duration of time prior to Project construction (2015), it is possible that yellow billed cuckoo could occur within the Project footprint. Given the extent of suitable habitat, without verification prior to construction an adverse effect could occur under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure BIO-1 is proposed to mitigate this effect.

Western Burrowing Owl. One individual wintering BUOW was observed onsite in January 2013, however, no evidence of breeding BUOW was detected within the Study Area during 2012 focused protocol surveys. However, given the presence of suitable habitat and the duration of time prior to Project construction (2015), it is possible that breeding and/or wintering BUOW could take residence within the Project footprint. Given the extent of suitable habitat, without verification prior to construction an adverse effect could occur under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure BIO-1 and BIO-5 (Burrowing Owl) are proposed to mitigate this effect.

Yellow Warbler. Yellow warbler was observed within the Study Area. Given the presence of suitable habitat and the duration of time prior to Project construction, it is possible that yellow warbler breeding sites could be located within or adjacent to the footprint. If construction occurs during the breeding season (February 15-August 31), there is a potential for direct impacts (e.g. nest abandonment) to occur as a result of construction activities in the vicinity of the SAR and Mission Zanja Channel. Because there is a high potential for nests to occur within these areas, an adverse effect under NEPA would occur. Under CEQA, this is considered a significant impact. Mitigation Measures BIO-3 and BIO-4 are proposed to mitigate this effect.

Loggerhead Shrike. Loggerhead shrike was observed within the Study Area. Given the presence of suitable habitat and the duration of time prior to Project construction (2015), it is possible that loggerhead shrike breeding sites could be located within or adjacent to the footprint. If construction occurs during the breeding season (February 15-August 31), there is a potential for direct impacts (e.g. nest abandonment) to occur as a result of construction activities in the vicinity of the SAR and Mission Zanja Channel. Because there is a high potential for nests to occur within these areas, an adverse effect under NEPA would occur. Under CEQA, this is considered a significant impact. Mitigation Measures BIO-3 and BIO-4 are proposed to mitigate this effect. Loggerhead shrike is covered by the MBTA.

Yellow Breasted Chat. No Yellow breasted chat were observed within the Study Area, therefore, direct impacts to this species is not likely. However, given the presence of suitable habitat and the duration of time prior to Project construction (2015), it is possible that Yellow breasted chat breeding sites could be located within or adjacent to the footprint. If construction occurs during the breeding season (February 15-August 31), there is a potential for direct impacts (e.g. nest abandonment) to occur as a result of construction activities in the vicinity of the SAR and Mission Zanja Channel. Because there is a high potential for nests to occur within these areas, an adverse effect under NEPA would occur. Under CEQA, this is considered a significant impact. Mitigation Measures BIO-3 and BIO-4 are proposed to mitigate this effect. Yellow breasted chat is covered by the MBTA.

Western Spadefoot Toad. Presence of Western spadefoot toad is assumed in the Mission Zanja Channel, Twin Creek, and some non-jurisdictional ditches. The Project could directly affect individuals through physical interaction with construction equipment and potential sedimentary fill into breeding habitat. Based on this context, an adverse effect would occur under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure BIO-1 is proposed to mitigate this effect.

Direct Effects from Long-Term Operations

Once operational, the Build Alternatives and Design Options would involve passenger train operations along the railroad corridor and periodic maintenance of SANBAG's ROW. The corresponding effects of these operations to each of the special status species with moderate to high potential to occur within the Study Area are detailed below.

Least Bell's vireo, Southwestern Willow Flycatcher, Yellow Billed Cuckoo, Western Burrowing Owl, Yellow Warbler, Loggerhead Shrike, Yellow Breasted Chat. Once operational, the Project would result in minimal physical disturbance to adjacent suitable habitat for LBV, SWFL, Yellow billed cuckoo, BUOW, yellow warbler, Loggerhead shrike, and Yellow breasted chat. Therefore, the potential for direct operational effects to these species are not considered adverse under NEPA. Under CEQA, this is considered a less than significant impact.

San Bernardino Kangaroo Rat and Western Spadefoot Toad. Once constructed, the Project would not require additional direct effects to the SAR, which is considered critical habitat for SBKR. Furthermore, the Project would not change the hydrologic processes within SANBAG's ROW that could contribute to further loss of PCEs identified for SBKR within the SAR. Similar circumstances would apply to western spadefoot toad. Therefore, no adverse operational effects would occur under NEPA. Under CEQA, this is considered a less than significant impact.

Santa Ana Sucker. Based on hydraulic modeling, the proposed bridge supports at Bridge 3.4 are not anticipated to substantially alter sediment and water transport downstream (see Appendix J1). Each bridge support would be the same width as the existing piles but approximately 20 feet longer and, thus, oriented parallel to flow. The river channel under the new bridge would be widened, particularly on the north side, so that the five new piles would be in the channel. Hydraulic modeling shows that, relative to the existing bridge, the new bridge would result in a slightly lower water surface elevation and velocity during a 100-year flow event (see Appendix J1). Thus, the new bridge supports would not impede water transport under the bridge nor would it change water surface elevations downstream of the bridge. Based on these considerations, the proposed design would not affect water or sediment transport downstream. Therefore, no adverse operational effects would occur under NEPA. Under CEQA, this is considered a less than significant impact.

Indirect Effects

As discussed above, protocol-level surveys only identified the presence of LBV. No other federally-listed bird species were identified within suitable habitat. During construction of the Project, construction activities could produce noise levels that would adversely affect breeding LBV. The USFWS typically applies a noise level criterion of 60 dBA Leq for assessing project-related noise effects to listed bird species. Therefore, depending on the type of equipment utilized near active LBV nests, an indirect adverse effect associated with construction-related noise could result under NEPA. This is considered a significant impact under CEQA. Implementation of Mitigation Measure BIO-2 is proposed to mitigate this effect.

Once operational, the potential for noise from passing trains to adversely affect breeding birds is very remote given the limited presence of suitable breeding habitat within the urbanized rail corridor and the infrequent and transient train movements past a given point. In this context, no adverse indirect effect would occur to sensitive zoological or bird species from operational noise. Under CEQA, this indirect impact is considered less than significant.

Other indirect effects to sensitive zoological species and migratory birds would generally be attributed to temporary construction-related dust and water quality effects. For example, hazardous materials leaks, such as fuel, hydraulic fluid, and/or lubricants, from equipment working in or above the river channel, although unlikely, have a potential to contaminate dry or moist river bed sediments when no flow is present. This contamination, if not cleaned up immediately, could be transported downstream during higher flow events to critical habitat occupied by SBKR and Santa Ana sucker. Leaks into flowing water would be transported downstream and could reach occupied habitat. Degradation of existing critical habitat functions and values are considered adverse under NEPA. This is considered a significant impact under CEQA. Mitigation Measures HWQ-2 (Prepare and Implement a SWPPP) and HWQ-3 (Prepare and Implement a Flow Diversion Plan for Construction) (as described in Section 3.8, Floodplain, Hydrology, and Water Quality) are proposed to mitigate this effect.

Construction of the new bridge at Bridge 3.4 would result in disturbances within the river channel and on the banks related to access, installation of temporary cofferdam(s) or cast-in-steel-shell (CISS) piles (or similar bridge structure type), dredging in the river bed and/or excavation along the banks, and removal of the cofferdam(s) or CISS piles (or similar bridge structure type) when construction is completed. Dredging and/or excavation of the river banks under the bridge to widen the channel would have the potential to cause suspension of fine sediments if the work occurs in flowing water or the disturbed soils later are exposed to flowing water before those soils are stabilized. Installation and removal of temporary cofferdam(s), CISS piles (or similar bridge structure type), and bridge support structures may result in temporary indirect effects to downstream SAS critical habitat. Erosion and sedimentation into suitable habitat would be considered a temporary indirect effect. This is considered an adverse indirect effect under NEPA. Under CEQA, this is considered a significant indirect impact. Mitigation Measures HWQ-2 and HWQ-3 are proposed to mitigate this effect.

EFFECT 3.7-2	**Loss and Degradation of Habitat for Special-Status Plant Species and Potential Direct Take of Individuals.** The Project would modify habitats within the Study Area resulting in direct and indirect effects on sensitive or special status plant species, including those listed as a candidate, sensitive, or special-status by CDFW and USFWS.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under Alternative 1, the Project would not be implemented and existing conditions along the railroad corridor would remain. To facilitate continued freight service per SANBAG's obligations, maintenance improvements would be required along the existing track alignment, which would include bridge replacement or rehabilitation. Sensitive botanical species occur along the SAR and future maintenance activities could affect sensitive plants species during construction. As a result, SANBAG would be required to secure the necessary permit approvals prior to the completion of work. This is considered an adverse effect under NEPA. Under CEQA, this is considered a significant impact.

Direct Effects from Long-Term Operations

Operational effects related to the sensitive plant resources are not anticipated to occur. Existing biological resources would generally be maintained along the existing rail corridor and, therefore, no effect would occur under NEPA. No impact would occur under CEQA.

Indirect Effects

Indirect effects to sensitive botanical species would generally be attributed to temporary construction-related dust and water quality effects. The potential for leaks (e.g., hydraulic fluid) combined with sedimentation from in-channel and upland construction into suitable habitat would be considered a temporary indirect adverse effect under NEPA. Under CEQA, this is considered a significant indirect impact.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Construction of the Build Alternatives and Design Options could result in adverse effects to sensitive plant species and their habitats by incidentally taking a species, potentially jeopardizing the viability of a population, disturbing habitat, or disruption of reproductive activities. Based on springtime rare plant surveys conducted for the Project, the federally endangered Santa Ana River woolly star was observed within the vicinity of the proposed improvements for Bridge 3.4 at the SAR. The plant is a single individual that is not part of a larger population in the Study Area, and is located approximately 0.7 miles downstream from the closest, locally established population. The plant is located within the proposed temporary impact footprint and although construction crews would make every attempt to avoid the individual, construction activities associated with the installation of the cofferdam (or CISS piles) carries a potential to directly affect the Santa Ana River woolly star individual. Although the direct effect to the individual Santa Ana River woolly star may be unavoidable, it would not be considered an adverse effect to the species' population as a whole. Therefore, no adverse effect under NEPA would occur. Under CEQA, this is considered a significant impact. Mitigation Measures BIO-1, BIO-4, and BIO-7 are proposed to mitigate this effect.

Direct Effects from Long-Term Operations

Future operations would be restricted to the existing SANBAG railroad ROW with maintenance activities required to maintain the track free of debris, including vegetation. These activities would be restricted to SANBAG's ROW and would not extend into adjacent sensitive habitats. For this reason, no adverse effect under NEPA would occur. Under CEQA, this is considered a less than significant impact.

Indirect Effects

Based on springtime rare plant surveys within the Study Area, no additional special status plant species were observed within the Study Area beyond the individual Santa Ana River woolly star plant that would be directly impacted by Project-related construction. Although no other populations were observed during the rare plant survey, given that Project construction would not start until 2015, there is a potential for one or more special status plants to inhabit the Study Area, thereby, being subject to construction-related indirect effects. This is considered an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measures BIO-1, BIO-4, and BIO-7 are proposed to mitigate this effect.

EFFECT 3.7-3	**Loss and Degradation of Waters of the U.S., including Wetlands, and Waters of the State.** Construction of the Project has the potential to result in substantial adverse effects to federally and state-protected wetlands (including, but not limited to, seasonal wetlands) through direct fill or excavation, hydrological interruption, or other indirect impacts.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, the Project would not be implemented and existing conditions along the railroad corridor would remain. To facilitate continued freight service per SANBAG's obligations, maintenance improvements would be required along the existing track alignment, which would include bridge replacement or rehabilitation. The replacement or rehabilitation of bridges (i.e., Santa Ana River Bridge) could result in construction-related effects in terms of construction debris falling into waterways and sedimentation as a result of in-channel construction activities. These activities would be subject to USACE and CDFW permit requirements. Temporary, direct effects to jurisdictional areas are considered adverse under NEPA. This is considered a significant impact under CEQA.

Direct Effects from Long-Term Operations

Under the No Build Alternative, the Project would not occur and existing rail operations (i.e., freight service) would continue to occur. With a continuation of the existing track alignment, no substantial changes in hydrology would occur that could otherwise impede water transport to existing wetlands of change water surface elevations in existing waterways (e.g., SAR). Project operations would result in no adverse effect under NEPA. This is considered a less than significant impact under CEQA.

Indirect Effects

Maintenance activities under the No Build Alternative may result in pollutants of concerns into drainage crossings. Erosion and sedimentation and hazardous materials spill or leakage from construction vehicles is also considered a potential indirect effect to jurisdictional areas. Water quality in aquatic systems and terrestrial species that depend on these resources may be adversely affected. These indirect effects to USACE and CDFW jurisdictional areas would be subject to regulatory permits and are considered adverse under NEPA. This is considered a significant impact under CEQA.

ALTERNATIVE 2 – PREFERRED PROJECT AND DESIGN OPTIONS 1 AND 3

Direct Effects from Temporary Construction

Implementation of the Preferred Project and Design Options would result in direct impacts to waters of the U.S. as result of the placement of fill materials or excavation within jurisdictional waters of the U.S. and state, including wetlands, within the railroad corridor. Based on preliminary engineering, total effects to waters of the U.S., including wetlands, are estimated at 6.23 acres. Of this total, permanent effects to USACE jurisdiction for the Preferred Project and the Design Options total up to 0.30 acres with the remaining 5.93 acres subject to temporary effects of which 0.02 acres consists of disturbed wetlands. A majority of these effects occur at the SAR, Twin Creek, and along the Mission Zanja Channel (Appendix I1). Direct effects to USACE jurisdictional areas are considered adverse under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure BIO-6 (Secure Clean Water Act Section 404

Permit and Implement All Permit Conditions to Ensure No Net Loss of Functions of Wetlands, Other Waters of the U.S., and Waters of the State) is proposed to mitigate effects to USACE jurisdictional areas.

Additionally, construction of the Preferred Project and the Design Options would result in effects to a total of 14.92 acres of CDFW jurisdiction with temporary effects occurring to up to 13.20 acres, of which includes 12.40 acres of non-vegetated channel. Permanent effects to CDFW jurisdiction would occur on the remaining 1.65 acres of which includes 0.50 acres of non-vegetated channel. Based on these combined construction-related impacts, the Project has the potential to result in adverse effects to state-protected wetlands through direct fill or excavation, and hydrological interruption. Direct effects to CDFW jurisdictional areas are considered a significant impact under CEQA. Mitigation Measure BIO-6 is proposed to mitigate this effect.

Direct Effects from Long-Term Operations

Based on hydrological analysis of the proposed improvements (see Appendix J1), including new bridge structures, no substantial changes in hydrology would occur that could otherwise impede water transport to existing wetlands of change water surface elevations in existing waterways (e.g., SAR). Over the longer-term, vegetation clearing/trimming would be generally restricted to the ROW. These activities would not extend into adjacent sensitive habitat areas, which include jurisdictional areas (i.e., the SAR, Twin Creek, and Mission Zanja Channel). Maintenance activities would generally be infrequent and limited in extent and, therefore, would be unlikely to result in adverse effects to jurisdictional areas, such as changes in habitat due to clearing, disruption of sediments, and introduction of pollutants (i.e., oil, gas, lubricants, etc.). Effects to jurisdictional areas during operations are not considered adverse under NEPA. This is considered a less than significant impact under CEQA.

Indirect Effects

Indirect effects to USACE and CDFW jurisdictional areas would primarily occur in the form of indirect water quality effects from various construction activities. Pollutants of concern for jurisdictional areas include increases in sedimentation and the discharge of hazardous materials or debris from construction activities, especially in close proximity to waterways. To minimize falling debris during the construction of bridges across Warm Creek, Twin Creek, SAR, Mission Zanja Channel, and Mill Creek Zanja, a debris containment system would be installed under the bridges to prevent falling debris from entering jurisdictional areas. These indirect effects to USACE and CDFW jurisdictional areas are considered adverse under NEPA. This is considered a significant impact under CEQA. Mitigation Measures BIO-6, HWQ-2 and HWQ-3 are proposed to mitigate these indirect effects.

ALTERNATIVE 3 – REDUCED PROJECT FOOTPRINT AND DESIGN OPTION 2

Direct Effects from Temporary Construction

Impacts to USACE and CDFW jurisdictional areas under the Reduced Project Footprint Alternative and Design Option2 would occur similar to the Preferred Project, however, the jurisdictional areas subject to direct impacts would be reduced as a function of the alternative's intent (e.g. reduce the Project's physical footprint) and the elimination of Bridge 5.78 under Design Option2. Based on preliminary engineering, total effects to waters of the U.S., including wetlands are estimated at 5.09 acres and 6.01 acres under the Reduced Footprint Alternative and Design Option 2, respectively. Of this total, permanent effects to USACE jurisdiction for the Reduced Project Footprint and Design Option 2 total up to 0.30 acres with the remaining areas subject to temporary effects.

Under the Reduced Project Footprint, up to 12.83 total acres of CDFW jurisdiction would be impacted with permanent effects totally up to 1.63 acres, which includes 0.50 acres of non-vegetated channeled. Temporary effects would occur within the remaining 11.2 acres, which includes 10.32 acres of non-vegetated channel. Permanent impacts to CDFW jurisdiction under Design Option 3 would be similar, but temporary impacts would be 12.98 acres with 12.18 acres consisting of non-vegetated channel.

The Reduced Project Footprint Alternative 3 and Design Option 2 reduces temporary effects to USACE jurisdictional areas by 1.14 acres and 0.22 acres, respectively, compared to the Preferred Project and the Design Options 1 and 3. Compared to Preferred Project, this alternative reduces temporary effects to CDFW jurisdictional areas by 1.99 acres. Although Alternative 3 and Design Option 2 reduces the acreage of jurisdictional areas affected, direct effects to jurisdictional areas would still occur and permanent impacts would be the similar. Effects to USACE and CDFW jurisdictional areas are considered adverse under NEPA. This is considered a significant impact under CEQA. Mitigation Measure BIO-6 is proposed to mitigate this effect.

Direct Effects from Long-Term Operations

Similar to the Preferred Project and Design Options, future operations, including long-term maintenance, would be limited to SANBAG's ROW and no adverse effect to jurisdictional areas would occur under NEPA. This is considered a less than significant impact under CEQA.

Indirect Effects

Alternative 3 would have similar indirect effects as Alternative 2 and the Design Options. Indirect water quality effects to USACE and CDFW jurisdictional areas are considered adverse under NEPA. This is considered a significant impact under CEQA. Mitigation Measures BIO-6, HWQ-2 and HWQ-3 are proposed to mitigate these indirect effects.

EFFECT 3.7-4	**Potential Interference with Wildlife or Fisheries Movement.** Construction and operation of the Build Alternatives would not interfere substantially with the movement of native resident or migratory fish or within established native resident or migratory wildlife corridors.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, maintenance improvements would be required along the existing track alignment, which would include the replacement of Bridge 3.4 at the SAR. Bridge improvement will require construction equipment to work adjacent to and within the existing channel. These activities would be subject to permit conditions from the appropriate regulatory agencies, including USACE and CDFW. Based on these considerations, construction activities would be unlikely to interfere substantially with the movement of any resident or migratory fish or wildlife species within established native, resident, or migratory wildlife corridors. In this context no adverse effect would occur under NEPA. Under CEQA, this is considered a less than significant impact

Direct Effects from Long-Term Operations

The continued operation of freight service within SANBAG's existing ROW would be unlikely to obstruct wildlife and fishery movements along the SAR corridor. Based on these considerations, no adverse effect would occur under NEPA. Under CEQA, this is considered a less than significant impact.

Indirect Effects

Continued maintenance and limited improvements to existing structures (e.g. bridges) would be unlikely to result in indirect effects to existing corridors such as blockage of the corridor or changes in existing habitat. Based on this context, no adverse effect under NEPA would occur. Under CEQA, this is considered a less than significant impact.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Construction activities are not likely to prohibit natural water and substrate transport or the ability of species to move upstream or downstream of SANBAG's ROW in the SAR or other waterways functioning as wildlife corridors and linkages. The replacement of bridges within these waterways would not create any pinch-points during construction. Noise barriers, if and where installed for noise mitigation, are not expected to affect wildlife movement because they will be located outside of known linkages, and are adjacent to urban areas, which are existing barriers to wildlife movement. Based on these considerations, construction activities are not likely to interfere substantially with the movement of any resident or migratory fish or wildlife species or within established native, resident, or migratory wildlife corridors. In this context, no adverse effect would occur under NEPA. Under CEQA, this is considered a less than significant impact.

During construction, noise levels may be temporarily elevated for short periods during daytime hours. Night work may require noise monitoring, should construction occur during the avian breeding season. The presence of construction equipment and personnel has the potential to dissuade animals from using potential linkages. However, this effect would be limited to the duration of construction and, therefore, no adverse effect would occur under NEPA. Under CEQA, this is considered a less than significant impact.

Direct Effects from Long-Term Operations

The proposed bridge structures would continue to facilitate wildlife movement along local waterways. Once operational, the Project would involve passenger train movements within the existing SANBAG ROW. Given the urbanized nature of the Study Area and narrow width of the railroad ROW, train operations and periodic maintenance activities within SANBAG's ROW would be unlikely to result in a barrier to wildlife movements. As a result, the Project is unlikely to cause habitat shifts (toward nonnative and/or disturbed type communities) or substantially degrade linkages, which may no longer provide food, cover, or ease of travel for many species. Based on these considerations, no adverse effect would occur under NEPA. Under CEQA, this is considered a less than significant impact.

Indirect Effects

Construction and operational activities would not prohibit the movement of native resident or migratory fish or wildlife species through existing wildlife corridors such as the SAR and Twin Creek. In this context, no adverse indirect effect would occur under NEPA. Under CEQA, this is considered a less than significant impact.

EFFECT 3.7-5	**Loss of Sensitive Natural Communities.** Construction and operation of the Project has the potential to have a substantial adverse effect on local riparian and woodland habitats.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, the Project would not be implemented and existing conditions along the railroad corridor would remain. To facilitate continued freight service per SANBAG's obligations, maintenance improvements would be required along the existing track alignment, which would include bridge replacement or rehabilitation. These activities would be subject to permit conditions that would require limiting direct impacts to sensitive communities and, if necessary, habitat replacement at acceptable ratios. Under NEPA, no adverse effect would occur. A less than significant impact would occur under CEQA.

Direct Effects from Long-Term Operations

The vegetation communities present along the existing track alignment are representative of existing conditions. Because freight service occurs along the existing track alignment, the vegetation communities along the track alignment would be unlikely to substantially change from existing conditions. Therefore, no effect would occur under NEPA. No impact would occur under CEQA.

Indirect Effects

There are no indirect effects related to vegetation communities associated with the No Build Alternative. No impact would occur under CEQA.

ALTERNATIVE 2 – PREFERRED PROJECT AND DESIGN OPTIONS

Direct Effects from Temporary Construction

The construction of the Preferred Project and the Design Options would involve direct effects to existing vegetation communities both within and adjacent to the railroad corridor as a result of direct removal or disruption to root systems. The construction of the Project under Alternative 2 and the Design Options would result in temporary and permanent effects to the following 12 vegetation communities: disturbed habitat (DH), disturbed wetland (DW), eucalyptus woodland (EW), Flat-top buckwheat scrub (FBS), (non-jurisdictional ditch (NJD), non-native grassland (NNG), non-vegetated channel (NVC), oak woodland (OW), orchards and vineyards (OV), southern cottonwood willow riparian forest (SCWRF), southern willow scrub (SWS), Riversidean alluvial fan sage scrub (RAFSS), and urban/developed (UD). With the exception of SCWRF, RAFSS, and SWS, the remainder of the vegetation communities are not identified as sensitive natural communities by CDFW and effects (temporary and permanent) would not be considered adverse. Of the 8.91 acres of sensitive vegetation communities within the Study Area, approximately 1.58 acre of SCWRF (Temporary: 0.62 acres, Permanent: 0.96 acres), <0.05 acre of RAFSS (Temporary: 0.05 acre), and 0.12 acre of SWS (Temporary: 0.12 acres) would be affected by the physical footprint for the Preferred Project and the Design Options. The physical disturbance to sensitive vegetation communities is considered an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measures BIO-4 and BIO-7 are proposed to mitigate effects to sensitive communities.

Direct Effects from Long-Term Operations

Routine maintenance activities (e.g., vegetation clearing) along the railroad corridor would be required to maintain SANBAG's ROW, including habitat areas between MP 3.3 and 4.0, free of obstructions over the long term operation of the Project. These activities would be limited to the existing ROW in order to maintain the track free of debris, including vegetation, and would not occur adjacent to sensitive habitats. As a result, no long-term conversion of adjacent sensitive habitat to non-sensitive habitat is expected and no adverse effect would occur under NEPA. Under CEQA, this is considered a less than significant impact.

Indirect Effects

Construction activities occurring adjacent to sensitive vegetation communities may result in temporary indirect effects such as dust, erosion/sediment, and ground disturbance from the intrusion of workers and equipment. Additional indirect impacts could result from the introduction of invasive species or noxious weeds, which could increase competition with species comprising these natural communities. These indirect effects on sensitive vegetation communities are considered adverse under NEPA. These impacts are considered significant under CEQA. Mitigation Measures BIO-4 and HWQ-2 are proposed to mitigate these indirect effects.

ALTERNATIVE 3 – REDUCED PROJECT FOOTPRINT

Direct Effects from Temporary Construction

Similar to the Preferred Project and the Design Options, this alternative would involve direct effects to existing vegetation communities within and adjacent to the railroad corridor as a result of direct removal or disruption to root systems. Compared to Preferred Project and Design Options, Alternative 3 provides no reduction in the acreage of impact to sensitive vegetation communities. Similar to the Preferred Project, the direct effect to sensitive vegetation communities is considered an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measures BIO-4 and BIO-7 are proposed to mitigate this effect.

Direct Effects from Long-Term Operations

This alternative would have similar long-term operational effects as the Preferred Project and the Design Options. No long-term conversion of adjacent sensitive habitat to non-sensitive habitat is expected and no adverse effect would occur under NEPA. Under CEQA, this is considered a less than significant impact.

Indirect Effects

Alternative 3 would have similar indirect effects as Alternative 2 and the Design Options. Potential indirect effects to sensitive vegetation communities are considered adverse under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measures BIO-4 and HWQ-2 are proposed to mitigate this effect.

EFFECT 3.7-6	**Conflict with Local Ordinances and Policies Protecting Biological Resources.** The Project would not conflict with the cities of San Bernardino and Redland's tree ordinances.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, the Project would not occur and existing conditions along the rail corridor would remain. Replacement of track improvements and bridge improvements may require the removal or disturbance of several tree species. The pruning and removal of protected trees within the cities of San Bernardino and Redlands is permitted with appropriate authorization. Therefore, the removal of trees would result in no adverse effect under NEPA. This is considered a less than significant impact under CEQA

Direct Effects from Long-Term Operations

Under Alternative 1, the Project would not occur and existing rail operations (i.e., freight service) would continue to occur. Future maintenance activities would be required to maintain freight service and, therefore, limited pruning or vegetation clearing would be required to keep the railroad corridor free of debris. Vegetation maintenance activities would be limited to SANBAG's ROW and would not extend into adjacent sensitive habitats. Therefore, vegetation maintenance activities are expected to result in no adverse effect under NEPA. This is considered a less than significant impact under CEQA.

Indirect Effects

As stated above, the No Build Alternative could result in the removal or disturbance of several species as a result of construction of track and bridge improvements within and immediately adjacent to open space areas. These activities could result in indirect effects affecting the root systems of adjacent native and ornamental trees. However, the pruning and removal of protected trees within the cities of San Bernardino and Redlands is permitted with appropriate authorization. Therefore, no adverse effect would result under NEPA. This is considered a less than significant indirect impact under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

The Project may require the removal or disturbance of several tree species that occur within the Project footprint. More specifically, the implementation of the Build Alternatives and Design Options could result in the removal or disturbance of several species including willow, cottonwood, walnut, citrus, and palm as a result of grading, track reconstruction, and creation of impervious surfaces within and immediately adjacent to open space areas. However, the pruning and removal of protected trees within the cities of San Bernardino and Redlands is permitted with appropriate authorization. Additionally, the Project would not require the removal of protected oaks. As a result, the removal of ornamental trees would not conflict with local ordinances and policies protecting biological resources and no adverse effect would result under NEPA. This is considered a less than significant impact under CEQA.

Direct Effects from Long-Term Operations

Once constructed, the Project would generally not require the removal of additional trees. However, future maintenance activities would be required throughout the duration of Project operation and, therefore, limited pruning or vegetation clearing would be required to keep the railroad corridor free of debris. Vegetation maintenance activities would be limited to SANBAG's ROW and would not extend into adjacent sensitive habitats. Therefore, no adverse effect would occur under NEPA as a result of vegetation maintenance activities. This is considered a less than significant impact under CEQA.

Indirect Effects

As stated above, the Project could result in indirect effects affecting the root systems of adjacent native and ornamental trees. Trenching, grading, soil compaction, placement of fill, impervious surfaces, irrigation, and landscaping within the drip lines of trees could lead to root damage ultimately resulting in death of the tree. However, the pruning and removal of protected trees within the cities of San Bernardino and Redlands is permitted with appropriate authorization. Therefore, no adverse effect would result under NEPA. This is considered a less than significant indirect impact under CEQA.

3.7.4 Mitigation Measures

The following mitigation measures are proposed for the Build Alternatives and Design Options to avoid, minimize, and/or reduce adverse direct and indirect effects to biological resources.

BIO-1 **Pre-Construction Survey - Conduct Preconstruction Survey for Special Status Plants and Wildlife and, if Found, Implement Avoidance and Compensation Measures.** Prior to construction, a qualified biologist retained by SANBAG shall conduct pre-construction surveys for special status plant species including woolly star, slender-horned spineflower, smooth tarplant, and salt spring checkerbloom. Pre-construction surveys will also be required for special status wildlife species including least Bell's vireo, southwestern willow flycatcher, San Bernardino kangaroo rat, yellow-billed cuckoo, burrowing owl, and western spadefoot toad to verify presence or absence in the Project area. If one or more species are detected, then SANBAG shall consult with the USFWS (or CDFW if appropriate) to develop additional minimization measures prior to project construction (if necessary). These additional measures may include construction timing restrictions and/or construction monitoring.

BIO-2 **Least Bells Vireo (LBV).** The following measures will be implemented to minimize direct and indirect impacts to LBV during construction:

a. Impacts associated with clearing and grubbing of Southern Cottonwood Willow Riparian Forest (SCWRF) and Southern Willow Scrub (SWS) will be timed to avoid the breeding season of the least Bell's vireo (March 15 to September 15), unless SANBAG provides survey documentation to USFWS that confirms the riparian habitat in not occupied by LBV.

b. Temporary impact areas will be restored to pre-grade contours following bridge construction. Natural recruitment is anticipated to occur rapidly due to the large amount of intact native riparian habitat that will remain as a seed source. Additionally, the riparian habitat being impacted is adapted to frequent disturbance. The individual species making up the community tend to have large quantities of seeds and very rapid growth that promote rapid re-establishment. Container planting and seeding has not been proposed due to potential conflicts with County Flood Control Maintenance requirements, high risk of plant material being washed out during subsequent storm events and potential conflicts with future Santa Ana River Trail construction. For erosion control purposes, temporarily impacted areas outside of the active floodplain will be hydroseeded with native grasses and shrubs.

i. The temporarily impacted SCWRF and SWS habitat will be monitored annually for five years, until LBV is documented using the re-established habitat or until habitat attains 80 percent cover including both shrub and overstory stratum. If recruitment of SCWRF and SWS species is not evident within two years of project construction or habitat has not attained 60 percent cover within three years, impacts will be treated as permanent and additional mitigation for areas not meeting success criteria shall be provided through in-lieu fee payment to an appropriate mitigation bank for enhancement, restoration or establishment of LBV habitat at a ratio of 1:1.

ii. Temporary direct impacts to potentially suitable LBV habitat will be mitigated as follows: The temporal[2] loss of occupied LBV habitat resulting from temporary removal of SCWRF associated with the Mission Zanja Channel shall be mitigated through in-lieu fee payment to an appropriate mitigation bank for enhancement, restoration or establishment of LBV habitat at a ratio of 3:1. The temporal loss of suitable unoccupied LBV habitat resulting from temporary removal of SCWRF and SWS shall be mitigated through in-lieu fee payment to an appropriate mitigation bank for enhancement, restoration or establishment of LBV habitat at a ratio of 2:1.

c. Permanent direct impacts to occupied LBV habitat (SCWRF) shall be mitigated at a ratio of 3:1 through in-lieu fee payment to an appropriate mitigation bank for enhancement, restoration and/or creation of LBV habitat within the Santa Ana River watershed.

d. If active LBV nests are identified during pre-construction surveys and noise levels at the nest exceed 60 dBA Leq, noise attenuation structures will be placed or other noise attenuation measures (e.g., reducing the number of construction vehicles or using different types of construction vehicles) will be implemented to reduce noise levels at the nest to 60 dBA Leq (or ambient noise level if greater than 60 dBA Leq). During construction adjacent to these areas, noise monitoring shall occur during the LBV breeding season and be reported daily to USFWS. Construction activities that create noise in excess of the aforementioned levels will cease operation until effective noise attenuation measures are in place to the extent practicable.

BIO-3 **MBTA Covered Species.** Prior to habitat removal during the avian breeding season (February 15-August 31), a qualified biologist shall conduct a pre-construction nest survey (in suitable areas) no more than 3 days prior to ground disturbing activities for migratory birds. Pre-construction surveys will performed year-around between MP 3.3 and 4.0 with the timing and implementation done in coordination with the CDFW and USFWS. Should an active nest of any MBTA covered species occur within or

[2] Refers to the time between initiation of mitigation and maturation of anticipated ecological functions on a compensatory mitigation site.

adjacent to the project impact area, a 100-foot buffer (300 feet for raptors) shall be established around the nest and no construction shall occur within this area until a qualified biologist determines the nest is no longer active or the young have fledged.

BIO-4 **Protection of Sensitive Plants and Habitats.** SANBAG shall require the construction contractor to implement the following measures to protect sensitive plants and habitats during project-related construction.

1. SANBAG shall designate an approved biologist (project biologist) who will be responsible for overseeing compliance with protective measures for the biological resources during clearing and work activities within and adjacent to areas of native habitat. The project biologist will be familiar with the local habitats, plants, and wildlife and maintain communications with the contractor to ensure that issues relating to biological resources are appropriately and lawfully managed. The project biologist will review final plans, designate areas that need temporary fencing, and monitor construction. The biologist will monitor activities within designated areas during critical times such as vegetation removal, the installation of Best Management Practices (BMPs) and fencing to protect native species, and ensure that all avoidance and minimization measures are properly constructed and followed.

2. Project employees and contractors that will be on-site shall complete environmental worker-awareness training conducted by the project biologist. The training will advise workers of potential impacts to the sensitive habitat and listed species and the potential penalties for impacts to such habitat and species. At a minimum, the program will include the following topics: occurrences of the listed species and sensitive vegetation communities in the area, a physical description and their general ecology, sensitivity of the species to human activities, legal protection afforded these species, penalties for violations of Federal and State laws, reporting requirements, and work features designed to reduce the impacts to these species; and to the extent practicable, promote continued successful occupation of areas adjacent to the work footprint. Included in this program will be color photos of the listed species, which will be shown to the employees. Following the education program, the photos will be posted in the contractor and resident engineer’s office, where they will remain through the duration of the work. Photos of the habitat in which sensitive species are found will also be posted on-site. The contractor will be required to provide SANBAG with evidence of the employee training (e.g., sign in sheet or stickers) upon request. Employees and contractors will be instructed to immediately notify the project biologist of any incidents, such as construction vehicles that move outside of the work area boundary. The project biologist will be responsible for notifying the USFWS within 72 hours of any similar incident.

3. Prior to construction, SANBAG shall delineate the construction area (including staging and laydown areas) between Mile Posts 3.3 and 4.0 and erect exclusionary construction fencing along the perimeter of the identified construction area to protect adjacent sensitive habitats (SWS, SCWRF, RAFSS, and Santa Ana wooly star). Limits of the exclusionary fencing shall be confirmed by the project biologist prior to habitat clearing. Exclusionary fencing shall be maintained throughout the duration of construction work from

Mile Posts 3.3 to 4.0. Exclusionary fencing can be removed at the conclusion of construction work as approved by the project biologist.

All construction-related vehicles and equipment storage shall occur in the construction area and/or previously disturbed areas as approved by the project biologist. Project-related vehicle traffic shall be restricted to established access roads, construction areas, storage areas, and staging and parking areas.

If construction activity extends beyond the exclusionary fencing into sensitive vegetation communities, areas of disturbance shall be quantified and an appropriate restoration approach shall be developed in consultation with USFWS and CDFW. For example, if construction extends beyond the limits of the exclusionary fencing, temporarily disturbed areas shall be restored to the natural (preconstruction) conditions, which may include the following: salvage and stockpiling of topsoil, re-grading of disturbed sites with salvaged topsoil, and re-vegetation with native locally available species.

BIO-5 **Burrowing Owl.** SANBAG will conduct take avoidance (pre-construction) surveys for burrowing owl within 30 days prior to initiating ground disturbance activities. These surveys will be completed in no less than 14 days prior to construction. If burrowing owl is identified, the following shall apply:

1. If burrowing owl is identified during the breeding season (February 1 through August 31) then an appropriate buffer will be established by the biological monitor in accordance with the 2012 *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). Construction within the buffer will be avoided until a qualified biologist determines that burrowing owl is no longer present or until young have fledged and a CDFW-approved exclusion plan has been implemented. In addition to avoidance of the occupied habitat, off-site mitigation will be provided as described below:
    a. Replacement of occupied habitat with occupied habitat: 1.5 times 6.5 (9.75) acres per pair or single bird.
    b. Replacement of occupied habitat with habitat contiguous to currently occupied habitat: 2 times 6.5 (13.0) acres per pair or single bird.
    c. Replacement of occupied habitat with suitable unoccupied habitat: 3 times 6.5 (19.5) acres per pair or single bird.
2. If burrowing owl is identified during the non-breeding season (September 1 through January 31), then a 50 meter buffer will be established by the biological monitor. Construction within the buffer will be avoided until a qualified biologist determines that burrowing owl is no longer present or until a CDFW-approved exclusion plan has been implemented.

BIO-6 **Secure Clean Water Act Section 404 Permit and Implement All Permit Conditions to Ensure No Net Loss of Functions of Wetlands, Other Waters of the U.S., and Waters of the State.** Before the approval of grading or other ground disturbing activities within 50 feet of jurisdictional areas, SANBAG shall obtain a CWA Section 404 permit, Section 401 water quality certification, and CDFW 1602 Streambed Alteration Agreement.

As part of the Section 404 permitting process, if the USACE (and/or CDFW) requires compensatory mitigation, a draft wetland mitigation and monitoring plan (MMP) shall be developed for the selected Build Alternative. The MMP shall be consistent with USACE's and EPA's April 10, 2008 Final Rule for Comp Compensatory Mitigation for Losses of Aquatic Resources (33 CFR Parts 325 and 332 and 40 CFR Part 230).

Potential mitigation for impacts to federal and state jurisdictional areas may occur at the following ratios:

- USACE Wetland
  - Permanent: 3:1
  - Temporary: restoration (in-kind)
- USACE Waters
  - Permanent: 1:1
  - Temporary: restoration (in-kind)
- CDFW Riparian
  - Permanent: 3:1 (SWS, RAFSS, and SCWRF)
  - Permanent: 1:1 (unvegetated stream bank)
  - Temporary: restoration (in-kind)

BIO-7 **Reseeding for Wooly Star.** Seeds from the closest known occurrences of woolly-star plants found both upstream and downstream of Bridge 3.4 shall be collected in the fall prior to construction of the SAR crossing. If construction activities require the loss of the single wooly-star at the SAR crossing, the collected seeds will be broadcast in the temporary impact areas, near the impacted woolly-star plant, after construction activities are complete and soils have been restored to pre-Project contours.

1. Seed collection and broadcast methodologies will be proposed by a qualified seed collector approved by the Service prior to seed collection in a Santa Ana Woolly-Star Management Plan.

2. Seed harvest shall be from a minimum of three plants per collection location, limited to no more than 50 percent of the available seeds from any one woolly-star plant.

3. Seeds shall be held at the appropriate temperature and humidity for the shortest length of time necessary prior to planting.

4. Planting of seeds shall be coordinated to occur prior to the first rains of the season, typically during early fall.

5. If the woolly-star plant known in the Project area is avoided, collected seeds will be hand broadcast near the parental plants where they were collected.

If SANBAG confirms that removal of an individual is required during final design, SANBAG will purchase ILF or mitigation credits from a qualified mitigation program to address the Project's temporal affect on woolly-star during the up to three-year construction period. Credits will be purchased to cover affects to the on-site individual and off-site parental plants.

The following mitigation measures as proposed in other sections of Chapter 3 of this EIS/EIR would minimize adverse indirect effects related to biological and wetland resources:

- HWQ-2: Prepare and Implement a SWPPP
- HWQ-3: Prepare and Implement a Flow Diversion Plan for Construction
- VQA-3: Tree Replacement

3.7.4.1 Effects After Mitigation

With the implementation of Mitigation Measures BIO-1 through BIO-7, HWQ-2, and HWQ-3, adverse effects related to biological and wetland resources would be minimized under NEPA. Significant impacts identified under CEQA would be reduced to a less than significant level.

3.8 FLOODPLAINS, HYDROLOGY, AND WATER QUALITY

This section provides an evaluation of the Project Alternatives and Design Options in relation to existing floodplains, hydrology, and water quality within the Study Area and describes applicable Federal, State, and local regulations. Potential adverse effects associated with floodplains, hydrology, and water quality that could occur as a result of the Project Build Alternatives and Design Options are described and, if necessary, mitigation is proposed. Information contained and considered in this section is summarized from a combination of sources including information produced by local and State agencies and the following reports contained in Appendix J:

- Existing Drainage Conditions Memo (Appendix J1)
- Hydrology and Hydraulic (H&H) Report for Bridge 1.1 (Appendix J2)
- H&H Report for Bridge 2.2 (Appendix J3)
- H&H Report for Bridge 3.4 (Appendix J4)
- H&H Report for the Mission Zanja Flood Control Channel and Mill Creek Zanja (Appendix J5)
- Evaluation of Hydraulic Impact on Bryn Mawr Bridge Alternatives (Appendix J6)
- Preliminary Water Quality Management Plan (Appendix J7)

3.8.1 Regulatory Framework

Table 3.8-1 identifies and summarizes federal, state, and local laws, regulations, and plans that are applicable to the Project.

3.8.2 Affected Environment

This section describes the existing environmental setting for the Study Area in terms of regional and localized hydrology, existing flooding hazards, groundwater resources, and current water quality conditions with the upper Santa Ana River Watershed.

3.8.2.1 Climate

The Study Area has a Mediterranean climate with hot dry summers and cooler wet and winters. Rainfall ranges from 18 inches per year in the inland valleys to 40 inches per year in the mountains. Due to the dry climate, there is little natural perennial surface water in the watershed. Flows in the Santa Ana River, below Seven Oaks Dam to the City of San Bernardino, generally consist of storm flows, rising groundwater, and water releases from Seven Oaks Dam. The 5-year, 24-hour rainfall estimate for the Study Area is approximately 3.0 inches and the 100-year, 24-hour rainfall estimate for the Study Area is approximately 5.0 inches (WRCC 1973).

Table 3.8-1. Pertinent Laws, Regulations, and Plans for Floodplains, Hydrology, and Water Quality

Law, Regulation, or Plan	Summary and Project Nexus
Federal	
Federal Emergency Management Agency (FEMA)	FEMA administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations that limit development in floodplains. FEMA also issues Flood Insurance Rate Maps (FIRMs) that identify which land areas are subject to flooding and flood hazard zones in the community. The design standard for flood protection covered by the FIRMs is established by FEMA, with the minimum level of flood protection for new development determined to be the 1-in-100 (0.01) annual exceedance probability [AEP]) (i.e., the 100-year flood event).
Executive Order 11988, Floodplain Management	This executive order recognizes floodplains as having "unique and adverse public values" and requires measures to minimize, restore and preserve natural floodplain values. The U.S. Department of Transportation Order 5650.2, titled "Floodplain Management and Protection," prescribes "policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs and budget requests."
33 U.S. Code (U.S.C.) 408, Navigation and Navigable Waters	Title 33 of the U.S.C. requires entities proposing to build upon, alter, deface, destroy, move, injure, or obstruct in any manner that impairs the integrity or functionality of a flood control facility constructed by the United States to obtain authorization from the U. S. Corps of Engineers (USACE). The Secretary of the Army or designee may grant permission in the form of a "408 Permit" for the temporary occupation or use of any of the aforementioned public works when a determination can be made that such occupation or use will not be injurious to the public interest.
Department of Transportation Order 5650.2, Flood Disaster Protection Act	This Order prescribes policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs, and budget requests. If the preferred alternative involves significant encroachment of the floodplain the final environmental document must include: FTA's finding that the proposed action is the only practicable alternative and supporting documentation reflecting consideration of alternatives to avoid or reduce adverse impacts on the floodplain.
Flood Disaster Protection Act	The Flood Disaster Protection Act mandates the purchase of flood insurance as a condition of receiving Federal assistance for the construction or repair of buildings located in areas having special flood hazards as identified by the Federal Insurance Administration (FIA). The requirement also applies when Federal assistance is being used to purchase equipment which will be housed in buildings which are located in such special flood hazard areas.
Clean Water Act (CWA)	The CWA of 1972 is the primary Federal law that governs and authorizes the EPA and the states to implement activities to control water quality. • Section 404 – Wetland protection elements administered by the USACE including permits for the discharge of dredged and/or fill material into waters of the United States, are discussed in Chapter 3.9, Biological Resources. • Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the U.S consisting of two elements: (1) designated beneficial uses of the water body in question; and (2) criteria that protect the designated uses. • Section 304(a) requires EPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all

Table 3.8-1. Pertinent Laws, Regulations, and Plans for Floodplains, Hydrology, and Water Quality

Law, Regulation, or Plan	Summary and Project Nexus
	effects on health and welfare that may be expected from the presence of pollutants in water. • Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the U.S. must obtain a water quality certification from the SWRCB in which the discharge would originate. Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) permit program to control point source discharges from industrial, municipal, and other facilities if their discharges go directly to surface waters.
CWA Section 303(d) Impaired Waters List	CWA Section 303(d) requires states to develop lists of water bodies that will not attain water quality standards after implementation of minimum required levels of treatment by point-source dischargers and to develop a total maximum daily load (TMDL) for each of the listed pollutants and water bodies. TMDLs prepared by the state must include an allocation of allowable loadings to point and nonpoint sources, with consideration of background loadings and a margin of safety and must also include an analysis that shows links between loading reductions and the attainment of water quality objectives.
Federal Anti-degradation Policy	The Federal Anti-degradation Policy, established in 1968, is designed to protect existing uses, water quality, and national water resources. This policy would be applicable to the Preferred Project or Design Option 1 layover facilities, which would include an on-site stormwater collection system and oil-water separator system that would be subject to the review and approval of the Santa Ana RWQCB.
U.S. Environmental Protection Agency (USEPA)	The USEPA is the federal agency responsible for water quality management and administration of the CWA. USEPA conducts groundwater protection and contaminated site remediation programs, such as installation of groundwater cleanup systems.
State	
Porter-Cologne Water Quality Control Act (California Water Code)	The California Water Code is California's statutory authority for the protection of water quality. Under this act, the state must adopt water quality policies, plans, and objectives that protect the state's waters. Unlike the federal CWA, which regulates only surface water, the Porter-Cologne Act regulates surface water, groundwater, and discharges to land.
Water Quality Control Plan for the Santa Ana River Basin	The Water Quality Control Plan for the SAR Basin (2008) (or Basin Plan) prepared by the Santa Ana River Basin RWQCB (Region 8) establishes water quality standards for the ground and surface waters in Region 8. According to the Basin Plan, the beneficial uses established for the SAR include: municipal, agricultural, groundwater recharge, water contact recreation, non-contact water recreation, warm freshwater habitat, wildlife habitat, and waters used by rare, threatened or endangered species. The Santa Ana RWQCB is currently preparing a Salt Management Plan, which focuses on discharges from municipal wastewater treatment plants, industrial discharges, individual septic tanks systems, return flows from landscape irrigation of landscaping, and return flows from irrigated agriculture in the upper Santa Ana Basin and the San Jacinto Basin.

Table 3.8-1. Pertinent Laws, Regulations, and Plans for Floodplains, Hydrology, and Water Quality

Law, Regulation, or Plan	Summary and Project Nexus
Santa Ana Regional Water Quality Control Board	The RWQCB implements State and federal laws and regulations within its jurisdiction, maintains its Basin Plan, and issues permits which govern and restrict the amount of pollutants discharged into the ground or a water body. The RWQCB has adopted stormwater runoff water quality discharge requirements for municipalities within San Bernardino County, which are outlined in the RWQCB Order R8-2010-0036, NPDES Permit CAS618036 for Municipal Separate Storm Sewer Systems within San Bernardino County (MS4 Permit; RWQCB 2010). Order R8-2010-0036 requires new developments and redeveloped area meeting certain requirement to prepare a Water Quality Management Plan (WQMP) to manage post-development runoff through a combination of best management practices (BMPs).
California Toxics Rule (CTR)	Under the CTR, the EPA has proposed water quality criteria for priority toxic pollutants for inland surface waters, enclosed bays, and estuaries. These federally promulgated criteria create water quality standards for California waters and satisfy CWA requirements.
California Department of Toxic Substances Control (DTSC)	DTSC is responsible for the oversight of hazardous substances and remediation of contaminated sites, including water sources in some cases. The USEPA promulgated the California Toxics Rule based on the Administrator's determination that numeric criteria for priority toxic pollutants and other provisions for water quality standards legally applicable in the State of California for inland surface waters, enclosed bays, and estuaries for all purposes and programs under the CWA, is necessary in the State of California to protect human health and the environment.
NPDES General Industrial Permit	The NPDES General Industrial Permit requirements apply to the discharge of stormwater associated with industrial activities and requires implementation of structural and non-structural management measures that represent Best Available Control Technology (BACT). Under the statute, operators of new facilities must implement industrial BMPs in the Projects' Stormwater Pollution Prevention Plan (SWPPP) and perform monitoring of stormwater discharges and unauthorized non–stormwater discharges. Based on the Preferred Project's standard industrial classification (SIC), Railway Maintenance and Operations (SIC 4113), the Project would be subject to the NPDES industrial permit with particular emphasis placed on potential stormwater discharges from the proposed or Design Option 1 layover facilities.
NPDES Construction Permit	Construction activities are regulated under the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Construction Permit, NPDES Order No. 2009-0009-DWQ as amended by Order No. 2010-0014-DWQ and 2012-0006-DWQ) which covers stormwater runoff requirements for projects where the total amount of ground disturbance during construction exceeds one acre. Coverage under a General Construction Permit requires the preparation of a SWPPP and submittal of a Notice of Intent (NOI) to the RWQCB to comply with the General Construction Permit. The SWPPP is required to include a description of BMPs to minimize the discharge of pollutants from the sites during construction.
Local	
Southern California Regional Rail Authority (SCRRA or Metrolink)	SCRRA has established engineering criteria for track and bridges under its jurisdiction, which requires that culverts conveying cross-track flood flows be designed to freely pass low flows and accommodate high-water conditions (SCRRA Design Criteria Manual 2010). New and replacement bridge and culvert openings shall be sized for two high-water design discharge events, designated "low

Table 3.8-1. Pertinent Laws, Regulations, and Plans for Floodplains, Hydrology, and Water Quality

Law, Regulation, or Plan	Summary and Project Nexus
	chord/soffit" event and "subgrade" event. If insufficient channel area exists to meet SCRRA's criteria, even with maximum widening, consideration will be given to adding relief structures on the overbank floodplain, raising the SCRRA grade, or other reasonable alternatives.
San Bernardino County Flood Control District (SBCFCD)	SBCFCD manages the major stormwater conveyance systems within San Bernardino County. The Study Area is located within portions of Flood Control Zones 2 (318 square miles) and 3 (366 square miles) with the boundary between these zones lying along the SAR as shown in Figure 3.8-1. The Zone 2 Drainage Area (Z2DA) includes portions of the Study Area west of the SAR with the Zone 3 Drainage Area (Z3DA) including areas to the east.
County of San Bernardino	San Bernardino County has prepared a Model Water Quality Management Plan (WQMP) Guidance document (San Bernardino County 2005) for preparation of project-specific to facilitate compliance with post-construction runoff requirements contained in the County's MS4 Permit. Pursuant to 40 CFR 122.26(a), the Santa Ana RWQCB has the authority to require non-cooperating entities to adhere to the requirements of the NPDES permit or issue individual discharge permits to those entities.
City of San Bernardino General Plan (2005)	Chapter 9 of the General Plan is the Utilities Element. The purpose of the Utilities Element is to provide provision of appropriate storm drain and flood control facilities. To prevent flooding within the City, this includes consistently evaluating and improving the capacity of the storm drain system, as needed. The Project's consistency with applicable General Plan Policies 9.4.4, 9.4.10, and 9.4.11 are outlined in Appendix D1. The Utilities Element and the Energy and Water Conservation Element enforce compliance of new construction and development in the City with regulations aimed at reducing discharges or runoff into waterways. The Project's consistency with applicable General Plan Policies 10.5.1, 10.5.3, 10.5.4, 10.5.5, 10.5.6, 13.2.2, 13.2.7, 13.2.8, and 13.2.9 are outlined in Appendix D. Stormwater discharges are regulated under Title 8, Health and Safety, of the City of San Bernardino Code of Ordinances, which states that discharge of non-stormwater is permissible only when connection to the storm drain system is made in accordance with a valid city permit, approved construction plan, or a NPDES permit and/or notice of intent. In addition, projects within the City of San Bernardino are required to comply with the requirements of the Construction General Permit and the County MS4 Permit.
City of Redlands General Plan	The City of Redlands General Plan Health and Safety Element provides guidance for the provision of adequate drainage for new development and, if necessary, flooding control measures. The Project's consistency with applicable General Plan Policies 8.40a, 8.40d, 8.40e, 8.40h, and 8.40l are outlined in Appendix D1. The City of Redlands General Plan Health and Safety Element also outlines policies regarding water quality regulation. The Project's consistency with applicable General Plan Policies 8.20j and 8.20o are outlined in Appendix D. The City of Redlands Municipal Code provides specific direction for the protection of water resources. Applicable ordinance requirements are contained in Chapter 13.54, Storm Drains (within Title 13, Public Services).

3.8.2.2 Hydrology

The Study Area is located within the Santa Ana River Watershed[1], which is approximately 2,800 square miles in area, originates at San Gorgonio Peak in San Bernardino County and drains southwesterly through Riverside and Orange Counties prior to emptying into the Pacific Ocean at Newport Beach. The Study Area is located with the Upper Santa Ana River Watershed, which is hydraulically disconnected from the lower watershed by San Prado Dam. The Study Area corresponds with the Santa Ana River Wash (HUC 18070203507), the Mission Zanja Flood Control Channel (Mission Zanja Channel; HUC 180702030506), and the Warm Creek (HUC 180702030508) sub-watershed units. Figure 3.8-1 depicts the Study Area in relation to these local watershed units within the Upper Santa Ana River Watershed.

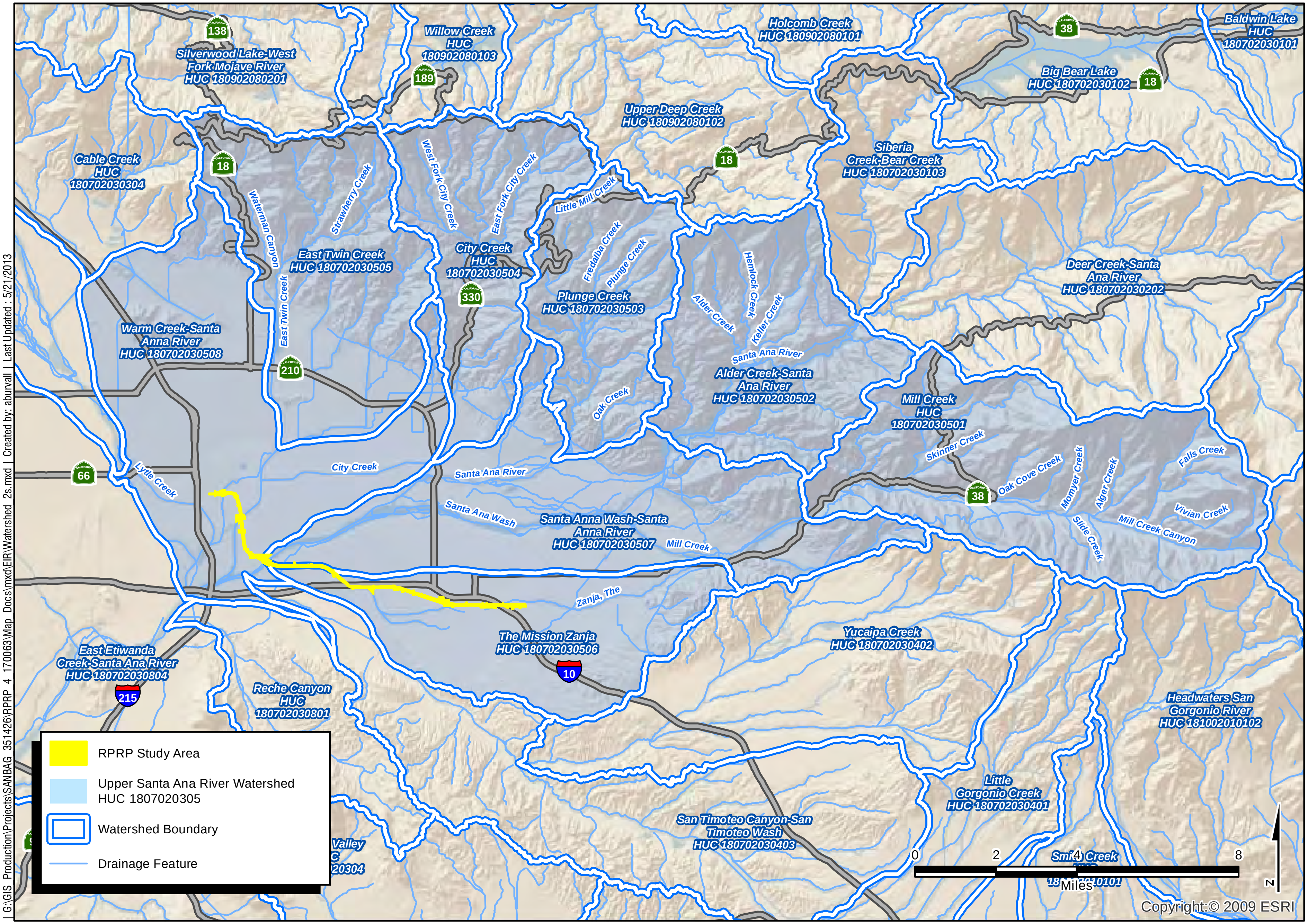
The main drainage feature within the Santa Ana Watershed is the Santa Ana River (SAR), which is about 96 miles long, with its major upstream tributaries, including Bear Creek and Mill Creek. Other tributaries just downstream of the Study Area include Lytle Creek originating in the San Gabriel Mountains and the San Jacinto River originating in the San Jacinto Mountains. The SAR bisects the Study Area at Mile Post (MP) 3.4 (or Bridge 3.4), which corresponds with approximately River Mile 28.62 (or Reach 4). Approximately 3.4 miles (or 34%) of the Study Area is located to the west of the SAR, with the remaining 6.6 miles (or 66%) extending east, with each side draining tributary on-site and offsite areas into the SAR either by surface flow, local drainage facilities, or major stormwater conveyance systems.

A total of five major offsite drainage features either crosses or is located longitudinally to the rail corridor. The crossings from west to east are known as Warm Creek (Historic) [Bridge 1.1], Twin Creek [Bridge 2.2], the SAR [Bridge 3.4], Bryn Mawr Avenue [Bridge 5.78], and Mill Creek Zanja [Bridge 9.4]. Bridges 5.78 and 9.4 cross the Mission Zanja Channel, which is a major drainage channel located adjacent and to the south of the eastern segment of the rail corridor. Hydrology and hydraulic reports for each of these crossings are presented in Appendices J2 through J6. Each of these features are described in Table 3.8-2 and discussed in more detail under the subheadings below.

Warm Creek (Historic), Bridge 1.1

Warm Creek extends from north of the City of Highland downstream to its confluence with the SAR at the southwest quadrant of the I-10/I-215 separation. The East Twin and Warm Creek improvements constructed by the USACE in 1961 diverted most of the original flows to the SAR at a point 1.4 miles upstream of its original confluence, resulting in a rerouting of the portion of Warm Creek from about 5th Street south to Central Avenue. The Warm Creek Bypass Channel today connects the Twin Creek Channel to the downstream Warm Creek Channel. Consequently, the left over portion of Warm Creek no longer serves as a regional flood control facility but only conveys tributary local drainage (a portion of the total 18 square miles) from the City of San Bernardino (see Section 1.5 Major Flood Control Facilities in Appendix J1); hence, this remaining portion of the channel is referred to as Warm Creek (Historic) throughout the EIS/EIR. Currently, the City of San Bernardino owns, operates, and maintains Warm Creek (Historic).

[1] Note the SAR Watershed is located within the South Coast Hydrologic Region and corresponds to Hydrologic Unit Code (HUC) 18070203 accordingly to the U.S. Geological Survey.



Upper Santa Ana River Watersheds and Regional Hydrology

Figure 3.8-1

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Table 3.8-2. Major Drainage Courses

Wash/River	Mile Post	Jurisdiction	Q100 (100-year storm event)	Type of Facility
Historic Warm Creek	1.1	City of San Bernardino	2,525 cfs[1]	17 feet wide by 9 feet high Rectangular Concrete Channel (RCC)
Twin Creek	2.2	SBCFCD, Zone 2	13,500 cfs[2]	60 feet wide by 14 feet high RCC
Santa Ana River	3.4	SBCFCD, Zone 2 & 3	33,000 cfs (with Seven Oaks Dam)[3]	Unimproved trapezoidal channel
Mill Creek Zanja	9.4	City of Redlands	3,000-4,000 cfs[4]	Unimproved channel, no fixed geometry
Mission Zanja Channel	3.4 to 6.1	SBCFCD, Zone 3	7,600 cfs[5]	Improved (earthen) trapezoidal channel

Source: Appendices J1 through J5
1 Computed based on a 1,222 acre drainage area (see Appendix J2)
2 Based on hydrologic modeling (see Appendix J3)
3 See Appendix J4
4 See Appendix J5
5 CSDP(4) 100-year discharge. Channel capacity upstream of Tippecanoe Avenue is estimated at 6,000 cfs (see Appendix J5)

Twin Creek, Bridge 2.2

Twin Creek (also known as "East Twin Creek and Warm Creek Channel") is a major channel that conveys flows from the Twin Creek Spreading Grounds in northern San Bernardino to its confluence with the Santa Ana River at the northeast quadrant of I-10/I-215 separation. Twin Creek is owned, operated, and maintained by the SBCFCD. According to USACE record drawings, Twin Creek consists of a 60-foot wide by 14-foot high rectangular concrete channel (RCC) through the Study Area. Further downstream, the channel transitions to an unimproved (earthen) 202-foot wide base trapezoidal channel (with 2 to 1 side slopes) prior to discharging into Reach 5 of the Santa Ana River. The portion crossing the rail corridor was constructed in 1958. The Standard Project Flood (SPF) for this section of Twin Creek is estimated at 22,000 cubic feet per second (cfs) (see Section 1.5 Major Flood Control Facilities in Appendix J1).

Santa Ana River, Bridge 3.4

The SAR bridge crossing is located between Waterman Avenue and Tippecanoe Avenue in the City of San Bernardino and corresponds to SAR River Mile 28.6. During a field visit in October of 2011, the SAR was confirmed to be unimproved through the Study Area with no dry weather flows observed in the channel (at least not during the field visit). According to the SAR Mainstem Project, Feature Design Memorandum No. 2, Seven Oaks Dam, Floodway Delineation Report, prepared by USACE, dated August 1991, the existing and future 100-year recurrence frequency flow (near and downstream of the Study Area at E Street) is estimated to be 67,000 and 70,000 cfs, respectively (see Section 1.5 Major Flood Control Facilities of Appendix J1). With the installation of Seven Oaks Dam, the 100-year recurrence frequency flow at Bridge 3.4 is estimated at 33,000 cfs (see Table 3.8-2 and Section 3 Hydrology in Appendix J4).

Mission Zanja Drainage Basin (Bryn Mawr, Bridge 5.78)

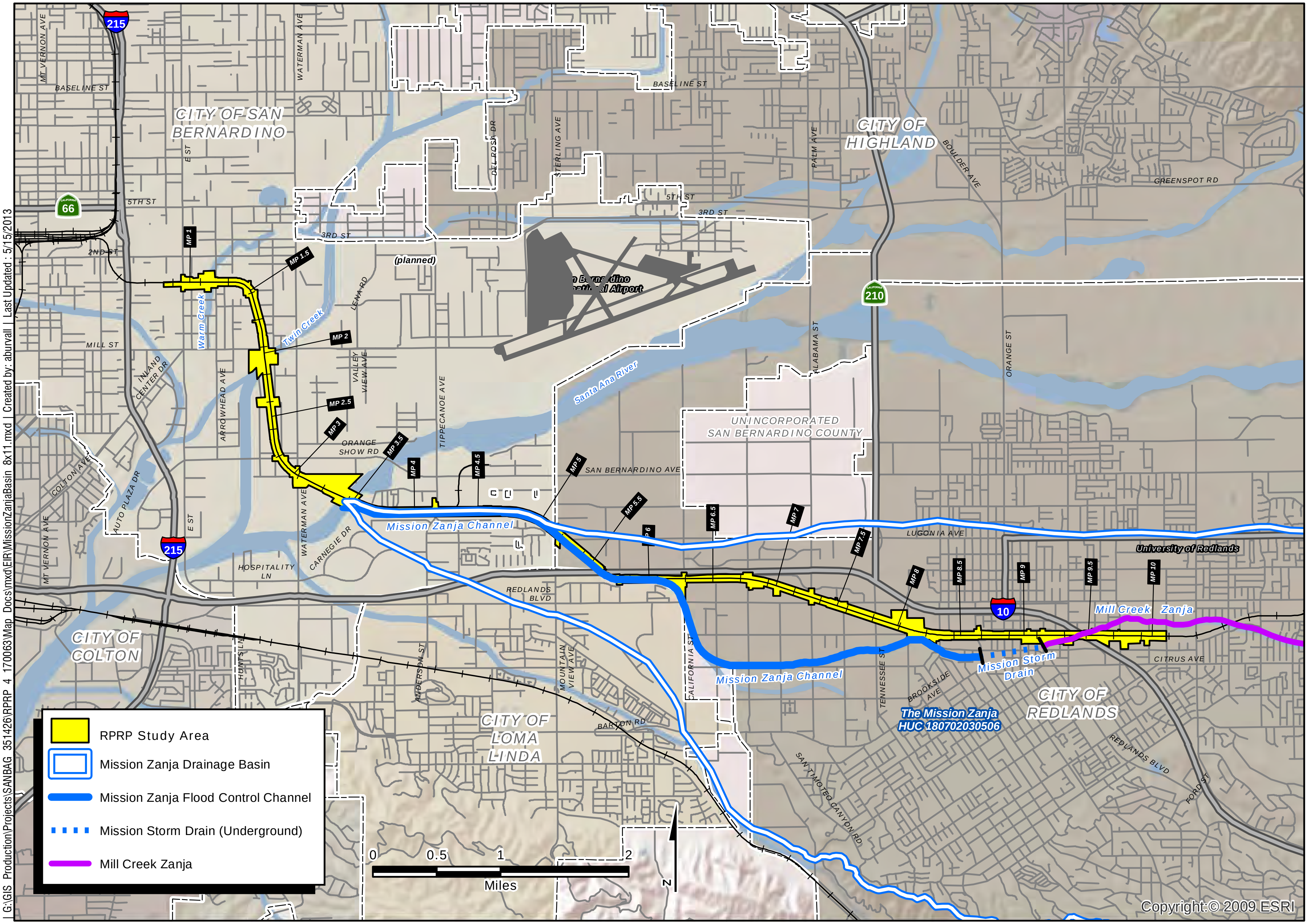
The Mission Zanja drainage basin is located along the southwestern boundary of San Bernardino County and comprises approximately 26 square miles. As shown on Figure 3.8-2, the drainage basin is shaped like a half circle and originates at the Zanja Peak in the Crafton Hills area and extends westward approximately 12 miles prior to draining into the SAR. The principle drainage feature of the Mission Zanja drainage basin is the Zanja Creek, which is the principal flood control facility for the City of Redlands and consists of three segments within the Study Area: Mill Creek Zanja, Mission Storm Drain, and Mission Zanja Flood Control Channel (Mission Zanja Channel). The Mission Zanja Channel is an improved (earthen) open channel that extends from the SAR to Texas Street (City of Redlands) and is also commonly referred to as the “Zanja Channel”. Further upstream and through downtown Redlands from Texas Street to 9th Street (City of Redlands), this drainage feature is referred to as the Mission Storm Drain. Upstream of 9th Street, this drainage feature is referred to as the Mill Creek Zanja, which extends east of the Study Area to the confluence with Mill Creek. Each of these segments are illustrated in Figure 3.8-2 and described in further detail below from east to west.

Mill Creek Zanja, Bridge 9.4

Mill Creek Zanja was originally built by Native Americans as a ditch for water supply in 1819. The water diverted from Mill Creek upstream of the Study Area supported the San Bernardino Assistencia and surrounding farms and ranches. As the area developed, the use of the Mill Creek Zanja transformed from water supply to a flood control and drainage channel. The Mill Creek Zanja, from 9th Street to Mill Creek, is designated as a State and Federal Historic Structure. SBCFCD owns the portion of the Mill Creek Zanja upstream and downstream of the Study Area. During a field visit in October of 2011, Mill Creek Zanja was confirmed to be unimproved (with no consistent geometry) and no dry weather flows were evident (at least not during the field visit). Just upstream of Caltrans right-of-way (I-10 and east), Mill Creek Zanja is covered with grouted rip rap as it conveys flow under I-10 (east crossing). Where Mill Creek Zanja intersects 9th Street in the City of Redlands, the SPF and 100-year flow is estimated at 6,400 cfs and 3,600 cfs, respectively (see Section 1.5 Major Flood Control Facilities in Appendix J1).

Mission Storm Drain (Upper Reach)

The Mission storm drain consists of a reinforced concrete box culvert (RCB) that extends from 9th Street to 1st Street and mostly along Redlands Boulevard. The exact size of the Mission storm drain is not known. In the vicinity of Orange Street, the storm drain starts diverging south but parallel to Redlands Boulevard until it outlets to the Mission Zanja Channel in the vicinity of 1st Street between Redlands Boulevard and State Street. Based on existing documentation, this storm drain is inadequately sized and can only accommodate discharges up to a 25-year storm (see Appendix E Miscellaneous Exhibits from Referenced Document in Appendix J1).



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Mission Zanja Drainage Basin

Figure 3.8-2

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Mission Zanja Flood Control Channel (Lower Reach)

The Mission Zanja Channel parallels the rail corridor to the south from its confluence with the SAR to approximately 1,000 feet west of California Street; a total distance of approximately 2.6 miles. Owned and maintained by SBCFCD, the Mission Zanja Channel consists of an unimproved trapezoidal earthen channel with some segments including wire revetment. A small segment west of Tippecanoe Avenue is vegetated from the SAR to the approximate location of the Gage Canal crossing (MP 3.9). The capacity of the channel ranges from 3,000 to 6,000 cfs (3,500 cfs on average) with capacity restrictions occurring at Tippecanoe Avenue, Richardson Street, and Mountain View Avenue. This capacity is further restricted to less than 1,500 cfs in portions of the channel west of Tippecanoe Avenue and east of the Gage Canal, where a stair-stepped drop structure is located. During field visits in October 2011, pockets of scouring and slope failure were evident resulting in damage to the rail corridor.

3.8.2.3 Localized Drainage Conditions and Infrastructure

All surface runoff generated within the Study Area drains into the SAR with localized drainage conveyance occurring via surface sheet flow, local drainage facilities, and/or major stormwater conveyance systems, as previously identified. Most of the local drainage generated within and adjacent to the rail corridor is conveyed into a system of inlets and public storm drain infrastructure (e.g., gutters, concrete piping, etc.) along public road ROWs or directly into historic Warm Creek, Twin Creek, SAR, Mission Zanja Channel, Mission Storm Drain, or Mill Creek Zanja. In several instances, existing drainage conveyance is directed from off-site areas onto the rail corridor resulting in deep erosional features within the ROW. Figure 3.8-3 illustrates four of these features, which are photo-documented to the west of the western I-10 overpass, west of Texas Street, east of Tennessee Street, and east of University Boulevard.

According to the Existing Drainage Conditions Memo (see Appendix J1), surface runoff generated from the railroad ROW east of the SAR, including areas immediately north and the south, generally drains in a westward direction (MP 5.6-10.3) eventually into the Mission Zanja Channel. Surface runoff generated within and adjacent to the railroad ROW, west of the SAR, is generally conveyed to the south and southeast into either Warm Creek (Historic) or Twin Creek. More locally, drainage is contingent on the grade and orientation of local roadway drainage infrastructure, which largely intercepts and conveys runoff from the railroad corridor and facility sites (e.g., layover) to local receiving waters (e.g., Mission Zanja Channel in Redlands and Twin Creek in San Bernardino). The Existing Drainage Conditions Memo (Appendix J1) provides additional site-specific detail as it relates to localized drainage conveyance along each segment of the railroad corridor. Table 3.8-3 lists major existing drainage infrastructure that intersects the Study Area along with their approximate location along the railroad corridor.

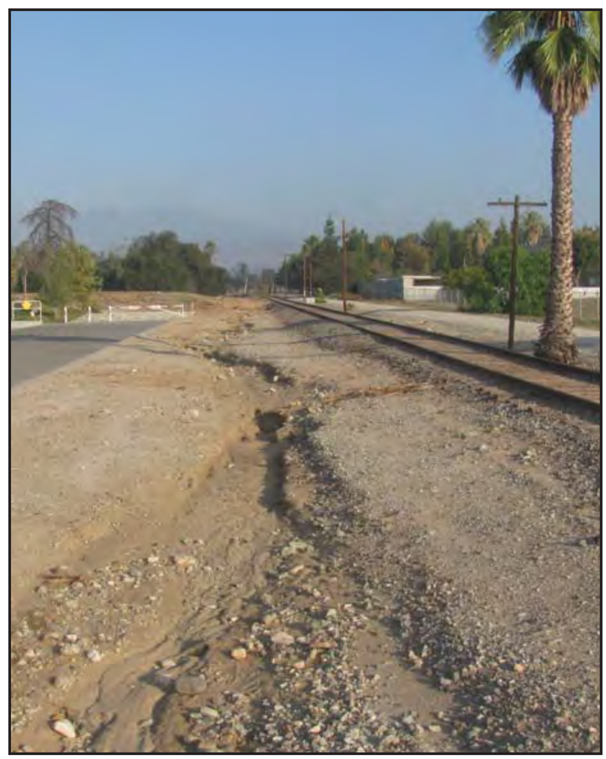
3.8.2.4 Flooding

Portions of the Study Area are contained within flood zones delineated by FEMA. These flood zones are depicted on FIRMs produced by FEMA for the following Panel Numbers: 06071C8681H, 06071C8683H, 06071C8684H, 06071C8703H, 06071C8711H, 06071C8712H and 06071C8716H. Figure 3.8-4 illustrates the flood zones mapped across the Study Area. Table 3.8-4 provides additional detail in terms of which flood zones intersect Study Area, based on specific rail mile posts.

West of I-10

West of Texas Street

East of Tennessee Street



East of University Boulevard

Photo-Documented Erosion

FIGURE 3.8-3

Table 3.8-3. Major Local Storm Drain Infrastructure

Drainage Facility	Mile Post	General Location
City of San Bernardino		
78-inch RCP	MP 1.5	North side of Twin Creek south of Mill Street
38-inch RCP	MP 2.3	Central Avenue
24-inch RCP	MP 3.1	Waterman Avenue and Dumas Street
City of Redlands		
39-inch RCP	MP 7.3	Alabama Street
72-inch RCP	MP 5.25	Lugonia Avenue
48-inch RCP	MP 5.6	North of I-10 (Western Overpass)
66-inch RCP	MP 8.35	Texas Street
Texas Drain, concrete box drain, 3 feet wide and 3 feet high	MP 8.35	Joins the Mission Storm Drain downstream of Texas Street
24-inch RCP	MP 8.75	Orange Street
24-inch RCP	MP 8.95	6th Street
48-inch x 30-inch rock and concrete arch	MP 9.2	9th Street
Oriental Drain (variable size)	MP 9.2	Parallel to Mill Creek Zanja upstream from its confluence with Reservoir Canyon Drain at 9th Street
Carrot Drain, 54-inch RCB	MP 9.2	Joins Mill Creek Zanja at 9th Street

Source: Appendix J1

Chronic flooding conditions are well documented in the Mission Zanja drainage basin with inundation events documented within portions of the City of Redlands almost annually since 1988. This circumstance has resulted in damages of varying severity within the City of Redlands. Historical records of floods along Mission Zanja Channel and adjoining streams date back to 1819 when missionaries settled in the area. However, most historical data is qualitative; very little quantitative data is available. Records since 1900 indicate that medium to large floods occurred in the Redlands area in 1910, 1916, 1929, 1935, 1937, 1938, 1943, 1965, 1969, 1976, and 1980 (Appendix J1). A stream gaging station was established on the Mission Zanja Channel at Tippecanoe Avenue near its mouth in 1942; at Iowa Street, about 0.6 miles south of the rail corridor in 1969; and at Ninth Street, within the Study Area, in 1970.

Based on current records, the western portions of the Mission Zanja Channel appear affected by hydromodification as a result of urbanization within the Redlands area. Hydromodification refers to changes in the magnitude, timing, and frequency of stream flows as a result of urbanization (or increased areas containing impervious surfaces) and the resulting impacts on receiving channels in terms of scour, sedimentation, and degradation of in-stream habitat. This circumstance in turn has resulted in inadequate capacity within the Mill Zanja Creek and Mission Zanja Channel thereby allowing flood flows to divert outside the channels at multiple locations. Based on current estimates, portions of downtown Redlands including the rail corridor are subject to inundation even during moderate storm events, including the 25-year event (Appendix J1).

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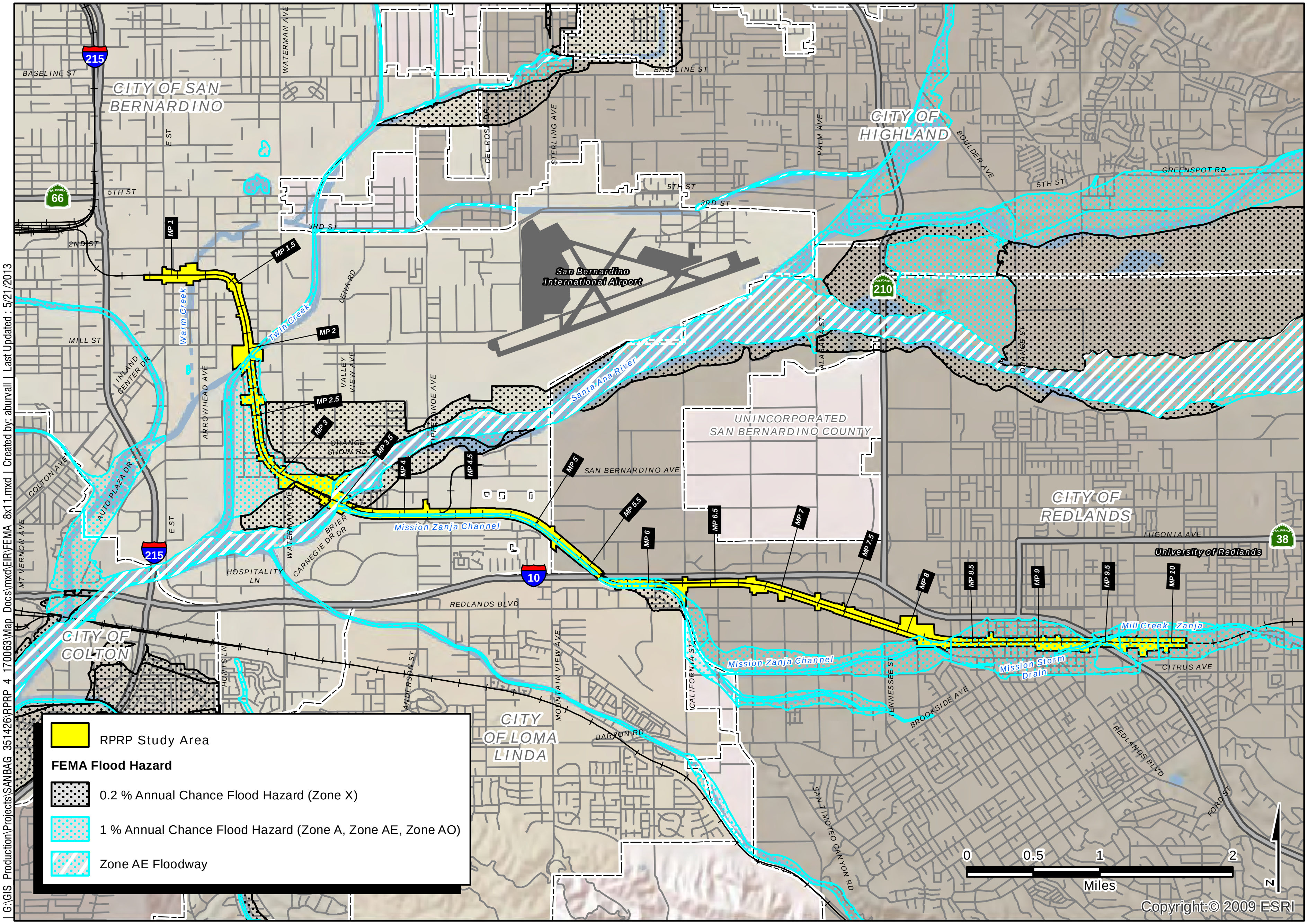

FEMA Floodplain Map

Figure 3.8-4

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Table 3.8-4. Flood Zones within the Study Area

Mile Point (MP)	Flood Zone*
MP 0 - MP 2.05	Zone X (Note: 100-year flood contained in Warm Creek at Bridge 1.1)
MP 2.05 - MP 2.07	Zone AE on the west side and Zone A on the east side rail corridor
MP 2.07 - MP 3.12	Zone A (Note: includes Twin Creek at Bridge 2.2)
MP 3.12 - MP 3.40	Zone A on the north side and Zone X (dotted) on the south side of rail corridor
MP 3.40 - MP 3.48	Zone AE (Bridge 3.4)
MP 3.48 - MP 3.6	Zone X (dotted) on the north side and Zone AE on the south side of rail corridor
MP 3.6 - MP 5.6	Zone X on the north side and Zone A on the south side of the rail corridor
MP 5.6 - MP 5.65	Zone X
MP 5.65 - MP 6.15	Zone AO
MP 6.15 - MP 8.1	Zone X
MP 8.1 - MP 8.3	Zone X on the north side and Zone AO on the south side of the rail corridor
MP 8.3 - MP 9.4	Zone AO
MP 9.4 - MP 9.47	Zone A (Note: includes Mill Creek Zanja at Bridge 9.4)
MP 9.47 - MP 10.1	Zone AO

Source: Appendix J1
* Note that flooding depths for AO zones are provided in Appendix J1.

Due to urbanization and limited improvements along the Mission Zanja Channel, runoff from even small storms (i.e., less than 5-year events) has the potential to exceed existing channel capacity, resulting in overflow and flooding of the surrounding areas. The Mission Zanja Channel at the Gage Canal crossing (MP 3.8) is one of the areas that have experienced the most problems. It has experienced significant flooding and scour issues due to the flat slope and limited channel depth upstream of the drop structure, and significant increase in velocity within and downstream of the drop structure (Appendix J1).

Groundwater Hydrology

The Study Area overlies the Bunker Hill Subbasin which is part of the Upper Santa Ana Valley Groundwater Basin (DWR Basin Number: 8-2.06). This basin consists of Holocene and Pleistocene age alluvial deposits of sand, gravel, and boulders intermixed with deposits of silt and clay and is divided into upper and lower aquifers. The maximum thickness of the upper aquifer is approximately 350 feet and 650 feet in the lower aquifer (DWR 2004). Groundwater generally converges toward the Santa Ana River and is restricted by the numerous faults in the area, including the San Andreas and San Jacinto fault zones. The San Jacinto fault forms a strong barrier to groundwater that raises the water table nearly to the surface below the course of the Santa Ana River (DWR 2004). In 2008, two groundwater monitoring wells near the Study Area measured groundwater depths greater than 100 feet below ground surface (Downtown Redlands General Plan & Specific Plan No. 45 Amendments Draft EIR 2011).

3.8.2.5 Water Quality

All surface runoff generated within the Study Area eventually reaches the SAR via Warm Creek (Historic), Twin Creek, or the Mission Zanja Channel and flows downstream to Prado Dam. As previously indicated, the Upper SAR Watershed (upstream from Prado Dam), is hydraulically separated from the Lower SAR Watershed (downstream from Prado Dam) since the construction of Prado Dam in 1941. The upper part of the Upper SAR Watershed in the San Bernardino Mountains has the highest gradient and water quality is usually the highest quality. As the SAR enters the San Bernardino Valley, it is subject to increasing discharges from a variety of sources, including various point-sources (e.g., treated wastewater) and stormwater runoff.

Surface Water Quality

The most pressing surface water quality issues in the SAR watershed are related to nutrients (e.g., nitrogen fertilizers) and total dissolved solids (TDS). Historically, the SAR and its major tributaries flowed year-round; however, diversion for irrigation in combination with urban development has resulted in decreased flow and groundwater recharge. Because of the size of the Santa Ana Region, it has been divided into 10 watershed management areas. The 10 waste management areas are based on the component sub-watersheds of the Santa Ana Region, and are being used as the basis for watershed planning and directing resources. The Study Area is located in the Upper Santa Ana River Management Area. Primary water quality concerns in the Upper Santa Ana River Management Area are wastewater reclamation (TDS and nitrogen) issues (Santa Ana RWQCB 2006).

As described in Table 3.8-1, the Cities of Redlands and San Bernardino are co-Permittees under Order No. R8-2010-0036. Based on available water quality monitoring data, several water quality objectives as specified in the Basin Plan, CTR criteria and/or USEPA's storm water benchmark are currently exceeded. Water pollutants of concern include fecal coliform bacteria, total suspended solids (TSS), nutrients, chemical oxygen demand (COD), and metals (Santa Ana RWQCB 2010). Monitoring also indicates that the most significant water quality problem associated with urban and storm water runoff is bacterial contamination. It also showed that Basin Plan objectives for metals such as lead, copper, and zinc are exceeded more frequently than Federal promulgated standards (RWQCB 2010). These findings indicate that urban and storm water runoff is causing or contributing to water quality impairments.

In conjunction with the adoption of Order No. R8-2010-0036, the co-Permittees prepared a Report of Waste Discharge (ROWD) (2006), which prioritized the pollutants of concern with regards to storm water management as follow:

a. High Priority: Coliform bacteria
b. Medium Priority: Zinc, copper, lead
c. Low Priority: Nutrients, COD, TSS

Groundwater Quality

The Bunker Hill Subbasin contains several contaminated plumes. The Norton Plume, located just to the southwest of the San Bernardino International Airport (formerly Norton Air Force Base) consists primarily of: trichloroethylene and perchlorate. In the past, the plume had impaired 10 wells owned by the City of Riverside and the City of San Bernardino. Cleanup efforts by the Air Force, consisting of soil removal, soil gas extraction, and groundwater treatment, have considerably reduced this plume. The treatment plant now operates in a standby mode, but monitoring of contaminants continues (DWR 2004).

Locally, the Crafton-Redlands Plume is composed primarily of trichloroethylene and perchlorate and is estimated at 150,000 acre-feet of affected groundwater (DWR 2004). Monitoring data for two wells operated by the City of Redlands has indicated increasing perchlorate concentrations. A small perchlorate plume has also been identified near the City of Redlands Agate #2 well.

Redlands and Lockheed are in the process of constructing additional treatment. Based on the current conditions and the fact that treatment is installed and other measures are being constructed, the Redlands-Crafton Plume is not anticipated to affect San Bernardino Basin Area water supply reliability.

Other local, shallow groundwater contamination is distributed throughout the Study Area (e.g., service stations). These locations are detailed in Section 3.10 Hazardous Waste and Materials (see Effect 3.10-4) and Appendix L2.

3.8.3 Environmental Impacts/Environmental Consequences

3.8.3.1 Effect Criteria

The Build Alternatives and Design Options would have an adverse effect on floodplains, hydrology, and water quality if it would:

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage system;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- Expose people or structures to a risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam;
- Inundation by seiche, tsunami, or mudflow;
- Result in an adverse effect on natural and beneficial floodplain values;
- Violate any water quality standards or waste discharge requirements;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
- Create or contribute runoff water, which provides substantial additional sources of polluted runoff; or
- Otherwise substantially degrade water quality.

3.8.3.2 Methodology

Both direct and indirect effects to floodplain and hydrology will occur with the implementation of the RPRP. This analysis considers the potential for the Build Alternatives and Design Options to affect local and regional surface hydrology based on the components described in Chapter 2.

The analysis of environmental effects focuses on foreseeable changes to existing hydrologic conditions in the context of the effects criteria listed above. The analysis considers each of the major Project components, as appropriate, in the context of construction, off-site staging areas, and post-construction operation. Potential hydromodification effects resulting from new impervious surfaces at the proposed stations and layover facility were considered based on the site acreage subject to new impervious surfaces.

Issues regarding the potential for flooding of the rail corridor and hydraulic effects at the proposed bridge locations are based on the conditions documented in the Existing Drainage Conditions Memo (Appendix J1) and the H&H Reports for each of the respective bridge crossing (Appendix J2, J3, J4, J5, and J6). Modeling for each of railroad bridge crossings applies USACE's Hydrologic Engineering Center River Analysis System (HEC-RAS, v4.1) program (USACE 2010). Channel geometry for each bridge crossing was generated based on the topographic map by using HEC-GeoRAS program (Version 4.1.1), an extension for support of HEC RAS using ArcGIS. The topographic map was based on the 1-foot contour surveyed for the RPRP. All reference topography is based on the North American Vertical Datum of 1988 (NAVD 88) datum.

This analysis of water quality effects considers the potential for the Project to affect local and regional water quality based on the components described in Chapter 2. The analysis of water quality provides a discussion for each of the Build Alternatives and Design Options in the context of construction, post-construction operations, and the potential for direct and indirect water quality effects. In considering the potential for adverse water quality effects, this analysis considers existing data, reports or studies on surface water quality, which characterizes baseline surface water quality in the Project area. This information was compared to the type(s) stormwater discharges that would be associated with one or more components of the Project to allow a qualitative evaluation of the Project's effects to beneficial uses.

The assessment of construction-related water quality effects considers the Project's sediment discharge risk and receiving water risk as defined in the NPDES General Construction Permit. These factors combine to determine the project Risk Level (1, 2, or 3) according to tables in the General Construction Permit (i.e., Risk Level 1 is the lowest risk and Risk Level 3 is the highest risk).

3.8.3.3 Criteria Requiring No Further Evaluation

Depletion of Groundwater Supplies or Interfere with Groundwater Recharge. The Project would not involve the use of groundwater, which could otherwise carry the potential for interference with current groundwater recharge, possible depletion of groundwater supplies, or interference with adjacent wells. Although groundwater dewatering may be necessary during construction in localized areas, these activities would only result in temporary reductions in groundwater levels within and directly adjacent to construction areas. Any localized lowering of the groundwater table would recover quickly following pumping and would not cause a net deficit in aquifer volume or a lowering of the groundwater table. As a result, no effect to groundwater levels is expected under NEPA. No impact would occur under CEQA.

Housing within 100-year Flood Hazard Area. The Project would not involve the construction of residential housing and, therefore, would not place housing within a 100-year flood hazard area as mapped on the most recent FIRMs for the Study Area. Therefore, no effect would occur under NEPA for this issue area. Likewise, under CEQA no impact would occur.

Flooding as a Result of the Failure of a Levee or Dam. The Project is located downstream of the existing Seven Oaks Dam, which provides flood protection to the railroad corridor from the SAR. Hazards related to the potential for dam failure are part of the existing condition and would not be increased as a result of the Project. Further, the Seven Oaks Dam is subject to the jurisdiction of the Department of Dam Safety (DODS) and, therefore, inspected on a routine basis. Based on these circumstances along with the fact that the Project would not involve any alterations to existing levees or the Seven Oaks Dam, no effect would occur under NEPA. No impact would occur under CEQA.

Inundation by Seiche, Tsunami, or Mudflow. In recognition of the Project's inland location and the lack of proximity to the ocean, a large lake or other body of water, the risk related to exposing people or structures to a tsunami or seiche is negligible. Also, the Project is located on relatively flat ground; therefore, the hazard of mudflows adversely affecting the Project facilities is very low. Based on these circumstances, no effect is expected under NEPA. Likewise, no impact would occur under CEQA.

Result in an Adverse Effect on Natural and Beneficial Floodplain Values. The Project would be constructed within an existing railroad ROW that has been in existence for over 100 years. Following construction, the Project would not adversely affect natural or beneficial floodplain values and would likely correct multiple pre-existing drainage and hydraulic problem areas throughout the railroad corridor. Consequently, no effect would occur under NEPA. Under CEQA, no impact would occur.

3.8.3.4 Assessment of Environmental Effects

EFFECT 3.8-1	**Alteration of Drainage Patterns Resulting in Off-Site Flooding.** The Project could result in the alteration of existing drainage patterns, in a manner which could result in substantial on- or offsite flooding.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, the Project would not occur and existing conditions along the railroad corridor would remain. To facilitate continued freight service per SANBAG's obligations, maintenance improvements would be required along the existing railroad corridor, which would include bridge replacement or rehabilitation. Maintenance activities could result in the removal of sparse vegetation and compaction of the ground surface as a result of the movement of heavy equipment. However, much of the railroad corridor is already disturbed and developed (e.g., the existing rail line and adjacent land uses). Based on these considerations, the potential for off-site flooding to occur beyond existing conditions is unlikely and no adverse effect is expected under NEPA. Under CEQA, this impact is considered less than significant.

Direct Effects from Long-Term Operations

Under Alternative 1, the Project would not occur and existing freight operations would continue. Although maintenance activities would be ongoing, these activities would maintain the existing track alignment and, therefore, major alterations to existing drainage patterns are unlikely. Additionally, no new impervious surfaces would be constructed under this alternative that could contribute to increases in on- and/or offsite flooding. As a result, there would be no effect under NEPA on existing drainage patterns. Under CEQA, no impact would occur.

Indirect Effects

Under the No Build Alternative, existing drainage pathways, including drainage ditches and piped infrastructure, would continue to convey runoff from the railroad corridor and adjacent areas to down gradient locations similar to existing conditions. In instances where off-site drainage is conveyed into the railroad corridor and contributes to minor flooding within SANBAG's ROW, this condition would persist. This condition would hold true in instances where runoff is conveyed off-site from the railroad corridor and contributes to minor flooding on off-site properties or public roadways. However, given that these conditions would not substantially differ from existing environmental conditions, no adverse effect would occur under NEPA. Under CEQA, this impact is considered less than significant.

BUILD ALTERNATIVES, DESIGN OPTION 1 - TRAIN LAYOVER FACILITY (WATERMAN AVENUE), AND DESIGN OPTION 3 - WATERMAN AVENUE RAIL STATION

Direct Effects from Temporary Construction

The Build Alternatives, Design Option 1, and Design Option 3 would closely match existing track grades throughout the course of the railroad corridor and, therefore, would not require substantial amounts of grading beyond that required to remove and replace existing subgrade and ballast materials. The exception to this may occur in the vicinity of the Mission Zanja Channel, west of Tippecanoe Avenue, where limited increases in the existing track grade may be required. Where necessary, drainage patterns would be reconfigured to correct existing deficiencies, as documented in Figure 3.8-3, and connected to existing drainage infrastructure to improve drainage conditions along the railroad corridor. Changes in localized drainage during construction would be most pronounced at the stations and layover facility (except Design Option 2) where construction of the Build Alternatives, Design Option 1, and Design Option 3 would result in the removal of existing vegetation, compaction of the ground surface, and additions of impervious surfaces (e.g., hardscape). Additionally, any increases in sediment load from the construction area could lead to accumulations of sediment in downstream locations, which could decrease channel depths and lead to a decrease in channel capacity. These combined drainage effects would be adverse under NEPA. Under CEQA, these impacts would be significant. Mitigation Measures HWQ-1 (Prepare Drainage Plan(s) for Structural Facilities) and HWQ-2 (Prepare and Implement a SWPPP) are proposed to mitigate these drainage effects.

Direct Effects from Long-Term Operations

The project layover facilities, stations, and associated parking lots would involve the placement of impervious surfaces at locations where such surfaces do not otherwise exist. Surfaces throughout the remaining railroad corridor would be similar to existing conditions in the post-construction condition with track improvements supported on ballast materials and bare ground or gravel in the adjacent ROW. For those sites where impervious surfaces are added, there would be a corresponding alteration in the infiltration characteristics of the ground surface, which could result in increases in peak runoff flows over the long term operation of the Build Alternatives, Design Option 1, and Design Option 3. Although individually the facility sites are relatively small, when combined, the net increase in peak runoff from the addition of up to 19.6 acres of impervious surface (up to 25.3 acres for Design Option 1) could contribute to on-site and off-site flooding and increased scour channels from higher flow velocities. These hydromodification impacts would occur within the Mission Zanja Drainage Basin, which currently suffers from inadequate drainage capacity. Additionally, it is possible that these increased flows could be routed to existing drainage infrastructure that is inadequately sized to accommodate the additional flow. This effect would be adverse under NEPA. Under CEQA, these impacts are considered significant. Mitigation Measure HWQ-1 is proposed to minimize adverse drainage effects related to the placement of new impervious surfaces.

Indirect Effects

With the exception of the SAR corridor, lands bordering the railroad corridor are generally developed with urban uses or planned for urban uses based on current planning documents. As a result, it is unlikely that new or redevelopment of adjacent properties would contribute substantial increases in flow that could otherwise result in off-site flooding within SANBAG's ROW. Additionally, future development would be required to attenuate any increase in peak flow to pre-construction levels based on several existing regulatory programs at the state and local levels. Based on these considerations, no adverse effect would occur under NEPA. Under CEQA, these impacts would be less than significant.

DESIGN OPTION 2 - USE OF EXISTING TRAIN LAYOVER FACILITIES

Direct Effects from Temporary Construction

Design Option 2 would result in similar temporary construction effects as identified for the Build Alternatives and Design Option 1. Based on this determination, this design option would result in an adverse effect under NEPA. . Under CEQA, these impacts would be significant. Mitigation Measures HWQ-1 and HWQ-2 are proposed to mitigate these effects.

Direct Effects from Long-Term Operations

Under Design Option 2, the Project would utilize existing train layover facilities, which would result in a corresponding reduction in impervious surfaces created by the Project as a result of constructing a new train layover facility. This design option would reduce the total impervious surface area for the Project to approximately 11.7 acres. Although this design option nearly reduces the total impervious surface area by half, there is a potential for the remaining impervious surfaces to create similar drainage problems as identified for the Preferred Project. These effects would be generally concentrated around the proposed stations and are considered an adverse effect under NEPA. Under CEQA, this impact is significant. Mitigation Measure HWQ-1 is proposed to mitigate these drainage effects.

Indirect Effects

The discussion proposed for the Build Alternatives, Design Option 1, and Design Option 3 would also apply to Design Option 2 and, therefore, no adverse effect is expected under NEPA. A less than significant impact is expected under CEQA.

EFFECT 3.8-2	**Exceeding the Capacity of Existing or Planned Drainage Systems.** The Project could result in the contribution of runoff water exceeding the capacity of existing or planned stormwater drainage systems.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, the Project would not occur and existing conditions along the railroad corridor would remain. Drainage improvements proposed in conjunction with the Project would not occur and future maintenance activities would maintain existing drainage patterns. In this context, no adverse effect to existing drainage infrastructure is expected under NEPA. Impacts under CEQA would be less than significant.

Direct Effects from Long-Term Operations

No substantial changes to the rail corridor would occur under this alternative beyond the replacement of existing railroad infrastructure within its current alignment. In this context, this alternative would be unlikely to contribute substantially to hydromodification, which could otherwise adversely affect existing and planned drainage infrastructure. As a result, there would be no adverse effect on drainage systems under NEPA. Under CEQA, impacts would be less than significant.

Indirect Effects

Under this alternative, existing off-site discharges that outfall into rail corridor would not be corrected. Several of these discharges have created deep erosional features that will eventually require repair in order to maintain freight operations. SANBAG would need to correct these discharges at some point in the future; especially, if new freight customers approach BNSF in the future. However, given that this alternative does not deviate from existing conditions, the continued influence from off-site discharges into SANBAG's ROW would result in no adverse effect under NEPA. Under CEQA, this impact would be less than significant.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Construction activities would result in temporary and permanent changes to existing drainage patterns to accommodate the proposed track, stations, and layover facility improvements. The changes would occur as a result of interim and final grades created by the Project facilities, which could increase or re-direct existing runoff thereby exceeding the capacity of drainage inlets. The NPDES Program administered by the State Water Resources Control Board (SWRCB) regulates stormwater discharges from construction sites. SANBAG will be required to file for permit coverage under the NPDES construction program and prepare a stormwater pollution prevention plan (SWPPP). The SWPPP is required to properly manage stormwater discharges during construction to the "maximum extent practicable." However, without these documents available for review as part of the EIS/EIR, SANBAG is unable to confirm the inclusion of best management practices (BMPs) that would otherwise minimize drainage impacts to off-site drainage infrastructure and, therefore, an adverse effect would occur under NEPA. Under CEQA, this impact would be significant. Mitigation Measures HWQ-1 and HWQ-2 are proposed to mitigate construction-related drainage effects.

Direct Effects from Long-Term Operations

The Project-related track, station, and layover facility improvements under each of the Build Alternatives and Design Options would require supporting on- and off-site drainage improvements that would include the extension of existing drainage culverts, construction of a series of catch basins and/or drains, and, potentially, detention and/or retention basins. The proposed bridge improvements would be constructed at existing drainage crossings and would be designed to drain directly into these associated drainage features. For the remaining Project facilities, new drainage ditches, pipes, outfalls, and/or drainage connections would be required along with their connection to existing drainage infrastructure. It is possible, that post-construction runoff from one or more of the Project elements (e.g., parking lots) could exceed the capacity of the corresponding inlet structure.

The net increase in peak runoff as a result of the Build Alternatives and Design Options would likely be partially attenuated by several of the containment areas at the layover facility, landscaped areas at the stations, and crushed rock roadways included as part of the maintenance road within the rail corridor. Additionally, given that much of the Study Area is developed, the Build Alternatives and Design Options' total area in relation to the watershed area is minor and unlikely to contribute substantially to hydromodification. However, it is reasonable to conclude that the Project would create new impervious surfaces that would result in a net increase in drainage discharge at certain locations. This increase in peak flows, though minor, could contribute to additional downstream flooding and affect existing drainage infrastructure. Although typical engineering standards (e.g., SCRAA) require that storm drain pipelines be capable of conveying the 100-year event, without the availability of final engineering plans, SANBAG is unable to confirm compliance with these standards. Without confirmation that these facilities design criteria satisfies this minimum criteria, there remains a potential for the track, station, and layover facility improvements in combination with one another or by themselves to contribute additional peak runoff that could exceed the capacity local drainage channels and/or storm drainage infrastructure. Based on this determination, there would be an adverse effect under NEPA. Under CEQA, this impact would be significant. Mitigation Measure HWQ-1 is proposed to mitigate drainage effects to existing drainage infrastructure.

Indirect Effects

The Build Alternatives and Design Options would alter existing drainage patterns within the rail corridor to the extent that substantial erosion and sedimentation and/or flooding offsite. Following construction, the degree of change to the channel morphology and stream character downstream of the new drainage outfall and connections would largely be dependent on the velocity of the increased flows and the frequency of inundation as a result of backwaters caused by downstream diversion structures. In the absence of detailed hydraulic modeling, this analysis assumes that the increase in effluent volume could lead to increased streambed and bank exposure within Twin Creek, Mission Zanja Channel, and Mill Creek Zanja. This increased exposure would likely result in the mobilization of more sediment along the banks, especially finer sediments, as a consequence of an increased duration of bankfull discharge conditions. This indirect effect would be adverse under NEPA. Under CEQA, this impact is considered significant. Mitigation Measure HWQ-1 and HWQ-2 are proposed to mitigate the indirect drainage effects of the Project.

EFFECT 3.8-3	**Placement of Structures or Encroachment within a 100-Year Floodplain.** The Project would include the placement of structures within a 100-year flood hazard area, which could result in damage to proposed structures, existing structures downstream, or redirection of flood flows and corresponding inundation depths.

Alternative 1 - No Build

Direct Effects from Temporary Construction

Under the No Build Alternative, the Project would not occur and existing conditions along the rail corridor would remain. According to the FEMA maps, portions of the existing track alignment and bridges are located within a 100-year floodplain. Based on this determination, the replacement of tracking and bridges would be subject to 100-year flood hazards and would be required to be designed in accordance with USACE standards. Presuming these improvements would be designed in accordance with USACE standards, no adverse effect from flooding would occur under NEPA. Under CEQA, this impact would be less than significant.

Direct Effects from Long-Term Operations

Under this Alternative, the Project would not occur and existing rail operations (i.e., freight service) would continue to occur. According to the FEMA map and incidents documented in the past, much of the Study Area is located within Flood Zone A, AE, or X and subject to flash floods that can lead to washout of tracks and subsequent derailment. Likewise, moderate rainfall events over longer durations could render some track segments impassable. In the event of an intense, short-duration rainfall event, there is a possibility that the track could be subject to inundation during normal freight operations. Operation would be discontinued in the event of flooding conditions until water levels recede. In such an event, freight service would not occur until flood levels recede and an assessment for any flood-related damage along the rail corridor is completed. This type of scenario could result in up a couple of days to several weeks of inactivity along the railroad corridor depending on the extent of damage to one or more sections of the track. This is considered an adverse effect under NEPA. Under CEQA, this impact would be considered significant.

Indirect Effects

The placement of track and bridge infrastructure within the 100-year flood plain could result in the redirection of floodwaters if substantial changes in existing grades occur along the railroad corridor. However, given that maintenance activities would generally only replace the existing track and ties, no substantial changes in grade are anticipated. For this reason, no effect would occur under NEPA. Under CEQA, no impact would occur.

ALTERNATIVE 2 - PREFERRED PROJECT, DESIGN OPTION 1 - TRAIN LAYOVER FACILITY (WATERMAN AVENUE), AND DESIGN OPTION 3 - WATERMAN AVENUE RAIL STATION

Direct Effects from Temporary Construction

The Preferred Project, Design Option 1, and Design Option 3 would involve the replacement of existing track infrastructure, channel improvements at several locations, and new bridges. FIRMs reviewed for the Study Area indicates multiple sections of the railroad corridor are located within FEMA Flood Hazard Zones (FHZ) A and AO and the Santa Ana River are mapped as AE (see Table 3.8-4 and Figure 3.8-4). As a result, construction activities would occur within multiple 100-year flood area and could be subjected to related flood hazards during the course of the three-year construction period. Additionally, bridge and channel construction activities would occur within the channel and delineated 100-year flood zone and, as described in Chapter 2, would likely require the passage or diversion of flow through the active construction area. The duration of in-channel construction would be dependent on the bridge or channel in questions, but in general could be up to 9 months for the SAR and up to 12 months for sections of the Mission Zanja Channel. Construction crews and equipment would require access to and from the channel over this duration. Although in-channel construction would be required to comply with conditions of the SBCFCD Flood Control Permit, which covers construction, operation, and maintenance, a crossing-specific diversion plan may be required to ensure the integrity and safety of construction personnel during construction. Therefore, this is considered an adverse effect under NEPA. Under CEQA, this impact is significant. Mitigation

Measure HWQ-3 (Prepare and Implement a Flow Diversion Plan for Construction) is proposed to mitigate impacts related to flooding during construction.

Construction of Bridge 3.4 at the SAR would require the removal of part of the existing bank and placement of five new pier structures (or bents) in the river. These new pier foundations would be placed adjacent to the existing bridge piers prior to the removal of the existing foundation piers to minimize disruption to existing freight service. The new bridge piers would be larger than the existing foundations in order to accommodate double tracking, if pursued in the future. As a result, there would be duration of time where both new and existing pier foundations are within the SAR, along with the related cofferdam or CISS pile, which could limit the capacity of the channel until removal of the existing pier foundations and cofferdams. The simultaneous placement of the pier foundations could also temporarily increase the 100-year water surface elevation (WSE). This is considered an adverse effect under NEPA. Under CEQA, this impact is significant. Mitigation Measure HWQ-3 is proposed to mitigate this effect.

Direct Effects from Long-Term Operations

The placement of Project facilities including track infrastructure, bridges, new station structures, and layover facilities would be constructed within a 100-year flood hazard area as mapped on the most recent FIRMs produced by FEMA. As indicated in Table 3.8-4, several sections of the rail corridor along with adjacent areas within the Cities of Redlands and San Bernardino are subject to inundation by flooding along the Mission Zanja Channel, Mission Storm Drain, Mill Zanja Creek, and Twin Creek. Each of these improvements are discussed individually under the following headings.

Track, Train Layover, and Station Improvements. FIRMs reviewed for the Study Area map extensive portions of the railroad corridor, including the University, Downtown, Tippecanoe and Waterman stations, and both train layover sites, within FHZ A and AO (see Figure 3.8-4 and Table 3.8-4). These flood zone designations correspond to flooding from Twin Creek, Mill Creek Zanja, and longitudinal encroachment from the Mission Zanja Channel. In this context, multiple Project components would be exposed to hazards associated with a 100-year flood event. Additionally, many of these same areas would be subject to inundation during a 25-year flood event or less. The placement of the Project facilities within a 100-year flood zone is inconsistent with SCRRA and BNSF standards (see Section 3.8.1) and, therefore, is considered an adverse effect under NEPA. Under CEQA, this impact is significant. Mitigation Measures HWQ-4 (Prepare a Natural Hazard Management Plan) and HWQ-5 (Flood-Proofing of Critical Infrastructure) are proposed to mitigate flooding-related impacts to Project infrastructure.

Flash floods could lead to washout of tracks and subsequent derailment; whereas moderate rainfall events over longer durations can render some track segments impassable. In the event of an adverse, short-duration rainfall event, there is a possibility that the track could be subject to inundation during normal passenger rail operations. As described in Chapter 2, Project operations would be discontinued in the event of flooding conditions until water levels recede. In such an event, passenger rail service would not occur until flood levels recede and an assessment for any flood-related damage along the rail corridor is completed. This type of scenario could result in up a couple of days to several weeks of inactivity along the rail corridor depending on the extent of damage to one or more sections of the track. This is considered an adverse effect under NEPA. Under CEQA, this impact is significant. Mitigation Measure HWQ-4 is proposed to mitigate this effect.

Bridge Crossings. Regulations from BNSF and Metrolink require that bridges have to be built at a certain height to avoid flooding. As described in Chapter 2, all new bridges and their associated abutments would be designed to maintain existing flow capacity within each of the respective channel crossings at Warm Creek (Historic), Twin Creek, the SAR, the Mission Zanja Channel, and Mill Creek Zanja. During the preliminary engineering phase, hydrologic and hydraulic studies were completed to determine whether the design of the improvements would adversely affect designated floodways and existing 100-year floodplains (Appendix J2 through J6). A summary of the findings and recommendations for each of these crossings are provided under the respective sub-headings below.

Bridge 1.1 - Warm Creek (Historic). Warm Creek consists of a rectangular concrete channel constructed in the late 1960s. Warm Creek flows formerly entered the Santa Ana River just downstream from the San Bernardino Freeway Bridge. However, construction of the East Twin and Warm Creek improvements by the USACE in 1960 delivered most of the Warm Creek flows (the flow interception occurs upstream of Bridge 1.1 location) to the Santa Ana River at a point approximately 1.4 miles upstream. Because of surface drainage improvements that have occurred since the 1960's, the contributing drainage area to Bridge 1.1 is effectively reduced to 1.9 square miles resulting in a calculated 100-year peak flow rate of 2,525 cfs with a corresponding water WSE of 1,003.41 feet based on the North American Vertical Datum (NAVD) (Appendix J2).

The Preferred Project proposes a 30-inch pre-stressed concrete box girder bridge or concrete slab with supporting piles placed outside the existing channel walls. The box girder bridge would have a total span of 27.6 feet with a low chord of 1,012.75 feet NAVD; while the concrete slab bridge would have a total span of 30.3 feet and low chord of 1,008.08 feet NAVD. The low chord elevation for both of these bridge designs would be well above the existing 100-year WSE of 1,003.41 feet NAVD (Appendix J2). Based on hydraulic modeling in support of the bridge design, the flow is supercritical through this section of the channel with the velocity at approximately 20 feet per second (fps) and, therefore, any disturbance to the flow could cause the profile to jump to subcritical. Based on this circumstance, the Preferred Project maximizes the vertical opening to minimize any increase in flow velocity or rise the existing 100-year WSE. Based on these considerations, no effect would occur under NEPA. Under CEQA, no impact is expected.

Bridge 2.2 - Twin Creek. As described in Chapter 2, the Preferred Project would not require the replacement of the existing sub-structure for the Twin Creek Bridge crossing and proposed improvements are limited to retrofitting the existing super structure to facilitate the track improvements and re-coating. For this reason, no effect to the existing channel hydraulics would occur under NEPA. Under CEQA, no impact would occur.

Bridge 3.4 - Santa Ana River. FIRM Number 06071C8684H designates the Bridge 3.4 crossing at the SAR as a "floodway" or Zone AE. By definition, designated floodways must be kept free of encroachment so that the 1% annual chance of flood can be carried without a substantial increase in flood heights. Any encroachment into the designated floodway and adjacent floodplain would be considered an adverse effect. Using the data and resources available, the hydraulic conditions for both existing and proposed conditions were modeled for Bridge 3.4. At SAR river mile 28.62, the modeled 100-year WSE for existing conditions is 1017.3 feet NAVD and an average channel velocity of 15.6 feet per second (ft/s) (Appendix J4). The results of the modeling indicate that the bridge improvements under the Preferred Project would result in a slightly lower water surface of 1017.0 feet NAVD and lower velocity of 11.7 ft/s. Thus, the proposed bridge design for the Preferred Project would meet applicable freeboard criteria and satisfy the requirements for a FEMA "No-Rise" Certificate (Appendix J4). Based on these findings, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

Bryn Mawr - Bridge 5.78. The proposed channel grading and Bryn Mawr Bridge improvements would increase the existing capacity within the Mission Zanja Channel of 1,450 cfs to a minimum capacity of 3,900 cfs upstream of the proposed Bryn Mawr Bridge. The downstream channel capacity is not significantly impacted by the proposed improvements. The capacity increase cannot meet the future condition 100-year flow of 7,600 cfs upstream of the bridge. The upstream master planned detention basin(s) would be required to prevent the overflow and flooding in the surrounding area. The proposed grading would also result in slightly higher velocities for a range of flows. The velocities are erosive and would require armoring as described in Chapter 2 (Appendix J6). Given that the Project improvements would increase the existing channel restriction within the Mission Zanja Channel, the Project would be an improvement from the existing conditions. Additionally, the structural integrity of the existing bridge is comprised and requires replacement with or without the Project. Based on these considerations, the Project would result in no adverse effect under NEPA. Under CEQA, the resulting impact would be less than significant.

Bridge 9.4 - Mill Creek Zanja. The Mill Creek Zanja Floodplain is shown in FIRM Number 06071C8716H. The floodplain extends through downtown Redlands and upstream along the Mill Creek Zanja through the University of Redlands (see Figure 3.8-4). The improvements at Bridge 9.4 would include a new pier bridge that would not require modification to or placement of structures within Mill Creek Zanja. The piers for this project improvement would be installed adjacent to and outside the channel wall. As a result, the Preferred Project would not contribute to additional changes in hydraulics through the I-10 crossing or within the Mill Creek Zanja (see Appendix J5). Based on these considerations, no effects would occur under NEPA**.** No impact would occur under CEQA.

Mission Zanja Channel, Multiple Reaches. Due to hydromodification from urbanization and limited improvements along the Mission Zanja Channel, runoff from even small storms has the potential to exceed existing channel capacity at numerous segments along the Mission Zanja Channel, resulting in overflow and flooding of the surrounding areas. The Gage Canal crossing (Bridge 3.9) and associated structure in particular are subject to significant flooding and scour issues due to the flat slope and limited channel depth upstream of the drop structure, and significant increase in velocity downstream of the drop structure (see Appendix J5). Flooding at this location could significantly impact the operation of the railroad tracks and the operation of the Tippecanoe Station, which are adjacent to the Mission Zanja Channel. Portions of the channel upstream of Tippecanoe Avenue and downstream of Bridge 3.9 have the greatest channel capacity (e.g., greater than 6,000 cfs). However the capacity is much less (1,400 to 2,700 cfs) in the area that is in between Tippecanoe Avenue and Bridge 3.9, (Appendix J5). Based on these capacity restrictions, the Project would be susceptible to flooding along this section of the railroad corridor, which is considered an adverse effect under NEPA. This impact would be significant under CEQA.

SANBAG is considering several engineering solutions for this and other sections of the Mission Zanja Channel to minimize this adverse effect; however, it is acknowledged that flooding issues within the Mill Creek Zanja Drainage Basin are not completely avoidable in the absence of a regional solution. To this end, several structural improvements are being considered including a 1-foot or 2-foot retaining wall along the north side of the channel from Tippecanoe Avenue to Bridge 3.9 to protect the track improvements. Additionally, SANBAG in coordination with SBCFCD is considering changes to the hydraulic grade of the Mission Zanja Channel along this same section and reconfiguration of the channel (e.g., widening or deepening). This would include modification or removal to the existing Gage Canal cascade structure. Additionally, as described in Chapter 2, bank stabilization, armoring, and excavation of debris from under the bridges would be performed to maximize capacity within the channel. Also, the use of an articulate concrete block (ACB) to support the armoring of the northern bank would decrease the risk of bank failure over the long-term operation of the Preferred Project, which could contribute to flooding. One or a combination of these improvements would greatly improve the capacity of the Mission Zanja Channel just east of Bridge 3.9 and reduce the reoccurrence of flooding along this section of the railroad corridor. However, capacity restrictions would remain upstream. Additionally, there would be a potential redirection of existing flood flows if improvements are limited to only one side of the channel. In this context, an adverse effect would occur under NEPA. This impact would be significant under CEQA.

Indirect Effects

At this time, SANBAG is not proposing the raising of the track alignment at any location along the rail corridor above the 100-year flood elevation with the exception of a small segment of track from MP 3.5 to Tippecanoe Avenue. The primary reason for this decision is based on limited modeling for the Mill Zanja Drainage Basin (Appendix J5), which suggests that any type of substantial raising of the track alignment (e.g., greater than 1 foot) could result in deeper inundation in areas to the south of the rail corridor during a 100-year flood event. As a result, existing topographical grades (see Figure 3.9-1, in Geology, Soils, and Seismicity) are generally maintained throughout the corridor and within the water surface elevation for the 100-year event. Based on limited hydraulic modeling for the Mission Zanja Channel, west of Tippecanoe, a raise in the current track profile of up to two feet would not result in substantial increases in flood elevations to the south (Appendix J5). For these reasons, the proposed track improvements would not cause an adverse effect to the 100-year water surface profile or result in any increase in flooding associated with the 100-year event on adjacent properties. Based on these considerations, no adverse effect would result under NEPA. Under CEQA, these impacts would be less than significant.

In the future, if intensification of land uses occurs around the proposed station locations as currently planned by each of the local jurisdictions, this pattern of development could result in the placement of additional uses within the 100-year floodplain. Although these uses would be consistent with the Cities of San Bernardino and Redland's goals of encouraging transit oriented development (TOD) along the railroad corridor, additional development of these areas would entail further encroachment into the floodplain. In the absence of a regional solution to existing flood hazards (e.g., up-stream detention and/or off-channel storage), the continued development of areas within the current 100-year floodplain would have an adverse indirect effect under NEPA. These impacts are significant under CEQA.

ALTERNATIVE 3 - REDUCED PROJECT FOOTPRINT

Direct Effects from Temporary Construction

The construction of this Build Alternative would result in similar construction-related impacts as described for the Preferred Project. As a result, an adverse effect would occur under NEPA. Under CEQA, this impact is significant. Mitigation Measure HWQ-3 is proposed to mitigate this effect.

Direct Effects from Long-Term Operations

The Reduced Footprint Alternative would entail many of the same effects as identified and described for the Preferred Project, Design Option 1, and Design Option 3 as they relate to the placement of the proposed track, stations, train layover facilities, and bridges within the 100-year flood zone. As a result, this alternative would result in the placement of the Project facilities within a 100-year flood zone, which is inconsistent with SCRRA and BNSF standards (see Section 3.8.1) and is considered an adverse effect under NEPA. Under CEQA, this impact is significant. Mitigation Measures HWQ-4 and HWQ-5 are proposed to mitigate this effect.

This alternative differs from the Preferred Project in that it would not include improvements to the northern bank of the Mission Zanja Channel to stabilize the entire length of the channel that parallels the railroad corridor. Rather these improvements would be limited to areas immediately adjacent to planned drainage facilities (or outfalls) and in the vicinity of the proposed siding track. The tracking along unimproved sections of the bank would be setback to minimize safety concerns. Hence, the potential for bank failures would be increased under this alternative, which although unlikely could further restrict flow through the Mission Zanja Channel and contribute to more frequent flood events. However, since the channel banks would remain in a state that would be comparable to existing conditions, no adverse effect would occur under NEPA. Under CEQA, this impact is less than significant.

Bridge 3.4 - Santa Ana River. As previously indicated, at SAR river mile 28.62, the modeled 100-year WSE for existing conditions is 1017.3 feet NAVD with an average channel velocity of 15.6 feet per second (ft/s) (Appendix J4). The results of the modeling indicate that the bridge improvements under this alternative result in a slightly lower water surface of 1016.5 feet NAVD and lower velocity of 11.3 ft/s when compared to the Preferred Project, Design Option 1, Design Option 3, and existing conditions. Thus, the proposed bridge design for the Reduced Project Footprint Alternative would meet applicable freeboard criteria and satisfy the requirements for a FEMA “No-Rise” Certificate (Appendix J4). Based on these findings, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

Indirect Effects

The indirect effects of this Build Alternative would result in similar to those identified for the Preferred Project. As a result, an adverse effect would occur under NEPA. Under CEQA, this impact is significant.

DESIGN OPTION 2 - USE OF EXISTING TRAIN LAYOVER FACILITIES

Direct Effects from Temporary Construction

Under Design Option 2, the construction of a new layover facility would not be required. Instead this alternative would integrate layover operations with existing train layover facilities at Metrolink’s EMF and Inland Empires Maintenance Facility (IMEMF). Compared to the Preferred Project, this Design Option would avoid the placement of a train layover facility within the 100-year floodplain. However, given that other features associated with this Design Option are similar to the Preferred Project in terms of the placement of tracks, bridges, and stations within the 100-year floodplain, an adverse effect would occur under NEPA. Under CEQA, this impact is significant. Mitigation Measure HWQ-3 is proposed to mitigate this effect.

Direct Effects from Long-Term Operations

Design Option 2 would integrate layover operations with existing train layover facilities at Metrolink’s EMF and If Inland Empires Maintenance Facility (IMEMF). By using the existing layover facilities, this Project feature would no longer be placed within a 100-year flood zone, thereby reducing adverse effects as they relate to the proposed train layover facility for the Preferred Project. However, given that the tracks, bridges, and stations would continue to be located in the 100-year floodplain, an adverse effect would occur under NEPA. Under CEQA, this impact is significant. Mitigation Measure HWQ-4 is proposed to mitigate this effect.

Indirect Effects

The indirect effects of this Design Option would result in similar to those identified for the Preferred Project. As a result, an adverse effect would occur under NEPA. Under CEQA, this impact is significant.

EFFECT 3.8-4	**Violation of Water Quality Standards.** The Project would generate discharges to surface water resources that would potentially violate water quality standards or waste discharge requirements.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under No Build Alternative, the Project would not occur and existing conditions along the railroad corridor would remain. To facilitate continued freight service per SANBAG's obligations, maintenance improvements would be required along the existing track alignment, which would include bridge replacement or rehabilitation. This would require construction in upland area and work directly within waterways (e.g., SAR), which would require disturbance of channel bed and banks. These activities could result in the suspension of sediment, which in turn could result in temporary increases in turbidity and sedimentation in downstream portions of the SAR and contributing drainages. In addition, work above the channel would be required at the bridges, which could result in construction debris falling into the waterways. These water quality effects are considered adverse under NEPA. A significant impact could occur under CEQA. Compliance with the NPDES General Construction Permit would be required.

Direct Effects from Long-Term Operations

Under this alternative, the Project would not occur and existing rail operations (i.e., freight service) would continue. Post-construction runoff from the railroad ROW would likely be similar to existing conditions. Drainage improvements under the Project would not be implemented and surface water discharges from the railroad corridor would likely continue to contain elevated levels of turbidity as a result of several of the erosional features documented within the ROW. These continued discharges would be considered part of existing conditions and, therefore, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

Indirect Effects

The No Build Project does not include any facilities that would generate additional discharges that could result in violations of water quality standards for one or more receiving waters. As a result, no indirect water quality effects would occur under NEPA. Under CEQA, no impact would occur.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Water quality effects associated with constructing the Build Alternatives and Design Options would be distributed throughout the Study Area and would include temporary staging areas. In general, the severity of construction-related water quality effects depends on the soil's susceptibility to erosion, construction practices, the frequency, magnitude, and duration of precipitation events, and the proximity of construction to drainage inlets, stream channels, and water bodies. Construction activities result in the disturbance of surface and removal of vegetative cover, which in turn, exposes the soil surface to the effects of erosion from rainfall, runoff, and wind. Erosion leads to sedimentation of runoff, which is the pollutant of concern most frequently associated with construction activity. Other pollutants of concern include hazardous chemicals from heavy equipment, such as gasoline, oils, grease, solvents, lubricants, and other petroleum products. Construction-related materials and debris including concrete, soap, trash, and sanitary wastes are other common sources of potentially harmful materials that may be discharged to receiving waters. The effect of hazardous construction-related chemicals on water quality varies depending on the duration and type of pollutants, the quantity of the discharge, and timing of construction activities.

During construction, the total disturbed area affected by the Build Alternatives and Design Options would be up to 141.6 acres over the course of 36 months. As described in Chapter 2, up to 10 acres could be potentially affected on any given day over the duration of Project construction. In addition, chemicals, liquid products, petroleum products (such as paints, solvents, and fuels), concrete-related waste, and other construction debris and waste could be spilled or leaked, with the potential to discharge into receiving waters. Additionally, grading activities would result in further compaction of the ground surface and could result in increases in peak runoff during rainfall events. These potential water quality and drainage effects could result in the degradation of receiving waters and/or groundwater during construction and is considered an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HWQ-2 is proposed to mitigate water quality effects during construction.

As described in Chapter 2, the Project would be subject to the requirements of the NPDES Construction General Permit, which would require the preparation of a SWPPP and implementation of construction BMPs during construction activities to minimize effects on surface waters. The requirements of the Construction General Permit are based on the risk level of the Project. The overall risk level is based on two factors: receiving water risk and sediment risk. As outlined in the environmental setting, runoff from the Study Area would not discharge to a 303(d)-listed water body impaired for sediment or into a designated environmental sensitive area. Therefore, the receiving water risk is considered low. Based on the anticipated construction schedule (beginning middle of 2015, with a 36-month construction period), the Project sediment risk would be moderate. Therefore, according to the Construction General Permit, the Project would be classified as Risk Level 2. Construction BMPs would include erosion and sediment control BMPs to minimize erosion and retain sediment. In addition to these minimum BMPs, Risk Level 2 projects are required to implement good housekeeping, perform quarterly non-stormwater discharge observations, and conduct weekly, pre-storm, interim storm, and post-storm inspections. Based on these considerations, temporary construction-related effects on water quality are considered an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HWQ-2 is proposed to mitigate this effect.

Beyond the potential water quality effects identified for upland areas, such as the station and layover facility improvements, the Build Alternatives and Design Options would involve work within and/or above local waterways along the railroad corridor. More specifically and as described in Chapter 2, work within the channel would be required for the Warm Creek (Historic), Twin Creek, SAR, Mill Creek Zanja, and the Mission Zanja Channel from MP 3.5 to just east of MP 6. Work directly within the channel can lead to disturbance of channel bed and banks thereby resulting in the suspension of sediment, which in turn could result in temporary increases in turbidity and sedimentation in downstream portions of the SAR and contributing drainages. These activities could be particularly disruptive in the main stem of the Santa Ana River where a temporary earthen crossing may be required to facilitate construction access. In addition, work above the channel would be required at these locations, including the Twin Creek Bridge, which could result in construction debris falling into the waterways. These water quality effects are considered an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HWQ-6 is proposed to mitigate this effect.

Bridge improvements requiring the placement of new structural footings along with bank improvements required for the Mission Zanja Channel would require the isolation of the work area to facilitate the required improvements. Isolation of the work areas could be accommodated through a variety of methods including sheet pile, CISS pile, or cofferdam installation depending on the construction contractor's preference. Once the work area is isolated, the construction area would be dewatered to facilitate construction, which could result in the discharge of water containing sediments, dissolved solids, metals, and other water quality constituents found in the channel, which could degrade the quality of receiving waters. Likewise, the removal of the sheet or CISS piles would reintroduce channel flow into the work area, which if performed improperly, could result in scour of the channel bed and unnatural channel incision. These effects would be considered an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measures HWQ-2 and HWQ-3 are proposed to mitigate water quality effects during in-channel construction.

Direct Effects from Long-Term Operations

As described in Chapter 2, the Build Alternatives and Design Options would include drainage improvements to minimize existing erosion within the railroad corridor and the use of concrete ties instead of wood ties that are treated with creosote and other chemicals. Additionally, the construction contractor would remove and properly dispose of existing wooden ties, potentially treated with creosote. The Build Alternatives and Design Options could also involve the placement of rail lubricants at specific locations to reduce rail squeal in tight turns; however, wheel lubricators use very small quantities of product. Because they are used in small quantities, in a small area, the lubrication is not anticipated to be a component of local runoff. For this reason, non-point sources of pollution originating from these components would be limited over the operational life of the Build Alternatives and Design Options. Based on these considerations, the long-term water quality effects are not adverse under NEPA. Under CEQA, the impact would be less than significant.

Post-construction runoff from the constructed facilities would carry two main water quality effects that could affect surface water drainages and storm drainage facilities within the railway corridor and the SAR. The first is caused by an increase in the type and quantity of pollutants in storm water runoff. As runoff flows over developed surfaces, water can entrain a variety of potential pollutants including, but not limited to, oil and grease, pesticides, trace metals, and nutrients. These pollutants can become suspended in runoff and carried to receiving waters. Long term point discharges from the stations and layover facility would be minimal, but could result in reductions in water quality where the water released is of lower quality than ambient conditions. These discharges would be infrequent, but could include landscape irrigation, stormwater runoff, and discharges of water that could come into contact with oils, gasoline, and other fluids used at the maintenance facility. This is considered an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HWQ-6 (Incorporate Post-Construction Runoff BMPs into Project Drainage Plan, Final WQMP, and Industrial SWPPP) is proposed to mitigate potential long-term water quality impacts.

As indicated in Chapter 2, the Build Alternatives and Design Options would require compliance with the requirements of the NPDES General Industrial Permit. The general NPDES permit covers all stormwater and some non-stormwater discharges associated with certain industrial activities. In the case of the Project, activities would be covered according to their SIC, Railway Maintenance and Operations (SIC 4113). Similar to the General Construction Permit, a SWPPP is required under the General Industrial Permit and has two objectives: (1) to help identify the sources of pollution that affect the quality of industrial storm water and non-storm discharges; and (2) to describe and ensure the implementation of BMPs to reduce or prevent pollutants in the discharges. A preliminary Water Quality Management Plan (WQMP) has been prepared for the Project and is included in Appendix J7. However, as noted in the preliminary WQMP, final engineering design is required before the location and specific type of BMPs can be determined.

To comply with the NPDES General Industrial Permit, drip pans would be installed where engines are parked in order to catch any fuel, lubrication, or hydraulic fluid drips from engines stored in the layover facility. There would be a train inspection pit located under one of the tracks at the layover facility, which allows train mechanics to inspect the undercarriage of the train, as necessary. The drainage from the drip pans and the inspection pit would be directly connected to an oil/water separator for treatment prior to discharge into the local sanitary sewer system. The oil/water separator would be periodically serviced to remove any accumulated oil and waste. However, without an Industrial SWPPP and final WQMP detailing the location and capacity of these facilities, post-construction water quality effects are considered adverse under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HWQ-6 is proposed to mitigate this effect.

Indirect Effects

The potential indirect effect from post-construction runoff is a potential increase in the quantity of water delivered to adjacent or nearby water bodies during storms. Increased impervious surfaces can interrupt the natural cycle of gradual percolation of water through vegetation and soil. Instead, water is collected from surfaces such as asphalt, concrete, and other compacted surfaces and routed to drainage systems where large volumes of runoff are discharged to the nearest receiving water. This process is referred to as hydromodification and can contribute to stream bank scouring and downstream flooding, which can result in loss of aquatic life and damage to property. Drainage runoff from the Project above-ground facilities would enter one of numerous drain features owned and operated by the cities of Redlands and San Bernardino and SBCFCD. For these reasons, the Project could result in on- and off-site discharges that could indirectly affect downstream surface waters by increasing scour and/or sedimentation. Therefore, this indirect effect is considered an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HWQ-1 is proposed to mitigate this effect.

EFFECT 3.8-5	**Alteration of Drainage Patterns Resulting in Off-Site Erosion and Sedimentation.** The Project would result in the alteration of existing drainage patterns, in a manner which would result in substantial erosion or siltation on- or offsite.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, the Project would not occur and existing conditions along the railroad corridor would remain. Ongoing maintenance activities would result in the removal of sparse vegetation and exposure of the soil surface to rainfall, thereby increasing the potential for accelerated erosion. However, given that much of the railway corridor is disturbed (e.g., the existing rail line and adjacent land uses) and already contains drainage patterns resulting in off-site erosion and sedimentation, this alternative would maintain the status quo and no adverse effect would occur under NEPA. Under CEQA, this impact would be less than significant.

Direct Effects from Long-Term Operations

Under this Alternative, the Project would not occur and existing rail operations (i.e., freight service) would continue. There would be no alteration of drainage patterns as existing drainage facilities would be utilized. As a result, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

Indirect Effects

Indirect effects relating to the routine maintenance and incremental improvements of the railway corridor would likely result in minimal changes to existing drainage patterns. As a result and presuming the use of standard engineering practices, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Construction activities would extend over a three-year period with multiple phases of construction occurring simultaneously. During construction, it may be necessary for the contractor to re-route drainage around one or more construction areas, which in turn may concentrate runoff and direct it offsite thereby resulting substantial erosion on adjacent properties. The construction contractor would be required to prepare and implement a SWPPP to control stormwater discharges off-site. However, without the availability of a SWPPP to confirm the inclusion of effective BMPs to address potential water quality pollutants, an adverse effect would occur under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HWQ-2 is proposed to mitigate this effect.

Direct Effects from Long-Term Operations

Implementation of the Build Alternatives and Design Options would require the replacement of existing track and bridges, which would involve re-grading of the entire railroad corridor and within the Project Study Area to match the proposed vertical and horizontal track alignment. Following construction and, as described in Chapter 2, existing grades and surface conditions would be similar to existing conditions. Ballast materials associated with track improvements would continue to be permeable and conducive to infiltration. Subgrade materials, including maintenance roads, would be similar to the existing ground surface, albeit some additional compaction, to facilitate vehicle movements. With the additional ROW requirements, there is a possibility for some minor increases in additional compacted surfaces, which could serve to concentrate and redirect stormwater runoff. However, these increases would be managed through Project-related drainage improvements that would drain runoff to the adjoining graded ditches and/or infiltrate directly into the underlying native soils. Additionally, based on the condition of certain sections of the railroad corridor as documented in Figure 3.8-3, the Build Alternatives and Design Options improvements could entail desirable benefits by reducing existing scour and soil erosion with the railroad corridor. Based on these circumstances, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

The Project layover facility, station improvements, and associated parking lots would involve the placement of impervious surfaces, which would alter the infiltration characteristics of the ground surface where proposed and carry the potential to result in increases in peak runoff flows. Although an approximately 20-acre portion of the Study Area could contribute to on-site and off-site channel erosion and increased sedimentation to local waterways (e.g., Mission Zanja Channel and SAR). The Build Alternatives and Design Options would implement site design BMPs as proposed in the Preliminary WQMP (see Appendix M) to minimize effects, such as incorporating landscape areas into the drainage design in the parking areas, constructing overflow parking areas with permeable paving, and enlisting other comparable design concepts that are equally effective. Given the conceptual nature of the Preliminary WQMP, SANBAG is unable to confirm the effectiveness of the conceptual BMPs and, therefore, an adverse effect would occur under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HWQ-6 is proposed to mitigate this effect.

Indirect Effects

As described in Chapter 2, the northern bank of the Mission Zanja Channel would be stabilized. This improvement would not only stabilize the existing bank, but would also reduce the existing scour along that bank that can lead to sedimentation in downstream portions of the channel. This is considered a desirable benefit of the Project. Although the Reduced Project Footprint Alternative would not employ this improvement along the entire stretch of the Mission Zanja Channel, given that some level of improvement would still be required in conjunction with contemplated drainage improvements, the Reduced Project Footprint Alternative would likely realize some of these benefits. However, these benefits would not be realized to the extent that they would under the Preferred Project and Design Options. Based on these considerations, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

EFFECT 3.8-6	**Contribute Substantial Sources of Polluted Runoff.** The Project could create or contribute to sources of polluted runoff, which could result in the degradation of receiving waters downstream or otherwise substantially degrade water quality.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under this Alternative, the Project would not occur and existing conditions along the railroad corridor would remain. Maintenance and bridge replacement activities would generate temporary sources of polluted runoff without proper management of stormwater discharges. These activities would be required to comply with the NPDES General Construction Permit and, therefore, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

Direct Effects from Long-Term Operations

Under the No Build Alternative, there would be no substantial alteration of existing drainage patterns. Presuming a continuation of existing freight operations, there would be no new sources of polluted runoff that that could otherwise adversely affect water quality. As a result, there would be no adverse effect under NEPA. A less than significant impact would occur under CEQA.

Indirect Effects

As previously discussed, no changes to existing drainage patterns would occur under this alternative. Additionally, no new sources of polluted runoff would be constructed within the railroad ROW and, therefore, no adverse effect is anticipated under NEPA. A less than significant impact is anticipated under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Implementation of the Build Alternatives and Design Options would include substantial construction activity over an area of up to 137.6 acres (depending on alternative and design option) and would include ballast removal, track and bridge installation, drainage improvements, grading, and revegetation. Construction activities associated with the Build Alternatives and Design Options would create the potential for soil erosion and sedimentation both within Study Area and downstream. The construction process could also result in the accidental release of other pollutants to surface waters, including oil and grease, petroleum hydrocarbons, chemical substances used during construction, waste concrete, and wash water. SANBAG would implement Treatment Control BMPs as prescribed in the SWPPP, such as using sediment/turbidity, organic compounds, trash and debris, oil and grease, pesticides, and heavy metal controls, thereby providing the required treatment at the proposed stations. In addition, erosion and sediment control BMPs would also be implemented to minimize adverse effects. However, in the absence of final design plans, SANBAG is unable to confirm the inclusion of the required measures and, therefore, an adverse effect is anticipated under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HWQ-2 and HWQ-3 is proposed to mitigate this effect.

Direct Effects from Long-Term Operations

Overall, the potential for the Build Alternatives and Design Options to cause or contribute to long-term discharges of urban contaminants (e.g., oil and grease, fuel, trash) into the stormwater drainage system and ultimate receiving waters would increase compared to existing conditions. The potential discharges of contaminated urban runoff from paved and landscaped areas could increase or could cause or contribute to adverse effects on aquatic organisms in receiving waters. Urban contaminants typically accumulate during the dry season and may be washed off when adequate rainfall returns in the fall to produce a “first flush” of runoff. The amount of contaminants discharged in stormwater drainage from developed areas varies based on a variety of factors, including the intensity of urban uses such as vehicle traffic, types of activities occurring on-site (e.g., office, commercial, industrial), types of contaminants used on-site (e.g., pesticides, herbicides, cleaning agents, petroleum byproducts), contaminants deposited on paved surfaces, and the amount of rainfall.

The Project layover facility, station improvements, and associated parking lots would involve the placement of impervious surfaces, and are candidates for a range of LID techniques such as surface swales, catch basins, drainage inlets, underground pipes and detention basins. The San Bernardino County NPDES MS4 Permit R8-2010-0036 (described in above in the “Regulatory Framework” section) would apply to these components of the Project that fall outside SANBAG’s ROW. The goal of the MS4 Permit is to increase the use of decentralized design techniques to infiltrate, evaporate, and surface storage while reducing excess stormwater runoff. The net increase in peak runoff across the 20-acres of impervious surfaces in the Project Study Area could contribute to polluted runoff and increased sedimentation in channels. A preliminary WQMP was prepared for the Project, but lacks sufficient design details to ensure the avoidance or minimize of potential discharge of water quality pollutants into local receiving waters. For this reason, potential sources of water quality pollutants are considered an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HWQ-6 is proposed to mitigate this effect.

Indirect Effects

Because the Build Alternatives and Design Options would disturb large areas of land and substantially alter on-site drainage patterns, indirect water quality impacts could result from temporary, short-term construction activities and future operations. Increased volumes and velocities of storm water discharges from the Build Alternatives and Design Options could contribute higher peak flows to natural watercourses and cause stream bank erosion and physical modifications that adversely impact aquatic ecosystems and stream habitat. This would be an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HWQ-6 is proposed to mitigate this effect.

3.8.4 Mitigation Measures

SANBAG proposes the following measures to avoid, minimize, and/or mitigate for adverse effects related to floodplains and hydrology for all build alternatives and design options.

HWQ-1 **Prepare Drainage Plan(s) for Structural Facilities.** SANBAG shall prepare a site specific Drainage Plan for all major structural facilities constructed in conjunction with the Project, including stations and parking areas, track improvements, and the proposed layover facility. The Final Drainage Plan shall incorporate measures to maintain on-site runoff during peak conditions to pre-construction discharge levels. Design specifications for the detention and/or infiltration facilities shall provide sufficient temporary storage capacity to attenuate runoff to pre-Project conditions. These improvements will be coordinated with the applicable jurisdictions, including the Cities of Redlands and San Bernardino and the SBCFCD, as appropriate.

HWQ-2 **Prepare and Implement a SWPPP**: The construction contractor will develop a SWPPP that complies with the requirements of the NPDES General Construction Permit (Order 2009-0009-DWQ as amended by Order No. 2010-0014-DWQ and 2012-0006-DWQ) for Risk Level 2 projects and implement the BMPs described in the SWPPP. The SWPPP shall identify specific actions and BMPs relating to the prevention of stormwater pollution from project-related construction sources by identifying a practical sequence for site restoration, BMP implementation, contingency measures, responsible parties, and agency contacts. The SWPPP shall reflect localized surface hydrological conditions and shall be reviewed and approved by SANBAG prior to commencement of work and shall be made conditions of the contract with the contractor.

The SWPPP shall be prepared by a qualified SWPPP developer with BMPs selected to achieve maximum pollutant removal and that represent the best available technology that is economically achievable. Emphasis for BMPs shall be placed on controlling discharges of oxygen-depleting substances, floating material, oil and grease, acidic or caustic substances or compounds, and turbidity. BMPs for soil stabilization and erosion control practices and sediment control practices will also be required. Performance and effectiveness of these BMPs shall be determined either by visual means where applicable (i.e., observation of above-normal sediment release), or by actual water sampling in cases where verification of contaminant reduction or elimination, (inadvertent petroleum release) is required to determine adequacy of the measure.

Following construction, SANBAG will ensure the provision of sufficient drainage inlet and outlet protection through the use of energy dissipaters, vegetated riprap, and/or other appropriate BMPs to slow runoff velocities and prevent erosion at discharge locations from the rail station and parking areas.

HWQ-3 **Prepare and Implement a Flow Diversion Plan For Construction.** SANBAG or SANBAG's construction contractor shall develop a Flow Diversion Plan(s) for in-channel construction activities proposed within Warm Creek (Historic)(Bridge 1.1); Twin Creek (Bridge 2.2), SAR (Bridge 3.4), Mission Zanja Channel (Bridges 3.9, and 5.8, and bank improvements), and Mill Creek Zanja (Bridge 9.4). SANBAG's contractor shall incorporate measures to minimize changes to flood flow elevation(s) during construction, address accumulation of floating debris, provide measures that minimize sedimentation to surface waters, and include contingency measures in the event of substantial rainfall.

HWQ-4 **Prepare a Natural Hazard Management Plan.** SANBAG shall develop a Natural Hazard Management Plan for the Project. The Natural Hazard Management Plan will include a flood monitoring and evacuation plan for all Project infrastructure located within a delineated 100-year flood zone based on the most recent FEMA mapping. The Plan shall include protocols and procedures for emergency response in the event of flooding, the investigation and repair of track, station, and bridge facilities following inundation, and the provision of interim transit until Project operations resume.

HWQ-5 **Flood-Proofing of Critical Infrastructure.** Where feasible, stations and building pads for the proposed train layover facility shall be designed such that the finished floor elevation will be one-foot above the base 100-year flood elevation, where established.

HWQ-6 **Incorporate Post-Construction Runoff BMPs into Project Drainage Plan, Final WQMP, and Industrial SWPPP:** The Project Drainage Plan, Final WQMP, and the NPDES Industrial SWPPP shall demonstrate treatment, control, and management of the on- and off-site discharge of stormwater to existing drainage systems or drainage features. The final Drainage Plan shall provide both short- and long-term drainage solutions to ensure the proper sequencing of drainage facilities and the final WQMP will ensure sufficient treatment of runoff generated from Project impervious surfaces prior to off-site discharge.

SANBAG shall ensure the provision of sufficient outlet protection through the use of energy dissipaters, vegetated rip-rap, soil protection, and/or other appropriate BMPs to slow runoff velocities and prevent erosion at discharge locations for the station platforms, parking areas, and layover facility. A long-term maintenance plan shall be developed and implemented to support the functionality of drainage control devices. The layover facility layout(s) shall also include sufficient container storage and on-site containment and pollution-control devices for drainage facilities to avoid the off-site release of water quality pollutants, including, but not limited to oil and grease, fertilizers, treatment chemicals, and sediment. These measures shall be reflected in the final Industrial SWPPP and WQMP for applicable facilities. The NPDES Industrial SWPPP shall incorporate required maintenance practices and housekeeping to maximize the long-term effectiveness of post-construction BMPs.

3.8.4.1 Effects after Mitigation

Upon implementation of Mitigation Measures HWQ-1, HWQ-2, HWQ-3, and HWQ-6, adverse effects related alteration of existing drainage patterns and short- and long-term water quality impacts, including in-channel construction, would be minimized and no adverse effect would occur under NEPA. Under CEQA, these impacts would be reduced to a less than significant level.

As discussed in the Project analysis, portions of the Build Alternatives and Design Options would be constructed within a 100–year flood zone with some locations subject to inundation at higher return internals (e.g., 5 years). SANBAG does not have control over the timing or implementation of larger, watershed-scale flood control improvements that are currently subject to limited funding and their corresponding implementation remains uncertain. Mitigation Measures HWQ-4 and HWQ-5 are proposed to partially mitigate these adverse effects. However, because SANBAG does not control the implementation of off-site flood control improvements constructed in areas under the jurisdiction of SBCFCD and others, hazards related to flooding and associated damage to the proposed infrastructure is considered significant and unmitigable under CEQA. With implementation of Mitigation Measures HWQ-4 and HWQ-5, adverse effects in relation to flooding and associated damage to proposed infrastructure would remain adverse under NEPA.

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3.9 GEOLOGY, SOILS, AND SEISMICITY

This section provides an evaluation of the Build Alternatives and Design Options in relation to existing geology and soil conditions within the Study Area. The issues considered in the analysis include seismic ground shaking, liquefaction, landslides, soil erosion, unstable geologic conditions, and problematic soils. Information contained in this section is summarized from a combination of sources including the Preliminary Geotechnical Evaluation prepared by HDR Engineering, Inc. (Appendix K) and available geologic resources such as the U.S. Department of Agriculture Web Soil Survey.

3.9.1 Regulatory Framework

Table 3.9-1 identifies and summarizes federal, state, and local laws, regulations, and plans that are applicable to the Project.

3.9.2 Affected Environment

Topography

The Study Area is located in the southeastern margin of the San Bernardino Basin, in unsectioned portions of Township 1 South; Range 4 West and Township 1 South at elevations above 1,000 feet above mean sea level (msl). The topography of the Study Area is typical of low and valley areas with gentle slopes ranging from one to three percent. The general topography within the Study Area grades towards the SAR from the cities of San Bernardino and Redlands, respectively. Topographical elevations in the general proximity of the SAR averages 1,028 feet msl and extend up to 1,078 feet msl in the vicinity of downtown San Bernardino and 1,474 feet msl in downtown Redlands. Figure 3.9-1 illustrates the general topographic profile for the existing land surface across the 9-mile railroad corridor.

Geology

The Study Area is located within the Peninsular Ranges Geomorphic Province of Southern California within the central portion of the San Bernardino Valley (Appendix K). The Peninsular Ranges Province consists of a series of ranges separated by northwest trending valleys, subparallel to faults branching from the San Andreas Fault. This Province is bounded on the northwest by the Traverse Ranges, on the east by the Colorado Desert, and extends south, encompassing the Los Angeles Basin and terminating south of the United States-Mexico border. The Peninsular Ranges include the southern portion of Los Angeles County, the southwest corner of San Bernardino County, all of Orange County and the San Jacinto Mountains and the Coachella Valley in the central portion of Riverside County.

The Study Area is characterized as a relatively flat-lying, alluvium-filled valley overlying crystalline basement rock. The bedrock below the alluvial sediments consists primarily of Mesozoic-age crystalline igneous and metamorphic rocks similar to those exposed in the nearby hills. The younger alluvium includes materials laid down during the present cycle of sediment deposition by streams. It is composed principally of un-weathered crystalline-rock debris derived from the surrounding highlands and contains minor quantities of consolidated sedimentary rocks (USGS 1959).

Table 3.9-1. Pertinent Laws, Regulations, and Plans for Geology, Soils, and Seismicity

Law, Regulation, or Plan	Summary and Project Nexus
Federal	
Uniform Building Code (UBC)	The UBC is published by the International Conference of Building Officials (ICBO) and forms the basis for California's building code, as well as approximately half of the state building codes in the United States. It has been adopted by the California Legislature to address the specific building conditions and structural requirements for California, as well as provide guidance on foundation design and structural engineering for different soil types.
United States Department of Agriculture (USDA), Natural Resources Conservation Service	The Natural Resources Conservation Service (NRCS) maps soils and farmland uses across the U.S. to provide comprehensive information necessary for understanding, managing, conserving and sustaining the nation's limited soil resources.
Earthquake Hazards Reduction Act	In October 1977, the U.S. Congress passed the Earthquake Hazards Reduction Act to reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards reduction program. To accomplish this goal, the act established the National Earthquake Hazards Reduction Program (NEHRP), which was further refined by the National Earthquake Hazards Reduction Program Act (NEHRPA).
State	
Alquist-Priolo Special Studies Zone Act (1972)	The Alquist-Priolo Special Studies Zone Act (Alquist-Priolo Act) (California Public Resources Code [PRC] Sections 2621–2630) was passed into law following the destructive February 9, 1971 San Fernando earthquake. The intent of the Alquist-Priolo Act is to ensure public safety by prohibiting the siting of most structures for human occupancy across traces of active faults that constitute a potential hazard to structures from surface faulting or fault creep.
California Building Code (CBC)	The State of California provides minimum standards for building design through the 2010 CBC (CCR, Title 24). The 2013 California codes become effective January 1, 2014. With the shift from seismic zones to seismic design, the CBC philosophy has shifted from "life safety design" to "collapse prevention," meaning that structures are designed for prevention of collapse for the maximum level of ground shaking that could reasonably be expected to occur at a site.
Seismic Hazards Mapping Act	The Seismic Hazards Mapping Act aims to reduce the threat of seismic hazard to public health and safety by identifying and mitigating seismic hazards. State, County, and City agencies are directed to utilize such maps in land use and permitting processes. The act also requires geotechnical investigations particular to the site be conducted before permitting occurs on sites within seismic hazard zones.

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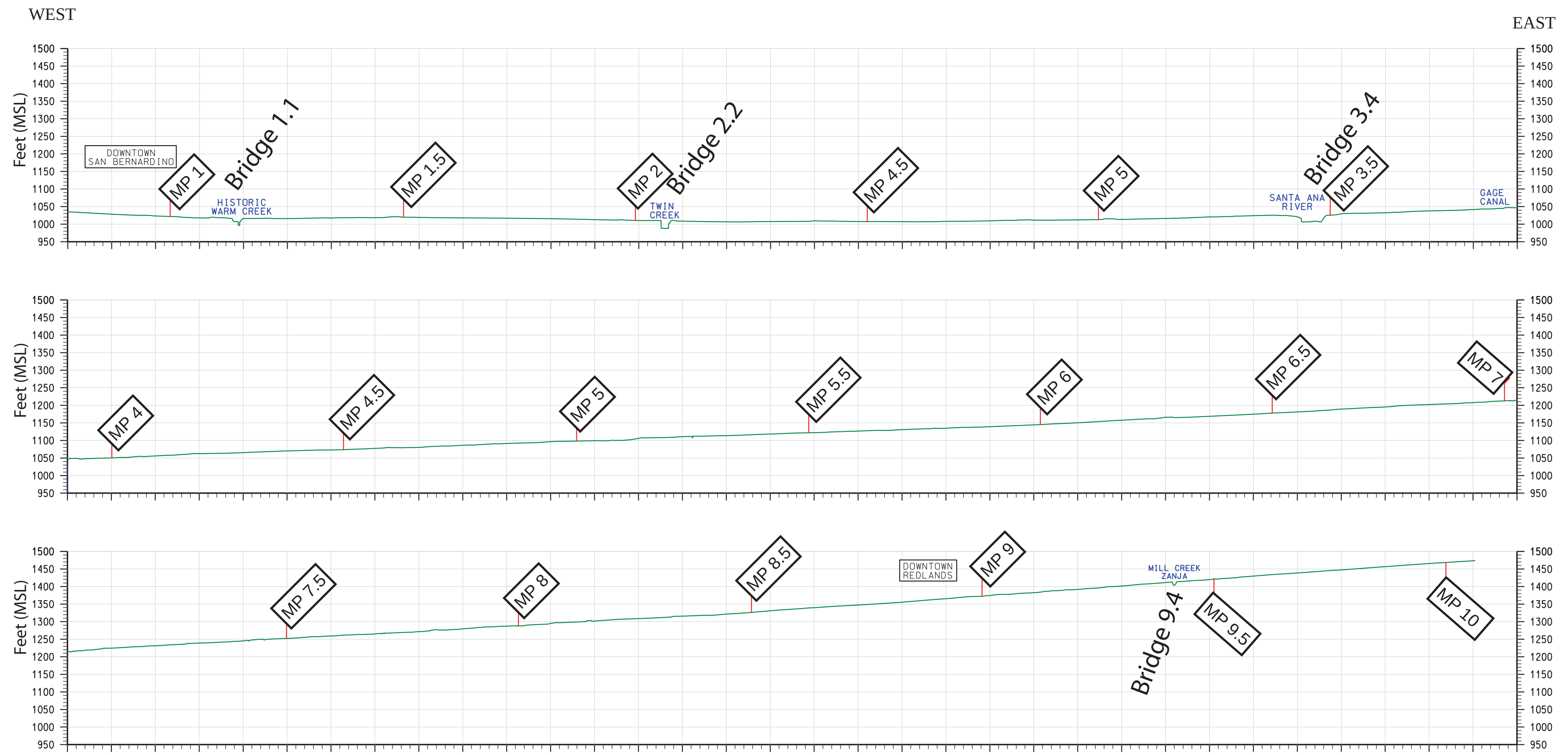

Topographical Profile of Existing Rail Corridor

Figure 3.9-1

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Based on the Preliminary Geologic Map of the San Bernardino 30' by 60' Quadrangle, the Study Area is generally underlain by Holocene-aged[1], young alluvium valley deposits designated as Qya1, Qya3, Qya4, and Qya5, as shown in Figure 3.9-2. Qya1 and Qya3 are defined as middle Holocene-aged young alluvial-valley deposits. Qya4 and Qya5 are defined as late Holocene-aged young alluvial valley deposits. At the SAR and other creek crossings, very young (late Holocene) alluvial wash deposits mapped as Qw underlie the Study Area. The corresponding soil types are composed primarily of sand and gravel with some local finer and coarser deposits and are described in more detail under the associated sub-heading.

Regional Faulting and Seismicity

Based on the results of the Preliminary Geotechnical Evaluation (Appendix K) and available maps produced by the State Geologist (Chief of the California Geological Survey [CGS]), there are no known active or potentially active faults mapped within the Study Area (see Figure 3.9-2). Additionally, the Study Area does not intersect with a delineated Alquist-Priolo Earthquake Fault Zone. As a result, the principal seismic hazard that could affect the Study Area is ground shaking resulting from an earthquake occurring along one of several major active or potentially active faults in Southern California. The closest active faults that could affect the Project are the Loma Linda, Redlands, San Jacinto (San Bernardino Valley Sections), Rialto-Colton, and San Andreas faults. Each of the major faults is located within close proximity to the Study Area and are further described below.

***San Jacinto Fault*.** The San Jacinto fault (San Bernardino Valley section) is the closest active fault, located approximately 1.1 miles (from MP 1) to the southwest of the Study Area. This fault is identified as being capable of generating a maximum considered earthquake (MCE) of magnitude 7.5; and for the Project, is considered to be the controlling fault with respect to the hazard of seismic shaking.

***San Andreas Fault*.** The San Andreas Fault zone is located approximately 3.9 miles east of the eastern end of the Study Area. This fault is believed to be capable of generating a MCE of magnitude 7.8.

***Loma Linda Fault*.** The Loma Linda fault is a concealed fault located closest to MP 4, approximately 0.3 miles southwest of the Study Area.

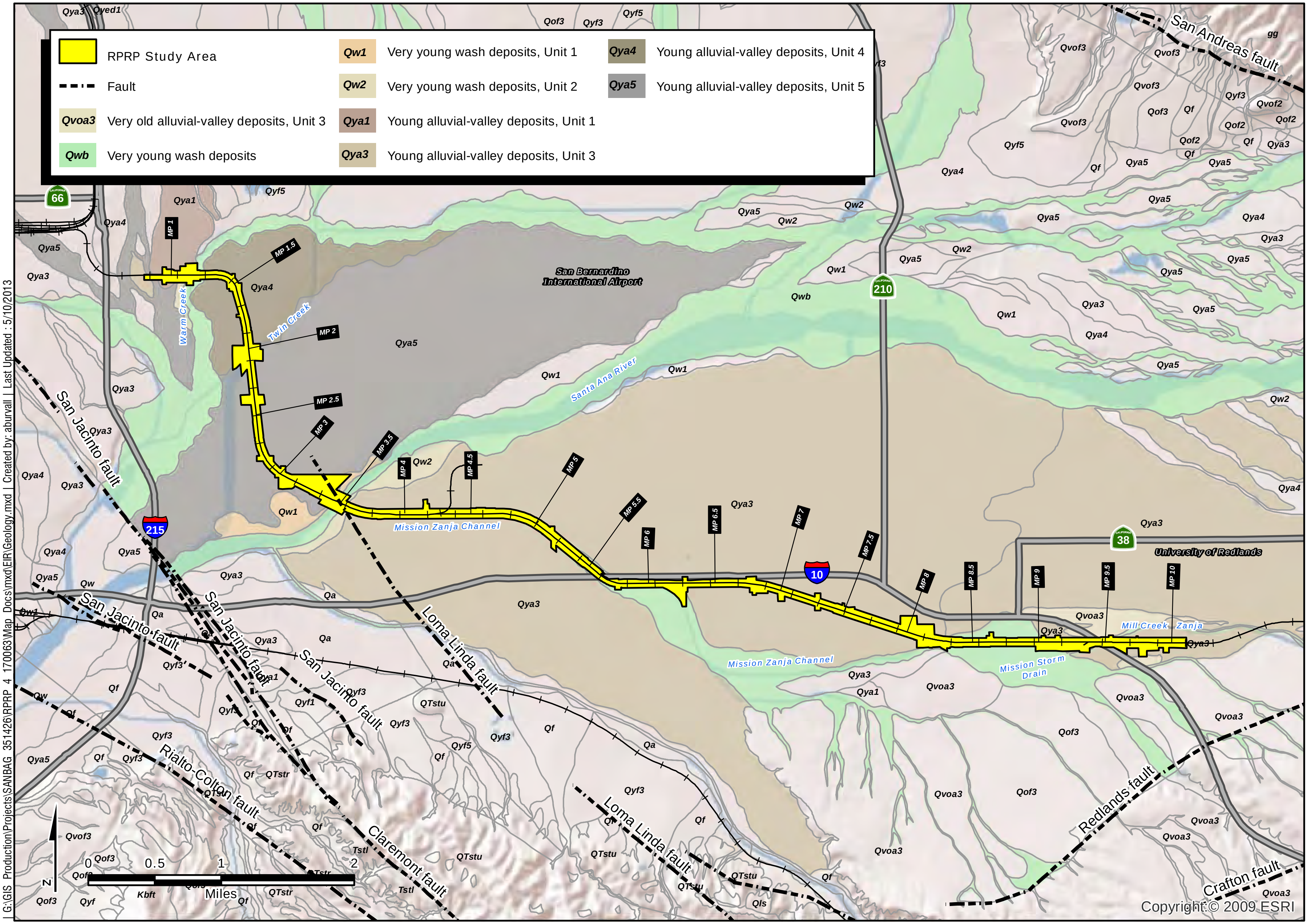
***Redlands Fault*.** The Redlands fault is located at a distance of approximately 0.75 miles east of the eastern end of the Study Area.

***Rialto-Colton Fault*.** The Rialto-Colton fault is a concealed fault located approximately 2.4 miles west of the western end of the Study Area.

Geologic Hazards

Potential geologic hazards within the Study Area include fault-induced ground rupture, seismic ground shaking, liquefaction, lateral spreading, settlement, landslides, hydroconsolidation, naturally occurring asbestos, and volcanism.

[1] Geological materials dated at less than 10,000 years old.



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Source: Douglas M. Morton, et al, 2003, Preliminary Geology Map of the San Bernardino 30' by 60' Quadrangle, California

Geological Formations and Regional Faults

Figure 3.9-2

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Fault-Induced Ground Rupture

As previously stated, there are no known active faults that directly intersect with the Study Area. Further, the Study Area is not located within an Alquist-Priolo Earthquake Fault Zone. Based on these circumstances, the likelihood of ground rupture to occur within the Study Area is considered low.

Seismic Ground Shaking

The probability that the Study Area will be subject to strong seismic shaking is considered to be high, due to the proximity of known active faults and the alluvium valley deposits underlying the Study Area. The maximum peak ground acceleration at the three proposed bridge replacement locations within the Study Area were estimated using the USGS deaggregation hazard online program. Based on the USGS instrumental intensity scale (USGS 2011), which uses an intensity scale similar to the Mercalli scale, an area mapped with a peak horizontal acceleration value of less than 0.0017g is not anticipated to feel seismic shaking. At the higher end of the scale, an area mapped with a peak horizontal acceleration value above 1.24g will experience strong seismic shaking. Based on the intensity scale, the proposed bridge replacement locations along the Study Area are subject to very strong levels of seismic ground shaking. The estimated peak ground accelerations for different seismic levels per the American Railway Engineering and Maintenance-of-Way Association (AREMA) are summarized in Table 3.9-2.

Table 3.9-2. Peak Horizontal Ground Accelerations

Seismic Event Level	Return Period (years)	Peak Horizontal Accelerations (g)		
		Warm Creek Crossing (MP 1.1)	Santa Ana River Crossing (MP 3.4)	Mill Creek Zanja Crossing (MP 9.4)
I	108	0.37	0.37	0.35
II	475	0.66	0.66	0.62
III	2,475	1.05	1.05	0.96

Source: Appendix K
Notes: MP =Mile Post

Liquefaction

Liquefaction is a seismic phenomenon in which loose, saturated, fine-grained granular soils behave similarly to a fluid when subjected to high-intensity ground shaking. Liquefaction occurs when three general conditions exist: (1) shallow groundwater; (2) low density, fine, clean sandy soils; and (3) high-intensity ground motion. Studies indicate that saturated, loose and medium dense, cohesionless soils exhibit the highest liquefaction potential, while dry, dense, cohesionless soils and cohesive soils exhibit low to negligible liquefaction potential. Effects of liquefaction on level ground can include sand boils, settlement, and bearing capacity failures below structural foundations. Effects of liquefaction on deep pile foundations may include reduction in the resistance of piles to lateral loads and downdrag or negative friction due to settlement of liquefied strata and the strata above it (refer to Appendix K for additional detail).

Based on the Preliminary Geotechnical Evaluation prepared for the Project (Appendix K), the approximate western half of the Study Area, west of Mountain View Avenue, is located within an area designated with low to high susceptibility to liquefaction. Areas along the Study Area with high susceptibility to liquefaction extend from E Street to approximately 2,500 feet west of

Tippecanoe Avenue (MP 1 to MP 3.8). Areas with medium susceptibility to liquefaction extend from approximately 2,500 feet west of Tippecanoe Avenue to approximately 1,500 feet east of Tippecanoe Avenue (MP 3.8 to MP 4.5). Areas with low susceptibility extend from approximately 1,500 feet east of Tippecanoe Avenue to the west side of Mountain View Avenue (MP 4.5 to MP 5.2). There is a potential for surface manifestation of liquefaction in the form of sand boils and ground cracking to occur along these areas. The remaining sections of the Study Area from Mountain View Avenue to the east are not considered susceptible to liquefaction. This issue is discussed further in the analysis of environmental effects.

Lateral Spreading

Lateral spreading is a phenomenon where large blocks of soil translate laterally along or through a layer of liquefied soil. The mass moves downslope toward an unconfined area, such as a descending slope or river, and is known to move on slope gradients as gentle as one degree. For lateral spreading to occur, the layer of liquefied soil needs to be continuous. There are sections of the Study Area where the Mission Zanja Flood Control Channel incises the local topography, and these areas by virtue of their unconfined geologic substrate are susceptible to lateral spreading(Appendix K). This issue is discussed further in the analysis of environmental effects.

Settlement

Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates) as the result of the placement of additional loads (e.g., from new structures). Typically, areas underlain by artificial fills, unconsolidated alluvial sediments, and slope wash, and areas with improperly engineered construction fills are susceptible to this type of settlement. Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid compaction and settling of subsurface materials (particularly loose, non-compacted, and variable sandy sediments) due to the rearrangement of soil particles during prolonged ground shaking. Poorly compacted artificial fills and poorly consolidated alluvium are particularly susceptible to this phenomenon. The Study Area is underlain by young alluvium valley depositions and, therefore, this issue is discussed further in the analysis of environmental effects.

Landslides

Based on the Preliminary Geotechnical Evaluation prepared for the Project (Appendix K), the Study Area is not located in an area susceptible to seismically induced landslides by San Bernardino County. However, the Study Area borders sections of the Mission Zanja Flood Control Channel, which contains bank slopes in excess of 25 percent and has experienced failures in the past.

Based on field observations, signs of active slope failure are documented along sections of the Mission Zanja Flood Control Channel. Photographs documenting observed slope failures and current conditions are provided in Appendix K. In particular, the segment of the Mission Zanja Flood Control Channel that borders the railroad corridor along the south from approximately MP 3.8 to MP 5.8 contains evidence of numerous localized slope failures (Appendix K). Given that the Study Area has experienced bank failures in the past, this topic is discussed further in the analysis of environmental effects.

Hydroconsolidation

Hydroconsolidation, commonly referred to as soil collapse, is a common problem in Southern California. Hydroconsolidation is caused by the addition of water to loose, dry soils in a semi-arid climate. The earthen materials most susceptible to hydroconsolidation are silty sands, sandy silts, and fine sands with relatively low moisture content. The existing soils along the Study Area are known to have the potential for hydroconsolidation and, therefore, this issue is discussed further in the analysis of environmental effects.

Naturally Occurring Asbestos

Asbestos is a term applied to several types of naturally occurring fibrous materials found in rock formations throughout California. Exposure and disturbance of rock and soil that contains asbestos can result in the release of fibers to the air and consequent exposure to the public. According to maps prepared by CGS (Department of Conservation 2000), there is no naturally occurring asbestos within the Study Area and, therefore, no additional consideration of this issue is required.

Volcanic Hazards

The Study Area is located over 300 miles from Mono Lake/Long Valley volcanic areas. Therefore, the risk to the Project from volcanic hazards is extremely low. For this reason, no additional consideration of this issue is required.

Soil Resources

According to the U.S. Department of Agriculture Web Soil Survey (Appendix I), the soil types within the boundaries of the Study Area are representative of the Grangeville series[2], Hanford series, Tujunga series, Psamments, and fluvents. Table 3.9-3 provides details on the soil characteristics within the boundaries of the Study Area by general location, erodibility, and corrosion potential. Figure 3.9-3 illustrates the geographic extent of reach of the soil map units[3] listed in Table 3.9-3.

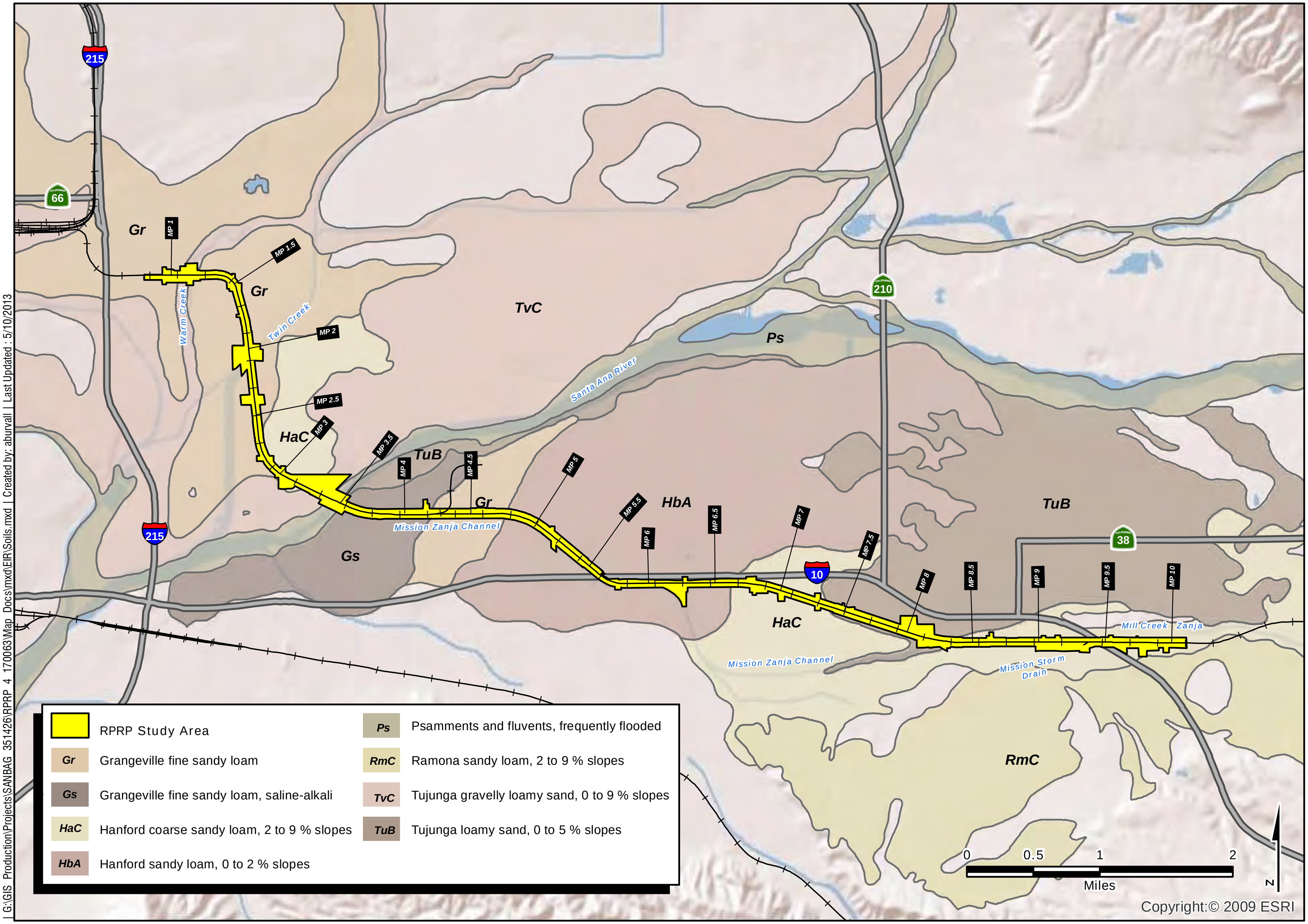
Table 3.9-3. Soils and Associated Hazard Potential

Soil	General Location (MP)	Erosion Hazard	Corrosion Potential	
			Concrete	Steel
Grangeville fine sandy loam (Gr)	MP 1 to MP 3.1	Moderate	Low	High
Grangeville fine sandy loam, saline-alkali (Gs)	MP 3.7 to MP 4.3	Moderate	Low	High
Hanford coarse sandy loam, 2-9% slopes (HaC)	MP 2.8 to MP 3.5 MP 6.9 to MP 10	Moderate	Low	Moderate
Hanford sandy loam, 0-2% slopes (HbA)	MP 5 to MP 6.9	Moderate	Low	Moderate
Psamments and fluvents, frequently flooded (Ps)	Santa Ana River	Slight	Low	High
Tujunga loamy sand, 0-5% slopes (TuB)	MP 7.5 to MP 8.5	Slight	Low	Moderate
Tujunga gravelly loamy sand, 0-9% slopes (TvC)	MP 3.4 to MP 3.6	Slight	Low	Moderate

Source: U.S. Department of Agriculture Web Soil Survey 2012.

[2] The soil series category is the most homogenous category in the taxonomy used in the U. S. The soils of a series have a relatively narrow range in of soil properties (USDA 1993).

[3] Soil map units have sets of interrelated properties that are characteristic of the material from which it formed, its environment, and its history (USDA 1993).



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Soils Map

Figure 3.9-3

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3.9.3 Environmental Impacts/Environmental Consequences

3.9.3.1 Effect Criteria

The Build Alternatives and Design Options would result in an adverse effect on geology, soils and seismicity if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42;
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction; and
  - Landslides.
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the Project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse;
- Be located on expansive soil, as defined in Table 18-1-B of the UBC (1994), creating substantial risk to life or property; or
- Have soils incapable of adequately supporting the use of septic tanks or alternative waste disposal systems where sewers are not available for the disposal of wastewater.

3.9.3.2 Methodology

Findings and conclusions contained in this analysis is based, in part, on the Preliminary Geotechnical Evaluation prepared by HDR Engineering, Inc. in December 2011 (Appendix K). The analysis also relies on NRCS soil survey data ("Web Soil Survey"), and published geologic literature and maps. Effects associated with geology and soils that could result from Project construction and operational activities were evaluated qualitatively based on site conditions, expected construction practices, materials, locations of planned facilities, and duration of Project construction and related activities.

3.9.3.3 Criteria Requiring No Further Evaluation

Fault Rupture. Based on a literature review, the railroad corridor does not intersect with an active fault or a designated Alquist-Priolo Zone and, therefore, the potential for ground rupture to occur within the Study Area is unlikely. No effect would occur under NEPA. No impact would occur under CEQA.

Expansive Soils. Based on the results of the Preliminary Geotechnical Evaluation (Appendix K), the soil resources along the railroad corridor are not known to have expansive qualities that would create a substantial risk to the structural features associated with the Project. In this context, expansive soils pose a negligible hazard to the Project and no effect would occur under NEPA. No impact would occur under CEQA.

Septic Tanks or Alternative Waste Disposal Systems. The layover facility would include restroom facilities for employees and would, therefore, generate wastewater; however, the layover facility would connect to local sanitary sewer collection facilities with wastewater treatment provided by the City of Redlands of San Bernardino. In this context, the Project would not require the use of septic tanks or an alternative wastewater disposal system. No other Project components would generate wastewater, including the proposed stations, which are not proposed for water or sewer hookups. In this context, no effect would occur under NEPA. Under CEQA, no impact would occur.

3.9.3.4 Assessment of Environmental Effects

EFFECT 3.9-1	**Possible Risks to People and Structures Caused by Strong Seismic Ground Shaking and Liquefaction.** The Project could result in possible risks to people and structures related to seismic ground shaking and related secondary geologic hazards including liquefaction.

ALTERNATIVE 1 – NO BUILD

Direct Effects from Temporary Construction

Under Alternative 1, the Project would not be implemented and existing conditions along the railroad corridor would remain. To facilitate continued freight service per SANBAG's obligations, maintenance improvements would be required along the existing track alignment, which would include bridge replacement or rehabilitation. Considering the proximity of known active faults, there is a high probability that the railroad corridor under the No Build Alternative would be subject to strong seismic shaking in the future. To minimize these potential geologic hazards, SANBAG would be required to comply with CBC and AREMA standards for all maintenance activities and bridge replacements. In this context, no adverse effect under NEPA would occur related to strong ground shaking. This impact would be less than significant under CEQA.

Direct Effects from Long-Term Operations

As indicated above, there is the potential for the railroad corridor to experience strong ground shaking from nearby faults during an earthquake under the No Build Alternative. Although there is no realistic way in which the seismic shaking can be avoided, no new facilities would be constructed that could expose individuals to the hazards of ground shaking throughout operations. No adverse effect would occur under NEPA. This impact would be less than significant under CEQA.

Indirect Effects

Under the No Build Alternative, maintenance of existing bridges, including Bridges 1.1 (Historic Warm Creek), 2.2 (Twin Creek), and 3.4 (SAR), would be required and replacement of the existing support structures would be required at Bridges 1.1 and 3.4. Additionally, improvements to the structural crossing at MP 3.9 (Gage Canal) will also be required. In the absence of any improvements to these crossings in the near term, they could be subject to failure during the next seismic event thereby potentially disrupting freight service. The risk of seismically induced liquefaction is highest for portions of the railroad corridor from MP 1 to MP 3.9. Track and bridge improvements along this section of the railroad corridor, including the Warm Creek and SAR Bridge crossing, would be at the highest risk. However given that these conditions are representative under existing environmental conditions, no adverse effect would under NEPA. Under CEQA, this impact would be less than significant.

Build Alternatives and Design Option 2 – Use of Existing Train Layover Facilities

Direct Effects from Temporary Construction

The probability that the Build Alternatives and Design Option 2 would be subject to strong seismic shaking is considered to be high due to the proximity of known active faults and the alluvium valley deposits, which are generally more prone to intense ground shaking. Therefore, an adverse effect under NEPA would occur. This is considered a significant impact under CEQA. Mitigation Measure GEO-1 (Prepare Final Geotechnical Report for the Project and Implement Required Measures) is proposed to mitigate the potential for geologic hazards to adversely effect Project-related infrastructure.

Direct Effects from Long-Term Operations

As indicated above, the probability that the Build Alternatives and Design Option 2 would be subject to strong seismic shaking is considered to be high due to the proximity of known active faults and the alluvium valley deposits. The hazard posed by seismic shaking is high. Therefore, an adverse effect under NEPA could occur during the operational life of the Project. This is considered a significant impact under CEQA. Mitigation Measure GEO-1 is proposed to mitigate this effect.

Indirect Effects

Project-related components would be constructed in accordance with standard engineering practices in the design and construction of the Build Alternatives and Design Option 2. Therefore, no indirect effect related to seismic ground shaking would occur. The proposed layover facility site and existing layover facilities are located in areas mapped as not having a risk for liquefaction (Appendix K) and, thus, no indirect adverse effect would occur under NEPA. Under CEQA, indirect impacts would be less than significant.

The western half of the railroad corridor, up to approximately the west side of Mountain View Avenue, contains areas designated as having low to high susceptibility to liquefaction during a seismic event. Table 3.9-4 identifies the Project components that could be potentially affected by liquefaction. Additionally, the proposed Tippecanoe Station is located in an area identified as having a medium susceptibility to liquefaction. Based on these considerations, an adverse effect under NEPA related to liquefaction would occur. This is considered a significant impact under CEQA. Mitigation Measure GEO-1 is proposed to mitigate for hazards related to liquefaction.

Table 3.9-4. Liquefaction Potential

Project Component	Generalized Liquefaction Susceptibility
Track Improvements	
MP 1 to MP 3.8	High
MP 3.8 to MP 4.5	Medium
MP 4.5 to 5.2	Low
Bridges	
Warm Creek	High
Santa Ana	High
Platforms	
Tippecanoe	Medium

Source: Appendix K

DESIGN OPTIONS 1 AND 3 – TRAIN LAYOVER FACILITY (WATERMAN AVENUE) AND WATERMAN AVENUE RAIL STATION

Direct Effects from Temporary Construction

Design Options 1 and 3 would have similar effects related to seismic shaking as the Build Alternatives and Design Option 2. The hazard posed by seismic shaking is high. Therefore, an adverse effect would occur under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure GEO-1 is proposed to mitigate this effect.

Direct Effects from Long-Term Operations

Design Options 1 and 3 would have similar effects related to seismic shaking as the Build Alternatives and Design Option 2 during operations. The hazard posed by seismic shaking is high. This is considered an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure GEO-1 is proposed to mitigate this effect.

Indirect Effects

Similar to the Build Alternatives and Design Option 2, no indirect effect related to seismic ground shaking is anticipated to occur with implementation of Design Options 1 and 3 under NEPA. Under CEQA, no indirect impact would occur related to seismic ground shaking.

Compared to the proposed layover facility, the layover facility at Waterman Avenue would be located in an area mapped as having a high risk for liquefaction (Appendix K), whereas the proposed layover facility would not otherwise be at increased risk. Also, the Waterman Avenue Station under Design Option 3 would be located in an area mapped as having a high risk for liquefaction, whereas the Tippecanoe Avenue station under the Build Alternatives and Design Option 2 is located in area identified as having a medium susceptibility to liquefaction. This adverse effect would be greater when compared to the Build Alternatives and Design Option 2 given the following: (1) the layover facility would include structures that would be susceptible to liquefaction, including storage tanks, which if improperly designed could result in the release of hazardous substances, such as diesel fuel and (2) the Waterman Avenue Station is located in area mapped as having a higher susceptibility to liquefaction. This is considered an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measure GEO-1 is proposed to mitigate this effect.

EFFECT 3.9-2	**Possible Risks to People and Structures Caused by Landslides.** Implementation of the Project would result in possible risks to people and structures from landslides associated with bank failures along the Mission Zanja Flood Control Channel.

ALTERNATIVE 1 – NO BUILD

Direct Effects from Temporary Construction

Under Alternative 1, the Project would not be implemented and existing freight service would continue to be similar to existing conditions. As described in Chapter 2, to facilitate continued freight service per SANBAG's obligations, maintenance improvements would be required along the railroad corridor from MP 1 to MP 4. Portions of the railroad corridor from approximately MP 3.8 to MP 5.8 that border the Mission Zanja Flood Control Channel have experienced bank failures in the recent past. The Preferred Project would include bank stabilization measures along the northern bank of the Mission Zanja Flood Control Channel to minimize the potential for bank scour and related slope failure. Under the No Build Alternative, bank stabilization improvements would not occur and existing bank scour and associated failures along MP 3.8 to MP 4 (existing freight track up to red board) would continue to occur and could have an effect on existing freight movements east of the SAR. Because this condition is representative of the environmental baseline, no adverse effect would result under NEPA. Under CEQA, this impact would be less than significant.

Direct Effects from Long-Term Operations

As indicated above, under the No Build Alternative, bank stabilization improvements would not occur and existing bank scour and associated failure along MP 3.8 to MP 4 (existing freight track up to red board) would continue to occur during high flow events. Given that these effects are part of the environmental baseline, no adverse effect would occur to existing freight movements under NEPA. Under CEQA, this impact is considered less than significant.

Indirect Effects

The railroad corridor is located at sufficient distance from surrounding hillslopes such that indirect effects related to hazards from a large landslide event are unlikely to affect the railroad corridor and, therefore, no effect is anticipated to occur under NEPA. Under CEQA, no impact would occur.

ALTERNATIVE 2 – PREFERRED PROJECT AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Based on maps produced by San Bernardino County in conjunction with the generally level topography, the Study Area is not located in an area susceptible to hazards associated with slope failure (or landslides). The Project-related improvements to existing bridges and proposed train layover facilities (except Design Option 2) would be constructed on relatively level terrain and not in close proximity to the Mission Zanja Flood Control Channel. Consequently, hazards related to the slope failure along the Mission Zanja Flood Control Channel would generally not apply to these Project features; except for Bridge 5.78. However, portions of the railroad corridor, from approximately MP 3.5 to just east of MP 5.8, border the Mission Zanja Flood Control Channel, which has experienced slope, or in this case, bank failures in the recent past. The bank failures were observed during site visits in March and October 2011 and July 2012. Figure 3.9-4 illustrates a section of the Mission Zanja Flood Control Channel, west of Tippecanoe Avenue, where slope movement is documented and where previous slope stabilization treatments have been implemented.

Based on this existing condition, it is possible these portions of the railroad corridor, specifically track and station improvements, that parallel the Mission Zanja Flood Control Channel could be susceptible to instability if placed in close proximity of the channel embankment without additional slope stabilization measures. This would be particularly true for track alignments that maximize SANBAG's ROW along segments that parallel the Mission Zanja Flood Control Channel. A landslide event along these sections of the railroad corridor could pose a hazard to the overall stability of the proposed rail infrastructure. This is considered an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure GEO-1 is proposed to mitigate hazards related to potential slope failures.

Mission Zanja Channel Bank Failure

Figure 3.9-4

Direct Effects from Long-Term Operations

The Preferred Project and Design Options would be constructed with standard engineering practices in the design and construction of the proposed track and/or station improvements. Additionally, the Preferred Project and Design Options would include necessary bank stabilization measures along the northern bank of the Mission Zanja Flood Control Channel to minimize the potential for bank scour and related slope failure over the long term operation of the Project. Therefore, once constructed, there is a low likelihood of the Preferred Project and Design Options to be affected by a landslide event along the Mission Zanja Flood Control Channel. As a result of these proposed bank improvements, no adverse effect would occur under NEPA . Under CEQA, this impact would be less than significant.

Indirect Effects

The geographic location of the Study Area is far enough away from surrounding hillslopes such that indirect effects related to hazards from a localized landslide event are unlikely to affect the railroad corridor and, therefore, no effect is anticipated to occur under NEPA. Under CEQA, no indirect impact would occur.

ALTERNATIVE 3 – REDUCED PROJECT FOOTPRINT

Direct Effects from Temporary Construction

Compared to the Preferred Project and Design Options, Alternative 3 would result in reduction of the physical disturbance associated with the Project. More specifically, bank stabilization improvements (e.g., armoring) to the northern bank of the Mission Zanja Flood Control Channel from MP 3.5 to MP 4.5 would not be implemented in the vicinity of previously documented bank failures along the Mission Zanja Flood Control Channel. It is possible that portions of the railroad corridor, specifically track and station improvements, that parallel Mission Zanja Flood Control Channel could be susceptible to instability without additional slope stabilization measures. Under Alternative 3, track improvements would be setback a sufficient distance from the northern embankment of the Mission Zanja Flood Control Channel to provide sufficient distance from the track and edge of the bank. With the integration of proper engineering methods during final Project design, this setback would minimize the potential for landslides to affect track improvements. However, this setback would reduce the developable areas within SANBAG's ROW for this segment of track. This reduction in the available ROW for the proposed infrastructure is considered an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measure GEO-1 is proposed to mitigate this effect.

Direct Effects from Long-Term Operations

As indicated above, bank stabilization improvements (e.g., armoring) to the northern bank of the Mission Zanja Flood Control Channel from MP 3.5 to MP 4.5 would not be implemented under Alternative 3. A landslide event along this section of the railroad corridor could pose a hazard with the overall stability of the proposed rail infrastructure during long-term operations. However, as previously indicated, track improvements would be set back a sufficient distance from the northern bank of the Mission Zanja Flood Control Channel to provide sufficient distance from the edge of the bank. Based on this consideration and with the implementation of standard engineering practices, including Mitigation Measures GEO-1, the potential of landslides to affect future rail operations would be minimized. Without mitigation, this would be an adverse effect under NEPA. Under CEQA, this is considered a significant impact and Mitigation Measure GEO-1 is proposed.

Indirect Effects

Similar to the Preferred Project and Design Options, Alternative 3 would result in no indirect effect related to landslides under NEPA. Under CEQA, no indirect impact would occur.

EFFECT 3.9-3	**Substantial Soil Erosion or Loss of Topsoil.** Project implementation would involve grading and soils movement, which could result in substantial soil erosion or loss of topsoil.

ALTERNATIVE 1 – NO BUILD

Direct Effects from Temporary Construction

Under Alternative 1, the Project would not be implemented and existing conditions along the railroad corridor would remain. Maintenance activities and bridge replacements associated with the No Build Alternative would require the removal of existing vegetation, site grading, and excavation activities, which would expose soils within the railroad corridor to wind and water erosion. This could result in siltation of local surface waters and contribute to increased sedimentation at downstream locations if not properly managed. These effects would be minimized through compliance with the NPDES General Construction Permit and preparation of a SWPPP. Given that compliance with the General Construction Permit would be required and the construction area would be substantially less than that of the Project, maintenance and bridge improvements would result in no adverse effect under NEPA related to erosion. Under CEQA, this impact is considered less than significant.

Direct Effects from Long-Term Operations

Track maintenance for continued freight operations would include the removal of overgrown vegetation and replacement of ballast. The placement of ballast would provide soil protection from precipitation and corresponding runoff. These regularly scheduled maintenance activities would not substantially expose soils to wind and water erosion beyond existing conditions, thus, no adverse effect would occur under NEPA. Under CEQA, this impact would be less than significant.

Indirect Effects

The indirect effect related to post-construction erosion associated with the No Build Alternative is discussed in Section 3.8 under Effect 3.8-5. As described, indirect effects to water quality are not adverse under NEPA. Under CEQA, a less than significant impact would result.

BUILD ALTERNATIVES AND DESIGN OPTIONS 1 AND 3 – TRAIN LAYOVER FACILITY (WATERMAN AVENUE) AND WATERMAN AVENUE RAIL STATION

Direct Effects from Temporary Construction

The Build Alternatives and Design Options 1 and 3 would involve the replacement or reconstruction of four bridges, new stations, and the replacement of the existing track infrastructure (continuous welded rail, wood or concrete ties, and ballast). Construction of these improvements would require the removal of existing vegetation, site grading, and excavation activities, which would expose soils within the railroad corridor to wind and water erosion. This could result in siltation of local surface waters and contribute to increased sedimentation at downstream locations. This is considered an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure HWQ-2 (Prepare and Implement a

SWPPP), as described in Section 3.8 Floodplains, Hydrology, and Water Quality, is proposed to mitigate this effect.

The construction contractor would be required to comply with the NPDES General Construction Permit and prepare and implement a SWPPP for the Project (refer to Section 3.8 Floodplains, Hydrology, and Water Quality for a more detailed discussion). The SWPPP requires the preparation of an erosion control plan which would include appropriate erosion-control BMPs, which would include, but not be limited to, preservation of existing vegetation, where feasible, use of proper grading techniques, providing soil stabilization, sediment control, runoff control, and reestablishment of plant cover on the construction site(s) as soon as possible following construction.

Direct Effects from Long-Term Operations

Once the Project is constructed, there would not be a substantial amount of exposed surfaces, which could be subjected to accelerated soil erosion during operations. The railroad corridor would still include exposed surfaces. However, the placement of ballast and other soil protection materials along with the reestablishment to vegetation or pavement in areas disturbed outside the ROW would provide soil protection from precipitation and corresponding runoff. Once completed, the railroad corridor would be better protected from erosion forces as compared to existing conditions (see Figures 3.8-3 and 3.9-4). No adverse effect would occur under NEPA. Under CEQA, this is considered a less than significant impact.

Indirect Effects

The indirect effect related to post-construction erosion as a result of changes to on- and off-site drainage conditions associated with the Build Alternatives and Design Option 1 is discussed in Section 3.8, Floodplain, Hydrology, and Water Quality under Effect 3.8-6. As described in Section 3.8, the indirect effect of the Project would be adverse under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure HWQ-6 is proposed to mitigate indirect effects to water quality from sedimentation.

Design Option 2 – Use of Existing Train Layover Facilities

Direct Effects from Temporary Construction

Design Option 2 does not require the construction of a new layover facility. Under Design Option 2, the overall area requiring site grading and excavation activities would be less compared to the Build Alternatives and Design Options 1 and 3 because the construction of a new layover facility is not required, thereby resulting in an approximately 8.4 acre reduction in the overall construction area. Compared to the Build Alternatives and Design Options 1 and 3, the construction-related erosion effect would be reduced, but would still result in an adverse effect under NEPA. Under CEQA, a significant impact would occur. Mitigation Measure HWQ-2 is proposed to mitigate this effect.

Direct Effects from Long-Term Operations

Design Option 2 would have a similar effect related to erosion as the Build Alternatives and Design Options 1 and 3 in that post-Project soil conditions would be improved through the control of erosive discharges from adjacent areas and placement of soil protection. No adverse effect would occur under NEPA. Under CEQA, a less than significant impact would occur.

Indirect Effects

The indirect effect related to post-construction erosion as a result of changes to on- and off-site drainage conditions associated with the Build Alternatives and Design Options 1 and 3 is discussed in Section 3.8, Floodplain, Hydrology, and Water Quality under Effect 3.8-6. As described in Section 3.8, the indirect effect of the Project would be adverse under NEPA. Under CEQA, this impact is considered significant. Mitigation Measure HWQ-6 is proposed to mitigate this effect.

EFFECT 3.9-4	**Unstable Geologic Conditions.** The Project is located on a geologic unit or soil that is unstable, or that would become unstable and would result in settlement, lateral spreading, liquefaction, or soil collapse.

ALTERNATIVE 1 – NO BUILD

Direct Effects from Temporary Construction

Under Alternative 1, the Project would not be implemented and existing conditions along the railroad corridor would remain. The young alluvium that underlies the railroad corridor is susceptible to soil collapse, especially at locations where additional loadings would occur such as the placement of new fill as subgrade or ballast, or new structures such as bridges. Maintenance improvements may result in additional loadings resulting in potential soil collapse. Because these improvements would be required to follow standard engineering practices (e.g. AREMA) and are representative of the environmental baseline, no adverse effect would occur under NEPA. Under CEQA, this is considered a less than significant impact.

Direct Effects from Long-Term Operations

Under the No Build Alternative, SANBAG would still be required to perform regularly scheduled maintenance of the existing track and corresponding improvements at bridges to facilitate continued freight service. These improvements would require compliance with CBC and standard engineering practices to ensure that the existing rail corridor would not be adversely affected by soil collapse. No adverse effect would occur under NEPA. Under CEQA, this impact is considered less than significant.

Indirect Effects

Under NEPA, no indirect effect related to soil collapse would occur as maintenance activities would require compliance with CBC and standard engineering practices. Under CEQA, no indirect impact would occur.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

In general, young alluvium underlies the railroad corridor. The alluvial soils are composed primarily of sand and gravel with some local finer and coarser deposits. Based on the Preliminary Geotechnical Evaluation prepared for the Project (Appendix K), the near-surface soils (within the upper five feet) along the railroad corridor is potentially susceptible to soil collapse at locations where additional loadings would occur as a result of the placement of new fill as subgrade or ballast, or new structures. The hazard for hydroconsolidation along the railroad corridor is considered moderate to high. This hazard is considered an adverse effect under NEPA. Under CEQA, this is considered a significant impact and mitigation is required. Mitigation Measure GEO-1 is proposed to mitigate this geologic hazard.

In general, poorly consolidated alluvium is especially susceptible to settlement. Because poorly consolidated alluvium underlies the railroad corridor, there is a potential for seismically induced settlement to occur along the railroad corridor. Therefore, the Build Alternatives and Design Options would result in an adverse effect under NEPA. Under CEQA, this impact would be significant. Mitigation Measure GEO-1 is proposed to mitigate hazards related to settlement.

With regards to unstable soil, the fill slopes located at the I-10 Freeway crossings were constructed by Caltrans for the freeway embankments and associated on- and off-ramps. These slopes are expected to be stable. If the Project requires new cut and fill slopes along the railroad corridor, these engineered slopes and/or retaining structures are required to comply with Chapter 18 of the CBC, which requires the design to include an adequate factor of safety to minimize the potential for instability. Therefore, compliance with applicable regulations and codes would minimize the potential for unstable engineered slopes. No adverse effect would occur under NEPA. Under CEQA, this is considered a less than significant impact.

Direct Effects from Long-Term Operations

As indicated above, the Build Alternatives and Design Options may be susceptible to collapsible soils, hydroconsolidation, lateral spreading, and liquefaction. The Build Alternatives and Design Options would be constructed with standard engineering practices in the design and construction of the Project. Therefore, once constructed, the likelihood that the Build Alternatives and Design Options would be affected by collapsible soils, hydroconsolidation, lateral spreading, and liquefaction is low. No adverse effect would occur under NEPA. Under CEQA, this is considered a less than significant impact.

Indirect Effects

A phenomenon associated with liquefaction is lateral spreading. As previously indicated in Effect 4.9-1, the Mission Zanja Flood Control Channel incises the local strata and could provide an unconfined zone along the railroad corridor for lateral spreading to occur. The potential indirect effect related to liquefaction and lateral spreading is considered adverse under NEPA. Under CEQA, this is considered a significant impact and mitigation is required. Mitigation Measure GEO-1 is proposed to mitigate this geologic hazard.

EFFECT 3.9-5	**Exposure to Potential Hazards from Problematic Soils.** The Project would expose infrastructure and structures to corrosive soils.

ALTERNATIVE 1 — NO BUILD

Direct Effects from Temporary Construction

Under Alternative 1, the Project would not occur and existing conditions along the railroad corridor would remain. As indicated above in Table 3.9-3, the soils along the railroad corridor are classified as moderately to highly corrosive to steel. Corrosive soil materials could lead to deterioration of existing steel infrastructure, damage underground utilities, and weaken railroad bridge structures. Maintenance activities and bridge replacements would comply with standard engineering practices to ensure that these facilities would be properly engineered to withstand hazards related to corrosive soils. No adverse effect would occur under NEPA. Under CEQA, this impact is considered less than significant.

Direct Effects from Long-Term Operations

Maintenance activities would require compliance with standard engineering practices to ensure that the existing track alignment and bridges are not adversely affected by corrosive soils. No adverse effect would occur under NEPA. Under CEQA, this impact is considered less than significant.

Indirect Effects

Under NEPA, no indirect effect related to corrosive soils would occur. Under CEQA, no indirect impact would occur.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

As shown in Table 3.9-3, soils along the railroad corridor are classified as moderately to highly corrosive to steel. Corrosive soil materials could lead to deterioration of steel infrastructure, damage underground utilities including pipelines and cables, and can weaken railroad bridge structures. Project improvements and proposed structures could be damaged by these types of soils. This hazard is considered an adverse effect under NEPA. Under CEQA, this impact is considered significant. Mitigation Measure GEO-1 is proposed to mitigate the hazard of corrosive soils.

Direct Effects from Long-Term Operations

As indicated above, the railroad corridor is underlain with soils classified as moderately to highly corrosive to steel. All Build Alternatives and Design Options would be constructed in accordance with standard engineering practices in the design and construction of railroad and bridge infrastructure. Therefore, once constructed, the likelihood that the Build Alternatives and Design Options would be affected by corrosive soils is low. No adverse effect would occur under NEPA. Under CEQA, this impact is considered less than significant.

Indirect Effects

Under NEPA, no indirect effect would occur as a result of corrosive soil materials. Under CEQA, no indirect impact would occur.

3.9.4 Mitigation Measures

SANBAG proposes the following mitigation measures to avoid, minimize, and/or mitigate for adverse effects related to geology, soils, and seismicity for the Build Alternatives and Design Options.

GEO-1 **Prepare Final Geotechnical Report for the Project and Implement Recommended Measures.** A Final Geotechnical Report shall be prepared to verify conditions identified in the Preliminary Geotechnical Evaluation prepared for the Project and to support the refinement of the Project's final design. Facility design for all Project components along the alignment shall comply with the site-specific design recommendations as provided by a licensed geotechnical or civil engineer to be retained by SANBAG. The final geotechnical and/or civil engineering report shall address and make recommendations on the following:

- Site preparation;
- Soil bearing capacity;
- Appropriate sources and types of fill;
- Liquefaction;

- Lateral spreading;
- Settlement;
- Landslides (with emphasis on improvements that border the Mission Zanja Flood Control Channel);
- Hydroconsolidation;
- Compressible/Collapsible soils;
- Corrosive soils;
- Structural foundations; and
- Grading practices.

In addition to the recommendations for the conditions listed above, the geotechnical report shall include subsurface testing of soil and groundwater conditions, and shall determine appropriate foundation designs that are consistent with the latest version of the CBC, as applicable at the time building and grading permits are pursued. All recommendations contained in the final geotechnical engineering report shall be implemented by SANBAG.

The following mitigation measure as proposed in other sections of Chapter 3 of this EIS/EIR would minimize adverse direct and indirect effects related to erosion and sedimentation.

- HWQ-2. Prepare and Implement a SWPPP.

3.9.4.1 Effects after Mitigation

With implementation of Mitigation Measures GEO-1 and HWQ-2, no adverse effect related to geology, soils, and seismicity would result under NEPA. Under CEQA, with the implementation of the proposed mitigation, impacts would be reduced to a less than significant level.

3.10 HAZARDOUS WASTE AND MATERIALS

This section provides an evaluation of the Build Alternatives and Design Options in relation to the existing hazards and hazardous materials within the Study Area and describes applicable Federal, State, and local regulations. This section also considers hazards as they relate to wildfire, proximity to airports, and interference with adopted emergency response plans. Information contained and considered in this section is summarized from a combination of sources including the Phase I Environmental Site Assessment (2010) (Appendix L1) and Phase I Environmental Site Assessment Update (2011) prepared by HDR Engineering, Inc. (Appendix L2) and information produced by local and State agencies.

3.10.1 Regulatory Framework

Table 3.10-1 identifies and summarizes federal, state, and local laws, regulations, and plans that are applicable to the Project.

3.10.2 Affected Environment

3.10.2.1 Terminology

For purposes of this section, the term "hazardous materials" refers to both hazardous substances and hazardous wastes. A "hazardous material" is defined by Federal regulations as "a substance or material that … is capable of posing an unreasonable risk to health, safety, and property when transported in commerce" (49 Code of Federal Regulations [CFR] 171.8). California Health and Safety Code Section 25501 defines a hazardous material as follows:

> Hazardous material means any material that, because of its quantity, concentration, or physical, or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

Hazardous wastes are defined in California Health and Safety Code Section 25141(b) as wastes that:

> …because of their quantity, concentration, or physical, chemical, or infectious characteristics, [may either] cause, or significantly contribute to an increase in mortality or an increase in serious illness [, or] pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Soil that is excavated from a site containing hazardous materials is a hazardous waste if it exceeds specific criteria listed in the California Code of Regulations (CCR) Title 22. Cleanup requirements are determined on a case-by-case basis by the agency with lead jurisdiction over the project. Under CCR Title 22, the term "hazardous substance" refers to both hazardous materials and hazardous wastes, both of which are classified according to four properties: (1) toxicity; (2) ignitability; (3) corrosiveness; and (4) reactivity (CCR Title 22, Chapter 11, Article 3).

Table 3.10-1. Pertinent Laws, Regulations, and Plans for Hazardous Waste and Materials

Law, Regulation, or Plan	Summary and Project Nexus
Federal	
Resource Conservation and Recovery Act (RCRA)	Under RCRA, the U.S. Environmental Protection Agency (EPA) has the authority to control the generation, transportation, treatment, storage, and disposal of hazardous waste by large-quantity generators (1,000 kilograms/month or more). Under the RCRA regulations, hazardous wastes must be tracked from the time of generation to the point of disposal. Additionally, all hazardous waste transporters are required to be permitted and must have an identification number. In California, the EPA has delegated RCRA enforcement to California's Environmental Protection Agency's (CalEPA), Department of Toxic Substances Control (DTSC).
Occupational Safety and Health Act of 1970	The Occupational Safety and Health Act, which is implemented by the Federal Occupational Safety and Health Administration (OSHA), contains requirements, as set forth in Title 29 of the Code of Federal Regulations (CFR) Section 1910, that are designed to promote worker safety, worker training, and a worker's right-to-know. OSHA requirements would be in effect during construction and operation of the Project to ensure the safety of workers. Title 49 of the CFR requires that every employee who transports hazardous materials receive training to recognize and identify hazardous materials and become familiar with hazardous materials requirements.
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	CERCLA provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA establishes requirements concerning closed and abandoned hazardous waste sites; provides for liability of persons responsible for releases of hazardous waste at these sites; and establishes a trust fund to provide for cleanup when no responsible party can be identified.
Superfund Amendments and Reauthorization Act	CERCLA enlarged and reauthorized the Superfund Amendments and Reauthorization Act of 1986 (SARA, PL 99-499). EPA compiles a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories, known as the National Priorities List (NPL).
Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)	The objective of the FIFRA is to provide control of pesticide distribution, sale, and use. All pesticides used in the U.S. must be registered (licensed) by EPA. Registration assures that pesticides will be properly labeled and that, if used in accordance with specifications, they will not cause unreasonable harm to the environment.
Emergency Planning and Community Right-To-Know Act	This law is designed to help local communities protect public health, safety, and the environment from chemical hazards. The State Emergency Response Commissions are required to divide their states into Emergency Planning Districts and to name a Local Emergency Planning Committee for each district. Fire fighters, health officials, government and media representatives, community groups, industrial facilities, and emergency managers help make sure that all necessary elements of the planning process are represented (EPA 2012).
National Oil and Hazardous Substances Pollution Contingency Plan (NCP)	The NCP is the Federal plan for responding to oil spills and hazardous substances releases. The NCP establishes the National Response Team and its roles in the National Response System, which include planning and coordinating response to major discharges of oil or hazardous waste, providing guidance to Regional Response Teams, coordinating a national program of preparedness planning and response, and facilitating research to improve response activities.

Table 3.10-1. Pertinent Laws, Regulations, and Plans for Hazardous Waste and Materials

Law, Regulation, or Plan	Summary and Project Nexus
Hazardous Materials Transport	The U.S. Department of Transportation (USDOT), along with the California Highway Patrol (CHP) and California Department of Transportation (Caltrans), regulates transportation of hazardous materials between states. Together, these agencies determine container types used and license hazardous-waste haulers for transportation of hazardous waste on public roads. The USDOT Federal Railroad Administration (FRA) enforces the Hazardous Materials Regulations, which include requirements that railroads and other transporters of hazardous materials, as well as shippers, have and adhere to security plans and also train their employees involved in offering, accepting, or transporting hazmat on both safety and security matters.
Clean Air Act (CAA)	The Federal CAA was enacted in 1970, with amendments made in 1990. The CAA required EPA to establish primary and secondary national ambient air quality standards. Section 112 of the CAA defines hazardous air pollutants and sets threshold limits. Additional information about CAA is contained in Section 3.5, Air Quality and Climate Change.
State	
California Hazardous Waste Control Law (HWCL)	The HWCL implements RCRA and specifies that generators have the primary duty to determine whether their wastes are hazardous and to ensure their proper management. The HWCL also establishes criteria for the reuse and recycling of hazardous wastes used or reused as raw materials. The HWCL exceeds federal requirements by mandating source reduction planning and a much broader requirement for permitting facilities that treat hazardous waste along with regulating a number of types of wastes and waste management activities that are not covered by federal law with RCRA.
Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program)	The Unified Program required the administrative consolidation of six hazardous materials and waste programs (Program Elements) under one agency, a Certified Unified Program Agency (CUPA). The Program Elements consolidated under the Unified Programs are: Tiered Permitting, Aboveground Petroleum Storage Tank Spill Prevention Control and Countermeasure Plan (SPCC), Community-Right-To-Know, California Accidental Release Prevention Program (CalARP), underground storage tank (UST), and Uniform Fire Code Plans and Inventory Requirements. The Unified Program is intended to provide relief to businesses complying with the overlapping and sometimes conflicting requirements of formerly independently managed programs.
Hazardous Materials Release Response Plans and Inventory Act (Business Plan Act)	The Business Plan Act requires businesses using hazardous materials to prepare a plan that describes their facilities, inventories, emergency response plans, and training programs. A business plan includes an inventory of hazardous materials handled, facility floor plans showing where hazardous materials are stored, an emergency response plan, and provisions for employee training in safety and emergency response procedures (California Health and Safety Code, Division 20, Chapter 6.95, Article 1). Per the requirements of this act, the preparation of a Hazardous Materials Business Plan (HMBP) would be required for the safe storage, containment, and disposal of chemicals and hazardous materials related to Project operations, including waste materials.

Table 3.10-1. Pertinent Laws, Regulations, and Plans for Hazardous Waste and Materials

Law, Regulation, or Plan	Summary and Project Nexus
California Public Utilities Commission (CPUC) Guidelines for the Federal Aid At-Grade Highway-Rail Crossing Program (§130 Program)	The purpose of Section 130 Program is to reduce the number, severity and potential of hazards to motorists, bicyclists, and pedestrians at crossings. Eligible grade crossings are taken through a prioritization process in which they are ranked by hazard potential, put onto a final priority list, and the associated projects are contracted by Caltrans for abandonment, closure, or updating (CPUC 2006).
Emergency Response to Hazardous Materials Incidents	California has developed an emergency response plan to coordinate emergency services provided by Federal, state, and local governments and private agencies. Response to hazardous-material incidents is one part of this plan. The plan is managed by the Governor's Office of Emergency Services, which coordinates the responses of other agencies, including Cal-EPA, California Highway Patrol (CHP), California Department of Fish and Game, Santa Ana Regional Water Quality Control Board (RWQCB), and the Cities of San Bernardino and Redlands Fire Departments.
Worker Safety Requirements	California OSHA (Cal-OSHA) assumes primary responsibility for developing and enforcing workplace safety regulations including requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and preparation of emergency action and fire prevention plans. Cal-OSHA enforces hazard communication program regulations that contain training and information requirements, including procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and preparation of health and safety plans to protect workers and employees at hazardous-waste sites.
Asbestos Abatement	The California Air Resources Board (CARB) Asbestos Program oversees implementation of and compliance with the National Emission Standard for Hazardous Air Pollutants (NESHAP) for asbestos, and investigates all related complaints, as specified by the California Health and Safety Code Section 39658(b)(1). The South Coast Metropolitan Air Quality Management District (SCAQMD) enforces Rule 1403, Asbestos Emissions from Demolition/Renovation Activities, which regulates asbestos abatement in commercial structures, and enforces NESHAP for asbestos.
Local	
County of San Bernardino	Based on the County's General Plan Safety Element, Interstates 10, 215, and 66 are three highways in the vicinity of the Project that are designated as evacuation routes. In addition, Caltrans has identified a number of "Potential Evacuation Routes" in the Valley Region and those that cross the Study Area are listed below: • Waterman Avenue from Barton Road to Mill Street; • Mill Street from Waterman Avenue to E Street; • Hospitality Lane from Waterman Avenue to Tippecanoe Avenue; • Coulston Street from Tippecanoe Avenue to Mountain View Avenue; • Lugonia Avenue from Mountain View Avenue to Orange Street; and • Redlands Boulevard from Waterman Avenue to Orange Street.

Table 3.10-1. Pertinent Laws, Regulations, and Plans for Hazardous Waste and Materials

Law, Regulation, or Plan	Summary and Project Nexus
San Bernardino International Airport Master Plan and the Comprehensive Land Use Plan (ACLUP)	According to the City of San Bernardino General Plan (2005), the ACLUP for the San Bernardino International Airport is in the process of being prepared and the airport is operating under an Interim Airport Operating Plan. Consequently, precise safety zones for the airport are not currently available beyond that established in the State Aeronautics Act. The approximate western half of the Study Area (from MP 1.5 to MP 6.3) is located within two miles of this airport and is subject to applicable provisions of the ACLUP.
East Valley Corridor Specific Plan (EVCSP)	The following are applicable goals and policies pertaining to hazards as identified in the EVCSP: • EV4.0225(b)(5). Every use shall be so operated that there is no emission of toxic, noxious or corrosive fumes of gases. • EV4.0225(b)(7). Every use shall be consistent with the provisions of the San Bernardino County Hazardous Waste Management Plan.
City of San Bernardino General Plan (2005)	The purpose of the Safety Element is the management and safety of the public from documented hazardous material sites, the transport and storage of hazardous waste and materials, and protection from wildfires. The Project's consistency with applicable General Plan Policies 10.11.1, 10.11.2, 10.11.3, 10.12.1, 10.12.2, 10.12.3, 10.12.5, and 10.12.6 are outlined in Appendix D1.
City of Redlands General Plan	The City of Redlands General Plan Health and Safety Element requires that the City develop an Emergency Response Plan that includes procedures for responding to hazardous waste and material releases. The Emergency Response Plan identifies specific evacuation routes within the Planning Area. The Project's consistency with applicable General Plan Policies 8.30a, 8.30b, 8.80a, 8.90a, and 8.90c are outlined in Appendix D1.

A few of the specific terms related to cleanup activities are defined below:

- Remedial Investigation – An in-depth study designed to determine the nature and extent of contamination at a site (e.g., what hazardous substances are present, how much there is, where it is).
- Baseline Risk Assessment – A study performed to provide risk managers with an understanding of the actual and potential risks to human health and the environment posed by the site, and any uncertainties associated with the assessment.
- Feasibility Study – An in-depth study designed to evaluate the effectiveness and costs of various remedial alternatives for the conditions defined by the Remedial Investigation and Baseline Risk Assessment.
- Remedial Action Plan – A plan, approved by the DTSC, RWQCB, or local oversight agency that outlines a specific program leading to the remediation of a contaminated site. Once the draft Remedial Action Plan is prepared, a public meeting is held and comments from the public are solicited for a period of no less than 30 days. After the public comment period has ended and public comments have been responded to in writing, DTSC, RWQCB, or local oversight agency will generally approve the final

remedy for the site (the final Remedial Action Plan). This plan is generally used for large, long-term projects.

- Removal Action Workplan – A plan that is similar to the Remedial Action Plan described above, but that is generally used for small, short-term projects.
- Certificate of Completion – A DTSC, RWQCB, or local oversight agency document that confirms that the Remedial Action Plan has been completed.
- No Further Action – The decision by DTSC, RWQCB, or local oversight agency that remedial actions are not necessary because environmental contamination is not present at a site.

3.10.2.2 Site and Vicinity Characteristics

The railroad tracks have been present since at least the late 1890s. The configuration of the tracks has not changed considerably over the years, with the exception of the removal of spurs previously located along the track. The easternmost and westernmost portions of the Study Area have been developed since at least the 1930s, with commercial/industrial uses located near the center of the railroad corridor and expanding in the 1960s.

Many of the structures located within the Study Area are first generation, and many at the westernmost and easternmost segments of the Study Area have been present since at least 1930. Because of the variation in development, the structures located within the Study Area vary considerably depending on use. The facilities range in size, age, construction and operation. Both industrial and commercial land uses are the most likely to involve the use, storage, and/or transport of hazardous materials. Industrial facilities include machine shops, numerous auto repair facilities, and various manufacturing facilities. Both occupied and vacant commercial warehouses are located in the Study Area and generally include large, paved parking areas and loading bays. These uses may include above and/or below ground storage tanks that may contain heating oil, motor oil, diesel fuel, gasoline, and/or other waste oils. Fertilizers and pesticides may also be used at these facilities for landscaping purposes and pest control. A detailed chronology of site development within the Study Area based on a review of historical aerial photographs is provided in Appendix L2.

Phase I Environmental Site Assessment

A Phase I documents the evaluation of a project area for indications of “recognized environmental conditions” (REC). Environmental Data Resources, Inc. (EDR) was contracted to complete a database search of federal, state, and tribal environmental records for the Study Area and adjacent areas. This expanded area was used to factor in sites located nearby that may affect the railroad corridor (by way of contamination migration), so they are accounted for in the analysis. The expanded area was limited to one-quarter and one-eighth-mile, depending on the database. In an effort to reduce the number of sites that would likely <u>not</u> affect the Study Area, a number of databases were limited to a one-eighth-mile buffer. Databases that include sites with a greater likelihood for large-scale contamination were searched to a distance of one-quarter-mile. Databases searched to one-quarter-mile from the Study Area included the CERCLIS database, the leaking underground storage tank (LUST) databases, the EnviroStor database and the Deed Restriction database. The database search was produced for the Study Area by EDR on October 28, 2011. A REC is defined by American Society for Testing and Materials (ASTM) Practice E 1527-05 as:

> "The presence or likely presence of any hazardous substances or petroleum products on a project site 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 project site or into the ground, groundwater, or surface water of the project site. The term includes hazardous substances or petroleum products even under conditions of storage and use in compliance with local and state laws and regulations. In the event that a site's regulatory issue has been resolved by the regulatory agency with jurisdiction, that site may be classified as a "Historic REC". This classification means that although the issue has been resolved to the satisfaction of the regulatory agency, a possibility exists that residual contamination may be present at the site."

A Phase I was completed in September 2010 (Appendix L1), for the Redlands Corridor Alternatives Analysis (RCAA). The RCAA incorporated a larger project area, of which the Study Area was included. The 2010 Phase I identified sites with RECs, for the Study Area that may adversely affect construction or Study Area right-of-way acquisition. According to ASTM standards (E 1527-05), the shelf life for a Phase I is 180 days and once exceeded, requires the completion of an update. A subsequent Phase I was completed in February 2012 (Appendix L2). The goal of the Updated Phase I was to provide updated information for the entire Study Area, which includes sites previously identified and investigated during the original Phase I process. New sites were also identified during the Phase I Update investigative process.

The Phase I update included the following:

- ***Environmental Records Review***

  The results of the database search were similar to those documented in the 2010 Phase I report, with minor changes in the regulatory status of some sites (see Table 3.10-2). Figures 3.10-1A and 3.10-1B illustrate the geographic location of each of the sites listed in Table 3.10-2. The most notable difference is the inclusion of numerous UST listings identified in the Phase I Update, which were not included in the original 2010 Phase I. The reason for the exclusion of these UST listings was a result of the previous report's focus, which centered mainly on large-scale contamination sites, and the areas of greatest ground disturbance within the Project (station locations and bridge improvements/construction locations). It should be noted that the original Phase I for the RCAA focused on nine potential station locations, with less emphasis on the main rail runs between the proposed stations. Therefore, the original Phase I did not include many of the sites identified in the Phase I Update. A complete list of the sites identified in the environmental records review is provided in Appendix L2.

- ***Data Gap Analysis***

  The ASTM E 1527-05 standard requires a listing of "data gaps" encountered during the investigative process that may affect the validity of the conclusions drawn by the environmental professional. The ASTM E 1527-05 standard also requires that the environmental professional estimate the relative importance of the data gaps. For this Project, the following items may constitute a data gap as defined by ASTM:

  - Lack of site-specific interviews
  - Lack of adequate regulatory files available for review
  - Inconsistency among California UST databases

Table 3.10-2. RECS with High or Indeterminate Risk Rankings

HDR Map Code[(1)]	Site Name	Address	Nearest MP	Site Operations Relative to Hazmat Issues[(2)], Regulatory Listing of Concern[(3)]	Risk Ranking L/I/H[(4)]	Project Component(s) Potentially Affected	Figure Reference
C-11	U-Haul	110 S. D Street	1.5	U-Haul trucking facility. REC. Two closed LUST cases onsite.	H	Track Improvement	Figure 3.10-1A
D	Hanford Foundry	119 S. Arrowhead Avenue	1.5	Former foundry. REC. Active CERCLIS site. Site contains deed restrictions; prohibited uses and soil management requirements.	H	Track Improvement North of a potential staging area	Figure 3.10-1A
E-11	City of San Bernardino Central Garage	182 S. Sierra Way	1.5	City maintenance yard. HREC. Closed LUST and HIST CORTESE cases onsite.	H	Track Improvement	Figure 3.10-1A
L-11	Sirion Printers	730 S. Lugo Avenue	2.5	Printing Company. HREC. Closed LUST case and HIST CORTESE case onsite. One gasoline UST listed in HIST UST database.	H	No Project Improvements but hits the Project Study Area	Figure 3.10-1A
M-11	Intech Equipment and Supply	731 S. Lugo Avenue	2.5	Equipment Company. REC. Two gasoline USTs listed in the CA FID.	I	Track Improvement	Figure 3.10-1A
O-11	Hansen Mechanical, Inc.	180 E. Central	2.5	Unknown business. REC. One diesel and one gasoline UST	I	Track Improvement	Figure 3.10-1A
Q	HazMat Trans, Inc.	230 E. Dumas Street	3	Trucking facility. REC. Hazardous Waste Transporter (HWT) listing.	I	Track Improvement	Figure 3.10-1A
Y	Ford Wholesale Company	1470 S. Tippecanoe Avenue	4.5	Roofing supplier. REC. Multiple USTs listed in CA FID, SWEEPS, and UST databases (unknown contents).	I	Tippecanoe Station and potential staging area	Figure 3.10-1A
Z	S&G Roofing Supply	1444 S. Tippecanoe Avenue	4.5	Roofing supplier, HREC. Closed HIST CORTESE, and LUST case onsite. UST listed in CA FID and SWEEPS UST databases (unknown contents).	H	Tippecanoe Station and potential staging area	Figure 3.10-1A
AC-11	United Parcel Service	1457 E. Victoria Avenue	4.5	Sorting facility. REC. USTs identified in county permit database.	H	Track Improvement	Figure 3.10-1A

Table 3.10-2. RECS with High or Indeterminate Risk Rankings

HDR Map Code(1)	Site Name	Address	Nearest MP	Site Operations Relative to Hazmat Issues(2), Regulatory Listing of Concern(3)	Risk Ranking L/I/H(4)	Project Component(s) Potentially Affected	Figure Reference
AD-11	Todd's Market	1605 E. Victoria Avenue	5	Convenience store. REC. Two gasoline USTs listed in the SWEEPS UST database.	I	Track Improvement	Figure 3.10-1A
AE	Shell Service Station	941 California Street	6.5	Current service station. REC. Closed LUST case onsite.	H	Track Improvement	Figure 3.10-1B
AF-11	Redlands Pavilion Cleaners	2094 W. Redlands Boulevard	6.5	Drycleaner. REC. Listed in the DRYCLEANERS database.	H	Track Improvement	Figure 3.10-1B
AG	ARCO Service Station	2098 W. Redlands Boulevard	6.5	Current service station. REC. Listed in UST database.	H	Track Improvement	Figure 3.10-1B
AK-11	Circle Mobil	875 Alabama Street	7	Historic service station. HREC. Numerous fuel and waste oil USTs listed in CA FID, SWEEPS, HIST UST databases.	H	Track Improvement	Figure 3.10-1B
AM	Chevron Service Station	1580 W. Redlands Boulevard	7.5	Current service station. REC. Closed LUST case onsite	H	Track Improvement	Figure 3.10-1B
AN	Redlands Plaza West	1323 W. Colton Avenue	8	Rental car facility. REC. Two gas and one diesel USTs listed in HIST UST database.	I	Track Improvement	Figure 3.10-1B
AQ-11	Redlands Florist	619 Tennessee Street	8	Florist. REC. Two gasoline tanks listed in the HIST UST database	I	Track Improvement	Figure 3.10-1B
AR-11	Redlands Maintenance Facility	501 Tennessee Street	8	Former maintenance facility. REC. Three gas USTs, one diesel UST, one waste oil UST and three USTs with unknown contents were listed in the HIST UST database.	H	Track Improvement	Figure 3.10-1B
AS-11	Texaco	1195 W. Redlands Boulevard	8	Current service station. REC. Three gasoline USTs listed in UST, HIST and SWEEPS UST databases.	H	Track Improvement	Figure 3.10-1B
AU	Mobil	1005 W. Redlands Boulevard	8.5	Historic service station. REC. Multiple USTs listed in CA FID, SWEEPS, HIST UST	H	Track Improvement	Figure 3.10-1B

Table 3.10-2. RECS with High or Indeterminate Risk Rankings

HDR Map Code(1)	Site Name	Address	Nearest MP	Site Operations Relative to Hazmat Issues(2), Regulatory Listing of Concern(3)	Risk Ranking L/I/H(4)	Project Component(s) Potentially Affected	Figure Reference
AV-11	Redlands Oil Co.	395 Texas Street	8.5	Former bulk fuel terminal. REC. Open SLIC case listed for the facility.	H	Track Improvement	Figure 3.10-1B
AX-11	Former Oil Companies	820-420 Oriental Avenue	8.5	Former bulk terminals present as early as 1910s. REC.	H	Track Improvement	Figure 3.10-1B
AY-11	Rondor Service Center	440 Oriental Avenue	8.5	Formerly part of oil company property. REC. One waste oil tank listed in CA FID, SWEEPS and HIST UST databases.	I	Track Improvement	Figure 3.10-1B
AZ-11	Fred Ford Co	420 Oriental Avenue	8.5	Unknown operations. Formerly part of oil company property. REC. One diesel tank listed in CA FID, SWEEPS and HIST UST databases. Formerly part of oil company property.	I	Track Improvement	Figure 3.10-1B
BD	Grigsby Bros. Building	21 W. Stuart Avenue	9	Former insecticide batch plant. REC. Two USTs (unknown contents) listed in HIST UST database.	H	Track Improvement and Downtown Redlands Station	Figure 3.10-1B
BE	Citrus Valley Towing	418 Orange Street	9	Former towing repair facility. REC. Three gasoline and two waste oil USTs listed in HIST UST database.	H	Track Improvement	Figure 3.10-1B
BH-11	Redlands Foothills Grove	304 9th Street	9.5	REC. One gasoline and one diesel UST listed in CA FID, HIST and SWEEPS UST databases.	I	Track Improvement	Figure 3.10-1B

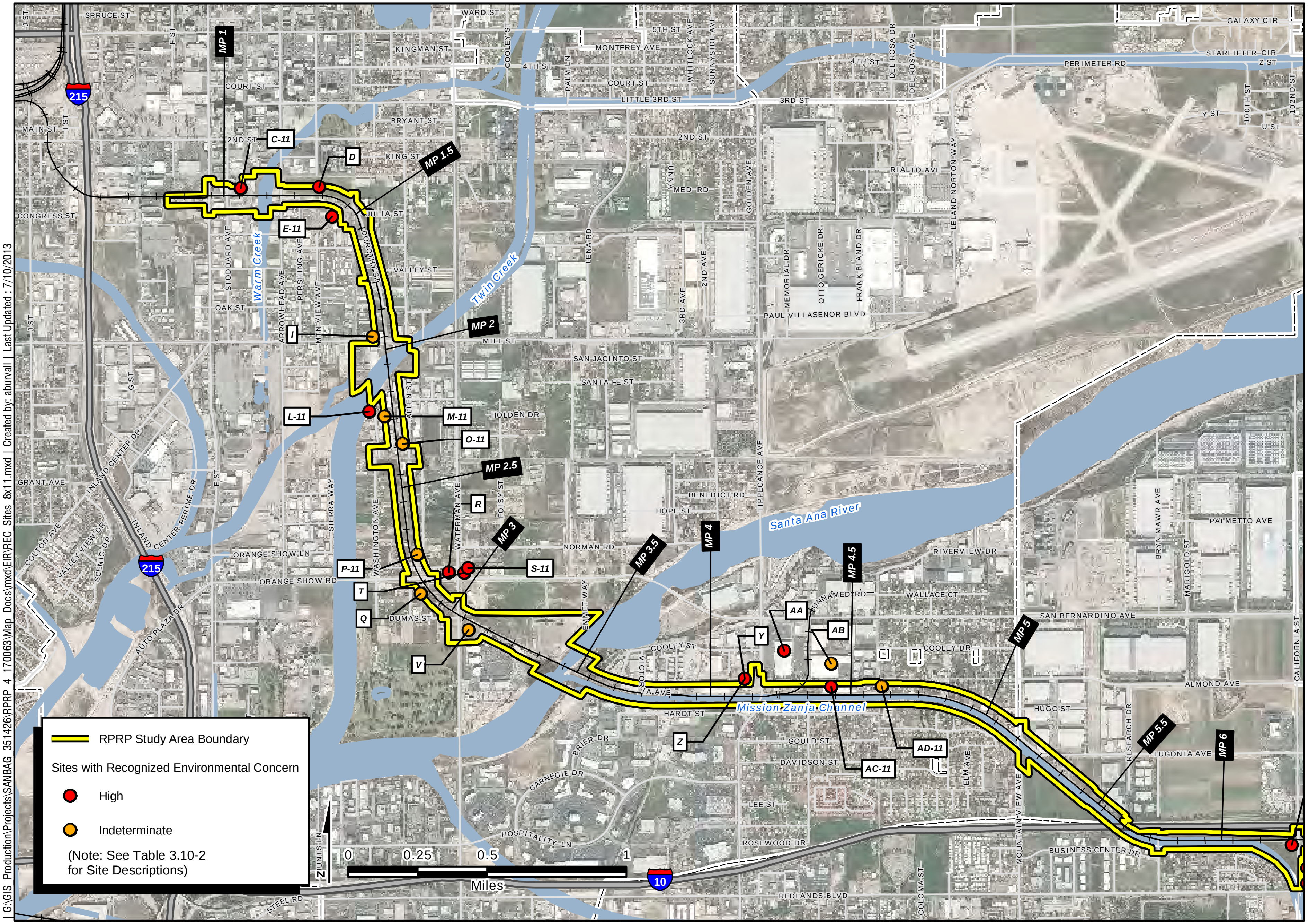
Source: Appendix L2

(1) Corresponds to location of site as depicted in Figure 3.10-1A and Figure 3.10-1B.

(2) Current = active station/facility, Former = building still present but under different operations, Historic = building no longer present.

(3) LUST=Leaking Underground Storage Tank, UST= Underground Storage Tank, PADS= PCB Activity Database, HWP= Hazardous Waste Permitted-facility, SLIC = Spills, Leaks, Investigations and Cleanup. Complete list of acronyms identified in EDR report, see Appendix L2.

(4) Risk of potential effects onsite, Indeterminate or High.



Location of Sites of Recognized Environmental Concern - Western Study Area

Figure 3.10-1 A

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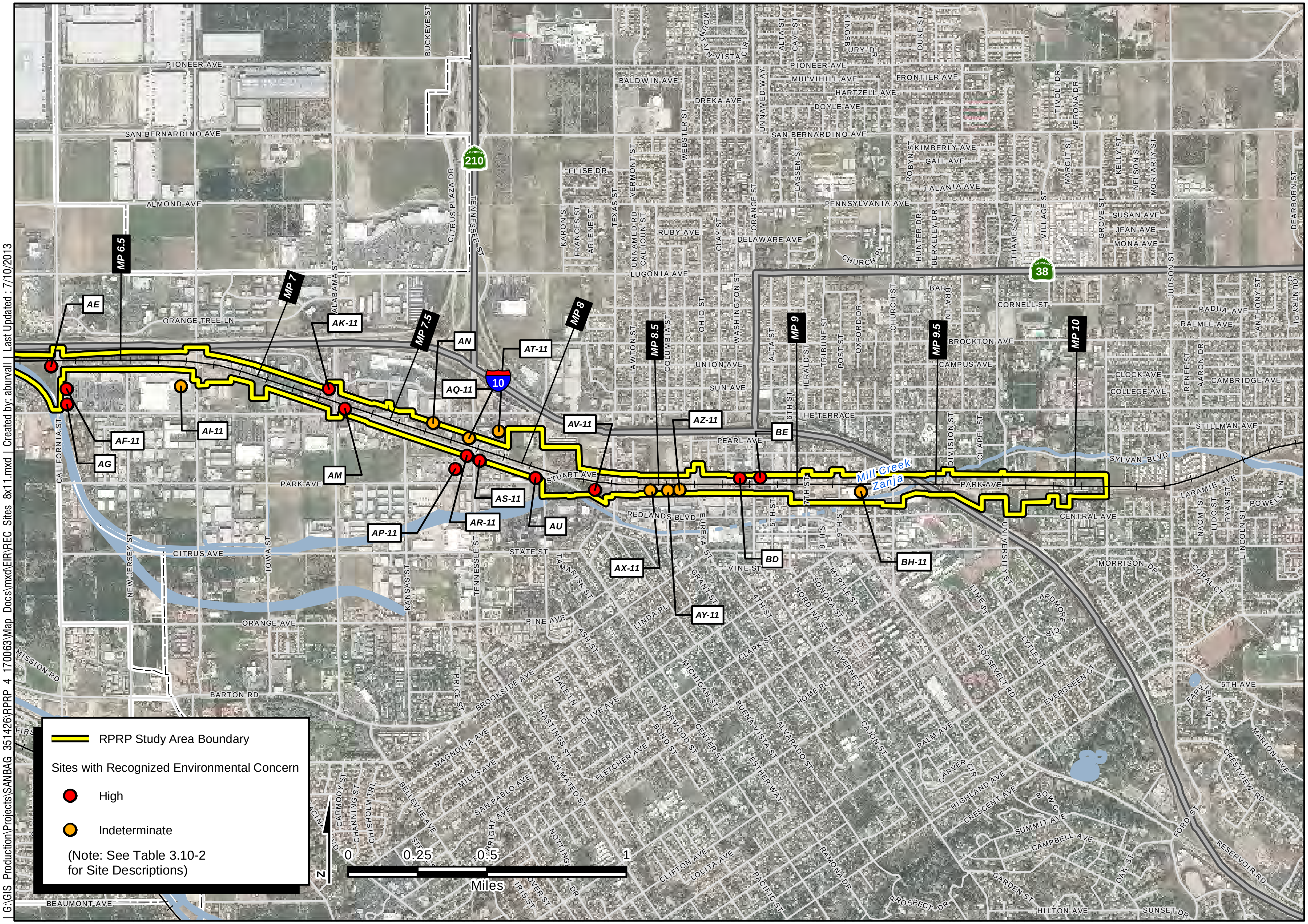

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Location of Sites of Recognized Environmental Concern - Eastern Study Area

Figure 3.10-1 B

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The absence of site-specific interviews, adequate regulatory files available for review, and inconsistency among UST databases may prove to be considerable data gaps, particularly for the properties located within the proposed ROW. The findings of the interviews and regulatory file review can serve to confirm the presence/status of the tanks, or other hazardous materials concerns which may alter the ranking or REC classification of a site.

- ***Historical Research***

  The objective of reviewing historical use information is to develop a history of previous land uses in the vicinity of the Study Area and to assess these uses for potential hazardous materials effects that may affect the Project.

  - *Sanborn Fire Maps* - Fire insurance maps are produced by private fire insurance companies to indicate uses of the Study Area on specific dates. Fire insurance maps were requested from EDR, the copyright holder for the Sanborn map collection. Sanborn maps for the years 1892, 1900 and 1915 were reviewed for the Study Area.
  - *Historical Aerial Photographs* - Historical aerial photographs are beneficial because it allows for the review of features of properties near the Study Area over a long period of time. Historical aerial photographs were reviewed for the years 1930, 1938, 1953, 1956, 1977, 1989, 1994, 2002 and 2009.
  - *City Directory* - Some additional historical research was conducted at the Redlands Public Library. Sources included city directories and survey data.

- ***Site Reconnaissance –*** The updated Phase I site reconnaissance was performed on November 15 through 17, 2011.

The details pertaining to the conducted research are included in the Updated Phase I (Appendix L2).

In addition to the ASTM-based “REC” classification of a site, a relative risk ranking system was applied that includes several investigative elements to describe “sites of concern” located within the Study Area. A site of concern is a site that the investigative process has determined to have a sufficient possibility of contamination, which warrants special attention during the Phase I investigation. A site of concern may or may not ultimately be classified as a REC site as defined by ASTM, yet still may be “of concern” and is therefore highlighted in the report. A site of concern may or may not be carried forward in recommendations for further investigation, depending upon the specific issues associated with the site.

Once the elements of the investigation process are completed, sites of concern were identified using a subjective risk ranking system, classifying the sites as low-risk, moderate-risk, high-risk, or (in some instances) indeterminate-risk. The following paragraphs provide general descriptions of each category.

- **Low-risk** sites are those sites that have few indications of potential for release of hazardous materials. On some occasions, sites that have had a hazardous materials issue in the past but have been remediated with approval of the local, state, or EPA may qualify as low-risk. Examples of low-risk sites include undeveloped or agricultural property, residential property, or benign commercial properties such as office buildings, warehouses, distribution facilities, or municipal facilities with no listed violation.

- **Moderate-risk** sites are those sites that have some indications of possible hazardous materials issues. A moderate-risk site may appear on a database as having a permit to handle hazardous materials, but has recorded no violations to date. Another way that a site could be interpreted as moderate risk would be if the environmental records search indicated no listing, but the site is an auto repair facility with visible surface staining. Examples of moderate-risk sites include auto repair garages, welding shops, or manufacturing facilities with minor listings in the environmental database.
- **High-risk** sites are those sites that have a high potential for releasing hazardous materials to the soil or groundwater, or have a recorded release issue. Examples of high-risk sites include current service stations, bulk fueling terminals, sites listed in environmental databases as having had a release, or a known release that has not been remediated.
- **Indeterminate** sites are those which, at the time of report preparation, did not include sufficient information to include a high, medium or low ranking. Indeterminate sites often require additional file review to determine the details of any related environmental issues at the site.

Based on the Updated Phase I, 60 sites of concern were identified within the Study Area, with a risk ranking of indeterminate or high risk ranking. The descriptions of all 60 sites of concern are included in Table 1 – Sites of Concern in Appendix L2. Of the 60 sites of concern, 46 are considered to be RECs, and 10 are considered to be historic RECs (HRECs). For the purposes of this EIS/EIR, the 60 sites have been narrowed down to 28 sites that have the potential to affect the Project based on the sites that have high or indeterminate risk rankings, are identified as RECs or HRECs, and located immediately within the Study Area. Table 3.10-2 summarizes the 28 sites (18 high and 10 indeterminate) that have the potential to affect the Project and the specific Project component that could be potentially affected. In addition, only one identified site has an active remedial investigation or remedial site cleanup (Redlands Oil Company), and one site has site deed restrictions required (Hanford Foundry).

Asbestos and Lead

As previously described in Section 3.10.2.2, the area has been developed since at least the 1930s, with commercial/industrial uses constructed in the 1960s. Based on the age of many of the structures that border the railway corridor within the Study Area (e.g., pre-1970s), it is possible that these buildings were constructed when asbestos-containing materials (ACMs) and lead-based paints were readily used in exterior coatings. Asbestos is designated as a hazardous substance when the fibers have the potential to come in contact with air because the fibers are small enough to lodge in the lung tissue and cause health problems. The presence of ACMs in existing buildings poses an inhalation threat only if the ACMs are found to be in a friable state. If the ACMs are not friable, there is no inhalation hazard because asbestos fibers remain bound in the material matrix. Emissions of asbestos fiber to the ambient air, which can occur during activities such as renovation or demolition of structures made with ACMs (e.g., insulation), are regulated in accordance with Section 112 of the Federal CAA.

Human exposure to lead has been determined by EPA and OSHA to be an adverse health risk, particularly to young children. Demolition of structures containing lead-based paint requires specific remediation activities regulated by Federal, state, and local laws.

Airport Safety

The Study Area is generally located south of the San Bernardino International Airport. Based on a review of Airport Safety Overlay maps (Figure 3.10-2) produced by the County of San Bernardino, the approximate western half of the Study Area (MP 1.5 to MP 6.3) is located within Airport Safety Review Area 3 (AR3). As defined in Section 82.09.030 of the County's Development Code, AR3 includes one of the following areas, as applicable:

- Public use airport with adopted noise contours: For a public use airport with adopted noise contours, AR3 includes the area within one mile outside the 65 L_{dn} noise contour, encompassing the boundaries prescribed in FAR Part 77 that depict imaginary surfaces for "objects affecting navigable airspace," as applicable to the specific FAA-approved Airport Layout and Approach Plan.
- Public use airport without adopted noise contours: For a public use airport without adopted noise contours, AR3 includes the area within one mile of the outer boundaries of the airport ownership.

According to the City San Bernardino General Plan (November 1, 2005), the Airport Master Plan and the Comprehensive Land Use Plan (ACLUP) for the San Bernardino International Airport are in the process of being prepared and the airport is operating under an Interim Airport Operating Plan. Consequently, precise safety zones for the airport are not currently available.

Emergency Response

The Fire Departments for the Cities of San Bernardino and Redlands provide fire protection and emergency response services for portions of the Study Area within each of the respective jurisdictions. According to the City of San Bernardino General Plan, San Bernardino Fire Department (SBFD) maintains a response time of six minutes within the service area. The closest SBFD stations to the Study Area include:

- Fire Station #221: 200 East 3rd Street
- Fire Station #230: 502 S. Arrowhead Avenue
- Fire Station #231: 450 Vanderbilt Way

According to the Annual Report for the City of Redlands Fire Department (RFD), the RFD maintains a response time of four minutes within the service area 90 percent of the time. The closest RFD stations to the Study Area include:

- Fire Station #261: 525 E. Citrus Avenue
- Fire Station #262: 1690 Garden Street
- Fire Station #263: 10 W. Pennsylvania Avenue
- Fire Station #264: 1270 W. Park Avenue

Wildland Fire Hazards

The County of San Bernardino created a Fire Safety (FS) Overlay to provide greater public safety in areas at risk to wildland brush fires, by establishing additional development standards for these areas. The FS Overlay is divided into three fire safety areas to correspond to distinct geographic areas and the associated wildland fire hazard. Based on a review of the County's Fire Hazard Overlap Map, the Study Area is not located within a fire safety area. The California Department of Forestry and Fire Protection (CalFire) has developed maps designating Fire Hazard Severity Zones (FHSZ) within Local Responsibility Areas (LRA). These fire severity zones are depicted in Figure 3.10-3.

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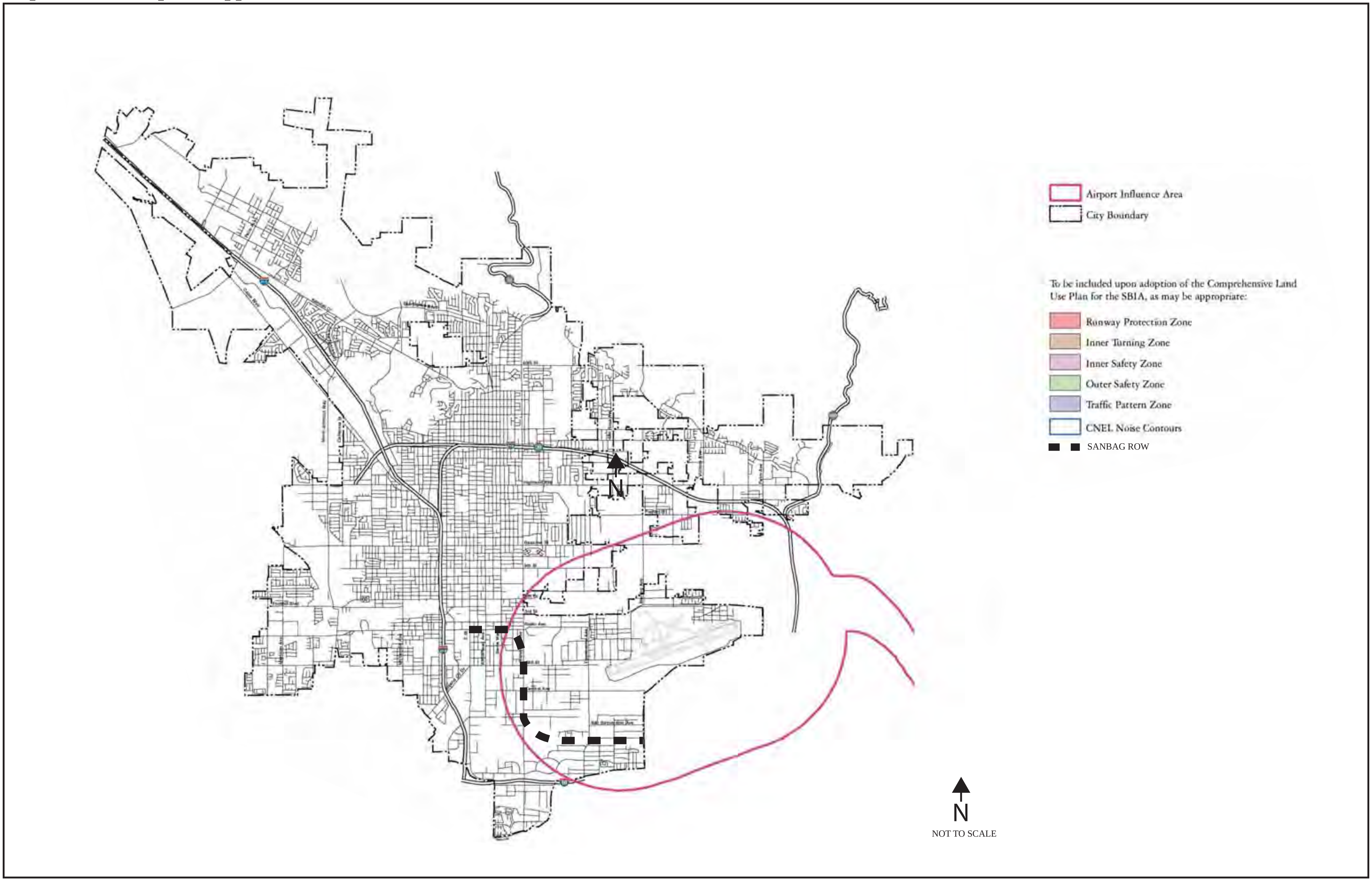

Airport Influence Area

Figure 3.10-2

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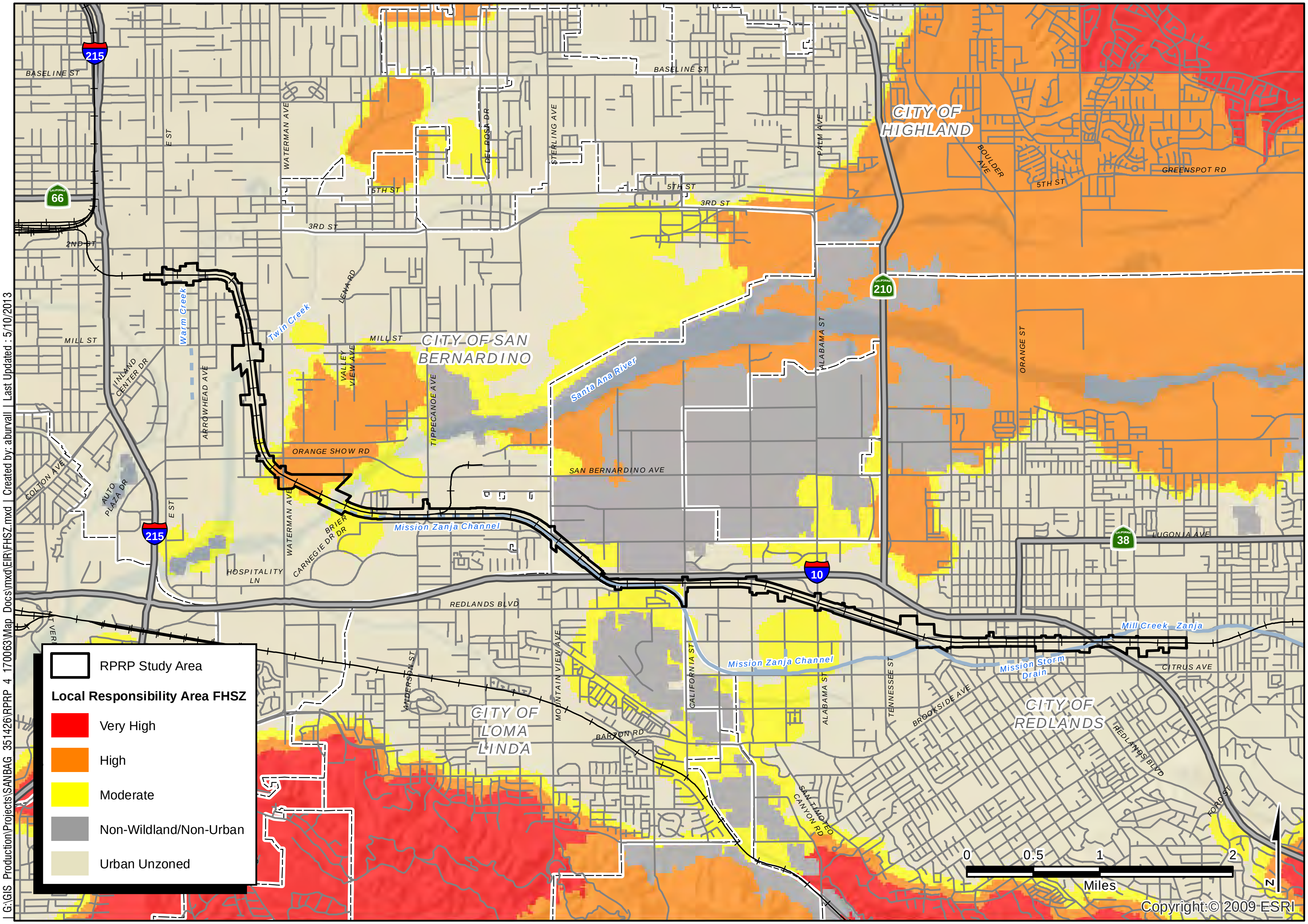

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Fire Hazard Severity Zones

Figure 3.10-3

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These maps are intended for local agencies and others to review areas of fire hazard. It should be noted that maps with rankings (Very High, High, and Moderate) in LRAs are only recommendations as the maps have not yet been adopted by local agencies. Based on a review of the FHSZ mapping depicted in Figure 3.10-3, the Study Area is located within a LRA. The majority of the Study Area is classified as urban un-zoned. Based on the mapping prepared by CalFire, there are four portions of the Study Area that are susceptible to wildland fires. These areas include:

- High risk areas located immediately north of the railroad corridor and northwest of the Santa River (MP 3 to MP 3.5);
- Moderate risk area located southeast of the railroad corridor (MP 3.5 to MP 4);
- Moderate risk area located to the south of the railroad corridor from MP 6 to MP 6.5; and
- Moderate risk area located south of the railroad corridor at MP 7.5.

3.10.3 Environmental Impacts/Environmental Consequences

This analysis evaluates the potential for the Build Alternatives and Design Options to result in adverse effects related to potential hazards and hazardous materials within the Study Area.

3.10.3.1 Effect Criteria

The Build Alternatives and Design Options would have an adverse hazard or hazardous materials effect if it would:

- Create a hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Create a hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 miles of an existing or proposed school.
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create an adverse hazard to the public or the environment.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- Be located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and result in safety hazards for people residing or working in the Study Area.
- Expose people or structures to an adverse risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

3.10.3.2 Methodology

This analysis is based, on a preliminary review of the Phase I (Appendix L1) and Updated Phase I (Appendix L2) prepared for the Project. The preparation of the Phase I and updated Phase I documents included an environmental records review; a data gap analysis; historical research, which included a review of Sanborn Fire Maps, historical aerial photographs, and a city directory; a site reconnaissance of the Study Area; and a review of the SWRCB's GeoTracker online database. Effects associated with hazards and hazardous materials that could result from Project construction and operational activities were evaluated qualitatively based on site conditions, proximity of the physical Project footprint to documented RECs, and expected Project construction practices. This analysis also included a review of fire severity maps prepared by the CalFire to determine the Project's direct and indirect risk to wildfires and the ALUCP prepared for San Bernardino International Airport for issues relating to the Project's proximity to airports.

3.10.3.3 Criteria Requiring No Further Evaluation

Hazards within Two Miles of an Airport. The Study Area is generally located south of the San Bernardino International Airport. The approximate western half of the Study Area (from MP 1.5 to MP 6.3) is located within two miles of this airport and within the ALUCP. With the exception of the proposed bridge structures, which would be reconstructed at their existing elevations, the Project would generally involve structures less than 30 feet in height and would not include any facilities (e.g., detention or retention ponds) that would attract birds resulting in airstrike. Based on these considerations, no further discussion of airport safety issues is required and no effect is expected under NEPA. No impact is expected under CEQA.

3.10.3.4 Assessment of Environmental Effects

EFFECT 3.10-1	**Possible Risk to the Environment Through the Routine Transport of Hazardous Materials.** The Project Alternatives and Design Options would result in a hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under Alternative 1, the Project would not occur and existing conditions along the railway corridor would remain. To facilitate continued freight service per SANBAG's obligations, maintenance improvements would be required to occur along the existing track alignment, which would include bridge replacement or rehabilitation. Construction of track improvements and bridge improvements would require fueling and servicing of construction equipment, which could involve the use of hazardous materials including the transport, storage, and disposal of commercially available hazardous materials such as gasoline, brake fluids, coolants, and paints. These activities could also generate hazardous wastes, which would require proper disposal. The handling of such materials would occur during short-term construction activities and would be subject to federal, state, and local health and safety requirements. Transportation of hazardous materials on area roadways is regulated by CHP and Caltrans, and use of these materials is regulated by DTSC, RWQCB, or local oversight agency, as outlined in Title 22 of the CCR. The accidental release of any hazardous substances and materials during future maintenance and construction of the railway corridor would be controlled through the implementation of provisions contained in BNSF's Hazardous Materials Management Plan (HMMP). Based on these considerations, no adverse effect would occur under NEPA. This impact would be less than significant under CEQA.

Direct Effects from Long-Term Operations

Under Alternative 1, the Project would not occur and existing rail operations (i.e., freight service) would continue to occur consistent with BNSF's existing HMBP. In this context, continued compliance with BNSF's existing HMBP would address issues related to the routine use, transport, and disposal of hazardous materials and substances. As a result, there would be no adverse effects related to long-term freight operations along the existing railway corridor under NEPA. No impact would occur under CEQA.

Indirect Effects

As described in Section 3.10.3, Affected Environment, there are multiple land uses located adjacent to the railway corridor that involve the routine transport, use, or disposal of hazardous materials. Under the No Build Alternative, existing freight operations and future maintenance activities would continue to be subject to potential adverse effects resulting from these activities, similar to existing conditions. As a result, this alternative would not involve new passenger rail operations that could increase the number of receptors (e.g., passengers) potentially affected by these ongoing activities. In this context, no indirect effect is expected under NEPA. No impact would occur under CEQA.

Build Alternatives, Design Option 1 - Train Layover Facility (Waterman Avenue), and Design Option 3 - Waterman Avenue Rail Station

Direct Effects from Temporary Construction

During construction of the Build Alternatives and Design Options fueling and servicing of construction equipment would involve the use of hazardous materials and substances and corresponding generation of hazardous wastes. Additionally, construction of the Build Alternatives and Design Options would involve the use of other hazardous materials including, but not limited to, asphalt, lubricants, and paint, during construction activities. The handling of such materials would occur during short-term construction activities and would be subject to federal, state, and local health and safety requirements.

Equipment fueling and maintenance requirements would likely use temporary aboveground bulk storage tanks as well as storage of other materials (e.g., paints, asphalt, etc.) in sheds or trailers. The potential for an accidental release exists during handling and transfer of these materials. If a significant spill were to occur, the accidental release could pose a hazard both to construction employees and the environment, depending on the relative hazard of the material released. Although typical construction management practices limit and often eliminate the impact of such accidental releases, there is a possibility of a spill or a release with the temporary on-site storage of hazardous materials. The accidental release of these substances and materials during construction is considered an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HAZ-1 (Prepare and Implement a Construction Hazardous Materials Management Plan and Operational Hazardous Materials Business Plan) is proposed to minimize the potential for a release of hazardous materials during construction.

Direct Effects from Long-Term Operations

During operation of the Build Alternatives and Design Options fueling and servicing of the locomotives at the proposed train layover facility would involve the use of hazardous materials and wastes that would require the transport, storage, and disposal of commercially available hazardous materials such as gasoline, brake fluids, and coolants. The handling of such materials would occur over the duration of Project operations and would be subject to federal, state, and local health and safety requirements. The accidental release of these substances and materials during Project operations could pose a threat to the environment. Therefore, an adverse effect would occur under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HAZ-1 is proposed to minimize the threat of a hazardous materials release during construction.

The layover facility would include a diesel tanker truck and portable fueling system. These operations may or may not include the use of an on-site above or underground storage tank that could accidentally leak into the soil, water, or air in the vicinity of the proposed layover facility. In addition, one service track would be provided at the yard with an enclosed inspection pit. The service pit would generate industrial wastes, which would be handled, stored, and transported in accordance with federal regulations. Based on the hazardous materials that would be used and generated at the proposed layover facility, there would be a risk of a release of hazardous materials during long-term operations. This would be an adverse effect under NEPA . This is considered a significant impact under CEQA. Mitigation Measure HAZ-1 is proposed to address the potential for accidental release from on-site storage tanks.

As described in Chapter 2, the proposed layover facility would include portable track pans at each track to catch drips during emergency fueling. Drip pans would be installed where engines are located, in order to catch any dripping or leaking fuel oil, lubrication, or hydraulic fluid from engines laid-up in the yard. The industrial waste from the service pit would be collected and routed through a grit trap and oil/water separator prior to being discharged to the sanitary sewer. Additionally, an oil/water separator system would be installed at the layover facility to comply with stormwater requirements as promulgated through the NPDES Industrial Stormwater Program, which is regulated locally by the Santa Ana RWQCB. Refer to Section 3.8 for additional discussion of potential effects from stormwater runoff and proposed mitigation measures.

Compliance with federal, state and local regulations in combination with the proposed mitigation would minimize the hazards associated with the use of these substances during long-term operation. In addition, SANBAG would be required to obtain permits and comply with appropriate regulatory agency standards designed to avoid hazardous waste releases. These permits would require the preparation of a HMBP per California's Health and Safety Code and is subject to approval by DTSC, RWQCB, or local oversight agency. The HMBP would provide for safe storage, containment, and disposal of chemicals and hazardous materials during operations, including waste materials. In the absence of a compliant HMBP, there is a possibility for a spill or a release to occur during operations and uncoordinated response to the incident. This is considered an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HAZ-1 is proposed to address the risk of accidental releases during operations.

Indirect Effects

Freight train engines generally operate using oil and diesel fuel and, on occasion may transport hazardous materials for delivery to customers along the railway corridor. With the introduction of passenger rail service to the railway corridor, only limited additional quantities of hazardous materials in the form of diesel fuel would be used; however, train service would extend further east through Redlands. Additionally, the Project could indirectly facilitate additional freight movements along the corridor, which in turn could carry hazardous materials. However, freight movements are subject to both FRA and USDOT requirements regarding the transport and storage of hazardous substances. Additionally, any additional freight movements would presumably result in corresponding reductions in existing truck traffic transporting the same materials along local roadways. Based on these circumstances, in combination with the proposed safety measures to facilitate passenger train movements throughout the railroad corridor, no adverse effect would result under NEPA. This is considered a less than significant impact under CEQA.

DESIGN OPTION 2 - USE OF EXISTING TRAIN LAYOVER FACILITIES

Direct Effects from Temporary Construction

Design Option 2 would result in similar construction effects as the Build Alternatives in relation to the tracks, bridges, and stations. Similar to the Build Alternatives, the use, transport, and storage of hazardous materials during construction would occur under this design option and, therefore, an accidental release of hazardous materials or substances could occur and would represent an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HAZ-1 is proposed to minimize this hazard.

Direct Effects from Long-Term Operations

Operational effects related to hazardous waste and materials handling would be similar to those anticipated to occur under the Build Alternatives. However, unlike the Build Alternatives, refueling and maintenance of the locomotives would occur at existing layover facilities (e.g., EMF and IEMF). As a result, the implementation of Design Option 2 would confine the areas subject to potential spills to existing layover facilities with HMBPs currently in place. Based on these considerations, no adverse effect would occur under NEPA. A less than significant impact would result under CEQA.

Indirect Effects

Similar to the Build Alternatives, this alternative could facilitate increased freight train movements in the future. However, freight movements are subject to both FRA and USDOT requirements regarding the transport and storage of hazardous substances. Additionally, any additional freight movements would presumably result in corresponding reductions in existing truck traffic transporting the same materials along local roadways. Based on these circumstances, in combination with the proposed safety measures to facilitate passenger train movements throughout the railroad corridor, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

EFFECT 3.10-2	**Possible Risk to the Environment Through an Accidental Release.** An accidental release of hazardous materials into the environment could result from Project related construction and operational activities.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under Alternative 1, the Project would not be constructed and existing conditions along the railroad corridor would remain. As described in Chapter 2, to facilitate continued freight service per SANBAG's obligations, maintenance improvements would be required to occur along the existing track alignment, including bridge replacements or rehabilitations. Construction of the track and bridge improvements would involve commercially available hazardous materials such as gasoline, brake fluids, coolants, and paints. However, the handling of such materials would be subject to federal, state, and local health and safety requirements and performed in compliance with BNSF's existing HMMP. Based on these considerations, no adverse effect is anticipated under NEPA. A less than significant impact is anticipated under CEQA.

Direct Effects from Long-Term Operations

Under Alternative 1, the Project would not occur and existing rail operations (i.e., freight service) would continue to occur. Operational effects related to the accidental release of hazardous waste and materials would occur during refueling or maintenance of the locomotives at the train layover facility. However, existing operations already follow federal, state, and local requirements and are representative of existing conditions. In this context, no adverse effect is anticipated to occur under NEPA. A less than significant impact is anticipated under CEQA.

Indirect Effects

Under the No Build Alternative, existing freight operations and future maintenance activities would continue to be subject to potential adverse effects resulting from adjacent land uses, which could involve activities that could indirectly impact the railroad corridor (e.g., spills), similar to existing conditions. As a result, this alternative would not involve new passenger rail operations that could increase the number of receptors (e.g., passengers) potentially affected by these ongoing activities. In this context, no indirect adverse effects are expected to occur under NEPA. No impacts are expected to occur under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

The Build Alternatives and Design Options would include track improvements to an existing railroad corridor in addition to bridge improvements, station improvements, and the construction of a layover facility (expect Design Option 2). As described under Effect 3.10-1, during construction, there will be the use of commercially available hazardous materials such as gasoline, brake fluids, coolants, and paints. The handling of such materials would be subject to federal, state, and local health and safety requirements and, with mitigation, would not represent a substantial threat to the environment. Additionally, as provided in Table 3.10-2, there are 23 sites that have the potential to affect Project construction. The accidental release or mobilization of hazardous materials from either Project construction equipment or previously contaminated sites identified in Table 3.10-2 would be an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HAZ-1 is proposed to address this hazard.

Demolition activities required as part of the Build Alternatives and Design Options could cause asbestos fibers from ACMs to become airborne and potentially inhaled, which can lead to a variety of health problems. Because the existing structures within the Project footprint could contain ACM and lead paint, demolition activities could expose construction workers to asbestos fibers and lead particles. In addition, electrical transformers may be located within the footprints. If not properly dismantled, transported, and disposed, PCBs could be released into the environment during potential removal of these transformers. Indiscriminate and unmitigated demolition of structures containing ACMs and lead-based paint could create asbestos dust, lead paint chips and lead dust that could travel offsite and present an inhalation hazard for both construction workers and the public (Refer to Section 3.57 Air Quality, Greenhouse Gases, and Global Climate Change). This is considered an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HAZ-2 (Pre-Demolition Investigation) is proposed to minimize the hazards associated demolition activities.

Direct Effects from Long-Term Operations

Operational effects related to the accidental release of hazardous waste and materials could occur as a result of the possible derailment of passenger rail locomotives or at the train layover facility as described in Effect 3.10.3. However, specific elements in the Build Alternatives and Design Options, including proposed railroad safety improvements and the limited quantities of hazardous materials onboard a passenger train, would be expected to reduce the level of risk posed by hazardous materials transport and reduce the risk of collisions. In addition, passenger rail operations in conjunction with the Project would be conducted in accordance with all applicable federal requirements intended to minimize the potential for these occurrences. As a result, no adverse effect would occur under NEPA. A less than significant impact is expected under CEQA.

Indirect Effects

Implementation of the Build Alternatives and Design Options could facilitate increased freight train movements in the future. However, freight movements are subject to both FRA and USDOT requirements regarding the transport and storage of hazardous substances. This could include the transfer of some freight, including hazardous materials, to rail rather than truck. Federal statistics show that hazardous materials incidents are much less common by rail than on highways (RTP 2012). In this context, no adverse effect would occur under NEPA. A less than significant impact is expected under CEQA.

EFFECT 3.10-3	**Hazardous Emissions Within Close Proximity of a School Site.** The Project could result in the emission or use of hazardous or acutely hazardous materials, substances, or waste within a ¼ mile of an existing or proposed school facility.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under Alternative 1, the Project would not occur and existing conditions of the railroad corridor would remain. To facilitate continued freight service per SANBAG's obligations, maintenance improvements would be required to occur along the existing track alignment. Eight schools are located within close proximity to the railroad corridor that would be subject to adjacent maintenance activities under this alternative. However, given that these activities would be generally restricted to the existing railroad ROW, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

Direct Effects from Long-Term Operations

Under Alternative 1, the Project would not occur and existing rail operations (i.e., freight service) would continue similar to existing conditions. Although there are eight schools located in close proximity to the railroad corridor, there would be no new operational emissions from Alternative 1 within a quarter mile of a school. In this context, no adverse effect is anticipated under NEPA. A less than significant impact is anticipated to occur under CEQA.

Indirect Effects

Under the No Build Alternative, existing freight operations and future maintenance activities could result in an accidental release of hazardous materials to nearby schools. Compliance with existing laws and regulations, including BNSF's existing HMBP, regarding transport and disposal of hazardous materials would minimize these risks. As a result, no adverse effect is anticipated under NEPA. A less than significant impact is anticipated under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

The Build Alternatives and Design Options would include track improvements to an existing railway corridor in addition to bridge improvements, station improvements, and the construction of a new layover facility or use of existing layover facilities. The Study Area contains eight educational institutions located within ¼-mile of the railway corridor. These educational facilities include the following:

- Burbank Elementary School
- Victoria Elementary School
- Mission Elementary School
- Redlands Jr. Academy
- Orangewood High School
- Franklin Elementary School
- Redlands Jr. High School
- University of Redlands

During construction activities associated with the track improvements, bridge improvements and station improvements, there will be use of commercially available hazardous materials such as gasoline, brake fluids, coolants, and paints. As such, the release of hazardous emissions could occur during construction. However, a release of these substances would generally be localized and is unlikely to pose a risk to the eight educational institutions within a ¼ mile of the railway corridor. Additionally, construction activities would be required to comply with mitigation for the handling of such materials and subject to federal, state, and local health and safety requirements. Based on these considerations, an adverse effect would occur under NEPA. A significant impact would occur under CEQA. Compliance with the Mitigation Measures HAZ-1 and HAZ-2 and applicable federal, state, and local laws and regulations would minimize any related risks.

The demolition of the existing structures and the existing railroad tracking would result in the release of diesel particulate matter (DPM) emissions from construction equipment. However, these emissions are short-term in nature. Since the cancer risk calculation is averaged over an extended exposure period of time (i.e., 70 years for a residential receptor), the sum of short-term construction and long-term operations would be below SCAQMD thresholds for identifying health risk effects (see Section 3.5). As such, there would be no adverse effect under NEPA. A less than significant impact would occur under CEQA.

During construction activities associated with the layover facility, there will be use of commercially available hazardous materials. Mission Elementary School is located within ¼ mile of the proposed layover facility and Burbank Elementary School is located within ¼ mile of the Design Option 1 layover facility. As such, the layover facility component of the Project may involve the release of hazardous emissions within close proximity to a school site. However, the handling of such materials would be short-term and subject to federal, state, and local health and safety requirements. Compliance with applicable federal, state, and local laws and regulations would ensure that hazardous materials would not pose an adverse risk to schools within ¼-mile of the layover facility and, therefore, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

Direct Effects from Long-Term Operations

As previously indicated, BNSF operates freight service along a portion of the railroad corridor from E Street to Tippecanoe Avenue. As a result, existing freight service involves the routine transport and storage of diesel fuel. On occasion, freight trains can carry hazardous materials for delivery to customers along the railroad corridor. With the track improvements proposed as part of the Project, there would be a potential for increased freight movements along the railway corridor, which in turn, could result in increased shipments of hazardous materials within the Study Area. Additionally, passenger rail service would also involve the increased transport and use of hazardous substances in the form of diesel fuel, of which certain components of diesel fuel (benzene, other volatile fractions) are classified as hazardous materials. The storage and transport of hazardous substances that are incidental to rail operations, including routine maintenance, would be performed in accordance with existing FRA and USDOT hazardous materials regulations. Compliance with these regulations would minimize any effect to schools within ¼-mile of the railway corridor. Therefore, there is no adverse effect under NEPA. A less than significant impact would occur under CEQA.

As described in more detail in Sections 3.3 (Transportation) and Section 3.5 (Air Quality, Greenhouse Gases, and Global Climate Change), the Project would not cause any intersections in the Study Area to operate at LOE E or F, the CO Protocol indicates that there is no potential for the creation of CO hot spots (see Section 3.5). Therefore, CO hot-spot effects from the Project, including potential effects to schools within ¼-mile of the railway corridor, would have no adverse effect under NEPA. A less than significant impact would occur under CEQA.

Materials incidental to layover operations, including routine maintenance or refueling, would be conducted at the layover facility. The layover facility would include a diesel storage tank and fueling system. In addition, one service track would be provided at the yard with an enclosed inspection pit, which is expected to generate industrial waste. Based on the hazardous materials that would be used onsite, operations at the layover facility carry the potential for an accidental release of hazardous emissions. Based on the close proximity of Mission Elementary School, this facility could be exposed directly or indirectly to these substances. To minimize this risk, the preparation and implementation of a HMBP is proposed. The HMBP would provide standards and procedures for the safe storage, containment, and disposal of chemicals and hazardous materials related to Project operations, including waste materials. This is considered an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HAZ-1 is proposed to minimize this hazard.

Beyond the typical handling and storage of hazardous materials, the Build Alternatives and Design Options would involve diesel emissions of toxic air contaminants (TAC) (see Section 3.5, Air Quality, Greenhouse Gases, and Global Climate Change). Emissions of diesel particulate matter (DPM) are considered a TAC, which results from the operation of diesel rail locomotives that would provide passenger rail service. These operations would be concentrated at the proposed layover facility and stations. DPM emissions are composed of a mixture of thousands of particles and gases that are produced when an engine burns diesel fuel. Many compounds found in diesel exhaust are carcinogenic. The State of California, after a 10-year research program, determined in 1998 that DPM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic health risk.

In a comprehensive assessment of diesel exhaust, the Office of Environmental Health Hazard Assessment (OEHHA) analyzed more than 30 studies of people who worked around diesel equipment, including truck drivers, railroad workers, and equipment operators. The studies showed these workers were more likely to develop lung cancer than workers who were not exposed to diesel emissions. These studies provide strong evidence that long-term occupational exposure to diesel exhaust increases the risk of lung cancer. Using information from OEHHA's assessment, the CARB estimates that diesel-particle levels measured in California's air in 2000 could cause 540 "excess" cancers (beyond what would occur if there were no diesel particles in the air) in a population of 1 million people over a 70-year lifetime. Exposure to diesel exhaust can have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks.

Rail emissions were estimated for the Build Alternatives and Design Options based on daily passenger rail operations, fuel consumption, locomotive notch setting (i.e., power setting), travel distance, idling time, and DPM emission factor. Each of these factors is discussed in detail in Section 3.5, including USEPA regulations for locomotive exhaust controls. Table 3.5-3 summarizes the Project's DPM emission sources and their emissions. When both stationary-source and mobile-source TAC emissions (primarily from rail locomotives) are analyzed for the Mission Elementary School, the SCAQMD cancer risk threshold is not exceeded at the maximum affected student receptor locations. As a result, there would be no adverse effect on students at the nearby school under NEPA. A less than significant impact would occur under CEQA.

Indirect Effects

During construction of the Build Alternatives and Design Options the transport of soil or other media contaminated with hazardous materials to a disposal facility could potentially be an indirect adverse effect through the accidental release of these hazardous materials to nearby schools. Compliance with existing laws and regulations regarding transport and disposal of hazardous materials would result in no adverse effect under NEPA. A less than significant impact would occur under CEQA.

EFFECT 3.10-4	**Disturbance to Known Hazardous Materials Sites.** During construction, the Project would create an adverse hazard to the environment as a result of disturbance to identified hazardous materials sites.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under Alternative 1, the Project would not occur and existing conditions of the railroad corridor would remain. To facilitate continued freight service per SANBAG's obligations, maintenance improvements would be required to occur along the existing track alignment. RECs located adjacent to the railway corridor would be avoided under this alternative since maintenance activities would be restricted to SANBAG's ROW. As a result, there would be no adverse effect under NEPA. A less than significant impact would occur under CEQA.

Direct Effects from Long-Term Operations

Under Alternative 1, the Project would not occur and existing rail operations (i.e., freight service) would continue similar to existing conditions. Existing freight operations already follow federal, state, and local requirements and would be unlikely to affect adjacent RECs. In this context, no effect is anticipated under NEPA. No impacts are anticipated under CEQA.

Indirect Effects

Under the No Build Alternative, existing freight operations and future maintenance activities would continue similar to existing conditions. RECs located adjacent to the railroad corridor would be avoided under this alternative by maintenance activities since they would be restricted to SANBAG's ROW; however it is possible that adjacent sources of contamination could migrate into the railroad corridor via surface runoff or subsurface groundwater flow. Although migration of contaminants into the railroad corridor could impact freight operations or maintenance activities, such an occurrence could occur under existing conditions and the response would be coordinated by BNSF in accordance with its HMBP. In this context, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS 1 AND 2

Direct Effects from Temporary Construction

As shown on Table 3.10-2, there are 28 sites that have been identified as a REC or HREC that have the potential to affect the environment as a result of their disruption during ground-disturbance associated with Project-related construction. The majority of the RECs are listed on databases because they contain documented hazardous material contamination, onsite gasoline or diesel USTs, and/or ASTs, or removed LUSTs. The close proximity of these existing RECs and HRECs to the railroad corridor could result in Project-related construction activities encountering contaminated soil and/or the migration of contaminated groundwater.

A CERCLIS site is located in the northern portion of the Project area and is in close proximity to track improvements and north of a potential staging area. This site has been "closed" by the RWQCB as one of the regulatory agencies; however, is still under the jurisdiction of the DTSC. This site has deed restrictions that include prohibited uses and soil management requirements. According to the latest annual Deed Restriction Site Inspection Report completed for the site (June 28, 2012), a Soil Management Plan would be required and approved by the Department of Toxic Substances Control. The presence of deed restrictions at the Hanford Foundry indicates that continuing obligation for site management are required, technically making the site “active”, even though the RWQCB may have “closed” their file. Upon final engineering, a determination can be made as to if the Project would affect this site.

Two hazardous materials sites are identified in close proximity to the proposed Tippecanoe Station improvements; The Ford Wholesale Company (Map Code Y on Figure 3.10-1A) is a roofing supplier facility that has two USTs listed in multiple databases listings (CA FID, SWEEPS and UST) with the contents listed as unknown, and the S&G Roofing Supply Company (Map Code Z on Figure 3.10-A), which is a roofing supplier that has multiple database listings (CORTESE, LUST, CA FID, and SWEEPS UST). Because soil contamination often exists in the subsurface surrounding USTs, there is a potential that construction activities associated with the Tippecanoe Station improvements would encounter these preexisting soil and/or groundwater sources of contamination.

The Grigsby Brothers Building (Map Code BD on Figure 3.10-1B) is located near the proposed Downtown Redlands Station and is listed in the HIST UST database for containing two USTs with unknown contents. This site is considered to be high-risk based on the former operations as an insecticide bath plant, as well as the presence of USTs. It is possible that elevated concentrations of insecticides are present in soil materials at this site. Therefore, there is a potential risk to the public and the environment if ground disturbing activities occurred at this listed REC. In addition, at the City of Redlands Right-of-Way site located just south of the orange grove (Map Code AI-11 on Figure 3.10-1B) and is listed in the SWEEPS UST database. This site is considered to be an indeterminate risk based on the site UST and unknown location.

Given uncertainties regarding the level of clean up or remediation on these respective RECs and the potential to encounter undocumented source of contamination, an adverse effect could occur under NEPA. This is considered a significant impact under CEQA. Mitigation Measures HAZ-3 (Prepare Phase I and/or Phase II ESA for Indeterminate or High-Risk Sites) and HAZ-4 (Halt Construction Work if Potentially Hazardous Materials are Encountered) are proposed to address these risks prior to the completion of final design and in the event that hazardous materials are encountered during construction.

Direct Effects from Long-Term Operations

Operation of the Build Alternatives and Design Options, including track improvements, bridge improvements, layover facilities, and station improvements, are not anticipated to result in an adverse effect related to the disturbance of recorded sites of concern. Prior to construction, any RECs located within the railroad corridor would be remediated in accordance with Federal, State, and local requirements. No adverse effect is anticipated to occur under NEPA. A less than significant impact would occur under CEQA.

Indirect Effects

Prior to construction, any REC sites located within the railroad corridor would be remediated. However, the REC sites adjacent to or in the vicinity of the Study Area could indirectly affect the Build Alternatives and Design Options during construction. If the hazardous materials have leaked onto the Study Area and construction is occurring, there would be an indirect effect on Project construction. Although compliance with federal, state, and local regulations would minimize these indirect effects an adverse effect could result under NEPA. This is considered a significant impact under CEQA. Mitigation Measure HAZ-3 is proposed to address the indirect impacts associated with sources of contamination adjacent to the railroad corridor.

DESIGN OPTION 3

Under Design Option 3, the Project would include an optional station location at Waterman Avenue in place of the one proposed at Tippecanoe Avenue thereby avoiding the REC site listed in Table 3.10-2. Although, an REC is reported on the optional Waterman Station site, based on the determination in Appendix L2, the site is not listed as a REC. The database report indicates that the site was previously used for a historic agricultural facility, which contained several ASTs and a grain elevator (Map Code V on Figure 3.10-1A). Although operations at the facility may have contributed to pesticide and/or herbicide effects onsite, the build-out that has occurred on adjacent properties would suggest that these materials no longer persist in the soil on-site. In this context, there would be no adverse effect under NEPA. Impacts under CEQA would be less than significant.

However, this design option would continue to involve the construction of track improvements that would include ground-disrupting activities. These activities could present a risk to construction workers and the surrounding environment in the event of an accidental release of a known REC as documented in Table 3.10-2. This is considered an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measures HAZ-3 and HAZ-4 are proposed to address risks associated with documented and undocumented sources of hazardous materials.

EFFECT 3.10-5	**Possible Impediment to Emergency Plans.** The Project would interfere with an adopted emergency response plan or emergency evacuation plan.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under Alternative 1, the Project would not occur and existing conditions along the railroad corridor would remain. To facilitate continued freight service per SANBAG's obligations, maintenance improvements would be required to occur along the existing track alignment. At-grade crossing closures that could possibly impede emergency response and access would not occur. As a result, no effects are anticipated to occur under NEPA. No impacts are anticipated under CEQA.

Direct Effects from Long-Term Operations

Under Alternative 1, the Project would not occur and existing rail operations (i.e., freight service) would continue similar to existing conditions. Existing operations include a limited number of freight trips and, in this context, no effect is anticipated to occur under NEPA. No impact is anticipated to occur under CEQA.

Indirect Effects

Operations under the No Build Alternative would continue in accordance with FTA, FRA, and SCRRA requirements and no street closures or at-grade crossing improvements would occur. Based on these considerations, no effect to emergency response would occur under NEPA. No impact is anticipated under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

The Study Area traverses 30 existing roadway crossings; two of which are overhead structures at I-10. The Build Alternatives and Design Options include safety improvements at 21 of the existing at-grade crossings with the remaining proposed for closure and use for private access. Upgrades would be made to several existing at-grade crossings along the railway corridor to improve public safety. Table 2-4 in Chapter 2, provides details for each roadway crossing. Construction activities at each of these at-grade crossings could interfere with emergency response and access; however, the duration of any such interference would be limited. Nevertheless, any disruption to emergency response would be considered an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measure TR-1 is proposed to address detours, length and time of grade crossing closures, temporary emergency response routes, and coordination with police and fire departments regarding changes in emergency access routes.

Direct Effects from Long-Term Operations

Operation of passenger rail service would be in accordance with FTA, FRA, and SCRRA requirements for railroad safety at the proposed crossings and the provision of emergency access. Although the Project proposes up to four at-grade crossing closures, none of these closures would include an at-grade crossing currently used as an emergency evacuation route. Additionally, based on the traffic analysis, Project operations would not require changes in traffic circulation that could result in major traffic delays. Based on these considerations, no adverse effect to emergency response plans and operations would occur under NEPA. A less than significant impact would occur under CEQA.

Indirect Effects

The Build Alternatives and Design Options would operate in accordance with FTA, FRA, and SCRRA requirements for passenger rail operations. Once operational, it is possible that an accident at one of the grade crossings could occur, thereby adversely effecting train operations. However, with the installation of the safety improvements as proposed in Chapter 2, accidents at the at-grade crossings would be unlikely and no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

EFFECT 3.10-6	**Possible Risk to People of Wildland Fires.** The Project is located in an area susceptible to wildland fires that would expose people or structures to a considerable risk of loss, injury, or death.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, the Project would not occur and existing conditions within the railroad corridor would remain. To facilitate continued freight service per SANBAG's obligations, maintenance improvements would be required to occur along the existing track alignment. According to FHSZ maps produced by CalFire, portions of the track alignment and Bridges 2.2 and 3.4 would be located in a moderate risk of fire hazard area. Given that these improvements would occur within areas subject to wildfire hazards, construction and maintenance activities could create additional risks to people or structures adjacent to the railroad corridor. Therefore, an adverse effect could occur under NEPA. A significant impact could occur under CEQA.

Direct Effects from Long-Term Operations

Under the No Build Alternative, the Project would not occur and existing freight service would continue. Given that no additional people or structures would be exposed to wildfire hazards under this alternative, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

Indirect Effects

Portions of the Study Area are located within a moderate risk fire hazard area according to the FHSZ Maps provided CalFire. As a result, there is a potential for an adjacent wildland fires to spread into the SANBAG ROW. Given that no additional people or structures would be exposed to these hazards under this alternative, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Based on the FHSZ Maps prepared by CalFire, the Study Area is located within a LRA with the Cities of San Bernardino and Redlands being the primary first responders. As depicted in Figure 3.10-3, the proposed track improvements and the Santa Ana River Bridge are located in moderate to high fire hazard zones and, therefore, construction activities would have the potential to expose people or structures to risks involving wildland fires. This is considered an adverse effect under NEPA. This is considered a significant impact under CEQA. Mitigation Measures HAZ-5 (Keep Construction Area Clear of Combustible Materials) and HAZ-6 (Provide Accessible Fire Suppression Equipment) are proposed to maintain construction areas clear of combustible materials and to ensure that sufficient fire suppression equipment are available during construction activities.

Direct Effects from Long-Term Operations

Once constructed, Project-related facilities constructed along the railroad corridor would be of steel and concrete construction and generally not be susceptible to fire damage. In this context, no adverse effect would result under NEPA. This is considered a less than significant impact under CEQA.

Indirect Effects

The Build Alternatives and Design Options are located within a moderate to high risk fire hazard area according to the FHSZ Maps provided by CalFire. As a result, there is a potential for wildland fires to spread into the railroad ROW right-of-way and layover facilities. However, the Project facilities constructed within these areas would generally not be susceptible to fire damage to due their steel and concrete construction. As a result, no adverse effect under NEPA would result. This is considered a less than significant impact under CEQA.

3.10.4 Mitigation Measures

Implementation of the following avoidance, minimization, and/or mitigation measures related to hazards and hazardous materials would reduce adverse effects.

HAZ-1 **Prepare and Implement a Construction Hazardous Materials Management Plan and Operational Hazardous Materials Business Plan**: Prior to operation, SANBAG shall prepare and implement a Hazardous Materials Management Plan (HMMP) and Hazardous Materials Business Plan (HMBP) for the Project. The HMMP shall provide for safe storage, containment, and disposal of chemicals and hazardous materials related to Project construction, including the proper disposal of waste materials. The HMBP will provide for safe storage, containment, and disposal of chemicals and hazardous materials related to Project operations. The HMMP and HMBP shall include, but shall not be limited to, the following:

- A description of hazardous materials and hazardous wastes used;
- A description of handling, transport, treatment, and disposal procedures, as relevant for each hazardous material or hazardous waste;
- Preparedness, prevention, contingency, and emergency procedures, including emergency contact information;
- A description of personnel training including, but not limited to: (1) recognition of existing or potential hazards resulting from accidental spills or other releases; (2) implementation of evacuation, notification, and other emergency response procedures; (3) management, awareness, and handling of hazardous materials and hazardous wastes, as required by their level of responsibility;
- Instructions on keeping Materials Safety and Data Sheets (MSDS) on-site for each on-site hazardous chemical; and
- Identification of the locations of hazardous material storage areas, including temporary storage areas, which shall be equipped with secondary containment sufficient in size to contain the volume of the largest container or tank.

HAZ-2 **Pre-Demolition Investigation:** Prior to the demolition of any structures within the Project footprint, a survey shall be conducted for the presence of hazardous building materials such as asbestos-containing materials, lead based paints, and other materials falling under Universal Waste requirements. The results of this survey shall be submitted to SANBAG and the City of San Bernardino's Department of Environmental Health or City of Redlands Department of Environmental Health, as applicable. If any hazardous building materials are discovered, a plan for there proper removal shall be prepared in accordance with applicable requirements of the California Division of Occupational Safety and Health and the County of San Bernardino Environmental Health Services. The contractor performing the work will be required to have a license in the State of California, and possess a C-21, A or B classification. Further and if required, the contractor or their subcontractor will be required to possess a California Contractor License (ASB) to perform any asbestos related work. Prior to any demolition activities, the contractor will be required to secure the site and ensure the disconnection of utilities.

HAZ-3 **Prepare Phase I and/or Phase II ESA for Indeterminate or High-Risk Sites.** Prior to grading, further investigation at any of the identified sites of concern with an indeterminate or high risk-ranking shall be conducted, if it is known that ground disturbance at those sites would exceed 18 inches within 50 feet of the site of concern. The additional investigation shall be in the form of a site-specific ASTM-compliant Phase I ESA investigation. The Phase I ESA recommendation would determine if a Phase II Preliminary Site Investigation (drilling and sampling) would be required, as appropriate. Both the Phase I and Phase II ESA investigations would be completed prior to parcel acquisition (therefore, prior to any construction activity). The Project shall comply with recommendations provided in the Phase I ESA and/or Phase II ESA(s).

HAZ-4 **Halt Construction Work if Potentially Hazardous Materials are Encountered.** All construction contractors shall immediately stop all subsurface activities in the event that potentially hazardous materials are encountered, an odor is identified, or considerably stained soil is visible. Contractors shall follow all applicable local, state, and federal regulations regarding discovery, response, disposal, and remediation for hazardous materials encountered during the construction process.

HAZ-5 **Keep Construction Area Clear of Combustible Materials.** SANBAG shall ensure, through the enforcement of contractual obligations that during construction, staging areas, welding areas, or areas slated for development using spark-producing equipment shall be cleared of dried vegetation or other materials that could serve as fire fuel. The contractor shall keep these areas clear of combustible materials in order to maintain a firebreak. Any construction equipment that normally includes a spark arrester shall be equipped with an arrester in good working order. This includes, but is not limited to, vehicles, heavy equipment, and chainsaws.

HAZ-6 **Provide Accessible Fire Suppression Equipment.** Work crews shall be required to have sufficient fire suppression equipment readily available to ensure that any fire resulting from construction activities is immediately extinguished. All off-road equipment using internal combustion engines shall be equipped with spark arrestors.

Implementation of Mitigation Measure TR-1 (See Section 3.3.3) to prepare a Traffic Management Plan would reduce construction related traffic effects.

3.10.4.1 Effects after Mitigation

Upon the implementation of Mitigation Measures HAZ-1 through HAZ-6 and TR-1, adverse effects in relation to hazards and hazardous waste and materials resulting from the construction and operation of the Build Alternative and Design Options would be reduced and no adverse effect would result under NEPA. Under CEQA, impacts would be reduced to a less than significant level.

3.11 ENERGY

This section evaluates the effects of the Build Alternatives and Design Options on energy resources and consumption within the Study Area. This section characterizes energy resources within the Study Area and provides an analysis of the potential effects construction and operational activities of the Build Alternatives and Design Options could have on the generation and distribution capacity of local utility providers, as well as on petroleum resources.

3.11.1 Regulatory Framework

Table 3.11-1 identifies and summarizes federal, state, and local laws, regulations, and plans that are applicable to the Project.

Table 3.11-1. Pertinent Laws, Regulations, and Plans for Energy

Law, Regulation, or Plan	Summary and Project Nexus
Federal	
Energy Policy Act of 2005	The National Energy Policy Act of 2005 requires the Secretary of Energy to conduct programs of energy efficiency research, development, demonstration, and commercial application. The National Energy Policy Act allocates funds for establishing and conducting energy efficient appliance rebates and pilot energy efficiency programs. Additionally, the National Energy Policy Act develops pilot programs for energy efficiency in low-income communities. The Project would contribute to energy conservation goals contained in adopted energy conservation plans; as well as other federal, state, and local regulations to conserve and reduce energy usage (e.g., RTP).
Executive Order 13514	Executive Order (EO) 13514, "Federal Leadership in Environmental, Energy, and Economic Performance," was signed by President Obama on October 5, 2009. The goal of EO 13514 is "to establish an integrated strategy towards sustainability in the Federal Government and to make reduction of greenhouse gas (GHG) emissions a priority for Federal agencies." The Project would contribute to sustainability goals identified in EO 13514.
U.S. Department of Transportation – Strategic Sustainability Performance Plan	The 2010 Strategic Sustainability Performance Plan (SSPP) represents the first step of a 10 year strategy to meet the challenging requirements of EO 13514. The SSPP addresses the following: • Sets Department of Transportation (USDOT) sustainability policy; • Establishes agency sustainability performance metrics, including GHG reduction targets; • Integrates sustainability with USDOT's budget planning process and identifies additional resources needed to achieve set goals; • Evaluates USDOT's climate change risks and vulnerabilities to manage the effects of climate change on USDOT's operations; and • Considers environmental measures as well as economic benefits, social benefits, and costs in evaluating projects and activities based on life-cycle return on investment.

Table 3.11-1. Pertinent Laws, Regulations, and Plans for Energy

Law, Regulation, or Plan	Summary and Project Nexus
Code of Federal Regulations: Title 40 – Protection of Environment	40 CFR §1502.16(e) includes provisions that EISs include a discussion of the energy requirements and conservation potential of various alternatives, natural or depletable resource requirements and conservation potential of various alternatives, along with an identification of potential mitigation measures to reduce energy consumption associated with project implementation.
State	
California Energy Commission	The California Energy Commission (CEC) is responsible for, among other things, forecasting future energy needs for the state. Senate Bill 1389 (Chapter 568, Statutes of 2002) requires the CEC to prepare a biennial Integrated Energy Policy Report (IEPR) assessing major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors. The report also provides policy recommendations to conserve resources, protect the environment, and ensure reliable, secure, and diverse energy supplies.
California Code of Regulations, Title 24, Part 6, Energy Efficiency Standards for Residential and Nonresidential Buildings	Title 24, Part 6, of the California Code of Regulations establishes California's Energy Efficiency Standards for Residential and Nonresidential Buildings. For nonresidential buildings, the standards establish minimum energy efficiency requirements related to building envelope, mechanical systems (e.g., heating/ventilation/air conditioning and water heating systems), indoor and outdoor lighting, and illuminated signs. The standards are enforced through the local building permit process.
Executive Order S-3-05	EO S-3-05 was enacted in June 2005. The order sets specific GHG emission reduction targets for the state and gives the Transportation and Housing Agency responsibility to help meet the targets. The EO envisions reduced VMT and increased vehicle fuel efficiency as major factors in achieving GHG emission reductions. The Project is anticipated to remove a large number of single occupancy vehicles from the existing transportation network. Correspondingly, the consumption of non-renewable resources would decrease with the Project.
Executive Order S-1-07	EO S-1-07, also known as the Low Carbon Fuel Standard, was enacted in January 2007. EO S-1-07 requires a reduction of at least ten percent in the carbon intensity of California's transportation fuels by 2020. The California Air Resources Board (CARB) expects the Low Carbon Fuel Standard to achieve a minimum 10 percent reduction goal.
Assembly Bill 1007, Alternative Fuels Plan	Assembly Bill (AB) 1007, (Pavley, Chapter 371, Statues of 2005) requires the CEC to prepare a state plan to increase the use of alternative fuels in California (Alternative Fuels Plan). The Alternative Fuels Plan approved by the CEC on November 2, 2007 aimed at cleaning the state's air, diversifying fuel sources and protecting the state from oil spikes that affect prices, the economy and jobs. The plan supports Governor Arnold Schwarzenegger's goal of reducing statewide GHG emissions in accordance with EO S-3-05. The Alternative Fuels Plan focuses on transportation fuels and alternative fuels in particular, but recognizes that other components of the transportation system, including advanced vehicle technology and efficiency improvements in conventional vehicles, are also key elements needed to achieve the state's petroleum reduction, air quality, and climate change goals. Additionally, the Plan indicates that significant efforts are needed to reduce vehicle miles

Table 3.11-1. Pertinent Laws, Regulations, and Plans for Energy

Law, Regulation, or Plan	Summary and Project Nexus
	traveled VMT by all Californians through more effective land use and transportation planning and greater mass movement of people and goods. The Project is anticipated to remove a large number of single occupancy vehicles from the existing transportation network and reduce highway VMT in the Study Area and regionally. Correspondingly, the consumption of non-renewable resources would decrease with the Project.
Local	
Southern California Association of Governments (SCAG) Regional Transportation Plan	The SCAG 2008 Regional Transportation Plan (RTP) describes energy production and consumption throughout the South Coast Air Basin and provides VMT by county. VMT data indicates the extent of vehicle usage throughout the region and is a valuable factor in calculating the amount of energy consumed by transportation. The RTP establishes the following goals relevant to the Project: • Preserve and ensure a sustainable transportation system; and • Protect the environment, improve air quality, and promote energy efficiency These goals are implemented through the policies established by SCAG in the RTP. Policies of the RTP are geared toward balancing safety, maintenance, and efficiency of the existing transportation system with the need for system expansion.
City of San Bernardino Energy Efficiency Conservation Strategy	In 2010, as part of the American Recovery and Reinvestment Act of 2009, the City of San Bernardino was allocated $1,954,600 to develop and Energy Efficiency Conservation Strategy (EECS) and identify certain projects to reduce the cities' fossil fuel emissions and total energy use, and to improve energy efficiency in all sectors of government operations. As identified in the EECS, two of the projects listed include AB 32 compliance and development of a new TOD Overlay District. In response to the AB 32 compliance initiative, the City developed an informal partnership with SANBAG, many of the cities in San Bernardino County, and San Bernardino County to develop a regional GHG inventory and reduction plan to achieve a GHG reduction target of 1990 levels by 2020. At the time of writing this EIS/EIR, the Regional GHG Reduction Plan and Climate Action Plan for the City have not been formally adopted. In July 2012, the TOD Overlay District was adopted by the City Council and provides land use policy for transit supportive land uses near existing and proposed transit stations in the City.
City of San Bernardino Sustainability Master Plan	The City of San Bernardino is in the process of creating a Sustainability Master Plan (SMP). A SMP is comprised of measures that, when implemented, will enable the City to reduce its GHG emissions from City operations and the community. The SMP is being funded through the City's Energy Efficiency Conservation Block Grant (EECBG), and will build on the City's EECS which identifies energy efficiency projects selected by the City, associated costs and projected energy savings.

Table 3.11-1. Pertinent Laws, Regulations, and Plans for Energy

Law, Regulation, or Plan	Summary and Project Nexus
City of Redlands Community Sustainability Plan	The Redlands City Council voted on March 1, 2011 to adopt a Sustainability Plan that designates ten overarching areas of sustainability in which to achieve efficiency and overall sustainable practices. Two of the key goals for efficient transportation and land use/urban design identified in the Sustainability Plan include reducing dependence on single occupancy vehicles and offering a variety of transportation options. The Project would meet both of these goals by removing a large number of single occupancy vehicles from the existing transportation network and reducing highway VMT by offering an alternative mode of public transportation. Correspondingly, the consumption of non-renewable resources would decrease with the Project.

3.11.2 Affected Environment

California's major sources of energy are electricity, natural gas, and crude oil. In 2010, the in-state generation of electricity consisted of 53.4 percent from natural gas, 15.7 percent from nuclear power plants, 14.6 percent from large hydropower sources, 1.7 percent from coal, and 14.6 percent from renewables (biomass, geothermal, solar, small hydro, and wind). Only 12 percent of California's natural gas was generated in the state, with the remainder of the natural gas coming from Canada, the Rockies, and other areas of the southwest. In 2011, 38.2 percent of the state's crude oil was generated in the state, with the remainder coming from Alaska and other foreign sources.

In 2010, the CEC reported a significant drop in annual electricity consumption as the recession worsened the economy combined with relatively mild weather in 2010. In 2010, the statewide electricity consumption was approximately 273,910 gigawatt hours (GWH), and is expected to increase up to 328,537 GWH by 2022 (CEC 2011). In the Southern California Edison (SCE) Planning Area, electricity consumption was approximately 98,064 GWH, and peak demand is expected to grow at an annual rate above 2 percent from 2010-2020, which reflects relatively high population and employment growth projections.

In reviewing the statewide electricity consumption by sector, in 2010, the "Transportation, Communications, Utilities and Street Lighting" sector resulted in approximately 17,846 GWH of the State's total 273,910 GWH consumed (about 6 percent); and is expected to grow at an annual rate of 0.77 percent through 2022 (CEC 2011).

In 2010, Californians consumed over 18 billion gallons of gasoline and diesel fuel, resulting in the estimated emission of over 200 million metric tons of GHG equivalence. According to the latest inventory of statewide GHG emissions values, in 2008 the transportation sector represented 36 percent of statewide GHG emissions (CEC website 2012).

Local Energy Use and Resources

Most traditional energy resources consumed by residents and businesses in San Bernardino County are imported. There are no local wells producing oil or natural gas, coal deposits, refineries and processing facilities or electrical generating stations. Natural gas is imported by SoCal Gas and the electrical energy is provided by Southern California Edison (SCE).

3.11.3 Environmental Impacts/Environmental Consequences

3.11.3.1 Effect Criteria

The Build Alternatives and Design Options would have an adverse effect on energy resources if it would:

- Conflict with adopted energy conservation plans, including Executive Order 13514;
- Use non-renewable energy resources in a wasteful and inefficient manner; or
- Require substantial increases in local and regional energy supplies or distribution capacity, including during peak and base demand periods for electricity and other forms of energy (e.g., natural gas, petroleum, etc.).

3.11.3.2 Methodology

To determine potential effects on energy resources, the energy demands associated with the Project were quantified for each source of energy required to operate the Project (e.g., diesel and electrical). These total energy requirements were considered on an annual basis and compared to existing automobile traffic that would otherwise be diverted to transit trips as a result of the Project. The analysis of potential energy resource effects included consideration of the following elements:

- The location of proposed facilities in relation to existing distribution lines/facilities, planned land uses, and service providers;
- Construction-related energy; and
- Energy during operations.

A review of the Project's compliance with Executive Order 13514 was also conducted, as applicable; and more specifically, a review of USDOT's SSPP was conducted to determine if the Project further achieves the goals and objectives of these initiatives in consideration of the Project's economic benefits, social benefits, and costs. A review of the Project's consistency with applicable energy conservation plans was also conducted to determine if the Project would be implemented in accordance with the regional strategies for energy conservation.

3.11.3.3 Criteria Requiring No Further Evaluation

Require substantial increases in local and regional electricity and natural gas supplies or distribution capacity. On a regional scale, the Project is expected to consume a minimal amount of electrical energy from the layover facility and for lighting at the station locations. This electrical energy demand associated is expected to be accommodated via the existing grid. Existing electrical utility lines exist near the locations of the proposed stations and layover facility, and as a result, these facilities would not require the construction of new energy supply facilities, including off-site generation, transmission, or distribution infrastructure, to accommodate the Project. No effect would occur under NEPA to energy resources, including electrical or natural gas generation or distribution facilities. No impacts are identified under CEQA.

3.11.3.4 Assessment of Environmental Effects

EFFECT 3.11-1	**Conflict with Adopted Energy Conservation Plans, including Executive Order 13514.** The Project would not conflict with any adopted energy conservation plan, including Executive Order 13514.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

The No Build Alternative would involve only periodic maintenance improvements to the existing rail line. The operation of construction-related equipment and heavy-duty machinery over this period would be regulated pursuant to existing state and federal regulations, which include standards for energy efficiency. Based on these considerations, Alternative 1 would not conflict with any adopted energy conservation plans and, therefore, no adverse effect would occur under NEPA. Under CEQA, the resulting impact would be less than significant.

Direct Effects from Long-Term Operations

Alternative 1 would not further the energy conservation initiatives of the region or the local cities, nor would it contribute to the state's GHG reduction targets in accordance with AB 32. The No Build Alternative would not implement the key goals or initiatives set forth in the Cities EECS, SCAG's RTP and SCS, or USDOT's SSPP. Therefore, the No Build Alternative would not be consistent with applicable federal, state, or local energy conservation plans. In this context, Alternative 1 would result in an adverse effect under NEPA. Under CEQA, this impact is considered significant.

Indirect Effects

Implementation of the No Build Alternative would indirectly contribute to increased energy consumption as a result of increased traffic congestion that is projected to occur in conjunction with future growth and the corresponding vehicles miles traveled (VMT) (Section 3.3, Transportation). Additionally, without the Project, opportunities for TOD as envisioned in the RTP and SCS for high quality transit areas would not be realized. Based on these considerations, the No Build Alternative would result in an adverse effect under NEPA. Under CEQA, this would be a significant impact.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

During construction, the Project would consume energy in two general forms: 1) the fuel energy consumed by construction vehicles and equipment; and 2) bound energy used in the manufacturing and processing of construction materials such as steel, concrete, pipes, lumber, and glass. Energy in the form of fuels used for construction vehicles and other equipment would be used during site excavation, grading, and construction. Such fuel energy use would be temporary and not represent a significant or permanent commitment to the use of energy, including non-renewable sources.

The construction activities associated with the Build Alternatives and Design Options would comply with federal, state, and local regulations to conserve and reduce energy usage during construction. Standard best management practices (BMPs) would be implemented onsite so that non-renewable energy would not be consumed in a wasteful, inefficient, or unnecessary manner. These BMPs would include, but are not limited to, recycling of concrete and wood, the reuse of existing ballast and sub-grade materials (as opposed to off-site hauling) and, where appropriate, and compliance with SCAQMD regulations for construction activities. Based on these considerations, energy demands during construction would be temporary and are not expected to result in conflicts with adopted energy conservation plans. Therefore, no adverse effect would occur under NEPA. A less than significant impact would occur under CEQA.

Direct Effects from Long-Term Operations

Operation of the Build Alternatives and Design Options would contribute to energy conservation goals contained in adopted energy conservation plans; as well as other federal, state, and local regulations to conserve and reduce energy usage (e.g., RTP). The Project would provide a means to achieve reduced VMT by providing another form of alternative transportation, thereby facilitating and contributing to reductions in the State's and USDOT's GHG reduction targets. Additionally, the Project would contribute to sustainability goals identified in EO 13514 and USDOT's SSPP. More specifically, the Project would realize improvements in environmental, energy and economic performance though the following:

- Assisting USDOT in meeting 2020 GHG emissions reduction targets by realizing net reductions in GHGs during operations (Appendix G);
- Increasing energy efficiency through long-term reductions in VMT;
- Reducing fleet petroleum consumption through the provision of alternative transportation and facilitation of non-motorized forms of transportation (e.g., pedestrian connectivity);
- Water conservation through minimal number of water/sewer hookups (e.g., low demand) and use of drought-tolerant landscaping;
- Reducing waste through the reuse or recycling of construction materials;
- Support for sustainable communities by facilitating future TOD opportunities within a high quality transit area as identified in the RTP; and
- Leveraging federal purchasing power to promote environmentally responsible products and technologies, including the purchasing and upgrading of locomotives with Tier 4 technologies.

Based on these considerations, the Build Alternatives and Design Options would realize desirable benefits in terms of energy efficiency and, therefore, a beneficial effect would result under NEPA. Under CEQA, this impact would be less than significant.

Indirect Effects

Implementation of the Build Alternatives and Design Options would enhance transit service in the region while encouraging more individuals to use public transit services as opposed to single occupant vehicles. As such, the Project is expected to reduce the consumption of gasoline from passenger vehicles on local and regional roadways, thereby resulting in regional reductions in VMT. Given that the Build Alternatives and Design Options would assist local jurisdictions in accommodating current and anticipated future growth while minimizing increases in traffic congestion, no adverse, indirect effect to energy consumption would result under NEPA. This indirect impact would be less than significant under CEQA.

EFFECT 3.11-2	**Use non-renewable resources in a wasteful and inefficient manner.** The Project would not use non-renewable resources in a wasteful and inefficient manner.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under Alternative 1, ongoing maintenance activities within the railroad corridor would consume energy in the form of fossil fuels used during site clearing, grading, and construction. Given that maintenance activities would be isolated to only a few locations along the railroad corridor at any one time and completed over a 10-year duration, the temporary and incremental energy use associated with these activities would be limited and not expected to conflict with state and federal standards. As a result, these activities would not result in wasteful, inefficient, and unnecessary consumption of energy during construction. Therefore, no adverse effect on energy resources is identified under NEPA. Under CEQA, the impact would be less than significant.

Direct Effects from Long-Term Operations

Alternative 1 would entail increased energy consumption in conjunction with increased traffic congestion as a result of projected growth within the region. Commuters would continue to rely on non-renewable energy sources such as gasoline and diesel fuels and this circumstance would not substantially change when compared to existing conditions. However, this alternative would inhibit SANBAG's ability to promote the efficient use and development of the railroad corridor for alternative transportation. The land value of the railroad corridor in of itself is a non-renewable resource that would remain under-utilized with the implementation of this alternative. In this context, a continuation of its non-use is considered an adverse effect under NEPA. This impact would significant under CEQA.

Indirect Effects

The No Build Alternative is expected to continue to encourage the consumption of non-renewable sources of energy by less energy-efficient modes of transportation, predominantly automobiles. Given that this pattern of consumption of non-renewables would be similar to existing conditions, no adverse, indirect effect would result under NEPA. Similarly, a less than significant impact would occur under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

During construction of the Build Alternatives and Design Options, construction vehicles and equipment would consume fuel energy and other non-renewable resources would be consumed in the construction process (e.g., steel, ballast, etc.). Construction-related energy use would be temporary with activities sequenced as efficiently as possible to minimize the contractor's energy costs. Likewise, recyclable materials would be recycled to the extent feasible by SANBAG's contractor, which in turn, would minimize the consumption of fuel energy through the export of these materials to local and regional landfills. As a result, no adverse effect is identified under NEPA. Under CEQA, this impact would be less than significant.

Direct Effects from Long-Term Operations

Passenger rail operations would involve the use of diesel fuel to run the trains to and from the rail stations. Currently there are two types of locomotives under consideration by SANBAG. The first locomotive is the MP36, which has a 0.751 miles per gallon fuel efficiency and the second is the F59, which has a 0.616 miles per gallon fuel efficiency (Appendix G). As stated in Chapter 2, these locomotive types would be fitted with Tier 4 emissions technologies (per USEPA's mandate) to minimize the generation of diesel particulates and NOx. The operation of the Build Alternatives and Design Options would in turn remove a large number of single occupancy vehicles from the existing transportation network and reduce highway VMT in the Study Area and regionally. Correspondingly, the consumption of non-renewable resources would decrease with the Project. As a result, a beneficial effect would occur under NEPA. Under CEQA, these impacts would be less than significant.

Indirect Effects

The Build Alternatives and Design Options would accommodate current and anticipated future increases in traffic in the region by providing a new means of public transportation. With new transit opportunities in the region, individuals could be encouraged to use public transit services and, as such, reduce the number of personal vehicles on the roads requiring energy. As a result, the Project could realize desirable benefits and no adverse effect would result under NEPA. Under CEQA, impacts would be less than significant.

3.11.4 Mitigation Measures

No mitigation measures would be required since no adverse effect would result under NEPA and the Project would entail desirable benefits. Under CEQA, impacts to energy resources under the Build Alternatives and Design Options would be less than significant.

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3.12 CULTURAL AND HISTORIC RESOURCES

This section provides a description of the existing cultural and historical resources within the defined Area of Potential Effect (APE) and describes applicable Federal, State, and local regulations. Potential adverse effects to cultural and historical resource as a result of the Build Alternatives and Design Options are considered in this section and, if necessary, mitigation is proposed in instances where adverse effects are identified. The findings and conclusions presented in this section are based on the Cultural Resources Technical Memorandum (ICF 2014d), which is provided as Appendix M. On August 14, 2014, the State Historic Preservation Officer (SHPO) concurred with both the eligibility determination and the effects analysis as presented in this section (see Appendix M).

3.12.1 Regulatory Framework

Table 3.12-1 identifies and summarizes federal, state and local laws, regulations, and plans that are applicable to the Project.

3.12.2 Affected Environment

3.12.2.1 Area of Potential Effect

The APE is defined as the geographic area or areas within which an undertaking that may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking (36 CFR Part 800.16[d]).

To determine whether a Project (or undertaking) could affect National Historical Preservation act (NRHP)-eligible properties, cultural resources (including archaeological, historical, and architectural properties) must be inventoried and evaluated for listing in the NRHP. In complying with the regulations of Section 106, 36 CFR Part 800, the following methodology was utilized for determining the APE.

The APE includes the existing railroad ROW, the construction footprint and temporary construction easements outside the existing railroad ROW that may be used for staging, access, and temporary construction activities, and one row of properties beyond the existing railroad ROW if the property contains a NRHP-eligible property. For archaeological resources, the APE is defined by the horizontal extent of areas where project-related construction activities may result in ground disturbance, as well as the vertical depth of proposed ground disturbance. The horizontal direct APE takes into account areas of direct ground disturbance, as well as areas for staging, access, and temporary construction activities. The vertical direct APE for the RPRP is not expected to exceed 5 feet below the existing ground surface (see Chapter 2).

On August 24, 2012, the FTA initiated consultation with SHPO, and consulted with the SHPO to determine, document and define the APE (see Appendix M). After discussion of the various components of the Project, SHPO concurred with the APE on April 24, 2013 (Appendix M).

Table 3.12-1. Pertinent Laws, Regulations, and Plans for Cultural and Historic Resources

Law, Regulation, or Plan	Summary and Project Nexus
Federal	
National Historic Preservation Act	Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, established a national policy of historic preservation, and encourages such preservation. The NHPA established the Advisory Council on Historic Preservation (ACHP) and provided procedures for the agency to follow if a proposed action affects a property that is included, or that may be eligible for inclusion, on the National Register of Historic Places (NRHP). The NRHP was developed as a direct result of the NHPA. Section 106 requires that the head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or Federally assisted undertaking in any state, and the head of any Federal department or independent agency having authority to license any undertaking, shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP. Thus, cultural resource impact analyses under NEPA must consider the Build Alternatives and Design Options' potential impacts on prehistoric resources as well as to historic properties listed or eligible for listing on the NRHP.
Archaeological Resources Protection Act	The Archaeological Resources Protection Act of 1979 regulates the protection of archaeological resources and sites that are on public (federal) lands and Indian lands.
Native American Graves Protection and Repatriation Act	The Native American Graves Protection and Repatriation Act is a federal law passed in 1990 that provides a process for museums and federal agencies to return certain Native American cultural items—such as human remains, funerary objects, scared objects, or objects of cultural patrimony—to lineal descendants and culturally affiliated Indian tribes.
State	
Office of Historic Preservation	The Office of Historic Preservation implements the policies of the NHPA on a statewide level. The SHPO is an appointed official who implements historic preservation programs within the state's jurisdictions. FTA initiated consultation with SHPO per the requirements of Section 106 for the Project on August 12, 2012 and delegated section 106 coordination to SANBAG. Appendix M contains the correspondence between SHPO, FTA, and SANBAG through November 2014.
California Register of Historical Resources	The California Register of Historical Resources (CRHR) is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens to identify the existing historical resources of the state and indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (California Public Resources Code Section 5024.1(a)). Certain resources are determined by the statute to be automatically included in the CRHR, including California properties formally determined eligible for, or listed in, the NRHP (California Public Resources Code Section 5024.1(d)).
Assembly Bill 4239	Assembly Bill (AB) 4239 established the Native American Heritage Commission (NAHC) as the primary government agency responsible for identifying and cataloging Native American cultural resources. Letters to potentially interested Native American tribes were sent out on October 17, 2012. To date, no responses have been received.

Table 3.12-1. Pertinent Laws, Regulations, and Plans for Cultural and Historic Resources

Law, Regulation, or Plan	Summary and Project Nexus
Public Resources Code 5097.97	Public Resources Code 5097.97 states that no agency or party shall cause severe or irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property, except on a clear and convincing showing that the public interest and necessity so require. No previously recorded Native American religious or ceremonial sites are documented within the APE.
Public Resources Code 5097.98 (b) and (e)	Requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until he/she confers with the NAHC-identified Most Likely Descendants (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to reenter the remains elsewhere on the property in a location not subject to further disturbance.
California Health and Safety Code, Section 7050.5	This code makes it a misdemeanor to disturb or remove human remains found outside a cemetery. This code also requires a project owner to halt construction if human remains are discovered and to contact the County Coroner.
Local	
County of San Bernardino Ordinance, Title 8, Division 2, Chapter 82.20 Paleontologic Resources Overlay	The Paleontologic Resources Overlay was created to identify and preserve significant paleontologic resources and to preserve paleontologic resources to provide a greater knowledge of County natural history. This source of information shall be used for review of individual project proposals to determine the level of effort necessary to evaluate potential project effects on paleontologic resources.
San Bernardino Register of Historical Resources	San Bernardino has yet to establish a register of historical properties under its 2007 historic preservation ordinance. As a result, the Historic Resources Reconnaissance Survey, San Bernardino, California, that was prepared by architect Milford Wayne Donaldson, A.I.A., for the City of San Bernardino Department of Planning and Building Services dated April 30, 1991 has been used by the City as a de facto list of its historic resources.

3.12.2.2 Prehistory

Building on early studies and focusing on data synthesis, Wallace (1955, 1978) developed a prehistoric chronology for the Southern California coastal region that is applicable to coastal and many inland areas, including southwestern San Bernardino County, and consists of the following sequence: Early Man, Milling Stone, Intermediate, and Late Prehistoric.

Early Man Period/San Dieguito (circa [c.] 10,000-6,000 B.C.)

Archaeological work has identified numerous sites dating prior to 10,000 years ago, including ones on the coast and Channel Islands (Appendix M). The earliest accepted dates for occupation are from two of the northern Channel Islands, located off the coast from Santa Barbara. On San Miguel Island, Daisy Cave clearly establishes the presence of people in this area about 10,000 years ago (Appendix M). On Santa Rosa Island, human remains have been dated from the Arlington Springs site to approximately 13,000 years ago (Appendix M).

Milling Stone/Encinitas Period (c. 6000-3000/1000 B.C.)

This period is characterized by an ecological adaptation to collecting, and by the dominance of small seed grinding. Milling stones, such as metates and slabs, and handstones, such as manos and mullers, occurred in large numbers for the first time, and were even more numerous near the end of this period. As indicated by their toolkits, people during this period practiced a mixed food procurement strategy. Subsistence patterns varied somewhat as groups became better adapted to their regional or local environments (Appendix M). Milling Stone Period sites are common in the Southern California at many inland locations, including Prado Basin in western Riverside County and the Pauma Valley in northeastern San Diego County (Appendix M).

Intermediate Period (c. 3000/1000 B.C.-A.D. 500/650)

This era is characterized by a shift toward a hunting and maritime subsistence strategy along with a wider use of plant foods. During the Intermediate Period, there was a pronounced trend toward greater adaptation to regional or local resources. For example, chipped stone tools suitable for hunting were more abundant and diversified, and shell fishhooks became part of the toolkit during this period. Larger knives, a variety of flake scrapers, and drill-like implements are common in deposits dating to this period. Projectile points include large side-notched, stemmed, and lanceolate or leaf-shaped forms. Bone tools, including awls, were more numerous than in the preceding period, and the use of asphaltum adhesive was common as well (Appendix M).

Late Prehistoric Period (c. A.D. 500-A.D. 1769)

During the Late Prehistoric Period, there was an increase in the use of plant food resources and an increase in land and marine mammal hunting. There was a concurrent increase in the diversity and complexity of material culture during this period, demonstrated by more classes of artifacts. The recovery of a greater number of small, finely chipped projectile points, usually stemless with convex or concave bases, indicates an increased use of the bow and arrow—rather than the atlatl and dart—for hunting. Cottonwood series triangular projectile points in particular are diagnostic of this period (Appendix M). Other items include steatite cooking vessels and containers, the increased presence of smaller bone and shell circular fishhooks, perforated stones, arrow shaft straighteners made of steatite, a variety of bone tools, and personal ornaments made from shell, bone, and stone (Appendix M). Ceramics were introduced during this time period, and pottery jugs, bowls, and smoking pipes become increasingly common.

Late Prehistoric Period sites contain complex objects of utility, art, and decoration. Ornaments include drilled whole Venus clam (*Chione* spp.) and drilled abalone. Another feature typical of Late Prehistoric Period occupation is an increase in the frequency of obsidian in site assemblages, especially imported from the Obsidian Butte source in Imperial County. Much of the rock art found today is thought to date to this period (Appendix M). Mortuary customs were elaborate, including cremation and interment, with abundant grave goods (Appendix M).

During this period, there was an increase in population size accompanied by the advent of larger, more permanent villages (Appendix M). Large populations and, in places, high population densities were characteristic, with some coastal and near-coastal settlements containing as many as 1,500 people. Many of the larger settlements were permanent villages where people resided year-round. The populations of these villages may have also increased seasonally (Appendix M).

3.12.2.3 Ethnography

The APE is located within an ethnographic transition zone between the Gabrielino/Tongva, Serrano, and Cahuilla Native American groups. All three groups are speakers of Takic languages, which are part of the Uto-Aztecan linguistic stock. Since the project area occupies a transitional zone among Gabrielino/Tongva, Serrano, and Cahuilla, it is necessary to consider all three groups to fully understand the occupation history of the rail corridor. Appendix M provides additional detail on these ethnographic groups.

3.12.2.4 Historical Context

San Bernardino County

Spanish missionaries settled the San Bernardino Valley in the early [1]9th century and colonized local native populations. Father Francisco Dumetz of Mission San Gabriel arrived in 1810 and named the area after the Italian San Bernardino of Siena (City of San Bernardino 2010). The missionaries ran Rancho San Bernardino, which functioned as a cattle ranch and adjunct to Mission San Gabriel until 1834 when the missions were closed by order of the Mexican governor of California. Following the secularization of the missions, the rancho was purchased by Jose de Carmen Lugo in 1842 and then sold to Mormon missionaries in the 1850s (Mission Tour n.d.). Mormon pioneers, under the aegis of Brigham Young, arrived in the San Bernardino Valley in 1851 and purchased 35,000 acres of Rancho San Bernardino. However, the missionaries were recalled to Salt Lake City by Brigham Young in 1857, leaving behind schools, roads, and a local government (City of San Bernardino 2010).

While the southwestern part of the county remained primarily an agricultural and logging area throughout the 19th century, some commercial interest was sparked by the Holcomb Valley Gold Rush from 1861 to 1862. Commercial interests were also served by the Southern Pacific Railroad, which arrived in Colton in 1875, and the California Southern Railroad, which arrived in San Bernardino in 1883 (Appendix M).

City of San Bernardino

When the City of San Bernardino was officially incorporated in 1854, two-thirds of the population was Mormon. Their influence ensured that San Bernardino would be a “temperance town,” with no drinking or gambling allowed. Growth in San Bernardino faltered when, in 1874, townspeople initially refused to accommodate railroad interests. As a result, Colton, a small city to the southwest, became the regional hub of the Southern Pacific Railroad—the first transcontinental railroad to pass through the Inland Empire—instead of San Bernardino. Later, when the AT&SF proposed that San Bernardino become a major facility for its operations, the city was much more amenable. With the AT&SF as an important growth engine for the area, the greater San Bernardino region thrived with citrus, grape, and steel industries (Appendix M). After World War II, San Bernardino’s economic and population growth continued, with suburban development rapidly replacing former agricultural land. Only in the 1970s did the region’s growth begin to falter with the demise of citrus and steel production and lessening demand for railroad transportation. While this trend has affected the historic core of downtown San Bernardino, residents have recently begun to return to the area as a result of redevelopment efforts (Appendix M).

City of Redlands

Like neighboring San Bernardino, the early 19th century history of Redlands is linked to the establishment of the San Bernardino *Asistencia* and formation of the Rancho San Bernardino during the Mexican Colonial period. A significant object associated with that early history is the Mill Creek Zanja, which made settlement and large-scale agriculture in the area possible. Today the Mill Creek Zanja, a portion of which is listed in the NRHP, is used for local drainage, spreading, and flood control. A portion of the Mill Creek Zanja crosses through the SANBAG ROW in the vicinity of I-10 and borders the SANBAG ROW east from the Santa Ana River into the City of Redlands (Appendix M).

Two East Coast persons who met in California in the late 1870s founded Redlands. The endeavor was the shared dream of Frank E. Brown, a civil engineer and Yale graduate, and E. G. Judson, a New York stockbroker, who setting out to establish an idyllic agricultural and residential community, selected the name Redlands colony due to the color of the adobe soil. With some financing from local grocer and dry goods merchant Lewis Jacobs, the two laid out the city, brought water from the mountains to the community, helped introduce the newly discovered Washington navel orange, and recruited settlers. In short order, Redlands became the center of the navel orange “citriculture” in Southern California, and is discussed in Carey McWilliams’ book *Southern California: An Island on the Land* (Appendix M).

By 1885, two transcontinental railroads, the Southern Pacific and Santa Fe, ran through the San Bernardino Valley; however, neither stopped in Redlands. The first spur from San Bernardino to Redlands was built in 1887. Familiarly known as the “Short Line,” the railroad corridor became part of the famed Kite-shaped Track, an extremely popular late 19th and early 20th century tourist excursion route. California experienced the biggest land boom in its history during the late 1880s. The rate war between the Santa Fe and the Southern Pacific railroads, which caused the boom, had a profound influence on the growth of Redlands, Crafton, and Lugonia, as well as various realty tracts known by such names as Terracina and Mound City.

The Redlands area prospered and grew during this period. The collapse of the boom in 1888 left Redlands well established, and in that year Redlands, Lugonia, the Brookside area, and a portion of Crafton voted to incorporate as Redlands. The incorporation joined the two distinctive street patterns that characterize Redlands today: the north-south Lugonia grid merges with the slope-oriented Redlands grid at the south edge of the valley (City of Redlands 2008).

Redlands Santa Fe Depot Historic District

The Redlands Santa Fe Depot District is an architecturally and historically significant part of the Redlands Specific Plan area that is listed as a Historic District on the NRHP. The district is located between Eureka, Fifth, Stuart and Redlands Boulevard. Its range of building types and construction dates conveys not only the evolution of downtown, but also distinctive eras of growth, architecture, and functions. New structures in the area have a pedestrian scale appropriate to the scale of the district’s adjacent historic buildings. The Project APE traverses this district, which is predominately commercial in nature, and includes transfer and livery businesses, industrial facilities, packing houses, and other citrus industry related structures sited in the area due to the proximity of the railroad or the train station.

Industrial Development

Due to the substantial role the railroad played in transporting goods, industrial development occurred in close proximity to the Redlands Subdivision. In Redlands, during the late 19th and early 20th centuries, the heaviest industrial uses, petroleum company properties featuring metal smudge oil storage tanks, machine shops, and warehouses, as well as citrus packing houses, adjoined the BNSF railroad corridor (USGS 1967:25–30). These pre-1960 buildings are of utilitarian design, and corrugated metal, brick, and reinforced concrete construction.

Ethnic History

Historically, because they form physical boundaries between neighborhoods and land uses, railroad corridors have had a role in defining the socioeconomic geography of communities. In Redlands, as is true of many communities across the United States during the late 19th and early 20th century, housing for working class individuals and minority groups was located adjoining, and in this particular case, generally north of the Redlands Subdivision. This placed Mexican American, Chinese, African American, and lower-income white workers within walking distance of some of the railroad-adjacent industrial facilities where they may have worked (e.g., orange packing houses, Chinese laundries). The establishment of passenger and freight depots by the ATSF and the Southern Pacific Railroads in Redlands attracted groups of immigrant laborers in search of work. Shanty towns housing immigrant Chinese, Japanese, and Mexican communities became established on both sides of the ATSF tracks just west of the Santa Fe depot. These shanty towns existed in various forms until the 1920s, when small worker housing was constructed north of the ATSF tracks and west of Orange and North Eureka Streets (Appendix M).

In Redlands, a small Chinatown existed just south of the Santa Fe Railroad tracks, west of the Redlands Santa Fe Station, and north of Oriental Avenue. The various buildings associated with Redlands Chinatown in the late 19th and early 20th centuries included residential quarters, a Chinese Mission, and a number of buildings identified as “Chinese Laundries” in the 1907 Sanborn map. Chinatown residents worked both in Redlands proper and in the Chinatown community. However, anti-Chinese sentiment grew in concert with a scarcity of employment for Anglo workers in the 1890s. With the implementation of several Exclusion Acts by the U.S. Congress, the population of Chinese in California, and Redlands, fell. Whereas there were approximately 200 Chinese in Redlands in the early 1890s, but 1896 there remained perhaps 24. “Soon after the Chinese left Redlands, the unusual lack of efficient nurserymen, laundrymen, and cooks was bewailed” (Appendix M). A few Chinese continued to occupy Chinatown as late as 1907. Today, there are no buildings associated with Redlands’ Chinatown remaining. A surface parking lot just east of Eureka Street and north of Oriental Avenue covers the location of the former Chinese laundries.

Surviving examples of working-class cottages can be found today along Stuart Avenue. These residences are modest, small in scale, one-story, and of frame construction with few architectural decorative elements. An excellent example of late 19th century front-gable-and-wing house type is found at 607 West Stuart Avenue (c. 1885). Other less well preserved examples of transitional Late Victorian/Craftsman cottages from the late 19th and early 20th century can be found along East Stuart Avenue, east and west of Second Baptist Church.

Located at 420 E. Stuart Street, Second Baptist Church is notable, at a local level of significance, as the oldest African American church congregation in Redlands, and documents the presence of African Americans in the neighborhood during the late 19th/early 20th centuries (Appendix M). A 1929 Redlands Directory confirms that Second Baptist Church was a “colored” congregation with Reverend F.W. Cooper as its pastor. According to the 1988 Redlands Historical Inventory Project, the Second Baptist Church served the African-American community in Redlands, which had existed since 1892. While the congregation was first organized on

Orange Street, and later on East State Street in Redlands, the location at 420 East Stuart served as their most longstanding site for worship. Members of the church often played active roles in the civic affairs of Redlands. Reverend R.L. Amos, pastor of the church from 1941 to 1946, became the first African-American to serve on the Redlands Chamber of Commerce. In addition, church founders such as Sebron Lee and Israel Beal are regarded as notable community figures during Redlands early growth stages in the last quarter of the 19th Century.

Transportation History

Redlands and the San Bernardino Valley Railway Company

The arrival of the CSRR/Santa Fe also stimulated the growth of other nearby communities besides San Bernardino. Among those that indirectly benefitted was the community of Redlands, which was the cultural center of the Inland Empire, and itself had a robust citrus industry. On January 12, 1887, just four months after the Santa Fe's arrival in San Bernardino, a consortium of Redlands businessmen established the San Bernardino Valley Railway Company (Beattie n.d.). Their San Bernardino Valley line is the branch from the San Bernardino depot to Redlands that is the focus of the proposed project. With $42,750 they purchased all right of way and Redlands Station grounds (Beattie n.d.). By December 31, 1887, the company was consolidated into the California Central Railway Company, who finished the alignment to the town of Mentone, due east/northeast of Redlands (Appendix M). Fred T. Perris, the California Southern engineer who supervised its completion through the Cajon Pass, also supervised the construction of this segment. This line, next to which the proposed project may add a second set of tracks, began operation in 1888, the same year that Redlands was incorporated. On November 7, 1889, the California Central, along with the California Southern, went under the operation of ATSF, which continues to operate this segment at the present time (Appendix M).

The Kite Shaped Track

Aside from being a significant contributor to Redlands growth and development, the railroad corridor is also notable for being a segment of the "Kite Shaped Track," a popular Southern California excursion route at the turn of the century. Named for a popular figure-8 shaped 19th century horseracing track, Santa Fe's Kite Shaped Track was a similarly figure-8 shaped 166-mile continuum of pre-existing segment across the greater Los Angeles basin. Began in 1891, the line, which was also called "The Loop," was highly promoted, and was itself a promotional tool for Southern California life. The line was marketed as a recreational excursion for both preexisting residents and visitors. Much of the line's focus was upon the sensory imagery of the Southern California citrus industry, and the beautiful natural terrain surrounding it. Additionally, the line served as a means for citrus farmers themselves to market their fruit, and is credited with stimulating the development of many communities along its path. The track alignment between San Bernardino and Redlands is all that remains of the Kite Shaped Track's eastern loop (Appendix M).

3.12.2.5 Architectural Resources

Architectural Resources in the Project APE Considered Historical Resources for the Purposes of CEQA

Ten properties within the APE are historical resources for the purposes of CEQA. Nine of these properties were previously identified as part of the Historic Resources Reconnaissance Survey, San Bernardino, California, that was prepared by architect Milford Wayne Donaldson, A.I.A., for the City of San Bernardino Department of Planning and Building Services dated April 30, 1991 (1991 survey). A tabular listing of these resources is included as an appendix to the 1991 survey (Appendix M). Because San Bernardino has yet to establish a local register of historical properties under its 2007 historic preservation ordinance, the 1991 survey has been used by the City as a de facto list of its historic resources (Appendix M). As a result, properties within the APE that are on the 1991 survey list are identified in the current assessment recordation documents as individually eligible for local listing (CEQA-only resources). The other CEQA-only historical resource within the APE is the California/I-10 Grove. This resource is part of the City of Redlands "Historical Preserve of Citrus," created by resolution number 5796 adopted by the city in 2000. These ten resources are provided in Table 3.12-2. None of these ten properties are pertinent to the Section 106 process.

Table 3.12-2. Architectural/Landscape Properties Considered Historical Resources per State CEQA Guidelines Section 15064.5(a)

Name	Address/Location	Community	Status[1, 2]
Religious building	1199 South Amos Street	San Bernardino, CA	5S3. Identified as local historic resource
Single-family residence	204 East Ennis Street	San Bernardino, CA	5S3. Identified as local historic resource
Single-family residence	241 East Ennis Street	San Bernardino, CA	5S3. Identified as local historic resource
Single-family residence	1048 South Lincoln Avenue	San Bernardino, CA	5S3. Identified as local historic resource
Religious building	952 South Lincoln Avenue	San Bernardino, CA	5S3. Identified as local historic resource
Single-family residence	311 South Sierra Way	San Bernardino, CA	5S3. Identified as local historic resource
Single-family residence	313 South Sierra Way	San Bernardino, CA	5S3. Identified as local historic resource
Single-family residence	879 South Washington Avenue	San Bernardino, CA	5S3. Identified as local historic resource
Single-family residence	905 South Washington Avenue	San Bernardino, CA	5S3. Identified as local historic resource
California/I-10 Grove	Immediately west of California Street and south of I-10	Redlands, CA	5D1 Identified as contributor to district designated locally

[1] California Historic Resources Code
[2] Note that these resources were locally designated as part of a historical resources survey or by local ordinance and are assumed eligible for the CRHR.
Source: Appendix M

The survey process undertaken for purposes of this evaluation was conducted per California Office of Historic Preservation (OHP) instructions, which gives a 45-year threshold for surveying properties for significance. Those properties that were of post-1967 construction (under 45 years of age) were not documented in the current survey unless they exhibited potentially "exceptional" importance (Appendix M).

National Register Listed Sites Located Within the Project APE

Nine architectural resources listed on the NRHP are located within the APE, as shown in Table 3.12-3, including the Redlands Santa Fe Depot Historic District (Appendix M). NRHP boundaries are historical parcel boundaries unless otherwise indicated. An additional nine properties within the APE and listed in Table 3.12-4 are eligible for listing in the NRHP based on the results of the survey completed in support of the Cultural Resources Technical Memorandum (see Appendix M). On August 14, 2014, the SHPO concurred with eligibility determinations provided in Table 3.12-4.

Table 3.12-3. Architectural Properties Listed on the National Register

Name	Address/Location	National Register Criteria	Status[1]
Redlands Santa Fe Depot Historic District (Contributors listed below in remainder of this table)	Redlands, CA	Criteria A and C	1S. Redlands Santa Fe Depot National Register Historic District
Haight Packing House	345 North Fifth Street Redlands, CA	Criteria A and C	1D. Listed as part of the Redlands Santa Fe Depot National Register Historic District
Redlands Board of Trade/Redlands Chamber of Commerce	337 Orange Street Redlands, CA	Criteria A and C	1D. Listed as part of the Redlands Santa Fe Depot National Register Historic District
Palace Livery	346 Orange Street Redlands, CA	Criteria A and C	1D. Listed as part of the Redlands Santa Fe Depot National Register Historic District
Pioneer Transfer	348 Orange Street Redlands, CA	Criteria A and C	1D. Listed as part of the Redlands Santa Fe Depot National Register Historic District
Atchison, Topeka, and Santa Fe Railway – Redlands Station	351 Orange Street Redlands, CA	Criteria A and C	1D. Listed as part of the Redlands Santa Fe Depot National Register Historic District
Packard Motor Company Sales Office	409 Orange Street Redlands, CA	Criteria A and C	1D. Listed as part of the Redlands Santa Fe Depot National Register Historic District
Redlands City Transfer	360 Orange Street Redlands, CA	Criteria A and C	1D. Listed as part of the Redlands Santa Fe Depot National Register Historic District.
Cope Commercial Company Warehouse (Grigsby Brothers)	21 West Stuart Avenue Redlands, CA	Criteria A and C	1D. Listed as part of the Redlands Santa Fe Depot National Register Historic District

[1] California Department of Parks and Recreation, Office of Historic Preservation. 2004. User's Guide to the California Historical Resources Status Codes & Historic Resources Inventory Directory. Technical Assistance Bulletin No. 8. Sacramento, California.

Source: Appendix M

Table 3.12-4. Architectural Properties Eligible for Listing on the National Register

Name	Address/Location	National Register Criteria	Status[1, 2]
Victoria Elementary School	1505 Richardson Street San Bernardino, CA	Criteria C	3S. Eligible for the NRHP based on the current survey
Single-family residence	337 North Cook Street Redlands, CA	Criteria C	3S. Eligible for the NRHP based on the current survey
Single-family residence	620 New York Street Redlands, CA	Criteria C	3S. Eligible for the NRHP based on the current survey
Brick warehouse	440 Oriental Avenue Redlands, CA	Criteria C	3S. Eligible for the NRHP based on the current survey
Van Dorin Motor Company	1267 West Redlands Boulevard Redlands, CA	Criteria C	3S. Eligible for the NRHP based on the current survey
Second Baptist Church	420 East Stuart Avenue Redlands, CA	Criteria A	3S. Eligible for the NRHP based on the current survey
Single-family residence	510 East Stuart Avenue Redlands, CA	Criteria C	3S. Eligible for the NRHP based on the current survey
Single-family residence	610 East Stuart Avenue Redlands, CA	Criteria C	3S. Eligible for the NRHP based on the current survey
The Redlands Lawn Bowling Club	411 North University Street Redlands, CA	Criteria A	3S. Eligible for the NRHP based on the current survey

1 SHPO concurred with eligibility determinations on August 14, 2014.
2 California Department of Parks and Recreation, Office of Historic Preservation. 2004. User's Guide to the California Historical Resources Status Codes & Historic Resources Inventory Directory. Technical Assistance Bulletin No. 8. Sacramento, California.

Source: Appendix M

3.12.2.6 Archaeological Resources

Archaeological resources are the physical remains of past human activities that can be either prehistoric or historic in origin. Archaeological sites are locations that contain significant evidence of human activity. Generally, a site is defined by a significant accumulation or presences of one or more of the following: food remains, waste from the manufacturing of tools, tools, concentrations or alignments of stones, modification of rock surfaces, unusual discoloration or accumulation of soil, or human skeletal remains. Archaeological sites are often located along creek areas, ridgelines, and vistas.

A total of five archaeological resources occur in the APE. These sites consist of a segment of the Mill Creek Zanja (CA-SBR-8092H), a portion of the Redlands Chinatown site (CA-SBR-5314H), a portion of the Redway House site (CA-SBR-5313H), the Elephant Orchards Packing House Site (P-36-11856H) and a segment of the Gage Canal (CA-SBR-7168H).

Based on archaeological presence-absence testing in the portion of the Redway House site within the APE, no subsurface archaeological deposits were found; thus, the Redway House site was not detected within the APE (Appendix M).

Based on the archaeological presence-absence testing conducted in the portion of the Redlands Chinatown site, the cultural materials uncovered within the APE were determined to lack association with other cultural materials and physical context because they are not part of an intact cultural feature or deposit. They have no known associations with persons or events important to the history of the Chinese or other ethnic communities in Redlands, to the city of Redlands, San Bernardino County, the State of California, or the nation. Hence, they do not appear to be eligible for listing on the NRHP under Criterion A or Criterion B. The cultural material does not have high artistic value and does not embody distinctive characteristics of a type, period, or method of construction. Hence, they do not appear to be eligible for listing on the NRHP under Criterion C.

The cultural materials observed in the SANBAG ROW within the project APE are not significant under Criterion D of the NRHP as a source, or likely source, of important historical information, nor do they appear likely to yield important information about historic lifeways, materials, or technologies. In fact, given the long-term use of the rail corridor as an unauthorized pedestrian throughway, it is likely the sparse historic period glass fragments are associated with this activity.

Based on archaeological presence-absence testing in the portions of the Redlands Chinatown site within the APE, no intact subsurface archaeological deposits were found. The cultural materials detected in the SANBAG ROW are largely non-diagnostic, and they do not demonstrate an association with Redlands Chinatown. Thus, the Redlands Chinatown site was not detected within the APE.

The Elephant Orchards Packing House site and the Gage Canal are not eligible for listing in the NRHP and the CRHR based on previous evaluations by others, which determined that these resources lacked integrity as a result of various modifications over the last century. The segment of the Mill Creek Zanja within the Project APE is not eligible for listing in the NRHP or the CRHR based on the results of the survey and evaluation completed (Cultural Resources Technical Memorandum Appendix M)). A list of these resources is presented in Table 3.12-5 below.

In terms of prehistoric archaeology, the presence or absence of water is a crucial predictor of site location in Southern California. Prehistoric camps or villages usually were located adjacent to permanent water sources, often at springs or along rivers. The APE is located on an alluvial fan near the junction of Lytle Creek and Warm Creek, two moderately substantial streams that flow from the nearby mountains. Prehistorically, these intermittent streams probably supported riparian vegetation that would have attracted Native Americans for plant products or for the hunting of game. However, the Project is some distance from these small flows, and it is unlikely that the area within the APE was attractive to Native American occupation and use, being a dry, open alluvial surface. Therefore, the potential for the APE to yield buried prehistoric archaeological resources is considered to be low.

Table 3.12-5. Archaeological Resources Identified in the Project Area

Site	Description	Status [1]
CA-SBR-7168	Gage Canal	6Y. Not eligible for CRHR or NRHP based on previous evaluation by others (1995)
CA-SBR-8092H	Mill Creek Zanja	6Z. Portion of the resource within the ROW found not eligible for CRHR or NRHP based on a lack of integrity and setting as a result of the current survey and evaluation [2]
P-36-11856H	Elephant Orchards Packing House Site	6Y. Not eligible for CRHR or NRHP based on previous evaluation by others (2005)_
CA-SBR-5314H	Redlands Chinatown	N/A. Site not detected in the APE; therefore, eligibility criteria could not be applied. Portions of the site outside SANBAG's ROW are assumed to be eligible for the CRHR or NRHP.[2]
CA-SBR-5313H	Redway House	N/A. Site not detected in the APE; therefore, eligibility criteria could not be applied. Portion of the site outside SANBAG's ROW are assumed to be eligible for the for CRHR or NRHP. [2]

[1] California Department of Parks and Recreation, Office of Historic Preservation. 2004. User's Guide to the California Historical Resources Status Codes & Historic Resources Inventory Directory. Technical Assistance Bulletin No. 8. Sacramento, California.

[2] SHPO concurred with eligibility determinations on August 14, 2014.**Source:** Appendix M

In terms of historic period archaeological resources, the APE is urbanized, occupied by structures and roads built in the 20th century. Sanborn fire insurance maps from 1906 depict the rail corridor as partially occupied by scattered buildings along the streets and along the AT&SF railroad line. Approximately one-third of the lots adjacent to the AT&SF rail line in the rail corridor are depicted as occupied by buildings; the remainder are open lots, or what the Sanborn maps label "Vacant." This depicts what was a typical pattern in expanding towns, indicating that the area was being developed at the time the fire insurance maps were first prepared. It also indicates that the area of San Bernardino being developed, which encompasses the APE, was open land prior to about 1906. The 1896 and 1901 USGS maps depict this area as open land with the railroad lines and a few main streets present.

Because the Study Area was developed in the early 20th century, some hollow fill historic features such as privy pits (a few appear to be depicted on the Sanborn maps) or trash deposits may exist within the APE. However, as the City likely developed modern trash and sewer disposal at about the same time, this potential is considered to be low, and the potential for the APE to yield buried historic period archaeological resources of any significance is also considered to be low.

3.12.2.7 Paleontological Resources

Paleontological resources are the fossilized remains of organisms from prehistoric environments that are found in geologic strata. Fossil remains may occur throughout the City, although the evenness of their distribution is not known (City of San Bernardino 2005b). The potential for fossil occurrence depends on the rock type or sediment type exposed at the surface in a given area (City of San Bernardino 2005b). The Project APE has been previously disturbed and is currently developed as a rail corridor.

The proposed Project is situated on Quaternary alluvium (see Figure 3.9-1), which is older at depth. Quaternary Holocene-age alluvium near the modern ground surface has a low potential for vertebrate fossils, but older Quaternary deposits have a higher potential for vertebrate fossils, primarily of mammals of the Pleistocene epoch. Surface grading or very shallow excavation in the Project APE is unlikely to uncover significant fossil vertebrates. Deeper excavations that extend five feet or more into older Quaternary deposits may encounter significant fossil vertebrate remains.

3.12.3 Environmental Impacts/Environmental Consequences

3.12.3.1 Effect Criteria

The Project Alternatives and Design Options would have an adverse effect on cultural resources if it would:

- Cause a substantial adverse change in the significance of a historical resource;
- Cause a substantial adverse change in the significance of an archaeological resource;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

3.12.3.2 Methodology

This analysis evaluates the potential for the Build Alternatives and Design Options as described in Chapter 2.0 to direct or indirectly alter the significance of cultural and historical resources in the APE as identified in the Cultural Resources Technical Memorandum competed for the Project (see Appendix M). Generally, and for the purposes of this EIS/EIR, such resources are considered to be potentially significant per NRHP/CRHR criteria and are considered as such for the analysis of environmental effects. Direct and indirect adverse effects to these resources were determined based on their position within or adjacent to the APE. As described, the extent of the APE was determined both horizontally and vertically based on actions described in Chapter 2.

For the purposes of the vertical APE, this analysis assumes the general maintenance of the existing grades in the post-construction condition. Construction-related sub-surface activities would be limited to the replacement of existing ballast and sub-ballast, foundation supports for stations and bridges, and installation of fiber optics along the length of the railroad corridor within a narrow (up to three feet wide) five-foot deep trench.

For the analysis of historical resources, there are 161 properties in the APE. One property is the California I-10 Grove and the remaining properties contain buildings over 45 years of age. Many of these buildings are not sensitive to a change in railroad activity because they were either used by a railroad; served by a railroad; or because railroad materials, features, and activities have long been part of their historic setting. The methodology utilized to streamline the documentation of architectural resources within the APE is outlined in Appendix M. Using the available information on known cultural resources, as provided in Appendix M, and significance considerations described above, an assessment of the Build Alternatives and Design Options was completed to determine their potential to disturb these resources. On November 29, 2012, FTA consulted with the SHPO on the use of this streamlined methodology for architectural resources. The SHPO concurred with this approach on January 14, 2013 (see Appendix M).

Subsurface archaeological testing was completed to assess the extent and nature of the deposits. The testing focused on determining the horizontal and vertical extent of the site(s), within the SANBAG ROW and the nature of the archaeological material, if present. The implementation of the testing and evaluation was coordinated with the California SHPO to determine the appropriate field methods.

3.12.3.3 Criteria Requiring No Further Evaluation

The following criteria would be unaffected or are not applicable to actions associated with the Build Alternatives and Design Options.

Unique Paleontological Resources. Based on a review of San Bernardino County's Conservation Background Report and available geologic mapping, the APE is underlain by Holocene-aged alluvial deposits. These geologic materials are the result of the alluvial deposition along the Santa Ana River within the last 11,000 years. By definition, paleontological resources are fossilized artifacts that formed in the Pleistocene and prior. Based on these circumstances combined with the minimal amount of subsurface excavation required for the installation of the track and station improvements, it is unlikely that the APE would contain paleontological resources. Therefore, no effect would occur to paleontological resources under NEPA. Under CEQA, no impact would occur and no further evaluation is necessary.

3.12.3.4 Assessment of Environmental Impacts

The following section is based on resource eligibility recommendations and effects analysis presented in the technical memorandum prepared for the Project (Appendix M). SHPO concurred with the resource eligibility and effects determinations on August 14, 2014.

EFFECT 3.12-1	**Impacts to Historic Architectural Properties Listed Under the NRHP.** The Project could cause a substantial adverse change in the significance of a historical resource listed on or eligible for the NRHP.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, the Project would not be constructed and existing conditions within the railroad corridor would remain unchanged pending future maintenance activities. All future maintenance activities would be restricted to SANBAG's existing ROW and, therefore, no encroachment into adjacent properties would occur. These activities would be focused in the western half of the railroad corridor, west of Tippecanoe Avenue, and would maintain the current track alignment. Based on these considerations, no adverse effect to historic properties would occur under NEPA. Under CEQA, this impact would be less than significant.

Direct Effects from Long-Term Operation

Continued freight operations would result in no physical changes to the existing railroad corridor. Based on this consideration, no effect to historic properties would occur under NEPA and no impact would occur under CEQA.

Indirect Effects

Negligible indirect construction or operational effects to historic period resources would occur under the No Build Alternative because there would be no substantial change in existing physical conditions along the corridor or freight operations. Therefore, no adverse effect to historic properties would occur under NEPA. Impacts under CEQA would be less than significant.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Construction-related excavation for the proposed track improvements, stations, and parking improvements carries the potential to adversely affect historic properties both listed and eligible for listing under the NRHP. Construction activities would generally be restricted to the existing railroad corridor with the exception of the layover facility (expect Option 2) and perimeter improvements along SANBAG's ROW including, but not limited to, drainage facilities, utilities, or fencing. The close proximity of construction has potential for adverse effects to each of the historic properties listed in Tables 3.12-3 and 3.12-4. These effects are discussed below.

National Register Listed Sites

Santa Fe Depot Historic District. The Build Alternatives and Design Options would require construction through the NRHP-listed Redlands Santa Fe Depot Historic District. This historic district was evaluated and listed in the NRHP in 1991 (1S status code; Appendix M). It currently consists of 23 contributing properties of which eight are located within the APE and listed below. Its general boundaries are Eureka Street, Fifth Street, Stuart Avenue, and Redlands Boulevard. Dating from 1888 through 1946, the buildings visually document the district's economic and social history (Appendix M).

The Redlands Station (351 Orange Street) is located within the boundaries of the Santa Fe Depot Historic District. The Redlands Station is a NRHP-listed contributor to the district. As stated in the methodology, an adverse effect is found when an "Project" may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association [1] (see Appendix M). The contributors to the Redlands Santa Fe Depot Historic District located within the APE are:

- Haight Packing House (345 North Fifth Street);
- Redlands Board of Trade/Chamber of Commerce (337 Orange Street);
- Palace Livery (346 Orange Street);
- Pioneer Transfer (348 Orange Street);
- Atchison, Topeka, and Santa Fe Railway – Redlands Station (351 Orange Street);
- Packard Motor Company Sales Office (409 Orange Street);
- Redlands City Transfer (360 Orange Street); and
- Cope Commercial Company Warehouse / Grigsby Brothers (21 West Stuart Avenue).

[1] 36 CFR Part 800.5

Below is an assessment of potential adverse effects of the Build Alternatives and Design Options on the Redlands Santa Fe Historic District in the context of the seven criteria identified in the Section 106 regulations.

(i) *Physical destruction of or damage to all or part of the property.* The Build Alternatives and Design Options would result in no direct physical destruction or damage to the historic district or to any of its contributors. However, there is the potential for five of the contributing buildings to be damaged by construction-related vibration.

(ii) *Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines.* The Build Alternatives and Design Options would not alter the historic district or any of its contributors in any manner inconsistent with the Secretary's Standards.

(iii) *Removal of the property from its historic location.* The Build Alternatives and Design Options would not remove the historic district or any of its contributors from their historic location.

(iv) *Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance.* The Build Alternatives and Design Options would not directly change the character of the historic district's or any of its contributor's use or physical features. Due to the close proximity of construction (e.g. less than five feet), there is a potential for adverse, indirect effects related to vibration damage due to the potential closeness of the work (five feet or less from a structure).

(v) *Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features.* The Build Alternatives and Design Options would not introduce such elements that diminish the integrity of the historic district or any of its contributor's significant historic features.

(vi) *Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization.* The Build Alternatives and Design Options would not cause the deterioration of the historic district or any of its contributors.

(vii) *Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.* The railroad corridor is not under federal control and the Build Alternatives would not result in the transfer, sale, or lease of any historic property out of federal control or ownership.

In summary, the Build Alternatives could adversely affect the district's distinctive physical or historical characteristics if the five contributing buildings within the APE are determined to be susceptible to construction-related vibration and no stabilization measure are instituted. If these buildings, when assessed, are found not to be susceptible to construction-related vibration, or if they are stabilized following the Secretary of the Interior's standards for the treatment of historic properties, the Build Alternatives would not alter the district's distinctive physical or historical characteristics or its integrity of location, design, materials, workmanship, feeling, or association. In this context, with the implementation of Mitigation Measure CUL-1, no adverse effect would result under NEPA. Similarly, with the implementation of the proposed mitigation, the impact under CEQA would be less than significant.

Atchison, Topeka, and Santa Fe Railway – Redlands Station (351 Orange Street). Character defining features contained within the northern section of the Redlands Depot includes the grand plaza and brick surface at the foot of the colonnade. North of the grand plaza, an unpaved area containing a railroad spur track (currently covered with grass), a narrow brick-paved landing (extant), and the mainline track (extant) (see Figure 3.12-1). The bricks of the grand plaza are a character-defining feature of the Redlands Station dating to the Redlands Santa Fe Depot Historic District's 1889-1941 period of significance. The historic arrangement of the grand plaza, railroad spur tracks, narrow landing brick, and mainline track was also a character-defining feature of the Redlands Station during the period of significance. However, the arrangement of these features been altered since the period of significance. The narrow landing and the mainline track are within the SANBAG ROW, immediately north of the Redlands Station property boundary, which includes grass-covered former spur track area (see Figure 3.12-1).

The historical integrity of the Redlands Station has been somewhat diminished by a number of alterations over the years, including the removal of the spur track and subsequent planting of this area with grass (Appendix M). Additionally, the original rectilinear concrete sidewalk and curb on the east side of the station building (along Orange Street) was reconstructed to form a predominantly brick sidewalk with curvilinear curbs. These alterations appear to have occurred prior to the Santa Fe Depot Historic District's listing on the NRHP in 1991 under Criteria A and C (Appendix M). The most substantial change in the setting and design of the station occurred after 1991, with construction of the fairly sensitive but sizeable and layout-altering addition connecting the east end of the station plaza to the Redlands Board of Trade / Chamber of Commerce building to the south (Appendix M).

Despite these previous alterations to the Redlands Station and the original arrangement of the station's grand plaza and associated features (spur track, narrow landing, and main track), the property continues to convey its significance and remain a contributor to the Redlands Santa Fe Historic District. The station waiting room/warehouse remains intact and structurally integrated on its north side with the long rectilinear colonnade aligned parallel to the rail alignment. As the most important element of the Station, the colonnade—with its Doric columns, tile roof, pediments, monitors, molded concrete panels with vegetable designs, and the brick floor of the grand plaza—continues to exhibit the distinctive Classical Revival elements that give the Station its architectural significance (Appendix M).

The Build Alternatives would remove the brick narrow landing within the SANBAG ROW and replace it with a graded trackway and maintenance access (Figure 3.12-2). The Build Alternatives would also introduce a pedestrian channelization fence between the grass-covered former spur track area along the northern edge of the station property line and the south side of the narrow landing at the eastern edge of the SANBAG ROW. To achieve ADA compliance, the currently uneven transition between the east end of the brick grand plaza and the sidewalk along Orange Street would be adjusted. This would require the removal of portions of brick at the east end of the grand plaza, which is one of the character defining features of the Redlands Station that serve to convey the building's architectural significance as a contributor to the Redlands Santa Fe Historic District. The flattening and associated brick removal would involve areas totaling 275 square feet at the east end of the grand plaza, which comprises three percent of the plaza's total area.

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Existing Conditions at Redlands Depot

Figure 3.12-1

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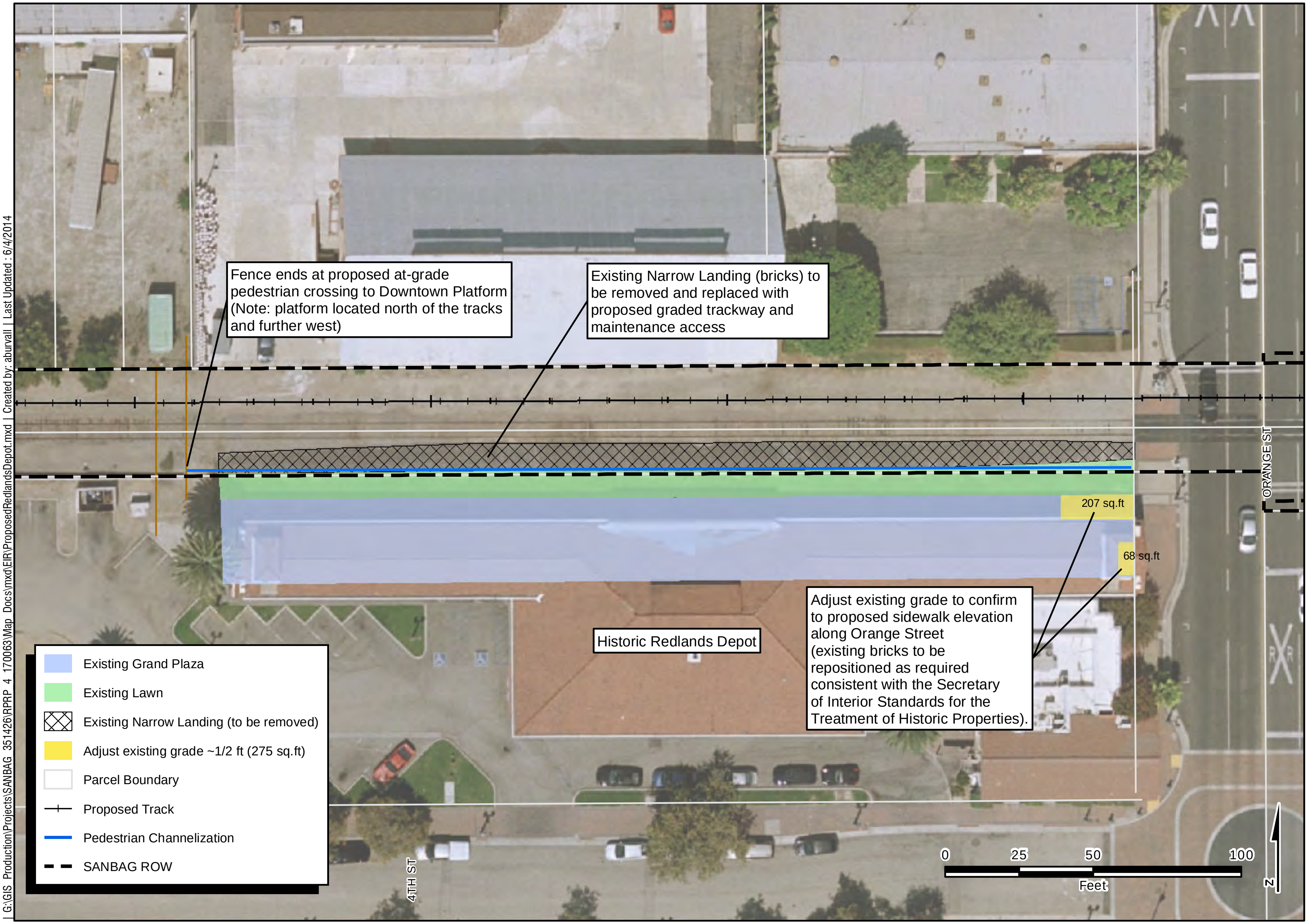

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Proposed Conditions at Redlands Depot

Figure 3.12-2

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Resurfacing of the flattened area of the grand plaza's east end will be conducted in accordance with the Secretary of the Interior's Standards for Rehabilitation with Guidelines for Applying the Standards (Appendix M). If possible, the original brick removed at the east end of the grand plaza to allow for surface flattening will be salvaged and reinstalled. If this is not possible, similar original brick removed from the narrow landing will be installed at the flattened portions of the grand plaza's east end. If the original brick at the east end of the grand plaza and the narrow landing cannot be reused, in-kind replacement brick matching the size and color of the original brick will be procured and installed at the flattened portions of the grand plaza's east end. Additionally, SANBAG will arrange for analysis of the existing mortar and production of appropriate mortar for the brickwork at the east end of the grand plaza by a qualified expert as outlined in the National Park Service's Preservation Brief 2: Repointing Mortar Joints in Historic Masonry Buildings (Appendix M).

The Build Alternatives would remove the narrow landing brick, which is within the SANBAG ROW beyond the station's current property lines in order create a graded trackway and maintenance access, and would introduce a new pedestrian channelization fence at the southern edge of the SANBAG ROW (between the grass-covered former spur track area and the narrow landing) (Figure 3.12-2). These areas are part of the immediate setting beyond the footprint of the Redlands Station at the north and east sides of the property, which has been substantially altered and no longer retains integrity to the 1889-1941 period of significance. Although the original arrangement of the grand plaza, the spur line, the narrow landing, and the main track was a character defining feature of the resource dating to the period of significance, this arrangement has since been altered by removal of the spur line and installation of lawn at that location (Appendix M). Other components of the immediate setting just beyond the footprint of the station and the grand plaza have also been altered since the period of significance. These alterations include the addition between the colonnade and the Redlands Board of Trade/ Chamber of Commerce building, and reconstruction of the original rectilinear concrete sidewalk on the east side of the property, which now consists mainly of non-original brick and incorporates non-original curvilinear curbs. The Build Alternatives' proposed alterations to the immediate setting on the north and northeast sides of the property would not affect the essential Classical Revival architectural features that convey its significance under Criteria A and C: the waiting room/warehouse and the colonnade's Doric columns, tile roof, brick grand plaza, pediments, monitors, and molded concrete panels with vegetable designs. For these reasons, this portion of the Build Alternatives would not result in an adverse effect to the significance of the Redlands Depot or the Redlands Santa Fe Depot Historic District to which it contributes (Appendix M).

Flattening of the east end of the grand plaza has the potential to result in a direct adverse effect to the integrity of the Redlands Station by altering three percent of its total brick-covered area (Figure 3.12-2). However, the Build Alternatives will resurface the flattened portions of the grand plaza floor at the east end of the property with original brick removed from the plaza or the narrow landing, or with in-kind replacement brick. The existing mortar will also be tested and appropriate mortar produced for the resurfacing. The brick work at the east end of the grand plaza will be conducted in accordance with the Secretary of the Interior's Standards for Rehabilitation with Guidelines for Applying the Standards and Preservation Brief 2: Repointing Mortar Joints in Historic Masonry Buildings (Appendix M). With these rehabilitation provisions incorporated into the Build Alternatives, the Redlands Depot's grand plaza will retain integrity of design, materials, and workmanship as a character-defining feature. The Depot will continue to exhibit its essential Classical Revival architectural features and will maintain its status as a contributor to the Redlands Santa Fe Depot Historic District. Based on this determination under

Section 106 (see Appendix M), no adverse effect would result under NEPA. Under CEQA, a less than significant impact would result.

Finally, if deemed necessary due to construction vibration effects, stabilization following the Secretary of the Interior's standards for the treatment of historic properties will be implemented at the Redlands Station. If needed, stabilization would not alter the building's status as a contributor to the Redlands Santa Fe Depot Historic District; hence, no adverse effect would result under NEPA. Under CEQA, the impact is less than significant.

Other NRHP Listed Sites. Construction of the Build Alternatives and Design Options would not directly alter the distinctive physical or historical characteristics of the NRHP-Listed sites identified below (see Appendix M).

- Haight Packing House (345 North Fifth Street);
- Redlands Board of Trade/Chamber of Commerce (337 Orange Street);
- Palace Livery (346 Orange Street);
- Pioneer Transfer (348 Orange Street);
- Packard Motor Company Sales (409 Orange Street);
- Redlands City Transfer (360 Orange Street); and
- Cope Commercial Company Warehouse/Grigsby Brothers (21 West Stuart Avenue).

Based on these findings, the Build Alternatives and Design Options would not alter the integrity of any of these structures nor would it alter their status individually or as contributors to the Redlands Santa Fe Depot Historic District (Appendix M). In this context, no adverse effect would result under NEPA. Under CEQA, the corresponding impact would be less than significant.

Properties Potentially Eligible for Listing in the National Register

The Build Alternatives and Design Options would not directly alter the distinctive physical or historical characteristics of the following resources that are potentially eligible for listing on the NRHP (see Appendix M).

- Victoria Elementary School (1505 Richardson Street);
- Single-family residence (337 North Cook Street);
- Single-family residence (620 New York Street);
- Brick Warehouse (440 Oriental Avenue);
- Van Dorin Motor Company (1267 West Redlands Boulevard);
- Second Baptist Church (420 East Stuart Street);
- Single-family residence (510 East Stuart Street);
- Single-family residence (610 East Stuart Street); and
- Redlands Lawn Bowling Club (411 North University Street).

Therefore, implementation of the Build Alternatives and Design Options would have no adverse effect on the significance of these historic properties under NEPA. Under CEQA, a less than significant impact would occur.

Long-Term Operations

Once operational, there would be no physical disruptions to adjacent properties. No adverse operational effects to historic properties listed or eligible for listing on the NRHP are anticipated to occur once the Project is complete and fully implemented. Therefore, no operational effects would occur under NEPA. Under CEQA, no impact would occur.

Indirect Effects

Damage from Vibration. All of the historic properties located adjacent to the SANBAG ROW were constructed during a period when the existing rail line was fully operational with numerous freight trains passing by on a regular basis. There is no obvious visual indication that adjacent historic buildings have been adversely affected by vibration emanating from past operations on the railroad. However, there is still a remote possibility of potential vibration effects on historic properties located adjacent to the SANBAG ROW in the future.

Based on the Noise and Vibration Technical Memorandum (Appendix H1) prepared for the project, the worst-case vibration level from construction-related activities near the Redlands Depot would be approximately 0.995 inches/second peak-particle velocity (PPV), a level that would be substantially higher than the corresponding damage criteria level of 0.12 inch/second PPV for fragile structures. Once operational, the predicted vibration level for passing trains is 74 VdB; whereas, the corresponding threshold for damage is 90 VdB. As a result, vibration-related damage to structures is only a concern during construction.

As previously stated, the APE includes properties listed or eligible for listing in the NRHP located adjacent to the rail line. Although these properties are within the boundaries of the APE they would not be directly affected by the Preferred Project through direct physical destruction or damage in order to build the project. However, these buildings may be subject to effects from nearby construction-related vibration.

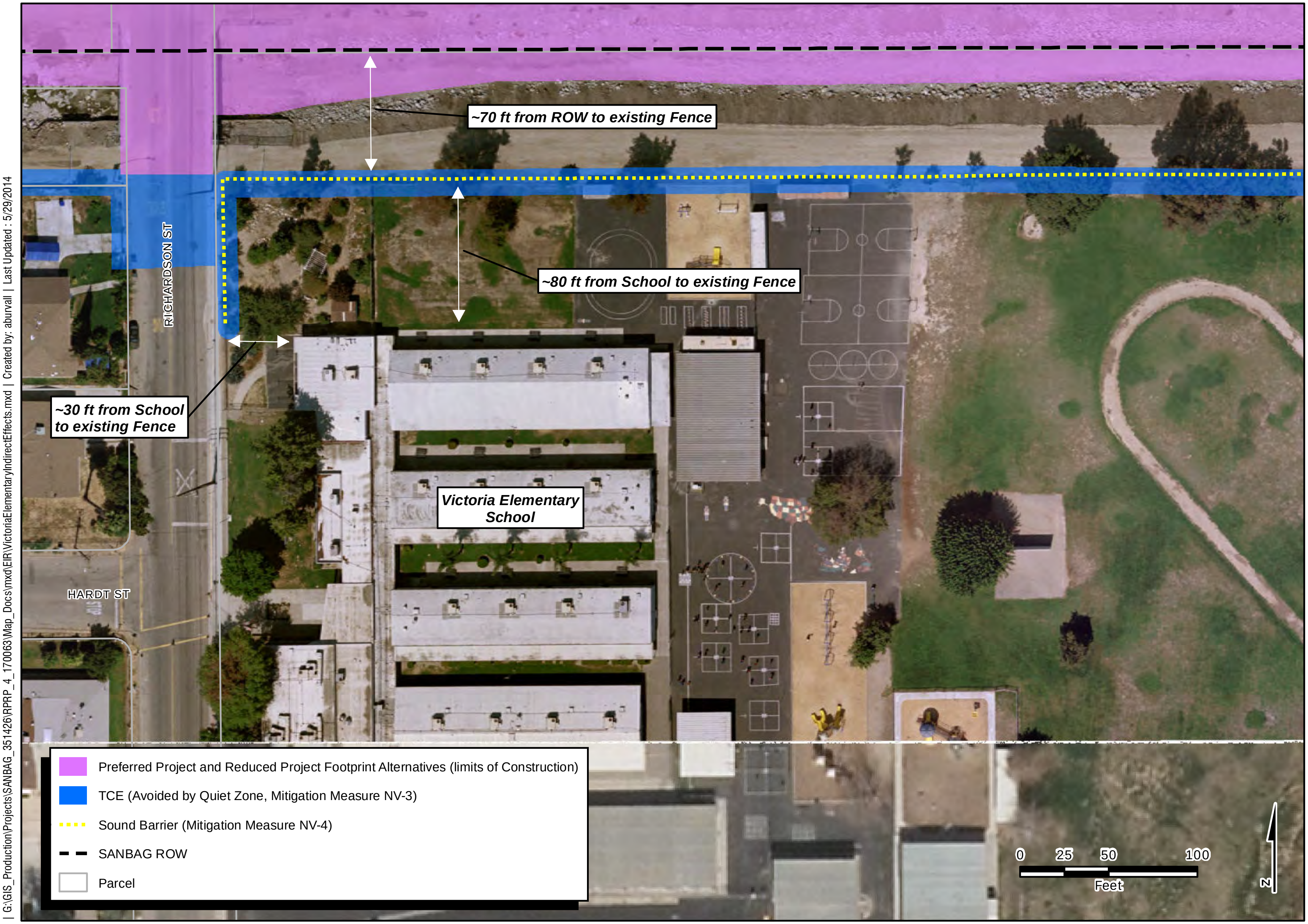
In addition to the Redlands Depot (351 Orange Street), which is of wood frame and masonry construction sheathed in stucco, four other NRHP eligible or listed buildings of brick masonry construction located adjacent to the track are subject to potential construction-related vibration effects generated by the Preferred Undertaking. They are Cope Commercial Company Warehouse (21 West Stuart Avenue), Haight Packing House (345 North Fifth Street), Redlands City Transfer (360 North Orange Street) and the brick warehouse at 440 Oriental Avenue.

In order to determine the structural stability of the Redlands Station Depot and the other four historic properties, and their ability to withstand the effects of construction-related vibration, structural evaluations would be required for these five buildings. It should be noted that these buildings were originally designed to withstand rail-generated vibration. However, due to rail inactivity in recent years and the aging of each building's construction materials, the potential re-introduction of rail operations and associated construction activities could potentially affect their structural integrity. As a result, the buildings would require structural evaluations to determine the probability of vibration effects. With implementation of stabilization needs as identified in the structural evaluations, as mitigation, the Build Alternatives would have no effect on the significance of the historic properties. The structural evaluations would also address maximum allowable levels of vibration during construction and could recommend lesser levels of stabilization in conjunction with vibration monitoring. Any stabilization would either need to be temporary, installed only during construction or, if permanent, meet the Secretary of the Interior's standards for the treatment of historic properties. Additionally, should the stabilization be temporary, any effects caused by its installation would need to be reversed and the buildings would need to be restored to their pre-construction condition. Based on these considerations, an adverse effect could occur under NEPA. Under CEQA, this is considered a significant impact and Mitigation Measures CUL-1 (Structural Evaluations) and NV-1 (Employ Noise-Reducing Measures during Construction) as described in Section 3.6 Noise and Vibration, are proposed to mitigate this effect.

Indirect Effects from Sound Barriers. As proposed in Mitigation Measure NV-4, sound barriers may be constructed along portions of the rail alignment to reduce noise levels at selected receivers with severe or moderate noise impacts. Whether the introduction of sound barriers would result in an adverse effect is a function of the characteristics of the property that convey significance under NRHP Criteria A, B, or C. Resources indirectly affected by the construction of sound barriers are discussed below.

- *Victoria Elementary School (1505 Richardson Stree*t). This property, originally known as Victoria School, is located just south of the former Santa Fe railroad tracks. Victoria Elementary School is identified as a sensitive noise receptor, unrelated to its historic status, in Section 3.6. In order to minimize noise from rail operations, multiple mitigation measures are currently under consideration. If possible, a quiet zone would be implemented for the Richardson Street at-grade crossing at the northwest corner of the property. Other noise-reducing design specifications that may be implemented in the vicinity of the school may include the use of ballast mats or resiliently supported ties (under-tie pads) on the track to minimize groundborne vibration generated by passing trains. None of these noise-reduction methods would affect the historical significance and integrity of Victoria Elementary School. However, if a quiet zone cannot be implemented, and noise-reducing design specifications do not adequately minimize rail operation noise in conjunction with a quiet zone, sound barriers would be constructed to mitigate rail noise.

  Mitigation in the form of sound barriers, if constructed, would require a temporary construction easement (TCE) across the school property and has the potential to indirectly result in visual alterations along the north and northwestern boundary of the school property. The northwestern portion of the property facing South Richardson Street, where the western segment of a sound barrier would be built, is landscaped with trees and tall shrubs. The sound barrier would also extend east from the northwest corner of the property, but separated from the school buildings by a grass lawn, paved asphalt basketball courts, and a sand-filled play area with slide and jungle gym (Figure 3.12-3). Installation of a sound barrier would create a new visual element up to 12 feet in height at the far northern and northwestern portions of this historic property. The south end of the sound barrier's west segment would be situated 30 feet west of the building at the northwest corner of the campus (Figure 3.12-3). The north sound barrier segment would be constructed 80 feet north of the buildings on the north side of the campus, 70 feet south of the SANBAG railroad ROW (Figure 3.12-3). The chain link fence currently occupying the northwest and north sections of the school property would be replaced by the sound barrier in locations where they overlap. Once installed, the sound barrier would assume the fence's function by obstructing access to the north and the Mission Zanja Flood Control Channel.



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Victoria Elementary School - Indirect Effects

Figure 3.12-3

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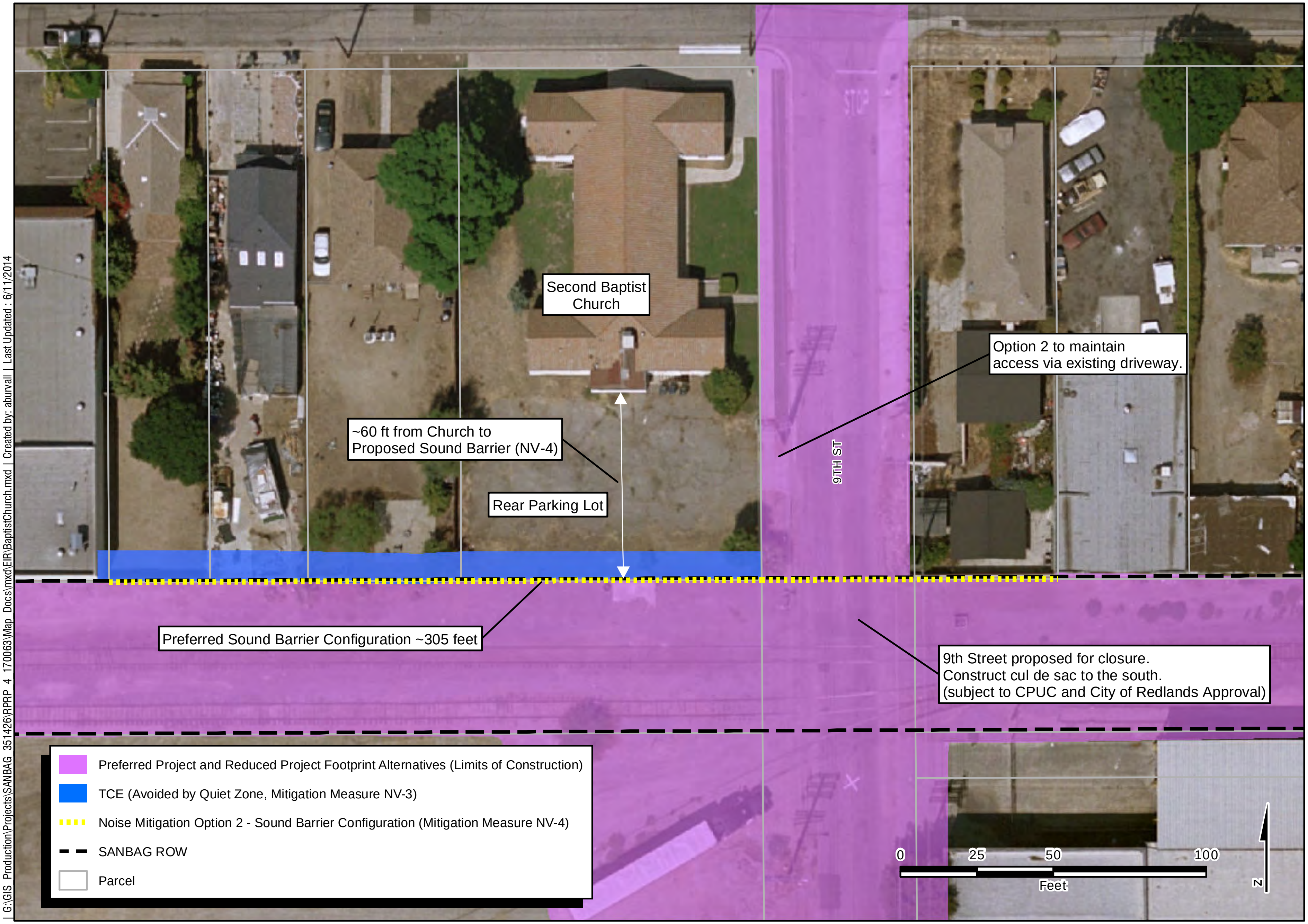
The presence of a 12-foot-high barrier would not diminish the integrity of the school's significant architectural features, especially given the sufficient distance between the wall and the school buildings. While there would be no loss of integrity of location, design, materials, workmanship, or association, the setting and feeling at the northern portion of the property would be somewhat altered due to the existence of the barrier. However, within the campus, views of the school's Modern architectural elements would remain unaltered, and the west-facing front of the campus building complex would remain clearly visible from most of South Richardson Street south of the rail alignment and north of Hardt Street. The overall integrity and characteristics of the property that convey architectural significance would not be compromised following the construction of the sound barrier. Therefore, mitigation in the form of a sound barrier along the northwest and north portions of this property would not result in an adverse indirect effect under NEPA. The corresponding impact under CEQA would be less than significant.

- *Second Baptist Church (420 East Stuart Avenue)*. According to the 1988 Redlands Historical Inventory Project, the Second Baptist Church served the African-American community in Redlands, which had existed since 1892. The Second Baptist Church building is separated from the Build Alternatives by a paved surface parking area approximately 60 feet in width. As a result, the Build Alternatives are sufficiently distant from the historic resource that it would not directly alter the building's distinctive physical or historical characteristics. Therefore, the Build Alternatives would have no direct effect on the significance of the historic resource. When the church was constructed in 1940, trains were operating on the adjacent rail line. For this reason, the reintroduction of trains at this location would result in no adverse effect under NEPA. Under CEQA, the impact is less than significant.

  Unrelated to its historic status, the Second Baptist Church is also a noise sensitive land use. If possible, to minimize noise levels caused by the reintroduction of rail service adjacent to the church property, a quiet zone would be implemented in accordance with Mitigation Measure NV-3. Safety improvements would be constructed at the intersections of 7th Street and Church Street in conjunction with the closure of 9th Street. Other noise-reducing design specifications that may be implemented in the vicinity of the church property include use of ballast mats or resiliently supported ties (under-tie pads) on the track to minimize project-related groundborne vibration generated by train movements. None of these noise-reduction methods would affect the historical significance and integrity of the Second Baptist Church. Hence, quiet zones are the preferred noise mitigation for the church property and identified as Noise Mitigation Option 1 in the Cultural Resources TM (Appendix M).

  If a quiet zone cannot be implemented, and noise-reducing design specifications do not adequately minimize rail operation noise, a sound barrier would be constructed as mitigation to reduce rail noise at this sensitive receptor (Mitigation Measure NV-4). Three potential sound barrier configurations have been developed to minimize the effect of rail operational noise on the Second Baptist Church (see Figures 3.12-4, 3.12-5, and 3.12-6). Each sound barrier configuration (Noise Mitigation Options 2, 3, and 4) would need to be coordinated with the property owner to facilitate implementation.



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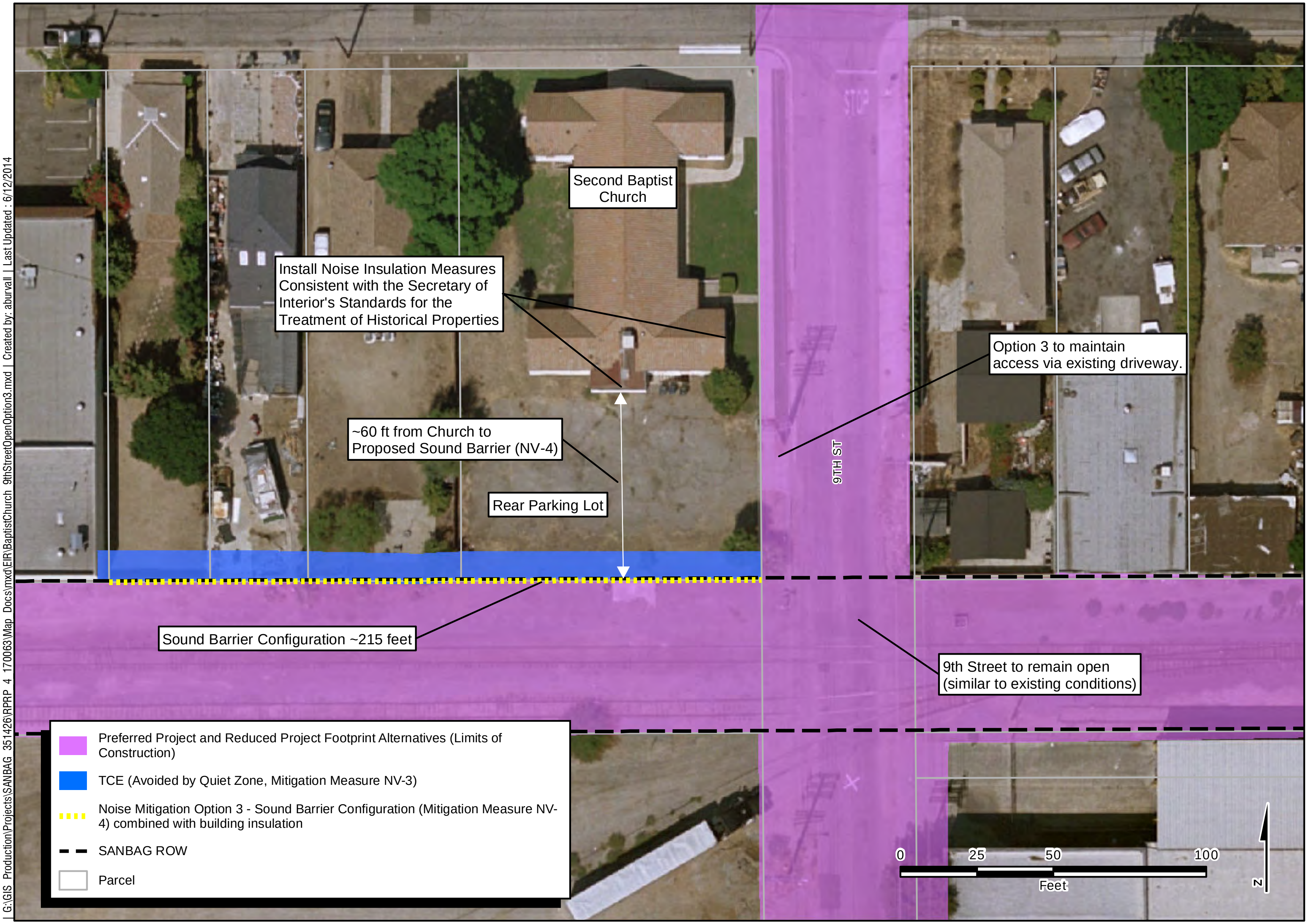
Second Baptist Church (9th Street Closed) - Indirect Effects of Noise Mitigation Option 2

Figure 3.12-4



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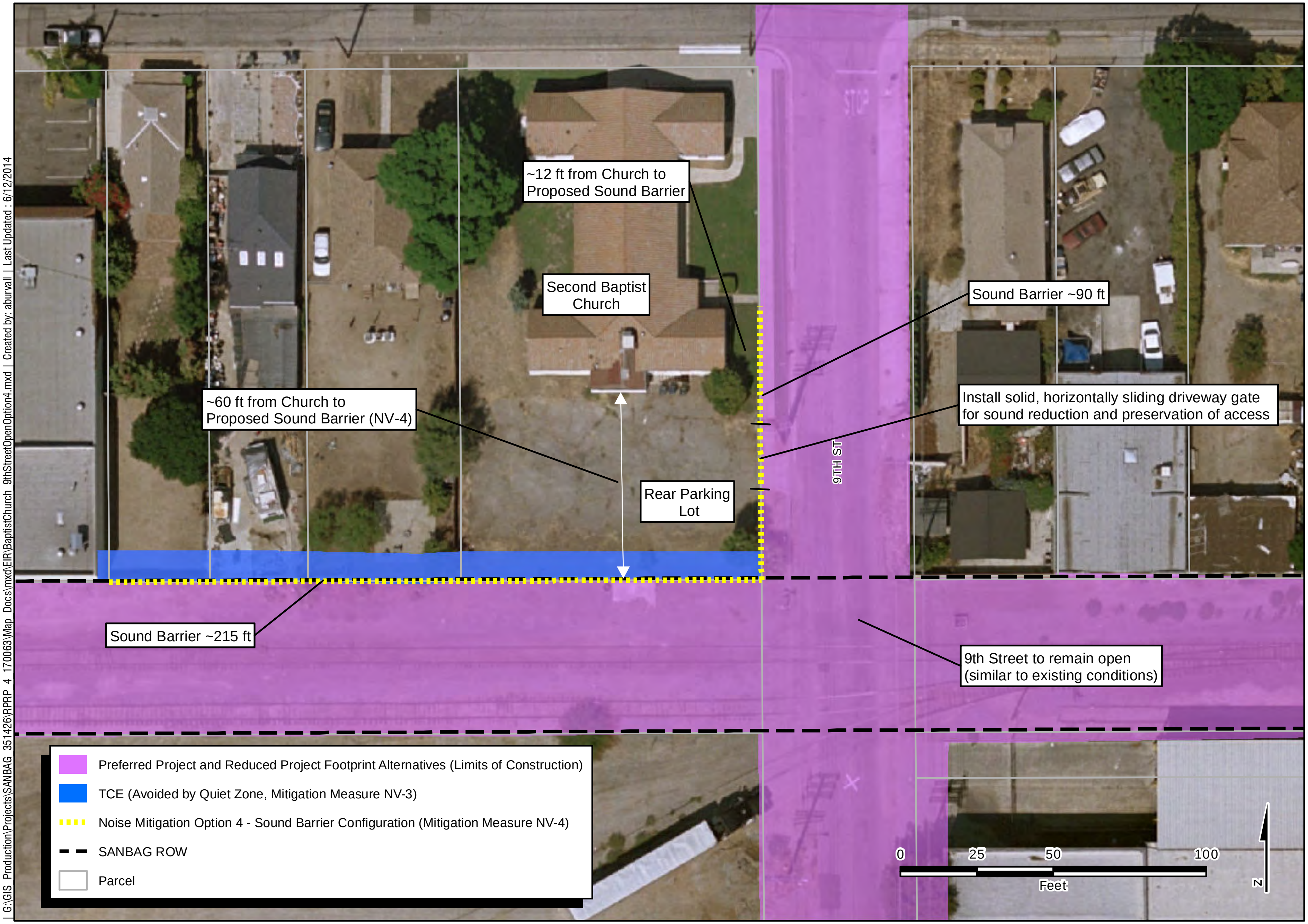
Second Baptist Church (9th Street Open) - Indirect Effects of Noise Mitigation Option 3

Figure 3.12-5



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Second Baptist Church (9th Street Open) - Indirect Effects of Noise Mitigation Option 4

Figure 3.12-6

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As shown in Figure 3.12-4, if sound barriers are required, Noise Mitigation Option 2 as described in the Cultural Resources TM (Appendix M) would have the sound barrier extending across 9th Street, just north of the at-grade crossing, in conjunction with the proposed closure of the at-grade crossing as part of the Build Alternatives. A sound barrier up to 10 feet in height would be constructed parallel to the rail track just beyond the southern edge of the Second Baptist Church property and within SANBAG's ROW. Aligned east-west at a distance of 60 feet south of the church building, the sound barrier under Noise Mitigation Option 2 would be 305 feet long (see Figure 3.12-4). Currently, there are no fences or landscaping along the south side of the church parcel.

Visually oriented measures would be implemented in conjunction with Mitigation Measure CUL-2a to minimize indirect visual effects from introduction of the sound barrier along the south side of the Second Baptist Church property as part of the Preferred Configuration. This sound barrier would not result in loss of the property's integrity of location, design, materials, workmanship, or association. The barrier would be located at a distance of 60 feet from the church building. Potential loss of integrity of setting and feeling would be minimized by aesthetically appropriate barrier surface treatments as proposed under Mitigation Measure CUL-2a, such as cladding and caps atop the barrier structure designed to harmonize with the Spanish Colonial Revival elements of the church's architecture. Drought-tolerant landscaping in the form of trees, vines, and/or shrubs would also be provided if barrier surface treatments do not adequately harmonize with the church architecture. A surface-treated sound barrier and landscaping would only affect the rear edge of the church parcel and would be encountered only by churchgoers using the rear parking area. The church's integrity of setting and feeling would not be substantially altered at the front of the property along East Stuart Avenue or from the majority of the property's eastern edge along 9th Street. With these visual measures minimizing indirect visual effects on the Second Baptist Church under Noise Mitigation Option 2, the property would retain sufficient integrity to convey its historical significance under NRHP Criterion A and CRHR Criterion 1.

Noise Mitigation Option 3 as described in the Cultural Resources TM (Appendix M) would consist of a combination of noise reduction measures including a sound barrier and building insulation for the southern and southeastern portions of the church (Figure 3.12-5). Under this option, the sound barrier would be 215 feet in length, ending at the western edge of 9th Street. SANBAG would also arrange for a qualified acoustical engineer to study and recommend appropriate sound insulation to achieve adequate noise attenuation at the church, which would remain exposed at the east elevation and part of the south elevation to noise generated from rail operations.

SANBAG would implement the recommended forms of insulation that results in the least disturbance to the building's historical fabric in coordination with the property owner and SHPO. In order to ensure that the property maintains its current degree of historical integrity and continues to convey its significance, the insulation work would be conducted in accordance with the Secretary of the Interior's Standards for Rehabilitation with Guidelines for Applying the Standards (Hume et al. 1990), and with applicable National Park Service preservation briefs Preservation Briefs. These measures combined with Mitigation Measures CUL-2a and CUL-2b would both effectively reduce noises levels while minimizing alterations to the church's historic setting such that the property would retain sufficient integrity to convey its historical significance under NRHP Criterion A and CRHR Criterion 1.

Noise Mitigation Option 4 would consist of an L-shaped sound barrier on the south and east sides of the Second Baptist Church property (Figure 3.12-6). Like Noise Mitigation Options 2 and 3, the south portion of the Option 4 sound barrier would be aligned 60 feet south of the church building parallel to the rail line and contained within SANBAG's ROW. From just outside the southwest corner of the church parcel, the barrier would extend approximately 110 feet to the west. In contrast to Noise Mitigation Options 2 and 3, the sound barrier under this option would turn north at the church parcel's southeast corner and extend northward approximately 90 feet parallel along 9th Street and within the City's roadway ROW.

At a point perpendicular to the church building's southeast corner, the east sound barrier would be constructed to taper from 10 feet to 6 feet in height, and would continue north approximately 25 feet. The 6-foot-high portion of the east sound barrier segment would terminate at south edge of the walkway situated at the middle of the parcel that provides pedestrian access from the sidewalk to the east side of the church. The east sound barrier segment would be aligned 12 feet east of the church building's southeast projecting gabled element. The same kinds of visual surface treatments and landscaping implemented as mitigation for Noise Mitigation Options 2 and 3 would be incorporated into the design of the L-shaped sound barrier developed under Noise Mitigation Option 4. These measures combined with Mitigation Measure CUL-2a would both effectively reduce noises levels while minimizing alterations to the church's historic setting such that the property would retain sufficient integrity to convey its historical significance under NRHP Criterion A and CRHR Criterion 1.

Each of the Noise Mitigation Options considered would result in no loss of the Second Baptist Church's integrity of location, design, materials, workmanship, or association. The implementation of Noise Mitigation Option 1 would implement quiet zones and no alteration of the church's historic setting would result. In contrast, Noise Mitigation Options 2, 3, and 4 would introduce a sound barrier that would alter the Second Baptist Church's setting and feeling. However, with the implementation of Mitigation Measures CUL-2a and CUL-2b (for Noise Mitigation Option 3), these alterations would be minimized such that no adverse indirect effect to the integrity of this historic property would result under NEPA. Under CEQA, with the implementation of the proposed mitigation, this impact would be less than significant.

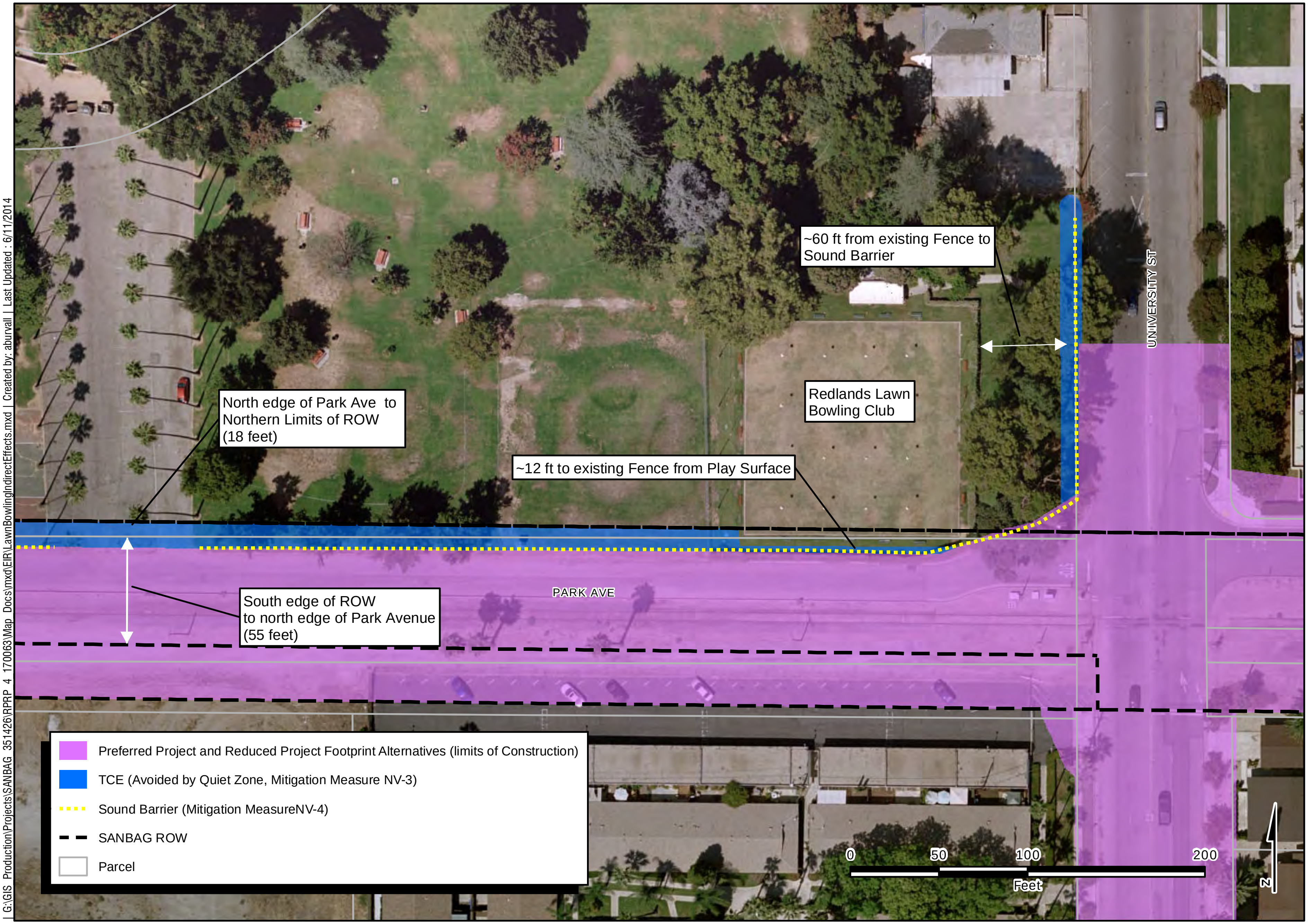
- *Single Family Residence (337 North Cook Street*). Architecturally, this farmhouse is an excellent example of the Transitional Arts and Crafts style, which enjoyed a shorter period of popularity than the later Craftsman style and is consequently rarer. Currently, a low chain link fence occupies the perimeter of the subject property, including where the sound barrier could be erected. The north portion of the property where the barrier would be built is landscaped with scattered mature citrus trees that partially obscure the north fence. The distance between the dwelling's north elevation and the proposed barrier is approximately 90 feet. Given these current conditions, the presence of a 12-foot high barrier would not diminish the integrity of the dwelling's significant architectural features given the sufficient distance between the proposed barrier and the north elevation of the house. As a result, there would be no indirect adverse effect on the historical resource under NEPA (Appendix M). Under CEQA, the impact would be less than significant.
- *Redlands Lawn Bowling Club (411 North University Street)*. The Redlands Lawn Bowling Club is located at the southeast end of Sylvan Park at 411 University Street and consists

of a large grass green for lawn bowling and three associated structures set at the north end of the lawn. A one-story, Spanish Colonial Revival style clubhouse is located at the northeast end of the property. Founded in 1923, the Redlands Lawn Bowling Club stands as the second oldest lawn bowling club in Southern California (Appendix M). Given the nearly 90 years of popular use within its bucolic Sylvan Park setting, the Redlands Lawn Bowling Club has made a significant contribution to the broad pattern of history in Redlands. Therefore, the property appears to achieve a level of significance necessary for listing in the NRHP under Criterion A at the local level of significance (Appendix M). The Build Alternatives do not involve any activities that would directly alter the distinctive physical characteristics of the bowling green itself, and would not result in additional alterations to the original clubhouse building. Although the Build Alternatives would involve some construction activity along Park Avenue, this would have no direct effect on the significance of the Redlands Lawn Bowling Club.

The Redlands Lawn Bowling Club is identified as a sensitive noise receptor, unrelated to its historic status, and noise from proposed rail operations would require effective mitigate to minimize operational noise. As currently proposed, SANBAG would construct the at-grade improvements for University Street to facilitate the adoption of a quiet zone at University Street by the City of Redlands. Additional measures to reduce noise may include use of ballast mats or comparable technologies (under-tie pads) on portions of the nearby track to minimize project-related groundborne vibration generated when trains pass. The implementation of a quiet zone at this location would maintain acceptable noise levels at the Lawn Bowling Club with Project train operations without affecting the historical significance and integrity of the Redlands Lawn Bowling Club.

If a quiet zone cannot be implemented, sound barriers (Mitigation Measure NV-4) would be constructed to reduce rail noise. As shown in Figure 3.12-7, mitigation in the form of sound barriers has the potential to affect the setting of the Redlands Lawn Bowling Club by adding a new visual element that would extend approximately 500 feet west from the southeast corner of the park to the park's southern entrance. It would also extend approximately 210 feet north from the park's southeast corner to form a large "L." The lawn bowling portion of Sylvan Park is set back from the east side of the property by a 75-foot buffer of lawn and mature trees. On the south end of the bowling green the barrier would be aligned between five and 12 feet south of the bowling green, and the approximately five-foot-high shrubbery-covered fence along the south side of the bowling green would be removed permanently.

Visually-oriented measures will be implemented to minimize indirect effects to the Redlands Lawn Bowling Club from the introduction of the sound barrier (Mitigation Measure CUL-2a). The potential for loss of integrity of setting and feeling would be reduced by sound barrier surface treatments designed to minimize the visual presence of the barrier within the park landscape at the south and east sides of the lawn bowling club. Where widths allow, drought tolerant landscaping such as trees, vines, and/or shrubs will be incorporated as needed to reinforce the pastoral qualities of the landscape within and immediately surrounding the lawn bowling club.



G:\GIS_Production\Projects\SANBAG_351426\RPRP_4_170063\Map_Docs\mxd\EIR\LawnBowlingIndirectEffects.mxd | Created by: aburvall | Last Updated : 6/11/2014

Redlands Lawn Bowling Club - Indirect Effects

Figure 3.12-7

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

HDR ONE COMPANY | Many Solutions℠

With these measures, the project would not result in an adverse effect to the Redlands Lawn Bowling Club. The clubhouse and the bowling green itself would remain unaltered. The bowling green would not be reduced in size. It would remain at approximately 36 meters in length, which is consistent with the Laws of the Sport of Bowls. The bowling club's proximity to the railroad alignment does not represent a character-defining feature. Blockage of views toward the rail alignment by the sound barrier would not diminish the property's integrity. From vantage points at the bowling green and clubhouse, the 12-foot-high sound barrier along University Street could partially block views of the lower portions of mature trees at the east side of the park. At least some of these large trees appear to date to the historic period. However, this cluster of trees is tall enough that approximately 80 to 90 percent of its form would remain visible from the bowling green. Views to the north and west would not be altered.

Although the south segment of the shrubbery-covered chain-link fence near the bowling green would be removed, historic aerial imagery suggests that this feature may not have been present during the historic period. While the pastoral surrounds of the lawn bowling club are important elements of its setting, as discussed above, the portion of the park devoted to lawn bowling appears to have been larger at one time, and elements bordering the bowling green (enclosing built features [fences], palm trees, and shrubs) have been removed or reconfigured during and after the historic period. Despite elimination of the south segment of shrubbery-covered chain-link fence, construction of a sound barrier incorporating appropriate visual treatments and landscaping elements would allow the property to maintain its overall pastoral character. With implementation of the aforementioned measures to minimize indirect effects from the introduction of sound barriers, the Redlands Lawn Bowling Club would retain sufficient integrity to convey its historical significance under the NRHP and no adverse effect would result under NEPA. Under CEQA, the impact would be less than significant with the implementation of Mitigation Measure CUL-2a.

EFFECT 3.12-2	**Impacts to Historical Resources Listed Under the CRHR.** The Project would cause a substantial adverse change in the significance of a historical resource listed on the CRHR.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, the Project would not be constructed and existing conditions within the railroad corridor would remain unchanged pending future maintenance activities. All future maintenance activities would be restricted to SANBAG's existing ROW and, therefore, no encroachment into adjacent properties would occur. Based on these considerations, no impact to historical resources would occur under CEQA.

Direct Effects from Long-Term Operation

Continued freight operations would result in no physical changes to the existing railroad corridor. Based on this consideration, no impact to historical resources would occur under CEQA.

Indirect Effects

No indirect construction or operational effects to historical resources would occur under the No Build Alternative because there would be no substantial change in existing physical conditions along the corridor or freight operations. Therefore, no impact to historical resources would occur under CEQA.

PREFERRED PROJECT ALTERNATIVE AND DESIGN OPTIONS

Direct Effects

Under the State CEQA Guidelines, the significance of a historical resource is materially impaired when a project materially alters in an adverse manner those physical characteristics that account for its inclusion in the CRHR (State CEQA Guidelines, 14 CFR Section 15064.5(b)(2)(A)). Based on a review of the resources eligible for the CRHR within the APE (see Table 3.12-2), the Build Alternatives and Design Options would not directly or indirectly alter the distinctive physical or historical characteristics of the following structures eligible for listing on the CRHR (see Appendix M).

- Religious Building (1199 South Amos Street);
- Single-family residence (204 East Ennis Street);
- Single-family residence (241 East Ennis Street);
- Single-family residence (1048 South Lincoln Avenue);
- Religious Building (952 South Lincoln Avenue);
- Single-family residence (311 South Sierra Way);
- Single-family residence (313 South Sierra Way);
- Single-family residence (879 South Washington Avenue); and
- Single-family residence (905 South Washington Avenue).

Based on this determination, implementation of the Build Alternatives and Design Options would have a less than significant impact on the significance of these nine historical resources eligible under CEQA. However, implementation of the Preferred Project Alternative and Design Options would directly alter the physical characteristics of the California/I-10 Grove, which is part of a larger, discontiguous multi-property preserve of historic-period citrus that appears to be a historical resource for the purposes of CEQA.

California/I-10 Grove. The Preferred Project and Design Options would pass by the California/ I-10 Grove. The Grove has been identified by the City of Redlands as a contributor to its “Historical Preserve of Citrus” based upon Resolution No. 5796 adopted by the City Council on September 19, 2000. The five-acre parcel is currently owned by the City of Redlands. Given the importance of the Grove to Redlands, its California Historic Resources Code (CHRC) equates to 5S1 (individual property that is listed or designated locally). As part of the current survey, the property has been evaluated for NRHP eligibility based on NPS guidance for significance and integrity evaluations of historic-period orchards and groups of fruit trees. The evaluation has concluded that the California/I-10 Grove is ineligible for listing in the NRHP due to substantially diminished integrity since the historic period (CHRC of 3S).

Notwithstanding this determination, the Grove has been identified by the City of Redlands as a contributor to its “Historical Preserve of Citrus” based upon Resolution No. 5796 adopted by the City Council on September 19, 2000. The grove is currently one of 16 City-owned groves that comprise Redlands’ Historical Preserve of Citrus. Given the importance of the Grove as a contributor to the Preserve, despite the Grove’s diminishment of integrity since the historic period, its CHRC equates to 5DS1 (contributor to a district that is listed or designated locally). Under existing conditions, the five-acre grove consists of an elongated west-east arrangement of 469 trees as follows (moving west to east): four trees deep (south to north) in the first nine rows, five trees deep in the next 18 rows, six deep in the next 18 rows, seven deep in the next 31 rows, and six deep in the final three rows on the east end of the Grove.

The proposed track alignment and drainage improvements would require the removal of one row of trees on the portion of the Grove nearest the railroad track. In addition, a TCE would be placed on a second row of trees that might result in additional tree removal. Given the grove's arrangement, the removal of one west-east row of citrus trees adjacent to the ROW (76 trees or 16 percent of total trees) would affect the significance of this resource. With the addition of a TCE and disturbance of a second row of trees (78 trees or 16.6 percent of total trees), this alteration could result in the removal or disturbance of two rows totaling 154 trees, or 32.6 percent. This is considered a significant impact under CEQA. Mitigation Measure CUL-3 is proposed to reduce this impact by providing for the planting of citrus trees at other properties within the Preserve to compensate for the trees removed from the California/I-10 Grove as part of the Preferred Project Alternatives and Design Options.

Direct Effects from Long-Term Operations

Once operational, there would be no physical disruptions to adjacent properties. No operational impacts are anticipated to occur once the Project is complete and fully implemented. Therefore, no operational impacts would occur under CEQA.

Indirect Effects

Construction-Related Vibration. All of the historical resources located adjacent to the SANBAG ROW were constructed during a period when the existing rail line was fully operational with numerous freight trains passing by on a regular basis. There is no obvious visual indication that adjacent historic buildings have been significantly impacted by vibration emanating from past operations on the railroad. All of the abovementioned local historic buildings are located more than 25 feet from the edge of the SANBAG ROW. Based on the distance of all of the abovementioned local historic buildings from the SANBAG ROW, the likelihood that the buildings would be damaged by construction vibration is low. Based on this consideration, a less than significant indirect impact would occur under CEQA.

Indirect Effects from Sound Barriers. As proposed in Mitigation Measure NV-4, sound barriers may be constructed along portions of the rail alignment to reduce noise levels at selected receivers with severe or moderate noise impacts. Whether the introduction of sound barriers would result in an adverse effect is a function of the characteristics of the property that convey significance under CRHR Criteria. Resources indirectly affected by the construction of sound barriers are discussed below.

- *1199 South Amos Street*. Substantial alterations to the subject building have resulted in a loss of integrity of design, workmanship, and materials such that it is ineligible for listing in the NRHP under Criterion C or the CRHR under Criterion 3. Current research does not reveal any evidence to suggest that the residential or religious use of the building was associated with any events or personages important to the history of the city, state, or nation. Despite the subject property's lack of integrity, it is considered a historical resource pursuant to CEQA guidelines section 15064.5(a) because it is included in the tabular listing of the City's surveyed historic resources found in the "Historic Resources Reconnaissance Survey San Bernardino, California" dated April 30, 1991. Given these current conditions, the presence of a 12-foot high barrier would not compromise the characteristics of the property that convey its significance given the sufficient distance between the proposed barrier and the building's rear elevation. As a result, there would be no indirect impact under CEQA on the historical resource following the construction of the sound barrier.

- *879 South Washington Avenue*. The property does not appear eligible for listing in the NRHP or CRHR under Criterion C or 3, respectively. Current research did not uncover any evidence to suggest that this building was associated with any events or personages important to the history of the city, state, or nation. As a new visual element, a sound barrier—12 feet in height—would extend the entirety of the subject property's east boundary along the railroad right-of-way. Currently, there is a large open dirt and gravel area between the rear of the dwelling and the parcel's east boundary. The distance between the building's rear elevation and the sound barrier is approximately 360 feet. Given these current conditions, the presence of a 12-foot high barrier would not compromise the characteristics of the property that convey its significance given the sufficient distance between the proposed barrier and the building's rear elevation. As a result, there would be no indirect impact under CEQA on the historical resource following the construction of the sound barrier.
- *905 South Washington Avenue*. The property does not appear eligible for listing in the NRHP under Criterion C or the NRHP under Criterion 3. Current research did not uncover any evidence to suggest that this building was associated with any events or personages important to the history of the city, state, or nation. As a new visual element, the barrier—12 feet in height—would extend the entirety of the subject property's east boundary along the railroad right-of-way. Currently, numerous shipping containers, vehicles, and miscellaneous salvaged materials are stored between the rear of the dwelling and the parcel's east boundary, a distance of approximately 385 feet. Given these current conditions, the presence of a 12-foot high barrier would not compromise the characteristics of the property that convey its significance given the sufficient distance between the proposed barrier and the building's rear elevation. As a result, there would be no indirect impact under CEQA on the historical resource following the construction of the sound barrier.
- *952 South Lincoln Avenue*. The property does not appear eligible for listing in the NRHP under Criterion C or the CRHR under Criterion 3. In addition, current research did not uncover any evidence to suggest that this church was associated with any events or personages important to the history of the city, state, or nation. As a new visual element, the barrier—12 feet in height—would extend the entirety of the subject property's west boundary along the railroad right-of-way. The subject religious building is situated near the parcel's east boundary facing South Lincoln Avenue. Currently, there is a large paved parking area and an equally large unpaved area between the rear of the building and the parcel's west boundary. The distance between the building's rear elevation and the proposed barrier is approximately 190 feet. Given these current conditions, the presence of a 12-foot high barrier would not compromise the characteristics of the property that convey its significance given the sufficient distance between the proposed barrier and the building's rear elevation. As a result, there would be no indirect impact under CEQA on the historical resource following the construction of the sound barrier.
- *204 East Ennis Street*. The subject property's two dwellings do not appear eligible for listing in the NRHP under Criterion C or the CRHR under Criterion 3. Current research did not uncover any evidence to suggest that the buildings are associated with any events or personages important to the history of the city, state, or nation. As relates to the layout of the subject property, there is a triangular parcel situated east of and

between the subject property and the railroad ROW. As a new visual element, the sound barrier—12 feet in height—would be erected parallel to the railroad ROW on the east side of this adjacent triangular-shaped parcel. The only portion of the proposed barrier that would touch the subject parcel would be on the parcel's northeastern tip. Both of the subject property's dwellings are situated near the parcel's south boundary facing East Ennis Street. Currently, there is a large open area between the rear of the second dwelling and the parcel's north boundary. The distance between that building's rear elevation and the proposed barrier is approximately 255 feet. In addition, there is a house situated east of and between the subject dwellings and the proposed barrier. The distance between the east elevation of the subject property's second dwelling and the proposed barrier is approximately 90 feet with the neighbor's parcel serving as a buffer between the barrier and the subject property. Given these current conditions, the presence of a 12-foot high barrier would not compromise the characteristics of the subject property that convey its significance and no indirect impact would result under CEQA.

- *241 East Ennis Street*. The property does not appear eligible for listing in the NRHP under Criterion C, or under Criterion 3 of the CRHR. Current research did not uncover any evidence to suggest that this dwelling was associated with any events or personages important to the history of the city, state, or nation. As a new visual element, the barrier—12 feet in height—would extend the entirety of the subject property's south boundary parallel to East Orange Show Road. The subject building is situated near the parcel's north boundary facing East Ennis Street. Currently, there is a large open area containing several trees between the rear of the house and the parcel's south boundary. The distance between the dwelling's rear elevation and the proposed barrier is approximately 90 feet. Given these current conditions, the presence of a 12-foot high barrier would not compromise the characteristics of the property that convey its significance and there would be no indirect impact under CEQA.
- *1048 South Lincoln Avenue*. The property does not appear eligible for listing in the NRHP under Criterion C or the CRHR under Criterion 3. Current research did not uncover any evidence to suggest that this building was associated with any events or personages important to the history of the city, state, or nation. As a new visual element, the barrier—12 feet in height—would extend the entirety of the subject property's west boundary along the railroad right-of-way. The subject building is situated near the parcel's east boundary facing South Lincoln Avenue. Currently, there is a large open dirt area between the rear of the house and the parcel's west boundary. The distance between the dwelling's rear elevation and the proposed barrier is approximately 168 feet. Given these current conditions, the presence of a 12-foot high barrier would not compromise the characteristics of the property that convey its significance given the sufficient distance between the proposed barrier and the building's rear elevation. As a result, there would be no indirect impact under CEQA.

ALTERNATIVE 3 – REDUCED FOOTPRINT ALTERNATIVE

Direct Effects from Temporary Construction

A distinguishing characteristic under the Reduced Project Footprint Alternative occurs in the vicinity of the CA/I-10 Citrus Grove, where the track alignment would be shifted south to avoid temporary and permanent encroachments into the Citrus Grove. As a result, this alternative effects the removal of two trees and, therefore, would avoid the direct removal of 152 trees that would otherwise occur under the Preferred Project and Design Options. Under CEQA, the impact would be less than significant.

Direct Effects from Long-Term Operations

Long-term operational effects would be similar to the Preferred Project and Design Options. This is considered a less than significant impact under CEQA.

Indirect Effects

Indirect effects under this alternative would be similar to the Preferred Project and Design Options. This is considered a less than significant indirect impact under CEQA.

EFFECT 3.12-3	**Adverse Effects to Archaeological Resources.** The Project could cause a substantial adverse change in the significance of an archaeological resource.

ALTERNATIVE 1 – NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, the Project would not be constructed and existing conditions within the railroad corridor would remain unchanged pending future maintenance activities. SANBAG will still be required to perform regularly schedule maintenance of the existing track and corresponding improvements at grade crossings and bridges to facilitate continued freight service per SANBAG's obligations with BNSF. Ground disturbance associated with maintenance activities would mainly occur at the surface and, therefore, these activities are unlikely to damage or destroy unknown cultural resources. No adverse effect would occur under NEPA. Under CEQA, a less than significant impact would occur.

Direct Effects from Long-Term Operations

Continued freight operations would result in no physical changes to the existing railroad corridor. No operational effects are anticipated to occur once the Project is complete and fully implemented. No effect would occur under NEPA. Under CEQA, no operational impacts would occur.

Indirect Effects

No indirect construction or operational effects to archaeological resources would occur under the No Build Alternative because there would be no substantial change in existing physical conditions along the corridor or freight operations. No indirect effect would occur under NEPA. No indirect impact to archaeological resources would occur under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Field investigation of the railroad corridor identified no archaeological resources within the APE (see Appendix M). Based on the records search, there are five recorded archaeological resources within the APE with two of these resources being previously determined not eligible for the NRHP or the CRHR. Three resources were evaluated as not eligible for the NRHP and CRHR within the Project APE as a result of the study completed in support of this EIS (Appendix M). Therefore, the Build Alternatives and Design Options would not adversely affect known archaeological resources eligible for the NRHP or CRHR within the APE.

In addition, the entire APE has some potential to contain buried archaeological resources, and ground disturbance could inadvertently damage or destroy buried archaeological sites not identified using standard archaeological survey methods. Because construction-related ground-disturbing activities could disturb, damage, or degrade unknown and intact archeological resources, this is considered an adverse effect under NEPA. Under CEQA, this impact is considered significant. Based on these findings, Mitigation Measure CUL-4 (Construction Monitoring) is proposed to mitigate this effect. Further discussion for each of the archaeological resources evaluated for listing on the NRHP or CRHR as a result of the study completed for the proposed project is provided below.

Mill Creek Zanja. The segment of the Mill Creek Zanja located within the APE and west of Division Street was determined ineligible for the NRHP due to its loss of historic integrity, based on the results of the survey and evaluation completed in support of the Cultural Resources Technical Memorandum (see Appendix M).

Redlands Chinatown. Based on the numerous historic-period artifact fragments that were observed on the ground surface by ICF (Appendix M), it is possible that intact subsurface archaeological deposits may exist within the SANBAG ROW. Given the Project APE's overlap with the Redlands Chinatown resource and the potential for encountering sub-surface resources and artifacts, sub-surface archaeological testing was completed to verify the presence or absence of any significant archaeological resources. No significant resources or artifacts were documented during the testing.

Redway House. Due to the proximity of this resource's location to SANBAG's ROW, archaeological subsurface testing was completed for portions of the resource that overlie SANBAG's ROW within the Project APE. No significant resources or artifacts were encountered during testing.

Direct Effects from Long-Term Operations

Once operational, there would be no ground disturbance that could inadvertently damage or destroy buried archaeological sites. No operational impacts are anticipated to occur once the Project is complete and fully implemented. Therefore, no operational effects would occur under NEPA. Under CEQA, no impact would occur.

Indirect Effects

No indirect construction or operation impacts to archaeological resources would occur under the No Build Alternative. Under NEPA, no effect would occur. Under CEQA, no impact would occur.

EFFECT 3.12-4	**Adverse Effects to Buried Human Remains.** Ground-disturbing activities associated with the Project could inadvertently disinter and/or destroy buried human skeletal remains.

ALTERNATIVE 1 – NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, the Project would not be constructed and existing conditions within the railroad corridor would remain unchanged pending future maintenance activities. SANBAG will still be required to perform regularly schedule maintenance of the existing track and corresponding improvements at grade crossings and bridges to facilitate continued freight service per SANBAG's obligations with BNSF. Ground disturbance associated with maintenance activities would mainly occur at the surface and, therefore, these activities are unlikely to damage or destroy unknown buried human remains No adverse effect would occur under NEPA. Under CEQA, a less than significant impact would occur.

Direct Effects from Long-Term Operations

Continued freight operations would result in no physical changes to the existing railroad corridor. There would be no ground disturbance that could inadvertently damage or destroy buried human remains. No effect would occur under NEPA. Under CEQA, no operational impacts would occur.

Indirect Effects

No indirect construction or operational effects to buried human remains would occur under the No Build Alternative because there would be no substantial change in existing physical conditions along the corridor or freight operations. No effect would occur under NEPA. No indirect impact to buried human remains would occur under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects

Temporary Construction

Ground disturbance associated with construction of the Project, including the layover facility and parking lot sites, could potentially damage or destroy buried human remains that were not previously identified using standard archaeological inventory methods such as surface surveys. This circumstance would be particularly true where deeper excavations are required. Inadvertent damage to or destruction of human remains would result in an adverse effect under NEPA. Under CEQA, this is considered a significant impact and Mitigation Measure CUL-4 is proposed to minimize this potential adverse effect.

Long-Term Operations

Once operational, there would be no ground disturbance that could inadvertently damage or destroy buried human remains. No operational impacts are anticipated to occur once the Project is complete and fully implemented. Therefore, no operational effects would occur under NEPA. Under CEQA, no impact would occur.

Indirect Effects

No indirect construction or operation impacts to buried human remains would occur under the Build Alternatives and Design Options. Under NEPA, no effect would occur. Under CEQA, no impact would occur.

3.12.4 Mitigation Measures

The following mitigation measures are proposed for the Build Alternatives and Design Options to avoid, reduce, or minimize adverse effects to historical and archaeological resources.

CUL-1 **Structural Evaluations.** In order to determine the structural stability of the Redlands Depot, Cope Commercial Company Warehouse, Haight Packing House, Redlands City Transfer, and the brick warehouse at 440 Oriental Avenue, structural evaluations shall be prepared by a qualified engineer for these five buildings prior to the commencement of construction. The structural evaluations will also address maximum allowable levels of vibration during construction and, if appropriate, will recommend reduced levels of stabilization in conjunction with vibration monitoring.

Qualified recommendations within the structural evaluation shall be adhered to, as appropriate. Permanent stabilization will follow the Secretary of the Interior's guidelines for the treatment of historic properties; if the buildings are temporarily stabilized for the duration of construction activities, when removed, the buildings will be restored to their pre-construction condition when the stabilization measures are removed.

CUL-2a **Minimize Indirect Visual Effects of Potential Sound Barriers.** Visual surface treatments and drought-tolerant landscaping will be implemented as necessary to minimize indirect effects on the setting and feeling of the Redlands Lawn Bowling Club portion of Sylvan Park and the Second Baptist Church from introduction of sound barriers (if constructed). The surface treatments and landscaping for the sound barrier at the Redlands Lawn Bowling Club will be designed and implemented to harmonize the barrier with the surrounding pastoral park landscape. If a sound barrier is necessary at the Second Baptist Church, surface treatments will be designed and implemented to harmonize the barrier with the Spanish Colonial Revival architecture of the church building. Drought tolerant landscaping will be incorporated into the design of the barrier at the church as needed.

CUL-2b **Conduct Potential Noise Insulation Work at Second Baptist Church in Accordance with Secretary of Interior Standards and Guidelines and Applicable Preservation Briefs.** Sound-attenuating insulation may be necessary for the Second Baptist Church building. If sound-attenuating insulation measures are implemented at the church building, the work will be conducted in accordance with the Secretary of the Interior's Standards for Rehabilitation with Guidelines for Applying the Standards (Hume et al. 1990) and applicable National Park Service preservation briefs, including #3 (Improving Energy Efficiency in Historic Buildings); #22 (The Preservation and Repair of Historic Stucco); #24 (Heating, Ventilating, and Cooling Historic Buildings: Problems and Recommended Approaches); and #30 (The Preservation and Repair of Historic Clay Tile Roofs). SANBAG will select and implement the recommended insulation measures in coordination with the property owner and SHPO.

CUL-3 **Off-Site Replacement of Citrus Trees Removed from California/I10-Grove.** SANBAG shall coordinate with the City of Redlands, including the Citrus Preservation Commission, to provide for the planting of citrus trees at properties within the Redlands Historical Preserve of Citrus to compensate for the trees removed from the California/I-10 Grove in association with the Preferred Project Alternative. The number of citrus trees planted will be equal to the number of trees removed from the California/I-10 Grove. The types of trees to be planted will be determined through consultation between SANBAG and the City of Redlands, including the Citrus Preservation Commission.

CUL-4 **Construction Monitoring. Full-time** monitoring for archaeological deposits will be conducted in the Project APE in the vicinity of the Redlands Chinatown site (and a 50-foot buffer on each side of the site boundary) during ground disturbing construction activities. Monitoring will be conducted in accordance with a Construction Monitoring and Discovery Plan to be prepared for the project. Monitoring will occur under the supervision of an archaeologist who meets the Secretary of the Interior's Professional Qualifications Standards.

***Unanticipated Discoveries*.** In the event an unanticipated discovery of archaeological resources occurs during construction, the following measures will be implemented immediately following the discovery:

- All construction within a 50-foot radius of the resource will be halted until a qualified archaeologist can evaluate the resource.
- FTA and SHPO will be notified in the event of an unanticipated discovery.
- If the discovery is determined to be significant or potentially significant by the qualified archaeologist, the adverse effects under Section 106 to portions of archeological resources determined to be eligible for the NRHP would be resolved in consultation with SHPO through the following tasks:
  - Discussion with project engineers to determine if impacts can be avoided/minimized, including consideration of preservation in place
  - Recovery and analysis of archaeological material and associated data
  - Preparation of a data recovery report or other reports
  - Recovered archaeological material shall be provided to an accredited archaeological repository.

Archaeological monitor qualification requirements, detailed approaches to archaeological monitoring of various project elements, and the procedures to follow in the event that unanticipated archaeological resources or human remains are discovered will be defined in the Construction Monitoring and Discovery Plan.

***Stop Work if Unanticipated Human Remains Are Encountered*.** If human remains are exposed during construction, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the county coroner has made the necessary findings as to origin and disposition pursuant to PRC 5097.98. If the coroner determines the remains to be Native American, the coroner must contact the Native American Heritage Commission and the Project must comply with state laws relating to the disposition of Native American burials that are under the jurisdiction of the Native American Heritage Commission (PRC Section 5097). Construction must halt in the area of the discovery of human remains, the area must be protected, and consultation and treatment would occur as prescribed by law.

The following mitigation measures as proposed in other sections of Chapter 3 of this EIS/EIR would minimize adverse effects related to land use, planning, and communities:

- NV-1: Minimize construction-related noise; and
- NV-3: Establish Quiet Zones.

3.12.4.2 Effects After Mitigation

With implementation of Mitigation Measure CUL-4, the Project's impact on archaeological resources and buried human remains would be minimized and no adverse effect would result under NEPA. Under CEQA, this impact would be reduced to a less than significant level.

To minimize indirect adverse effects to NHRP listed and eligible historic properties within the City of Redlands, Mitigation Measures NV-1, CUL-1, and NV-3 are proposed to avoid adverse indirect effects related to construction-related vibration and the placement of sound barriers.

However, since the adoption of quiet zones is at the discretion of the local jurisdiction (e.g., City of Redlands), SANBAG is unable to fully implement the mitigation. In this context, Mitigation Measure CUL-2a is proposed to avoid adverse indirect effects as a result of the placement of sound barriers at the Redlands Lawn Bowling Club and Second Baptist Church. With the implementation of Mitigation Measure CUL-2b, no adverse effect would result to the integrity of the Second Baptist Church. With implementation of Mitigation Measures CUL-1, CUL-2a, and CUL-2a, the Project's impact on NRHP-listed and eligible properties would be minimized and no adverse effect would result under NEPA. Under CEQA, this impact would be reduced to a less than significant level.

The removal of up to two rows of citrus trees would alter distinctive physical or historical characteristics of the California/I-10 Citrus Grove and, therefore, constitute a significant impact under CEQA given the Grove's status as local historic resource. The footprint for the Preferred Project would be unable to avoid these two rows within the Citrus Grove. However, Mitigation Measure CUL-3 is proposed to mitigate this impact through in-kind replacement and, therefore, no residual impact for the Preferred Project and Design Options would result. For the Reduced Project Footprint Alternative, a majority this resource would be avoided and the corresponding impact would be less than significant, thus no mitigation would be required.

3.13 PARKLANDS, COMMUNITY SERVICES, AND OTHER PUBLIC FACILITIES

This section evaluates the effects of the Build Alternatives and Design Options relative to existing parklands (e.g., parks and recreational facilities), community services (e.g., fire protection, law enforcement, and emergency services), and other public facilities and institutions (e.g., schools, libraries, and other public facilities).

3.13.1 Regulatory Framework

Table 3.13-1 identifies and summarizes federal, state, and local laws, regulations, and plans that are applicable to the Project.

Table 3.13-1. Pertinent Laws, Regulations, and Plans for Parklands, Community Services, and Other Public Facilities

Law, Regulation, or Plan	Summary and Project Nexus
Federal	
Uniform Fire Code	The Uniform Fire Code (UFC) contains regulations relating to building construction and maintenance and the use of their premises. Topics addressed in the UFC include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, and hazardous materials storage and use. The UFC also include provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire safety requirements for new and existing buildings and their premises. The UFC contains specialized technical regulations related to fire and human safety. Project associated structures, such as the layover facility, would be constructed in accordance with UFC regulations and provisions.
State	
California Fire Code and California Building Code	California Code of Regulations (CCR) Title 24 of the California Building Code (CBC) is a compilation of building standards. State fire regulations are set forth in Section 13000 et seq. of the California Health and Safety Code and include regulations for building standards (as also set forth in the CBC), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training. Project associated structures, such as the layover facility, would be constructed in accordance with building standards outlined in Title 24.
The California Parklands Act of 1980	The California Parklands Act of 1980 (Public Resources Code Section 5096.141-5096.143) identifies “the public interest for the state to acquire, develop, and restore areas for recreation… and to aid local governments of the state in acquiring, developing and restoring such areas…” The California Parklands Act also identifies the necessity of local agencies to exercise vigilance to see that the parks, recreation areas, and recreational facilities are not lost to other uses. The Project would induce a negligible increase in population and does not include a residential or commercial component. As such, parks and recreation facilities within proximity of the Project would be able to accommodate the minimal increase in demand.

Table 3.13-1. Pertinent Laws, Regulations, and Plans for Parklands, Community Services, and Other Public Facilities

Law, Regulation, or Plan	Summary and Project Nexus
Local	
San Bernardino County Non-Motorized Transportation Plan	The San Bernardino County Non-Motorized Transportation Plan (NMTP 2011) is intended to guide the provision of all bicycle related plans, programs, and projects within the County. As a Countywide Bicycle Plan, it focuses on providing bikeway connections between the incorporated cities, adjacent counties, and major regional destinations within the County. The NMTP also prioritizes recommended bikeway projects through the Planning Area, and serves as a guide to the incorporated cities regarding bikeway policies and design standards. This adopted plan identifies a regional trail system in San Bernardino County, including multi-use trails accommodating hikers, equestrians, and bicycles. The following bikeway classifications standards are derived from the Caltrans Highway Design Manual and apply to bikeway facilities found in the cities of Redlands and San Bernardino: • Class I (Shared Use Path): A bikeway physically separated from any street or highway. Shared Use Paths may also be used by pedestrians, skaters, wheelchair users, joggers, and other non-motorized users. • Class II (Bike Lane): A portion of roadway that has been designated by striping, signaling, and pavement markings for the preferential or exclusive use of bicyclists. • Class III (Bikeway): A generic term for any road, street, path, or way that in some manner is specifically designated for bicycle travel regardless of whether such facilities are designated for the exclusive use of bicycles, or are to be shared with other transportation modes. There are currently no existing Class 1, Class 2, or Class 3 bikeways within proximity of or adjacent to the Project Study Area.
City of Redlands Emergency Management Plan	The Emergency Management Plan outlines policies aimed at protecting the general population from various human and natural disasters, including emergency preparedness and recovery with consideration to evacuation routes, peak load water supply requirements and minimum road with/clearance around structures.

3.13.2 Affected Environment

This section describes the existing environmental setting for fire and police protection and emergency services, public and community facilities (schools, parks, and other public facilities), and parks and recreational facilities for the cities of San Bernardino and Redlands.

Parklands

There are abundant parkland resources within the cities of San Bernardino and Redlands, which host a variety of recreational activities. Park and recreation areas range from mini parks to large region-wide park facilities. Recreational facilities are also found at schools and various community centers, which offer recreational programs for the local population. Table 3.13-2 lists the parklands in the Planning Area, and Figures 3.13-1A and 3.13-1B identify the location of these facilities in context of the Planning Area.

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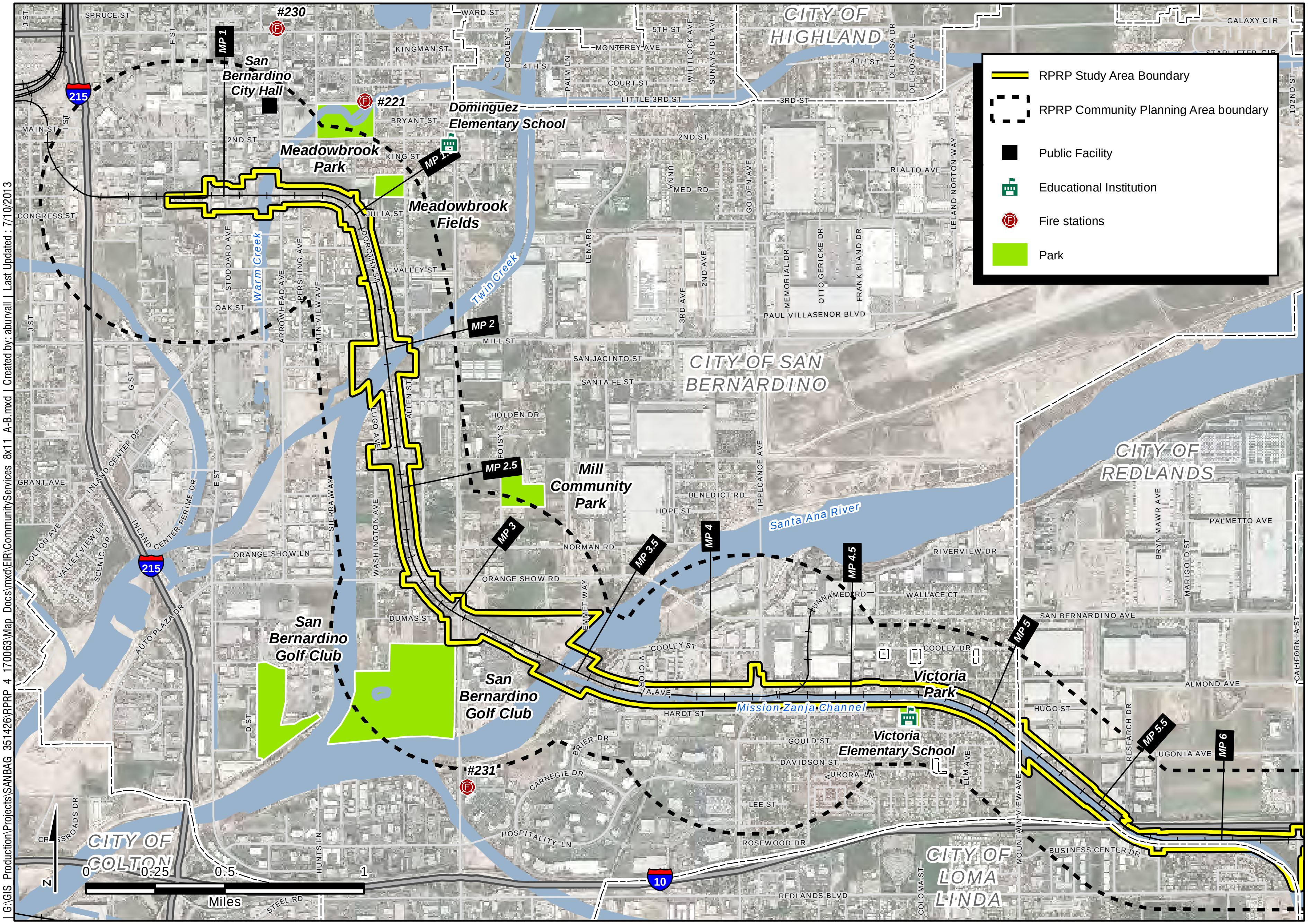
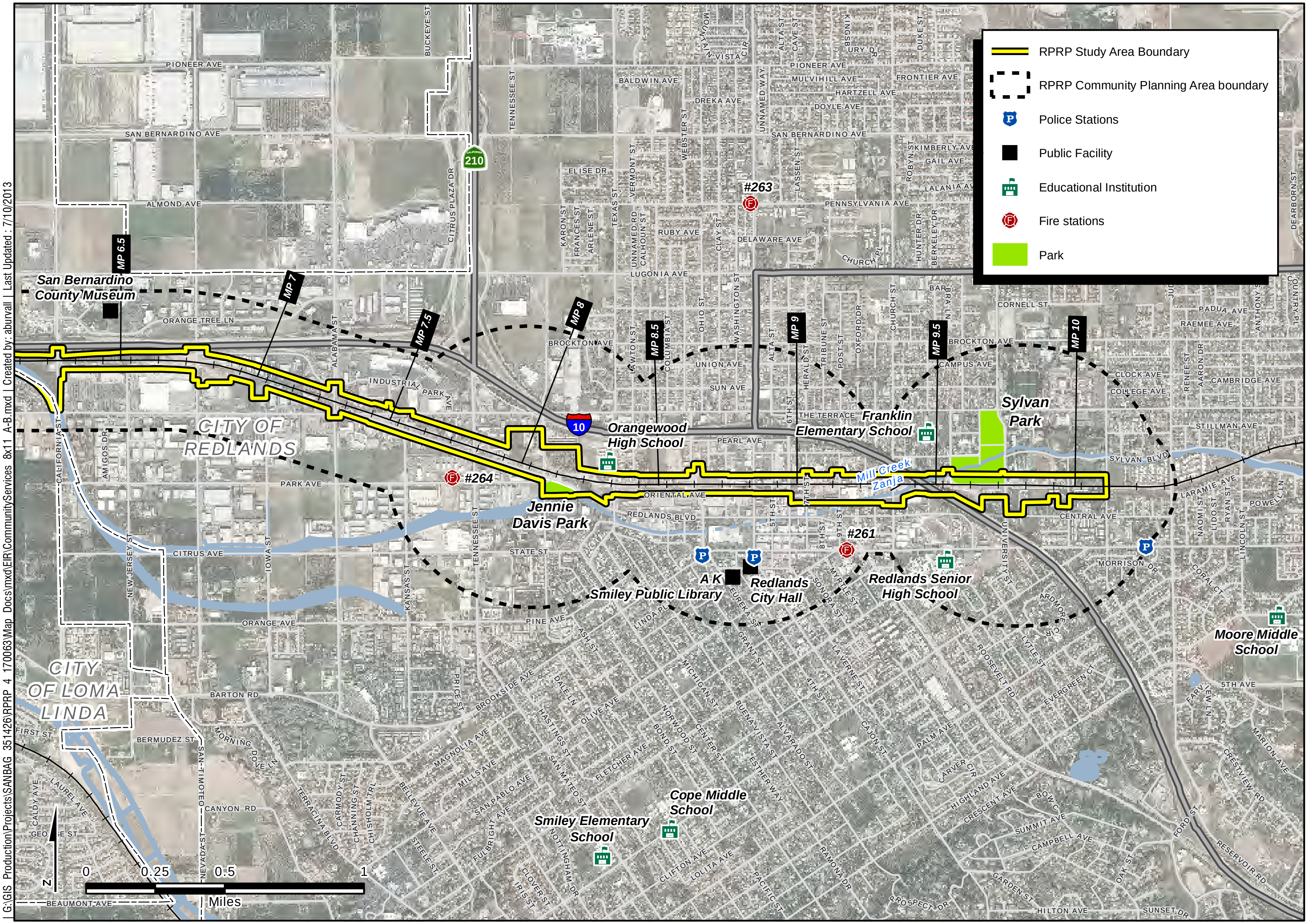


Parklands, Community Services, and Other Public Facilities - Western Study Area

Figure 3.13-1 A

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

HDR ONE COMPANY | Many Solutions℠



Parklands, Community Services, and Other Public Facilities - Eastern Study Area

Figure 3.13-1 B

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Table 3.13-2. Park and Recreational Facilities within the Planning Area

Park/Recreational Facility	Classification	Jurisdiction (applicable to project)[1]	Approximate Distance from Project Footprint and Rail Mile Post (MP)	Length (Miles) or Acreage
Meadowbrook Park	Neighborhood Park	San Bernardino	.20 Miles/ MP 1.0	14.12 ac
Meadowbrook Fields	Mini Park	San Bernardino	.09 Miles/ MP1.9	4.96 ac
San Bernardino Golf Club	Recreational Facility	Private	.11 Miles/ MP 3.0	N/A
Santa Ana River Trail	Trail	San Bernardino	Traverses Planning Area/ MP 3.5	100 miles[2]
Victoria Park	Mini Park	City of San Bernardino/RUSD	.01 Miles/ MP 4.5	-
Orange Blossom Trail (East Valley Corridor Multi-Purpose Trail)	Primary Community Trail	Redlands	.43 Miles/ MP 5.0	-
Jennie Davis Park	Neighborhood	Redlands	.02 Miles/ MP 8.0	4.0 ac
Orange Blossom Trail	Recreational Facility	Redlands	~6.5-8.5/ MP 6.5 to 8.5	-
Orangewood High School	Recreational Facility	City of Redlands/ RUSD	Direct Adjacent to Project Footprint/ MP 8.0	
Sylvan Park	Community Park	Redlands	Directly Adjacent to Project Footprint/ MP 9.5	23.30 ac

Source: City of Redlands 1995, City of San Bernardino 2005

[1] Some trails may also fall into multi-jurisdictional areas outside of the cities of San Bernardino and Redlands; however, only the two cities the Project footprint falls within are identified in this table due to the associated impact analysis relevance.

[2] Once complete, the SAR trail will be 100-mile long trail extending from the San Bernardino Mountains to the Pacific Ocean spanning San Bernardino, Riverside and Orange Counties. The trail is currently approximately 60-percent complete. The portion of the trail intersecting the Project at the Santa Ana River Bridge is currently incomplete. However, full completion of the trail is anticipated before the completion of RPRP.

3.13.2.1 Bikeways and Trails

Trails and bikeways, at times, provide interconnection between parks, schools, and civic facilities throughout the community. As a result, bikeways and trails can traverse multi-jurisdictional areas. A good portion of the Santa Ana River Trail is designated as a Class I facility; however, the portion that traverses the Planning Area has not yet been constructed. Once complete, the portion of the trail that crosses the Project is anticipated to be designated as a Class I facility (Figure 3.3-2). Similarly, the Orange Blossom Trail is anticipated to be a Class I facility as well. Planning documents have shown a portion of the trail generally running parallel with the Project along two sections of the ROW. The first section is mapped approximately between Mountain Avenue and California Street and the second is mapped between the limits of Church Street and the eastern Project terminus and within the Project footprint (NMTP 2011).

According to the NMTP, the Planning Area crosses bike friendly roads, but currently there are no existing Class I, Class II, or Class III bikeways within proximity of or adjacent to the Planning

Area.[1] Future routes adjacent to the SANBAG ROW (e.g., Orange Blossom Trail, Santa Ana River Trail) are planned, although these routes are considered trail bikeways and for this reason are discussed further in this section. The NMTP also identifies future roadway bike lanes and paths that would intersect the railroad corridor, as presented in Figure 3.3-2.

Community Services

City of San Bernardino

Fire and Emergency Medical Services

The City of San Bernardino Fire Department (SBFD) serves a resident population of approximately 202,000 and covers a service area of over 59 square miles, including approximately 19 miles of wildland interface area. The SBFD staffs 12 fire engine companies, two aerial truck companies, one heavy rescue vehicle, five 4-wheel drive brush engines, one hazardous material response vehicle, and one medic squad, all of which are housed in 12 stations throughout the City of San Bernardino (SBFD Website 2012).

All fire departments in the State are signatory to a master mutual aid agreement established to provide assistance for major incidents. In addition to a master mutual aid agreement, the SBFD has joint response agreements with the City of Rialto, City of Colton, and City of Loma Linda, the San Bernardino County Fire Department for fire protection and emergency medical response. Figures 3.13-1A and 3.13-1B illustrate the SBFD facilities within proximity to the Planning Area.

Police Protection

Police protection services within the city limits are provided by the City of San Bernardino Police Department (SBPD). The City of San Bernardino is served by one main police station and six community service offices that serve four designated geographical patrol districts. The SBPD is comprised of 312 sworn officers and an additional 150 civilian support staff members and maintains a ratio of approximately one sworn officer for every 820 residents (City of San Bernardino 2005). The Planning Area is located in the Southeast District of the South Division, of which no police stations are located within the vicinity of the Planning Area.

The SBPD operates under mutual aid agreements with neighboring police departments and law enforcement agencies. Such agreements allow for the use of a neighboring agency's personnel and resources upon request and for automatic response within zones of mutual aid. In particular, the San Bernardino Sheriff's Department and the SBPD provide mutual backup services upon request within both the City of San Bernardino and unincorporated areas. In addition, the California Highway Patrol provides backup services to the SBPD upon request, as well as providing traffic patrol on State Highways and roadways within the County.

City of Redlands

Fire and Emergency Medical Services

The City of Redlands Fire Department (RFD) serves a resident population of approximately 70,000 and covers a diverse service area of over 37 square miles. The RFD staffs four fire engine companies, one ladder truck, one duty battalion chief, three 4-wheel drive brush engines, one air truck, one water tender, one air/light incident support, one mobile generator,

[1] See Figure ES-1, Bicycle Facilities East Valley - http://sanbag.ca.gov/planning/Non-MotorizedTransportationPlan_03-11.pdf

three disaster trailers, and one medic squad, all of which are housed in four stations throughout the City of Redlands and illustrated in Figures 3.13-1A and 3.13-1B (City of Redlands Fire Department Annual Report 2009).

RFD includes emergency medical response services with paramedic staff at each of the above fire stations. The RFD has a mutual aid agreement with the San Bernardino County Fire Department (SBCFD), the California Department of Forestry, and the Loma Linda Fire Department.

Police Protection

The Redlands Police Department (RPD) provides police response to emergency and non-emergency calls for assistance, routine patrol, traffic enforcement, investigation of crimes, parking control services, community problem solving, code enforcement, business liaison, and animal control. Additional programs include gang intervention, drug prevention, high school programs, and cadet and explorer programs.

Other Public Facilities

City of San Bernardino

Schools

The San Bernardino City Unified School District (SBCUSD) provides educational services to elementary, intermediate, and high school students within the City of San Bernardino. The SBCUSD operates a total of 44 elementary schools, 10 middle schools, seven high schools, three educational schools, and one adult school (SBCUSD 2011). For the 2010-2011 school year, the SBCUSD had a total enrollment of 54,518 students (California Department of Education 2011). Figures 3.13-1A and 3.13-1B illustrate SBCUSD facilities within proximity to the Planning Area.

The following schools are located within the Planning Area:

- Norton Elementary School;
- Curtis Middle School;
- San Gorgonio and Pacific High School; and
- Dominguez Elementary School (Planned).

Other Public Facilities

The City of San Bernardino contains a variety of civic institutions, including City of San Bernardino and County of San Bernardino government offices, the County of San Bernardino Courthouse, two public colleges, and the public library system. Cultural facilities include theaters, libraries, art galleries, and a museum. Figures 3.13-1A and 3.13-1B show other public facilities within proximity to the Planning Area.

City of Redlands

Schools

The Redlands Unified School District (RUSD) provides educational services to elementary, intermediate, and high school students within the City of Redlands. RUSD operates a total of 16 elementary schools, four middle schools, four high schools, one educational school, and one adult school (RUSD 2011). For the 2010-2011 school year, the RUSD had a total enrollment of 21,398 students (California Department of Education 2011). Figures 3.13-1A and 3.13-1B illustrate the RUSD facilities within proximity to the Planning Area.

The nearest RUSD facilities to the Planning Area include:

- Victoria Elementary School, Smiley Elementary School, Kimberly Elementary School; and Franklin Elementary School;
- Beattie Middle School, Cope Middle School, and Moore Middle School; and
- Orangewood High School and Redlands High School.

Other Public Facilities

Other public facilities within the City of Redlands include civic institutions and cultural facilities such as A.K. Smiley Library, University of Redlands, City of Redlands government offices, and San Bernardino County Museum. Figures 3.13-1A and 3.13-1B illustrate other public facilities within proximity to the Planning Area.

3.13.3 Environmental Impacts/Environmental Consequences

3.13.3.1 Effect Criteria

The Build Alternatives and Design Options would have an adverse effect on parklands, community services, and other public facilities, if they would:

- Result in substantial adverse physical impacts to government facilities or the need for new or physically altered government facilities;
- Result in an increase in the demand for parklands, community services or other public facilities such that substantial physical deterioration of the facility would occur or be accelerated; or
- Result in substantial adverse effect to service ratios, response times, or other performance objectives.

3.13.3.2 Methodology

Impacts on parklands, community services, and other public facilities that would result from Project implementation were identified by comparing existing facilities and service capacity against anticipated future demand. Potential impacts to parklands, community services and other public facilities were assessed by conducting an inventory of facilities located within proximity to the Planning Area, and determining which facilities are most likely to be impacted due to their distance to the rail construction area and ongoing operations.

Park and recreational facilities were identified through review of available mapping, previous studies, and general plans for the cities of San Bernardino and Redlands. Effects were assessed based on proximity of the resource to the existing SANBAG ROW and making a determination if any direct impacts (e.g., land acquisition, limiting access, pedestrian barrier) or indirect impacts (e.g., increased noise, air quality) would occur. Corresponding with the established Community Planning boundary (Planning Area), a 0.25-mile distance along the alignment and a 0.50-mile distance around station areas was determined to be the maximum distance at which potential indirect impacts associated with traffic, noise or visual quality would occur. The analysis also examined the potential for the Project to lead to physical deterioration of existing facilities and the need for new recreational facilities. Effects on recreation were evaluated in relation to potential construction and operational-related impacts. A long-term, operational effect could occur if a park or recreation facility is eliminated.

3.13.3.3 Criteria Requiring No Further Evaluation

The following criteria are not applicable to actions associated with the Build Alternatives and Design Options or would result in no effect.

Increase in the Demand for Parklands, Community Services or Other Public Facilities. The Project would result in a negligible increase in population growth (less than 20 persons) in the Planning Area throughout the operational phase of the Project. During peak construction where multiple construction activities would be occurring simultaneously, up to 100 construction workers would be active at any given time. It is anticipated that existing parklands and other public service providers would be able to accommodate the minimal increase in demand based on the number of employees required for construction and operation of the Project.

The Project does not include residential or commercial development that would substantially increase population and employment in the area. As residential units are not proposed, there would not be an increase in the number of school-age children in the area and thus, no new demand for educational services would be generated. Furthermore, the schools located in the vicinity of the Planning Area would not be physically impacted or altered in a way that would cause relocation or need for new facilities. For this reason, no effect on these services would occur under NEPA. No impacts are contemplated under CEQA.

3.13.3.4 Assessment of Environmental Impacts

EFFECT 3.13-1	**Physical Impacts or Alterations to Government Facilities.** Implementation of the Project could result in adverse physical impacts or alterations to parklands and government facilities.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, although no immediate construction activities would occur under this alternative, future track maintenance and bridge replacement would be required within the next 10 years. These improvements would be limited to the existing SANBAG ROW and would be isolated to a small section of the corridor at any one time. Based on these considerations, the potential for substantial disruption to existing parklands, community services, or other public facilities is unlikely and no adverse effect would occur under NEPA. Under CEQA, this impact is considered less than significant.

Direct Effects from Long-Term Operations

Continued freight operations along the railroad corridor are unlikely to result in disruptions to existing parklands, community services, or other public. Based on these circumstances, no adverse effect would occur under NEPA. Under CEQA, this impact is considered less than significant.

Indirect Effects

No indirect construction or operation effects on parklands, community services, or other public facilities would occur under the No Build Alternative because there would be no major construction activities or new passenger rail operations. Limited freight operations and maintenance activities would continue similar to existing conditions. Under NEPA, no indirect effect would occur. Under CEQA, no indirect impact would occur.

ALTERNATIVE 2 - PREFERRED PROJECT AND DESIGN OPTIONS

Direct Effects from Temporary Construction

The Build Alternatives and Design Options would involve numerous roadway crossings and would involve the crossing of several water features, including the SAR. Project construction activities could result in the temporary disruption to both formal and informal (e.g., local streets) bikeways, trails, and access to recreational areas. As provided in Chapter 2, the Project would accommodate the proposed extension of the SAR Trail; however, during the construction of the SAR Bridge (Bridge 3.4) access under the existing bridge at the SANBAG ROW could be obstructed for several months. This disruption in access may occur during the drier summer months when use would normally be at its peak. Additionally, with the proposed increase in channel capacity at Bridge 3.4, the area available for the trail under the bridge would be further constrained and may be in conflict with current design plans or standards. In this context, an adverse effect to parks and recreational facilities would occur under NEPA. This is considered a significant impact under CEQA. Mitigation Measures PCS-1 (Coordinate Trail Planning with Local Jurisdictions), TR-1 (Prepare a Traffic Management Plan) in Section 3.3, Transportation, and NV-2 (Prepare a Community Notification Plan for Project Construction), in Section 3.6, Noise and Vibration, are proposed to minimize this direct effect.

Station, access, and track improvements at New York Street would occur in close proximity to existing parks facilities including Jennie Davis Park to the south of Redlands Boulevard and Orangewood High School to the northeast of the New York Street Station. All temporary construction and related disturbance would remain north of Redlands Boulevard, except at the intersection with New York Street, and, therefore once constructed, all improvements adjacent to the park would be located at-grade to connect with existing walkways. During Project construction, access to Orangewood High School could also be affected due to the proximity of the school with anticipated construction activities, which would include improvements to Texas Street and the closing of W. Stuart Street. Although, parking lot access for Orangewood High School is available from Texas Street, temporary construction at this location could disrupt access thereby requiring the temporary re-routing of traffic. In this context, an adverse effect would occur under NEPA. This is considered a significant impact under CEQA. Mitigation Measure TR-1 in Section 3.3, Transportation, is proposed to address this temporary effect.

Similarly, the construction of the track improvements east of I-10 could reduce access to Sylvan Park via East Park Avenue and Division Street and encroach into the southern edge of the park due to its location directly within SANBAG's ROW. The existing width of Park Avenue is sufficient to facilitate one-way traffic during construction activities, thereby maintaining park access during construction. Additionally, the nearest staging area may be located directly west of the I-10 overpass, which would maintain a physical separation (e.g., I-10) between the park and the staging area. However, widening of Park Avenue to a two-lane, improved roadway would include temporary effects into the park. Upon completion of the roadway improvements, the park would be functional. Existing ornamental trees along the north side of Park Avenue may also be removed and would require replacement. These effects collectively could degrade the existing park setting for the duration of construction and are considered adverse under NEPA. This is considered a significant impact under CEQA. Mitigation Measures TR-1 and

VQA-3 (Prepare Tree Replacement Plan), in Section 3.4 are proposed to addresses these adverse effects.

Based on the proximity of existing law enforcement and fire protection facilities (Figures 3.13-1A and 3.13-1B) from the railroad corridor and anticipated construction areas, temporary construction-related effects would not result in direct impacts or alterations to those facilities. Therefore, no adverse effect would occur under NEPA. This is considered a less than significant impact under CEQA. Issues related emergency responses are considered in Sections 3.3 and 3.15.

Direct Effects from Long-Term Operations

Once operational, passenger trains would operate in between San Bernardino and Redlands as described in Chapter 2. The primary operational effects to local parks and recreational areas would be associated with train noise and access safety. In the absence of mitigation, Project operations could result in an adverse effect under NEPA and a significant impact under CEQA. In terms of train noise, multiple mitigation measures are proposed in Section 3.6, Noise and Vibration, to reduce operational noise including Mitigation Measures NV-3 (Establish Quiet Zones), NV-4 (Construct Sound Barriers), NV-5 (Wayside Rail Lubrication), and NV-6 (Use Ballast Mats, Resiliently Supported Ties, or Measures of Comparable Effectiveness on Portions of the Rail near Sensitive Receivers). In the context of safe access to and from existing park and recreational areas, Mitigation Measures TR-3 (Approval from CPUC for Grade Crossings and Safety Measures) and TR-4 (Recommended Pre-Signals for Queuing) would be effective in minimizing any hazards related to pedestrian and/or bicycle safety across the railroad.

Once constructed, the southern portion of Sylvan Park would remain within the SANBAG ROW. Limited physical encroachments into Sylvan Park would be necessary during construction as result of improvements to Park Avenue. However, once constructed, these improvements would not result in any decreased functionality of any of the existing park amenities (lawn bowling, playground, walkways). In this context, the Project would not result in the loss of recreational opportunities within the park. Likewise, no loss of vehicular access to an existing parking lot from East Park Avenue would occur. For these reasons, no adverse effect would occur under NEPA. This is considered a less than significant impact under CEQA.

Although portions of the existing Orange Blossom Trail are not located within the immediate Study Area and, therefore would be unaffected by Project construction; per SANBAG's adopted NMTP there are planned sections of the trail that overlap with SANBAG's ROW. More specifically, the NMTP identifies the trail along SANBAG's ROW at two locations: (1) along the Mission Zanja Channel between Mountain View Avenue and California Street; and (2) east of Church Street. Given that these planned sections of the Orange Blossom Trail remain unfunded, these sections would most likely be constructed at some point in the future following the installation of the Project.

Based on existing constraints within SANBAG's ROW, there would be several challenges to constructing a trail at the two locations reflected in the NMTP. Most notably, SANBAG's ROW along the Mission Zanja Channel measures from 50 to 100 feet in width with the track siding requiring a minimum of 50 feet along this stretch of the ROW. Additionally, the southern portion of SANBAG's ROW contains the Mission Zanja Channel (e.g. up to 30 feet). As a result, there is negligible additional ROW for a trail that would otherwise provide sufficient separation from the tracks. A similar circumstance exists in the ROW section east of Church Street where Mill Creek and Park Avenue are contained within the northern section of the ROW. Based on these constraints, the placement of a trail within SANBAG's ROW would likely create an undesirable trail environment due to the close proximity of active passenger rail operations.

Notwithstanding these constraints, SANBAG updates the NMTP every five years. As part of the next update, SANBAG will have the opportunity to work with the City of Redlands and the SBCFCD to revise the trail alignment based on more detailed design information for the Project. In this context, although the Project would not preclude the future installation of the Orange Blossom Trail, the Project would likely require realignment of the trail in the NMTP. Given that the Orange Blossom Trail is a desired public amenity within the City of Redlands, the Project's conflict with the NMTP is considered an adverse effect under NEPA. Under CEQA, this impact is considered significant. Mitigation Measure PCS-1 is proposed to minimize this conflict.

Indirect Effects

The Project would not directly generate population growth or require new public services. The Project would allow SANBAG to provide passenger rail service to existing development within the cities of San Bernardino and Redlands. Any new development adjacent to the railroad corridor would be subject to the requirements of the respective General Plans for each jurisdiction, which identifies performance standards and funding mechanisms to support the demand for the kinds of public services that would support new development, such as schools, parks, fire, police, or other public facilities. In this context, no adverse effect would occur under NEPA. Under CEQA, a less than significant impact would result.

As discussed above, direct impacts in the form of increased noise from train operations could temporarily degrade the quality of the recreational experience at the parks and recreational facilities in the Planning Area. Mitigation measures are proposed to address this adverse noise effect, which include the construction of noise barriers. However, as discussed in Section 3.4, Visual Quality and Aesthetics, the construction of noise barriers would in turn create an indirect aesthetics impact that would be unmitigable. Based on the results of the noise analysis, noise barriers could be constructed at Victoria and Sylvan Parks within the City of Redlands. Not only would the construction of noise barriers at these locations degrade the visual appearance of the two parks, they would also intensify the level of encroachment into each park site. These effects are considered adverse under NEPA. This is considered a significant impact under CEQA. Mitigation Measure VQA-4 (Sound Barrier Screening and Surface Treatments) in Section 3.4, Visual Quality and Aesthetics, is proposed to minimize these indirect effects.

ALTERNATIVE 3 - REDUCED PROJECT FOOTPRINT

Direct Effects from Temporary Construction

Construction-related effects, including noise effects under this alternative would be similar to those identified for the Preferred Project. The main difference under this alternative occurs in the vicinity of Sylvan Park where the proposed improvement to Park Avenue would occur within a constrained ROW. Under a constrained roadway improvement scenario, the limits of construction would be shifted further south with no permanent alterations to existing park amenities north of Park Avenue. Nevertheless, these effects collectively could degrade the existing park setting for the duration of construction and are considered adverse under NEPA. This is considered a significant impact under CEQA. Mitigation Measures TR-1 in Section 3.3, Transportation, VQA-3 in Section 3.4, and NV-1 and NV-2, in Section 3.6, Noise and Vibration are proposed to minimize these effects.

Direct Effects from Long-Term Operations

Effects identified for the Preferred Project would be similar under this alternative. As a result, Project operations could result in an adverse effect under NEPA and a significant impact under CEQA.

Indirect Effects

Indirect effects under the Preferred Project would be similar to this alternative. Similar to the Preferred Project, the erection of noise barriers in the vicinity of Victoria and Sylvan parks would result in a degradation of the each park's visual quality. These effects are considered adverse under NEPA. This is considered a significant impact under CEQA. Mitigation Measure VQA-4 is proposed to minimize this indirect effect.

EFFECT 3.13-2	**Impact to Service Ratios, Response Times, or Other Performance Objectives.** Implementation of the Project could result in potential adverse effects to service ratios and response times for local agencies.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, no immediate construction activities would occur; however, future track maintenance and bridge replacement would be required within the next 10 years. Since these improvements would occur within SANBAG's existing ROW, it is unlikely that the No Build Alternative would impact or result in conflicts with service ratios, response times or other performance objectives of parklands, community services, and other public facilities. Based on these circumstances, no adverse effect under NEPA would occur. This is considered a less than significant impact under CEQA.

Direct Effects from Long-Term Operations

Continued freight operations along the railroad corridor are unlikely to conflict with service ratios, response times or other performance objectives of parklands, community services, and other public facilities. Based on these circumstances, no adverse effect would result under NEPA. Under CEQA, this impact is considered less than significant.

Indirect Effects

No indirect construction or operation effects on parklands, community services, or other public facilities would occur under the No Build Alternative because limited freight operations and maintenance activities would continue similar to existing conditions. Therefore, under NEPA, no indirect adverse effect would occur. Under CEQA, no impact would occur.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Construction of the Project would have the potential to result in temporary delays in response times for fire, police and emergency vehicles due to increased traffic congestion and/or road closures during construction activities on or near the at-grade crossings. Emergency vehicles may need to alter their routes in order to avoid areas with construction occurring along the railroad corridor. Construction delays could also impact travel to and from schools and result in the need to temporarily alter routes. However, these types of delays would be temporary during the construction phase of the Project. The number of delays would vary, depending on location, type of improvement, and surrounding conditions, such as traffic demands, access, and pedestrian activity. As such, an adverse effect under NEPA would occur. This is considered a significant impact under CEQA. Mitigation Measure TR-1 in Section 3.3, Transportation, is proposed to minimize this direct effect.

Directs from Long-Term Operations

The Project would not result in a substantial increase in demand or changes in existing service ratios for community services and other public facilities that typically serve the existing population within the Planning Area. Due to the limited number of new permanent positions generated (approximately 40) by the Project, service ratios for parks and community service providers such as the SBFD, SBPD, RFD, and RPD would be generally unaffected. As such, under NEPA, no adverse long-term operational effects associated with services ratios and response times are anticipated upon the implementation of the Build Alternatives and Design Options. Under CEQA, no impact would occur.

Indirect Effects

No indirect construction or operation impacts would affect service ratios and response times in the Planning Area. Therefore, under NEPA, no indirect adverse effects would occur. Under CEQA, no impact would occur.

3.13.4 Mitigation Measures

SANBAG proposes the following measures to avoid, minimize, and/or mitigate for adverse effects related to parklands, community services, and other public facilities for the Build Alternatives and Design Options:

PCS-1 **Coordinate Trail Planning with Local Jurisdictions.** SANBAG will implement the following activities to minimize Project-related conflicts with proposed trails:

- Santa Ana River Trail - SANBAG shall coordinate final design and construction of Bridge 3.4 with the San Bernardino County Department of Public Works, Transportation Design Division, and Parks and Recreation Department to integrate the trail as contemplated in the SANBAG's Non-Motorized Transportation Plan (2011) (NMTP), so as to maintain it's planned future continuity along the Santa Ana River. If the trail is constructed and operational in advance of the bridge structure, SANBAG will maintain trail access during the course of construction, to the extent feasible. In instances, where trail closures are required the construction contractor will be required to minimize the duration of the closure and support the County with any noticing, outreach, or implementation of temporary detours.
- Orange Blossom Trail - SANBAG shall update the NMTP (2011) as part of it's next cycle update, to include the realignment of the trail segment of the Orange Blossom Trail that is currently shown as being located within the railroad right-of-way, so as to not conflict with the proposed project. SANBAG will coordinate with the City of Redlands and the County Flood Control District to determine available rights-of-way for the placement of the trail and, if necessary, realign the trail to take advantage of connections via existing roadway and other public right-of-ways.

Implementation of following Mitigation Measures would minimize adverse effects to parklands and communities services and facilities:

- NV-1 (Employ Noise-Reducing Measures during Construction)
- NV-2 (Prepare a Community Notification Plan for Project Construction)
- NV-3 (Establish Quiet Zones)
- NV-4 (Construct Sound Barriers)
- NV-5 (Wayside Rail Lubrication)
- NV-6 (Use Ballast Mats, Resiliently Supported Ties, or Measures of Comparable Effectiveness on Portions of the Rail near Sensitive Receivers)
- TR-1 (Prepare a Traffic Management Plan)
- TR-3 (Approval from CPUC for Grade Crossings and Safety Measures)
- TR-4 (Recommended Pre-Signals for Queuing)
- VQA-3 (Tree Replacement)
- VQA-4 (Sound Barrier Screening and Surface Treatments)

3.13.4.1 Effect after Mitigation

Upon implementation of Mitigation Measures PCS-1, NV-1 through NV-6, TR-1 through TR-4, and VQA-3 and VQA-4, no adverse effect would remain under NEPA. Under CEQA, impacts would be reduced to a less than significant level.

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3.14 ECONOMIC AND FISCAL IMPACTS

This section provides an evaluation of the Build Alternatives and Design Options in relation to existing economic conditions within the Planning Area and the larger southern California region. Economic indicators considered in this section include employment, earnings, population, and housing resources. The information and findings contained in this section are based on a Socioeconomics and Economics Impact Analysis, which is provided as Appendix N.

3.14.1 Regulatory Framework

Table 3.14-1 identifies and summarizes federal, state, and local laws, regulations, and plans that are applicable to the Project.

Table 3.14-1. Pertinent Laws, Regulations, and Plans for Economic and Fiscal Impacts

Law, Regulation, or Plan	Summary and Project Nexus
Federal	
Federal Transportation Agency (FTA)	According to the FTA, transit projects may have economic impacts that should be included in environmental impact documents. In particular, projects may create direct and indirect taxation changes, cause substantial displacement of businesses and individuals, disrupt business activities, and influence regional construction costs. Small projects that are contained on a single site, do not involve displacements, and are compatible with surrounding land uses, and, result no or few displacements of businesses and individuals typically result in fewer economic impacts. In larger projects, a detailed economic impact analysis should be included in the environmental documentation.
State	
Southern California Association of Governments	The Southern California Association of Governments (SCAG) is the nation's largest metropolitan planning organization, representing six counties (Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura), 191 cities and more than 18 million residents in an area of more than 38,000 square miles. SCAG undertakes a variety of planning and policy initiatives to encourage sustainable growth in southern California. The analysis of socioeconomics provided in this section relies on population and growth data obtained from SCAG as well as information from the U.S. Census Bureau (2010) and the California Employment Development Department (2011) for San Bernardino County and the cities of San Bernardino, Loma Linda, and Redlands.
Local	
Measure I	Measure I is the half-cent sales tax collected throughout San Bernardino County for transportation improvements. San Bernardino County voters first approved the measure in November 1989 to ensure that needed transportation projects were implemented countywide through 2010. In 2004, San Bernardino County voters approved the extension of the Measure I sales tax through 2040. One of SANBAG's responsibilities is to administer Measure I revenue and to determine funding allocations based on the current Measure I 2010-2040 Ten Year Delivery Plan (dated 2009). Per Exhibit A (Transportation Expenditure Plan) of Measure I (or San Bernardino County Transportation Authority Ordinance No. 04-01), 8% of revenue collected in the San Bernardino Valley Subarea is required to fund Metrolink/Rail Service. Eligible expenditures of Metrolink/Rail Service funds under Measure I include capital improvements on the Metrolink San Bernardino Line, construction and operation of a new passenger rail service between the

Law, Regulation, or Plan	Summary and Project Nexus
	cities of San Bernardino and Redlands, and the construction and operation of an extension of the Gold Line to Montclair. In addition, Ordinance No. 04-01 allocates 8% of the revenue collected in the San Bernardino Valley Subarea for Senior and Disabled Transit Service and 2% for Express Bus/Bus Rapid Transit Service. The remainder of the Measure I revenue for the San Bernardino Valley Subarea is required to be allocated for vehicular improvements to freeways and major/local streets.

3.14.2 Affected Environment

The SCAG planning region includes Imperial, Los Angeles, Orange, San Bernardino, Riverside, and Ventura counties. For the purposes of this EIS/EIR, the San Bernardino region of the SCAG region and the cities of San Bernardino, Loma Linda, and Redlands are the geographies used to evaluate socioeconomic effects. This section describes the baseline socioeconomic conditions within this region and the attributes of the human and built environment in the Project vicinity.

Population

Table 3.14-2 shows the existing 2011 population for each of the counties located within the SCAG region and the total for SCAG. Based on SCAG Growth Forecasting, the SCAG region has a total existing (2011) population of 18,257,907, with Los Angeles County accounting for the majority of the population within the SCAG region. Orange County makes up the second most populous county in the SCAG region, and is followed by Riverside, San Bernardino, Ventura, and Imperial counties.

Table 3.14-2. 2011 Population in the SCAG Region

County	2011 Population
Los Angeles	9,894,657
Orange	3,045,507
Riverside	2,240,793
San Bernardino	2,066,502
Ventura	832,737
Imperial	177,711
SCAG Region	18,257,907

Source: SCAG 2011b

Between 2000 and 2011, the population in the SCAG region increased by 1.7 million people. In descending order, Riverside County grew by 45 percent (695,406 persons), Imperial County grew by 25 percent (35,350 persons), San Bernardino County grew by 21 percent (357,068 persons), Ventura County grew by 11 percent (79,540 persons), Orange County grew by seven percent (199,218 persons), and Los Angeles County grew by four percent (357,319 persons). Riverside County had the highest amount of growth annually at 4.09 percent in the SCAG region (Appendix N).

Between 2000 and 2010, the cities within and surrounding the Study Area experienced varying rates of population growth. In descending order, the City of Loma Linda grew by 24.5 percent (4,580 persons), the City of San Bernardino grew by 13.2 percent (24,523 persons), and the

City of Redlands grew by 8.1 percent (5,156 persons) (Appendix N). Tables with specific population data for the SCAG region and cities within and surrounding the Planning Area are provided in the Socioeconomic and Economics Impacts Analysis (see Appendix N).

According to SCAG's 2012-2035 RTP/SCS EIR (SCAG 2012b), the total SCAG region population is expected to increase by approximately 3.89 million persons at buildout of the 2012-2035 RTP/SCS. The highest amount of growth is projected to occur in Los Angeles County (an increase in 1,455,743 persons), with Riverside County ranking second (an increase in 1,140,107 persons), and San Bernardino ranking third (an increase in 683,298 persons). These projected figures differ from the 2000 and 2010 time period between, which showed the greatest increases in Riverside County.

Employment

Employment trends in Southern California have long followed a "boom and bust" cycle. Much of the 2000's saw a boom of housing development, particularly, in the Inland Empire, only to be followed by a bust starting in 2008. This cycle significantly impacted regional employment, particularly in the construction (housing) and service sectors. Out of all the counties within the SCAG region, only Imperial County showed a net gain in jobs between 2000 and 2011. The remaining counties in the SCAG region all show a negative employment growth, as does the SCAG region as a whole. The counties with the highest employment loss (in increasing order of percent of lost employment) are: Orange County (5 percent), Los Angeles County (14 percent), San Bernardino County (16 percent), Riverside County (17 percent) and Ventura County (20 percent). Overall, the SCAG Region lost approximately 995,300 jobs, or 13 percent, between 2000 and 2011. Meanwhile, the cities of San Bernardino, Loma Linda, and Redlands had a net gain in jobs between 2000 and 2011. The cities of San Bernardino and Redlands had a six percent increase in total employment between 2000 and 2011, while the total employment in Loma Linda increased by seven percent (Appendix N).

Unemployment rates in southern California generally follow a pattern similar to those experienced throughout California. Unemployment rose steeply in the early 1990s, which was associated with a reduction in military spending (especially in the aerospace industry) at the end of the Cold War. Unemployment rates peaked in 1993 and then fell gradually throughout the rest of the decade as the state economy improved. The rate of unemployment in southern California rose and fell moderately for several years before the sharp increases that began in 2009 with the housing collapse. Between 1990 and 2010, the state unemployment rate had never reached double digits until the economic downturn that began in 2009. Similar to southern California, the unemployment rates in the cities of San Bernardino, Loma Linda, and Redlands rose and fell and then increased drastically during the economic downturn that began in 2009. According to the California Employment Development Department (EDD), unemployment rates for the cities of San Bernardino, Loma Linda, and Redlands in 2011 was 17.6 percent, 8.0 percent, and 9.7 percent, respectively (Appendix N).Throughout 2000 to 2011, the unemployment rate in the City of San Bernardino has been a little more than twice that in the City of Loma Linda and almost twice as high as in the City of Redlands.

According to the EDD, the total number of jobs in San Bernardino County increased between 1990 and 2010. The industries that contributed to the overall employment growth in the County were trade, transportation and utilities, professional and business services, educational and health services, and local government. Between 1990 and 2010, job losses occurred in the farming, construction, and information technology and natural resources and mining sectors. Although a significant number of well-paying jobs were added to the regional economy over the same time period, the majority of new jobs were lower paying jobs in the service sector or in the educational sectors of local government. Tables with specific employment data for the SCAG region and cities within and surrounding the Planning Area are provided in the Socioeconomic and Economics Impacts Analysis (Appendix N).

Income

Based on the U.S. Census 2006-2010 American Community Survey, the median household income in San Bernardino County in 2010 was $55,845. Riverside and Los Angeles Counties had very similar median household incomes of $57,768 and $55,476, respectively. The values for Orange and Ventura Counties were $74,344 and $75,348, respectively. The City of Redlands had the highest median household income out of the cities in the Planning Area. Specifically, the median household income in the city of Redlands, Loma Linda, and San Bernardino were $67,651, $56,112 and $39,895, respectively (Appendix N).

Housing

Housing construction typically exhibits a cyclical pattern in response to local, regional, and national economic conditions. Between 2000 and 2010, the housing market experienced new construction at all-time highs and lows. During this time period, permits were issued for 623,091 new residential units in southern California, with the majority of these units constructed in Riverside County (33 percent of the regional total), followed by Los Angeles County (32 percent of the regional total) and San Bernardino (17 percent of the regional total) (Appendix N).

Based on the 2010 Census, San Bernardino County had a total of 699,637 total housing units. The proportion of occupied housing units in the County was 87.4 percent (12.6 percent was vacant). The proportion of occupied housing units in the cities of San Bernardino and Loma Linda were very similar at almost 91 percent. The percentage of occupied housing units in the City of Redlands was 93 percent (7 percent vacant) (Appendix N).

Overall, median home prices in the counties within the SCAG region rose steadily from 2000 to 2007, and then declined precipitously for the next two to three years. The slump in home prices is reflective of the housing market crash experienced throughout the country. Housing prices in the region generally rose in 2010. Through this time period, average home prices in the five counties were lowest in San Bernardino, followed closely by prices in Riverside. Tables with specific housing data for the SCAG region and cities within and surrounding the RPRP Planning Area are provided in the Socioeconomic and Economics Impacts Analysis (Appendix N).

3.14.3 Environmental Impacts/Environmental Consequences

3.14.3.1 Effect Criteria

The Build Alternatives and Design Options would have an adverse effect on local economic conditions if it would:

- Result in substantial changes in employment, income, or tax revenues.

3.14.3.2 Methodology

The findings and conclusions in this analysis are based, in part, on the Socioeconomic and Economics Impacts Analysis prepared for the Project (see Appendix N). The Socioeconomic and Economics Impacts Analysis involved the estimation of three types of effects, commonly referred to as direct, indirect and induced effects:

- *Direct Effects:* Refers to the economic activity occurring as a result of direct spending by businesses or agencies located in the Planning Area (e.g., expenses related to construction of the rail tracks);
- *Indirect Effect:* Refers to the economic activity resulting from purchases by local firms who are the suppliers to the directly affected businesses or agencies (e.g., spending by suppliers of the contractor responsible for components of the Project); and
- *Induced Effect:* Represents the increase in economic activity, over and above the direct and indirect effects, associated with increased labor income that accrue to workers (of the contractor and all suppliers, in our example) and is spent on household goods and services purchased from businesses within the Planning Area.

The total economic impact is the sum of the direct, indirect and induced effects for the Project being evaluated. The indirect and induced effects are sometimes referred to as multiplier effects since they can make the total economic impact substantially larger than the direct effect alone (see Appendix N).

Economic impacts are measured in terms of industry output, value added, employment, and tax revenue (at the federal and state/local levels). While output refers to the total volume of sales, “value added” refers to the value a company adds to a product or service. It is measured as the difference between the amount a company spends to acquire it and its value at the time it is sold to other users. Thus, value added can be thought of as a measure of the contribution to the gross domestic product (GDP) made by an establishment or an industry. The total value added within a state is equivalent to the gross state product and includes employee compensation, proprietary income, other property type income (e.g., rents) and indirect business taxes (e.g., excise taxes).

With respect to employment, two impact metrics are calculated: labor income and jobs. Labor income includes employee compensation and proprietary income. Employee compensation consists of wage and salary payments as well as benefits (health, retirement, etc.) and employer paid payroll taxes (employer side of social security, unemployment taxes, etc.). Proprietary income consists of payments received by self-employed individuals (such as doctors and lawyers) and unincorporated business owners. The job impact measures the number of jobs created for a full year. These impacts should not be interpreted as full-time equivalent (FTE) as they reflect the mix of full- and part-time jobs that is typical for each sector. And, strictly speaking, they should not be interpreted as permanent jobs either, but rather as job-years. A job-year can be defined as one person employed for one year.

To estimate the economic impacts of the Project, the IMPLAN® System of input-output model was used. This model, supported by the Minnesota IMPLAN Group, consists of a software package and data files that are updated regularly. The IMPLAN data files include transaction information on 440 distinct industrial sectors and data on 21 economic variables, including employment, output and value added. For this study, the IMPLAN® System is populated with 2010 data that is the most recent data available (see Appendix N). The economic impacts were estimated for the San Bernardino County as a whole.

3.14.3.3 Assessment of Environmental Effects

EFFECT 3.14-1	**Employment, Income, and Tax Revenues.** The Project could result in changes to the Planning Area's employment, income, and tax revenues.

ALTERNATIVE 1 - NO BUILD

Direct Effects from Temporary Construction

Under the No Build Alternative, SANBAG would not implement the Project and passenger rail service would not be extended from San Bernardino east to the University of Redlands. The No Build Alternative assumes that some renovation and rehabilitation projects would be required within the next 10 years to facilitate continued freight operations. It can be anticipated that some short-term jobs would be created to implement maintenance improvements under the No Build Alternative. As a result, the No Build Alternative would have no adverse effect under NEPA to economic or fiscal resources.

Direct Effects from Long-Term Operations

Under the No Build Alternative, passenger rail service would not be expanded from San Bernardino east to the University of Redlands. This alternative would reduce the potential increase in employment and income for the regional economy, including new jobs required to operate and maintain passenger rail service. Given that no changes in existing conditions would occur, no adverse effect would occur under NEPA.

Indirect Effects

Because passenger rail service would not be implemented under the No Build Alternative, there would be no economic benefits from direct job creation, income, or spending by suppliers whose goods and services are used in a project. SANBAG would be required to fund maintenance improvements to the Redlands Corridor to facilitate continued freight service with no corresponding enhancements to local transit service.

In parallel and over the short-term, existing bus and rail service within the Planning Area, as provided by Omnitrans and Metrolink, would continue similar to existing conditions. These transit operators would continue to provide existing levels of service within the confines of the transit funding available to the San Bernardino Valley for operations as described above (see Figure 2-10). In this context, no adverse indirect effect would occur under NEPA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Construction of the Project is estimated to cost $202.1 million (in 2012 dollars). As shown in Table 3.14-5, key components of the capital cost include site work, guideway and track elements and systems. It is estimated that out of the total Project cost of $202.1 million, $136.8 million would be expended within the San Bernardino County on project engineering and construction during the period from 2012 to 2018. The expenditure schedule for the Project development phase (between 2012 and 2018) is used to estimate the short-term economic impacts of the Project (see Appendix N).

Table 3.14-5. Capital Cost by Category

Cost Category	2012 Base Year Cost, Undiscounted ($million)
Guideway and Track Elements	$42.4
Stations	$1.3
Support Facilities	$5.2
Sitework	$59.5
Systems	$29.8
Right of Way	$8.0
Vehicles	$7.8
Professional Services	$23.9
Unallocated contingency	$26.3
Total	**$202.1**

Source: Appendix N

During the Project development phase, the Project is expected to generate 1,390 job-years (Appendix N). As shown in Table 3.14-6, the Project is also expected to create $103.9 million in value added, including $71.3 million in labor income. Additionally, the Project is expected to generate $14.4 million in federal taxes and $7.6 million in state and local taxes. A complete breakdown of short-term impacts that could be expected during the Project development phase by the type of effect (e.g., direct, indirect, and induced) is provided in Table 3.14-6. Based on the results provided in Table 3.14-6, the Project would entail desirable benefits in terms of short-term employment and value added from employee compensation.

Table 3.14-6. Direct, Indirect and Induced Impacts during Project Development Phase

Impact Type	Spending in San Bernardino County (Millions of 2012 $)	Direct	Indirect	Induced	Total
Employment**	$136.8*	$844	$185	$361	$1,390
Labor Income		$49.7	$8.0	$13.6	$71.3
Value Added		$64.0	$13.6	$26.3	$103.9
Output		$136.8	$22.8	$41.9	$201.5
Federal Taxes		--			$14.4
State and Local Taxes					$7.6

Source: Appendix N

* Includes engineering ($2.2 million) and construction ($134.6 million; This figure does not include Project costs associated with right-of-way, insurance, permit and review fees, as these are considered transfers and do not contribute to the incremental impacts of the Project. For the purposes of this Economic Impacts Analysis, unallocated contingency within the cost estimate is allocated to construction cost.

** Employment impacts from IMPLAN should not be interpreted as FTE as they reflect the mix of full and part time jobs that is typical for each sector.

Table 3.14-7 provides further breakdown of the Project's short-term economic impacts in terms of employment (job-hours), labor income and value added. As shown, total labor income is projected to be greater than $23 million annually once construction begins. This would be considered a desirable benefit to the local economy that would be experienced through the duration of construction.

Table 3.14-7. Short-Term Economic Impacts Resulting from Project Development

Period	Spending in San Bernardino County (Millions of 2012 $)*	Total Job Hours**	Direct Job Hours**	Total Labor Income (Millions of 2012$)	Total Value Added (Millions of 2012$)
2012	$0.5	14,714	8,179	$0.4	$0.5
2013	$0.5	14,714	8,179	$0.4	$0.5
2014	$0.5	14,714	8,179	$0.4	$0.5
2015	$45.4	825,063	501,079	$23.6	$34.4
2016	$45.0	814,027	494,945	$23.3	$34.0
2017	$44.9	810,349	492,900	$23.2	$33.9
Total	**$136.8**	**2,493,581**	**1,513,462**	**$71.3**	**$103.9**

Source: Appendix N
* Includes engineering ($2.2 million) and construction ($134.6 million);
** Assuming average weekly hours of 34.3 (Bureau of Labor Statistics estimate). Job-hours per job-year = (weeks in a year) x (average hours worked in a week) = 52 x 34.3 = 1,783.6.

Beyond creating a short-term increase in employment and labor income, the Project would generate capital expenditures in key industries. As shown in Table 3.14-8, a significant portion of the jobs that would be created are industries that generally employ low-income people, such as construction, transportation retail trade and food services. The Project would generate 829 job-years and create $63.2 million in value added in the construction sector alone (see Table 3.14-8). The real estate and retail sectors would also experience $10.6 million and $4.8 million in value added, respectively. These would be desirable economics benefits.

Under NEPA, the Project would have a beneficial economic effect on the regional and local economy through the Project's generation of employment, millions in value, labor income, and federal, state, and local taxes. As previously discussed, unemployment rates for the cities of San Bernardino, Loma Linda, and Redlands in 2011 was 17.6 percent, 8.0 percent, and 9.7 percent, respectively. The Project's generation of 1,390 job-years during the development phase would create short-term jobs for San Bernardino County and help in lowering the current rates of unemployment.

Direct Effects from Long-Term Operations

Beyond economic benefits related to short-term job creation, the Project is expected to generate long-term employment opportunities. Unlike those resulting from capital expenditures, these jobs are expected to exist through the life of the Project (assumed at 20 years). Based on the economic analysis, the Project is expected to generate 295 job-years and create $15.6 million in labor income annually once passenger service becomes operational. Table 3.14-9 provides a breakdown of estimates of the annual long-term employment impacts resulting from the operation and maintenance of the Project. Based on the results provided in Table 3.14-9, the Project would have a beneficial effect on the regional and local economy under NEPA through the generation of direct, indirect, and induced employment and labor income during the Project's long-term operational phase.

Table 3.14-8. Short-Term Impacts in Key Industries

Sector	Employment (Job-Years)	Total Labor Income (Millions of 2012$)	Total Value Added (Millions of 2012$)
Construction	829	$48.8	$63.2
Manufacturing	4	$0.2	$0.3
Wholesale Trade	1	$0.0	$0.1
Retail trade	97	$3.3	$4.8
Transportation & warehousing	27	$1.6	$2.0
Information	8	$0.5	$1.8
Finance & insurance	43	$1.5	$3.2
Real estate & rental	34	$1.0	$10.6
Professional: scientific & tech services	31	$1.5	$2.6
Administrative & waste services	56	$1.7	$2.0
Educational services	11	$0.5	$0.4
Health & social services	82	$4.5	$4.9
Arts/entertainment & recreation	11	$0.2	$0.3
Accommodation & food services	50	$0.9	$1.6
Government & non NAICs	8	$0.6	$0.5

Source: Appendix N

Table 3.14-9. Long-Term Economic Effects (Annually)

	Annually
Net O&M Spending (Millions of 2012 $)	$8.4
Employment (Direct + Indirect + Induced) (in Job-Years)	295
Labor Income (Millions of 2012 $)	$15.6

Source: Appendix N

Indirect Effects

The Project would indirectly affect funding for other local transit projects within San Bernardino County through the allocation of capital funds to implement RPRP and the use of Measure I – Metrolink/Passenger Rail Program funds to operate RPRP. On January 16, 2014 the SANBAG Commuter Rail and Transit Committee designated RPRP as the top priority for transit projects. Based on this Committee action and statutory limitations of the Measure I – Metrolink/ Passenger Rail Program not allowing other existing transit operators to use these funds for operations, no adverse effect would result from the implementation of the Project under NEPA.

3.14.4 Mitigation Measures

No mitigation measures are proposed since the Project would entail desirable economic benefits and no adverse effect is identified under NEPA.

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3.15 SAFETY AND SECURITY

This section evaluates issues related to safety and security for the Build Alternatives and Design Options. The safety issues considered in the analysis are station hazards, boarding and disembarking hazards, and right-of-way hazards, as well as visibility obstructions for operators, motorists, and pedestrians. Security as it pertains to station locations, design, layout, and parking is another aspect of safety that is evaluated to determine if the safety of transit passengers or surrounding communities is compromised and made more susceptible to criminal activity.

3.15.1 Regulatory Framework

Both federal and state regulatory requirements dictate the safety and security aspects of the various Project facilities and systems. Federal requirements include those published by Federal Railroad Administration (FRA) and Federal Transit Administration (FTA). State requirements include those contained in state laws and guidelines, including general orders, administered by the California Public Utilities Commission (CPUC). As a new passenger rail system, safety criteria and policies for passenger train service will be developed and implemented for operations following examples from other operations regionally (NCTD, Metrolink) and using guidelines developed by the American Passenger Transport Association (APTA), the industry group. Table 3.15-1 identifies and summarizes some of the key federal, state, and local laws, regulations, and guidelines that are applicable to the Project.

Table 3.15-1. Pertinent Laws, Regulations, and Guidelines for Safety and Security

Law, Regulation, or Plan	Summary and Project Nexus
Federal	
Federal Transit Administration (FTA)	FTA's Safety and Security Program focuses on transit safety and security for all modes of transit. The Transit Safety Management and Performance Measurement, Volume 1: Guidebook was prepared by FTA with the objective of providing resource information for local and regional transit agencies regarding the development and implementation of Safety Management Systems and Safety Performance Measurement Systems (FTA 2011). Safety Management Systems provide a means of managing public transportation hazards by integrating safety into all aspects of a transit system's activities, from planning to design to construction to operations to maintenance.
Federal Railroad Administration (FRA)	The FRA was created by the Department of Transportation Act of 1966 to publicize and enforce rail safety regulations, administer railroad assistance programs, and conduct research in support of improved railroad safety and national rail transportation policy (49 USC 103, Section 3[e][1]). The FRA Office of Safety promotes and regulates safety throughout the nation's railroad industry. The FRA inspectors specialize in five safety disciplines and numerous grade-crossing and trespass-prevention initiatives (e.g., track, signal, and train control; motive power and equipment; operating practices; hazardous materials; and highway rail-crossing safety). The Project would be developed to ensure track, signal, and rail-crossings meet or exceed the FRA's safety standards as contained in 49 CFR Parts 200-299.

Table 3.15-1. Pertinent Laws, Regulations, and Guidelines for Safety and Security

Law, Regulation, or Plan	Summary and Project Nexus
U.S. Department of Homeland Security	The Homeland Security Act of 2002 was signed into law on November 25, 2002 (Pub. L. 107-296) in response to the September 11, 2001 terrorist attacks (Department of Homeland Security 2012). The act brought together approximately 22 separate federal agencies to establish the Department of Homeland Security. The Department of Homeland Security sets forth the primary missions of the department. The act has been amended over 30 times since its original passage. The department's mission is to ensure a homeland that is safe, secure, and resilient against terrorism and other hazards.
State	
California Public Utilities Commission (CPUC)	The CPUC is a state public utilities commission that regulates privately-owned utilities in the state of California among other duties and responsibilities. The CPUC is the designated state oversight agency, in accordance with 49 CFR 659. The CPUC's regulatory and safety oversight responsibility is divided among three branches within the Consumer Protections and Safety Division: Railroad Safety, Rail Crossings Engineering Section and Rail Transit Safety. The Railroad Safety branch oversees heavy freight and passenger railroads, which the Project is included. The Rail Crossings Engineering Section is responsible for implementing the CPUC's Highway-Rail Crossing Program, which oversees safety for all public and private highway rail crossings in California. The CPUC authorizes the construction of new or modified at-grade highway rail crossings and the construction of underpasses and overheads. As mitigation presented in Section 3.3, the Project will consult with CPUC for the construction of modifications to the existing at-grade crossings, and warning devices to ensure safety compliance.
California Department of Transportation (Caltrans)	Caltrans is responsible for the design, construction, maintenance, and operation of the California State Highway System, as well as that portion of the Interstate Highway System within the state's boundaries. Alone and in partnership with Amtrak, Caltrans is also involved in the support of inter-city passenger rail service in California and is a leader in promoting the use of alternative modes of transportation. Two Caltrans programs are designed specifically to improve railroad safety: (1) the Caltrans Rail Safety Program, which focuses on vehicular and pedestrian hazards involving passenger trains; and (2) the California Operation Lifesaver Program, which emphasizes education pertaining to safety issues, including highway rail-crossing-related hazards.

3.15.2 Affected Environment

The Study Area is located in an urbanized area characterized by commercial, residential, and industrial forms of development. The existing railroad tracks have been present since at least the late 1890s. Section 3.2 Land Use, Planning and Communities, provides additional details regarding existing and planned land uses along the railroad corridor.

Typical Station Design and Operating Standards for Rail

Regionally, existing passenger train stations (e.g. Metrolink) provide a representative model for the design and layout of fixed-rail facilities (vehicles, stations, parking lots), which are intended to provide a safe, secure, and comfortable transit system. Facility features typically include, but are not limited to, station boarding platforms, park-and-ride lots, and fare collection and passenger information systems. Security-related design features include video surveillance, public announcement systems, open sightlines, security lighting, and a contracted security patrol. Station and track design (access, layout, exits, alarms, evacuation, etc.) and operational procedures (interagency agreement, training, and evacuation) are major considerations in maintaining a safe environment to increase the effectiveness and timeliness of emergency response.

Rail Hazards

Incidents involving pedestrian or vehicular collisions with trains can be divided into various types. The first type involves collisions that occur along the rail right-of-way as the result of unauthorized trespassing at non-designated crossings. The second type occurs at public crossings designed with safety features and warning devices to assist the public with safely crossing the railroad right-of-way (ROW). Accident history records reveal that a majority of accidents occur at these public crossings despite the added warning. A third type involves collisions that occur at stations. Because of the inherent purpose of a station, large numbers of people converge near the trains and often need to cross the tracks before or after riding the trains.

The infrequency of past pedestrian or motorist collisions, and the unique circumstances under which they occur, do not allow for a valid quantitative projection of future collisions along the railroad corridor. There are some distinct trends present in the background data. For example, collisions with pedestrians are more likely to occur near stations where large numbers of pedestrians cross the tracks. Inattention to pedestrian warning devices, whether due to distractions, inattention, or other causes, is a factor in many of these collisions. Nevertheless, the low number of pedestrian collisions with passenger trains can be attributed to a safe design, operator training, and public education programs that teach people about potential hazards around the trains.

Another type of accident results from derailment of one or more cars from the track while the train is in operation thereby presenting a safety hazard for adjacent land uses. FRA maintains a database of all reported incidents, accidents, and/or injuries along with the type of incident that occurred. Table 3.15-2 below summarizes the number of all train-related accidents over the past ten years nationwide. As shown in Table 3.15-2, in the past 10 years, there have been a total of 74,857 incidents nationwide, of which, 15,007 have been train accidents.

Table 3.15-3 summarizes all train accidents/incidents within the past ten years in San Bernardino County. As shown in Table 3.15-3, there have been a total of 435 accidents/ incidents within San Bernardino County since 2003; 386 of which have been classified as “other accidents/incidents,” meaning these accidents/incidents were events other than train accidents or crossing incidents that cause physical harm to persons. From January to July 2012, there have been 24 accidents/incidents, of which 22 are classified as “other accidents/incidents.” There were two public crossing incidents noted in 2012, however, zero fatalities or serious injuries.

Along the Redlands Corridor, there are 29 reported incidents documented east of E Street that date back to the 1970s. Each of the reported the incidents generally involved an automobile failing to stop at the crossing signal. At-grade crossings with the highest reported incidents include Arrowhead Avenue, Sierra Way, Mill Street, Central Avenue, and California Street.

Table 3.15-2. Ten-Year Accident/Incident Overview - Nationwide

Category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Percent Change From 2011	Percent Change From 2003	Total for Period
Total Accidents/Incidents[1]	**8,228**	**8,550**	**8,172**	**8,044**	**8,118**	**7,690**	**6,587**	**6,757**	**6,579**	**6,132**	**-6.79**	**-25.47**	**74,857**
Total fatalities	477	510	535	507	466	441	396	428	397	433	9.07	-9.22	4,590
Total nonfatal conditions	5,339	5,526	5,532	5,123	5,639	5,404	4,686	4,863	4,803	4,308	-10.31	-19.31	51,223
Train Accidents	**1,760**	**1,985**	**1,928**	**1,775**	**1,581**	**1,525**	**1,119**	**1,141**	**1,213**	**980**	**-19.21**	**-44.32**	**15,007**
Train accident deaths	2	8	26	1	3	.	3	8	6	6	0.00	200.00	63
Train accident injuries	104	264	507	113	123	229	86	74	109	39	-64.22	-62.50	1,648
Human factor caused	713	762	734	625	594	549	375	379	442	363	-17.87	-49.09	5,536
Track caused	564	626	636	619	562	515	380	401	404	325	-19.55	-42.38	5,032
Motive power/equipment caused	217	254	224	208	192	203	162	138	144	123	-14.58	-43.32	1,865
Signal caused, all track types	29	45	39	37	24	29	29	41	22	20	-9.09	-31.03	315
Signal caused, main line track	1	4	4	5	6	1	3	1	2	1	-50.00	0.00	28
Miscellaneous caused	237	298	295	286	209	229	173	182	201	149	-25.87	-37.13	2,259
Collisions	112	133	157	116	107	108	76	80	97	77	-20.62	-31.25	1,063
Collisions on main line track	22	35	33	25	22	21	14	15	23	20	-13.04	-9.09	230
Derailments	1,268	1,436	1,370	1,281	1,165	1,104	794	808	876	719	-17.92	-43.30	10,821
Other types, e.g., obstructions	380	416	401	378	309	313	249	253	240	184	-23.33	-51.58	3,123
Train accidents on main line	583	627	598	586	503	489	363	370	408	287	-29.66	-50.77	4,814
Accidents on yard track	967	1,119	1,075	940	822	834	588	617	642	549	-14.49	-43.23	8,153
Incidents at Public Crossings	**1,409**	**1,523**	**1,428**	**1,428**	**1,314**	**1,205**	**989**	**999**	**976**	**957**	**-1.95**	**-32.08**	**12,228**
Other Accidents/Incidents[2]	**4,847**	**4,798**	**4,589**	**4,602**	**4,976**	**4,761**	**4,312**	**4,452**	**4,239**	**4,033**	**-4.86**	**-16.79**	**45,609**
Other incidents deaths	290	277	296	291	273	279	250	274	236	293	24.15	1.03	2,759
Other incidents injuries	4,656	4,654	4,424	4,410	4,934	4,597	4,152	4,262	4,103	3,797	-7.46	-18.45	43,989
Passengers killed in train accidents or crossing incidents	1	1	10	.	.	.	.	.	4	.	.	.	16
Passengers injured in train accidents or crossing incidents	80	87	127	117	83	235	73	96	210	55	-73.81	-31.25	1,163
Passengers killed in other incidents	2	1	3	.	2	.	2	1	.	4	.	100.00	15
Passengers inured in other incidents	326	370	340	431	871	562	639	683	635	671	5.67	105.83	5,528

Source: http://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/tenyr2a.aspx
1. Total accidents is the sum of train accidents, crossing incidents, and other accidents/incidents
2. Other accidents/incidents are events other than train accidents or crossing incidents that cause physical harm to persons

Table 3.15-3. Ten-Year Accident/Incident Overview for San Bernardino County

Category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Percent Change From Last Year	Percent Change From 2003	Total for Period
Total Accidents/Incidents [1]	**54**	**45**	**41**	**52**	**63**	**54**	**34**	**32**	**36**	**24**	**-33.33**	**-55.56**	**435**
Total fatalities	4	4	1	.	4	1	3	2	4	2	-50.00	-50.00	25
Total nonfatal conditions	49	40	40	48	66	48	31	28	29	23	-20.69	-53.06	402
Train Accidents	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Train accident deaths	-	-	-	-	-	-	-	-	-	-	-	-	-
Train accident injuries	2	-	2	-	5	-	-	-	-	-	-	-	9
Incidents at Public Crossings	**4**	**7**	**2**	**6**	**5**	**6**	**-**	**2**	**5**	**2**	**-60.00**	**-50.00**	**39**
Other Accidents/Incidents [2]	**49**	**38**	**36**	**44**	**56**	**48**	**34**	**28**	**31**	**22**	**-29.03**	**-55.10**	**386**
Other incidents deaths	2	4	1	.	2	1	3	2	3	-	-	-	18
Other incidents injuries	47	35	36	44	59	47	31	26	28	22	-21.43	-53.19	375
Passengers killed in train accidents or crossing incidents	-	-	-	-	-	-	-	-	-	-	-	-	-
Passengers injured in train accidents or crossing incidents	-	-	2	-	4	-	-	-	-	-	-	-	6
Passengers killed in other incidents	-	-	-	-	-	-	-	-	-	-	-	-	-
Passengers inured in other incidents	1	-	4	2	4	3	5	3	3	1	-66.67	0.00	26

Source: http://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/tenyr2a.aspx
1. Total accidents is the sum of train accidents, crossing incidents, and other accidents/incidents
2. Other accidents/incidents are events other than train accidents or crossing incidents that cause physical harm to persons

Local Law Enforcement and Security

Within the City of San Bernardino, police protection services are provided by the City of San Bernardino Police Department (SBPD) Southeast District of the South Division. The Redlands Police Department (RPD) facilities in the Planning Area include the main police station for the City of Redlands located at 1270 W. Park Avenue and the Police Annex located at 30 Cajon Street. Both RPD facilities are located on the southeast portion of the Planning Area.

For 2011 in the City of San Bernardino, there were 12,890 arrests made, of which 8,364 were for misdemeanor charges, and 4,526 were felony charges. In 2009, there were 2,977 arrests made in the City of Redlands (City of Redlands website 2012).

3.15.3 Environmental Impacts/Environmental Consequences

3.15.3.1 Effect Criteria

The Build Alternatives and Design Options would have an adverse effect on safety and security if it would:

- Result in the potential for increased pedestrian and/or bicycle safety risks;
- Result in substantial adverse safety conditions, including station accidents, boarding and disembarking accidents, right-of-way accidents, collisions, fires, and major structural failures; or
- Result in the potential for adverse security conditions, including incidents, offenses, and crimes.

3.15.3.2 Methodology

This assessment of safety and security includes consideration of potential safety conflicts between the Project and pedestrians, bicyclists, transit riders, and automobiles within the Study Area. For the assessment of pedestrian safety, this analysis places emphasis on the following three categories:

- Pedestrian safety at station locations;
- Pedestrian safety near the trackway; and
- Pedestrian safety at designated grade crossings

System safety factors evaluated included the alignment configuration, engineering safeguards, and the type of control system(s) proposed. Additionally, potential security risks for the Build Alternatives and Design Options were evaluated to determine potential for crime based on the conceptual station and parking layouts provided in Chapter 2.

This analysis of track safety considers the risks of exposure of passengers, employees, or structures to significant loss, injury, or death during operation of the Project. The evaluation of rail operational safety is based on (1) best available statistical information for railroad safety (e.g. national statistical data provided by the FRA) and (2) a consideration of existing conditions along the railroad corridor compared with the design and operational features of the Build Alternatives and Design Options.

3.15.3.3 Assessment of Environmental Effects

EFFECT 3.15-1	**Increased Pedestrian and/or Bicycle Safety Risks.** The Project would result in the potential for increased pedestrian and/or bicycle safety risks.

ALTERNATIVE 1 – NO BUILD

Direct Impacts from Temporary Construction

Under Alternative 1, the Project would not occur and existing conditions along the railroad corridor would remain. Maintenance and construction activities would occur along the existing railroad corridor, but would be restricted to SANBAG's existing ROW, and confined to limited portions of the railroad corridor at any one time. In this context, temporary construction effects on pedestrian and bicycle safety conditions would not be adverse under NEPA. Under CEQA, this impact would be less than significant.

Direct Impacts from Long-Term Operations

Under the No Build Alternative, SANBAG would improve and/or maintain the existing at-grade crossings on an as-needed basis with the exception of private or unauthorized crossings. The safety improvements proposed for implementation by the Project (e.g., a pedestrian egress route, grade crossings, other security measures) would not occur. As a result, there would be minimal to no change from existing conditions for pedestrian and bicycle safety within the Study Area and no adverse effect would occur under NEPA. Under CEQA, this impact would be less than significant.

Indirect Effects

Implementation of Alternative 1 would maintain the current level of transit service in the Study Area and would have no indirect effect on pedestrian and bicycle safety conditions under NEPA. No impact under CEQA will occur.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Impacts from Temporary Construction

Construction of the Build Alternatives and Design Options could have temporary adverse effects on pedestrian and bicycle safety conditions within the Project footprint. This would result from the number and proximity of vehicles and people adjacent to rail and station facility construction and right-of-way improvements. Construction of the Project could result in temporary lane blockages, detours, and use of heavy equipment in close proximity to pedestrians and cyclists and, therefore, the Project would result in an adverse effect under NEPA. Under CEQA, this impact is considered significant. Mitigation Measure TR-1 (Prepare a Traffic Management Plan) from Section 3.3 is proposed to mitigate this safety hazard.

Direct Impacts from Long-Term Operations

The Build Alternatives and Design Options also include safety improvements at 26 of the existing at-grade crossings within the railroad corridor. In accordance with CPUC requirements, upgrades would be made to several existing at-grade crossings along the railroad corridor to improve public safety. Pedestrian safety at designated at-grade crossings is a key factor in Project design. Each proposed at-grade crossing was evaluated for pedestrian safety based on a site visit and review of the preliminary engineering design. The type of treatments and warning devices would vary based on the at-grade crossing geometry and pedestrian volumes. The Build Alternatives and Design Options include the complete closure of four at-grade crossings at D Street, Stuart Avenue, 7th Street (reconfigure to pedestrian only), and 9th Street to accommodate the track and safety improvements. The remaining 21 at-grade crossings would be improved to include raised medians, widened sidewalks, traffic striping, flashing lights, pedestrian gate arms and other safety warning enhancements based on location-specific reviews with CPUC and both cities.

Pedestrians would be permitted to cross the tracks only when trains are not present. At locations where crossings would not be allowed, pedestrians could still attempt to cross the tracks. This action is considered trespassing. Compliance with CPUC requirements would minimize risks to pedestrians and cyclists to the greatest extent possible. The CPUC requirements include, but are not limited to erection of fencing and signage to notify pedestrians of potential train hazards and to discourage trespassing.

In addition to track and at-grade crossing improvements, as discussed in Chapter 2, four (4) new stations are proposed for the Build Alternatives and Design Options. Also, as described in Chapter 2, the E Street station would be constructed in conjunction with the DSBPRP. The facilities would be designed to provide a safe and secure transit system with limited amenities (e.g., bike racks). Safety control features proposed as part of the Project include security lighting, in-station pedestrian crossings at select stations with railroad/pedestrian crossing equipment, and small shade canopy areas. In addition, SANBAG would include security-related design features such as emergency telephones, public address systems, and video surveillance systems. Parking and vehicular circulation within or around the station locations would also be evaluated to determine if any pedestrian/vehicle conflicts would arise.

Notwithstanding these Project design elements, the Build Alternatives and Design Options could result in an adverse effect on safety for motorists and pedestrians because of the proposed passenger rail operations, which would involve a higher frequency of train movements along the corridor. As shown in the Table 3.15-3 above, although rare, incidents at public crossings have occurred within San Bernardino County. Pedestrian crossings would be located at existing intersections, and pedestrians would cross to the station locations at clearly marked crosswalks or other pedestrian pathways. Notwithstanding implementation of proper design and installation of appropriate safety upgrades, the Project could result in potential safety hazards that would be considered an adverse effect under NEPA. This impact would be significant under CEQA. Mitigation Measures SS-1 (Develop Safety and Security Management Plan) and TR-3 (Approval from CPUC for Grade Crossings and Safety Measures) are proposed to mitigate for potential safety hazards associated with Project operations.

Indirect Effects

With the implementation of the Build Alternatives and Design Options and required safety measures, no adverse, indirect effects would occur under NEPA. Indirect impacts under CEQA would be less than significant.

EFFECT 3.15-2	**Substantial Adverse Safety Conditions Related to Accidents.** Implementation of the Project could result in a potential for adverse safety conditions, including station accidents, boarding and disembarking accidents, right-of-way accidents, collisions, fires, and major structural failures.

ALTERNATIVE 1 – NO BUILD

Direct Effects from Temporary Construction

The No Build Alternative assumes that the Project would not occur and that existing conditions along the railroad corridor would remain. Limited maintenance and reconstruction activities would occur incrementally over the near future under this alternative. In this context, any temporary construction activities would be limited in extent and duration and no adverse effect on safety are anticipated to occur under NEPA. Under CEQA, these impacts would be less than significant.

Direct Effects from Long-Term Operational

Existing freight operations along the railroad corridor would remain under the No Build Alternative and the existing 26 at-grade roadway crossings would be maintained in their current configuration. Therefore, there would be no change from existing conditions in terms of roadway and railroad corridor safety, and no direct, adverse effect on safety would occur under NEPA. Under CEQA, no impact would occur.

Indirect Effects

Implementation of the No Build Alternative would maintain the current levels of freight and transit service and existing roadway configurations along the railroad corridor and, therefore, would have no indirect, effect on safety under NEPA. No impact would occur under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Construction of the Build Alternatives and Design Options could have temporary adverse effects on safety within the Study Area. This would result from the number and proximity of vehicles and people adjacent to rail and station facility construction and right-of-way improvements. As a result, construction of the Project could create temporary safety risks and, therefore, would result in an adverse effect under NEPA. Under CEQA, this impact could be significant. Mitigation Measure TR-1 in is proposed to mitigate these risks.

Direct Effects from Long-Term Operations

The types of accidents that could be associated with passenger rail operations may be broken down into train-to-train collisions, collisions between a train and objects entering the railroad corridor such as vehicles from adjacent highways, or trains from adjacent freight lines, and train derailments. These types of accidents are discussed below.

Train-to-Train Collisions. Current practice in the U. S. to ensure safety of passengers in the event of a train-to-train collision is to provide passenger equipment with sufficient weight and strength to protect the trailing passenger cars. This approach is sometimes referred to as crashworthiness, as both of the lead vehicles, or locomotives, are designed to withstand the impact of a collision (Aldrich 2006). If applied to all trains, this approach ensures that the trains would be of like strength, and the impact would be distributed equally between the two trains involved in a collision.

In the context of the Build Alternatives and Design Options, the Project includes track improvements to facilitate train movements along a nine mile section of single track through the railroad corridor with an approximately 10,000-foot-long section of passing track or siding (or second track), from just west of Richardson Street to just east of California Street. The rail improvements would also include the construction of a new train signaling and communications system to control access to the tracks and to facilitate constant communications between a centralized dispatch and train operators, thereby further minimizing hazards between trains. Additionally, as shown in Tables 3.15-2 and 3.15-3, incidents of train collisions have been steadily decreasing over the past decade both nationally and in San Bernardino County. Based on these considerations, the operation of an F-59 or MP-38 locomotive driven trainset would result in no adverse effect under NEPA. Under CEQA, this impact is considered less than significant.

In the case of an FRA-compliant diesel multiple unit (DMU) vehicle type (regulated under 49 CFR Part 238, Passenger Equipment Safety Standards), which has similar crashworthiness as heavy rail equipment, the operation would be no different than what is described above under a traditional “push-pull” locomotive and passenger carriage type operation. If a non-FRA compliant DMU is selected for use on the Project, it can operate only upon approval of a waiver to certain sections of the 49 CFR Part 211. Such an operation may then be subject to oversight by the CPUC under the State Safety Oversight Program (49 CFR Part 659). The potential safety issue introduced by a non-compliant DMU vehicle type would result in an adverse effect under NEPA. Under CEQA, this impact would be considered significant. To minimize this adverse effect, as part of Mitigation Measure SS-1, SANBAG would develop a plan for a safe shared use operation and obtain the appropriate regulatory approval from FRA and CPUC (as applicable).

Train Derailment and Collisions. A basic safety design feature of a rail system is to contain train sets within the operational corridor (ICF 2012). Strategies to ensure containment include operational and maintenance plan elements that would ensure good state of repair tracks and vehicles to reduce the risk of derailment. Also, physical elements, such as guard rails and collision walls, would be used in specific areas with a high risk of or high impact from derailment. As provided in Tables 3.15-2 and 3.15-3, based on national statistics for passenger train operations, there is a very low likelihood of a train derailment occurring with the implementation standardized engineering practices for railroads and completion of routine maintenance. Given that these are proposed in conjunction with the Project, risks of derailments would be minimized and no adverse effect would occur under NEPA. This impact would be less than significant under CEQA.

Safety considerations are also included in the design of the railroad corridor with regard to proximity to other transportation facilities, including other railroads or highways. The primary safety concern is that a derailed train or errant vehicle could enter the railroad corridor and foul the line. Because a portion of the Project would operate with BNSF Railway, there is a risk of a conventional passenger or freight train derailing, entering the trackway, and obstructing or impacting a trainset. Historically, train derailments in the U.S. have generally occurred where there is special trackwork, such as turnouts and crossovers, or where a rail network may not have been adequately maintained to the authorized speed. Given that temporal separation between passenger and freight operations would be implemented to restrict interactions between the respective operations, no adverse effects would occur under NEPA. Under CEQA, this impact would less than significant.

Safety improvements at 26 of the existing at-grade crossings, including four roadway closures, would minimize interactions between motor vehicles and trains. In accordance with the CPUC requirements, this would include upgrades to existing at-grade crossings along the railroad corridor to improve public safety or closure of the roadway crossing. As show in Table 3.15-3, although rare, in the past 10 years, there have been 25 highway-rail incidents in San Bernardino County. Any potential interaction between passenger rail operations and local surface roadway traffic would be considered an adverse effect under NEPA. Under CEQA, this impact is considered significant. Mitigation Measure TR-3 is proposed to mitigate this effect.

The replacement or retrofitting of up to six structural bridge crossings would occur to facilitate the loading requirements of the trains and track foundation. The location of each of these proposed structural replacements is illustrated in Figure 2-1. Pier protection walls would also be constructed for each of the two I-10 freeway bridges and overhead structures. These structures would be constructed in accordance with federal and state requirements including the American Railway Engineering and Maintenance-of-Way Association (AREMA) and BNSF/Union Pacific (UP) standard 25.3.1 for pier protection walls. Notwithstanding these requirements, the Project is located in an area that contains known active faults and alluvium soils that are prone to ground shaking and related ground failure. Under NEPA, the potential for failure of these crossing is considered an adverse effect. Under CEQA, this impact is considered significant. Mitigation Measure GEO-1 (Prepare a Final Geotechnical Report) in Section 3.9 is proposed to mitigate this effect.

Indirect Effects

There are no adverse, indirect effects associated with the Build Alternatives and Design Options under NEPA. Under CEQA, no indirect impact would occur.

EFFECT 3.15-3	**Potential for Adverse Security Conditions.** Implementation of the Project could result in the potential for adverse security conditions, including incidents, offenses, and crimes.

ALTERNATIVE 1 — NO BUILD

Direct Effects from Temporary Construction Impacts

As described previously, the No Build Alternative assumes that the Project would not occur and existing conditions along the railroad corridor would be maintained. Minimal construction activities would occur at limited sections of the railroad corridor on an incremental basis. Therefore, no effects from construction-related security concerns are anticipated to occur under NEPA. Similarly, under CEQA, no impact would occur.

Direct Effects from Long-Term Operational Impacts

As described previously, existing operational conditions along the railroad corridor would remain. Therefore, there would be no change from existing security conditions within the railroad corridor, and no direct, effects on security conditions would occur under NEPA. No impact would result under CEQA.

Indirect Effects

Implementation of the No Build Alternative would maintain the current level of transit service in the railroad corridor and, therefore, would result in no, indirect effect on safety under NEPA. Under CEQA, no impact would occur.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Construction of the Build Alternatives and Design Options is not expected to increase crime within the vicinity of the railroad corridor. Adequate signage would be posted to alert the public areas where large construction vehicles or equipment are operating or where roads and sidewalks have been closed. After work hours when construction equipment is idle and no personnel are on-site, there is a potential for trespassing into the construction area; especially staging areas. Although the construction contractor would be responsible for providing security during construction hours, it is possible that trespassing during off hours could occur, thereby subjecting individuals to safety hazards. This is considered an adverse effect under NEPA. Under CEQA, this impact is considered significant. Mitigation Measure SS-2 (Fencing) is proposed to mitigate this potential security risk.

Direct Effects from Long-Term Operations

The Build Alternatives and Design Options would incorporate all necessary crime prevention measures, including City and FTA crime prevention strategies, to deter criminal acts and protect passengers, employees, and the community. Without the integration of necessary design elements per FTA guidelines (e.g., surveillance, sufficient line of sight, etc.), the security of transit riders could be compromised resulting in opportunities for criminal activities (e.g., theft). This would be considered an adverse effect under NEPA. Under CEQA, this impact would be significant. Mitigation Measure SS-1 is proposed to mitigate this effect.

Indirect Effects

There are no indirect effects under NEPA identified for the Build Alternatives and Design Options. Similarly, under CEQA, no indirect impact would result.

3.15.4 Mitigation Measures

To minimize potential adverse effects of the Project, the following avoidance, minimization, and/or mitigation measures are proposed for the Build Alternatives and Design Options.

SS-1 **Develop Safety and Security Management Plan.** Prior to construction, SANBAG shall coordinate and consult with local safety and crime prevention authorities to develop a Safety and Security Management Plan (SSMP) for the track alignment, bridges, parking facilities, and station areas. The SSMP shall include a station surveillance element to be developed in coordination with the local jurisdiction and private properties owners, as applicable. If a non-FRA compliant DMU vehicle type is selected for the Project, the SSMP shall include a plan element that includes appropriate levels of safety as may be necessary to facilitate a shared-use operation.

SS-2 **Fencing.** SANBAG's contractor shall erect temporary fencing and visual screening for staging areas and provide security personnel during construction to minimize trespassing and vandalism throughout the duration of construction.

The following mitigation measures as proposed in other sections of Chapter 3 of this EIS/EIR would minimize adverse effects related to safety and security:

- GEO-1: Prepare a Final Geotechnical Report;
- TR-1: Prepare a Traffic Management Plan; and
- TR-3: Approval from CPUC for Grade Crossings and Safety Measures.

3.15.4.1 Effects after Mitigation

Upon the implementation of Mitigation Measure SS-1, GEO-1, TR-1, and TR-3, adverse effects in relation to safety and security resulting from the construction and operation of the Build Alternative and Design Options would not be adverse under NEPA. Under CEQA, impacts would be reduced to a less than significant level.

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3.16 SECTION 4(f) RESOURCES

This section provides a discussion and analysis of resources within and adjacent to the Planning Area that qualify for consideration per the requirements of Section 4(f) of the Department of Transportation Act of 1966 (Section 4(f)). As required by Section 4(f), this section considers the potential for the Build Alternatives and Design Options to result in adverse effects to these resources during both construction and future operation of the Project.

3.16.1 Regulatory Framework

Federal

Section 4(f) of the Department of Transportation Act

In 1966, Section 4(f) regulations were codified in Federal law at 49 U.S.C. §303, stating that "[i]t is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

Section 4(f) specifies that "[t]he Secretary [of Transportation] may approve a transportation program or project…requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if:

- There is no prudent and feasible alternative to using that land; and
- The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use."

Section 4(f) further requires consultation with the Department of the Interior and, as appropriate, the involved offices of the Departments of Agriculture and Housing and Urban Development in developing transportation projects and programs that use lands protected by Section 4(f). If historic sites are involved, then coordination with the State Historic Preservation Officer (SHPO) is also needed.

State

Safe, Accountable, Flexible, Efficient Transportation Equality Act: A Legacy for Uses

The federal transportation policy and spending bill passed in 2005, SAFETEA-LU, includes an amendment to Section 4(f) intended to expedite the approval process for projects that would only have minor impacts on protected resources. These “de minimis” impacts include direct use and temporary occupancies that do not adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection. SAFETEA-LU allows projects with de minimis impacts to Section 4(f) resources to proceed without needing to make a finding that no feasible and prudent avoidance alternatives exist. SAFETEA-LU also clarifies the process for selecting alternatives with the least impacts to Section 4(f) resources, and the standards for determining whether potential avoidance alternatives are reasonable and prudent. These requirements are largely unchanged with the recent passage of MAP-21.

3.16.1.1 Section 4(f) Use

As defined in 23 CFR Section 774, the "use" of a protected Section 4(f) resource (as set forth in the Applicability §774.11, Exceptions §774.13, Constructive Use Determinations §774.15,and Definitions §774.17 Sections) occurs when any of the following conditions are met:

- Land is permanently incorporated into a transportation facility through partial or full acquisition (i.e., "direct use");
- There is a temporary occupancy of land that is adverse in terms of the statute's preservationist purposes as determined by the criteria in §774.13(d); (i.e., "temporary occupancy"); or
- There is no permanent incorporation of land, but the proximity of a transportation facility results in impacts so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired (i.e., "constructive use").

The definitions of the "uses" are described in more detail as follows:

- *Direct Use* - A direct use of a Section 4(f) resource takes place when property is permanently incorporated into a proposed transportation project. This may occur as a result of a partial or full fee acquisition, permanent easement, or temporary easement that exceed established regulatory limits.
- *Temporary Occupancy* - A temporary occupancy of a Section 4(f) resource occurs when there is a use of property that is considered adverse in terms of the preservationist purposes of the Section 4(f) statute. Under the FTA/FHWA regulations, a temporary occupancy of property does not constitute a use of a Section 4(f) resource when the following conditions are satisfied:
    - The occupancy must be of temporary duration (i.e., shorter than the period of construction) and not involve a change in ownership of the property.
    - The scope of work must be minor, with only minimal changes to the protected resource.
    - There are no permanent adverse physical effects on the protected resource, and there will be no temporary or permanent interference with activities or purpose of the resource.
    - The property being used must be fully restored to a condition that is at least as good as that which existed prior to the proposed project.
    - There must be documented agreement of the appropriate officials having jurisdiction over the resource regarding the foregoing requirements.
- *Constructive Use* - A constructive use of a Section 4(f) resource happens when a transportation project does not permanently incorporate land from the resource, but the proximity of the project results in impacts (i.e., noise, vibration, visual, access, and/or ecological impacts) so severe that the protected activities, features, or attributes that qualify the resource for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only if the protected activities, features, or attributes of

the resource are substantially diminished. This determination is made through the following practices:

- Identification of the current activities, features, or attributes of the resource that may be sensitive to proximity impacts.
- Analysis of the potential proximity impacts on the resource.
- Consultation with the appropriate officials having jurisdiction over the resource.

As stated above, a Section 4(f) use occurs only when Section 4(f) land is permanently incorporated into a transportation facility, there is a temporary occupancy that is adverse, or there is a constructive use. If mitigation activities proposed within a Section 4(f) property are solely for the preservation or enhancement of the resource and the official(s) with jurisdiction agrees in writing with this assessment, a Section 4(f) use does not occur.

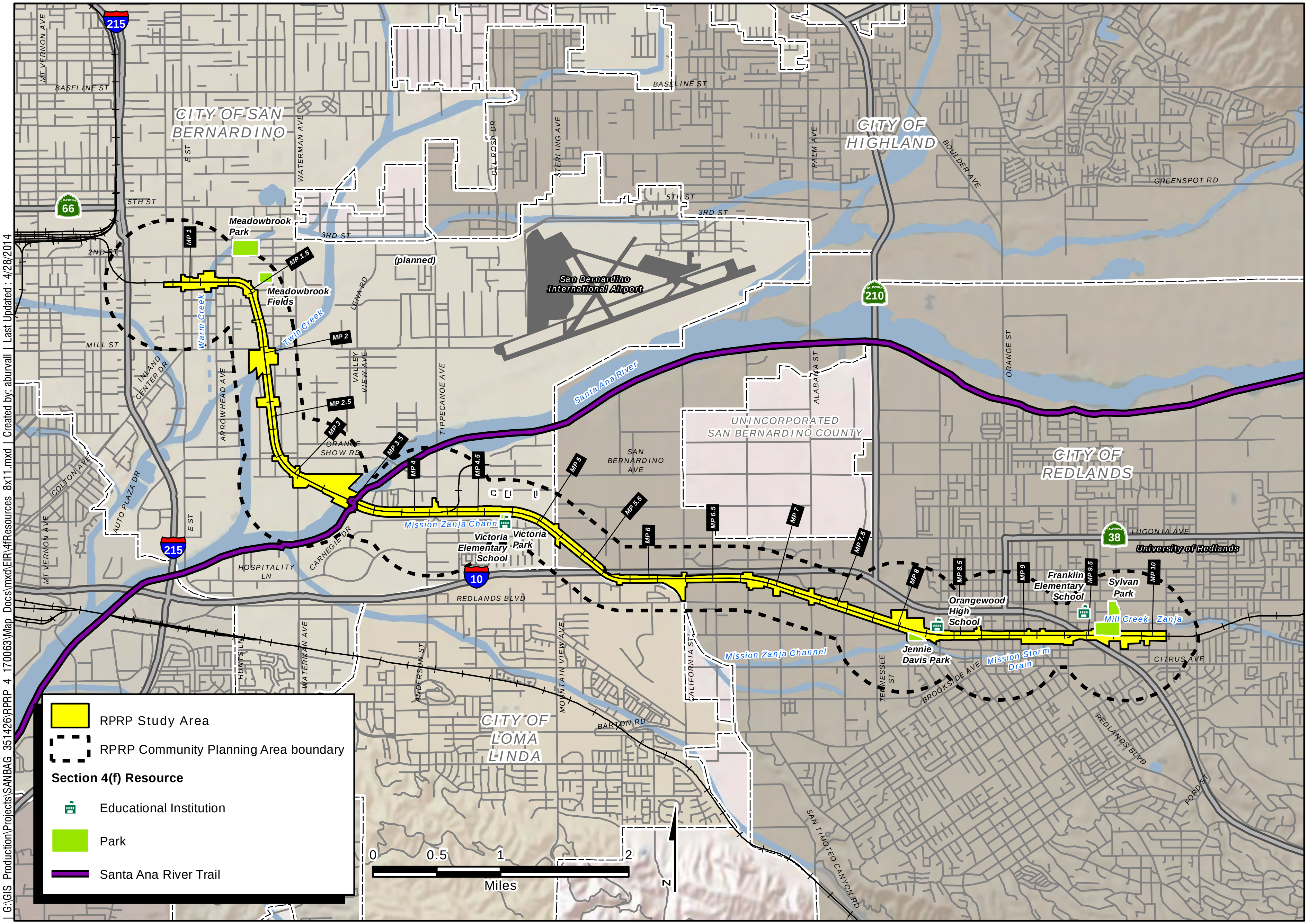
- *De Minimis* - A de minimis impact to historic sites occurs when FTA determines in accordance with 36 CFR Part 800 that no historic property is affected by a project or that the project will have “no adverse effect” on the historic property in question. A de minimis impact on a park, recreation area, or wildlife and waterfowl refuge that qualifies as a Section 4(f) resources occurs if FTA determines that a project results in no adverse affect to the features, attributes, or activities qualifying the property for protection under Section 4(f).

3.16.2 Affected Environment

Public Parks and Recreational Areas

Park and recreational facilities within the Planning Area have been identified through review of available mapping, previous studies, and community planning documents (cities of San Bernardino and Redlands General Plans and SANBAG’s Non-Motorized Transportation Plan). According to the Civic Center Act, recreational facilities on public school sites are available for public use during after-school hours or events and are considered joint-use facilities. For this reason, public school facilities in the Planning Area with recreational areas available for use by citizens, school-community councils, and clubs as well as senior, education, political, artistic, and other organizations are included in the analysis.

The Planning Area was determined to be the maximum distance at which potential direct and indirect impacts of the Project could affect Section 4(f) resources. All potential park and recreational Section 4(f) resources within and adjacent to the Planning Area are identified in Table 3.16-1 and described in more detail in Sections 3.3, Transportation, and 3.13, Parklands and Community Services. Park/Recreational Areas within the Planning Area are presented according to the nearest milepost (MP) marker in from MP 1.0 to 9.5. The locations of these parks and recreational resources are shown on Figure 3.16-1. In two instances, the recreational resources identified in Table 3.16-1, Sylvan Park and Victoria Elementary School and Park, also contain historical resources. These resources are evaluated separately under Section 4(f) based on their local historical significance (see Table 3.16-2).



Section 4(f) Parks and Recreational Areas

Figure 3.16-1

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Table 3.16-1. Parks and Recreation Areas - Section 4(f) Resources within the Planning Area

Resource Name	Resource Type	Milepost (Approximate Distance from Project Footprint)	Ownership	Potential for 4(f) Use
Meadowbrook Park	Public Park	MP 1.0 (0.20 Miles)	City of San Bernardino	None
Meadowbrook Fields	Public Park	MP 1.9 (0.09 Miles)	City of San Bernardino	None
Santa Ana River Trail	Public Recreational Facility; "Future" Class 1 Bike Trail	MP 3.5 (Traverses Project Footprint)	Multiple Jurisdictions including County of San Bernardino	None
Victoria Elementary School and Park [1]	Public Recreational Facility (Joint Use)	MP 4.5 (0.01 Miles)	Redlands Unified School District (RUSD)	Direct Use (De minimis impact); Temporary Occupancy[3]
Jennie Davis Park	Public Park	MP 8.0 (0.02 Miles)	City of Redlands	None
Orangewood High School	Public Recreational Facility (Joint Use)	MP 8.5 (Directly Adjacent to Project Footprint)	RUSD	None
Sylvan Park [2]	Public Park	MP 9.5 (Directly Adjacent to Project Footprint)	City of Redlands	Direct Use (De minimis impact); Temporary Occupancy
Franklin Elementary	Public Recreational Facility (Joint Use)	MP 9.5 (0.11 Miles)	RUSD	None

[1] The recreational area encompassed by this 4(f) resource also contains a historical resource identified in Table 3.16-2 (Victoria Elementary School), which is considered separately pursuant to Section 4(f).
[2] The recreational area encompassed by this 4(f) resource also contains a historical resource identified in Table 3.16-2 (Redlands Lawn Bowling Club), which is considered separately pursuant to Section 4(f).
[3] Only if sound barriers are constructed per Mitigation Measures NV-4. With the adoption of the MOU for the implementation of quiet zones, sound barriers in the vicinity of the Section 4(f) resource would not be constructed under the Preferred Project Alternative.

The Orange Blossom Trail is identified in the County's Non-Motorized Transportation Plan (NMTP) as a 7.47-mile "Future" Class I bicycle path that would extend from Mountain View Avenue to Opal Avenue within the City of Redlands (SANBAG 2011). The NMTP depicts future portions of the trail running parallel along two sections of the existing railroad ROW. The first section is along the Mission Zanja Flood Control Channel from Mountain Avenue to California Street. The second section is between the limits of Church Street and the eastern project terminus. Existing (currently developed) portions of the trail are located to the south of the Planning Area extending from Nevada Street on the west to Iowa Street on the east. Since the remaining sections for the Orange Blossom Trail remain unfunded and the City has no planned construction date for any portions of the trail within SANBAG's ROW, it is not considered a Section 4(f) resource at this time.

Cultural and Historic Sites

As part of the process to evaluate potential impacts of the Build Alternatives and Design Options to cultural and historic properties, an APE was established in accordance with the SHPO guidelines and Section 106 of the NHPA. The delineation of the APE is described in Section 3.12, Cultural and Historic Resources, and illustrated in Appendix M1 (see Figures 3-1A through 1J in Appendix M1). The APE consists of all properties affected by the Build Alternatives and Design Options; and includes the entire parcel for adjacent historical properties. Cultural and historic resources evaluated within the APE encompass all areas of ground disturbance, including potential staging and assembly areas, and areas immediately adjacent that may experience indirect effects (e.g., dust, vibration, etc.) during construction.

The cultural and historic resources identified and discussed in Section 3.12, Cultural and Historic Resources of this EIS/EIR were evaluated to determine if they met the criteria for eligibility as a Section 4(f) resource (see Tables 3.12-3 and 3.12-4). Table 3.16-2 provides the cultural and historic properties that are listed on or eligible for listing on the NRHP and, therefore, qualify as a historical resource under Section 4(f). Table 3.16-2 provides information with respect to: (1) the type of resource; (2) the location; and (3) significance of the site with respect to Section 4(f) consideration. Additionally, Table 3.16-2 identifies if any Project-related use would occur based on the analysis presented in Section 3.12. For those resources where a potential direct or indirect adverse effect is identified in Section 3.12, Table 3.16-2 identifies if a corresponding use under Section 4(f) could occur. For those resources where no direct or indirect adverse effect is identified in Section 3.12, there is no corresponding potential for a Section 4(f) use and, therefore, no additional discussion is provided. Those cultural and historical resources where the Build Alternatives could result in a potential use under Section 4(f) are evaluated further in Section 3.16.3.

Table 3.16-2. Historic Resources - Section 4(f) Resources within the Planning Area

Name	Resource Type	Location	Significance	Potential for 4(f) Use[2]
Redlands Santa Fe Depot Historic District	Historic District (Landscape)	List of contributing properties	Redlands Santa Fe Depot National Register Historic District	None
Redlands Santa Fe Depot Station (36-017106) [1]	Historic Building	Directly adjacent to Project footprint/ between MP 8.5 and 9.0	Listed on the NRHP.	Temporary Occupancy
Cope Commercial Company Warehouse (36-017477) [1]	Historic Building	21 West Stuart Avenue, Redlands, CA	Listed on the NRHP.	Temporary Occupancy
Redlands Board of Trade / Redlands Chamber of Commerce [1]	Historic Building	337 Orange Street Redlands, CA	Listed on the NRHP.	None
Haight Packing House (36-017046) [1]	Historic Building	345 North Fifth Street Redlands, CA	Listed on the NRHP.	Temporary Occupancy
Palace Livery [1]	Historic Building	346 Orange Street Redlands, CA	Listed on the NRHP.	None

Table 3.16-2. Historic Resources - Section 4(f) Resources within the Planning Area

Name	Resource Type	Location	Significance	Potential for 4(f) Use[2]
Pioneer Transfer[1]	Historic Building	348 Orange Street Redlands, CA	Listed on the NRHP.	None
Packard Motor Company Sales Office[1]	Historic Building	409 Orange Street, Redlands, CA	Listed on the NRHP.	None
Redlands City Transfer (36-017107)[1]	Historic Building	360 Orange Street Redlands, CA	Listed on the NRHP.	Temporary Occupancy
Single family residence	Historic Building	337 North Cook Street Redlands, CA	Listed on the NRHP.	None
Single family residence	Historic Building	620 New York Street Redlands, CA	Listed on the NRHP.	None
Brick Warehouse[1]	Historic Building	440 Oriental Avenue Redlands, CA	Eligible for listing on NRHP.	Temporary Occupancy
Victoria Elementary School [3]	Historic Building	1505 Richardson Street San Bernardino, CA	Eligible for listing on NRHP.	Direct Use (de minimis impact); Temporary Occupancy[5]
Van Dorin Motor Company	Historic Building	1267 West Redlands Blvd. Redlands, CA	Eligible for listing on NRHP.	None
Single family residence	Historic Building	510 East Stuart Avenue Redlands, CA	Eligible for listing on NRHP.	None
Single family residence	Historic Building	610 East Stuart Avenue Redlands, CA	Eligible for listing on NRHP.	None
Redlands Lawn Bowling Club [4] (411 North University Street)	Historic Site	Approximately MP 9.6	Eligible for listing on NRHP	Temporary Occupancy [5]
Second Baptist Church (420 East Stuart Avenue).	Historic Building	Immediately north of SANBAG ROW and west of 9th Street	Eligible for listing on NRHP	Temporary Occupancy [5]

[1] Listed as part of the Redlands Santa Fe Depot National Register Historic District.
[2] Initial screening of Section 4(f) resources based on the findings of the Section 106 analysis (see Section 3.12 and Appendix M). For historic properties within the APE where Sections 106 analysis concludes that the Build Alternatives and Design Options would result in "no effect," there would be no potential for a corresponding use under Section 4(f). The remaining historic properties in determined to qualify for Section 4(f) protection are considered further in Section 3.16.3.
[3] Contained within the western portion of Victoria Elementary School and Park; a recreational resource identified in Table 3.16-1.
[4] Contained within the southeastern corner of Sylvan Park; a recreational resource identified in Table 3.16-1.
[5] Only if sound barriers are constructed per Mitigation Measure NV-4. With the adoption of the MOU for the implementation of quiet zones, sound barriers in the vicinity of the Section 4(f) resource would not be constructed under the Preferred Project Alternative.

Source: Appendix M

3.16.3 Environmental Impacts/Environmental Consequences

3.16.3.1 Section 4(f) Criteria for Use

As defined in 23 CFR §774.11 through 774.17 and further detailed in the Regulatory Framework subsection above, the "use" of a protected Section 4(f) resource occurs when any of the following conditions are met:

- Land is permanently incorporated into a transportation facility through partial or full acquisition (i.e., "direct use");
- There is a temporary occupancy of land that is adverse in terms of the preservationist purposes of Section 4(f) (i.e., "temporary occupancy"); or
- There is no permanent incorporation of land, but the proximity of a transportation facility results in impacts so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired (i.e., "constructive use").

3.16.3.2 Methodology

To create a comprehensive list of resources that could potentially be subject to analysis under Section 4(f), a combination of review of local and regional planning documents, field reconnaissance, and outreach to public and private entities were conducted to identify potential resources. Resources subject to Section 4(f) consideration include publicly-owned lands consisting of a public park/recreational areas; public wildlife and waterfowl refuges of national, state, or local significance; or historic sites of national, state, or local significance, whether publicly or privately owned. Resources ultimately considered included any property affected by the Build Alternatives or Design Options as a result of partial or full fee acquisition, new permanent easements, or temporary construction easements (TCEs).

As provided in Tables 3.16-2-1 and 3.16-2, there are multiple publicly-owned parks, recreational areas and significant cultural and historic sites (on or eligible for listing in, the National Register of Historic Places (NRHP)) adjacent to or within the Planning Area that may be considered Section 4(f) resources. Section 4(f) also applies to all archaeological sites that are listed on or determined eligible for listing on the NRHP, including those discovered during construction. Section 4(f) does not apply to archaeological sites where the lead federal transportation agency has determined that the archaeological site is important chiefly because of what can be learned by data recovery (even if it is agreed not to recover the resource) and has minimal value for preservation in place (23 CFR §774.11). For the purposes of this analysis, the cultural and historic properties identified in Tables 3.12-3 and 3.12-4 were evaluated to determine if they met the requirements of a Section 4(f) resource. Table 3.16-2 identifies those historic properties that qualify as Section 4(f) resources.

In instances, where the Project "uses" a Section 4(f) resource and the use is not de minimis or does not qualify for a Programmatic Section 4(f) Evaluation, then the lead agency must determine whether there is a feasible and prudent avoidance alternative to the use of the Section 4(f) property(ies). Feasibility represents an engineering test; whereas the lead agency must answer whether it is feasible to build the alternative as a matter of sound engineering judgment. Prudency is more subjective, in that, a balancing test may be used to determine whether an avoidance alternative is prudent using six factors. This analysis considers an alternative as not prudent per 23 CFR §774.17 if:

- It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;
- It results in unacceptable safety or operational problems;
- After reasonable mitigation, it still causes:
  - Severe social, economic, or environmental impacts;
  - Severe disruption to established communities;
  - Severe disproportionate impacts to minority or low income populations;, or
  - Severe impacts to environmental resources protected under other federal statutes.
- It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
- It causes other unique problems or unusual factors; or
- It involves multiple factors in paragraphs (3)(i) through (3)(v) of this definition, that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

This analysis balances the attributes of the Section 4(f) property (including consideration of its relative value) and the potential changes attributable to the Project against the above six factors.

3.16.3.3 Criteria Requiring No Further Evaluation

Public Wildlife and Waterfowl Refuges Resources. There are no wildlife or waterfowl refuges within or directly adjacent to the Planning Area. Although the Santa Ana River (SAR) traverses the Planning Area, no officially designated wildlife or waterfowl refuges are present. Additionally, for the purposes of Sections 4(f) and 6(f)[1], the Project would not involve a direct, temporary, or constructive use of lands purchased or improved with funds under the Land and Water Conservation Fund Act.

3.16.3.4 Assessment of Section 4(f) Resources

PARK/RECREATIONAL AREAS

Alternative 1 - No Build

Under the No Build Alternative, SANBAG would not implement the Project and the proposed improvements to the Redlands Corridor would not occur. Under the No Build Alternative, the potential use of Section 4(f) park and recreational resources would be avoided.

[1] Section 6(f) of SAFETEA applies to park and recreational areas acquired or improved through the use of grants obtained under the Land and Water Conservation Fund Act.

Build Alternatives and Design Options

Build Alternatives and Design Options that could result in a potential use of a Section 4(f) park and recreational resources include the following:

- Meadowbrook Park and Meadowbrook Fields;
- Jennie Davis Park;
- Orangewood High School;
- Franklin Elementary School;
- Santa Ana River Trail;
- Victoria Elementary School and Park; and,
- Sylvan Park

Each of these resources are discussed below in terms of in the potential for the Build Alternatives and/or Design Options to result in a direct use, temporary occupancy, or constructive use under Section 4(f).

Meadowbrook Park and Meadowbrook Fields

Meadowbrook Park is a 14.1-acre neighborhood park located within the City of San Bernardino at 3rd Street and North Sierra Way. This park is available to the general public and offers open space and general recreation facilities, including: a recreation/community center; an indoor and outdoor basketball court; indoor volleyball court; tennis court; horseshoe pits; swimming pool; 22 picnic tables; three barbeque grills; and a gazebo. Vehicular access to the park is available from 2nd and 3rd Streets, and North Sierra Way. Parking is available on-site, as well as street parking around the perimeter of the park.

Meadowbrook Fields, located at Rialto Avenue and South Allen Street, is a mini park occupying 4.96 acres owned by the City of San Bernardino. Recreational amenities available to the general public include: a baseball diamond; soccer field; outdoor basketball court; racquetball courts; tetherball courts; and picnic tables.

Application of Section 4(f) Criteria for Use. Meadowbrook Park and Fields are buffered from the railroad corridor by a distance of approximately 0.20 miles and 0.09 miles, respectively. The presence of existing residential and commercial uses between the two facilities and SANBAG's ROW creates a physical separation between the parks and railroad ROW. Based on this physical separation and the corresponding distance (i.e. greater than 475 feet), no direct use, temporary occupancy, or constructive use would result to this Section 4(f) resource.

Coordination/Consultation. Formal consultation was initiated with the City of San Bernardino. A hardcopy notification letter was sent on August 1, 2012 to the City of San Bernardino Parks, Recreation, and Community Services Department (see Appendix O, Section 4(f) Correspondence). On August 6, 2012, subsequent contact with the City included an email summarizing the contents of the notification letter that was sent out the week prior. A digital copy of the original letter was included in the email for reference. An additional outreach letter providing additional detail on the Project's direct and indirect interaction with Meadowbrook Park was sent to the City of San Bernardino on June 7, 2013. Prior to preparation and release of this EIS/EIR, a formal response concerning the contents of the notification letter and potential Section 4(f) use of Meadowbrook Park and Meadowbrook Fields was not received by SANBAG.

Determination. Based on the analysis above, no direct use, temporary occupancy, or constructive use of Meadowbrook Park or Meadowbrook Fields would result from the Build Alternatives and Design Options.

Jennie Davis Park

Located within the City of Redlands, Jennie Davis Park is 5.2-acre public neighborhood park with picnic and playground facilities and open space. The park is located south of Redlands Boulevard and east of New York Street to the south of the railroad corridor and Orangewood High School. The City of Redlands owns and maintains Jennie Davis Park. Figure 3.16-2 illustrates the extent of the proposed improvements in the vicinity of the park along with its associated amenities.

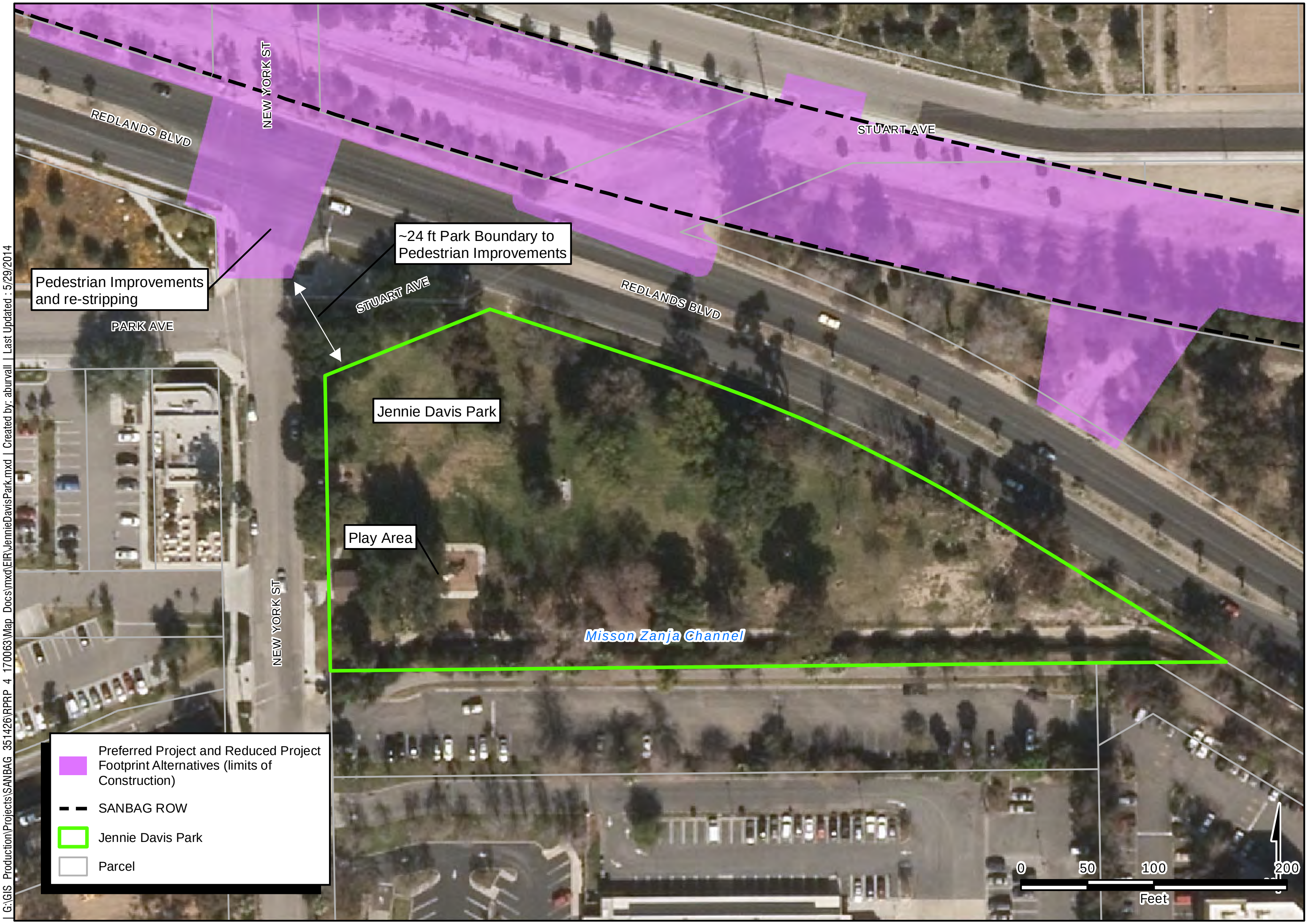
Application of Section 4(f) Criteria for Use. Based on the park's close proximity to Project-related improvements, further consideration of the Build Alternatives and Design Options potential to result in a direct use, temporary occupancy, or constructive use is provided below.

Direct Use. The Project would not require the permanent use of any portion of the existing park facilities; therefore, no Section 4(f) use would occur.

Temporary Occupancy. Project-related construction adjacent to Jennie Davis Park would include pavement rehabilitation, re-stripping, and curb/gutter improvements in the vicinity of the intersection of Redlands Boulevard and New York Street (see Figure 3.16-2). Other construction activities near the park include track improvements, construction of the New York Street rail station, and construction of an at-grade pedestrian crossing to facilitate pedestrian mobility north of Redlands Boulevard. These activities would occur within 200 feet of the recreational use areas (e.g., picnic benches) at the park. Additionally, the close proximity of construction to Jennie Davis Park may result in temporary effects with regards to potential sidewalk access issues.

Issues related to access to and from the park during construction would be addressed through the implementation of Mitigation Measures NV-2 and TR-1 (Prepare Traffic Control Plan). Additionally, construction related noise would be minimized through the implementation of Mitigation Measures NV-1 (Employ Noise-Reducing Measures during Construction) and NV-2 (Prepare a Community Notification Plan for Project Construction). No TCE would be required to facilitate construction of the Build Alternatives. Based on these factors, with the implementation of the proposed mitigation measures, the Build Alternatives would not result in a temporary occupancy to Jennie Davis Park.

Constructive Use. Based on the information presented in Section 3.6 and the Noise and Vibration TM (Appendix H), train operations would not create substantial noise levels at Jennie Davis Park. This findings is attributed to the proximity of the Park to the railroad corridor, at over 100 feet at its nearest point, which results in a corresponding noise level of 60 dBA Leq with train operations (Appendix H) without mitigation. Hence, the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) would not be substantially impaired. No constructive use of the resource would occur.



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Jennie Davis Park

Figure 3.16-2

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Coordination/Consultation. Formal consultation was initiated with the City of Redlands. A hard copy notification letter was sent to the City of Redlands on August 1, 2012 (see Appendix O, Section 4(f) Correspondence). On August 6, 2012, subsequent contact with the City of Redlands included an email summarizing the contents of the notification letter sent the week prior. A digital copy of the original letter was included in the email. A subsequent letter providing further detail on the Project's direct and indirect interaction with Jennie Davis Park was sent to the City of Redlands on June 7, 2013. A response letter received from the City of Redlands on July 17, 2013 indicated concurrence with determination described above (see Appendix O).

Determination. Based on the analysis above, the Build Alternatives and Design Options would not require a temporary occupancy of Jennie Davis Park during construction. The Project would avoid any direct use of the parklands and no constructive use of the park would result. Hence, the Project would not substantially impair the protected activities, features, or attributes that qualify Jennie Davis Park as a Section 4(f) resource.

Orangewood High School

Orangewood High School is located at approximately MP 8 on the corner of Texas Street and Stuart Avenue in the City of Redlands, directly north of the railroad corridor. The school is owned by the RUSD. Major surrounding streets include West Redlands Boulevard south of the school and the I-10 freeway north of the school. The campus has two softball fields that primarily serve the student body population during school hours; however, it is open to the general public during the daytime, after school hours, and during the summertime when school is not in session. The softball fields also include nighttime lighting to allow for evening use.

Application of Section 4(f) Criteria for Use. Project-related improvements in the vicinity of Orangewood High School would be similar for each of the Build Alternatives and Design Options. The school's close proximity to the railroad corridor has the potential to result a use of this Section 4(f) resource, which is used for public recreation during and after school hours. Further consideration of the Build Alternatives and Design Options potential to result in a direct use, temporary occupancy, or constructive use is provided below.

Direct Use. The proposed track improvements and the New York Street station improvements would be confined within SANBAG's and the existing public roadway ROW and would not involve a direct (permanent) use of recreational facilities located at Orangewood High School.

Temporary Occupancy. No temporary construction easement would be required on the school property during construction. Although temporary disruptions in traffic flow may occur during construction, these affects would be addressed through the implementation of a traffic control plan during construction per Mitigation Measure TR-1. Construction related noise would be addressed through compliance with Mitigation Measures NV-1 and NV-2. Therefore, no temporary occupancy would result.

Constructive Use. As discussed in Section 3.6, Noise and Vibration, and as provided in Appendix H, long-term noise associated with the Project would not result in an severe impact that would constitute a constructive use of the property. Operational noise levels without mitigation would be 60 dBA Leq and could be further minimized through the implementation of Mitigation Measure NV-3. Design measures to maximize crossing safety from Redlands Boulevard would be integrated into the at-grade crossings, including Texas Street, in coordination with the CPUC as required in Mitigation Measure TR-3. In this context, the protected activities, features, and attributes that qualify this resource for protection under Section 4(f) would not be substantially impaired with the implementation of Mitigation Measures TR-3 and NV-3. No constructive use of this resource would occur.

Coordination/Consultation. Formal consultation was initiated with RUSD. A hard copy notification letter was sent to RUSD on August 1, 2012 (see Appendix O, Section 4(f) Correspondence). On August 6, 2012, subsequent contact with RUSD included an email summarizing the contents of the notification letter that was sent out the week prior. A digital copy of the original letter was included in the email for reference.

An email response concerning the contents of the notification letter was received from Cameron Brown, Facilities Planning Services for RUSD, on August 20, 2012. A follow up email was received on September 13, 2012, also from Cameron Brown, notifying SANBAG that RUSD will provide a letter by September 20, 2012. A formal response letter was received on September 10, 2012, which identified concerns related to potential constructive uses, including increased noise, air quality effects, and safety at existing at-grade crossings. An additional outreach letter providing further detail on the Project's direct and indirect interaction with the Orangewood High School was sent to the RUSD on June 7, 2013. Prior to preparation and release of this EIS/EIR, a response letter containing the September 10, 2012 letter was resubmitted on June 17, 2013. SANBAG submitted a response letter following the release of the Draft EIS/EIR on September 24, 2014 indicating that SANBAG and the City of Redlands would be entering into a MOU to facilitate the implementation of quiet zones. The MOU was adopted on February 4, 2014.

Determination. Based on the analysis above, no direct use, temporary occupancy, or constructive use of the Orangewood High School playfields would result from the Build Alternatives or Design Options.

Franklin Elementary School

Franklin Elementary School is located at 820 E. Colton Avenue in the City of Redlands and is owned by the Redlands Unified School District (RUSD). The elementary school has a large field that is open to the general public during non-school hours.

Application of Section 4(f) Criteria for Use. The large fields at Franklin Elementary School are buffered from the Project footprint by a distance of approximately 0.11 miles. Due to the presence of residential uses between the school and the Project (see Figure 3.2-2 in Section 3.2, Land Use and Planning), no direct use, temporary occupancy, or constructive use would result as a consequence of the Project's implementation.

Coordination/Consultation. Formal consultation was initiated with RUSD. A hardcopy notification letter was sent to RUSD on August 1, 2012 (see Appendix N, Section 4(f) Correspondence). On August 6, 2012, subsequent contact with RUSD included an email summarizing the contents of the notification letter that was sent out the week prior. A digital copy of the original letter was included in the email for reference.

An email response concerning the contents of the notification letter was received from Cameron Brown, Facilities Planning Services for RUSD, on August 20, 2012. A follow up email was received on September 13, 2012, also from Cameron Brown, notifying SANBAG that RUSD will provide a letter by September 20, 2012. An additional outreach letter providing additional detail on the Project's direct and indirect interaction with Franklin Elementary School was sent to RUSD on June 7, 2013. Prior to preparation and release of this EIS/EIR, a formal response concerning the potential Section 4(f) use of the fields at Franklin Elementary School was not received by SANBAG.

Determination. Based on the analysis above, no direct use, temporary occupancy, or constructive use of the fields at Franklin Elementary School would result from the Project.

Santa Ana River Trail

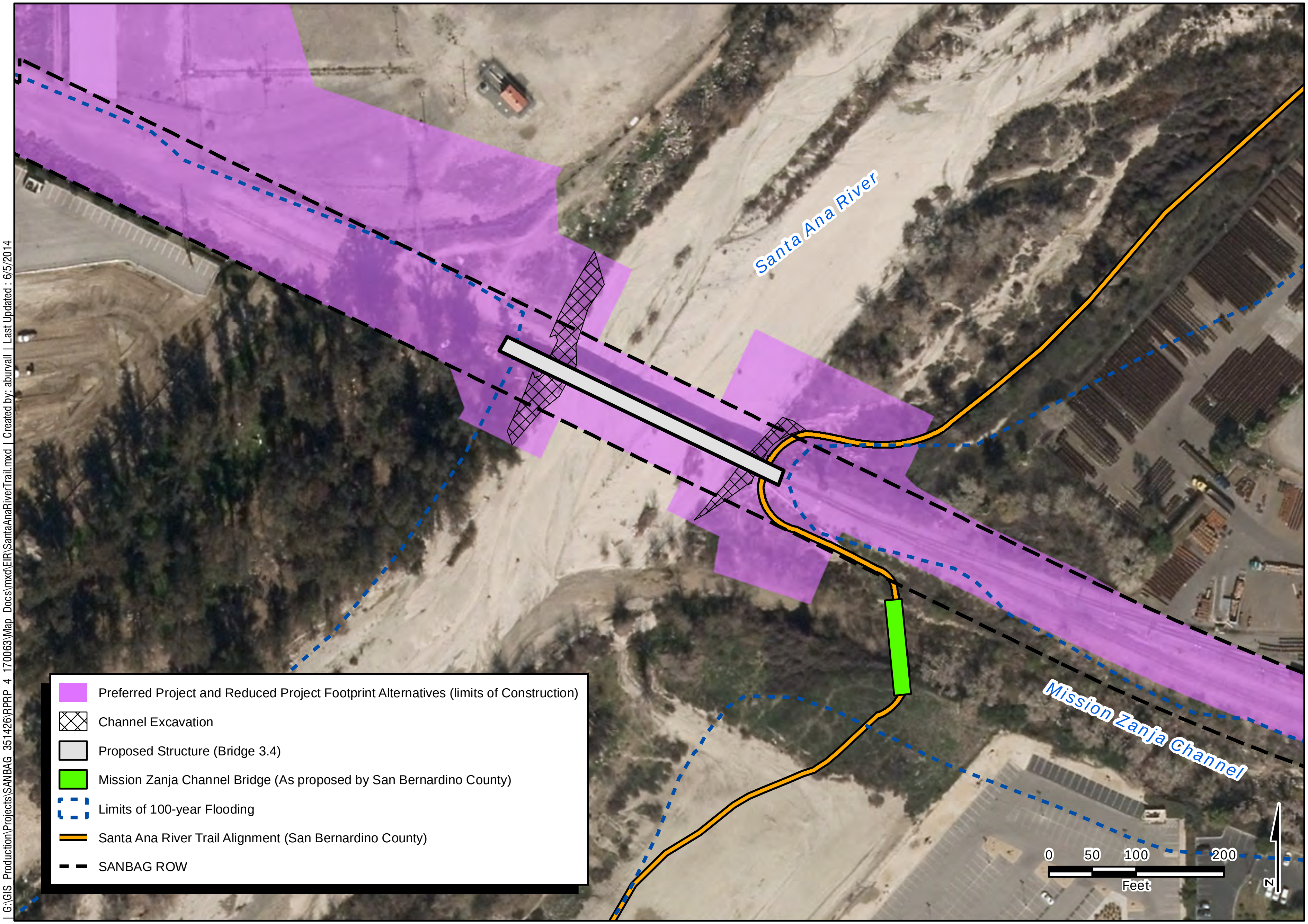
The SAR Trail is a 110-mile long recreational trail extending from the crest of the San Bernardino Mountains to the Pacific Ocean. Parts of the trail are currently under preliminary engineering design, including the portions that traverse the railroad corridor at Bridge 3.4. According to the Santa Ana Watershed Project Authority (SAWPA), the trail is approximately 60 percent complete; and SAWPA plans to complete the remaining portions over the next several years (SAWPA 2012). The construction and completion of a 3.6-mile segment of the trail from California Street to Waterman Avenue is expected to occur on a concurrent timeframe as the Project (2015 through 2017).

According to the San Bernardino County Non Motorized Transportation Plan (2011), the portion of the SAR Trail to the northwest of the rail corridor from Waterman Avenue to Mountain View Avenue is designated as a Class I bikeway (SANBAG 2011); however, at the time of preparation of this EIS/EIR, the section of the SAR Trail that intersects the railroad corridor is not designated a Class I facility. Once completed, the trail is planned to provide a continuous connection for various methods of non-motorized transportation, including, but not limited to, hiking, bicycling, walking, running, and horseback riding, in addition to providing areas for bird watching and organized team and individual sports (e.g., 10K runs).

The SAR Trail proposes to cross the existing railroad corridor with its“middle” portion of the trail, and which is relatively flat and densely urbanized. This section of the trail will be operated and maintained by the San Bernardino County Regional Parks Department. Based on preliminary engineering plans provided by the San Bernardino County Regional Parks Department, the planned alignment for the SAR Trail traverses SANBAG’s ROW along the east bank of the SAR and adjacent to the existing eastern bridge abutment (see Figure 3.16-1). As currently planned, segments of the trail are subject to inundation during a 100-year flood event (see Figure 3.16-3).

Application of Section 4(f) Criteria for Use. Portions of the SAR Trail in the vicinity of SANBAG’s ROW remain unconstructed with members of the public currently using a bypass route along Tippecanoe Avenue. The SAR Trail is part of a large watershed-scale planning effort with preliminary design engineering documents and, therefore, Section 4(f) is considered applicable. Additionally, with the exception of SANBAG’s ROW, the current trail alignment is contained within lands under the County’s ownership. Each of the Section 4(f) use types are considered further below.

Direct Use. The placement and configuration of the proposed structure at Bridge 3.4 and associated abutment along the eastern bank of the SAR (MP 3.5) would have the potential to disrupt or impede access along the central portion of the SAR Trail. As shown in Figure 3.16-3, the current design for the SAR Trail places the alignment up against the eastern bridge abutment. This placement of the trail alignment would conflict with the current design for Bridge 3.4 (see Figure 2-2B), which proposes excavation at the eastern bank to improve channel hydraulics. This excavation would likely create a slope that is too steep to facilitate the placement of the trail. Additionally, the current placement of the trail alignment would be subject to inundation during high flow events, which in turn, could encourage unauthorized access across the tracks and disruption to sensitive biological habitats along the SAR.



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SAR Trail Alignment

Figure 3.16-3

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In SANBAG's consultation with the County Parks and Recreation Department, three types of crossings have been considered for the SAR Trail at Bridge 3.4. These include an overcrossing (e.g., bridges), undercrossings (e.g., bridge undercrossing or tunnel), or an at-grade crossing. An overcrossing was determined to be prohibitively expensive and infeasible to design based on the land requirements, additional impacts to sensitive habitats for listed species, and the need to comply with ADA for the ramps. An undercrossing concept as currently proposed remains subject to inundation, especially at its current location under Bridge 3.4. This creates accessibility problems during even 2 and 5-year flow events within the SAR. As shown in 3.16-3, in the event of a 100-year flood event, numerous other sections of the trail would be subject to similar inundation. Therefore, recreational use of the trail during high flow events would likely be restricted with or without the project.

An at-grade crossing, although feasible and likely the most cost effective, could be perceived as creating a safety issue due to train operations. However, similar to other pedestrian crossings proposed as part of the Build Alternatives and Design Options at other locations (e.g., 7th Street), such a crossing would be subject to the discretionary approval of the CPUC to ensure its design meets applicable safety standards. Additionally, an at-grade crossing would require new ramps up to the grade crossing that would need to be ADA compliant. Such a design feature may require realignment of the trail to the north and south of the railroad crossing from what is shown in Figure 3.16-3.

Based on these considerations, an at-grade crossing would be considered the most feasible and prudent alternative to the SAR Trail at Bridge 3.4. In response to these issues, Mitigation Measure PCS-1 (Coordinate Trail Planning with Local Jurisdictions.) is proposed to address these design concerns in coordination with San Bernardino County during final design of the respective projects to ensure the continuity of the trail in its "future" condition. With the implementation of Mitigation Measure PCS-1, the Project would not result in a direct use of the SAR Trail.

Temporary Occupancy. The potential for temporary occupancy of the SAR Trail remains contingent on the County's construction schedule. Replacement of Bridge 3.4 would likely take a period of up to 30 months to construct. Sections of the SAR Trail are already constructed to the north and south of the railroad ROW and a bypass route is currently designated to maintain the trail's continuity. For this reason, Project construction is unlikely to interfere with trail access. Further, with the implementation of Mitigation Measure PCS-1, the Build Alternatives and Design Options would be designed in tandem with the trail thereby facilitating future recreational uses as planned. In this context, the Project would not result in a temporary occupancy of the SAR Trail.

Constructive Use. Once constructed, the SAR Trail would traverse the railroad corridor at Bridge 3.4. The operation of the Project would result in the generation of noise from passing trains and changes to existing visual quality and aesthetics. The potential for a constructive use associated with noise and visual quality is discussed below.

- *Noise.* Because park and recreation areas are considered sensitive receptors, train noise associated with the Project could result in disruptions to the open space recreational experience. Once operational, the 60 dBA Leq noise contour would extend approximately 50 feet to the north and south of the track centerline. These noise levels would be within the acceptable range for Category 3 land uses, which includes parks, and are attributed to the bridge's distance location from roadway intersections (e.g., Waterman Avenue and Tippecanoe Avenue) where train horn noise would be more prevalent. Additionally, since the SAR Trail is an active recreational facility, the time of exposure would be limited in duration. Based on these circumstances, the protected activities, features, and attributes that qualify this resource for protection under Section 4(f) would not be substantially impaired with the operation of passenger rail service. No constructive use would occur.

- *Visual Quality and Aesthetics.* As analyzed in Section 3.4, Visual Quality and Aesthetics, this segment of the railroad corridor is considered to have an overall moderate visual quality with the SAR corridor having the highest visual quality along the railroad corridor. The following mitigation measures would be implemented as part of the project and will restore the project site to pre-construction conditions and/or will enhance existing conditions/visual quality: Mitigation Measures BIO-4 (Protection of Sensitive Plants and Habitats), BIO-6 (Secure Clean Water Act Section 404 Permit and Implement All Permit Conditions to Ensure No Net Loss of Functions of Wetlands, Other Waters of the U.S., and Waters of the State), and VQA-3 (Tree Replacement). Protected activities, features, and attributes that qualify this resource for protection under Section 4(f) would not be substantially impaired. Therefore, no constructive use would occur.

Coordination/Consultation. Formal consultation between SANBAG and San Bernardino County Parks and Recreation Department was initiated on March 29, 2011. At that time, the County was anticipating construction of the trail by the end of 2011. However, due to uncertainties regarding funding and design, construction of the trail did not occur. In conjunction with the recent of the NOI, a hardcopy notification letter was sent to San Bernardino County Parks and Recreation Department on August 1, 2012 (see Appendix O, Section 4(f) Correspondence). On August 6, 2012, subsequent contact with San Bernardino County Parks and Recreation Department included an email summarizing the contents of the notification letter sent the week prior. Additionally, a digital copy of the original letter was included in the email. A subsequent outreach letter providing further detail on the Project's direct and indirect interaction with the SAR Trail was sent to the County on June 7, 2013. Prior to preparation and release of this EIS/EIR, a formal response concerning the contents of the notification letter and potential Section 4(f) use of the SAR Trail was not received by SANBAG. SANBAG submitted an additional letter following the release of the Draft EIS/EIR on September 24, 2014. The County provided a concurrence letter on November 6, 2014.

Determination. Based on the analysis above, no direct use, temporary occupancy, or constructive use of the SAR Trail would result from the Project.

Victoria Elementary School and Park

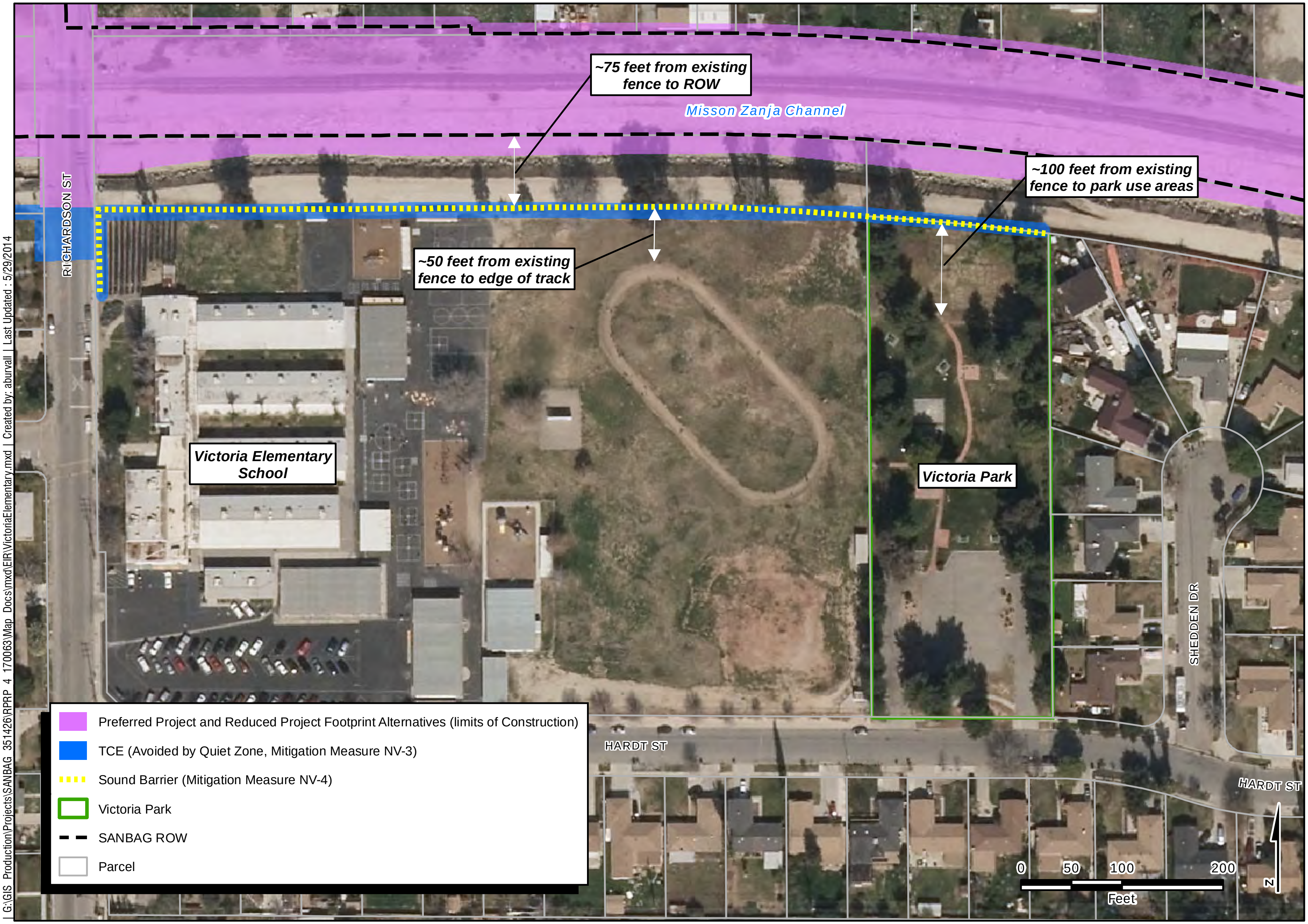
Victoria Elementary School and Park is located on Hardt Street within the City of San Bernardino. The school and adjacent fields are owned and maintained by the RUSD with the school building identified as a historic property eligible for the NRHP (see discussion under Cultural and Historic Resources). The fields at Victoria Elementary School primarily serve students enrolled in Victoria Elementary School during school hours; however, schoolyard facilities remain open to the general public for recreational use in the daytime hours after school. The fields at Victoria Elementary School are open to the general public; however, based on a conversation with the RUSD Facilities Planning Office Staff, organized events are not allowed (personal communication with Antonette Llamas, July 19, 2012). In addition to the playfields, a small neighborhood park is located east of the playfields and provides picnic benches, a basketball court, walking paths, and two hard top courts.

Application of Section 4(f) Criteria for Use. Project-related improvements and associated mitigation measures east of Richardson Avenue and north and south of the Mission Zanja Channel in the City of Redlands would have the potential to result in a Section 4(f) use of Victoria Park without mitigation. Victoria Elementary School and Park are open to the public park and provide a variety of recreational opportunities, and, therefore, Section 4(f) is considered applicable. Each of the Section 4(f) use types are considered further below.

Direct Use. Victoria Park is located to the south of the Mission Zanja Channel outside of the established Project footprint. The width of the existing SANBAG ROW at this segment of the railroad corridor (100 feet) is considered adequate to accommodate the proposed track improvements; however, if sound barriers are constructed as part of Mitigation Measure NV-4 to mitigate for adverse noise effects, these features would be constructed to the south of SANBAG's ROW on the school property to the north of Victoria Elementary School and Park. At this time, a TCE of approximately 10 feet would be required to facilitate construction of the sound barrier; however, no property acquisition is proposed. Rather, the sound barrier would replace the existing 5-foot chain link fence and, subsequently, be dedicated to the RUSD. If constructed, long-term maintenance of the sound barrier would be achieved through an agreement and/or rights of access pending further discussion between SANBAG and RUSD.

The installation of the sound barrier would result in an encroachment into the school property and park and could require the removal of existing vegetation (e.g., trees) and the replacement of the existing chain link fence. The implementation of Mitigation Measure NV-3 (Quiet Zones) would avoid these impacts. However, if quiet zones are not implemented and sound barriers are required (NV-4), the implementation of VQA-3 (Tree Replacement) and VQA-4 (Sound Barrier Screening and Surface Treatments) is proposed to minimize these impacts. In its current location (see Figure 3.16-4), the sound barrier would be a minimum of 100 feet from any use area at the park; hence, no interruption of existing recreational uses is expected. Since no property acquisition is proposed and the sound barrier would effectively replace the existing fence, the protected activities, features, or attributes that qualify this resource for protection under Section 4(f) would not be substantially impaired. This direct use is considered de minimis.

Temporary Occupancy. Construction activities associated with track improvements would occur along the railroad corridor, east of Richardson Street and potentially along both banks of the Mission Zanja Channel. Work along this segment would generally be confined to the boundaries of SANBAG ROW, which is approximately 100 feet, with the exception of sound barriers that may be required under Mitigation Measures NV-4 (Construct Sound Barriers). This noise reduction measure would require a 10 foot TCE just north of the existing fence to facilitate construction. This would require a temporary occupancy across the northern portion of the property of approximately 1,700 square feet; however, the occupancy would avoid the athletic fields and park use areas (see Figure 3.16-4). Although Project-related construction could occur adjacent to the fields at Victoria Elementary School and may result in construction-related impacts (e.g. noise and access) along the north perimeter of the park, the implementation of Mitigation Measures LU-1 (Minimize Project Land Requirements), TR-1 (Prepare a Traffic Management Plan), NV-1 (Employ Noise-Reducing Measures during Construction), and NV-2 (Prepare a Community Awareness Program for Construction), would minimize these impacts. For these reasons, the Build Alternatives would result in a temporary occupancy.



Victoria Elementary School and Park

Figure 3.16-4

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Constructive Use. Long-term operational noise and changes in visual resources and aesthetics will not substantially diminish the protected activities, features or attributes of this resource. These issues are discussed in further detail below.

- *Noise.* With the operation of trains along the railroad corridor, ambient noise levels would increase at the park and playfields. However, this increase up to 60 dBA (Leq) would fall within the acceptable range for FTA's noise criteria. However, residential uses to the north of the ROW, east of Richardson Street would be severely impacted. If sound barriers are constructed at this location as proposed under Mitigation Measure NV-4, a sound barrier would also be required along the northern boundary of the park to absorb sound redirected to the south by the northern sound barrier. With the implementation of Mitigation Measure NV-3, the increase in noise levels would be minimized through the implementation of quiet zones. If quiet zones are not implemented, the implementation of Mitigation Measures NV-4 and/or NV-6 would ensure the placement of the necessary noise reduction measures (e.g., sound barriers, etc.). With the implementation of these measures, no substantial impairment to the protected activities, features, and attributes of this resource will occur. Therefore, no constructive use would occur.
- *Visual Quality and Aesthetics.* As analyzed in Section 3.4, Visual Quality and Aesthetics, this segment of the railroad corridor is considered to have an overall moderate visual quality. With the implementation of Mitigation Measures VQA-3 and VQA-4, noise reduction measures required for the Build Alternatives and Design Options will not substantially diminish the protected activities, features or attributes of this resource. Therefore, no constructive use would occur.

Coordination/Consultation. Formal consultation was initiated with RUSD. A hardcopy notification letter was sent to RUSD on August 1, 2012 (see Appendix O, Section 4(f) Correspondence). On August 6, 2012, subsequent contact with RUSD included an email summarizing the contents of the notification letter that was sent out the week prior. A digital copy of the original letter was included in the email for reference.

An email response concerning the contents of the notification letter was received from Cameron Brown, Facilities Planning Services for RUSD, on August 20, 2012. A follow up email was received on September 13, 2012, also from Cameron Brown, notifying SANBAG that RUSD will provide a letter by September 20, 2012. A formal response letter was received on September 10, 2012, which identified concerns related to potential constructive uses, including increased noise, air quality effects, and safety at existing at-grade crossings. An additional outreach letter providing further detail on the Project's direct and indirect interaction with Victoria Elementary School was sent to the RUSD Redlands on June 7, 2013. A formal response letter containing the RUSD's September 10, 2012 letter was resubmitted on June 17, 2013. SANBAG submitted a response letter following the release of the Draft EIS/EIR on September 24, 2014 SANBAG submitted a response letter following the release of the Draft EIS/EIR on September 24, 2014 indicating that SANBAG and the City of Redlands would be entering into a MOU to facilitate the implementation of quiet zones. The MOU was adopted on February 4, 2014.

Determination. With the implementation of quiet zones, no direct use, temporary occupancy, or constructive use would result. Based on the analysis above, if sound barriers are constructed, with the implementation of proposed mitigation measures would avoid any constructive use of Victoria Park. The Build Alternatives would require a TCE for the construction of a sound barrier, which would result in a temporary occupancy. The direct use resulting from the replacement of the existing chain link fence with a sound barrier is considered de minimis.

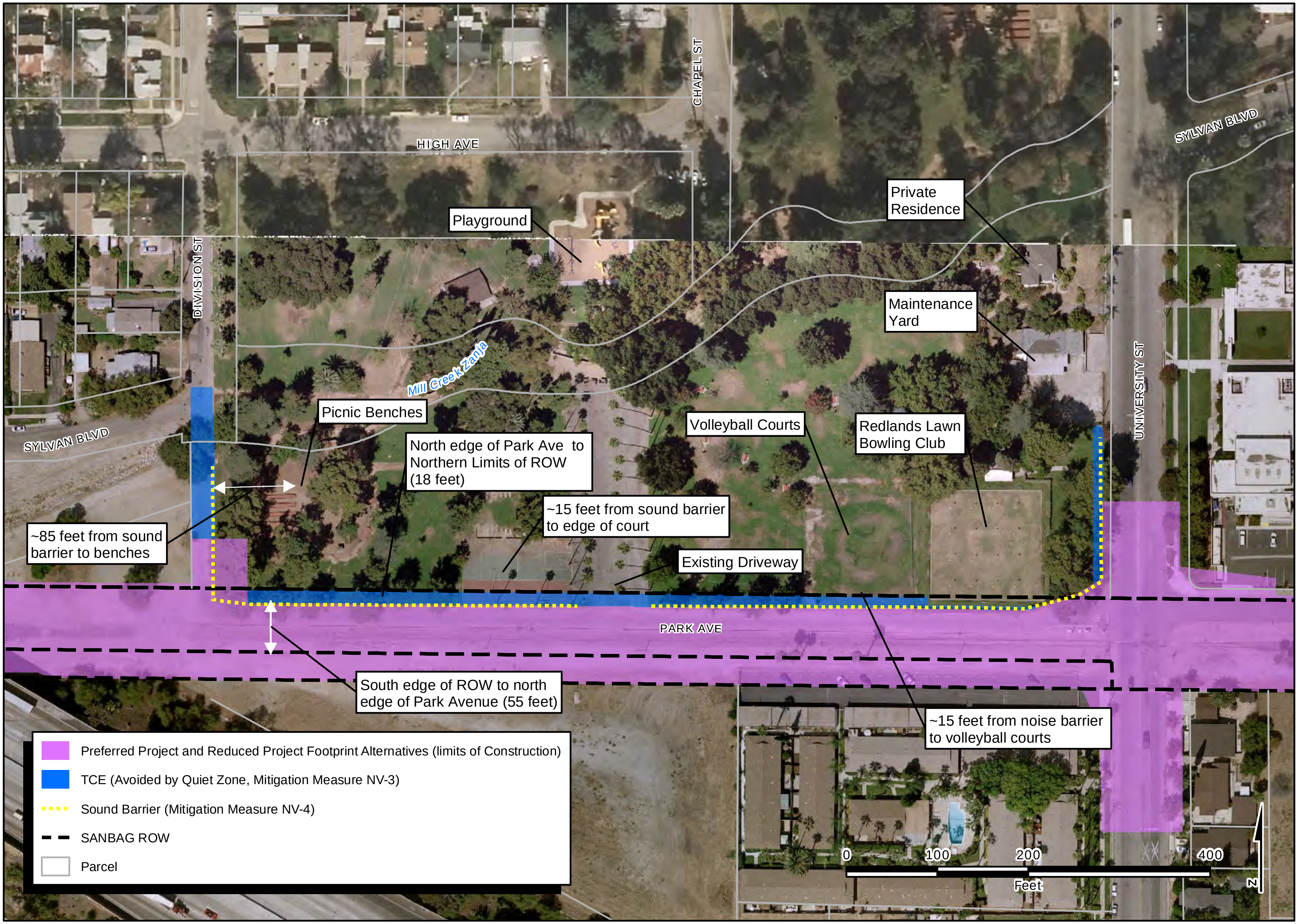
Sylvan Park

Sylvan Park is a 23.3-acre public park with a softball field, group and individual picnic areas, and playground facilities primarily serving the needs of local residents, visitors and students located in proximity to the park at the University of Redlands campus. The historic Mill Creek Zanja flows through the park (see Section 3.12 for a complete discussion on the Mill Creek Zanja). The park is located immediately west of the University of Redlands at Colton Avenue and University Street. Community events, such as lawn bowling and the annual Redlands Fourth of July celebration, are held at the park. The Lawn Bowling Club is a historical resource eligible for listing under the NHPA (see discussion under the Cultural and Historical Resources heading). Sylvan Park also includes both active (e.g., playground, picnic areas, walking trails) and passive recreational areas (e.g., shaded benches) and a park and maintenance building at the southeast corner.

The ownership situation for Sylvan Park is unique in that the southern 18 feet of the park extend into SANBAG's ROW. Park Avenue, which provides primary access to the main parking lot, encroaches an additional 22 feet south into SANBAG's ROW, thereby reducing the northern sections of SANBAG's by 40 feet. This leaves approximately 35 feet of remaining ROW for SANBAG, which is insufficient for two tracks, thereby requiring the acquisition of properties owned by Union Pacific to the south. Additionally, the current width of Park Avenue does not meet County roadways standards (e.g., minimum of 24 feet).

Application of Section 4(f) Criteria for Use. Project-related track and roadway improvements west of University Avenue would have the potential to disrupt recreational activities within the limits of Sylvan Park, resulting in a potential use of this resource. Given that the park has existed within the ROW prior to SANBAG's purchase of the ROW, Section 4(f) is considered applicable. Each of the Section 4(f) use types are considered further below.

Direct Use. As discussed above, the southern portion of Sylvan Park currently extends into the northern section of SANBAG's ROW. Based on this circumstance, minimal construction outside of SANBAG's ROW (and within the actual park) would be necessary to facilitate improvements proposed under the Build Alternatives and Design Options (see Figure 3.16-5). Both the planned roadway improvements along Park Avenue and, if required, the construction of sound barriers would encroach into the southern limits of the park boundary thereby necessitating the removal of ornamental trees and walkways, which could affect the overall recreational experience at the southern end of the park, including activities at the Lawn Bowling Club (discussed separately). A majority of these improvements would be contained in SANBAG's ROW or the City of Redland's roadway ROW for University and Division Streets with the remainder extending into the park property, which is under the City of Redlands' ownership (see Figure 3.16-5). As proposed, the Build Alternatives would require up to 858 square feet at the southeast corner of the park to facilitate roadway improvements at Park Avenue and University Street. Of this total area, approximately 740 square feet are located just north and outside SANBAG's ROW. As a result, SANBAG will be required to acquire this small section of the park property or secure an easement pending further discussion between SANBAG and the City of Redlands.



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Sylvan Park

Figure 3.16-5

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Similarly, up to 1,070 square feet would be required at the southwest corner of the park to facilitate safety improvements at the intersection of Park Avenue and Division Street (see Figure 3.16-5). Of this total area, approximately 640 square feet occur to the north and outside of SANBAG's ROW. As a result, SANBAG would be required to acquire a small section of the park property or secure an easement pending further discussion between SANBAG and the City of Redlands. To the extent feasible, SANBAG would attempt to reduce these areas during final design in conjunction with Mitigation Measures LU-1 (Minimize Project Land Requirements and Comply with Federal and State Relocation Laws).

If required, sound barriers combined with the contemplated roadway improvements would also encroach into the southern portion of Sylvan Park adjacent to SANBAG's ROW. The sound barrier(s) would replace existing fencing where it currently exists (e.g. Lawn Bowling Club) and create a new fence where none currently exists. The TCE required to construct the sound barriers along the southern park boundary is estimated at 0.27 acres. Although generally contained with SANBAG's ROW, these improvements would remove existing landscaping and alter the existing sidewalk. Physical disruptions to the park (e.g. tree removal) as a result of placing sound barriers' would be avoided by Mitigation Measure NV-3 (Quiet Zones) or minimized through the implementation of a combination of Mitigation Measures LU-1, VQA-3, and VQA-4.

Regardless of whether sound barriers are installed, the roadway improvements required for the Build Alternatives would require a partial land acquisition or easement at the southeast and southwest corners of the park. However, the acquisition (or easement) would be minor in area and, in total, would affect less than 0.02 percent of the total park acreage. Additionally, the existing uses along the southern portion of the park, including picnic benches, volleyball courts, and the parking lot would all be maintained in their current condition both during and after project construction (see Figure 3.16-5). All improvements along the southern boundary of the park would be followed by tree replacement and other aesthetic treatments determined to be appropriate in coordination with the City of Redlands. Based on these circumstances (e.g., 0.02 percent of the park would be utilized), the direct use resulting from the Build Alternatives is considered de minimis.

Temporary Occupancy. Construction related activities adjacent to Sylvan Park include track improvements and the construction of the University of Redlands rail station east of University Street. Construction may also include installation of sound barriers along the southern portion of Sylvan Park to mitigate for adverse noise effects and the widening of Park Avenue to improve traffic flow. Heavy equipment and machinery necessitating the need for up to 0.25 acres of temporary work space would result in a temporary occupancy of the southern perimeter of Sylvan Park (Figure 3.16-5). This temporary occupancy could also disrupt access to the southern parking lot; although, the existing width of Park Avenue is sufficient such that one-way traffic would be allowable in order to maintain park access during construction.

With the implementation of Mitigation Measures TR-1, NV-1, and NV2, the temporary occupancy resulting from the Build Alternatives and Design Options is minimal and no use would occur. This finding is supported by the short duration of construction, the magnitude of the Project changes would be minimal and limited to the southern boundary of the park, and no permanent adverse impacts would result that could otherwise interfere with the protected activities, features, or attributes that qualify Sylvan Park as a resource. Upon completion of the required improvements, the park facilities, including the volleyball courts, would function similar to existing conditions.

Constructive Use. Over the long-term operation of the Project, noise from train operations and the potential erection of sound barriers as proposed under Mitigation Measure NV-4 may result in adverse effects regarding noise, and visual quality and aesthetics. These potential constructive uses are discussed further below.

- *Noise.* With the operation of passenger trains in close proximity to the park, ambient noise levels would increase as a result of the Project. Based on information contained in the Noise and Vibration TM (Appendix H), noise levels with the Project would be up to 68 dBA (Leq) without mitigation. With the implementation of quiet zones, as proposed in Mitigation Measure NV-3, noise levels would be reduced to 63 dBA (Leq). However, SANBAG cannot guarantee the adoption of quiet zones by the City of Redlands; therefore, if implementation of Mitigation Measure NV-3 is not feasible, SANBAG would implement a combination of Mitigation Measures NV-4, NV-5, and NV-6. With the implementation of one or more of these measures, Project-related operational noise would not substantially impair the protected activities, features, and attributes of this resource. Therefore, no constructive use would occur.
- *Visual Quality and Aesthetics.* As analyzed in Section 3.4, Visual Quality and Aesthetics, this segment of the railroad corridor is considered to have an overall moderate visual quality. Over the long-term, the implementation of Mitigation Measure NV-4, if required, would result in the erection of sound barriers that would create a new obstructive visual feature within the southern portion of the park. Park patrons would have a direct line of sight of the sound barriers, which could be up to 12 feet in height. However, with the implementation of Mitigation Measures VQA-1, VQA-3, VQA-4, and CUL-2a, these adverse effects would not substantially impair the protected activities, features, and attributes that qualify this resource for protection under Section 4(f). Therefore, no constructive use would occur.

Coordination/Consultation. Formal consultation was initiated with the City of Redlands. A hard copy notification letter was sent to the City of Redlands on August 1, 2012 (see Appendix O, Section 4(f) Correspondence). On August 6, 2012, subsequent contact with the City of Redlands included an email summarizing the contents of the notification letter sent the week prior. A digital copy of the original letter was included in the email for reference. A subsequent outreach letter providing further detail on the Project's direct and indirect interaction with Sylvan Park was sent to the City of Redlands on June 7, 2013. A response letter from the City of Redlands was received on July 17, 2013 identifying additional concerns relating the cross-section for Park Avenue and corresponding impacts to the Park. SANBAG submitted a response letter following the release of the Draft EIS/EIR on September 24, 2014 indicating that SANBAG and the City of Redlands would be entering into a MOU to facilitate the implementation of quiet zones. The MOU was adopted on February 4, 2014.

Determination. Based on the analysis above, the Build Alternatives and Design Options would not result in a constructive use of Sylvan Park. The Build Alternatives would require a TCE and would result in a temporary occupancy of Sylvan Park for roadway improvements and, if necessary, installation of sound barriers. Direct uses would occur associated with the roadway improvements to Park Avenue and, if necessary, the sound barriers. With the implementation of mitigation measures, the impacts would be de minimis. The City of Redlands concurred with this determination in February 2015 (see Appendix O).

CULTURAL AND HISTORIC RESOURCES

Section 3.12, Historic and Cultural Resources, identifies the cultural and historic properties within the Project APE. This section identifies the historic resources that occur within APE that qualify for protection under Section 4(f), and have a potential to result in a Section 4(f) use (see Table 3.16-2). Based on those historic resources identified in Table 3.16-2, this section evaluates the potential for the Build Alternatives and Design Options to result in a direct use, temporary occupancy, or constructive use under Section 4(f).

Alternative 1 – No Build

Under the No Build Alternative, SANBAG would not implement the Project and the proposed improvements to the Redlands Corridor would not occur. Under the No Build Alternative, the use of Section 4(f) resources would be avoided.

Build Alternatives and Design Options

Section 4(f) historic resources (Table 3.16-2) that may be subject to potential use as a result of the Build Alternatives and Design Options include the following:

- Contributing properties within the Redlands Santa Fe Depot Historic District[2]:
  - Redlands Santa Fe Depot
  - Cope Commercial Company Warehouse
  - Haight Packing House
  - Redlands City Transfer
  - Brick warehouse at 440 Oriental Avenue
- Victoria Elementary School
- Second Baptist Church
- Redlands Lawn Bowling Club

Each of these resources are discussed below in terms of whether the Build Alternatives and Design Options would result in a Section 4(f) direct use, temporary occupancy, and/or constructive use.

Redlands Santa Fe Depot

The Redlands Santa Fe Depot (Depot) property was evaluated and listed on the NRHP as a contributor to the Redlands Santa Fe Depot Historic District in 1991 (1S status code). According to the San Bernardino County Tax Assessor, this building is actually located on APN: 169-28-1390, with a 347 Orange Street address that includes the Redlands Santa Fe Depot Station (independently listed with a 351 Orange Street address) and the Board of Trade/Chamber of Commerce Building (independently listed with a 337 Orange Street address). This neoclassical style building is the third railroad station erected in Redlands. It was designed by Bakewell and Brown and constructed by F.O. Engstrom in 1909. This station was one of dozens built by the railroad to display settlements along their newly acquired route.

[2] There are three other contributing properties to the Redlands Santa Fe Depot Historic District that are located within the planning area: (1) Redlands Board of Trade / Redlands Chamber of Commerce (337 Orange Street); (2) Palace Livery (346 Orange Street); and (3) Pioneer Transfer (348 Orange Street). These contributing properties are not discussed in detail in this section because they are located far from enough away from the project such that the Build Alternatives will not result in a direct use, constructive use, or temporary occupancy of the these properties.

Section 3.12, Cultural Resources, provides additional descriptive detail for the Depot.*Application of Section 4(f) Criteria for Use.* The Redlands Depot is a NRHP-listed historical property that is considered a Section 4(f) resource. Track improvements associated with the construction of the Downtown Redlands Station would have the potential to result in the use of this resource as a result of construction activities along the northern perimeter of the property boundary. Each of the Section 4(f) use types are considered further below.

Direct Use. Project-related improvements that border and encroach into the Depot property would include track improvements immediately north of the Depot and sidewalk improvements along Orange Street. The northern portion of the Depot property contains three distinct areas that are contributing elements to the Depot's historical significance. These areas include the grand plaza, a linear lawn area (remnant spur track), and a narrow landing north of the lawn area. Both the narrow landing and the grand plaza contain red bricks that date back to the Depot's period of significance (1889-1941). The extent of these areas is illustrated in Figure 3.12-1. As shown, the narrow landing and a portion of the lawn area are located within SANBAG's ROW with the grand plaza contained within the Depot property. Additionally, as shown in the photo inset in Figure 3.12-1, the spur track within the lawn area is no longer present.

To facilitate the at-grade safety and related pedestrian improvements at Orange Street, the existing brick sidewalk situated to the east of the Depot would require an adjustment to its current elevation (up to 12 inches). To maintain a level walkway connection from the sidewalk on Orange Street to the Depot's grand plaza, the grade between the grand plaza and sidewalk would be adjusted to maintain conformance with ADA requirements (see Figure 3.12-2). These improvements would affect up to 275 square feet (or 3 percent) of the existing grand plaza. As currently proposed, SANBAG would maintain the current appearance of this brick surface by repositioning the existing bricks to the extent feasible subject to SHPO's concurrence. These pedestrian access improvements are proposed on the east and northeast corners of the Depot's grand plaza (see Figure 3.12-2).

Additionally, in conjunction with the track improvements, SANBAG would remove the existing narrow landing, which is located within its ROW. A fence would be placed along the southern edge of SANBAG's ROW grand plaza for safety purposes. No modifications to the Depot's exterior facade are proposed as part of the Project or change in ownership (see Figure 3.12-2). Likewise, more important design features such as the orientation of the building's central element to the plaza and the colonnade, and the colonnade itself, would not be altered. Therefore, although the minor alterations to the eastern edge of the grand plaza would result in conjunction with the Project, the property would not be permanently incorporated into the transportation facility and the property would be fully restored to conditions as good as existing; hence, no direct use under Section 4(f) would result.

Temporary Occupancy. Project-related construction directly adjacent to the Depot would require a TCE across approximately 275 square feet along the northeastern perimeter of the Deport property to facilitate access. This would result in a temporary occupancy. Access to and from the Depot would be maintained during construction and would be coordinated with the owner. Through the implementation of Mitigation Measures LU-1 and TR-1 issues related to access would be minimized such that the temporary occupancy is considered minimal and no use would occur. This determination is supported by the short duration of construction, the magnitude of the Project changes would be minimal and limited to the northern boundary of the Depot, and no permanent adverse impacts would result that could otherwise interfere with the protected activities, features, or attributes that qualify the Depot for protection under Section 4(f).

In addition to access, Project construction would include demolition and the replacement of the existing track, which could result in structural damage as a result of construction-related vibration. Special consideration of vibration effects is critical for avoiding or minimizing impacts to fragile historical buildings. The Depot is located approximately 15 feet from the railroad ROW and the worst-case damage level from project construction at this distance would be 0.995 inch/second PPV, whereas damage threshold is only 0.12 inch/second PPV. Due to rail inactivity and the aging of each building's construction materials, the potential re-introduction of rail operations and associated construction activities could potentially affect its structural integrity or result in exterior damage (e.g., cracking). Based on these considerations, the Build alternatives would not adversely affect the historic features or attributes that qualify this resource for protection under Section 4(f). No direct use would result.

Constructive Use. Although the Depot was originally designed to withstand rail-generated vibration, due to rail inactivity and the aging of the building's construction materials, construction activities and re-introduction of rail operations could potentially affect structural integrity. Once operational, the predicted vibration level for passing trains is 74 VdB; whereas the corresponding threshold for damage is 90 VdB. As a result, in order to determine the structural stability of the Depot, a structural evaluation is proposed as part of Mitigation Measure CUL-1. Upon implementation of Mitigation Measure CUL-1 and following Project construction, a post-construction assessment of the structure would verify its integrity to withstand re-introduced rail operations.

Given the nature of the Project (e.g., passenger rail service) the changes in the visual character of the Study Area in the vicinity of the Depot would be consistent with its current sense of place. In addition, the Build Alternatives and Design Options would not alter the integrity of the Depot nor would it alter their status as a contributor to the Redlands Santa Fe Depot Historic District. Based on these considerations, the protected activities, features, or attributes that qualify this resource for protection under Section 4(f) would not be substantially impaired. No constructive use of the resource would occur.

Determination. Based on the analysis above, the Build Alternatives and Design Options would not result in a direct use or constructive use of the Depot. With the implementation of Mitigation Measures LU-1, TR-1, CUL-1 and NV-1, temporary occupancies associated with construction would be minimal and no use would occur. SHPO concurred with this determination with the implementation of Mitigation Measure CUL-1 on August 14, 2014 (see Appendix M).

Other Contributing Properties to the Redlands Santa Fe Depot Historic District: Cope Commercial Company Warehouse, Haight Packing House, Brick warehouse at 440 Oriental Avenue, and Redlands City Transfer

There are four other contributing properties within the Redlands Santa Fe Depot Historic District that are considered Section 4(f) resources. These four other NRHP eligible or listed buildings are constructed of brick masonry and located adjacent to the track. They are Cope Commercial Company Warehouse (21 West Stuart Avenue), Haight Packing House (345 North Fifth Street), Redlands City Transfer (360 North Orange Street) and the brick warehouse at 440 Oriental Avenue.

Application of Section 4(f) Criteria for Use. The Cope Commercial Company Warehouse (21 West Stuart Avenue), Haight Packing House (345 North Fifth Street), Redlands City Transfer (360 North Orange Street) and the brick warehouse at 440 Oriental Avenue are NRHP-listed or eligible historical properties that are afforded protection under Section 4(f). Track improvements in conjunction with the construction of the Downtown Redlands Station would have the potential to result in a use as a result of construction activities within SANBAG's ROW. Each of the Section 4(f) use types are considered further below.

Direct Use. The Build Alternatives and Design Options would not result in any permanent use or alteration of these Section 4(f) resources. No change in fee ownership would be required. Hence, no direct use of these historical resources would result.

Temporary Occupancy. Project-related construction directly adjacent to these structures would require a small TCE for construction access at the respective property lines adjoining SANBAG's ROW. This TCE would result in a temporary occupancy of these properties. Access to and from these structures would be maintained. Through the implementation of Mitigation Measures LU-1 and TR-1 issues related to the TCE would be minimized. This finding is supported by the short duration of construction, the magnitude of the Project changes would be minimal and limited to the property line, and no permanent adverse impacts would result that could otherwise interfere with the protected activities, features, or attributes that qualify these structures as a 4(f) resource, on either a temporary or permanent basis.

The Cope Commercial Company Warehouse, Haight Packing House, Redlands City Transfer and the brick warehouse at 440 Oriental Avenue are NRHP eligible or listed buildings of brick masonry construction located adjacent to the track within a similar proximity that may be subject to potential vibration effects. Although these buildings were originally designed to withstand rail-generated vibration, due to rail inactivity and the aging of each building's construction materials, the potential re-introduction of rail operations and associated construction activities could potentially affect structural integrity. As a result, in order to determine the structural stability of these building, a structural evaluation is proposed as part of Mitigation Measure CUL-1. Mitigation Measures CUL-1 and NV-1 are proposed to minimize vibration-related impacts.

Constructive Use. Although these contributing structures were originally designed to withstand rail-generated vibration, due to rail inactivity and the aging of the buildings' construction materials, the potential re-introduction of rail operations and associated construction activities could potentially affect structural integrity. Once operational, the predicted vibration level for passing trains is 74 VdB; whereas the corresponding threshold for damage is 90 VdB. As a result, in order to determine the structural stability of these buildings, a structural evaluation is proposed as part of Mitigation Measure CUL-1. Upon implementation of Mitigation Measure CUL-1 and following Project construction, a post-construction assessment of the structure would verify its integrity to withstand rail operations.

Given the nature of the Project (e.g., passenger rail service) the changes in the visual character of the Study Area in the vicinity of the Depot would be consistent with its current sense of place. In addition, the Build Alternatives and Design Options would not alter the integrity of these structures nor would it alter their status as a contributor to the Redlands Santa Fe Depot Historic District. Based on these considerations, the protected activities, features, or attributes that qualify this resource for protection under Section 4(f) would not be substantially impaired. No constructive use of the resource would occur.

Determination. Based on the analysis above, the Build Alternatives and Design Options would not result in a direct use or constructive use of the Cope Commercial Company Warehouse, Haight Packing House, Redlands City Transfer and the brick warehouse at 440 Oriental Avenue. With the implementation of Mitigation Measures LU-1, TR-1, CUL-1 and NV-1, temporary occupancies associated with construction would be minimal. SHPO concurred with this determination with the implementation of Mitigation Measure CUL-1 on August 14, 2014 (see Appendix M).

Victoria Elementary School

Victoria Elementary School is located at 1505 Richardson Street in the City of San Bernardino. Based on the results of the cultural resources survey (see Appendix M), the school building is deemed potentially eligible for the NRHP. Figure 3.12-3 illustrates the elementary school building and its relative position within the western section of the school property. Section 3.12 provides additional detail on this historic property.

Direct Use. Similar to the discussion for Victoria Park, the Build Alternatives would introduce passenger rail service to SANBAG's ROW, which is located just north of the school property (see Figures 3.16-5 and 3.12-3). With the implementation of Mitigation Measure NV-3 (Quiet Zones), noise levels at the school resulting from train operations would remain within acceptable levels and no direct use of the school property would result from the Project. However, if quiet zones are not adopted by the City of San Bernardino, the implementation of Mitigation Measure NV-4 (sound barriers) is proposed to mitigate noise levels below the threshold of significance.

If sound barriers are required to mitigate operational noise, the barriers would likely replace the existing five foot chain-link fence that borders the northern and northwestern portions of the school. If constructed, sound barriers (up to 12 feet) would be constructed within 30 feet of the school building on its northwestern corner and 80 feet from the northern portion of the building. Once constructed, the sound barrier structure would be dedicated to the RUSD and, thus, no permanent acquisition of the historical property would result. Given that the sound barrier would replace an existing chain link fence and would not obstruct the important architectural features of the school, the direct use is considered de minimis.

Temporary Occupancy. Similar to the discussion of potential direct use, no temporary occupancy of the school property would result with the implementation of Mitigation Measure NV-3 (Quiet Zones). However, if the construction of sound barriers is proposed under Mitigation Measure NV-4, SANBAG would require a TCE in order to construct the sound barriers. This would result in a temporary occupancy of the property. Through the implementation of Mitigation Measures LU-1 and TR-1, issues related to access would be minimized such that the temporary occupancy is considered minimal and no use would occur. This determination is supported by the short duration of construction, the magnitude of the Project changes would be minimal and limited to the existing fence line, and no permanent adverse impacts would result that could otherwise interfere with the protected activities, features, or attributes that qualify the elementary school for protection under Section 4(f).

Constructive Use. Operational noise generated by the Project would be avoided through the implementation of quiet zones as proposed under Mitigation Measure NV-3. However, if quiet zones are not adopted by the City of San Bernardino, then the construction of sound barriers (NV-4) would be required to mitigate operational noise. At its closet point, the sound barrier would be over 30 feet from the northwestern corner of the school in the vicinity of a sand-filled play area with slide and jungle gym (Figure 3.12-3). The overall integrity and characteristics of the property that convey architectural significance would not be compromised. Based on these considerations, the protected activities, features, or attributes that qualify this resource for protection under Section 4(f) would not be substantially impaired. Further, with the implementation of Mitigation Measures VQA-3 and VQA-4, any potential visual impacts resulting from the sound barriers would be minimized. No constructive use of the resource would occur.

Determination. Based on the analysis above, if quiet zones are constructed, the Build Alternatives would not result in a direct use, temporary occupancy, or constructive use of the Victoria Elementary School. If sound barriers are required, through the implementation of

Mitigation Measures LU-1, TR-1, CUL-1 and NV-1, the temporary occupancy resulting from construction would be minor in extent and no use would occur. With sound barriers in place, no constructive use would result. The direct use resulting from the replacement of the existing fence with the sound barrier is considered de minimis. SHPO concurred with this determination with the implementation of Mitigation Measure NV-3 on August 14, 2014 (see Appendix M). However, if quiet zones are not implemented, this finding remains subject to further consultation with SHPO.

Second Baptist Church

The Second Baptist Church is located at 420 East Stuart Avenue and serves the African-American community in Redlands and has existed since 1892. The Second Baptist Church building is separated from SANBAG's ROW by a paved surface parking area to the south of the building that provides parking for church patrons. Section 3.12 provides additional detail on this historic property.

Application of Section 4(f) Criteria for Use. The Second Baptist Church is a NRHP-eligible historical property and, therefore, is considered a Section 4(f) resource. Track improvements in conjunction with the potential for sound barriers (or walls) may result in a Section 4(f) use. Each of the Section 4(f) use types are considered further below.

Direct Use. The Project is located a sufficient distance from the Second Baptist Church such that it would not directly alter the building's distinctive physical or historical characteristics. To address Project operational noise, SANBAG is proposing quiet zones (NV-3) through the installation of enhanced safety measures at 7th and Church Streets in conjunction with the closure of 9th Street. This mitigation option is referred to as Noise Mitigation Option 1 in the Cultural Resources TM and is preferred by SANBAG over the remaining three options under consideration With the implementation of quiet zones, no direct use of the church property would occur, including no change in ownership. Hence, with the adoption of quiet zones, the Build Alternatives would have no direct use of this resource.

If quiet zones are not implemented, a sound barrier (Mitigation Measure NV-4) would be required to mitigate operational train noise. Three optional sound barrier configurations are available to minimize noise from passing trains. As described in Section 3.12 and the Cultural Resources TM (Appendix M), these include Noise Mitigation Options 2, 3, and 4. Noise Mitigation Option 2 is the preferred sound barrier configuration and would consist of a 305-foot sound barrier along the northern edge of SANBAG's ROW, just south of the church, and across 9th Street. As shown in Figure 3.12-4, the sound barrier would be located 60 feet from the rear of the church and within SANBAG's ROW. Hence, even though temporary construction activities would extend onto the southern edge of the church property, no property acquisition or displacement of existing improvements would occur. For these reason, no direct use would result.

However, if the closure of 9th Street is not possible, Noise Mitigation Options 3 and 4 could be implemented to address train noise. Noise Mitigation Option 3 would consist of a combination of noise reduction measures including a sound barrier and building insulation for the southern and southeastern portions of the church (Figure 3.12-5). Under this option, the sound barrier would be 215 feet in length, ending at the western edge of 9th Street. The installation of build insulation at the church would be performed in coordination with the property owner and SHPO following the Secretary of Interior's Standards for the treatment of historic properties such that the protected activities, features, or attributes that qualify this resource for protection under Section 4(f) would not be substantially impaired. These measures combined with Mitigation

Measures CUL-2a and CUL-2b would both effectively reduce noises levels while minimizing alterations to the church's historic setting such that the no direct use would result under Section 4(f).

Optionally, Noise Mitigation Option 4 would avoid any direct alteration to the church structure through the installation of noise insulation (and HVAC) through the extension of the sound barrier north along eastern perimeter of the church property (see Figure 3.12-6). To avoid encroaching into the church property, the sound barrier under this option would be constructed within the roadway ROW for 9th Street. To avoid blockage of an existing driveway that provides access to the church's rear parking lot, a solid horizontally sliding gate would be installed to preserve access from 9th Street (see Figure 3.12-6). No property acquisition would be required to facilitate these improvements. These measures combined with Mitigation Measure CUL-2a would both effectively reduce noises levels while minimizing alterations to the church's historic setting. Given that the protected activities, features, or attributes that qualify this resource for protection under Section 4(f) would not be substantially impaired following construction of the improvements, no direct use would result.

Temporary Occupancy. Construction of the Build Alternatives and Design Options would occur adjacent to the church site and would result in traffic disruptions as part of the closing of 9th Street, construction related noise, and, if applicable, a TCE would be required to construct sound barriers. To address issues related to temporary access disruptions, SANBAG is proposing the implementation of Mitigation Measures TR-1 and NV-2. These measures would provide the required advanced notice of construction activities along with a traffic control plan to minimize disruptions to existing circulation patterns. Similarly, with the implementation of Mitigation Measures NV-1 and NV-2, issues related to construction noise would be minimized. With the implementation of quiet zones, no temporary occupancy would occur.

If quiet zones are not adopted by the City of Redlands at 7th Street and Church Street, operational rail noise would require the construction of sound barriers (Mitigation Measure NV-4), which would consist of a sound barrier along the property's southern perimeter (Noise Mitigation Options 2, 3, and 4) and, if necessary, the eastern perimeter (Noise Mitigation Option 4). Under Noise Mitigation Options 2, 3, and 4, the configuration of the sound barrier would require a TCE of approximately 825 square feet along the southern church boundary to facilitate construction. This would result in a temporary occupancy of the property. Following construction, no property acquisition would be required. Although this would be considered a temporary occupancy, the occupancy is minimal and no use would occur because there would not be a change in ownership, the magnitude of change would be limited to the southern and western perimeters of the property, and the church structure would be unchanged in the post-construction condition.

Constructive Use. With the operation of trains along the railroad corridor, ambient noise levels would increase up to 66 dBA (Ldn) at the church (see Appendix F). However, with the implementation of Mitigation Measure NV-3, the adoption of quiet zones at 7th Street and Church Street, operational noise levels would be minimized such that it is unlikely that protected activities, features, and attributes that qualify this resource for protection under Section 4(f) would be substantially impaired. In contrast, if quiet zones are not adopted by the City, the implementation of Mitigation Measure NV-4 would be required, which could negatively affect the property's integrity of setting and feeling. For this reason, the implementation of Mitigation Measure CUL-2a is proposed to provide exterior aesthetic treatments and/or landscaping to minimize the visual impact of the sound barriers. Similarly, if noise insulation improvements are required, the implementation of Mitigation Measure CUL-2b would ensure that the improvements maintain the church's historic integrity and setting. Based on these circumstances, the protected activities, features, or attributes that qualify this resource for protection under Section 4(f) would not be substantially impaired. No constructive use of the resource would occur.

Determination. With the implementation of quiet zones (Noise Mitigation Option 1), the Build Alternatives would result in no direct use, temporary occupancy, or constructive use of the church property. Based on the analysis above, the implementation sound barriers under Noise Mitigation Options 2, 3, and 4 would not result in a direct or constructive use of the Second Baptist Church. With the implementation of Mitigation Measures LU-1, TR-1, CUL-1 and NV-1, temporary occupancies associated with construction are minimal and do not constitute a use. SHPO concurred with this determination with the implementation of Mitigation Measure NV-3 on August 14, 2014 (see Appendix M). However, if quiet zones are not implemented, this finding remains subject to further consultation with SHPO.

Redlands Lawn Bowling Club

The Redlands Lawn Bowling Club is located at the southeast end of Sylvan Park in Redlands. It consists of a large grass green for lawn bowling and three structures set at the north end of the lawn as described in Section 3.12. Grass lawn, mature trees, and mature shrubs surround the perimeter of the bowling green (see Figure 3.12-7). Section 3.12 provides additional description on this historic property.

Application of Section 4(f) Criteria for Use. The Redlands Lawn Bowling Club is a NRHP-eligible historical property and, therefore, is a Section 4(f) resource. Track and roadway improvements at Park Avenue in conjunction with the potential for sound barriers (or walls) would have the potential to result in a use. Each of the Section 4(f) use types are considered further below.

Direct Use. The Project does not involve any activities that would directly alter the distinctive physical or historical characteristics of the lawn bowling club portion of Sylvan Park. If quiet zones are implemented as proposed under Mitigation Measure NV-3, this resource would be avoided by the Project and no direct use would result. However, if quiet zones are not implemented and the construction of sound barriers (NV-4) becomes required, a sound barrier would be required along the southern border of the Lawn Bowling Club. If constructed, the sound barrier would replace the existing vegetation and chain link fence that borders the lawn bowling area on its south end; thus, displacing the existing improvements. However, because replacement of the fence would occur with SANBAG's ROW and no reduction in the lawn bowling area would result, no direct use would occur.

Temporary Occupancy. Similar to the discussion for Sylvan Park, improvements along the southern border of the Lawn Bowl Alley would be required to facilitate construction of the Built Alternatives (see Figure 3.12-7). The Lawn Bowling Alley is located at the southwest corner of the park. The improvements would result in constrained access along Park Avenue, construction related noise, and potentially frontage improvements that may include a sound barrier. A TCE would be required to facilitate these improvements, which would result in a temporary occupancy. Issues related to access and temporary construction-related noise would be addressed through the implementation of Mitigation Measures TR-1, NV-1, and NV-2. With the implementation of these measures, the temporary occupancy would be minimal and no use would result because there would be no change in ownership, the magnitude of change would be limited to the southern perimeter of the resource, and the lawn bowling area would be unchanged in the post-construction condition.

Constructive Use. Similar to the discussion for Sylvan Park, the recreational use of the Redlands Lawn Bowling Club would likely be affected by train operations and the associated increase in ambient noise levels. Additionally, the mitigation options available to reduce noise may have indirect visual impacts. These two issues are considered further below.

Noise. Similar to the discussion for Sylvan Park, the operation of passenger trains in close proximity to the lawn bowling area would increase ambient noise levels up to 68 dBA (Leq) without mitigation (see Appendix H). With the implementation of quiet zones, as proposed in Mitigation Measure NV-3, noise levels would be reduced to 63 dBA (Leq). However, since SANBAG cannot guarantee the adoption of quiet zones by the City of Redlands; if implementation of Mitigation Measure NV-3 is not feasible, SANBAG would implement Mitigation Measures NV-4, NV 5, and NV-6. With the implementation of one or more of these measures, Project-related operational noise would not substantially impair the protected activities, features, and attributes of this resource. Therefore, no constructive use would occur.

Visual Quality and Aesthetics. Beyond long-term noise-related effects, the indirect effect of constructing a 12-foot high sound barrier per Mitigation Measure NV-4, if quiet zones are not adopted, would be a dominant, visually intrusive element in an otherwise pastoral landscape; similar to the effects on the park in general. The placement of sound barriers at this location would require a TCE along the edge of the Lawn Bowling Alley to enable for construction and would represent a new visual element that would extend up to 12 feet in height along the southern and eastern perimeter of the Redlands Lawn Bowling Club (see Figure 3.12-5). The barrier would extend approximately 500 feet west from the southeast corner of Sylvan Park to the park's southern entrance. It would also extend approximately 210 feet north from the park's southeast corner to form a large "L." The lawn bowling portion of Sylvan Park is set back from the east side of the property by a 75-foot buffer of lawn and mature trees. However, the south end of the bowling green abuts the property line at Redlands Lawn Bowling Club Drive. The placement of a sound barrier at this location would require the replacement of the shrubbery-covered south fence. However, through the implementation of Mitigation Measures LU-1, VQA-3, VQA-4, and CUL-2a, the protected activities, features, or attributes that qualify this resource for protection under Section 4(f) would not be substantially impaired. No constructive use of the resource would occur.

Determination. If quiet zones are implemented, the Build Alternatives would not result in a direct use, temporary occupancy, or constructive use of the Redlands Lawn Bowling Club. Based on the analysis above, if sound barriers are required, a temporary occupancy would be required along the southern edge of the Lawn Bowling Club; however, all work would be contained within SANBAG's ROW and following construction no use would occur. With the installation of sound barriers in conjunction with aesthetic treatments as proposed under Mitigation Measures VQA-3, VQA-4, and CUL-2a, the Build Alternatives would not result in a constructive use of the Redlands Lawn Bowling Club. Since the sound barrier would be replace an existing chain link fence and would be constructed with SANBAG's ROW, no direct use would result. SHPO concurred with this determination with the implementation of Mitigation Measure NV-3 on August 14, 2014 (see Appendix M). However, if quiet zones are not implemented, this finding remains subject further consultation with SHPO.

SHPO Coordination and Consultation

The historic preservation review process mandated by Section 106 of the NHPA serves as the Section 4(f) resource correspondence for the Depot. As such, on August 24, 2012, a letter was sent to SHPO initiating formal consultation for cultural, archaeological, and historical resources and to delegate Section 106 consultation responsibility to SANBAG (see Appendix O, Section 4(f) Correspondence). In a meeting held on October 17, 2012, FTA and SANBAG consulted with SHPO to discuss the Project and to determine the Section 106 identification effort. On November 29, 2012, SANBAG sent a formal letter requesting SHPO's approval of the APE. Also on November 29, 2012, FTA consulted with SHPO on the use of a streamlined methodology for determining architectural resources. SHPO sent a letter to FTA and SANBAG on January 14, 2013 concurring with the streamlined approach to determining architectural resources.

On March 15, 2013, SANBAG sent a formal letter including a hardcopy map of the updated APE that more clearly demonstrates the inclusion of historical properties (in their entirety) within the APE per SHPO's request. On April 24, 2013, SHPO concurred with the revised APE. On June 4, 2013, SHPO approved the archaeological testing plan for Redlands Chinatown and Redway House. SANBAG provided a preliminary draft of the Cultural Resources TM to SHPO for review and comment on August 20, 2013. SHPO provided comments on the preliminary draft Cultural Resources TM on October 9, 2013. An updated Cultural Resources TM (see Appendix M) and response letter was sent on July 28, 2014 in response to SHPO's comments. On August 14, 2014, SHPO concurred that the Project would have no adverse effect to historic properties. SHPO also concurred that the segment of the Mill Creek Zanja within the APE is not eligible to the NRHP due to lack of integrity and setting. SHPO concurred with the NRHP-eligibility determinations for the Redlands Lawn Bowling Alley, the Second Baptist Church, and Victoria Elementary School. SHPO concurred with the Project's findings of effect as presented in Section 3.12.

3.16.4 Archaeological Resources

The Cultural Resources TM (Appendix M) concludes the Build Alternatives and Design Options would not result in an adverse effect since archaeological resources were not detected within the APE or those resources detected lacked integrity (see Table 3.12-5). Based on the findings of the Cultural Resources TM (Appendix M), no archaeological resources were detected at the Redway House during sub-surface testing within SANBAG's ROW. Portions of the Mill Creek "Zanja" to the west of Division Street were determined to lack integrity due to pre-existing alterations. Although isolated resources were encountered within Redlands Chinatown during sub-surface testing, these resources were found to lack integrity. Nonetheless, construction-related ground-disturbing activities could encounter undiscovered archaeological resources. Any discovery of archeological resources during construction would be evaluated to determine whether preservation in place is warranted. The determination and treatment of the resource would be coordinated with the SHPO. Based on these circumstances, none of the archaeological sites listed in Table 3.12-5 within the APE for the Build Alternatives are considered Section 4(f) properties because they are not listed or eligible for listing to the NRHP, or would warrant preservation in place. Therefore, Section 4(f) does not apply to these resources.

3.16.5 Consultation and Coordination

SANBAG has consulted with the local jurisdictions to ensure participation in the planning process for the Project. SANBAG has been in communication with the City of Redlands, City of San Bernardino, San Bernardino County Parks and Recreation Department, Santa Ana Watershed Project Authority, and the Redlands Unified School District regarding the potential use of Section 4(f) resources. Additionally, SANBAG and FTA consulted with SHPO for cultural and historic properties that would be subject to potential use. SANBAG has initiated consultation with appropriate tribes pursuant to tribal consultation requirements of Senate Bill (SB) 18. Please refer to Chapter 6, Public and Agency and Outreach for details regarding consultation and coordination occurring as part of the Project.

Section 4(f) correspondence with the respective agencies or owners of identified resources, in addition to outreach letters to the SHPO, are included in Appendix O of this EIS/EIR.

3.17 ENVIRONMENTAL JUSTICE

This section provides an evaluation of potential effects on environmental justice populations within the Study Area and larger Planning Area (see Section 3.2, Land Use, Planning, and Communities), as a result of the implementation of the Build Alternatives and Design Options. To support this evaluation, this section includes a discussion of applicable federal environmental justice regulations and guidelines, describes the methods used in defining environmental justice (EJ) populations[1], and identifies general socioeconomic indicators in the Planning Area. Based on these considerations, this section provides an analysis of whether potential environmental effects would be disproportionately high and adverse to EJ populations when compared to non-EJ populations within the Planning Area.

3.17.1 Methods for Defining Environmental Justice Populations

The analysis in this section was developed in accordance with the DOT Order 5610.2 and the CEQ *Environmental Justice – Guidance Under the National Environmental Policy Act.* DOT Order 5610.2(a) defines a minority person as any individual who is a member of any of the following population groups: American Indian and Alaska Native, Asian American, Native Hawaiian and Other Pacific Islander, Black or African American, or Hispanic or Latino. According to the CEQ guidelines, a minority population is present in a Study Area and larger Planning Area if the minority population of the affected area exceeds 50 percent.

Under the same guidelines, a low-income population exists if the Study Area or larger Planning Area is composed of 50 percent or more people living below the poverty threshold, as defined by the U.S. Census Bureau, or if 50 percent or more households earn 80 percent or less than the median household income. To ensure the full inclusion of potential low-income populations, this analysis defines low-income populations based on 50 percent or more households earning 80 percent or less of the median household income in the City in which they are located; instead of the HHS poverty guidelines. This threshold is particularly relevant to Southern California in that it allows for the capturing of low-income populations beyond those simply below the poverty level, yet making substantially less than the median household income.

Given that the Study Area encompasses two separate municipalities, the cities of San Bernardino and Redlands, these two jurisdictions were considered the most appropriate geographic unit for the completion of the assessment. For each jurisdiction, 2010 U. S. Census demographic data was generated at the census block group level and income data was produced at the census tract level. For each census block group, minority populations within the Study Area were determined through the comparison of demographic data for each block group to that of the general population for the respective cities. To identify low-income populations within the Planning Area, household income figures were analyzed for census tracts intersecting the Planning Area to determine the concentration or percentage of households making 80 percent or less of the median household income relative to the cities where they are located. In instances where a census tract crosses multiple cities, the median household income of the city where the majority of the census tract is located was used to determine if the tract classifies as a low-income population.

[1] EJ populations broadly refer to low-income, minority, and/or combined low-income and minority populations.

3.17.2 Regulatory Framework

Federal

Executive Order (EO) 12898

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of agency programs, policies, and activities on minority populations and/or low-income populations (collectively "EJ" populations).

The guiding principles for environmental justice are summarized below:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and/or low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority populations and/or low-income populations.

Department of Transportation Order 5610.2(a)

In April 1995, the U.S. Department of Transportation issued Order 5610.2(a) to *Address Environmental Justice in Minority Populations and Low-Income Populations* to fulfill the environmental justice policy objectives laid out in EO 12898. In May 2012, DOT issued an updated internal DOT Order 5610.2(a). The DOT Order reaffirms DOT's commitment to environmental justice and clarifies certain aspects of the original order, including the definitions of "minority" populations in compliance with the Office of Management and Budget's Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity of October 30, 1997. The revisions affirm the importance of considering environmental justice principles as part of early planning activities in order to avoid disproportionately high and adverse effects on EJ populations.

The DOT Order sets forth steps to prevent disproportionately high and adverse effects to EJ populations through environmental justice analyses conducted as part of Federal transportation planning and NEPA provisions.

DOT Order 5610.2(a) defines a minority person as any individual who is a member of any of the following population groups: American Indian and Alaska Native, Asian American, Native Hawaiian and Other Pacific Islander, Black or African American, or Hispanic or Latino. Low-income is defined as a person whose median household income is at or below the Department of Health and Human Services poverty guidelines.

FTA Circular 4703.1 Environmental Justice Policy Guidance for FTA Recipients

FTA's Environmental Justice Circular 4703.1 became effective on August 15, 2012. This circular was issued to address the intent of EO 12898 by incorporating EJ principles into plans, projects, and activities that receive funding from FTA. The new circular is meant to ensure that FTA funding recipients (i.e., SANBAG) avoid, minimize, or mitigate disproportionately high and adverse health and environmental effects, including social and economic effects, on minority and low-income populations.

Department of Health and Human Services Poverty Guidelines

Following the Office of Management and Budget's Statistical Policy Directive 14, the U.S. Census Bureau uses a set of income thresholds that vary by family size and composition to determine poverty status. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. Each person or family is assigned one out of 48 possible poverty thresholds. The official poverty thresholds do not vary geographically, but they are updated for inflation using the Consumer Price Index. Low-income populations are also defined by the Department of Health and Human Services (HHS) poverty guidelines. The poverty guidelines, sometimes referred to as the "federal poverty level," are issued each year in the Federal Register by the HHS and are a simplification of the poverty thresholds for use for administrative purposes (e.g., for determining financial eligibility for certain federal programs). The HHS poverty guidelines for 2012 are shown in Table 3.17-1. Many government aid programs use a different poverty measure, the HHS poverty guidelines, or multiples thereof.[2] However, as described in the methods for determining low-income populations in the Planning Area, the use of poverty HHS guidelines, especially in California, are generally not as inclusive as the use of the 80 percent of median household income or lower threshold.

Table 3.17-1. 2012 Poverty Guidelines for the 48 Contiguous States

Persons in Family/Household	Poverty Guideline
1	$11,170
2	$15,130
3	$19,090
4	$23,050
5	$27,010
6	$30,970
7	$34,930
8	$38,890

Source: U.S. Department of Health and Human Services 2012.
Note: For families/households with more than eight persons, add $3,960 for each additional person.

3.17.3 Affected Environment

Ultimately, environmental justice determinations are made based on effects not population size (FTA 2012). To promote a thorough consideration of environmental justice throughout the NEPA review process, it is important to determine where EJ populations are present within a geographic area that is likely to experience adverse effects. The Planning Area encompasses a total of 14 census tracts along the 9-mile railroad corridor from the City of San Bernardino to the City of Redlands (see Section 3.2, Land Use, Planning, and Communities) and is further divided into 48 census block groups. As mentioned in the methodology, the EJ populations within the Study Area and larger Planning Area are defined by minority populations delineated at the census block group level and low-income populations delineated at the census tracts level. Table 3.17-2 identifies the census tracts that comprise the Planning Area, the cities in which they are located, and provides an indication of whether the census tract contains an EJ population.

[2] http://www.census.gov/hhes/www/poverty/about/overview/measure.html

Table 3.17-2. Census Tracts in the Planning Area

Census Tract	City	Environmental Justice Population
49	San Bernardino	Yes (Low-Income and Minority)
57.01	San Bernardino	Yes (Low-Income and Minority)
58	San Bernardino	Yes (Low-Income and Minority)
72	San Bernardino	Yes (Minority)
124	San Bernardino	Yes (Minority)
73.06	Loma Linda	Yes (Minority)
78	Redlands, San Bernardino, Loma Linda	Yes (Low-Income and Minority)
80.02	Redlands	Yes (Low-Income and Minority)
81	Redlands	Yes (Low-Income)
82	Redlands	No
84.01	Redlands	Yes (Minority)
84.02	Redlands	No
84.03	Redlands	No
84.04	Redlands	Yes (Low-Income and Minority)

Minority Populations

In 2010, census data indicates that Whites and Hispanics made up the two largest populations within the City of San Bernardino, City of Redlands, San Bernardino County, and the State of California (see Table 3.17-3). The City of Loma Linda is an exception, with Whites and Asians making up the two largest populations. As provided in Table 3.17-3, people of Hispanic origin made up 44.9 percent of the Planning Area's population in 2010, which was 22.7 percent and 14.6 percent more than the Hispanic populations in the City of Loma Linda and City of Redlands, respectively. In contrast, the Planning Area contains 15.1 percent and 4.3 percent less people of Hispanic origin when compared to the City of San Bernardino and San Bernardino County, respectively.

As provided in Table 3.17-4, of the 48 block groups comprising the Planning Area, 32 block groups (16 in the City of San Bernardino, 2 in Loma Linda, and 14 in Redlands) qualify as minority populations because they contain minority populations greater than 50 percent (approximately 48,013 persons). Based on these demographic characteristics, and in considering the overall general demographics for each of the cities in the Planning Area, 95 percent of the census block groups in the City of San Bernardino, 18 percent of the census block groups in the City of Loma Linda, and 36 percent of the census block groups in the City of Redlands contain minority populations, respectively. As shown in Figures 3.17-1A and 3.17-1B, the 2010 census block group data indicates the entire Planning Area is composed of populations consisting of greater than 50 percent minorities, with the exception of a portion of the Planning Area in the City of Redlands from MP 8 to approximately MP 9.3, where minority populations comprise less than 50 percent of the total population.

Table 3.17-3. Race/Origin Characteristics

Characteristic	Census Tracts[1] (%)	City of San Bernardino (%)	City of Loma Linda (%)	City of Redlands (%)	San Bernardino County (%)	California (%)
Race						
White	56.6	45.6	47.8	69.0	56.7	57.6
Black or African American	8.3	15.0	8.7	5.2	8.9	6.2
American Indian and Alaska Native	1.2	1.3	0.4	0.9	1.1	1.0
Asian	8.8	4.0	28.3	7.6	6.3	13.0
Native Hawaiian, other Pacific Islander	0.3	0.4	0.7	0.3	0.3	0.4
Some other race	19.7	28.5	8.7	2.0	21.6	17.0
Two or more races	5.1	5.1	5.4	4.9	5.0	4.9
Origin						
Hispanic	44.9	60.0	22.2	30.3	49.2	37.6
Not Hispanic (One Race)	55.1	40.0	77.8	69.7	50.8	62.4
Minority						
Non-White	43.4	54.3	52.2	20.9	43.3	42.5
Poverty						
Individuals below poverty level	16.1	27.4	12.7	10.1	14.8	13.7
Families below poverty level	19.2	21.9	9.1	7.3	11.7	10.2

Source: US Census Bureau 2010.
Note: [1] This represents the average for all census tracts within the Planning Area.

Low-Income Populations

In 2010, census data indicates the percentage of individuals and families below the poverty level within the Planning Area was 16.1 percent and 19.2 percent, respectively. This was slightly higher than the City of Redlands, City of Loma Linda, San Bernardino County, and the State. The percentage of individuals and families below the poverty level within the Planning Area was slightly lower than the City of San Bernardino values (see Table 3.17-5).

Table 3.17-5 also identifies the median and mean income levels for census tracts within the Planning Area. In 2010, the median household income for the City of San Bernardino was $39,895, $56,112 for the City of Loma Linda, and $67,651 for the City of Redlands. Three of the five census tracts in the City of San Bernardino (census tracts 49, 57.01 and 58 in the western end of the Planning Area) have a lower mean and median income than census tracts 124 and 72 located in the southern portion of the City. Census tracts 78, 80.02, 81 and 84.04, located in the western portion of the City of Redlands show a lower mean and median income than census tracts 84.01, 84.02 and 84.03 located in the eastern end of the City. Generally, the mean and median income in the City of Redlands (and the Planning Area as a whole) increases from the west to the east.

Table 3.17-4. Minority Populations by Census Block Group 2010

Census Tract	Block Group	White	Minority	Total	Percentage Minority
City of San Bernardino					
49	Block Group 1	117	1,209	1,326	91%
	Block Group 2	102	1,807	1,909	95%
	Block Group 3	168	2,453	2,621	94%
	Block Group 4	115	1,619	1,734	93%
57.01	Block Group 1	252	897	1,149	78%
	Block Group 2	174	893	1,067	84%
58	Block Group 1	142	1,390	1,532	91%
	Block Group 2	73	1,380	1,453	95%
	Block Group 3	68	928	996	93%
72	Block Group 1	462	1,357	1,819	75%
	Block Group 2	122	1,133	1,255	90%
	Block Group 3	271	1,557	1,828	85%
	Block Group 4	334	1,562	1,896	82%
124	Block Group 1	182	1,491	1,673	89%
	Block Group 2	74	967	1,041	93%
	Block Group 3	67	836	903	93%
Total		*2,723*	*21,479*	*24,202*	*88.7%*
City of Loma Linda					
73.06	Block Group 1	954	1,641	2,595	63%
	Block Group 2	976	2,288	3,264	70%
Total		*1,930*	*3,929*	*5,859*	*67.0%*
City of Redlands					
78	Block Group 1	573	841	1,414	59%
	Block Group 2	965	1,036	2,001	52%
	Block Group 3	632	865	1,497	58%
80.02	Block Group 1	203	503	706	71%
	Block Group 2	113	652	765	85%
	Block Group 3	112	824	936	88%
	Block Group 4	292	1,281	1,573	81%
	Block Group 5	173	1,377	1,550	89%
	Block Group 6	329	1,397	1,726	81%
81	Block Group 1	540	256	796	32%
	Block Group 2	1,035	1,351	2,386	57%
82	Block Group 1	1,062	628	1,690	37%
	Block Group 2	1,216	227	1,443	16%
	Block Group 3	572	149	721	21%
	Block Group 4	917	376	1,293	29%

Table 3.17-4. Minority Populations by Census Block Group 2010

Census Tract	Block Group	White	Minority	Total	Percentage Minority
84.01	Block Group 1	759	1,095	1,854	59%
	Block Group 2	581	1,045	1,626	64%
	Block Group 3	1,466	1,263	2,729	46%
	Block Group 4	672	507	1,179	43%
	Block Group 5	1,640	925	2,565	36%
84.02	Block Group 1	546	403	949	42%
	Block Group 2	1,695	1,126	2,821	40%
	Block Group 3	842	409	1,251	33%
	Block Group 4	930	497	1,427	35%
84.03	Block Group 1	915	459	1,374	33%
	Block Group 2	1,238	442	1,680	26%
	Block Group 3	1,073	666	1,739	38%
	Block Group 4	685	355	1,040	34%
84.04	Block Group 1	459	546	1,005	54%
	Block Group 2	620	1,104	1,724	64%
Total		**22,855**	**22,605**	**45,460**	**50%**

Source: US Census Bureau 2010.

Table 3.17-5. Income by Census Tract 2010

Census Tract	Median Income	Mean Income	Percentage of Households Below Poverty Level
City of San Bernardino			
49*	$28,636	$33,965	34.1
57.01*	$14,521	$22,912	34.8
58*	$17,418	$27,949	42.5
72	$41,012	$54,781	21.9
124	$43,328	$45,557	10.4
City of Loma Linda			
73.06	$57,121	$67,053	2.3
City of Redlands			
78*	$51,380	$61,988	8.4
80.02*	$41,351	$46,710	23.7
81*	$39,018	$50,918	15.5
82	$56,025	$65,697	3.0
84.01	$70,104	$84,269	2.5
84.02	$83,140	$86,410	5.8
84.03	$88,085	$105,682	1.8
84.04*	$36,723	$41,319	19.1

Source: U.S. Census 2010
*Census Tracts with households earning 80% or less of the median household income in the City in which they are located.

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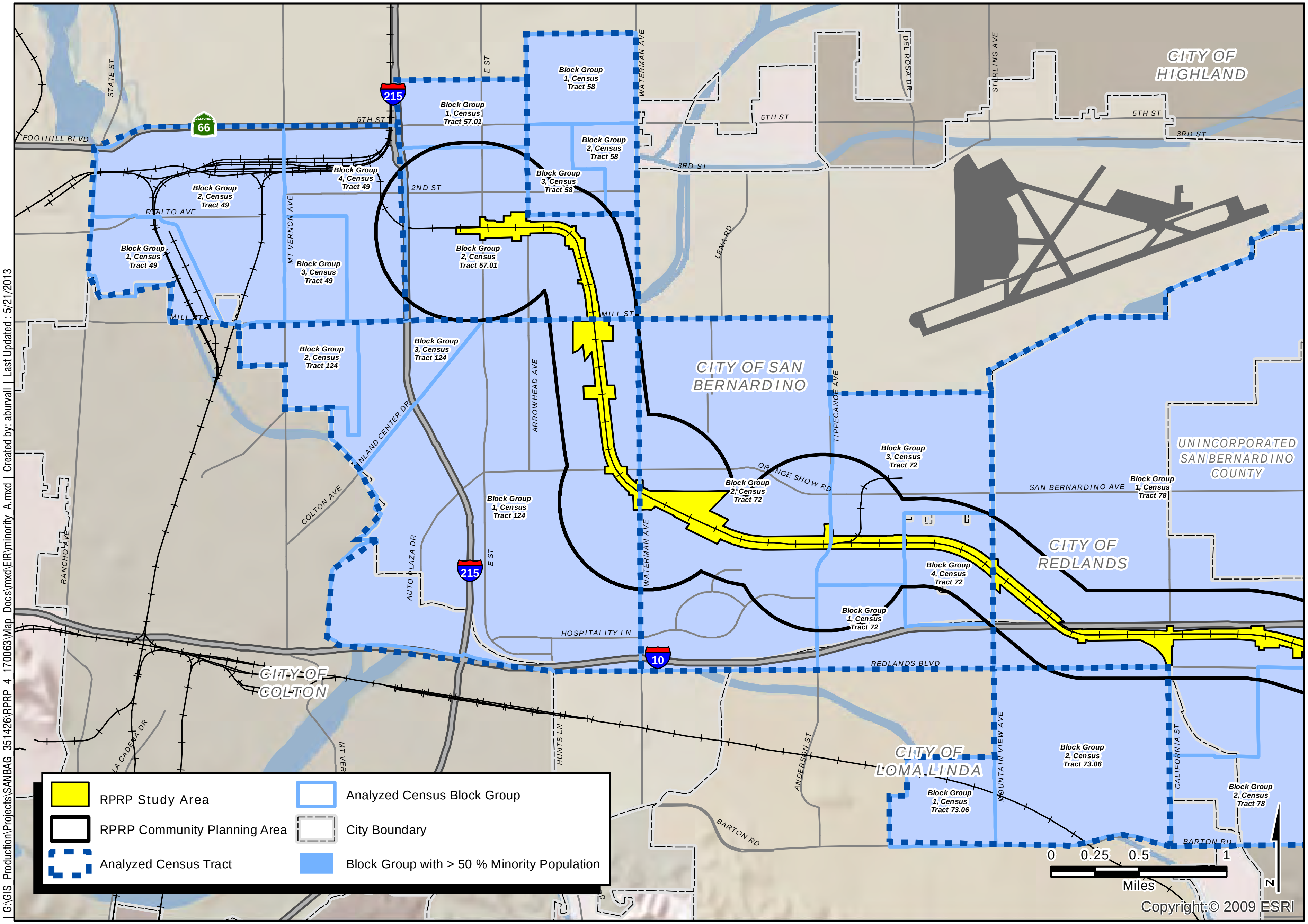

Minority Populations - Western Study Area

Figure 3.17-1A

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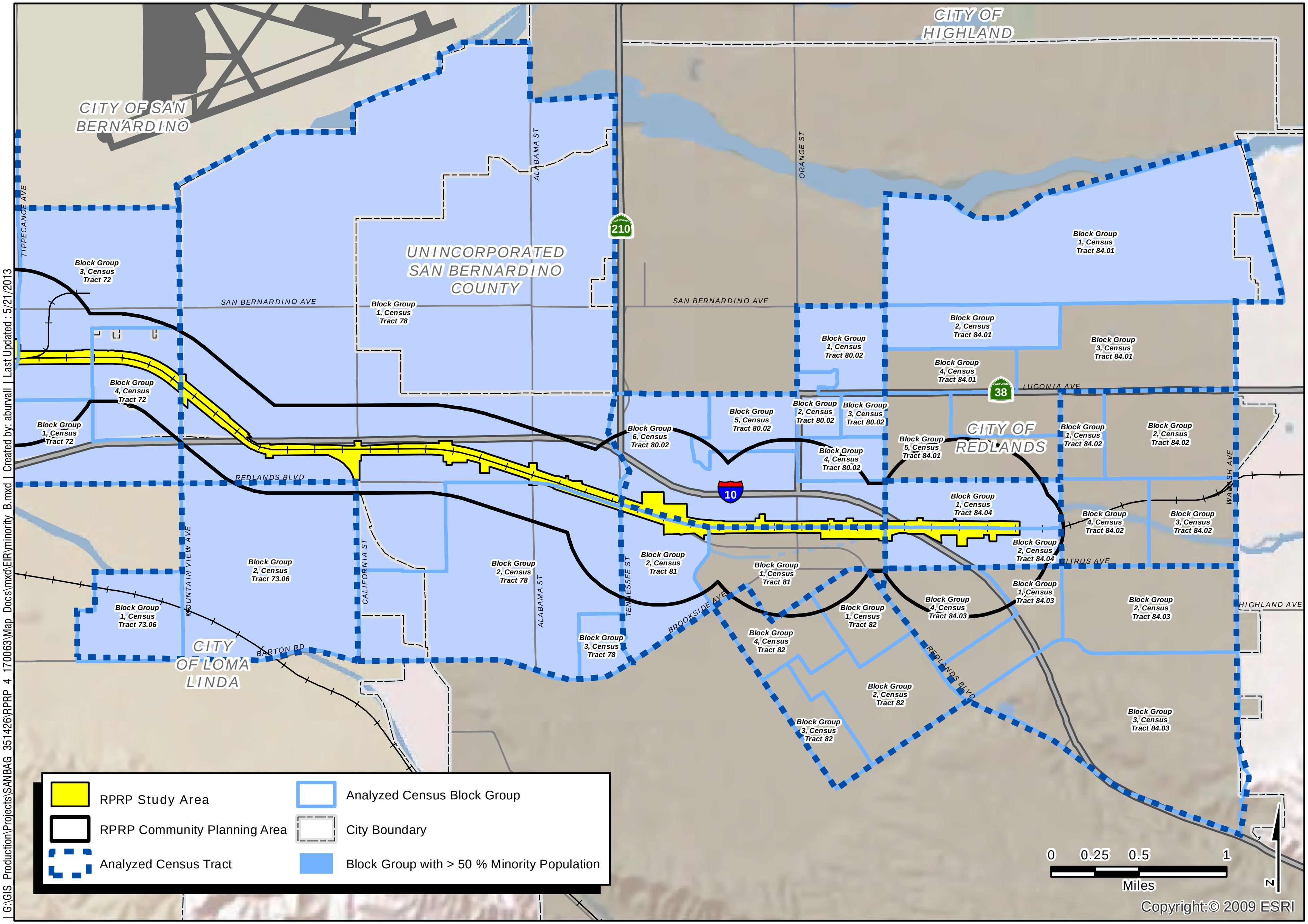

Minority Populations - Eastern Study Area

Figure 3.17-1B

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As shown in Figures 3.17-2A and 3.17-2B, of the 14 census tracts comprising the Planning Area, seven census tracts (three in the City of San Bernardino and four in the City of Redlands) contained 50 percent or more households earning 80 percent or less of the median household income for the City in which they are located. Based on this circumstance, the 80 percent of median household income metric is clearly more inclusive for defining low-income populations as opposed to poverty levels. In considering each of the cities in the Planning Area as a whole, 40 percent of the census tracts in the City of San Bernardino are considered low-income. Within the City of Loma Linda, 50 percent of the census tracts are considered low-income. For the City of Redlands, 33 percent of the census tracts are considered low-income.

Figures 3.17-3A and 3.17-3B illustrate the combined EJ populations, including minority, low-income, and combined low-income and minority populations, within the western and eastern portions of the Planning Area. Combined EJ populations reflect one or more minority census block groups within a larger low-income census tract. As shown in Figures 3.17-3A and 3.17-3B, EJ populations border the entire railroad corridor.

3.17.4 Environmental Impacts/Environmental Consequences

3.17.4.1 Effect Criteria

The Build Alternatives and Design Options would have an adverse effect on EJ populations if their implementation would:

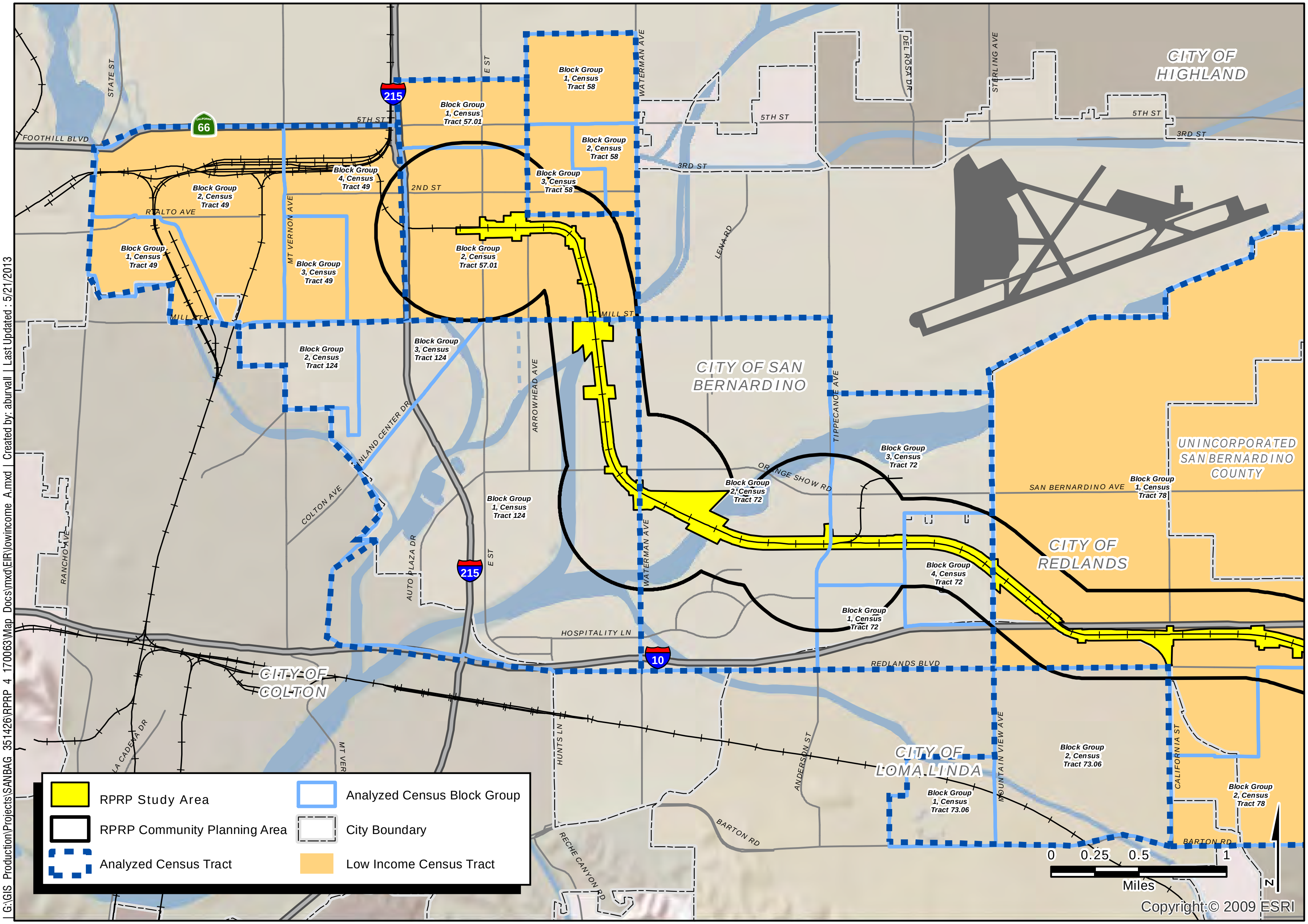
- Result in an adverse effect that is predominately borne by a minority population and/or a low-income population, or
- Result in an adverse effect that will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.

3.17.4.2 Methodology for Assessing Disproportionate Adverse Effects on EJ Populations

Race and income are socioeconomic characteristics critical to the consideration of a project's impacts on EJ populations. A disproportionately high and adverse effect on EJ populations is defined as an effect that is predominately borne by or would be suffered by an EJ population or that is appreciably more severe or greater in magnitude than adverse effects suffered by a non-EJ population. In general, the determination of disproportionately impacted EJ populations is done by analyzing the pattern of overall environmental and human health impacts in relation to identified areas of EJ populations. Adverse effects are the totality of significant individual or cumulative human health or environmental effects.

Executive Order 12898 directs Federal agencies to make environmental justice part of their mission through identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of Federal programs, policies, and activities on EJ populations. For FTA, this means following the three guiding principles of environmental justice:

- To avoid, minimize, and mitigate disproportionately high and adverse effects.
- To ensure the full and fair participation by all potentially affected communities.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.



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Low-Income Populations - Western Study Area

Figure 3.17-2A

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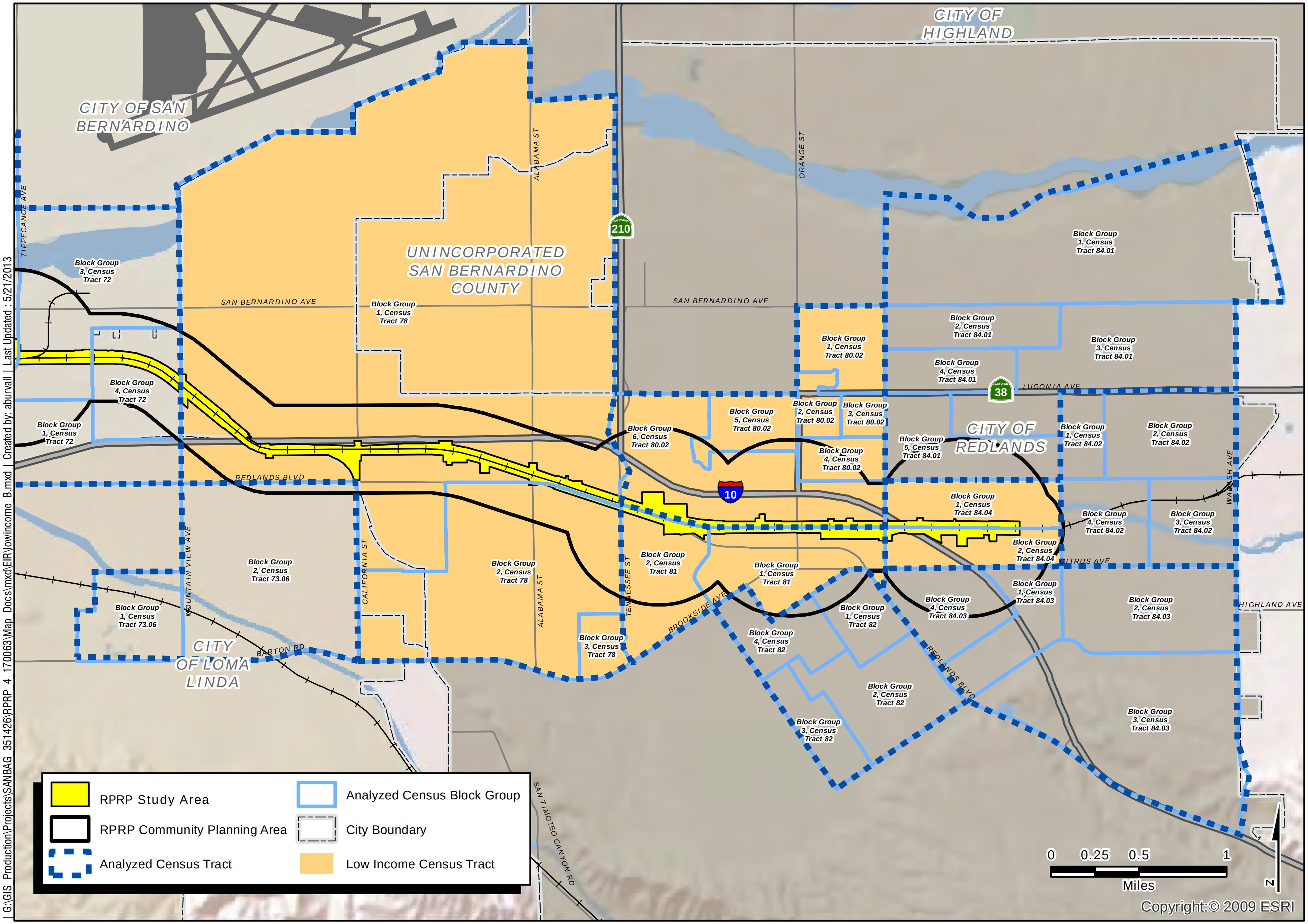

Low-Income Populations - Eastern Study Area

Figure 3.17-2B

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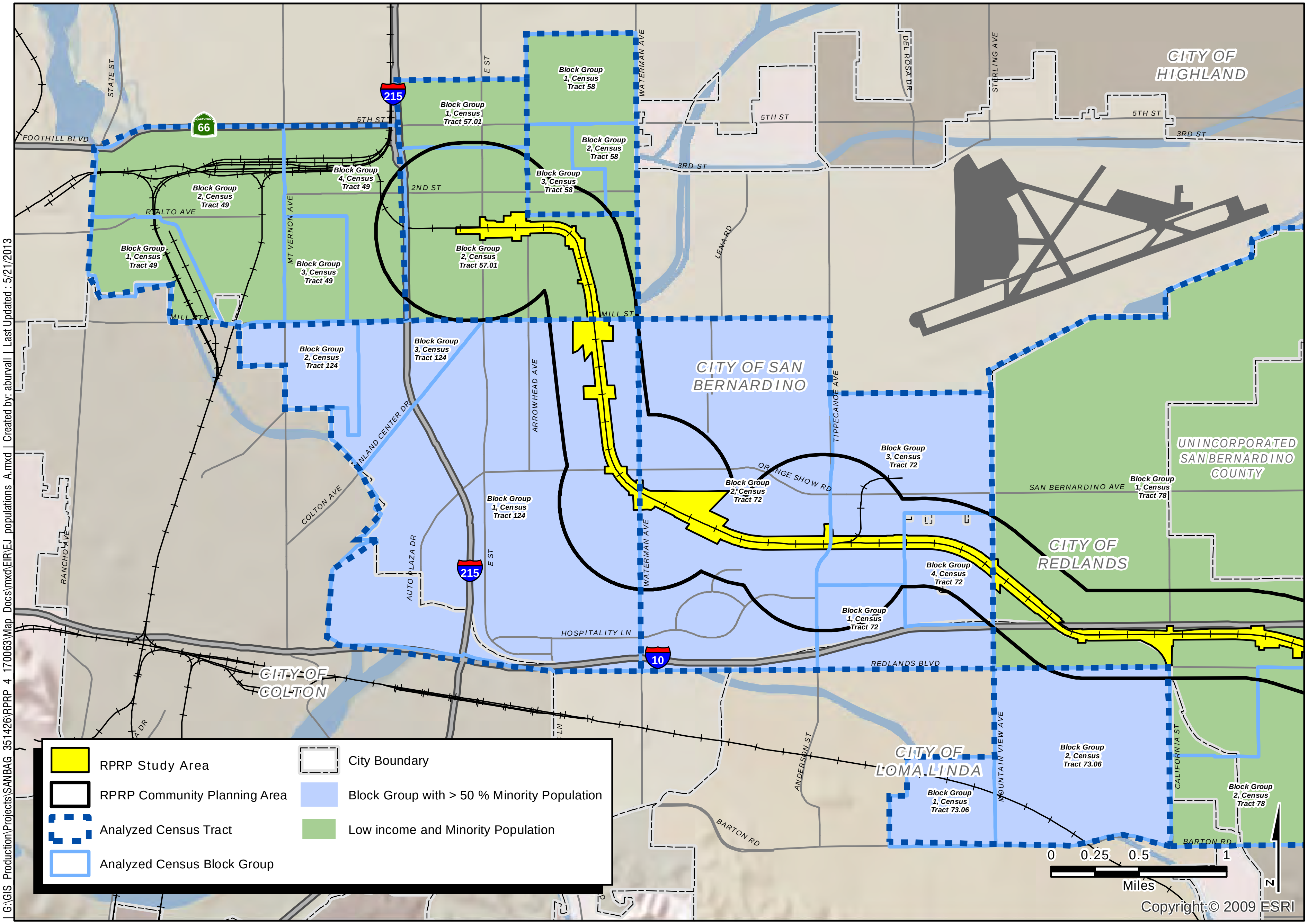

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Environmental Justice Populations - Western Study Area

Figure 3.17-3A

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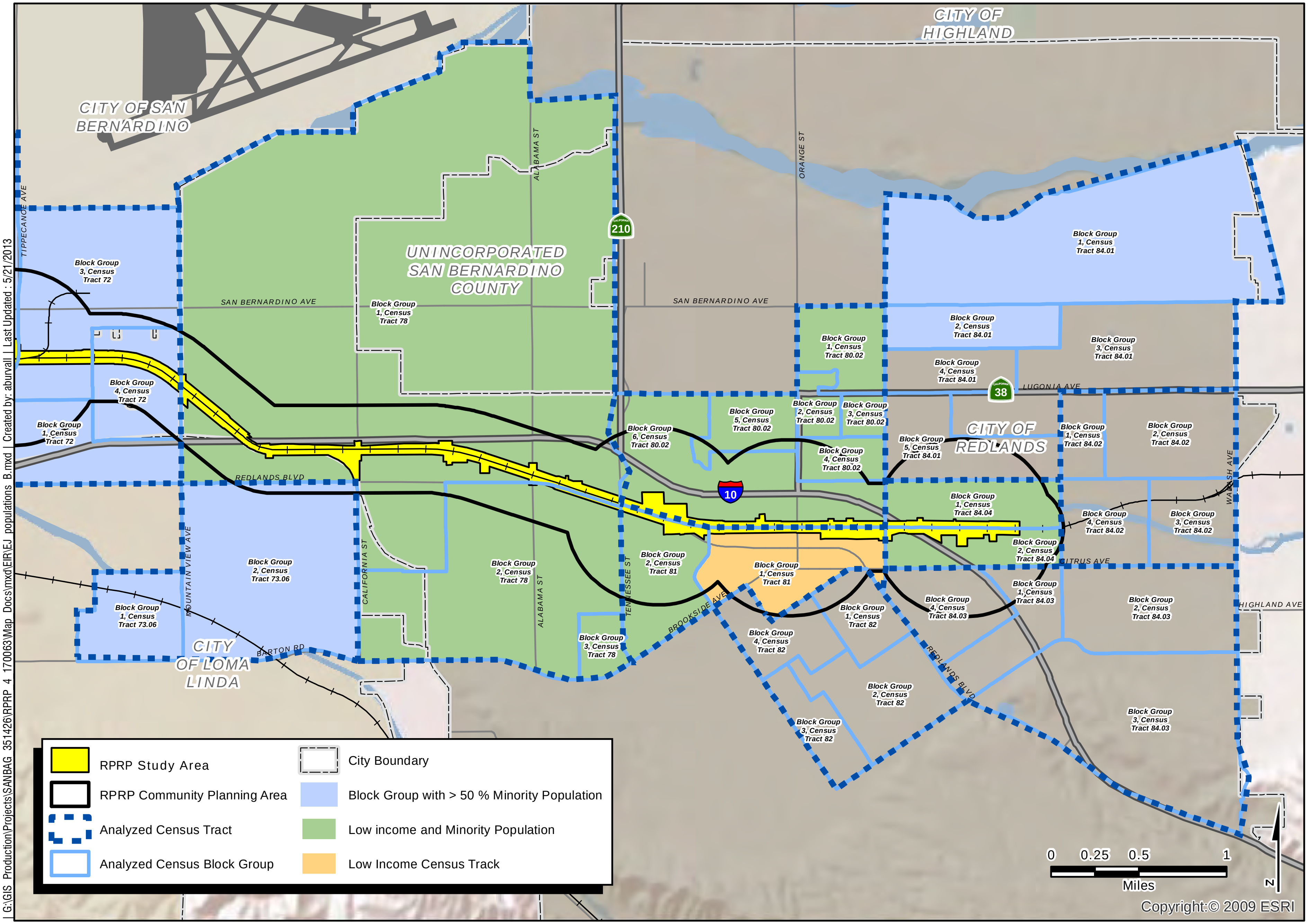

Environmental Justice Populations - Western Study Area

Figure 3.17-3B

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

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This assessment applied the following steps for analyzing the potential effects of the Project on EJ populations:

- The census tracts and block groups within the Planning Area were evaluated to determine the socioeconomic conditions of the communities along the railroad corridor (e.g., vacant properties, blight conditions, etc.).
- Environmental effects were analyzed to determine if they are adverse or beneficial to EJ populations. Where adverse effects are identified, the analysis considers if they could be avoided, minimized, or mitigated, and whether there are off-setting circumstances or benefits from the Project that should be recognized.
- The location and severity of impacts associated with the Build Alternatives and Design Options were evaluated to determine if adverse impacts (if any) on EJ populations would occur, and whether any effects were disproportionately high and adverse for any given EJ population. To determine whether Project-related environmental effects are disproportionate to EJ populations when compared to non-EJ populations, this analysis applies the city limits for the cities of San Bernardino, Redlands, and Loma Linda as the "unit" for comparison for each corresponding section of the Planning Area.

To address the Effect Criteria applied in the analysis, this assessment first identifies whether the Project would result in one or more adverse effects that would be predominately borne by a minority population, low-income population, or combined EJ population (Effect 3.17-1). As depicted in Figures 3.17-3A and 3.17-3B, EJ populations border the entire railroad corridor from San Bernardino to Redlands. As a result, adverse effects associated with the Project are likely to affect one or more of the EJ populations situated along the railroad corridor depending on their geographic extent.

To assess whether the adverse effects suffered by EJ populations are appreciably more severe or greater in magnitude than those suffered by non-EJ populations, this analysis considers whether the adverse effects identified in Effect 3.17-1 would result to greater than 50 percent of the total EJ population within each of the respective cities (Effect 3.17-2). Table 3.17-6 provides a comparison of the EJ populations located within the Planning Area and the total number of EJ populations (by census track and block group) within each City. As provided, the proportion of EJ populations within the Planning Area when compared to the total EJ population within each City does not exceed 50 percent with the exception of low-income populations within the cities of Redlands and Loma Linda. These proportions for each City's total EJ population are taken into consideration in Effect 3.17-2 for the determination of whether adverse effects associated with the Project are disproportionately high per FTA's guiding principals.

Table 3.17-6. Proportion of EJ Populations within Planning Area

City [1]	Total Census Tracts	Total Low-Income Census Tracts[2]	Low Income Census Tracts in Planning Area (percentage)	Exceed Threshold[3]
San Bernardino	42	17	3 (17.6%)	No
Redlands	12	4	4 (100%)	Yes
Loma Linda	4	2	1 (50%)	Yes
City	**Total Block Groups**	**Total Minority Block Groups[4]**	**Minority Block Groups in Planning Area (percentage)**	**Exceed Threshold**
San Bernardino	143	137	9 (6.7%)	No
Redlands	45	16	7 (43.7%)	No
Loma Linda	11	3	1 (33%)	No

1 Geographic unit applied for analysis.
2 Total number of low-income census tracts within each City.
3 Adverse effects would be predominantly borne by EJ communities when greater than 50 percent of the census tracts or block groups within each City are contained within the Planning Area.
4 Total number of minority census block groups within each City.

3.17.4.3 Environmental Effects Determined Not to be Adverse

ALTERNATIVE 1 - NO BUILD

As discussed in detail in Chapter 3 of this EIS/EIR, the No Build Alternative would result in no adverse effect for the following resource areas:

- Land Use, Planning, and Communities – Under the No Build, local communities and neighborhoods would likely not receive any of the desirable direct and indirect benefits of the Project such, as increased employment opportunities. Maintenance activities would not extend beyond SANBAG's ROW and, therefore no acquisition of private property would be required.
- Visual Quality and Aesthetics - Negligible changes to existing visual elements within the Planning Area are anticipated.
- Air Quality - Anticipated increased traffic congestion in the Planning Area and region would increase vehicle emissions; however, adverse air quality impacts would be borne by the entire region and all communities equally.
- Noise and Vibration - Periodic maintenance activities would be isolated to specific portions of the ROW at any one time and would be relatively short in duration and, therefore, would not result in adverse effects related to noise or vibration.
- Hazardous Waste and Materials - Existing conditions related to localized hazards, including the presence of hazardous materials and wastes, would remain unchanged.
- Economic and Fiscal Impacts - Economic vitality and employment characteristics would likely remain unchanged within the Planning Area and a continuation of pre-existing market conditions and trends unrelated to the Project.
- Safety and Security - Existing safety concerns (e.g., at-grade crossings) and security concerns (e.g., no lighting, trespassing, etc.) would continue to persist along the railroad corridor and no adverse effect on EJ populations would occur.

Based on this context, no disproportionately adverse effects associated with the abovementioned resource areas would occur to EJ populations.

BUILD ALTERNATIVES AND DESIGN OPTIONS

As discussed in detail in Chapter 3 of this EIS/EIR, the Build Alternatives and Design Options would not result in adverse effects on the following resource areas:

- Air Quality - Construction and operational activities associated with the Project would generate air pollutant emissions; however, these emissions would not exceed significance thresholds established by the SCAQMD, and would be controlled through SCAQMD's existing regulatory program(s).

Based on this context, no disproportionately adverse effects associated with the abovementioned resource areas would occur to EJ populations.

3.17.4.4 Assessment of Disproportionate Adverse Environmental Effects

EFFECT 3.17-1	**Result in Effects on Low-Income and/or Minority Populations.** Implementation of the Project would result in adverse effects that are predominantly borne by a minority population and/or a low-income population.

ALTERNATIVE 1 - NO BUILD

Direct, Indirect, and Cumulative Effects from Temporary Construction

Under the No Build Alternative, construction activities associated with maintenance of the existing tracks and bridges would occur along the railroad corridor incrementally over the foreseeable future (e.g., next ten years). These activities would be limited in geographic extent, duration, and generally confined to SANBAG's existing ROW. Nevertheless, these activities could occur at any location along the entire length of the railroad corridor and result in temporary disruptions in access, increased delay on affected roadways, and temporary construction noise. Based on the demographic characteristics of the Planning Area, which includes a combination of low-income and minority populations immediately adjacent to the railroad corridor, these adverse effects would be predominately borne by EJ populations.

Direct, Indirect, and Cumulative Effects from Operations

Under the No Build Alternative, the proposed improvements to facilitate passenger rail service between the City of San Bernardino and the University of Redlands in the City of Redlands would not be implemented. Without the Project, no new opportunities for increased pedestrian connectivity would be implemented. Unobstructed access across and/or along SANBAG's ROW would likely continue, thereby continuing to present safety concerns for pedestrians. Without the Project, low-income and minority populations in the Planning Area would not realize the potential benefits of improved regional public transit. Additionally, increased traffic congestion in the Planning Area could result in indirect impacts to the local roadway network and transit service, which in turn, could affect the mobility of transit-dependent populations (some of which are EJ populations). These adverse effects would be predominately borne by EJ populations situated along the railroad corridor.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Minority and low-income populations located within the Planning Area and in close proximity to the railroad would be subject to potential adverse effects during construction of the Project. These adverse construction-related effects, although temporary, could include noise and vibration, hazards and safety concerns, disruptions to traffic and circulation, temporary displacement of parking, land acquisitions and TCEs, and changes in local aesthetics and visual quality. In limited circumstances, even following the application of mitigation, these effects could remain adverse.

Construction would likely result in temporary closures and/or detours during construction activities, which could result in temporary increases in traffic congestion in the vicinity of the construction zone. The adverse effect would be concentrated along the railroad corridor and predominately borne by EJ populations distributed throughout the Study Area. However with the implementation of Mitigation Measure TR-1 (Prepare a Traffic Management Plan) as proposed in Section 3.3 Transportation, the adverse effects of temporary road closures, detours, and obstructions in access would be minimized or avoided.

The Project would directly affect a number of properties through full and partial acquisitions, thereby eliminating or reducing the ability of property owners to use their properties. As the Study Area is located entirely within and adjacent to areas with predominately low-income and minority populations, all affected property owners would have low-income or minority status. However, these affected property owners would be fully compensated for the amount of property acquired per the Uniform Relocation Assistance and Real Property Acquisition Policies Act and the California Relocation Act. Additionally, to further minimize the number of temporary construction easements and land acquisitions, Mitigation Measure LU-1 (Minimize Project Land Requirements and Comply with Federal and State Relocation Laws) as proposed in Section 3.2 Land Use, Planning, and Communities, would be implemented to reduce the Project's land requirements during final design thereby minimizing or avoiding these adverse effects.

As discussed in Section 3.6 Noise and Vibration, Mitigation Measures NV-1 (Employ Noise-Reducing Measures during Construction) and NV-2 (Prepare a Community Notification Plan for Project Construction) would reduce noise and vibration effects during Project-related construction, however, even with these measures, construction activities could exceed daytime and nighttime noise thresholds established by FTA. EJ populations border much of the length of the railroad corridor (except for Loma Linda; see Figure 3.17-3) and, therefore, adverse noise effects during construction would predominately borne by EJ populations. Although these effects would be temporary, construction-related noise would occur over the three-year duration of Project construction and could occur during all hours of the day and, therefore, would remain adverse even following the application of mitigation.

Other construction-related adverse effects may include concerns related to the release of hazardous materials or discovery of unknown hazardous material site(s). These adverse effects would be limited to the immediate vicinity of the railroad corridor, which as previously indicated is bordered by EJ populations. These potential adverse effects would be minimized or avoided through the implementation of Mitigation Measures HAZ-1 (Prepare and Implement a Construction Hazardous Materials Management Plan and Operational Hazardous Materials Business Plan), HAZ-2 (Pre-Demolition Investigation), HAZ-3 (Prepare Phase I and/or Phase II Environmental Site Assessment (ESA) for Indeterminate or High-Risk Sites), and HAZ-4 (Halt Construction Work) (see Section 3.10 Hazardous Waste and Materials).

Similarly, construction of the project is expected to result in temporary adverse effects to the local visual quality of the railroad corridor as a result of the placement of temporary fencing, tree and/or vegetation removal, and the presence of construction equipment. These adverse effects would be predominately borne by EJ populations. However, Mitigation Measures VQA-1 (Screening of Construction Staging Areas) and VQA-3 (Prepare a Tree Replacement Plan) would minimize these temporary adverse effects.

Direct Effects from Long-Term Operations

Project operations would include new passenger rail service and supporting activities that would result in potential adverse effects related to traffic circulation, noise and vibration, visual resources, and land use. These effects are analyzed throughout Chapter 3. In most instances, a majority of the adverse effects associated with the Project's operation would be minimized through the implementation of proposed mitigation measures or standard engineering practices. In limited instances, no mitigation is available or the applied mitigation would be ineffective in reducing the effect or is outside SANBAG's control to implement. Further consideration of these effects for specific resources is provided below in the context of the EJ populations potentially affected within the Study Area and, where appropriate, within the larger Planning Area.

Land Use and Planning

From a land use perspective, SANBAG's ROW is an established corridor within the Study Area, and adjacent land uses (e.g., residential, commercial and industrial) have been planned for or are already constructed adjacent to the railroad corridor. Given that a majority of the proposed improvements would occur within SANBAG's ROW, they would generally be compatible with established uses along the railroad corridor. However, in addition to elements proposed as part of the Project, additional mitigation requirements in the form of noise barriers may also be proposed. As described in Section 3.2, the presence of noise barriers would contribute to the division of established communities through the physical separation of the railroad ROW on one or both sides from adjacent land uses. Depending on whether quiet zones are or are not implemented at all of the locations proposed under Mitigation Measure NV-3 (Establish Quiet Zones), these indirect adverse effects could be distributed throughout the Study Area and adjacent to the railroad corridor. Given that EJ populations border the entire railroad corridor; these indirect adverse effects would be predominately borne by EJ populations.

Noise and Vibration

Operation of the Project would result in an increase in noise and vibration levels for residences located within close proximity of the rail corridor. As part of the mitigation measures proposed in Section 3.6, Noise and Vibration, Mitigation Measures NV-3, NV-4 (Construct Sound Barriers), NV-5 (Wayside Rail Lubrication), NV-6 (Use Ballast Mats, Resiliently Supported Ties, or Measures of Comparable Effectiveness on Portions of the Rail near Sensitive Receivers), and NV-7 (Provide Building Noise Insulation to Severe- and Moderate-Impact Residences) would avoid, minimize, or reduce adverse noise and vibration effects throughout the future operation of the Project. However, as discussed in Section 3.6, it is possible that one or more of these measures may be impractical to implement at one or more sensitive receptor locations due to other indirect impacts (e.g. physical division of existing communities) or is out of SANBAG's control to implement. As a result, long-term increases in the ambient noise environment could occur at one or more, undetermined locations, thereby resulting in an adverse effect that would be predominately borne by EJ populations bordering the railroad corridor.

Transportation and Safety

As discussed in Section 3.3, once operational in 2018, of the 38 intersections analyzed, four intersections located in an EJ community, would not operate at satisfactory LOS in the PM peak hour (LOS D or E; see Section 3.3). Additionally, the V/C for three intersections located in an EJ community, would exceed V/C thresholds, respectively (see Section 3.3). Although these intersections are already projected to operate poorly without the Project, further deterioration in LOS and V/C of intersections along the railroad corridor would be an adverse effect that would be predominately borne by EJ populations. With the implementation of Mitigation Measure TR-2 (Payment of Fair Share Fees for Roadway Improvements), potential adverse effect would be minimized or avoided.

Further, queuing impacts at intersections and at-grade crossings could interfere with local traffic patterns, including emergency response, and would be considered adverse without mitigation. The increase in train activity along the railroad corridor could also result in adverse effects to the residents located near the active railroad corridor, specifically related to pedestrian and bicycle safety. These adverse effects would be predominately borne by EJ communities situated adjacent to the railroad corridor. With the implementation of Mitigation Measures TR-3 (Approval from CPUC for Grade Crossings and Safety Measures), TR-4 (Recommended Pre-Signals for Queuing), and SS-1 (Develop Safety and Security Management Plan) as proposed in Section 3.15 Safety and Security, these adverse effects would be minimized or avoided.

Visual Resources and Aesthetics

Project improvements would not obstruct or degrade visual resources in the Study Area and, in general, Project-related facilities would blend with the character of existing development and the established railroad corridor. The Project would result in improvements to the existing railroad corridor and Project facilities would be of similar height and character as the existing structures in the surrounding area of the railroad corridor. However, localized changes in visual resources (e.g. new structures or fencing) or new sources of nighttime lighting could be perceived as adverse with these effects being predominately borne by EJ populations. With the implementation of Mitigation Measure VQA-2 (Enhance Exterior Appearance of Structural Facilities), VQA-3, and VQA-4 (Sound Barrier Screening and Surface Treatments), adverse effects associated with localized changes in visual character would be minimized.

However, as discussed in Section 3.4, sound barriers may be constructed along portions of the railroad corridor to mitigate for operational rail noise. The physical scale of sound barriers at sensitive receptor locations could create a distinct and significant aesthetic change to the community character of the immediate area and may result in an indirect adverse effect on adjacent land uses by disrupting existing viewsheds. This adverse effect would be minimized by implementing Mitigation Measure VQA-4 (Minimize Exterior Lighting in Adjacent Uses) to the extent possible through screening and other treatments to make the barriers more aesthetic in appearance. However, given the subjective nature of aesthetics and visual resources, the placement of these features could remain adverse. This indirect adverse effect would be predominately borne by EJ communities located adjacent to the railroad corridor.

Indirect Effects

The Project would result in an increase in train activity along the railroad corridor that may result in indirect adverse effects within the Planning Area, specifically related to aesthetics and land use. The western portion of the railroad corridor is used for active freight service and, therefore, some existing residents and business owners may already experience indirect effects from rail activities. However, portions of the railroad corridor east of Tippecanoe Avenue have not seen regular freight traffic in decades and, therefore, these areas would be the most sensitive to the operation of passenger trains. Additionally, the Project could indirectly encourage the intensification of land uses along the railroad corridor, which could result in other secondary effects and benefits that would be predominately borne by minority and low-income populations situated immediately adjacent to the railroad corridor and, over time, within the larger Planning Area.

SCAG's RTP/SCS PEIR (2012) acknowledges that intensification of land uses along the railroad corridor could result in the following types of secondary effects:

- Construction-related and operational impacts to air quality from ozone precursors, particulate matter, TACs, and GHGs;
- Increases in the ambient noise environment;
- Increased traffic delay and intersection congestion;
- Potential land use incompatibilities and conflicts; and
- Increased demands for public services and utility infrastructure.

Notwithstanding these factors, the Project would be constructed within a historic railroad corridor (see Section 3.12 Cultural and Historic Resources) that preceded the occupancy of a majority of the uses adjacent to the railroad corridor. However, given that SANBAG retains no land use authority beyond its ROW, there is no feasible mitigation that SANBAG could otherwise adopt to condition new development to avoid or minimize the secondary effects identified above. Therefore, these secondary effects are considered adverse and would be predominately borne by minority and low-income populations situated immediately adjacent to the railroad corridor and, over time, within the larger Planning Area.

Cumulative Effects

As described in Chapter 4, EJ populations situated along the railroad corridor would also be exposed to adverse effects from other projects proposed within the Planning Area. These projects could result in incremental increases in construction and/or operational effects, mainly in terms of increases in ambient noise, disruptions in access, property acquisitions, and delay at roadway intersections. These cumulative effects would be predominately borne by minority and low-income populations situated immediately adjacent to the railroad corridor and, over time, within the larger Planning Area. Conversely, low-income and minority populations distributed throughout the Planning Area could benefit from other incremental and future projects in relation to improved access, improved commercial market conditions, and potentially increased property values.

EFFECT 3.17-2	**Result in Effects Appreciably More Severe or Greater in Magnitude than Suffered by Non-EJ Populations.** Implementation of the Project would result in an adverse effect that will be suffered by a low-income population that is appreciably more severe or greater in magnitude than the adverse effect that will suffered by non-low-income populations.

ALTERNATIVE 1 - NO BUILD

Direct, Indirect, and Cumulative Effects from Temporary Construction and Operations

As described in Effect 3.17-1, the No Build Alternative could result in an indirect adverse effects to EJ populations. Based on the demographic and income information presented in Table 3.17-6, construction-related adverse effects would not be appreciably more severe or greater in magnitude on minority populations when compared to the general population for Redlands and San Bernardino, which resembles similar demographic characteristics. However, as provided in Table 3.17-6, these adverse effects would be disproportionately experienced by low-income populations in downtown Redlands and in areas east of I-10.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Direct Effects from Temporary Construction

Adverse construction-related effects to EJ populations, although temporary, would include noise and vibration, hazards and safety concerns, disruptions to traffic and circulation, temporary displacement of parking, land acquisitions and TCEs, and changes in local aesthetics and visual quality. These adverse effects would be minimized, reduced, or avoided through the implementation of the proposed Mitigation Measures TR-1, TR-2, LU-1, NV-1, NV-2, HAZ-1 through HAZ-4, VQA-1, and VQA-3. In most instances, the proposed mitigation would be effective in minimizing these adverse effects. However, in the case of construction-related noise, given the long construction duration and potential for work at all hours of the day, noise effects could remain adverse even following the application of mitigation.

Based on the demographic and income information presented in Table 4.17-6, construction-related adverse effects would not be appreciably more severe or greater in magnitude on minority populations when compared to the general population for Redlands and San Bernardino, which resembles similar demographic characteristics. Similar to minority populations, low-income populations comprise a relatively large proportion of San Bernardino, such that these populations cannot be reasonably avoided (see Table 3.17-6). However, in the eastern portion of the Study Area, including downtown Redlands and areas east of I-10, these construction-related adverse effects would be disproportionately experienced by low-income populations. Similarly, construction-related adverse effects would be disproportionately experienced by low-income populations within the City of Loma Linda, east of Bryn Mawr Avenue.

Indirect, Direct, and Cumulative Effects from Long-Term Operations

Per the discussion under Effect 3.17-1, new passenger rail service and supporting activities as proposed under the Project would result in adverse effects that would be predominately borne by EJ populations, which are distributed along the entire railroad corridor. These adverse effects would be minimized, reduced, or avoided through the implementation of the proposed Mitigation Measures TR-2, TR-3, TR-4, NV-3, NV-4, NV-5, NV-6, NV-7, VQA-2, VQA-3, VQA-4, and BIO-7. In most instances, these measures would be effective in minimizing, reducing, or avoiding the identified adverse effect. However, as discussed in Effect 3.17-1, it is possible that one or more of the mitigation measures for operational noise may be impractical to implement at one or more sensitive receptor locations and, therefore, adverse noise effects to EJ populations could remain.

Conversely, the erection of noise barriers could result in other indirect adverse effects, such as the physical division of existing communities, expanded ROW needs, and adverse effects to visual resources. Given that these effects would be more adverse for properties in close proximity to the railroad corridor (e.g., first row tier of buildings), EJ communities would be the most affected; whereas properties located at a further distance (e.g., one block) would be unable to see the barriers and would likely be unaffected. Additionally, from a cumulative project standpoint, if future phases of the RPRP are eventually proposed by SANBAG and constructed in the future, it is possible that adverse effects related to operational noise could be reduced as a result of a change in vehicle technology and the sound barriers would become remnant features that would no longer serve a useful purpose.

Based on the demographic and income information presented in Table 3.17-6, these adverse effects associated with the Project's operation would not be appreciably more severe or greater in magnitude on minority populations when compared to the general population for San Bernardino, which resembles similar demographic characteristics. Therefore, these populations occur throughout San Bernardino and cannot be reasonably avoided. In the case of Loma Linda and Redlands, although these cities contain a lower minority population when compared to the total populations for both cities (see Table 3.17-6), the proportion of minority populations contained within the Study Area is less than 50 percent of the total minority population. For this reason, adverse effects associated with the Project would not be disproportionate when compared to non-minority populations.

Similar to minority populations, low-income populations comprise a relatively large proportion of San Bernardino, such that these populations cannot be reasonably avoided (see Table 3.17-6). Therefore, these populations occur throughout San Bernardino and cannot be reasonably avoided. However, as reflected in Table 3.17-6, these adverse effects would be disproportionately borne by low-income populations in downtown Redlands and in areas east of I-10 when compared to non-low income populations. Additionally, these adverse effects would be disproportionately borne by low-income populations south of the Mission Zanja Channel and east of Bryn Mawr Avenue within the City of Loma Linda when compared to non-low income populations.

Notwithstanding this finding, the choice in project location was not based on the demographics or income status of the Study Area, but based on other factors, such as the need for additional transit opportunities along the Redlands Corridor and SANBAG's pre-existing ownership on the railroad ROW, which includes active rail services up to MP 4.5. Although adverse construction and operational noise effects would be disproportionately borne by low-income populations bordering the railroad corridor in downtown Redlands and in northern Loma Linda, this result is largely based on the land use development pattern that has occurred over decades and the concentrated lower-income populations that already occur along the railroad corridor in San Bernardino, Loma Linda, and Redlands. The main difference is that within Redlands and Loma Linda higher income communities are located at further proximity (e.g., beyond 1/2-mile) from the railroad corridor; whereas low-income populations are more evenly distributed throughout City of San Bernardino.

3.17.4.5 Assessment of Beneficial Effects

The Build Alternatives and Design Options would provide for new transit service along an existing railroad corridor through the Planning Area that would provide a new connection between downtown San Bernardino and the University of Redlands via a dedicated transit corridor. The connection at E Street would also provide a link to the Planning Area from outside communities in Los Angeles, Orange, and Riverside Counties via the Metrolink System. These improvements in turn would improve mobility for transit-dependent populations in the Planning Area to employment centers in Los Angeles, Riverside, and Orange Counties. This increase in mobility, both from communities within the Planning Area and to outside communities would disproportionately benefit EJ populations within the Planning Area due to their increased reliance on transit when compared to non-EJ populations.

The station improvements would enhance pedestrian, bicycle, and parking accommodations in the Planning Area; thereby increasing the livability and sustainability of local neighborhoods. Although there are no existing roadway bicycle routes identified within the Planning Area, bicycle routes are proposed throughout the Planning Area, as presented in Figure 3.3-2 of Section 3.3, and would be accommodated at Project at-grade crossings in coordination with each city. Between 130 and 150 additional parking spaces are proposed as part of the Project. The additional pedestrian, bicycle, and parking amenities offered by the Project represent a beneficial effect to the EJ populations within the Planning Area. Additionally, these improvements are expected to result in reductions in VMT, which in turn, would translate into desirable air quality benefits for both EJ and non-EJ communities.

The Project would also realize economics benefits as described in Section 3.16 in the form of short-term and long-term employment opportunities, which would be available to local low-income and minority populations within the Planning Area. Additionally, the direct employment benefits from the Project would also create value-added revenues for local merchants as a result of construction-related spending as well as long-term revenues in conjunction with long-term spending. Further, the Project would construct transit infrastructure within a high quality transit area as identified in SCAG's RTP/SCS (2012), which could encourage transit-oriented development (TOD) in the Planning Area. EJ populations distributed throughout the Planning Area would likely disproportionately benefit from other incremental and future projects associated with TOD and improved commercial market conditions.

The indirect benefits of TOD would potentially come in the form of increased employment opportunities and higher property values. The increase in property values would be a positive benefit for those who currently own property in the corridor, but may possibly have a negative effect on those who rent and who may not be able to afford the higher rents that often accompany higher land values. However, according to a recent study, there was no evidence of a causal relationship between economic redevelopment in a community and displacement of low-income persons (Lance Freeman 2006). His findings indicated that poor residents may actually be less likely to move from areas undergoing redevelopment. These direct and indirect economic benefits would be greater for low-income and minority populations that occur within the Planning Area as opposed to non-EJ communities located at greater distances from the railroad corridor.

3.17.5 Outreach to Environmental Justice Communities

Alternatives Analysis Outreach

SANBAG has provided opportunities for public input since the beginning of the project development process. During the initial planning phase of the RPRP, including the initial Alternatives Analysis (AA) phase and the subsequent Strategic Plan phases, public involvement activities were primarily focused on public meetings to engage the public at key milestones. During the AA phase of the project, the public outreach team coordinated two formal public information meetings in Redlands and San Bernardino as follows:

- September 13, 2010 – City of San Bernardino Economic Development Agency Business Center, Downtown San Bernardino
- September 14, 2010 – ESRI Café, Redlands, CA

Nearly 200 people, consisting of residents, employees, community leaders and city officials, attended the two meetings held in Redlands and San Bernardino. Holding two meetings – one on each end of the Study Area – allowed the project development team to maximize attendance and better reach target audiences.

These meetings were held to inform the public about each of the alternatives being analyzed by the project development team (commuter rail, light rail, diesel multiple unit and bus rapid transit), transit-oriented land use development scenarios, and to solicit public feedback/input before recommending a Locally Preferred Alternative (LPA) to SANBAG for adoption.

Draft EA/EIR Scoping Outreach

Early in 2012, SANBAG began preparation of a joint Environmental Assessment (EA)/EIR to satisfy NEPA and CEQA compliance for the Project. As part of the CEQA process, a Notice of Preparation (NOP) was released for the Project, and a 30-day public review and comment period was established from April 10, 2012 to May 12, 2012. Two scoping meetings were scheduled during the course of the 30-day NOP public review period. These meetings were held at the following locations along the Study Area:

- EIR Scoping Meeting #1. ESRI Café, 380 New York Street, Redlands, CA 92373. April 24, 2012, 5:00-7:00 PM.
- EIR Scoping Meeting #2. San Bernardino Hilton, 285 East Hospitality Lane, San Bernardino, CA 92408, University Room May 2, 2012, 5:00-7:00 PM.

A translator was present at both scoping meetings to accommodate LEP individuals in attendance. Noticing for the NOP occurred via direct mailings to adjacent property owners, SANBAG's web site, the County Clerk, and newspapers of local circulation, including the San Bernardino Sun, Redlands Daily Facts, and Inland Empire Community Newspapers. The NOP public review period generated comments from the 17 public and agencies (local, state, and federal).

Draft EIS/EIR Scoping Outreach

Pursuant to NEPA, a Notice of Intent (NOI) was prepared for the Project to inform interested parties of FTA's intent to prepare an EIS for the Project. The NOI provided an additional opportunity to provide information to the public on the nature of the Project, invite further participation in the EIS/EIR process, provide additional opportunity for the public and agencies to comment on the scope of the EIS/EIR, and to announce two additional public scoping meetings. An extended circulation period was established for the NOI due to a clerical error on the noticing of the NOI scoping meeting. The NOI circulation period lasted from July 31 through October 12, 2012. In conjunction with the release of the NOI, a notice for two new project scoping meetings was posted in the Federal Register. The following scoping meetings were held during the NOI circulation period:

- EIS Scoping Meeting #1 – San Bernardino Hilton (September 25, 2012)
- EIS Scoping Meeting #2 – Redlands ESRI Café (September 27, 2012)

A translator was present at both scoping meetings to accommodate LEP individuals in attendance. Noticing for the NOI occurred via direct mailings to adjacent property owners, SANBAG's web site, the County Clerk, and newspapers of local circulation, including the San Bernardino Sun, Redlands Daily Facts, and Inland Empire Community Newspapers. The NOI public review period generated comments from the 14 public and agencies (local, state, and federal).

The NOP, NOI, distribution list for the public comment period, and a Final Scoping Report are provided under Appendix A to this EIS/EIR. The Agency Coordination Plan and Public Involvement Plan are included under Appendix B to this EIS/EIR.

In conjunction with the release of the draft EIS/EIR for public review, SANBAG held public meetings concurrent with the public review period. The public meetings were held on:

1. September 4, 2014, 5:00–7:00 PM, at the ESRI Café, 380 New York Street, Redlands, CA 92373; and
2. September 9, 2014, 5:00–7:00 PM, at the Hotel, 285 East Hospitality Lane, San Bernardino, CA 92408

In addition to receiving written comments on the draft EIS/EIR, SANBAG had a court reporter in attendance to transcribe verbal comments during the public meeting. A Spanish and American sign language (ASL) translator were also in attendance. Responses to the comments provided are contained in Appendix P of the Final EIS/EIR.

3.17.6 Mitigation Measures

The Build Alternatives or Design Options may result in adverse effects on traffic and transportation; noise and vibration; visual resources and aesthetics; hazards and safety; land use, and property acquisitions and displacements. Adverse effects associated with the Build Alternatives and Design Options would be minimized through the implementation of the following mitigation measures, which would be applied throughout the corridor.

- TR-1 (Prepare and Implement a Traffic Management Plan), TR-2 (Payment of Fair Share Fees for Roadway Improvements), TR-3 (Approval from CPUC for Grade Crossings), TR-4 (Recommended Pre-Signals for Queuing) and TR-5 (Transit Service Realignment) proposed in Section 3.3.
- HAZ-1 (Prepare and Implement a Construction Hazardous Materials Management Plan and Operational Hazardous Materials Business Plan), HAZ-2 (Prepare Phase I and/or Phase II ESA for Indeterminate or High-Risk Sites), and HAZ-3 (Halt Construction Work) proposed in Section 3.10.
- LU-1 (Minimize Project Land Requirements and Comply with Federal and State Relocation Laws) proposed in Section 3.2.
- NV-1 (Employ Noise-Reducing Measures during Construction), NV-2 (Prepare a Community Awareness Program for Project Construction), NV-3 (Establish Quiet Zones), NV-4 (Construct Sound Barriers), NV-5 (Lubricate Wayside Rail), NV-6 (Use Ballast Mats, Resiliently Supported Ties, or Measures of Comparable Effectiveness on Portions of the Rail near Sensitive Receivers), and NV-7 (Provide Building Noise Insulation to Severe- and Moderate-Impact Residences), proposed in Section 3.6.
- VQA-1 (Screening of Construction Staging Areas), VQA-2 (Enhance Exterior Appearance of Structural Facilities), VQA-3 (Prepare Tree Replacement Plan), VQA-4 (Minimize Exterior Lighting in Adjacent Uses) and VQA-5 (Sound Barrier Screening and Surface Treatments) proposed in Section 3.4.
- SS-1 (Develop Safety and Security Management Plan) proposed in Section 3.15.

3.17.6.1 Effects After Mitigation

The mitigation measures identified in Section 3.17.6 above would apply uniformly to EJ and non-EJ communities. As previously indicated, adverse effects related to hazards and safety concerns, and disruptions to traffic and circulation would be minimized with implementation of proposed mitigation measures. However, direct and indirect adverse effects related to noise and vibration, division of established communities, and local aesthetics and visual quality would remain adverse, since the implementation of proposed mitigation measures in of themselves result in adverse effects (e.g., installation of sound barriers at sensitive receptor locations). Mitigation Measures NV-1, NV-2, NV-3, NV-4, NV-5, NV-6, and NV-7 would reduce noise and vibration effects, however, given uncertainties regarding their full implementation Project-related construction and operational noise levels could still exceed noise thresholds established by FTA.

For example, although measures are proposed to mitigate these adverse effects, the measures proposed for operations may not be within the complete control of SANBAG to implement (e.g., Quiet Zones) or are not feasible to implement in all instances (e.g., sound barriers). Additionally, the mitigation measures (e.g., sound barriers) would in of themselves result in other indirect impacts that would not be fully mitigable (e.g., division of communities).

3.17.7 Findings of Disproportionate Environmental Effects

Through a systematic delineation of low-income and minority populations within the Planning Area, a high concentration of EJ populations was identified within the Study Area and larger Planning Area considered in this EIS/EIR. As discussed, the Build Alternatives and Design Options could result in construction and operational adverse effects related to noise and vibration, hazards and safety concerns, disruptions to traffic and circulation, land use and land acquisitions, changes in local aesthetics and visual quality. As described in Effect 3.17-1, these adverse effects would be predominately borne by EJ populations. Mitigation Measures proposed throughout Chapter 3 would minimize, reduce, or avoid these adverse effects in most circumstances. However, adverse effects related to noise and vibration, division of established communities, and local aesthetics and visual quality could remain adverse, even after implementation of proposed mitigation measures.

As discussed in Effect 3.17-2, the proportion of low-income populations adversely affected by Project-related construction and operational adverse effects within downtown portions of the City of Redlands would be disproportionate to that of higher income populations located at further proximity from the railroad corridor. In contrast, based on the total number of minority populations present within the City of San Bernardino and Redlands, these adverse effects would not exceed the general proportion of minority populations throughout the City as a whole (see Table 3.17-6). By virtue that large minority populations are distributed throughout the Planning Area, these populations cannot be reasonably avoided. In this context, minority populations would not experience disproportionate adverse effects. Similarly, low-income populations within San Bernardino would not be disproportionately affected.

While minority and low-income populations would predominately experience adverse project affects, they also experience the most benefit by the Project because of their close proximity and even distribution throughout the Study Area. The benefits of a new and improved regional transit service, as well as air quality improvements and enhanced employment opportunities as a result of increased development potential would be considerable and would especially accrue to those living closest to the railroad corridor, which includes mainly EJ populations. Additionally, these benefits would be longer-term in their duration in contrast to the construction-related effects that would be shorter-term in duration. In view of the anticipated adverse effects, mitigation measures that would be implemented, and the offsetting benefits, the Build Alternatives and Design Options would not result in disproportionately high and adverse effects on low-income or minority populations.

CHAPTER 4.0 CUMULATIVE EFFECTS

This EIS/EIR provides an analysis of overall cumulative effects of the Build Alternatives and Design Options taken together with other past, present, and probable future projects producing related effects, as required by the State CEQA Guidelines (14 California Code of Regulations [CCR] Section 15130) and "reasonably foreseeable" future projects under NEPA implementing regulations (40 Code of Federal Regulations [CFR] 1508.7). The purpose of this analysis is twofold: first, to determine whether the overall long-term effects of all such projects would be cumulatively adverse and second, to determine whether the project itself would cause a "cumulatively considerable" (and thus adverse) incremental contribution to any such cumulatively adverse effects (see State CEQA Guidelines [CCR Sections 15064(h), 15065(c), 15130(a), 15130(b), and 15355(b)]. In other words, the required analysis first creates a broad context in which to assess the Project's incremental contribution to anticipated cumulative effects, viewed on a geographic scale well beyond the Project itself. The analysis then determines whether the Project's incremental contribution to any adverse cumulative effects from all projects is itself adverse (i.e., "cumulatively considerable"). Chapter 4.0 presents the discussion of cumulative effects according to the presentation of each issue area identified in Chapter 3.0.

4.1 REGULATORY FRAMEWORK

4.1.1 NEPA Guidance

The CEQ regulations implementing provisions of NEPA define cumulative effects as "the effect on the environment which results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative effects can result from individually minor, but collectively adverse, actions over time (40 CFR 1508.8). They are caused by the incremental increase in total environmental effects when the evaluated project is added to other past, present, and reasonably foreseeable future actions. Cumulative effects can thus arise from causes that are totally unrelated to the project being evaluated, and the analysis of cumulative effects looks at the life cycle of the effects, not the project at issue.

4.1.2 CEQA Guidance

Cumulative effects are defined in the CEQA Guidelines (CCR Section 15355) as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental effects." A cumulative effect occurs from "the change in the environment which results from the incremental effect of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative effects can result from individually minor but collectively adverse projects taking place over a period of time" (CCR Section 15355[b]).

Consistent with the CEQA Guidelines (CCR Section 15130[a]), the discussion of cumulative effects in this EIS/EIR focuses on adverse and potentially adverse cumulative effects. The CEQA Guidelines (CCR Section 15130[b]) state that:

> The discussion of cumulative effects shall reflect the severity of the effects and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness, and should focus on the cumulative effect to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative effect.

Methodology

There are several steps involved in analyzing cumulative effects. The initial steps involve analyzing direct and indirect effects, followed by the application of those results to cumulative effects. These steps are generally outlined below:

- Establish the geographic scope for the analysis used to analyze project-level and cumulative effects.
- Characterize the thresholds of significance that are relevant to the resource issue areas.
- Identify the effects associated with the proposed action. If there are no direct or indirect effects of the project on a resource or discipline area then there cannot be any cumulative effects.
- Identify other actions affecting the resource issue areas of concern. This includes consideration of past, present, and reasonably foreseeable future related projects.
- Determine the magnitude and significance of cumulative effects. Significance determinations are related back to the background laid in the methodology section and the thresholds of significance that are relevant to each resource as presented in Chapter 3.
- Identify potential mitigation measures for potential cumulative effects on each environmental resource. Potential mitigation measures could include measures that would avoid, minimize, or mitigate cumulative effects as well as direct and indirect Project-related effects.

4.1.3 Projects Contributing To Potential Cumulative Effects and Study Area

The CEQA Guidelines identify two basic methods for establishing the cumulative environment in which the project is to be considered: the use of a list of past, present, and probable future projects (the “list approach”) or the use of adopted projections from a general plan, other regional planning document, or certified EIR for such a planning document (the “plan approach”). Either of these methodologies also fulfills the NEPA requirements for cumulative effect analysis (CEQ 1997). For this EIS/EIR, a combined list and plan approach have been utilized to generate the most reliable future projections possible for assessing potential cumulative effects.

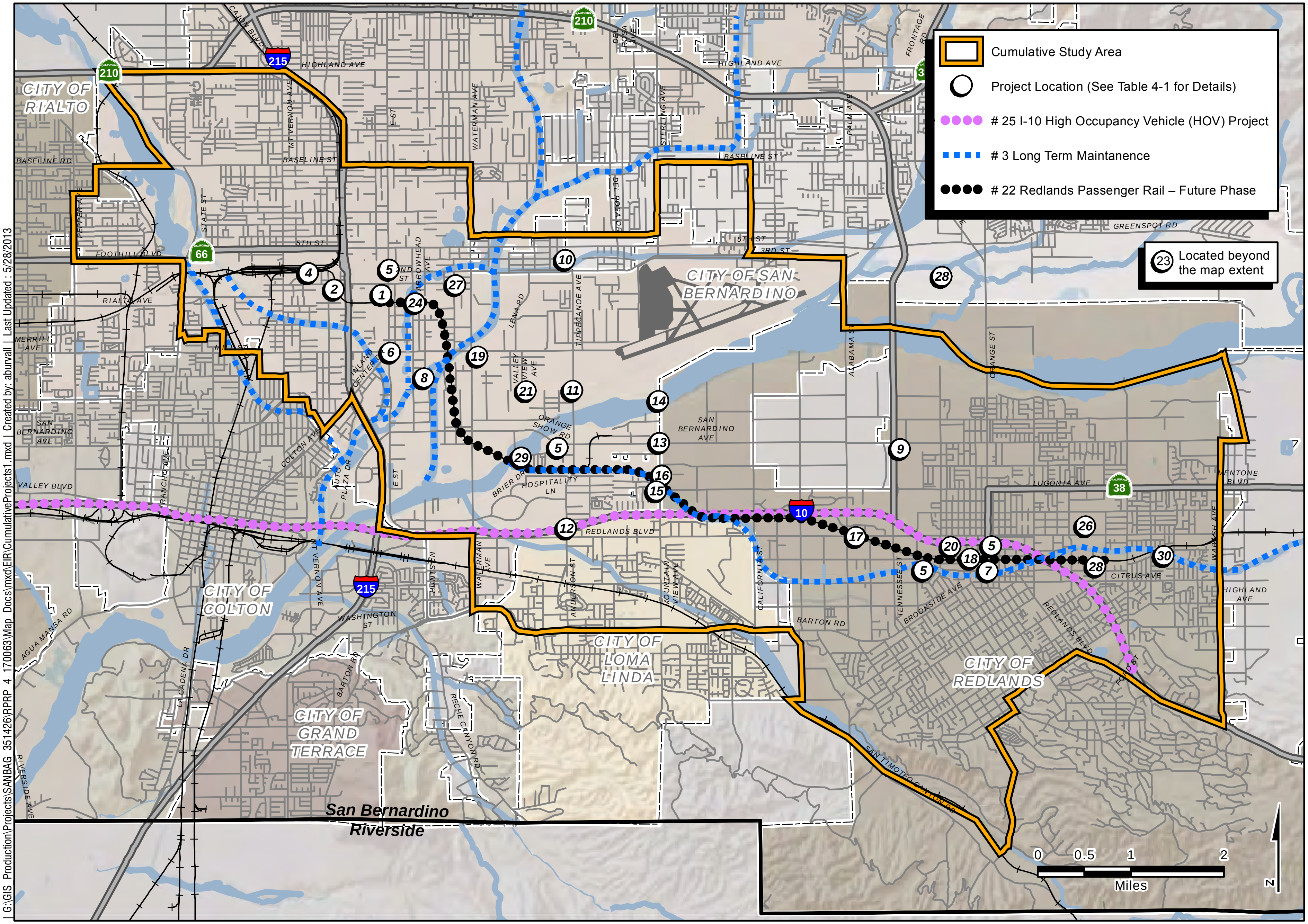
The RPRP is composed of several components, including new track infrastructure and new stations and layover facilities. To facilitate consideration of these proposed improvements and the corresponding potential direct and indirect effects to adjacent land use, planned and approved development projects in the general vicinity of the cumulative study area are included in the list of projects considered. To facilitate consideration of track-related improvements, including proposed bridge replacements along the railroad corridor, the cumulative analysis also considers known (or planned) infrastructure projects in greater southwestern San Bernardino County, the East Valley Corridor, and larger statewide planning efforts that could substantially influence cumulative operational conditions along the Redlands Corridor (e.g., HST Project).

Different portions of the Build Alternatives and Design Options would affect different geographical areas within the Study Area. In some instances, these effects could combine with other projects adjacent to and outside the Study Area. For this reason, the cumulative analysis considers a broader geographic context as delineated by the Cumulative Study Area as defined in Section 3.1, Introduction to Environmental Analysis. The Cumulative Study Area, as illustrated in Figure 4-1, is based on the Traffic Analysis Zones (TAZs) considered in the traffic impact analysis and was considered the most suitable geographic unit based on the Project's context (e.g., new transit infrastructure). The general geographic area associated with different environmental effects of RPRP defines the boundaries of the Cumulative Study Area used for compiling the list of projects considered in the cumulative effect analysis.

The list of past, present, and probable future projects used for this cumulative analysis is restricted to major development and infrastructure projects in southwestern San Bernardino County. For the purposes of this discussion, the projects that may have a cumulative effect on the resources in the Cumulative Study Area will often be referred to as the "cumulative projects." These projects are identified in Figure 4-1 and Table 4-1 (note that the map numbers identified for each related project in Table 4-1 correspond with the numbers that appear on the map in Figure 4-1). The analysis of cumulative environmental effects associated with the Build Alternatives and Design Options addresses the potential incremental contributions of the RPRP in combination with these related projects. The list of projects in Table 4-1 is not intended to be an all-inclusive list of projects in the region, but rather an identification of larger projects approved or planned in southwestern San Bernardino County that may affect the same resources or geographic area as the RPRP.

4.2 AFFECTED ENVIRONMENT

The cumulative context includes the geographic area, timeframe, and/or type of projects that would contribute to the potential cumulative effect. This context differs for each discipline. Each discipline identifies a relevant geographic area for evaluation of cumulative effects. The geographic range considered for the cumulative analysis can vary based on the resource area. For example, the geographic range over which hydrological or water quality effects (e.g., watershed scale) would occur would not necessarily be the same as the geographic range considered for transportation-related effects (e.g., TAZs). In instances, where the cumulative analysis extends beyond the limits of the cumulative study area, for example to consider effects at a watershed scale, this fact is noted. Table 4-2 presents the general geographic areas associated with the different resources addressed in this EIS/EIR cumulative analysis. As depicted in Figure 4-1, the Cumulative Study Area captures a majority of these projects identified in Table 4-1.



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Cumulative Projects Map

Figure 4-1

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

Table 4-1. Cumulative Projects

	Project Title	Project Description	Location	Related Effects	Schedule
1	Local Omnitrans Bus Service	Existing bus services include 12 local bus routes (1, 2, ¾, 5, 7, 8, 9, 10, 11, 14, 15, and 215).	Throughout San Bernardino.	• Air quality • Noise • Roadway traffic	Existing service (see Section 3.3 for additional detail)
2	Downtown San Bernardino Passenger Rail Project SCAG RTP Project #20061012	Extension of Metrolink regional passenger rail service from San Bernardino Santa Fe Depot to new Metrolink stations.	From existing San Bernardino Santa Fe Depot to intersection of Rialto Avenue and E Street in the City of San Bernardino.	• Air quality • Noise • Roadway traffic • Acquisitions	Construction: late 2013 to 2015, operational 2015
3	Long-Term Maintenance of Flood Control and Transportation Facilities Located throughout San Bernardino County	The project includes maintenance of various flood control channels, basins, earthen streams and dams, bridges, and road culvert crossings throughout San Bernardino County. The purpose of the project is flood protection and road safety.	Drainage facilities (March 2010) throughout Zone 2, which includes the City of San Bernardino, and Zone 3 for the City of Redlands,	• Vegetation • Special status species • Wetlands and Waters of the U.S./State • Noise	Notice of Preparation issued in October 2010; Draft EIR release in 2014
4	California High-Speed Train (HST) Project, City of San Bernardino Station option of the Los Angeles to San Diego (via the Inland Empire) SCAG RTP Project #7120010	The City of San Bernardino option of the HST project would operate adjacent to the existing San Bernardino Metrolink line and could include a station(s) adjacent to the rail stations proposed as part of the Preferred Project. Additionally the HST Project would include a new alignment through the southeastern portion of San Bernardino and within the Cumulative Study Area.	Various locations within the Inland Empire, including through San Bernardino.	• Air quality • Noise • Traffic • Cultural Resources (historic structures)	Portions to start construction after 2015 RTP anticipates completion by 2035
5	Transit-Oriented Development – Land Use Updates for the Cities of San Bernardino and Redlands	Increase in land use densities and development to advance forms of transit-oriented development within 0.5 mile of proposed stations in the Redlands corridor.	Cities of San Bernardino, Loma Linda, and Redlands adjacent to the Redlands railroad corridor.	• Air quality • Drainage/ • Utilities Conflicts • Land use compatibility • Traffic • Infrastructure capacity • Noise • Recreation	Planned; timing unknown

Table 4-1. Cumulative Projects

Project Title		Project Description	Location	Related Effects	Schedule
6	Omnitrans sbX Bus Rapid Transit Project SCAG RTP Project #200625	The future planned sbX service/E Street Corridor Project with 16 station locations designed to provide bus rapid transit on rubber tires, with platform-level boarding, and landscaped stations.	E Street corridor right-of-way in San Bernardino.	• Air quality • Noise • Traffic • Acquisitions	Construction in 2012-2014, operational in 2014
7	Downtown General Plan & Specific Plan No. 45 Amendments	This planning project involves revisions to the 1994 Downtown Redlands Specific Plan (1994 Specific Plan), including expansion of its boundaries, modification of its goals, and establishment of a development program that will provide a pedestrian-friendly, amenity-rich, mixed-use environment in both the immediate and long-range future.	Central section of the City of Redlands.	• Air Quality • Utilities Conflicts • Cultural Resources • Traffic • Noise • Recreation • Flooding	Construction of projects within the plan area would be phased gradually over the 15-year timeframe of the planning horizon through the year 2025
8	National Orange Show Industrial Project	Construction of four industrial buildings and 752,770 square feet of building area.	Bounded by Arrowhead Avenue, Esperanza Street, and Central Avenue in San Bernardino.	• Air quality • Noise • Traffic	Timing of construction unknown
9	Redlands Crossing Center	Development of a regional shopping center of approximately 275,500 square feet of commercial retail uses on approximately 23.9 acres. Includes a Walmart store, drive-thru fast food restaurants, retail spaces, retail/gas station and parking.	MP 7.5 South of San Bernardino Avenue and east of SR 210. Southeastern intersection of Tennessee Street and San Bernardino Avenue APNs: 167-141-01, -02, -03, -04	• Air quality • Noise • Traffic • Cultural Resources • Utilities	Construction 2013-2014, operational 2015

Table 4-1. Cumulative Projects

Project Title		Project Description	Location	Related Effects	Schedule
10	Tippecanoe Avenue Widening, Phase I SCAG RTP Project #201182	Widen from 2 to 4 lanes (0.3 miles).	MP 4.08 to 4.16 From 3rd Street to 5th Street	• Traffic (construction) • Air quality • Noise	RTP does not indicate anticipated construction or operation date
11	Tippecanoe Avenue Widening Project, Phase II RTP Project #20610	Widen from 4 to 6 lanes include median landscape (1.4 miles).	MP 4.16 Between Mill Street and Santa Ana River (SAR) Bridge	• Traffic (construction) • Air quality • Noise	RTP anticipated completion by 2012
12	Interstate 10: Tippecanoe Avenue/Anderson Street Interchange	Widening the freeway eastbound off-ramp to 2 lanes, thereby expanding Tippecanoe Avenue to 4 lanes at the intersection. Widening the Anderson Street/Redlands Boulevard intersection to include 2 through-lanes, 2 left-turn lanes and 1 right-turn lane in each direction. Adding an auxiliary lane on eastbound I-10 between Waterman Avenue and Tippecanoe Ave to facilitate weaving with freeway traffic.	MP 4.20 Tippecanoe Avenue from Lee Street, just south of Hospitality Lane, to just south of I-10.	• Air quality • Noise • Traffic	Construction expected to start by mid-2012 and completed in approximately 18-24 months
13	Mountain View Avenue Widening/Extension Project SCAG RTP Project #200609	Widen southbound from 2 to 4 lanes.	MP 5.16 From Coulston to Riverview (south of the SAR) (Project is split into 2 separate projects)	• Air Quality • Noise • Traffic	Construction 2013-2015, operational 2015
14	Mountain View Avenue Bridge over the SAR SCAG RTP Project #40M0701-2011160	Construct new 4-lane bridge.	MP 5.16 Mountain View currently terminates at south edge of SAR. Project would extend by means of bridge structure across the SAR.	• Biological resources • Waters of the U.S./State • Hydraulics	N/A

Table 4-1. Cumulative Projects

Project Title		Project Description	Location	Related Effects	Schedule
15	Mountain View Avenue Bridge at Mission Zanja Channel SCAG RTP Project #SBD41317	Widen roadway and shoulder work and existing bridge at Mountain View Avenue to 2 lanes north/south and left turns to make a total of 4 lanes (2 in each direction).	MP 5.16 Mountain View Ave. at bridge.	• Biological resources • Hydrology • Waters of the U.S./State • Water quality (e.g., sedimentation)	RTP anticipates completion by 2018
16	Mountain View Avenue Railway Grade Crossing SCAG RTP Project #SBD41316	Widen railway grade crossing from 1 lane north and south to 2 lanes north and south and upgrade gates (0.75 miles).	MP 5.16 1500 feet north of I-10.	• Air Quality • Noise • Traffic	Planned; timing unknown
17	I-10/ Alabama and Redlands Boulevard and Alabama-Colton Intersection Improvements SCAG RTP Project #20081704	Widen intersection approaches on all four legs of Redlands Boulevard/Alabama Street. Alabama Street intersection and add dual left turn lanes. Realign Alabama Street on north side of intersection to eliminate the 23' horizontal offset at intersection.	MP 7.29-7.47 Redlands Boulevard/Alabama Street Intersection	• Air Quality • Noise • Traffic	RTP does not indicate anticipated construction or operation date
18	Redlands Park Once – Parking Structure	Downtown parking structure north of the rail tracks between Eureka Street and Orange Street. Access to the structure will be from Stuart Avenue. City of Redlands has expressed desire to open new pedestrian crossing across the tracks, crossing can not go underground but will either be at grade or elevated.	MP 8.7 North of the rail tracks between Eureka Street and Orange Street.	• Air Quality • Cultural Resources • Noise • Traffic	2014-2016
19	Cott Beverage Industrial Warehouse	Development of an approximately 345,802 square feet warehouse and industrial and assembly and distribution plant. Project would require the demolition of an existing self-storage facility located on site.	601-650 Waterman Avenue, southeast corner of Waterman Avenue and Mill Street in the City of San Bernardino.	• Air quality • Noise • Traffic	Initial Study dated March 2012

Table 4-1. Cumulative Projects

	Project Title	Project Description	Location	Related Effects	Schedule
20	Redlands Promenade	Development of a 149,800 square feet commercial center including stores, restaurants and offices.	South of I-10 and west of Eureka Street.	• Air Quality • Noise • Traffic	Timing of construction is unknown
21	Central Avenue Corridor Storm Drain Improvements and Utility Master Plan	The Inland Valley Development Agency proposes the improvement of their existing roads and infrastructure as part of the master planned development of the Inland Empire Goods Movement Bill.	Project site encompasses area south of Mill Street, west of Tippecanoe Avenue, north of Orange Show Road, and east of Waterman Avenue.	• Air Quality • Noise • Traffic	Planned; timing unknown
22	Redlands Passenger Rail – Future Phase	Construction of additional stations and double tracking along the Redlands Corridor. New stations could be constructed at Mill Street, Mountain View Avenue, California Street, and/or Alabama Street. Future extensions to connections outside the railroad corridor are considered remote and speculative.	Redlands Corridor.	• Air Quality • Noise • Traffic • Biology • Hydrology • Acquisitions	Planned; timing unknown
23	Opal Basin	Construction of a basin that will hold more than 208 million gallons of water. This facility is located to the east of the Cumulative Study Area and beyond the extent of Figure 4-1.	City of Redlands. Site is bounded by Opal and Citrus Ave. and Walnut St.	• Hydrology • Flood Control • Biology	Planned; timing unknown
24	Arrowhead Parking Lot	Provide temporary parking for the construction workers of the new Justice Center at Third Street and Arrowhead Avenue.	MP 1.3, southeast corner of Rialto Avenue and Arrowhead Avenue	• Hydrology • Flood Control	Constructed by March 2014 and would last 2 years before being removed
25	I-10 High Occupancy Vehicle (HOV) Project SCAG RTP Project #OC2500	Extension of carpool lanes, widen outside existing lanes, pave medians, widen several existing under-crossings, rebuild over-crossings, construct a concrete median barrier, improve drainage and add auxiliary lanes.	MP 5.61/9.45. I-10 between Haven Avenue in Ontario and Ford Street in Redlands	• Hydrology • Transportation	Environmental Review Process started in 2012; construction anticipated in 2020

Table 4-1. Cumulative Projects

Project Title		Project Description	Location	Related Effects	Schedule
26	University of Redlands Campus Facilities Master Plan	Link the campus across the Zanja Creek and the ridge that stretches from Duke Hall to the Alumni House.	MP 9.8. University of Redlands	• Hydrology	Draft Master Plan anticipated by 2014
27	Dominguez Elementary School	Construction of a new elementary school on a 13-acre site. The school will include 3 new buildings, 16 general classrooms, administration building, playground, and special education classroom.	Southwest corner of S. Waterman Avenue and Rialto Avenue in City of San Bernardino		Currently under construction, operational in 2014
28	San Bernardino Valley Water Conservation District, Upper Santa Ana River (SAR) Wash Land Management and Habitat Conservation Plan	This project would allow the BLM to exchange public lands located within the Santa Ana River Wash Area of Critical Environmental Concern (ACEC) for District-owned lands in San Bernardino County, and would amend existing Santa Ana River Wash ACEC management prescriptions outlined in the South Coast Resource Management Plan.	Santa Ana River Wash Plan Area beginning at the mouth of the SAR Canyon at Greenspot Road and extends westward to Alabama Street.	• Air Quality • Geology/ Soils • Hydrology/ Flooding • Biology • Land Use • Transportation • Cultural Resources	After 2013
29	Santa Ana River (SAR) Trail	This project involves the construction of the multi-use SAR Trail along the eastern bank of the SAR at the location of Bridge 3.4.	MP 3.5 Santa Ana River	• Parks and Recreation • Access • Noise • Flooding	Construction planned for 2015-2017
30	Orange Blossom Trail	Trail proposed and in design to the east of Lincoln Street. Other segments planned parallel to the railroad corridor along the Mission Zanja Flood Control Channel from Mountain Avenue to California Street and between the limits of Church Street and the eastern project terminus.		• Parks and Recreation • Access • Noise	Planned; schedule unknown

Table 4-2. Geographic Scope of Cumulative Effects

Resource Issue	Geographic Area
Land Use, Planning, and Communities	City of Redlands, City of San Bernardino, City of Loma Linda
Transportation	Transit Analysis Zones; subarea of the San Bernardino Valley Focus Model (SBVFM)
Visual Quality and Aesthetics	Southwestern San Bernardino County, City of Redlands, City of San Bernardino
Air Quality, Greenhouse Gases, and Global Climate Change	South Coast Air Basin, global
Noise and Vibration	Railroad corridor and immediate vicinity
Biological and Wetland Resources	Railroad corridor, the SAR Watershed with focus on the Santa Ana River and Mission Zanja Channel
Floodplain, Hydrology, and Water Quality	SAR watershed, Mission Zanja Channel, Mission Storm Drain, Mill Creek Zanja
Geology, Soils, and Seismicity	Railroad corridor and immediate vicinity
Hazardous Waste and Materials	Railroad corridor and immediate vicinity
Energy	Local, regional
Cultural and Historic Resources	City of San Bernardino and City of Redlands
Parklands and Community Services and Facilities	Regional and local facilities
Economic and Fiscal Impacts	San Bernardino County, City of Redlands, and City of San Bernardino
Safety and Security	Local, regional
Section 4(f)	City of San Bernardino and City of Redlands
Environmental Justice	City of Redlands, City of Loma Linda, City of San Bernardino

Cumulative Effects

The following section discusses the potential for the Project to result in cumulatively considerable effects together with the related projects and regional development for each of the environmental issue areas evaluated in Chapter 3. It should be noted that the cumulative effects of implementing the Project, including the Build Alternatives or Design Options, would be substantially similar; therefore, this cumulative analysis uses the term “Project” to collectively refer to the build alternatives and design options. However, in situations where cumulative effects differ substantially among the Build Alternatives and Design Options, separate discussions are included for the Alternative and/or Design Option to denote this finding.

4.3 ENVIRONMENTAL IMPACTS/ENVIRONMENTAL CONSEQUENCES

4.3.1 Land Use, Planning, and Communities

EFFECT 4.3-1	**Land Use, Planning, and Communities.** The Project in conjunction with past, present, and future projects would result in cumulatively considerable adverse effects related to the division and/or disruption of communities.

NO BUILD ALTERNATIVE

The No Build Alternative would not result in changes to established communities; however, it would not increase mobility or decrease traffic congestion, especially in future years. Cumulative projects, particularly development projects and land use intensification along the railroad corridor, are also expected to contribute to the region-wide traffic congestion. As discussed in Section 3.2, Land Use,Planning, and Communities, the No Build Alternative would not be consistent with federal, state, regional, and local land use policies and regulations that promote integration of transportation and land use planning together to create more sustainable communities. In particular, the No Build Alternative would be inconsistent with the 2012 RTP/SCS, which identifies the railroad corridor as a high quality transit corridor and specifically calls for passenger rail service between the City of San Bernardino and Redlands. Because the RTP predicts that traffic will continually worsen in the absence of additional capacity, the No Build Alternative would incrementally contribute to deteriorating access and mobility within the San Bernardino region. Based on these inconsistencies with regional plans and policies, the No Build Alternative would result in an adverse effect that would be cumulatively considerable under NEPA. This inconsistency is considered a cumulatively significant impact under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Temporary Land Use Conflicts

Potential construction-related cumulative effects on land use and development would be similar for each of the Build Alternatives and Design Options. The Project along with other cumulative projects could result in temporary disruptions in community cohesion or connectivity, including access disruptions or temporary road closures. As presented in Table 4-1, Project construction could occur concurrent with multiple planned projects along the railroad corridor, including the Central Avenue Drainage Improvements, Alabama Street Intersection Improvements, Redlands Master Plan, and Redlands Park Once, which are planned to begin construction in or shortly after 2015. RTP projects, including the Tippecanoe Avenue Widening Project and Mountain View Avenue Widening Project, are identified as financially constrained projects and will depend on the availability of funding sources to be completed. If funding sources are obtained, there is a potential that these RTP projects could begin construction concurrent with the Project. Implementation of Mitigation Measure TR-1 (Prepare a Traffic Management Plan) as identified in Section 3.3 Transportation, would require SANBAG's construction contractor to prepare a Traffic Management Plan, which would reduce construction related adverse effects to the local roadway network along with non-motorized forms of transportation (e.g., bicycle, pedestrians, etc.). Compliance with this mitigation would require the contractor to coordinate construction activities with local jurisdictions to maximize opportunities for concurrent construction.

Additionally, construction activities and supporting staging areas may require temporary, intermittent street and sidewalk closures in the immediate vicinity of the railroad corridor. This could temporarily inhibit, but not eliminate, access to adjacent parcels. Further, based on the up to three year duration of construction, staging areas for multiple projects could be perceived as incompatible with adjacent land uses based on related nuisances. Although these adverse effects would be temporary, when combined with other projects, they would be cumulatively considerable under NEPA. Under CEQA, this cumulative impact is considered significant. Mitigation Measures TR-1 and VQA-1 (Screening of Construction Staging Areas), as identified in Section 3.4, Visual Quality and Aesthetics, and NV-1 (Employ Noise-Reducing Measures during Construction) and NV-2 (Prepare a Community Notification Plan for Project Construction) as identified in in Section 3.6, Noise and Vibration, are proposed to minimize or avoid these adverse effects such that they would no longer be cumulatively considerable.

Long-Term Compatibility with Adjacent Uses

Implementation of the Project and other projects listed in Table 4-1 and identified in the 2012-2035 RTP/SCS would affect a number of land uses adjacent to the railroad corridor. In general, land uses within 150 feet of transportation improvements could experience some kind of land use impact; although existing commercial and industrial uses would be less sensitive to these transportation projects. As described in Section 3.2, Land Use, Planning, and Communities, the Project could create nuisance conditions for adjacent land uses (i.e., University of Redlands, nearby schools, Sylvan Park, and low and high-density residential areas) through a variety of mechanisms. These may include changes in the visual character of adjacent areas as a result of the external appearance of Project-related facilities and new sources of nighttime lighting (e.g., security lighting). Additionally, mitigation proposed in the form of sound barriers would incrementally add to these adverse effects. Other projects, such as the I-10 HOV Project, in the vicinity could also incrementally add to these changes. These adverse effects would be cumulatively considerable under NEPA. Under CEQA, these impacts are considered cumulatively significant. Mitigation Measures VQA-1, VQA-2 (Enhance Exterior Appearance of Structural Facilities), VQA-4 (Sound Barrier Screening and Surface Treatments), and VQA-5 (Minimize Exterior Lighting in Adjacent Uses) are proposed minimize land use incompatibilities with adjacent residential uses,

Likewise, train operations would result in increases in ambient noise levels within the Study Area. Other transportation projects proposed in the Project vicinity, such as the I-10 HOV Project and various roadway improvements, including those to Mountain View Avenue and Tippecanoe Avenue could incrementally add to these noise level increases through higher traffic speeds. These adverse effects would be cumulatively considerable under NEPA. Under CEQA, these impacts are considered cumulatively significant. Mitigation Measures NV-3 (Establish Quiet Zones), NV-4 (Construct Sound Barriers), NV-5 (Wayside Rail Lubrication), NV-6 (Use Ballast Mats, Resiliently Supported Ties, or Measures of Comparable Effectiveness on Portions of the Rail near Sensitive Receivers), and NV-7 (Provide Building Noise Insulation to Severe- and Moderate-Impact Residences) are proposed to minimize adverse effects to land use compatibility. The implementation of these measures in conjunction with the fact that these uses have developed adjacent to and subsequently to the development of the railroad corridor, these effects would not be cumulatively considerable.

Division of Established Communities

The existing railroad corridor represents a known quantity within the cities of San Bernardino and Redlands with various land uses developing adjacent to the corridor as growth has progressed within the area over the last 100 years. The railroad corridor presents a physical separation in land use under existing conditions and with the implementation of the Project, this condition would not change. Although fencing would be installed along the railroad corridor to limit access across the tracks for safety purposes, the fencing would not obstruct visibility across the railroad corridor thereby maintaining a visual connection between uses adjacent to the corridor. Additionally, since entering SANBAG's right-of-way (ROW) without proper authorization is considered trespassing under existing conditions, the placement of fencing would not otherwise further limit legal access across the corridor. As discussed in the 2012-2035 RTP/SCS Program EIR (SCH No. 2011051018), projects identified on the RTP project list, including but not limited to roadway improvements to Mountain View Avenue, Alabama Street, and Redlands Boulevard, have the potential to disrupt or divide established communities. For example, the widening of a roadway could be perceived as too great a distance to cross by a pedestrian, thereby dividing a community. However, given that pedestrian access would be maintained at the at-grade crossings throughout much of the corridor as part of the Project, no adverse cumulative effect would occur under NEPA. Under CEQA, potential cumulative impacts would be less than significant.

In contrast to basic fencing, noise barriers, if and where constructed in conjunction within Mitigation Measure NV-4, would present a new physical separation between existing neighborhoods within the cities of San Bernardino and Redlands. The presence of noise barriers would further contribute to the division of established communities through the physical (and visual) separation of the railroad ROW on one or both sides from adjacent lands uses. These impacts would be most significant in downtown Redlands, the University of Redlands, in the Victoria Community, and in portions of San Bernardino, east of Sierra Way and south of Mill Street. In addition to potential noise barriers associated with the implementation the Project, other future projects, such as the I-10 HOV Project and other programed roadway widening projects, could result in the placement of additional noise barriers thereby incrementally adding to the overall magnitude of such a division. This is considered a cumulatively considerable effect under NEPA. Under CEQA, this impact is considered cumulatively significant. Mitigation Measure VQA-4 is proposed to minimize this adverse effect; however, a cumulatively considerable adverse, indirect effect would remain under NEPA. Under CEQA, this cumulatively considerable indirect impact would remain significant and unmitigable.

Land Acquisitions, Displacements, and Relocations

Each of the Build Alternatives and Design Options considered would require partial and full acquisitions for some of the adjacent properties along the railroad corridor. The number of properties requiring full acquisitions will vary slightly under each Build Alternative and Design Option (see Table 3.2-9). Many of the partial takes and roadway easements at various at-grade crossings are associated with programmed roadway improvements and, therefore, the Project accounts for these planned or already funded improvements. SANBAG will be required to comply with the provisions of the Uniform Act and California Act to ensure that affected property owners receive relocation assistance and just compensation. In the case of the Project, two relocations are necessary as a result of the Project. In this context, an adverse effect would result under NEPA. Under CEQA, these impacts could be cumulatively significant. Mitigation Measure LU-1 (Minimize Project Land Requirements and Comply with Federal and State Relocation Laws) is proposed to minimize these impacts.

With projected increases in ridership in the future, a future phase of the RPRP could be constructed, which would include additional double tracking along the railroad corridor. Additionally, there would be a potential change in mode-type (e.g., LRT), which could also require new electrical transmission, distribution, and transformer improvements. These improvements, if ultimately proposed by SANBAG, would require property acquisitions beyond those required for the Build Alternatives and Design Options due to the expanded ROW requirements. This could in turn result in displacements and relocations of existing businesses and residences that are not otherwise required for the Build Alternatives and Design Options due to the expanded ROW needs. More than 200 additional private properties could be affected by the expanded ROW requirements. Additionally, properties impacted as part of the Project could be affected a second time in the future. As indicated in Section 3.2, all affected property owners would be required to receive relocation assistance and just compensation pursuant to the Uniform Act and California Act. In this context, no cumulatively considerable adverse effect would occur under NEPA. Under CEQA, this is considered a significant cumulative impact. Mitigation Measure LU-1 would be effective in minimizing these impacts such that they would no longer be cumulatively considerable.

Communities and Neighborhood

As discussed in Section 3.2, Land Use, Planning, and Communities, construction and operation of the Build Alternatives and Design Options would have the potential to affect community mobility, viability of local businesses, community resources and events, population, housing, and employment. Construction of other local, un-programmed transportation and infrastructure projects (e.g., flood control maintenance) could overlap with the Project construction period (2015-2017). Based on this cumulative context, the Project in conjunction with other cumulative projects could potentially result in adverse effects to community mobility, viability of local businesses, and community resources. Concurrent construction as a result of these combined projects could result in multiple street closures and the use of multiple construction staging areas simultaneously. These adverse effects would be cumulatively considerable under NEPA. Under CEQA, these impacts are considered cumulatively significant. Mitigation Measures TR-1, NV-1, NV-2, SS-2 (Fencing), and VQA-1 would be effective in minimizing and/or avoiding these adverse effects such that they would not be cumulatively considerable.

4.3.2 Transportation

EFFECT 4.3-2	**Transportation.** The Project in conjunction with past, present, and future projects would result in adverse cumulative effects to the local motorized and non-motorized transportation networks.

NO BUILD ALTERNATIVE

Under the No Build Alternative, the lack of additional transit service as offered by the Project would likely have a direct effect on traffic circulation and existing bus service. As identified in Section 3.3, Transportation, increased traffic would occur in parallel with future population increases, which would decrease the roadway intersection level of service (LOS) and volume to capacity ratio (V/C) for the years 2018 and 2038. Because the RTP predicts that traffic will continually worsen in the absence of additional capacity, the No Build Alternative would contribute to deteriorating access and mobility within the San Bernardino region. Likewise, the No Build Alternative would not promote a diversification in transit modes or take advantage of the direct connectivity of the Redlands corridor, which could otherwise contribute to reductions in the use of personal automobiles. Based on these considerations, the No Build Alternative would be inconsistent with the SCAG RTP/SCS 2012-2035. This adverse effect would be cumulatively considerable under NEPA. This impact is considered cumulatively significant under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Traffic Disruption During Construction

Construction of the Project would require temporary roadway closures and possible detours adjacent to the at-grade crossings, which would disrupt the flow of traffic, thereby temporarily reducing LOS and V/C at roadway intersections. In addition, construction detours and closures could disrupt bus stops and routes during construction of the Project, which could affect bus schedules. Construction activities could also result in temporary detours or blockages to bike routes and pedestrian walkways. Construction-related adverse effects may be compounded if planned projects, such as the California HST Project and other transportation projects listed in Table 4.1-1, such as the Tippecanoe Avenue Widening and Mountain View Avenue Widening Projects, occur at the same time as the Project. Although currently constrained by funding, if sources of funding become available, there is a potential that these and other RTP projects could begin construction concurrent with the Project. Concurrent construction activities would contribute incrementally to the local roadway network and could result in multiple roadway closures at the same time if not properly coordinated. These adverse effects would be cumulatively considerable under NEPA. Under CEQA, these impacts would be cumulatively significant. With the implementation of Mitigation Measure TR-1, the combination of preparing a Project-specific Traffic Management Plan in conjunction with maximizing opportunities for concurrent construction would be effective in minimizing these adverse effects to the extent that they would no longer be cumulatively considerable.

Level of Service and Congestion Management

As indicated in Chapter 2, ridership in the opening year is conservatively estimated at 820 and 1,330 in 2038. This total ridership would then translate into a reduction in the number of single occupancy vehicles on local roadways and highways during both the peak AM and PM hours. Additionally, there is a strong possibility in future years that ridership demand will increase beyond these estimates, especially if any intensification in land use occurs along the railroad corridor in the future. With the Project infrastructure in place, up to 2,620 daily ridership trips could occur in future years (see Table 4.2 of Appendix C), which in turn would result in further decreases in VMT from those estimated in Section 3.5, Air Quality and Greenhouse Gases. Additionally, if there is an increase in the number of stations or an increase in the service frequency, ridership could increase upwards of 6,100 (Appendix C), thereby incrementally adding to the Project's daily ridership and associated direct and indirect benefits as identified in Sections 3.2, 3.3, and 3.5.

As discussed in Section 3.3, there are two major limited-access highways that parallel or intersect the Study Area, I-10 and I-215. Currently, the I-10 and I-215 are experiencing increased congestion, which results in poor operating conditions (e.g., fuel efficiency) and delay. The level of congestion on I-10 and I-215 is a byproduct of a relatively high share of regional and local trips diverted onto highways as a result of the limited connectivity between Redlands and San Bernardino created by the SAR. The connectivity between Redlands and San Bernardino offered by the Project would assist in reducing the number of vehicle trips (and associated VMT) on these regional and local roadways. The availability of the Project would incrementally add to improvements in circulation along with other planned roadway improvements within the region (e.g., I-10 HOV).

As discussed in Section 3.3, at opening day (2018), only two of the 38 intersections analyzed (Orange Street and Pearl Avenue and 6th Street and Pearl Avenue) would not operate at satisfactory LOS in the PM peak hour (LOS D). Additionally, the V/C for two intersections

(California Street and I-10 West Ramps, and California Street and I-10 East Ramps) would exceed V/C thresholds. Other development projects, such as the Redlands Crossing Center and new development within the Downtown Redlands Specific Plan (DRSP) Area, which are anticipated to generate commercial related (shopping and restaurants) roadway trips, would incrementally contribute along with the Project to these reductions in LOS and V/C. Adverse effects associated with the deterioration in LOS and V/C in Year 2018 as a result of the Project combined with other projects would be cumulatively considerable under NEPA. Under CEQA, this impact is cumulatively significant. Mitigation Measure TR-2 is proposed so that SANBAG coordinates with local jurisdictions to fund its “fair share” of the identified roadway improvements. With this mitigation, adverse effects would not be cumulatively considerable.

Under 2038 conditions with the Project (see Table 3.3-13), a total of 15 intersections would experience multiple peak hour impacts (e.g., AM LOS, PM LOS, and V/C). A total of five intersections in the AM peak hour and 13 intersections in the PM peak hour intersections would operate at an unsatisfactory LOS. A total of 12 intersections would have an unsatisfactory V/C in the PM peak hour and six intersections in the AM peak hour under 2038 conditions with the Project; although, a majority of these effects occur in the Year 2038 without the Project (No Build). Other cumulative projects listed in Table 4-1, such as the Redlands Crossing Center, could incrementally contribute to these adverse effects and, therefore, this adverse effect is cumulatively considerable under NEPA. These impacts are cumulatively significant under CEQA. Similar to 2018 conditions, the implementation of Mitigation Measure TR-2 is proposed to minimize these effects such that they would no longer be cumulatively considerable. Likewise, cumulative projects would be subject to similar mitigation measures to reduce traffic impacts.

Transportation Safety and Design Hazards

The RPRP Traffic Report (see Appendix E) provides a summary of the grade crossing influence zone queue analysis for year 2038. The results indicate the potential for adverse effects during the AM Peak Hour for the following intersections: EB I-10 Ramps and the California Street; Redlands Boulevard and the California Street; Redlands Boulevard and the Alabama Street; and Redlands Boulevard and the Tennessee Street. During the PM Peak Hour, the following intersections would experience impacts: Waterman Avenue and the Orange Show Road; Orange Show Road and the Waterman Avenue; EB I-10 Ramps and the California Street; Redlands Boulevard and the California Street; Industrial Park Avenue and the Alabama Street; Redlands Boulevard and the Alabama Street; and Redlands Boulevard and the Tennessee Street. These effects would be considered adverse and cumulatively considerable under NEPA. Under CEQA, this impact would be cumulatively significant.

The Traffic Report provided in Appendix E also provides a summary of the Project crossing spillback queue for year 2038. The results indicate that the queues from certain grade crossing locations exceed the available storage between the grade crossing and the signalized intersection and could potentially block the intersection. During the AM Peak Hour, six intersections would experience impacts. During the PM Peak Hour, eight intersections would experience impacts. Other projects listed in Table 4-1 would incrementally add to these cumulative effects and, therefore, would be considered adverse under NEPA and significant under CEQA. With implementation of Mitigation Measures TR-1, TR-3 (Approval from CPUC for Grade Crossings and Safety Measures), and TR-4 (Recommended Pre-Signals for Queuing), these cumulative effects would be minimized and no residual adverse effect would occur.

Alternative Transportation

As discussed in Section 3.3, the availability of passenger rail service could result in changes to existing bus service by rerouting existing bus routes, eliminating routes, or less frequent bus service. Without sufficient coordination between existing transit providers and SANBAG, it is possible that existing transit services would not efficiently interface with passenger rail operations thereby resulting in schedule conflicts and impacts to existing transit ridership. Additionally, changes in ridership demand as a result of other projects, such as Transit-Oriented Development and the DRSP, could incrementally add to these changes. Additionally, other cumulative projects could result in additional conflicts to planned non-motorized transportation routes, such the I-10 HOV and local roadway improvement projects. This is considered an adverse effect that would be cumulatively considerable under NEPA. Under CEQA, this impact is considered cumulatively significant. Mitigation Measure TR-5 (Transit Operations Realignment) is proposed to enable for the realignment of transit services in conjunction with the Project's long-term operation. Mitigation Measure PCS-1 (Coordinate Trail Planning with Local Jurisdictions) is proposed to minimize conflicts with locally planned non-motorized transportation routes. With the implementation of these measures, cumulative effects would be less than considerable

4.3.3 Visual Quality and Aesthetics

EFFECT 4.3-3	**Visual Quality and Aesthetics.** The Project in conjunction with past, present, and future projects would result in cumulative effects related to the placement of proposed physical improvements (e.g., rail stations and canopies, layover facilities, sound barriers, etc.).

NO BUILD ALTERNATIVE

Under the No Build Alternative, existing conditions would generally be maintained albeit some minor changes along the railroad ROW as a result of track maintenance and bridge replacement. It is unlikely that these activities would result in adverse effects to visual resources outside the ROW (e.g., ornamental trees). Likewise, no new structures would be constructed within the Study Area that could otherwise contribute to physical changes in the visual character of the adjacent communities, including new sources of glare or nighttime lighting. In this context, no cumulatively considerable adverse effects to visual quality would occur under NEPA. Under CEQA, a less than significant cumulative impact would occur.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Changes in Visual Character

Construction along the railroad corridor would result in short-term visual effects and a temporary alteration of the existing visual quality along the railroad corridor as a result of earthmoving and other activities (e.g., staging/stockpiling, presence of construction equipment, and temporary traffic barricades). Residents, schools, and parks fronting the railroad ROW would have direct sight lines to the site during construction of the Project, which in some instances, could last longer than twelve months in duration (e.g., staging areas). Given the subjective sensitivity of individuals to visual changes, if construction of the Project occurred during the same time as other cumulative projects such as new development associated with the DRSP and University of Redlands Master Plan, various roadway improvements (e.g., Tippecanoe Avenue Widening), and drainage channel maintenance, especially where activities are concentrated for longer durations in close proximity to residences, short-term visual changes are anticipated. Considering the long duration of Project construction in conjunction with other planned and proposed projects in Table 4-1, an adverse cumulative considerable effect would occur under NEPA. Under CEQA, this impact is considered cumulatively significant. Mitigation Measures VQA-1 and SS-2 are proposed to lessen and minimize these effects such that no cumulatively considerable effect would result.

As described in Section 3.4, longer-term direct and indirect visual effects of the Project would be in the form of the placement of new physical facilities including, but not limited to, rail stations, layover facilities, and, if proposed, sound barriers. Of these structural improvements, the installation of sound barriers would have the most pronounced, distinctive change in the visual landscape as a result of their longer linear nature (e.g., thousands of feet) and associated height (e.g., up to 12 feet). These sound mitigation features along with those that may be required for other projects (e.g., I-10 HOV and other roadway improvements) would incrementally contribute to the creation of new long, linear physical obstructions in the landscape that could be considered disruptive visually to multiple individuals by eliminating existing middle or background views, creating shading effects, and providing an attractive source for graffiti. As discussed in the 2012-2035 RTP/SCS Program EIR, proposed alignments or facilities identified in the RTP Project List, could result in similar aesthetic effects if these projects require large cut-and-fill slopes or noise barriers. Likewise, depending on future ridership demands, if a future phase of the RPRP is ultimately constructed, a conversion in transit mode (e.g., LRT) could entail a reduction in operational noise thereby negating the need for noise barriers for the Project in future conditions. In this context, the adverse indirect visual effects of the Project components are cumulatively considerable under NEPA. These visual impacts would be cumulatively significant under CEQA. Mitigation Measures VQA-2, VQA-3 (Tree Replacement), and VQA-4 are proposed to address the physical appearance of Project facilities. However, indirect effects associated with the placement of sound barriers would visually dominate the railroad corridor, where constructed, thereby resulting in a cumulative effect that would remain adverse under NEPA and significant under CEQA.

Light and Glare

The Project is located in an urban setting with existing sources of light and glare associated with surrounding commercial, industrial and residential uses. The Project would result in the creation of new source of lighting and glare associated with stations, layover facility, at-grade crossing signals, and station platforms and parking lots. SANBAG would coordinate final design plans for the Project with the cities of San Bernardino and Redlands prior to final approval regarding lighting fixtures, light shielding, parking lot orientation, and glare-reduction materials. Each project considered in this cumulative analysis, including, but not limited to, development projects such as the National Orange Show Industrial Project, Redlands Crossing Center, Redlands Park Once, and Cott Beverage Industrial Warehouse, would be required to individually meet building code requirements, as well as the requirements of local policies. Notwithstanding these considerations, the Project could result in a cumulatively considerable lighting and glare effect that would be adverse under NEPA. Under CEQA, this significant impact would be cumulatively considerable. With the implementation of Mitigation Measures VQA-1 and VQA-5, cumulatively significant impacts under CEQA would be reduced to a less than significant level. Under NEPA, with the proposed mitigation, these cumulative effects would not be adverse.

4.3.4 Air Quality, Greenhouse Gases, and Global Climate Change

EFFECT 4.3-4	**Cumulative Effect to Air Quality Standards.** Implementation of the Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is in nonattainment or GHG emissions that could otherwise contribute to global climate change.

NO BUILD ALTERNATIVE

Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. The region of analysis for cumulative effects on air quality is the SCAB (see Table 4-2). Under the No Build Alternative, the Project would not occur and existing conditions along the railroad corridor would remain. Maintenance improvements would be required to occur along the existing track alignment, which would include bridge replacement or rehabilitation. These construction activities would be required to comply with SCAQMD Rule 403 for fugitive dust emissions from earth-moving and grading activities. In this context, the No Build Alternative is not anticipated to violate state or federal air quality standards. In this context, no adverse, cumulatively considerable effect would result under NEPA and a less than significant cumulative impact would result under CEQA.

The SCAB is currently in extreme nonattainment for O_3, maintenance for particulate matter less than 10 microns (PM_{10}), nonattainment for particulate matter less than 2.5 microns ($PM_{2.5}$), serious maintenance for CO under NAAQS, and nonattainment for O_3, $PM_{10,}$ $PM_{2.5}$, and NO_2 under CAAQS. These air quality conditions are a result of past and present projects and will likely further degrade by reasonably foreseeable future projects. These nonattainment conditions within the region are considered cumulatively significant and SCAQMD thresholds have been established to ensure attainment of NAAQS and CAAQS. As discussed in Section 3.5, the mass transit opportunities associated with the proposed Project would reduce single-occupancy vehicle trips on regional roadways, resulting in a net regional air quality benefit and a reduction in nonattainment pollutants and GHG emissions. As provided in Tables 3.5-9 and 3.5-10, emissions of criteria air pollutants associated with the No Build Alternative (e.g., continued freight) would be less than those associated with the Build Alternatives due to the addition of train emission with the Project. However, the No Build Alternative would negate the possibility of future technological advances (e.g., beyond Tier 4) or future modes changes (e.g., LRT) that could result in additional emission reductions under future conditions. Notwithstanding these shortcomings, no adverse air quality effects would result under the No Build Alternative that would otherwise be cumulatively considerable under NEPA and CEQA.

Greenhouse Gases

Over the long term under the No Build Alternative, freight operations would continue similar to existing conditions and could expand to include new customers based on ongoing negotiations between BNSF and potential new customers. Under the No Build Alternative, increased traffic congestion in the Cumulative Study Area without the Project would increase personal vehicle emissions, as indicated in the Air Quality and GHG Technical Report prepared for the Project (Appendix G). Tables 3.5-13 and 3.5-14 show that carbon dioxide equivalent (CO_2e) emissions would not exceed SCAQMD's thresholds during construction and operation in future forecast years 2018 and 2038. Therefore, the No Build Alternative in conjunction with cumulative projects listed on Table 4-1 would result in no cumulatively considerable adverse effect under NEPA and a less than significant cumulative impact under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Temporary Construction

As shown in Tables 3.5-6 and 3.5-10, emissions of construction-related criteria pollutant emissions would be below both regional and localized SCAQMD thresholds of significance. Construction impacts related to other projects located in areas surrounding the Study Area such as the California HST Project, various roadway improvements project, and Redlands Park Once would be cumulatively considerable within the SCAB if their combined construction emissions would exceed the SCAQMD daily emission thresholds for construction. However, any project located within the SCAB would be required to comply with SCAQMD rules and regulations to reduce potential emissions during construction. Other projects would be required to implement measures targeted at minimizing emissions through fugitive dust control measures and the use of construction equipment equipped with engine designations of EPA Tier 2 or 3. Based on these considerations, implementation of the Project in conjunction with other cumulative projects would not result in a cumulatively considerable adverse effect under NEPA. Under CEQA, the cumulative impact would be less than significant.

Criteria Air Pollutants from Operations

The Project is listed in a conforming RTP and FTIP and is, therefore, consistent with the AQMP and SIP. The SCAB is currently classified as extreme nonattainment for ozone, maintenance for PM_{10}, nonattainment for $PM_{2.5}$, serious maintenance for CO under NAAQS, and nonattainment for ozone, PM_{10}, $PM_{2.5}$, and NO_2 under CAAQS. These designations are a result of past and present projects with reasonably foreseeable future projects incrementally adding to basin-wide emissions. As provided in Section 3.5, with the use of Tier 4 technology, Project operational criteria air pollutant emissions for each of the vehicle technologies under consideration would be below both regional and localized SCAQMD thresholds of significance during 2018 opening year and 2038 forecast year operations (see Tables 3.5-9, 3.5-10, and 3.5-11). Additionally, cumulative projects (e.g., future RPRP phase, I-10 HOV, HSR, etc.) within the Cumulative Study Area and in future conditions could further improve cumulative air quality conditions. Furthermore, as discussed in the 2012-2035 RTP/SCS Program EIR, the projects identified in the RTP (which includes the Project) would not result in cumulatively considerable emissions. Based on these considerations, emissions of criteria air pollutants in conjunction with other projects listed in Table 4-1 would not be cumulatively considerable and, therefore, no adverse effect would occur under NEPA. Under CEQA, Project-related emissions in combination with other cumulative projects would be less than significant.

Toxic Air Contaminants

Project-related temporary, short-term construction and long-term operations could expose nearby existing off-site or proposed on-site sensitive receptors to TACs. TAC emissions associated with temporary, short-term construction activities and stationary sources are site-specific and would be less than significant for the Project as detailed in Section 3.5. The proposed passenger rail operations would occur in close proximity of nearby sensitive receptors, thereby exposing these nearby on-site receptors to TACs from diesel emissions. However, as described in the analysis in Section 3.5 and provided in Table 3.5-12, the combination of using Tier 4 technology in conjunction with the use of electrical power for station idling would minimize the potential for Project operations to expose sensitive receptors to high levels of TACs. Given that other cumulative projects would be subject to the same best available control technologies, Project-related TACs would not be cumulatively considerable. For these reasons, the Project would not result in a cumulatively considerable adverse effect under NEPA. Under CEQA, the Project's contribution to a significant cumulative impact would be less than significant.

Greenhouse Gases

Based on the results of the project-level analysis provided in Section 3.5, the Build Alternatives and Design Options would not result in any unmitigable air quality effects. As provided in Table 3.5-13 and 3.5-14, GHGs generated from short-term construction and the Project's long-term operation would not exceed applied thresholds. Therefore, cumulative effects resulting from the Project in relation to the generation of GHGs and global climate change would not be considerable. For this reason, no adverse effect would occur under NEPA. Under CEQA, cumulative effects would be less than significant.

4.3.5 Noise and Vibration

EFFECT 4.3-5	**Noise and Vibration.** The Project in conjunction with past, present, and future projects would result in cumulative adverse effects related to construction and operational noise and vibration.

NO BUILD ALTERNATIVE

Under the No Build Alternative, existing conditions within the railroad corridor would generally be unaffected. As described in Chapter 2, SANBAG would still be required to perform regularly scheduled maintenance of the existing track and corresponding improvements to the at-grade crossings and bridges to facilitate continued freight service. These improvements would be incrementally implemented on an as-needed basis and would be limited in geographic extent at any given time. In this context, although sensitive receptors could be exposed to maintenance-related construction noise and vibration, the corresponding duration and extent would be limited. In this context, when considered in conjunction with other cumulative projects, no cumulatively considerable adverse effect would occur under NEPA. Under CEQA, cumulative effects would be less than significant.

Under the No Build Alternative, the railroad corridor would continue to be used for low-speed, local freight service. Although no extension of freight service is proposed east of Tippecanoe Avenue, the extension of such service further east would remain a possibility if new customers request service from BNSF. Additionally, changes in the frequency of deliveries would remain at BNSF's discretion. Given that these changes could occur under existing conditions, potential operational noise impacts would not be cumulatively considerable and no adverse effect would occur under NEPA. Under CEQA, operational impacts in conjunction with other cumulative projects would be less than significant.

BUILD ALTERNATIVES AND DESIGN OPTIONS

When determining whether the noise and vibration effects from cumulative projects would be cumulatively considerable, it is important to note that noise and vibration are generally localized occurrences; as such, they decrease rapidly in magnitude as the distance from the source to the receptor increases. Therefore, only those cumulative projects that are in the direct vicinity of the Project would have the potential to be considered in a cumulative context with the Project's incremental contribution. The following cumulative projects are considered for this noise and vibration cumulative analysis: future development within the DRSP, Redlands Park Once, I-10/Alabama and Redlands Boulevard intersection improvements, California HST Project, DSBPRP, Omnitrans sbX BRT Project, I-10 HOV, University of Redlands Master Plan, and transit oriented development (TOD) in the cities of San Bernardino and Redlands.

Short-Term Construction Noise Exposure and Vibration

Implementation of the Project would result in a temporary, short-term exposure of sensitive receptors to increased equipment noise, groundborne noise, and vibration from construction. Given that some of the Project construction activities could occur during nighttime hours, these activities would be in conflict with local noise ordinances and municipal codes. As described in Section 3.6, noise levels during construction would exceed FTA criteria for daytime and nighttime construction (13 daytime and 65 nighttime Category 2 receivers), if required. Additionally, construction-related vibration impacts would also exceed FTA's annoyance criteria at 56 Category 2 land uses that include residences and hotels (see Appendix H). Additionally, adverse effects from construction-related vibration could also result to historic structures that may be more sensitive to vibration (e.g., Redlands Depot).

Noise associated with the construction of other projects listed in Table 4-1, such as the development projects within the University of Redlands Master Plan and DRSP, including Redlands Park Once, or local roadway improvement projects, could be greater if constructed concurrently in the general vicinity of the Project. Therefore, adverse noise effects associated with the Project in conjunction with the potential noise effects of other cumulative projects would be cumulatively considerable under NEPA. This is considered a significant cumulative impact under CEQA. Implementation of Mitigation Measures NV-1 to employ noise-reducing measures during construction and NV-2 to prepare a community awareness program would minimize or reduce these impacts. However, even with the implementation of these mitigation measures cumulatively considerable noise impacts could remain adverse under NEPA and significant under CEQA.

Long-Term Noise and Vibration from Train Operations

The Build Alternatives and Design Options would result in long-term increases in ambient noise levels and vibration along the railroad corridor due to operation of passenger trains along the railroad corridor. As identified in Table 3.6-6, these permanent increases in ambient noise would result in moderate and severe noise impacts on Category 2 and 3 land uses distributed throughout and along the railroad corridor for the all the vehicle technologies under consideration. Moderate impacts from rail noise would occur at up to 115 Category 2 land uses and three Category 3 land uses, including a church, a public park, and the University of Redlands. Severe impacts from rail noise would occur at up to 83 Category 2 land uses. Additionally, ground-borne vibration impacts at up to 24 Category 2 uses are considered severe. These adverse noise and vibration effects, which could occur with any one of the vehicle technologies under consideration, would occur in conjunction within other cumulative projects listed in Table 4-1, such as the California HST Project, DSBPRP, I-10 HOV, and Omnitrans sbX Bus Rapid Transit Project. The combination of these projects would increase the ambient noise levels for existing Category 2 and 3 land uses and, therefore, would be cumulatively considerable under NEPA. Under CEQA, long-term noise impacts would be cumulatively significant.

As discussed in Section 3.6, noise and vibration effects due to Project operations would be reduced with the implementation of a combination of mitigation measures. As described in Section 3.6, the combination of noise mitigation including establishing quiet zones (Mitigation Measure NV-3), constructing sound barriers at certain locations (Mitigation Measure NV-4), the use of rail lubrication (Mitigation Measure NV-5), the use of ballast mats and resiliently supported ties (Mitigation Measure NV-6), and the insulation to severe- and moderate-impacted residences where sound barriers are ineffective or impractical (NV-7) would minimize Project-related noise impacts. Mitigation Measure NV-3 would be capable of achieving desired reductions in operational noise. However, the full implementation of Mitigation Measure NV-3 requires the approval of the City of San Bernardino and the City of Redlands to adopt the quiet zones at each of the at-grade crossings. Although SANBAG would design the at-grade crossing to be quiet zone ready, the implementation of these measures is outside SANBAG's jurisdiction to fully implement and, thus, full implementation cannot be assumed. In the event that quiet zones are not approved by the cities of San Bernardino and Redlands, noise impacts would be greater, thus requiring the construction of sound barriers in more locations along the Redlands corridor. Based on these circumstances and the financial reality of mitigating noise impacts for all sensitive receptors, long-term noise would remain an adverse effect that would be cumulatively considerable under NEPA. Under CEQA, the impact of long-term noise is considered cumulatively significant and unmitigable.

From a broader land use perspective, the cities of San Bernardino and Redlands are considering an increase in land use densities along the railroad corridor. These land use plans contemplate advancing TOD forms of development along the railroad corridor, which is identified as a high quality transit area in the RTP (21012). As a result, there is a potential for new residential land uses to be constructed within close proximity to the railroad corridor that could be adversely affected by noise levels generated by trains. However, per local exterior and interior noise standards, developers of new noise-sensitive land uses would be conditioned to minimize noise at these locations through various measures including, but not limited to, noise insulation and noise barriers.

Likewise, if land use intensifies along the railroad corridor, ridership may increase thereby enabling for the implementation of a future RPRP phase, which could increase the frequency in service or a change in mode (e.g., LRT). Both of these factors could decrease (e.g., LRT) or increase (e.g., higher frequency) ambient noise levels beyond the operations considered in this EIS/EIR; however, the impacts remain too speculative for consideration. Given that future development along adjacent properties would be required to design new structures based on the presence of train operations, implementation of the Project in conjunction with other cumulative projects would result in no adverse, cumulatively considerable effect under NEPA. Under CEQA, this cumulative impact is considered less than significant.

4.3.6 Biological and Wetland Resources

EFFECT 4.3-6	**Biological Resources.** The Project in conjunction with past, present, and future projects would result in cumulative effects related to sensitive biological and wetland resources.

NO BUILD ALTERNATIVE

Sensitive wildlife and botanical species occur along the SAR and to a lesser extent Twin, Warm, and Mill Zanja Creeks. As such, maintenance activities and bridge replacement could result in direct and indirect effects to sensitive species. Also, the replacement or rehabilitation of bridges could result in construction-related adverse effects in terms of in-channel construction or debris falling into surrounding waterways. The implementation of the No Build Alternative in conjunction with other cumulative projects (e.g., Long-Term Channel Maintenance and Mountain View Avenue Bridge) that occur along the SAR has the potential to directly and indirectly affect the same biological resources. However, given uncertainties regarding the timing, potential overlap with other projects, and presence of existing regulatory requirements, the No Build Alternative would result in no adverse, cumulatively considerable effect to sensitive species and jurisdictional resources under NEPA. This is considered a less than significant cumulative impact under CEQA

BUILD ALTERNATIVES AND DESIGN OPTIONS

Numerous other projects, independent of the RPRP, would occur within the Cumulative Study Area ranging from private development to road and bridge improvements. Long term channel maintenance activities for local waterways within SBCFCD's jurisdiction would also be required and could conceivably occur concurrent with construction. The different Project components of the Build Alternatives and Design Options would affect different geographic areas within the Cumulative Study Area. These effects could combine with other projects adjacent to and outside the Cumulative Study Area. For this reason, the cumulative analysis for biological resources considers a broader geographic context than the area contained within the Cumulative Study Area and, instead considers potential cumulative effects at the watershed level (e.g., Upper SAR Watershed).

Although implementation of the Project would not result in long-term adverse effects to biological resources, it would result in direct adverse effects during construction that would require mitigation and appropriate regulatory permits (e.g., Section 404 permit and Section 7 Consultation) in coordination with USACE, USFWS, and CDFW. From a cumulative perspective, a majority of the projects considered would occur entirely within upland urban areas and would not result in adverse effects to sensitive biological resources, which are generally concentrated around the SAR and mouth of the Mission Zanja Channel. There are six main projects in the vicinity of or adjacent to the Cumulative Study Area that are anticipated to potentially contribute to biological resource impacts based on their location: (1) Long-Term Maintenance of Flood Control and Transportation Facilities throughout San Bernardino County; (2) Mountain View Avenue Bridge over the SAR; (3) SAR Trail and Mission Zanja Channel Bridge; (4) Upper SAR Wash HCP; (5) I-10 HOV; and (6) Mountain View Avenue Bridge at Mission Zanja Channel.

Sensitive Vegetation Communities and Plant Species

Implementation of the Project would result in effects to sensitive vegetation communities such as Southern Willow Scrub (SWS), Riversidean alluvial fan sage scrub (RAFSS), and Southern Cottonwood Willow Riparian Forest (SCWRF) as a result of bridge replacements, track improvements, and bank reinforcement within the Mission Zanja Channel. Implementation of other cumulative projects, such as the SAR Trial, I-10 HOV, and SBCFCD's Long-Term Maintenance Program, are anticipated to result in similar effects to sensitive vegetation communities (e.g., SWS, RAFSS, and SCWRF). Absent mitigation, a loss to valuable habitat and associated sensitive vegetation communities from Project construction and other cumulative projects would be considered an adverse effect under NEPA. Under CEQA, this impact would be cumulatively significant. However, through the implementation of Mitigation Measures BIO-1 (Pre-Construction Survey - Conduct Preconstruction Survey for Special Status Plants and Wildlife and, if Found, Implement Avoidance and Compensation Measures), BIO-2 (LBV), BIO-4 (Protection of Sensitive Plants and Habitats, and BIO-7 (Reseeding for Wooly Star), no net loss of these resources would occur. Following the application of the prescribed mitigation, cumulative impacts would not be adverse under NEPA and less than significant under CEQA.

Implementation of the Project would result in a direct effect to one federally endangered Santa Ana River woolly star individual located immediately south of the existing Bridge 3.4 located in the SAR. The plant is a single individual that is not part of a larger population in the Study Area, and is located approximately 0.7 miles downstream from the closest, locally established population. Although the direct effect to the individual Santa Ana River woolly star may be unavoidable, it would not be considered a cumulative adverse effect to the species' population as a whole with the application of Mitigation Measures BIO-1, BIO-4, and BIO-7. Given that other projects considered in the cumulative analysis would be required to mitigate for direct and indirect impacts to the Santa Ana River woolly star population, the cumulative effect of the Project would not be adverse under NEPA. Under CEQA, this significant impact would not be cumulatively considerable with implementation of Mitigation Measures BIO-1,BIO-4, and BIO-7.

Sensitive Zoological Communities

Implementation of the Project would result in direct effects to SWS, RAFSS, and SCWRF, which are habitats that support the federally endangered LBV and other sensitive avian species such as yellow warbler and those protected under the MBTA. In addition, the Project could potentially affect suitable habitat for the State Species of Concern, western spadefoot toad and western burrowing owl. Degradation of wildlife habitat caused by the Project, when combined with other habitat effects occurring from other proposed transportation projects (e.g., Mountain View Avenue SAR Bridge and I-10 HOV Bridge), the SAR Trail, SBCFCD maintenance activities, and development projects within the region, could result in cumulatively considerable effects under NEPA and CEQA. Additionally, construction-related indirect effects (e.g., noise) could also result from the Project and other projects, which in the absence of mitigation, could be cumulatively considerable under NEPA and CEQA.

In response to the potential for cumulative effects to listed species or those of special concern, CDFW and USFWS have promulgated a regulatory scheme that limits impacts on these species. The effects of the Project would be minimized through mitigation requiring compliance with all applicable regulations that protect wildlife species. More specifically, Mitigation Measures BIO-1 through BIO-5, HWQ-2 (Prepare and Implement a SWPPP), and HWQ-3 (Prepare and Implement a Flow Diversion Plan for Construction) would be imposed and the provisions required by law (e.g., pre-construction surveys and resource staking, presence of an environmental monitor, contractor training) would minimize effects to biological resources. Similar to the Project, other projects considered would also be subject to these regulatory requirements (e.g., Sections 7 and 10 of the ESA). Based on these considerations, under NEPA no cumulatively considerable adverse effect would occur. Under CEQA, cumulative impacts would be less than significant.

State and Federal Jurisdictional Areas

Project implementation would permanently and temporarily affect state and federal jurisdictional areas. Permanent effects to USACE and CDFW jurisdictional areas would occur primarily within the SAR, Mission Zanja Channel, Twin Creek and Warm Creek as a result of bridge replacement and bank stabilization/armoring. Total permanent impacts to USACE jurisdictional areas are estimated at up to 0.41 acres (Preferred Project) and 1.34 acres for CDFW jurisdiction. These calculated areas represent a very small fraction of the total acreage of wetlands and waters of the U.S. and State within the overall watershed of the Upper SAR Hydrologic Area. However, these impacts to jurisdictional areas would likely overlap with other cumulative projects, including the Mountain View Avenue SAR and Mission Zanja Channel Bridges and I-10 HOV Bridge, the SAR Trail, and SBCFCD maintenance activities could be cumulatively considerable. Although specific impacts to jurisdictional areas are not available for these other projects, it is possible that the temporal overlap of potential jurisdictional impacts from the combined project could exceed several acres and, thus, would be cumulatively considerable.

Direct and indirect Project-related effects to jurisdictional areas would be mitigated through implementation of Mitigation Measures BIO-6, HWQ-2 and HWQ-3 along with any additional measures established during the permitting process. Mitigation Measure BIO-6 would require the securing of a Clean Water Act (CWA) Section 404 Permit and implement all permit conditions to ensure no net loss of functions and values of wetlands, other waters of the U.S., and waters of the State. Through these measures, SANBAG would be responsible for maintaining a no net-loss of jurisdictional areas subject to USACE's "no-net-loss" standard. Similar to the Project, other cumulative projects that affect jurisdictional areas would be subject to similar mitigation requirements and regulatory permit conditions to maintain no net-loss of jurisdictional areas. With the implementation of the proposed mitigation measures, adverse effects under NEPA would not be cumulatively considerable. Similarly, with mitigation, cumulative impacts to wetlands and Waters of the U. S. and State would be less than significant under CEQA.

Local Ordinances

The Project could require the removal of numerous ornamental and other native trees as part of construction. Similarly, other cumulative projects may result in the removal of trees as part of construction. However, the Project would adhere to local tree ordinances prior to the removal of native and ornamental trees and would not require the removal of native oak trees. In considering that other cumulative projects would be subject to local tree ordinances, cumulative effects related to local tree ordinances would not be cumulatively considerable under NEPA and CEQA.

4.3.7 Floodplains, Hydrology, and Water Quality

EFFECT 4.3-7	**Floodplains, Hydrology, and Water Quality.** The Project in conjunction with past, present, and future projects would result in cumulative adverse effects related to local and regional hydrology, the placement of structures within a 100-year flood zone, and water quality.

NO BUILD ALTERNATIVE

According to the FEMA maps, portions of the existing railroad corridor and bridges are located within a 100-year floodplain. Based on this determination, the replacement of tracking and bridges would be subject to 100-year flood hazards and would be required to be designed and constructed in accordance with BNSF, SBCFCD, and USACE standards to avoid adverse effects from flooding. Under existing conditions, flash floods could lead to washout of tracks and impacts to existing freight service; whereas moderate rainfall events over longer durations could render some track segments impassable. The development of other cumulative projects, especially projects, which would add impervious surfaces (e.g., University of Redlands Master Plan, Redlands Crossing, Redlands Park Once, and Orange Show Investments), would further contribute to hydromodification of the watershed. However, given that little to no new impervious surfaces would be developed under the No Build Alternative and existing hydraulics would be maintained at existing bridge crossings, floodplain impacts would not be cumulatively considerable under NEPA or CEQA.

Under the No Build Alternative, limited maintenance and rehabilitation activities would extend over an area greater than one acre and these activities would be required to apply for coverage under the NPDES General Construction Permit. Preparation and implementation of a SWPPP in compliance with the General Construction Permit would minimize the potential for cumulative water qualityeffects during construction. Similarly, compliance with BNSF's existing SWPPP for operational discharges would minimize the potential for any long-term water quality effects. Based on these considerations, the No Build Alternative would not contribute to a cumulatively considerable adverse effect under NEPA or significant cumulative impact under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Drainage and Hydrology

Local hydrology, drainage, and groundwater conditions are often affected by multiple activities within the watershed. Generally, the limits of the cities of Redlands and San Bernardino contain mainly developed areas including paved roads, existing structures, and other impervious surfaces (e.g., parking lots). Both cities have existing stormwater drainage and conveyance infrastructure in place that connects with larger flood control facilities (e.g., Mission Zanja Channel). Stormwater drainage and flood control facilities in both cities is operated and maintained by a combination of USACE, SBCFCD, and the respective engineering departments for each City. As described in Section 3.8, the Mission Zanja Channel, which accepts drainage from the eastern portion of the Study Area, is limited in its ability to contain flood waters during moderate to large storm events and is prone to flooding at multiple locations. This condition is a result of hydromodification within the larger watershed (see Figure 3.8-2), which has effectively reduced the time of concentration for flood waters to reach the Mission Zanja Channel. Hydromodification is a result of incremental increases in impervious surfaces from development from both within the cities and unincorporated areas in the upper watershed that increase the peak runoff volume, which places strain not only on the local storm drain system, but the Mission Zanja Channel as well (City of Redlands 2011). A similar, but less severe, condition affects southeastern portions of San Bernardino, south of Orange Show Road.

Implementation of the Project would create a relatively small fraction of new impervious surfaces, up to 20 acres from the station platforms, parking areas, and layover facility (except Design Option 2), that would result in a small increase in the volume of runoff. Although, in many instances, the Project would correct numerous pre-existing drainage deficiencies, the increased efficiency of Project-related drainage infrastructure combined with an increase in impervious surface in combination with similar impervious surfaces for other projects (i.e., Transit-Oriented Development, Redlands Crossing, Redlands Park Once) could incrementally contribute to cumulatively considerable increases in peak discharges under NEPA and CEQA. Conformance with LID principles briefly summarized in Mitigation Measures HWQ-1 (Prepare Drainage Plans for Structural Facilities) and conformance with applicable state and local regulations regulating surface water runoff, including the procedures outlined in the San Bernardino County Drainage Manual and Storm Water Management Plan, would reduce cumulative drainage impacts such that no adverse effect would remain under NEPA. Under CEQA, cumulative drainage impacts would be reduced to a less than significant level.

During construction of the Project, in-channel construction activities in combination with other projects, such as Mountain View Avenue Bridge and Long-term Maintenance Activities by

SBCFCD, would have the potential to result in temporary restrictions in channel capacity along the SAR and Mission Zanja channel. Depending on the duration and overlap of these projects, temporary reductions in channel capacity could be cumulatively considerable under NEPA and CEQA. In response to this concern, the implementation of Mitigation Measure HWQ-3 is proposed to minimize flooding hazards during construction. With the implementation of Mitigation Measure HWQ-3, the Project would not result in a cumulatively considerable incremental contribution to an adverse effect under NEPA or a significant cumulative impact under CEQA.

Floodplain Encroachment and Development

As discussed in Section 3.8, several sections of the railroad corridor are currently susceptible to flooding from just moderate rainfall events as a result of hydromodification within the larger watershed. With the construction of the stations, tracking, bridges, and layover facilities within the limits of the 100-year flood zone (some within the 10-year), these Project features would be susceptible to damage from flood waters. In the case of the bridge structures at MP 1.1, 3.4, 5.78, and 9.4, each structure is designed to maintain or increase the existing hydraulic capacity thereby avoiding an associated rise in the 100-year flood elevation. In this context, Project-related floodplain effects (or hydraulics) at these bridge locations when considered in conjunction with other cumulative projects, such as the I-10 HOV and Mountain View Avenue Bridges, would not be cumulatively considerable under NEPA and CEQA. However, in the case of the track, station, and layover facility improvements, these Project improvements would be subject to existing floodplain conditions.

As discussed in detail in Section 3.8, based on pre-existing drainage limitations within both the cities of Redlands and San Bernardino, the placement tracking, rail stations, and layover facilities within the 100-year flood zone would occur at multiple locations (see Table 3.8-4) and is inconsistent with SCRRA and BNSF standards. In considering these Project-specific effects in conjunction with other past, present, and reasonably foreseeable projects within the Cumulative Study Area, let alone the larger watershed, the Project infrastructure and new development (e.g., TOD) would be subject to cumulatively considerable flooding impacts. For example, construction of the Project could encourage an intensification in land use densities within a quarter to half mile proximity of the proposed station locations, which could result in a pattern of development that would result in the placement of additional structures and uses within the delineated 100-year floodplain. Mitigation Measures HWQ-4 (Prepare a Natural Hazard Management Plan) and HWQ-5 (Flood-Proofing of Critical Infrastructure) are proposed to mitigate these adverse effects in the form of flood damage to new Project-related structures in the event of flooding. However, since Project-related structures would continue to be subject to inundation from flooding and new development adjacent to the railroad corridor would not be subject to the mitigation proposed by SANBAG, an adverse cumulative effect would remain under NEPA and a significant cumulative impact would remain under CEQA

SBCFCD in coordination with the USACE and FEMA is in the process of planning and securing the necessary funding for a combination of drainage improvements that would effectively reduce the threat of flooding throughout the Cumulative Study Area. However, the timing and implementation of these larger, watershed-scale flood control improvements that are currently subject to funding limitations remains uncertain. For example, the construction of the Opal Basin (see Table 4-1) would alleviate the frequency of the flooding in the City of Redlands by providing temporary detention of storm runoff for up to a 25-year storm event. Likewise, the future Mission Storm Drain Bypass is expected to alleviate the flooding in downtown Redlands by adding capacity to the existing Mission Storm Drain (see Figure 3.8-2). Although these drainage improvements would incrementally help to alleviate these flooding issues, the provision of 100-year flood protection is contingent on the completion of a combination of projects that remain outside SANBAG's control. Based on this context and the fact that operations would likely start in advance of the completion of the necessary flood control projects, the Project in conjunction with other projects would result in an adverse, cumulatively considerable effect under NEPA. Under CEQA, this cumulative flooding impact is considered significant and unmitigable.

Construction-Related Water Quality

Construction activities during implementation of the Project would involve extensive grading and movement of earth. Substantial construction-related alteration of on-site drainages could result in soil erosion and stormwater discharges of suspended solids, increased turbidity, and potential mobilization of other pollutants from project-related construction sites. This contaminated runoff could enter Warm Creek (Historic), Twin Creek, Mill Creek Zanja, the SAR, and the Mission Zanja Channel. In response to these concerns, SANBAG's contractor would be required to prepare and implement a SWPPP consistent with the existing statewide NPDES General Construction Permit. Implementation of these regulatory requirements in addition to Mitigation Measures HWQ-2 and HWQ-3 would reduce the significant water quality and erosion impacts from construction activities. Although there are no assurances that other cumulative projects listed in Table 4-1 would incorporate the same degree or methods of treatment as the Project, each related project would be required to comply with NPDES General Construction Permit and local stormwater ordinances, at a minimum. In this context, Project construction would not result in a cumulatively considerable water quality impact. For this reason, the Project's incremental contribution to cumulative water quality impacts would not be adverse under NEPA. Under CEQA, the cumulative impact would be minimized through the proposed mitigation and reduced to a less than significant level.

Long-Term Stormwater Discharges

Urban runoff can carry dissolved or suspended residue from both natural and man-made land uses into natural water bodies. Cumulative projects including, but not limited to, the National Orange Show Industrial Project, Redlands Crossing, Cott Beverage Industrial Warehouse, University of Redlands Master Plan, and Redlands Park Once would include various pollutant sources similar to the Project including, but not limited to, parking lots and streets, industrial uses, rooftops, exposed earth at construction sites, and landscaped areas. Pollutants in runoff from these areas can include sediment, oil and grease, hydrocarbons, heavy metals, pathogens, nutrients, and other water quality threats (e.g., brake fluids, solvents, etc.). To address effects related to long-term impacts from polluted runoff, post-construction runoff BMPs as proposed as part of Mitigation Measures HWQ-1, HWQ-2, and HWQ-6 to protect minimize post-construction and operational effects on water quality. Each cumulative project considered in Table 4-1 would also be subject to similar mitigation. Given that the SAR is listed generally not listed as an impaired water body under Section 303(d) of the CWA for pollutants of concerns for the Project, with the implementation of the proposed mitigationmeasures, no cumulatively considerable adverse effect would result under NEPA. Under CEQA, cumulative, long-term water quality impacts would be reduced to a less than significant level.

4.3.8 Geology, Soils, and Seismicity

EFFECT 4.3-8	**Geology, Soils, and Seismicity.** The Project in conjunction with past, present, and future projects would not result in cumulatively considerable effects related to geology, soils, and seismicity.

NO BUILD ALTERNATIVE

The No Build Alternative would not result in changes to the existing ROW beyond periodic maintenance and rehabilitation that would result in adverse effects related to strong seismic shaking, risks due to landslides, create unstable geologic conditions, or be subject to hazards from problematic soils. Based on these considerations, the No Build Alternative would not contribute to a cumulative geology, soils, and seismicity effect. The No Build Alternative would not result in a cumulative adverse effect under NEPA or significant cumulative impact under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Geologic hazards based on the local geologic characteristics of a project site are typically site specific and addressed on a project-by-project basis, rather than in a cumulative nature. Although the Study Area is not underlain by or immediately adjacent to any known faults, as described in Section 3.9, the Project components could be subject to seismic ground shaking from an earthquake occurring along one of several major active or potentially active faults and related secondary effects (e.g., liquefaction). Other projects would be subject to the same risks of ground shaking as a result of displacement along one or more faults in close proximity to the Study Area. Similar to the Project, other projects (e.g., Mountain View Bridge, I-10 HOV) would be subject to similar mitigation requirements per federal, state and local requirements. In this context, no cumulatively considerable effects would occur under NEPA and CEQA.

The Study Area is underlain with soils that are susceptible to erosion, settlement, liquefaction, collapse, lateral spreading, and corrosion. In addition, portions of the railroad corridor, from approximately MP 3.8 to 5.8, have experienced bank failures in the recent past. It is possible that portions of the railroad corridor that parallel Mission Zanja Channel could be susceptible to instability. Other cumulative projects could contribute to additional instability (e.g., Long-Term Maintenance by SBCFCD). Mitigation Measure GEO-1 would reduce adverse effects related to these geologic hazards, including landslides, through integration of site-specific geotechnical recommendations and design measures as required by the CBC. Similarly, other cumulative projects would be subject to similar mitigation and federal, state, and local regulations. Therefore, the Project would not result in a cumulatively considerable effect under NEPA and CEQA.

4.3.9 Hazardous Waste and Materials

EFFECT 4.3-9	**Hazards and Hazardous Waste and Materials.** The Project in conjunction with past, present, and future projects could not result in cumulatively considerable adverse effects related to local hazards and hazardous waste and materials.

NO BUILD ALTERNATIVE

Under the No Build Alternative, maintenance and rehabilitation activities would occur within SANBAG's ROW. These activities could involve the use of hazardous materials. The handling of such materials would occur during short-term construction activities and would be subject to federal, state, and local health and safety requirements. Other cumulative projects would be subject to federal, state, and local health and safety requirements. No demolition of structures (beyond existing bridges requiring replacement) or encroachment into adjacent listed hazardous materials sites would occur under the No Build Alternative. Based on these considerations, the No Build Alternative would not contribute to a cumulatively considerable effect under NEPA or CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Encountering Documented and Undocumented Sources of Contamination

Health and safety effects associated with the past or current uses of a project site generally occur on a project-by-project basis, rather than in a cumulative nature. Implementation of the Project would require construction-related disturbances on adjacent properties with known hazardous materials exposure. Any hazardous wastes or materials encountered through ground-disturbing activities would be handled and disposed of in accordance with federal, state and local regulatory requirements. All future projects in the Cumulative Study Area and adjacent to the railroad corridor, such as the National Orange Show Industrial Project, Redlands Crossing Center, and Cott Beverage Industrial Warehouse, would be subject to the same local, regional, state and federal regulations. These regulations require an individual site evaluation and, if hazardous materials are encountered, clean up prior to construction. Further, the implementation of Mitigation Measures HAZ-3 (Prepare Phase I and/or Phase II ESA for Indeterminate or High-Risk Sites) and HAZ-4 (Halt Construction Work if Potentially Hazardous Materials are Encountered) would serve to further minimize potential risk such that they would not be cumulatively considerable under NEPA and CEQA.

The Project would also require the demolition of a limited number of existing structures, which may contain asbestos, and/or lead based paint. Other projects involving the removal of existing structures would also be subject to this hazard (e.g., Redlands Park Once, University of Redlands Master Plan, California HST Project, and DSBPRP). Any adverse effects would be mitigated on a project specific basis pending final engineering design. With the implementation Mitigation Measures HAZ-2, Project-specific health and safety hazards would be minimized such that no cumulatively considerable adverse effects would occur under NEPA or CEQA.

Use, Transport, and Storage of Hazardous Materials

The Project and related projects, such as the National Orange Show Industrial Project, Redlands Crossing Center, California HST Project, and Cott Beverage Industrial Warehouse, would all involve the storage, use, disposal, and transport of hazardous materials to varying degrees during construction and operation. Adverse effects from these activities are negligible for the Project because the storage, use, disposal, and transport of hazardous materials are extensively regulated by federal, state, and local laws, regulations, and policies. It is foreseeable that the Project and the related projects would implement and comply with these existing hazardous materials laws, regulations, and policies. Implementation of Mitigation Measures HAZ-1 would further minimize and reduce any Project-specific health and safety hazards such that no adverse cumulatively considerable effects would occur under NEPA. Under CEQA, cumulative impacts would be reduced to less than significant levels.

Wildfire Hazards

Wildfire hazards are inherent to Southern California's dry climate and certain activities can increase these hazards and to adjacent areas. As discussed in Section 3.10, the proposed track improvements and the SAR Bridge are located in moderate to high fire hazard zones. Project-related construction activities in conjunction with other projects that are located near moderate to high fire hazards zones, such as the Cott Beverage Industrial Warehouse and Central Avenue Corridor Storm Drain Improvements and Utility Master Plan Project, could increase the relative probability of a wildfire occurring. However, with the implementation of Mitigation Measures HAZ-5 (Keep Construction Area Clear of Combustible Materials) and HAZ-6 (Provide Accessible Fire Suppression Equipment) hazards related to wildfires would be minimized, no cumulatively considerable effects would result under NEPA and CEQA.

4.3.10 Energy

EFFECT 4.3-10	**Energy.** The Project in conjunction with past, present, and future projects would not result in cumulative effects related to energy.

NO BUILD ALTERNATIVE

Implementation of the No Build Alternative would indirectly contribute to increased energy consumption as a result of increased traffic congestion that is projected to occur in conjunction with future growth and the corresponding VMT. This alternative would not further the energy conservation initiatives of the region or the local cities, nor would it contribute to the state's GHG reduction targets in accordance with Assembly Bill (AB) 32. Likewise, the No Build Alternative would not implement the key goals or initiatives set forth in the Cities EECS, SCAG's RTP and SCS, or Department of Transportation's System Safety Program Plan (SSPP). Therefore, the No Build Alternative would not be consistent with applicable federal, state, or local energy conservation plans. In this context, the No Build Alternative would result in an adverse effect under NEPA that could be cumulatively considerable. Under CEQA, this cumulative impact is considered significant.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Construction-Related Energy Demand

The construction of the Project would result in temporary increases in demand for energy in the form of fuel used for construction vehicles and other equipment used during site clearing, grading, and construction. The energy used for project construction would not require significant additional capacity or significantly increase peak or base period demands for electricity and other forms of energy. In this context, no cumulatively considerable adverse effect would occur under NEPA or CEQA.

Long-Term Energy Demands

The Project would accommodate current and anticipated ridership demands for alternative transportation in the region. The Project would have a beneficial effect on energy resources by providing improved transit service, which would encourage more individuals to use public transit services, thereby reducing the number of personal vehicles on the roads requiring gasoline and fuel consumption. Regional VMT would also be reduced. Additionally, the cities of San Bernardino, Loma Linda, and Redlands may propose to increase land use densities, and update land use plans and development regulations to advance TOD within a high quality transit zone delineated in the RTP (2012) along the Redlands corridor. Due to the proximity of proposed TOD areas to rail stations associated with the Project and proposed mass transit projects such as the California HST Project, DSBPRP, Omnitrans sbX BRT Project, and existing regional transportation services including local Omnitrans bus service, an increase in the use of mass transit is anticipated and the associated level of ridership could in actuality be much higher than projected for in this EIS/EIR for 2038. By supporting and helping to improve public rail transit operation, the Project is expected to have an incremental beneficial effect when compared to existing conditions with regards to energy resources.

Given the planning period available, energy providers have sufficient information to include the Project in their demand forecasts. In the context of other projects considered in Table 4-1, all development projects would be required to comply with the energy efficiency standards as identified in Title 24. Based on these factors, the Project in conjunction with other past, present, and reasonable foreseeable transportation improvements projects (e.g., DSBPRP, Omnitrans sbX, and California HST Project), the improved transit service and reduced VMT offered by the combined projects is considered a beneficial cumulative effect under NEPA and CEQA.

4.3.11 Cultural and Historic Resources

EFFECT 4.3-11	**Cultural and Historic Resources.** Construction of the Project in conjunction with past, present, and future projects could result in cumulatively considerable adverse effects related to cultural and historic resources.

NO BUILD ALTERNATIVE

Under the No Build Alternative, there is a potential that ground-disturbing activities associated with maintenance activities could disturb, damage, or degrade known and unknown, intact, and potentially significant archaeological resources. In addition, ground disturbance could potentially damage or destroy unknown buried human remains. Damage to these potential resources is considered an adverse effect under NEPA that could be cumulatively considerable when considered with other projects (e.g., DRSP, Park Once, etc.). Under CEQA, these cumulative impacts are considered significant.

PREFERRED PROJECT AND DESIGN OPTIONS

According to the County of San Bernardino General Plan, more than 11,000 prehistoric and historic archaeological sites and over 2,000 historic structures have been documented within the County. Many of these sites are located on private lands under the jurisdiction of the County. The preponderance of both prehistoric and historic sites throughout the County, and the vast areas that have yet to be systematically surveyed for cultural resources, indicate that an equal number of cultural resources, as yet unidentified, are present. Given the rapid development within the County, numerous cultural resource sites will be affected by development (County of San Bernardino 2007).

Historical Resources

The records search conducted for the Project indicates that the APE has been previously inventoried for cultural resources and that approximately 161 prehistoric and historic-era districts, sites, features, and isolated artifacts have been identified (Appendix M). NRHP-listed resources identified within the APE include: (1) features from Native American habitation including the "Zanja"; and (2) structures and landscape districts of historic-era activities, in particular, those related to Gold Rush-era, railroad, and agricultural operations (see Tables 3.12-2, 3.12-3, and 3.12-4). Of these resources, the Project would require construction through the National Register-listed Redlands Santa Fe Depot Historic District, which was evaluated and listed in the National Register in 1991 (1S status code; Appendix M). It currently consists of 23 contributing properties of which eight are located within the APE. The construction in close proximity to historic structures (e.g., Redlands Depot) could result in indirect effects that in conjunction with other projects within the DRSP area would be cumulatively considerable under NEPA and CEQA. However, with the application of Mitigation Measure CUL-1 (Structural Evaluations), cumulative effects to the historic district would be minimized and no adverse effect would result under NEPA. Under CEQA, cumulative effects would be minimized to a less than significant level.

In addition, the Preferred Project and Design Options would require an encroachment into the historic eligible I-10/California Citrus Grove adjacent to the railroad corridor, which is one of eight groves owned by the City of Redlands. The groves are an important historical element of the landscape and if additional groves are removed in the City of Redlands and for that matter the San Bernardino Valley, the incremental effect would be cumulatively considerable. Given that the Preferred Project and Design Options would result in the removal of up to two rows (or one-third) of the I-10/California Citrus Grove, the incremental reduction in the total acreage allocated to the remaining citrus groves would be significant impact that is cumulatively considerable under CEQA. The implementation of Mitigation Measure CUL-3 would reducer this impact to a less than significant level such that it would not be cumulatively considerable.

In additional to direct effects to historic resources, indirect effects from Project-related mitigation measures (e.g. NV-4 – Construction of Sound Barriers) could adversely affect the Second Baptist Church and the Redlands Lawn Bowling Area, both of which are eligible for listing on the NRHP. Other cumulative projects, including new development within the DRSP and the University of Redlands Master Plan, could incrementally add to these adverse effects. However, through the implementation of Mitigation Measures CUL-2, VQA-3, and VQA-4 these indirect effects would be mitigated such that no cumulative adverse effect to these historic resources would result under NEPA and CEQA.

Archaeological Resources

Although many portions of the APE have been subjected to detailed archaeological surveys and historical investigations (e.g., Chinatown), much of this research has been piece-meal. Several of the prehistoric resources documented within the APE have not been formally evaluated for significance per NRHP and the CRHR criteria (e.g., Redway House, Chinatown). Regardless of their association or eligibility, the large number of cultural resources documented within the APE indicates that in particular eastern sections of the APE have long been the focus of intensive activity. Construction activities implemented as part of the Project and other projects, such as Redlands Park Once and new development within the DRSP area, could result in direct adverse impacts to these resources. Although no resources and artifacts were identified within SANBAG's ROW based on archaeological testing, the potential for discovery of resources remains; especially in portions of the Project footprint that extend beyond SANBAG's ROW. With the implementation of Mitigation Measure CR-4, Project-related impacts to NRHP and CRHP resources would be minimized through avoidance techniques or systematic evaluation and data recovery, if necessary. Therefore, the Project would not result in a cumulatively considerable incremental contribution to the regional loss of known archaeological resources or artifacts under NEPA and CEQA.

REDUCED PROJECT FOOTPRINT ALTERNATIVE

Effects to historical and archaeological resources under this alternative would largely be similar to those associated with the Preferred Project. The main difference under this alternative is that drainage facilities would be contained within the ROW between California Street and just of west of Nevada Street. This alternative would contain drainage within a large diameter pipe that would require the track be raised approximately 2 feet to facilitate avoidance of the I-10/California Citrus Grove. Under the Reduced Footprint Alternative, no cumulatively considerable adverse effect would occur to the I-10/California Citrus Grove under NEPA. Under CEQA, cumulative impacts to the I-10/California Citrus Grove would be less than significant. All other effects to cultural and historical resources would be similar to the Preferred Project.

4.3.12 Parklands and Community Services and Facilities

EFFECT 4.3-12	**Parklands and Community Services and Facilities.** The Project in conjunction with past, present, and future projects could result in cumulatively considerable adverse effects related to parklands and community services and facilities.

NO BUILD ALTERNATIVE

Under the No Build Alternative, maintenance activities would be limited to the existing ROW and would not have the potential for disruption to existing parkland, community services, and other public facilities. Although bridge improvements would have the potential to interfere with trails (e.g., SAR Trail) and bike lanes, these effects would be temporary, contained within SANBAG's ROW, and would maintain the existing design. Based on these circumstances and in considering the disturbed nature of the railroad corridor, there would be no cumulatively considerable adverse effects to parkland, community services, and other public facilities under NEPA. Under CEQA, no significant cumulative impact would result.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Parks and Recreation

The installation of Project facilities along the railroad corridor could include disruptions to bicycle and hiking trails, local parks, and sports fields. These incremental disruptions in conjunction with other projects, such as the Tippecanoe Avenue Widening Project, Mountain View Avenue Widening Project, Flood Control Maintenance by SBCFCD, and the University of Redlands Master Plan could be cumulatively considerable. With implementation of Mitigation Measures TR-1, VQA-1, PCS-1 (Coordinate Trail Planning with Local Jurisdictions.), NV-1, and NV-2, effects related to the temporary disruption to local streets, impacts to the SAR Trail, access to recreational areas during construction, and nuisance-related construction effects on recreational areas and parks would be minimized. With these mitigation measures, no cumulatively considerable adverse effect to parklands and communities facilities would result under NEPA. Under CEQA, cumulative impacts would be reduced to less than significant levels.

4.3.13 Economic and Fiscal Effects

EFFECT 4.3-13	**Economic and Fiscal Effects.** The Project in conjunction with past, present, and future projects would result in beneficial cumulative effects as a result of increases in the number of jobs and spending in the local and regional economy.

NO BUILD ALTERNATIVE

Under this alternative, some short-term job creation would occur to implement maintenance improvements along with other cumulative projects under the No Build Alternative. As a result, the No Build Alternative would have no adverse effect under NEPA to economic or fiscal resources. However, because passenger rail service would not be implemented, this alternative would not realize value-added dollars income for the regional economy or facilitate the opportunities within a high quality transit area as delineated by the 2012 RTP. Although this alternative would potentially perpetuate existing blight conditions along the railroad corridor and create less incentive for private investment and corresponding cumulative projects (e.g., TOD), these conditions remain speculative and not cumulatively considerable under NEPA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

The Project would enhance transportation options for the cities of San Bernardino and Redlands and facilitate passenger train service within a high quality transit corridor as delineated in the 2012 RTP. The Project would increase accessibility by rehabilitating the railroad corridor and constructing new station locations that would benefit local business by increasing the pool of potential consumers (or shoppers) that could access businesses by foot. This new access and enhanced pedestrian connectivity would not only potentially increase the visibility for local businesses, but support (or increase) the vitality of local business. Additionally, if future stations are constructed as demand increases (e.g., future RPRP phases) and land use intensifies (e.g., TOD); additional incremental benefits could result. These indirect economic benefits would be cumulatively considerable under NEPA.

The Project is expected to generate 1,390 job-years (Appendix O). The Project is also expected to create $103.9 million in value added, including $71.3 million in labor income. Additionally, the Project is expected to generate $14.4 million in federal taxes and $7.6 million in state and local taxes. Beyond economic benefits related to short-term job creation, the Project is expected to generate long-term employment opportunities. The economic benefits would add incrementally to the labor market (California HST Project, I-10 HOV, etc.) within southwestern San Bernardino County. The Project would have a beneficial effect on the regional and local economy along with other projects listed in Table 4-1. These direct economic benefits would be cumulatively considerable under NEPA.

Future passenger train operations would be funded by Measure I (Rail) as provided in Chapter 2. This funding source is specifically allocated for rail operations per the voter approved Measure I. In this context, the Project would not result in a cumulatively considerable adverse affect to funding allocations for other transit operations within San Bernardino County.

4.3.14 Safety and Security

EFFECT 4.3-14	**Safety and Security Effects.** The Project in conjunction with past, present, and future projects could result in a potential for adverse safety conditions, including station accidents, right-of-way accidents and collisions, conflicts with non-motorized forms of transportation (e.g., bicycles), and adverse security conditions.

NO BUILD ALTERNATIVE

Under the No Build Alternative, existing conditions safety and security conditions would continue along the railroad corridor. Unobstructed and unauthorized access (e.g., trespassing) across the railroad corridor would likely continue to persist. Additionally, security concerns (e.g., graffiti, illegal encampments, etc.) would also likely continue to persist. These conditions would be representative of existing conditions and would generally only be influenced by other projects that intersect the railroad corridor, such as the Mountain View Avenue, Tippecanoe Avenue, and

Alabama Street widening projects. As a result, minimal to no cumulatively considerable changes to existing safety and security conditions within the Study Area would occur.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Given the nature of the proposed passenger rail and pedestrian improvements, potential effects to local crime rates are expected to be negligible. Similar to the Project, security concerns associated with other projects within the Study Area would be addressed on a project-specific basis with the inclusion of site-specific security measures or the payment of fees to cover the provision of police services. Additionally, during construction of the Project and other concurrent projects, the implementation of Mitigation Measure TR-1 would ensure for the notification of local emergency service providers in an effort to coordinate with local law enforcement and emergency response providers. Once operational, design of the Project in conformance with LASD Transit Police Services Bureau and Metrolink station design and operation standards in conjunction with the implementation of Mitigation Measure SS-1 would minimize any long-term security risk. Given that security risks would generally be specific to the Project, implementation of the Project would not contribute to a cumulatively considerable adverse effect in terms of security under NEPA or CEQA.

Safety concerns for motorists and pedestrians would increase locally, particularly if other development and transportation projects are constructed in the vicinity of the railroad corridor concurrently. These concerns and the potential for any incremental effects from other projects would be minimized through the implementation of Mitigation Measure TR-1 and SS-2. Once operational the Project, in combination with other projects, would be unlikely to contribute to a cumulatively considerable adverse effect on safety since the Project's design would factor other projects that interface with the railroad corridor (e.g., roadway widening projects, Redlands Park Once, DSBPRP, and University of Redlands Master Plan) and follow standardized engineering practices, including at proposed bridge locations. The Project would include the incorporation of safety measures at each of the rail stations, bridges, and at-grade crossings per Mitigation Measures SS-1, GEO-1, and TR-3. In this context, the Project would not result in a cumulatively considerable adverse effect to safety under NEPA and CEQA.

4.3.15 Environmental Justice

EFFECT 4.3-15	**Environmental Justice.** The Project in conjunction with past, present, and future projects would result cumulatively considerable adverse effects that would predominately be borne by environmental justice populations; however, these cumulative effects would not be disproportionately high.

NO BUILD ALTERNATIVE

As discussed in detail in Section 3.17 Environmental Justice, the No Build Alternative would generally not result in direct or indirect adverse effects to environmental justice (EJ) populations because maintenance would be limited in geographic extent, duration, and confined to SANBAG's existing ROW. Nevertheless, these activities could occur at any location along the entire length of the railroad corridor in conjunction with projects listed in Table 4-1, such as the Tippecanoe Avenue Widening Project and Mountain View Avenue Widening Project, and result in temporary disruptions in access, construction-related noise, and increased delay on affected roadways. Based on the demographic characteristics of the Planning Area, which includes a combination of low-income and minority populations immediately adjacent to the railroad corridor, these adverse effects would be predominately borne by EJ populations.

Existing bus service and freight use along the railroad corridor would be maintained under the No Build Alternative; however, no increases in connectivity to regional public transit would be offered beyond planned conditions; extension to downtown San Bernardino (e.g., DSBPRP). Traffic congestion in the Planning Area is anticipated to increase, which may result in transit service being impacted by this congestion. As a result, the mobility of transit-dependent populations (some of which are EJ populations) could be disrupted more in the future. However, these poor operating conditions on local roadways and highways are part of the existing environmental conditions and, therefore, would not be cumulatively considerable under NEPA and CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Construction-Related Effects

Minority and low-income populations located within the Planning Area and in close proximity to the railroad would be subject to potential adverse effects during construction of the Project. These adverse construction-related effects, although temporary, could include noise and vibration, hazards and safety concerns, disruptions to traffic and circulation, temporary displacement of parking, land acquisitions, and changes in local aesthetics and visual quality. The construction-related effects would occur in conjunction with the construction of other roadway improvement projects (e.g., Mountain View Avenue widening) and development projects (e.g., University of Redlands Master Plan). In limited circumstances (e.g., nighttime construction noise), even following the application of mitigation, the Project-related effects during construction could remain adverse and cumulatively considerable under NEPA and CEQA.

Construction of the Project and other roadway projects listed in Table 4-1 including, but not limited to, Alabama Street and Tippecanoe Avenue widening and California HST Project, would likely result in temporary closures and/or detours during construction activities. Mitigation Measure TR-1 proposed in Section 3.3 would reduce potential adverse effects as a result of temporary road closures, detours, and obstructions in access. To minimize the number of temporary construction easements and land acquisitions, Mitigation Measure LU-1 would be implemented to further minimize the Project's land requirements during final engineering design. Each of these mitigation measures would be applied throughout the corridor. Other cumulative projects would also be required to follow similar requirements to minimize the taking of private properties. As discussed in Section 3.6, Mitigation Measures NV-1 and NV-2 would reduce noise and vibration effects, however, even with these measures, Project-related construction activities could exceed daytime and nighttime noise thresholds established by FTA. EJ populations border much of the length of the railroad corridor (except for Loma Linda) and, therefore, these populations would be subjected to adverse noise effects during construction (see Figure 3.17-3). Although these effects would be temporary, construction-related noise would occur over the three-year duration of Project construction during all hours of the day and when considered with other projects listed in Table 4-1, such as the California HST Project, this is considered a cumulatively considerable adverse effect under NEPA.

Long-Term Operations

Project operations would include new passenger rail service and supporting activities that would result in potential adverse effects to EJ populations related to traffic/circulation; noise and vibration; visual resources; and land use. These project-level and cumulative effects are analyzed throughout Chapters 3 and 4. In most instances, these adverse effects associated with the Project would be minimized through the implementation of proposed mitigation measures or standard engineering practices. In limited instances, no mitigation is available or the applied mitigation would be ineffective in reducing the effect, is impractical to implement, or outside SANBAG's control to fully implement. Further consideration of these effects for specific resources is provided below in the context of the EJ populations potentially affected within the Planning Area.

Adverse noise effects during construction would be predominately experienced by low-income and minority populations bordering the railroad corridor. EJ populations would be in close proximity to passenger train operations and related noise and vibration effects. In the vicinity of downtown Redlands, adverse noise impacts would be experienced disproportionately by EJ populations. However, these adverse noise effects would generally decrease with increasing proximity from the railroad corridor and, therefore, would be confined to areas at relatively short distances from the railroad corridor (e.g., less than 500 feet). Thus, the entire low-income census tract or minority block group would not be affected equally. Notwithstanding this circumstance, the Project along with other projects listed in Table 4-1, such as the California HST Project, I-10 HOV, and local roadway widening projects, would result cumulatively considerable adverse noise effects to EJ populations under NEPA.

Multiple mitigation measures are proposed that address increased noise; however, these measures in of themselves result in indirect adverse effects. For example, the physical scale of sound barriers (up to 12 feet) at sensitive receptor locations would create a distinct and significant aesthetic change to the community character of the area in which they are construction. Additionally, these noise barriers may result in an adverse, indirect impact on adjacent land uses by creating a physical barrier between existing uses that are otherwise continuous and connected. These adverse effects would be experienced mostly by portions of the respective populations living closest to the railroad corridor, typically the first row tier of buildings. Receptors at greater distances would be less affected. Based on this context, the Project would result in cumulatively considerable indirect adverse effects to minority and low-income populations under NEPA. These cumulatively considerable adverse effects would be disproportionate for EJ populations in downtown Redlands and east of I-10 when compared to non-EJ populations.

CHAPTER 5.0 OTHER STATUTORY CONSIDERATIONS

This chapter provides discussion of other statutory requirements under the National Environmental Policy Act (NEPA) and/or the California Environmental Quality Act (CEQA). These topics include a discussion of growth-inducing impacts, a summary comparison of the Build Alternatives and Design Options, and the identification of significant and unmitigable impacts. Per the requirements of NEPA, this chapter includes a discussion of the relationship between short-term use of the environment and the maintenance and enhancement of long-term productivity. As required by CEQA, this chapter also includes a discussion of irreversible and irretrievable resource commitments, impacts that are less than significant, and the identification of the environmentally superior alternative.

5.1 GROWTH-INDUCING IMPACTS

In accordance with Section 15126.2(d) of the CEQA Guidelines, an Environmental Impact Report (EIR) must:

> *"Discuss the ways in which a project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth ... Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristics of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment."*

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

Future growth and land use patterns within the region are greatly influenced by the Southern California Association of Governments' (SCAG's) visioning process, known as the Compass Blueprint Program (Blueprint), which identifies a regional strategy to accommodate project growth in southern California. The Blueprint seeks to accommodate growth through the development of demonstration projects that capitalize on the collaboration between regional planning agencies, local communities, and jurisdictions. As part of this visioning program, the San Bernardino Associated Governments (SANBAG) completed the Redlands Rail Feasibility Study (2003) and the Redlands Passenger Rail Station Area Plans (2010). These studies explored the feasibility of establishing passenger rail service between the cities of San Bernardino and Redlands, while identifying transportation alternatives, potential station locations, and multi-modal transit development opportunities. The Project is identified as a major transit project in SCAG's latest Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) (2012). Transportation projects outlined in the RTP/SCS are planned for implementation through 2035 to accommodate growth and intensified development within the SCAG region.

As provided in Section 3.2, the population within the Planning Area is expected to increase by 11 to 17 percent between the years 2010 and 2035. Employment in the region is expected to grow by 22 to 28 percent between 2010 and 2035 (SCAG 2012). The Project is proposed to address the transit needs of this growing population by constructing the necessary backbone track and bridge infrastructure to facilitate passenger train movements between the cities of San Bernardino and Redlands. In addition to facilitating Project operations, this infrastructure would provide the foundation for future phases of operation, if proposed, and could serve as an initial catalyst for change in future land use within the cities of San Bernardino and Redlands to TOD forms of development (TOD). Both cities have identified transit infrastructure as a constraint to TOD growth within their respective jurisdictions. Given that one of the primary objectives of the Project is to construct the necessary track rail infrastructure to fully realize the transit benefits along the Redlands Corridor, the Project would remove this obstacle.

In this context, the Project could accommodate future land use intensification along the railroad corridor. These changes in land use would likely occur within a high quality transit area identified by SCAG thereby encouraging more compact forms of development (e.g., TOD) within existing urban areas. Additionally, as described in Table 4-1, construction of the Project could support additional transit infrastructure (e.g., double tracking) within the railroad corridor. In the longer-term, the RPRP could serve as the backbone for future transit extensions to the north, south, and east of the Redlands Corridor. In considering these collective factors, the Project could indirectly facilitate infill growth and related secondary effects beyond opening day in 2018 and the forecast year of 2038.

This analysis incorporates by reference the programmatic analysis provided in SCAG's RTP/SCS (2012) PEIR, which identifies the Redlands Corridor as a high-quality transit area (HQTA). The RTP/SCS targets infill development for HQTAs and acknowledges that intensification of land use in these areas could result in the following types of secondary effects:

- Construction-related and operational impacts to air quality from ozone precursors, particulate matter, toxic air contaminants (TACs), and greenhouse gases (GHGs);
- Increases in the ambient noise environment;
- Increased traffic delay and intersection congestion;
- Potential land use incompatibilities and conflicts;
- Potential impacts to special-status biological resources, wetlands, and vegetation, and other sensitive communities;
- Potential impacts to historical and/or archaeological resources; and
- Increased demands for public services and utility infrastructure.

It is important to emphasize that the Project in of itself would not directly increase growth or the secondary effects thereof. Rather, the degree of indirect growth accommodation resulting from the provision of public transit infrastructure would largely be within the land use authority of San Bernardino, Redlands, and Loma Linda. The Project would serve existing development within Redlands and San Bernardino along with future planned and unplanned developments. Given that SANBAG retains no land use authority beyond its ROW, there is no feasible mitigation that SANBAG could otherwise adopt to condition new development to avoid or minimize the secondary effects identified above. In this context, these secondary effects of growth could remain significant and unmitigable.

5.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

CEQA requires that irreversible and irretrievable commitment of resources be addressed for certain categories of projects, including the "[t]he adoption, amendment, or enactment of a plan, policy, or ordinance of a public agency" and any project also subject to NEPA. (State CEQA Guidelines CCR Sections 15127[a] and 15127[c].) NEPA requires that an environmental analysis include identification of "…any irreversible and irretrievable commitment of resources which would be involved in the proposed action should it be implemented." (Section 102 [42 USC Section 4332(c)]).

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that this use could have on future generations. Commitments of resources could be current, as well as future, the latter potentially associated with the secondary effect of growth-inducing impacts. Irreversible effects result primarily from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural resource).

Resources such as timber used for the construction of station improvements and the layover facility, are generally considered renewable and would ultimately be replenished. Human resources are also considered a renewable resource. Non-renewable resources such as petrochemical construction materials, steel, copper, lead and other metals, gravel, concrete, and other materials are typically considered finite and would not be replenished over the lifetime of the project.

The construction and implementation of the Project would entail the irreversible and irretrievable commitment of some land and energy and human resources, including labor required for the planning, design, construction, and operation of the Project. These resources include the following:

- Commitment of land within and immediately outside the railroad right-of-way (ROW) to accommodate passenger rail service, including proposed rail, station, bridge, layover facility, and roadway improvements;
- Commitment of natural resources during construction activities associated with the Project, including the use of construction materials (e.g., steel, concrete, etc.); and
- Consumption of nonrenewable energy resources, mainly diesel and electricity, as a result of construction, operation, and maintenance of the proposed improvements.

In terms of the Project's commitment to land, the land within the Study Area is largely designated as existing rail or roadway ROW and the Project would commit a majority of the land to its continued use for transportation use. Conversion of the land within the footprint to additional railroad ROW (area not previously included as current SANBAG ROW) represents a short-term action that would have a long-term effect on the land's productivity. Over the long term, the productivity of the land would not be available to other uses. However, it could have a long-term beneficial effect on the productivity of the rail operations through added railway safety and the availability of passenger rail service resulting in shorter travel time. However, properties located adjacent to the SANBAG ROW proposed for full acquisition would be irreversibly committed to the Project, and affected property owners would be compensated at fair market value for the amount of property acquired.

In terms of the Project's commitment of resources, there are several resources, both natural and built, that would be expended in the construction and operation of the Project. The Project would result in a short term increase in the use of energy to manufacture, deliver, and construct the proposed improvements. The manufacturing of materials used to construct the Project (e.g., ballast and rail ties, etc.) and energy in the form of natural gas, petroleum products, and electricity consumed during construction and operation would contribute to the incremental depletion of renewable and non-renewable resources. Existing ballast and sub-grade materials would be reused, to the extent possible, to serve as fill material to raise the site of the proposed layover facility. Steel, concrete, and other materials would be recycled, to the extent feasible. However, the loss of these resources is considered irreversible because their reuse for some other purpose than the Project would be highly unlikely or impossible. Based on these considerations, the Project constitutes an irreversible and irretrievable commitment of natural resources.

In the long term, the Project would not significantly increase the use of energy for rail transport of people or goods. The proposed improvements are likely to improve the reliability and efficiency of passenger and freight train transportation. The use of non-renewable energy sources during project operations, such as diesel fuel is considered an irreversible, irretrievable commitment of these petroleum resources. However, this commitment is based on the minimal amount of these resources that would be consumed in relation to the energy resources available and otherwise used under the No Build condition (e.g., existing transit and VMT).

5.3 RELATIONSHIP BETWEEN SHORT-TERM USE OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

NEPA requires a review of the balance between short-term uses and long-term productivity of resources within a project area. Potential impacts that narrow the range of beneficial uses to the environment include selecting a development option that reduces the ability to pursue other possibilities, or committing a piece of land or other resources to a particular use that limits additional uses being performed on the same site.

Effects on resources are often characterized as being short-term or long-term in duration. Impacts that occur only during construction are considered temporary. Impacts that occur within a period of three years or less would be considered a short-term use and in excess to three years would be considered long-term. Construction can create temporary water quality effects and increases in noise, emissions, traffic, and human population that can disturb resources in an area but subside when the work is complete. Long-term effects relate to the maintenance and enhancement of long-term productivity—in particular, the consistency of the Project with long-term economic, social, regional, and local planning objectives. These impacts may lead to permanent loss or degradation of resources. As required by Public Resources Code Section 21001(g), the short and long-term effects of the Project under consideration are summarized below.

5.3.1 Short-Term Uses

Implementation of the Project would result in temporary and short-term construction-related impacts. As discussed elsewhere in this EIS/EIR, the temporary and short-term construction impacts would affect all resource areas to some extent, but would be associated predominantly with water quality, traffic, land acquisitions, aesthetics, air quality emissions, noise and vibration, biological resources, and cultural and historical resources. SANBAG would implement mitigation measures identified in each environmental resource area to reduce these impacts to a less than significant level wherever feasible and available. At the same time, however, construction of the Project would create economic benefits during construction, in the form of jobs and the subsequent direct and indirect demand for goods and services.

5.3.2 Long-Term Uses

Implementation of the Project would result in long-term impacts related to the division of an established community; visual quality and aesthetics; noise and vibration; and flooding risks. However, long-term economic productivity in the cities of San Bernardino and Redlands would be substantially enhanced through new passenger rail service.

5.4 LESS THAN SIGNIFICANT IMPACTS OF THE BUILD ALTERNATIVES AND DESIGN OPTIONS

In the course of this evaluation, certain resources were found to be not adverse under NEPA or significant under CEQA due to the Project's geographic location, context, or the absence of project characteristics producing effects to this resource. In accordance with CEQA Guidelines Section 15128, the following provides a brief description of additional resource issue areas that the Project would not impact and therefore not further discussed in the EIS/EIR.

Agriculture and Forest Resources

The Project would be implemented within and adjacent to the SANBAG corridor. The railroad corridor is not subject to Williamson Act contracts. Based on the farmland maps prepared by the California Department of Conservation, the Study Area is not identified as containing Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The Study Area is identified as Urban and Built-Up Land (California Department of Conservation 2010). According to the Farmland Mapping and Monitoring Program, Urban and Built-Up Land is typically occupied by structures with a building density of at least one unit to 1.5 acres, or approximately six structures to a 10-acre parcel. Common examples include residential, industrial, commercial, and institutional facilities; cemeteries; airports; golf courses; sanitary landfills; sewage treatment facilities; and water control structures. Based on these circumstances, the Project would not convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance to non-agricultural uses.

There are no existing forest lands, timberlands, or timberland zoned Timberland Production either on-site or in the immediate vicinity of the Study Area; therefore, the Build Alternatives and Design Options would not conflict with existing zoning of forest land, cause rezoning of any forest land, or adversely affect forest lands.

According to the City of Redlands General Plan, citrus farming was Redlands' original economic base and remains a small, but not insignificant, component of the economy. Despite a two-thirds decline in acreage during the previous 30 years, approximately 30 percent of the existing citrus is within the East Valley Corridor Area (EVCSP). The Specific Plan for this area (EVCSP) calls for conversion of agricultural land for commercial and industrial development over a 40-year period. Citrus groves currently owned by the City of Redlands which are proposed to remain in citrus include the Prospect Park Grove, Judson Grove, Fifth Avenue Grove, Interstate 10 (I-10)/California Grove, Texas Webster Grove, Palmetto/Nevada Grove, Olive Avenue Grove, and San Bernardino/ Wabash Grove. The I-10/California Grove is located within the Study Area. Based on the City of Redlands General Plan (Figure 3.2-1B), the General Plan land use designation of the I-10/California Grove is Agriculture. However, as shown in Figure 3.2-2, the I-10/California Grove is zoned for commercial uses. As a consequence, the Project would not conflict with existing zoning for agricultural use.

Implementation of the Project would result in the loss of up to two rows of the citrus grove. However, this loss is not considered a significant impact to agricultural resources as a majority of the citrus grove's site acreage would remain unaltered. In addition, the I-10/California Grove is bound by existing and planned urban uses on all four sides of the property. Based on these considerations, the Project would not involve other changes in the existing environment that would result in the conversion of productive agricultural land to non-agricultural use.

Based on these circumstances, the Project would result in no significant impacts to agricultural and forest resources.

Mineral Resources

A variety of land uses are located adjacent to the railroad corridor, including industrial, commercial, retail, and office uses. According to City of San Bernardino General Plan, the western half of the Study Area is located within a Mineral Resource Zone (MRZ) 2 designated area, where the available geologic information indicates the likelihood of significant mineral deposits. MRZ-2 designated areas indicate the potential existence of construction aggregate deposits that meets certain state value and marketability criteria based solely on geologic factors. The Project is not within an Industrial Extractive (IE) zone used for mineral, sand, and gravel extraction. Therefore, mineral extraction is not permitted within the Study Area. Considering the "existing developed land uses" within the area, a MRZ reclassification may occur, rendering the area unsuitable for mineral production (City of San Bernardino 2005). Therefore, the Project would result in no impact related to mineral resources.

Utilities and Service Systems

Various public and/or private utilities encroach across SANBAG's ROW. These facilities may require relocation or encasement depending on if they conflict with new track and grade crossing improvements, replacement or retrofit of existing bridges, and the development of limited station amenities at E Street, Tippecanoe Avenue (or Waterman), New York Street, Downtown Redlands, and the University of Redlands. Impacts to utilities within the Study Area would depend on rail elevation or ROW changes. In some locations fire hydrants, meter boxes, and power poles may need to be relocated depending on construction of project components. Service disruption would likely occur to underground utilities at railway crossings and median areas in locations that require construction of a signal arm which call for deep footings. These service interruptions would be temporary in nature.

The underground utilities and service connections would be identified prior to commencing any excavation work through the implementation of an Underground Services Alert. The exact utility locations will be determined by hand-excavated test pits dug at locations determined and approved by the construction manager. Coordination with the utility providers during final engineering design and implementation of appropriate installation methods would minimize potential utility service disruptions. Upon completion of construction activities, there would be no disruption to existing utilities and infrastructure during operation. Impacts would be less than significant.

5.5 ALTERNATIVES COMPARISON

The selection of Alternatives as described in Chapter 2, including optional modes of transit, to support the Project was based on several factors including each alternative's ability to meet the project goals and objectives identified in Chapter 1. The alternatives screening process consisted of two major steps:

Step 1: Define the range in modes of transit to facilitate a comparative evaluation under the first tier of the alternatives analysis. The analysis was done as part of the initial selection of alternatives to be considered in the EIS/EIR.

Step 2: Evaluate the operational and constructability of each mode of transit based on the consideration of the following criteria:

- ***Technical and Engineering Feasibility.*** An alternative must be technically and physically feasible. An alternative must be based on existing and accepted engineering concepts and practices. Also, an alternative must not be dependent upon either the availability or acquisition of site locations that cannot be reasonably assured.
- ***Environmental Fatal Flaw.*** An alternative cannot have environmental impacts that are so significant as to negate the positive attributes of the alternative, or simply transfer potential environmental impacts from one location to another.
- ***Economic Feasibility.*** An alternative cannot be economically impractical or infeasible. An alternative should be economically attractive such that the total direct costs are minimized and do not significantly exceed the costs of alternatives with similar benefits. Similarly, an alternative cannot result in excessive operation and maintenance costs.
- ***Public Health and Safety.*** An alternative should be able to meet all existing and anticipated future State and Federal health and safety requirements.
- ***Timing.*** An alternative must be capable of being implemented within a reasonable timeframe such that the benefits and needs of the project are not unduly delayed.
- ***Institutional.*** An alternative cannot possess significant uncertainty that all permits, licenses, or other logistical requirements can be reasonably obtained.

Each of the three Build Alternatives and three Design Options defined in Chapter 2 would be capable of achieving the criteria above; whereas, the alternatives rejected from consideration in Chapter 2 would not satisfy one or more of the listed criteria. Table 5-1 provides a summary of the attributes for each of the Build Alternatives and Design Options considered, including the main quantitative differences. Based on these differences, each alternative and design option would minimize, lessen, or avoid one or multiple adverse effects identified for the Preferred Project (Alternative 2).

Table 5-1. Summary of Differentiators Between Build Alternatives and Design Options

Alternative/ Design Option	Acreage of Disturbance	Type of Service	Partial/Full Acquisitions/TCEs	Layover Facility	Other Features
Alternative 1 – No Build	Existing ROW	Freight (only)	--	--	Replace Bridges 1.1 and 3.4
Alternative 2 – Preferred Project	137.3 acres	Local and Express Passenger and Freight	58/4/60	West of California Street	Replace Bridges 1.1, 3.4, 5.78, 9.4
Alternative 3 – Reduced Project Footprint	130.1 acres	Local and Express Passenger and Freight	58/4/60	West of California Street	Reduced construction area along Mission Zanja Channel and I-10/ California Orange Grove
Design Option 1 – Train Layover at Waterman Ave.	143.3 acres	Local and Express Passenger and Freight	58/2/60	East of Waterman Avenue	Optional Train Layover Site
Design Option 2 – Use of Existing Layover Facilities	129.5 acres	Local and Express Passenger and Freight	58/1/60	Existing IEMF/ EMF	Use of Existing Layover Facilities; Longer Train Trips
Design Option 3 – Waterman Avenue Rail Station	139.0 acres	Local and Express Passenger and Freight	57/5/60	West of California Street	Optional rail station at Waterman Avenue

Source: HDR Engineering 2013

Table 5-2 provides a comparative summary of the environmental impacts identified for the Build Alternative's and Design Options where different (lesser or greater) based on the analysis presented in Chapter 3. The summary presented in Table 5-2 compares Alternative 2, Preferred Project against the No Build Alternative, Design Options 1, 2, and 3, and the Reduced Project Footprint, (Alternative 3). Table 5-2 presents the finding of effect under NEPA and impact determination under CEQA based on the greatest magnitude of the impact identified for construction, operational, and indirect-related effects. In addition, Table 5-2 includes a brief statement as to the reasons for an associated reduction or increase in effect (and impact) between the alternatives and design options. These conclusions in turn then provide the basis for the selection of the Environmentally Superior Alternative which is identified in Section 5.7.

Table 5-2. Build Alternatives and Design Options Comparison Table

Environmental Issue Area [1]	Build Alternatives and Design Options: Alternative 2 – PP (NEPA and CEQA) [2]	Alternative 3 – RPF	Design Option 1	Design Option 2	Design Option 3	No-Build Alternative
Section 3.2 - Land Use and Planning – NEPA and CEQA Comparison						
Effect 3.2-1: Physically divide an established community or physically disrupt community cohesion.	AE/SU [4]	S [5]	S	S	S	L (No sound barriers proposed as mitigation)
Effect 3.2-2: Create incompatibility with on-site or adjacent land uses and zoning.	NAE/LTS	S	L (Layover facility placed on industrially zoned land)	L (No new layover facility)	S	L (No new facilities outside ROW)
Effect 3.2-3: Result in conflict or inconsistency with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project.	NAE/LTS	S	L (Layover facility placed on industrially zoned land)	L (No new layover facility)	S	G (Conflict with RTP/SCS)
Effect 3.2-4: Degrade the social or physical character of the community or quality of life of nearby neighborhoods.	NAE/LTS	S	L (Layover facility placed on industrially zoned land)	L (No new layover facility)	S	L (No new facilities outside ROW)
Effect 3.2-5: Displacement of residences and businesses.	NAE/LTS	L (Fewer number of TCEs and partial takes)	S	L (No new layover requires fewest number of full takes)	S	L (Contained within SANBAG ROW)
Section 3.3 - Transportation – NEPA and CEQA Summary						
Effect 3.3-1: Impact local traffic plans, policies, and standards.	NAE/LTS	S	S	S	S	G (Conflict with RTIP, RTP/SCS, and Long Range Transit Plan)

Table 5-2. Build Alternatives and Design Options Comparison Table

Environmental Issue Area [1]	Build Alternatives and Design Options: Alternative 2 – PP (NEPA and CEQA) [2]	Alternative 3 – RPF	Design Option 1	Design Option 2	Design Option 3	No-Build Alternative
Effect 3.3-2: Conflict with an applicable congestion management program.	NAE/LTS	S	S	S	S	G (No decrease in VMT)
Effect 3.3-3: Create or increase hazards from project design features.	NAE/LTS	S	S	S	S	L (No new facilities outside ROW)
Effect 3.3-4: Impacts to emergency response and access.	NAE/LTS	S	S	S	S	L (No new facilities outside ROW)
Effect 3.3-5: Adversely effect alternative forms of transit, including non-motorized facilities.	NAE/LTS	S	S	S	S	L (No new facilities outside ROW)
Section 3.4 - Visual Quality and Aesthetics – NEPA and CEQA Summary						
Effect 3.4-1: Changes to visual character or quality.	AE/SU	S	S	L (No new layover facilities)	S	L (No sound barriers)
Effect 3.4-2: New sources of nighttime lighting and glare.	NAE/LTS	S	S	L (No new layover facilities)	S	L (No new layover facilities)
Section 3.6 – Air Quality and Global Climate Change – NEPA and CEQA Summary						
Effect 3.5-1: Conflict with an air quality plan.	NAE/LTS	S	S	S	S	L (No increase in operational noise from trains)
Effect 3.5-2: Violate air quality standards.	NAE/LTS	S	S	S	S	L (No increase in operational noise from trains; construction next to Redlands Depot)

Table 5-2. Build Alternatives and Design Options Comparison Table

Environmental Issue Area [1]	Build Alternatives and Design Options					No-Build Alternative
	Alternative 2 – PP (NEPA and CEQA) [2]	Alternative 3 – RPF	Design Option 1	Design Option 2	Design Option 3	
Effect 3.5-3: Possible risk to sensitive receptors.	NAE/LTS	S	S	L (No new layover facilities)	S	L (No operational changes)
Effect 3.5-4: Create objectionable odors.	NAE/LTS	S	S	L (No new layover facilities)	S	L (No operational changes)
Effect 3.5-5: Generate greenhouse gas.	NAE/LTS	S	S	S	S	L (No operational changes)
Section 3.6 - Noise and Vibration – NEPA and CEQA Summary						
Effect 3.6-1: Permanent increase in ambient noise levels.	AE/SU	S	S	L (No new layover facilities)	S	L (No operational changes)
Effect 3.6-2: Create excessive groundborne vibration or noise.	NAE/LTS	S	S	L (No new layover facilities)	S	L (No operational changes)
Section 3.7 - Biological and Wetland Resources – NEPA and CEQA Summary						
Effect 3.7-1: Loss and degradation of habitat for special-status wildlife species and potential direct take of individuals.	NAE/LTS	L (Reduction in physical disturbance along Mission Zanja Channel)	S	S	S	L (No bank improvement along Mission Zanja Channel)
Effect 3.7-2: Loss and degradation of habitat for special-status plant species and potential direct take of individuals.	NAE/LTS	L (Reduction in physical disturbance along Mission Zanja Channel)	S	S	S	L (No bank improvement along Mission Zanja Channel)
Effect 3.7-3: Loss and degradation of waters of the U.S., including wetlands, and waters of the state.	NAE/LTS	L (Less impacts to waters of U.S. and State)	S	S	S	L (No bank improvement along Mission Zanja Channel)
Effect 3.7-4: Potential interference with wildlife or fisheries movement.	NAE/LTS	L (Less impacts to vegetation as a result of footprint reduction)	S	L (Less impacts to vegetation with use of existing layover facilities)	S	L (No bank improvement along Mission Zanja Channel)

Table 5-2. Build Alternatives and Design Options Comparison Table

Environmental Issue Area [1]	Build Alternatives and Design Options: Alternative 2 – PP (NEPA and CEQA) [2]	Alternative 3 – RPF	Design Option 1	Design Option 2	Design Option 3	No-Build Alternative
Effect 3.7-5: Loss of sensitive natural communities.	NAE/LTS	S	S	S	S	L (No facilities outside SANBAG's ROW)
Effect 3.7-6: Conflict with local ordinances and policies protecting biological resources.	NAE/LTS	S	S	S	S	L (No work outside SANBAG's ROW)
Section 3.8 – Floodplain, Hydrology, and Water Quality – NEPA and CEQA Summary						
Effect 3.8-1: Alteration of drainage patterns resulting in off-site flooding.	NAE/LTS	S	G (Increase in impervious surface up to 5 acres)	L (Reduced Impervious surface area to 11.7 acres)	S	L (No new impervious surfaces)
Effect 3.8-2: Exceeding the capacity of existing or planned drainage systems.	NAE/LTS	S	S	L (No new layover facilities)	S	L (No facilities outside SANBAG's ROW)
Effect 3.8-3: Placement of structures or encroachment within a 100-year floodplain	AE/SU	S	S	L (Layover Facility located outside 100-year floodplain)	S	L (No new structures within the 100-year Floodplain)
Effect 3.8-4: Violation of water quality standards.	NAE/LTS	S	S	S	S	G (No correction of existing drainage)
Effect 3.8-5: Alteration of drainage patterns resulting in off-site erosion and sedimentation.	NAE/LTS	S	S	L (No new layover facilities)	S	L (No facilities outside SANBAG's ROW)
Effect 3.8-6: Contribute substantial sources of polluted runoff.	NAE/LTS	S	S	L (No new layover facilities)	S	L (No facilities outside SANBAG's ROW)

Table 5-2. Build Alternatives and Design Options Comparison Table

Environmental Issue Area [1]	Build Alternatives and Design Options					No-Build Alternative
	Alternative 2 – PP (NEPA and CEQA) [2]	Alternative 3 – RPF	Design Option 1	Design Option 2	Design Option 3	
Section 3.9 – Geology, Soils, and Seismicity – NEPA and CEQA Summary						
Effect 3.9-1: Possible risks to people and structures caused by strong seismic ground shaking and liquefaction	NAE/LTS	S	S	L (No new layover facilities)	S	L (No facilities outside SANBAG's ROW)
Effect 3.9-2: Possible risks to people and structures caused by landslides.	NAE/LTS	S	S	S	S	G (No correction of existing drainage)
Effect 3.9-3: Substantial soil erosion or loss of topsoil	NAE/LTS	S	G (Layover facility subject to liquefaction hazards)	L (No new layover)	S	L (No new facilities)
Effect 3.9-4: Unstable geologic conditions	NAE/LTS	S	S	L (No new layover facilities)	S	L (No facilities outside SANBAG's ROW)
Effect 3.9-5: Exposure to potential hazards from problematic soils	NAE/LTS	S	S	L (No new layover facilities)	S	L (No facilities outside SANBAG's ROW)
Section 3.10 - Hazardous Waste and Materials – NEPA and CEQA Summary						
Effect 3.10-1: Possible risk to the environment through the routine transport of hazardous materials.	NAE/LTS	S	S	L (No new layover facilities)	S	L (No facilities outside SANBAG's ROW)
Effect 3.10-2: Possible risk to the environment through an accidental release.	NAE/LTS	S	S	L (No new layover facilities)	S	L (No facilities outside SANBAG's ROW)

Table 5-2. Build Alternatives and Design Options Comparison Table

Environmental Issue Area [1]	Build Alternatives and Design Options: Alternative 2 – PP (NEPA and CEQA) [2]	Alternative 3 – RPF	Design Option 1	Design Option 2	Design Option 3	No-Build Alternative
Effect 3.10-3: Hazardous emissions within close proximity of a school site.	NAE/LTS	S	S	S	S	L (No facilities outside SANBAG's ROW)
Effect 3.10-4: Disturbance to known hazardous materials sites.	NAE/LTS	S	S	S	S	L (No construction beyond existing ROW)
Effect 3.10-5: Possible impediment to emergency plans	NAE/LTS	S	S	S	S	L (No facilities outside SANBAG's ROW)
Effect 3.10-6: Possible risk to people of wildland fires.	NAE/LTS	S	S	S	S	L (No facilities outside SANBAG's ROW)
Section 3.11 - Energy – NEPA and CEQA Summary						
Effect 3.11-1: Conflict with adopted energy conservation plans, including Executive Order 13514.	NAE/LTS	S	S	S	S	G (No long-term decrease in VMT)
Effect 3.11-2: Use non-renewable resources in a wasteful and inefficient manner.	NAE/LTS	S	S	S	S	G (No long-term decrease in VMT)
Section 3.12 - Cultural and Historic Resources – NEPA and CEQA Summary						
Impact 3.12-1: Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5.	NAE	L (Avoids California/I-10 Grove)	S	S	S	L

Table 5-2. Build Alternatives and Design Options Comparison Table

Environmental Issue Area [1]	Build Alternatives and Design Options: Alternative 2 – PP (NEPA and CEQA) [2]	Alternative 3 – RPF	Design Option 1	Design Option 2	Design Option 3	No-Build Alternative
Impact 3.12-2. Impacts to Historical Resources Listed Under the CRHP.	LTS	L	S	S	S	L
Impact 3.12-3. Adverse Effects to Archaeological Resources.	LTS	S	S	S	S	L
Section 3.13 - Parklands, Community Services and Other Public Facilities – NEPA and CEQA Summary						
Effect 3.13-1: Physical impacts or alterations to government facilities.	NAE/LTS	L (Effects to Sylvan Park minimized through constrained roadway design)	S	S	S	L (Noise barriers not required for mitigation)
Effect 3.13-2: Impact to service ratios, response times, or other performance objectives.	NAE/LTS	S	S	S	S	L (No new facilities)
Section 3.14 - Economic and Fiscal Impacts – NEPA Summary[3]						
Effect 3.14-1: Employment, income, and tax revenues.	B	S	S	S	S	L (No direct or indirect economic benefits)
Section 3.15 - Safety and Security – NEPA and CEQA Summary						
Effect 3.15-1: Increased pedestrian and/or bicycle safety risks.	NAE/LTS	S	S	S	S	L
Effect 3.15-2: Substantial adverse safety conditions related to accidents	NAE/LTS	S	S	S	S	L

Table 5-2. Build Alternatives and Design Options Comparison Table

Environmental Issue Area [1]	Build Alternatives and Design Options					No-Build Alternative
	Alternative 2 – PP (NEPA and CEQA) [2]	Alternative 3 – RPF	Design Option 1	Design Option 2	Design Option 3	
Effect 3.15-3: Potential for adverse security conditions.	NAE/LTS	S	S	S	S	L

1. Resource areas where recognizable differences exist between the Build Alternatives and Design Options.
2. The NEPA finding and CEQA determination for the Preferred Project following the application of proposed mitigation. Each findings/determination reflects the greatest magnitude of impact as described for the collective direct construction, direct operational, and indirect impacts in Chapter 3.
3. Economic and fiscal effect findings applies only to NEPA.
4. Acronyms for the NEPA finding and CEQA determination are as follows:

   NEPA Findings
   AE Adverse Effect
   NAE No Adverse Effect

   CEQA Determinations
   SU Significant and Unmitigable
   LTS Less than Significant
   B Beneficial Impact
5. In comparing the alternatives and design options to the Preferred Project, the corresponding effects are identified as follows: Similar (S); Greater (G); or Lesser (L).

5.6 SIGNIFICANT AND UNMITIGABLE ENVIRONMENTAL EFFECTS

CCR Section 15216.2(b) of the State CEQA Guidelines requires EIRs to include a discussion of any significant environmental impacts that cannot be avoided if the project is implemented. Chapter 3 of this EIS/EIR provides a detailed analysis of all significant environmental impacts related to the Project; identifies feasible mitigation measures, where available, that could avoid or reduce these significant impacts; and presents a determination whether these mitigation measures would reduce these impacts to less than significant levels. Chapter 4 identifies the significant cumulative impacts resulting from the combined effects of the Project and related projects considered in cumulative analysis. If a specific impact in either of these sections cannot be fully reduced to a less than significant level, it is considered a significant and unmitigable adverse impact.

As described below in Sections 3.2 through 3.17, project implementation would result in significant and unmitigable adverse impacts in the following six issue areas: land use and planning; long-term visual quality and aesthetics; noise and vibration; floodplain and hydrology; cultural and historic resources; and environmental justice. Each of these significant impacts would be cumulatively considerable when considered with other incremental projects (listed in Table 4-1) thereby contributing to a significant cumulative impacts see Chapter 4). The following adverse effects would be significant and unmitigable for each of the Build Alternatives and Design Options:

- **Effect 3.2-1.** Physically Divide an Established Community or Physically Disrupt Community Cohesion. The Project would divide established communities and temporarily disrupt community cohesion (Indirect Adverse Effect) (under CEQA only).

- **Effect 3.4-1.** Changes to Visual Character or Quality. Implementation of the Project could substantially degrade the existing visual character or quality of the Study Area and their surroundings (Indirect Adverse Effect).
- **Effect 3.6-1.** Permanent Increase in Ambient Noise Levels. The Project would result in a permanent increase in ambient noise levels in the Study Area (Direct construction and operational increases in ambient noise levels).
- **Effect 3.8-3.** Placement of Structures or Encroachment within a 100-Year Floodplain. The Project would include the placement of structures within a 100-year flood hazard area, which could result in damage to proposed structures, existing structures downstream, or redirection of flood flows and corresponding inundation depths (Placement of transportation infrastructure within a 100-Year Flood Zone).

The following adverse effects would be significant and unmitigable for the No Build Alternative:

- **Effect 3.2-3.** Result in conflict or inconsistency with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project. The No Build Alternative is inconsistent with the regional land use and transportation goals of the 2012 RTP/SCS, which identifies the railroad corridor as a high quality transit corridor and specifically call for passenger rail service between the City of San Bernardino and Redlands. (Inconsistent with RTP/SCS and Long-Range Transit Plan).
- **Effect 3.3-1.** Impact Local Traffic Plans, Policies, and Standards. The No Build Alternative would not implement passenger rail service thereby resulting in further deterioration in LOS and V/C on local roadways. This would conflict with applicable City and County policies regarding the performance of the circulation system, including, but not limited to, intersections, streets, highways and freeways (Inconsistent RTIP and RTP/SCS).
- **Effect 3.3-2.** Conflict with the County CMP during construction. The lack of additional passenger rail service would have a direct effect to overall traffic circulation resulting in reduced LOS and increased V/C. Increases in delay as a result of decreases in the roadway intersection LOS and V/C would create an inconsistency with the City of San Bernardino standards, the Redlands General Plan, and the CMP.

5.7 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

This section identifies the Environmentally Superior Alternative from among the Alternatives and Design Options considered in the EIS/EIR. CEQA defines the Environmentally Superior Alternative as the alternative that would result in the fewest or least significant environmental impacts, while still achieving the project objectives.

As provided in Table 5-2, the No Build Alternative would avoid or lessen many of the construction and operational impacts identified for the Build Alternatives and Design Options. However, under the No Build Alternative, SANBAG would be unable to take advantage of its ownership of the railroad ROW by installing the necessary infrastructure to accommodate passenger rail service. Additionally, under the No Build Alternative, SANBAG would still be required to perform regularly scheduled maintenance of the existing track and corresponding improvements at grade crossings and Bridges 1.1 and 3.4 to facilitate continued freight service per SANBAG's obligations with BNSF. For this reason, construction-related adverse effects would not be eliminated. Further, the implementation of the No Build Alternative would be in conflict with SCAG's RTP/SCS, which would be a significant and unmitigable adverse effect.

Based on these considerations, including the fact that the No Build Alternative would result in adverse effects in of itself, the No Build Alternative was determined not to be environmentally superior.

Of the Build Alternatives and Design Options analyzed in Sections 3.2 through 3.17 the summary comparison provided in Table 5-2 suggests that Alternative 3, Reduced Project Footprint, would minimize adverse effects to biological and cultural resources. First, Alternative 3 would reduce both temporary and permanent impacts to USACE and CDFW jurisdictional areas by reducing the extent of bank improvements along the Mission Zanja Channel and including an alternate bridge design at Bridge 3.4. This reduction would reduce temporary and permanent impacts to USACE and CDFG jurisdictional areas by 0.29 and 1.20 acres respectively. Alternative 3 would also avoid a majority of the direct impacts to the I-10/California Orange Grove, which is eligible for the CRHR.

In terms of the Design Options under consideration, Design Option 2 would result in the least amount of impact, due to its integration with existing train layover facilities. Since Design Options 1 and 3 would continue to incorporate new layover facilities, these design options would not avoid adverse effects related to the placement of the layover facility within a 100-year flood zone. Additionally, Design Option 2 would avoid the need for full property acquisitions to house the layover facility, extensive grading and drainage improvements to enable for the operation of new layover site, and a new source of nighttime lighting.

Based on these considerations, Alternative 3, Reduced Project Footprint would minimize the direct and indirect impacts to suitable LBV habitat located at the Santa Ana River and direct impacts to the I-10/California Orange Grove. Design Option 2 reduces some of the adverse effects related to the placement of a new layover facility; however, this design option would not result in the avoidance of any of the significant and unmitigable adverse effects identified for the Preferred Project. Although Design Option 2 would relocate the Project layover facilities at locations outside the 100-year floodplain, other Project-facilities would continue to remain subject to inundation from flooding (e.g., tracks and rail stations). For these reasons, Alternative 3, Reduced Project Footprint is considered the environmentally superior alternative under CEQA.

CHAPTER 6.0 PUBLIC AND AGENCY OUTREACH

This chapter documents the implementation of the Public Involvement Plan (Appendix B) and the EIS/EIR phases of the project in compliance with NEPA and CEQA. Outreach efforts during the Draft EIS/EIR process were performed in accordance with U.S. Code Title 23, Section 139, and were inclusive and encouraging of community participation. FTA and SANBAG sought extensive coordination with other federal, state, local, and tribal entities during the scoping process and throughout the Draft EIS/EIR phase of the Project. This chapter provides summary highlights of the outreach efforts and specifically addresses the public participation process and activities from early scoping through the formal scoping period, and during subsequent preparation of the Draft EIS/EIR.

6.1 SUMMARY HIGHLIGHTS OF OUTREACH EFFORTS

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process. It helps planners to determine the necessary scope of environmental documentation as well as the level of analysis required to evaluate potential effects and identify appropriate mitigation measures. Agency consultation and public participation for the Project have been accomplished through a variety of formal and information outreach methods, including Project development team meetings, interagency coordination meetings, public scoping meetings, and SANBAG website notification.

6.2 BACKGROUND

The Project would provide a cost-effective, alternative travel option for communities located along the Redlands Corridor in a way that improves transit mobility, travel times, and corridor safety, while allowing for the continuation of existing freight service. The RPRP would provide travelers and commuters with a new mobility option within a dedicated ROW that would be capable of achieving shorter travel times than automobiles.

The following alternatives and design options were analyzed in the Draft EIS/EIR:

- Alternative 1 – No Build
- Alternative 2 – Preferred Project
- Alternative 3 – Reduced Project Footprint
- Design Option 1 – Train Layover Facility (Waterman Avenue)
- Design Option 2 – Use of Existing Train Layover Facilities
- Design Option 3 – Waterman Avenue Rail Platform

6.3 PUBLIC INVOLVEMENT PLAN (PIP)

In order to ensure that the public was informed and had opportunities to comment at key milestones of the Project, a detailed PIP was developed at the commencement of the Draft EIS/EIR. The Plan includes a list of target audiences, communications protocols, and a detailed discussion of various public outreach activities. The full PIP is provided as Appendix B. The goals of the PIP are to:

- Conduct a public outreach effort that is open, honest and transparent with all stakeholders throughout the various phases of the environmental review process
- Accurately document public input and meet all NEPA and CEQA requirements
- Identify and address public interests and issues to help shape and refine project alternatives
- Provide multiple, convenient ways for interested parties to provide comments
- Engage a broad, representative cross section of the public to help ensure the EIS/EIR reflects and incorporates agency and public input
- Increase project awareness among stakeholders, especially those directly impacted by the Project.

An important step of the PIP is to identify target audiences. With Project-facilities proposed in the cities of San Bernardino and Redlands, it is important to communicate with organizations, entities, and key stakeholders that are representative of each community. Additionally, with state and federal implications as it relates to permitting and approvals, target audiences need to reflect the appropriate agencies/entities. The following is a list of target audiences by sector:

- Businesses/Institutions
  - Priority: Directly impacted/affected (e.g., ESRI; University of Redlands; Businesses affected by right-of-way temporary construction easements, and partial and full property takes)
  - General: within cities of Redlands and San Bernardino – Downtown Redlands, Downtown San Bernardino, San Bernardino International Airport, Inland Valley Development Agency, Citrus Plaza, University/College Satellite Campuses off of Hospitality Lane near Waterman Avenue; Hospitality Lane Business Corridor
- Residents/Community Organizations
  - Redlands, San Bernardino, Loma Linda
  - Prominent community members/opinion leaders
  - Service organizations, neighborhood organizations/associations
  - Faith-based entities
  - Redlands Unified School District; San Bernardino City Unified School District
- Elected Officials – City, County, State, Federal
  - Redlands and San Bernardino City Councils, leadership, key department officials (public works, planning, emergency responders, etc.)
  - County Supervisors Josie Gonzales and Neil Derry
  - State Senators Gloria Negrete McLeod and Bob Dutton
  - State Assembly Members Wilmer Amina Carter and Mike Morrell
  - U.S. Congressman Joe Baca and Jerry Lewis
  - U.S. Senator Barbara Boxer and Dianne Feinstein

- Agencies and Project Coordination
  - San Bernardino County Flood Control District
  - Burlington Northern Santa Fe Railway
  - Metrolink/Southern California Regional Rail Authority
  - Caltrans
  - Omnitrans
  - California Public Utilities Commission
  - FTA
  - SANBAG
  - Southern California Associated Governments
  - South Coast Air Quality Management District
  - Federal Railroad Administration
  - Federal Emergency Management Agency
- Local Media
  - Dailies: Redlands Daily Facts, San Bernardino Sun, Press-Enterprise
  - Weeklies: Inland Empire Community Newspapers, La Prensa
  - Broadcast: KVCR TV & Radio, Inland News Today, Inland Empire Media Group
  - SANBAG Website

6.4 GOVERNMENT AND OTHER AGENCY CONSULTATION

6.4.1 U.S. Code Title 23, Section 139

U.S. Code Title 23, Section 139 is intended to promote efficient project management by lead agencies and enhanced opportunities for coordination with the public and with other federal, state, local, and tribal government agencies during the project development process. As part of the environmental review process, the lead agency must identify as early as practicable, any other federal or non-federal agencies that may have an interest in the project, and invite such agencies to become participating agencies in the environmental review process. Consistent with U.S. Code Title 23, Section 139, FTA and SANBAG, as the lead agencies for the Project, prepared an Agency Coordination Plan to provide opportunities for cooperating and participating agencies to be involved, and guide agency involvement in decision-making related to the completion of the NEPA environmental review process. The Agency Coordination Plan is included in Appendix B.

U.S. Code Title 23, Section 139 emphasizes public participation, requiring that the public participation plans of metropolitan planning processes “be developed in consultation with all interested parties and provide that all interested parties have reasonable opportunities to comment on the contents of the transportation plan.” U.S. Code Title 23, Section 139 also expanded the definition of participation by “interested parties” to include partners, groups, and individuals who are affected by or involved with transportation in the appropriate county and the surrounding region. Examples stated include citizens, affected public agencies, representatives of public transportation employees, private providers of transportation, representatives of users of public transportation, representatives of users of pedestrian walkways and bicycle transportation facilities, representatives of the disabled, and other interested parties with a reasonable opportunity to comment on the transportation plan. The PIP for this Project was developed in accordance with the requirements of U.S. Code Title 23, Section 139 and conforms to the public participation requirements of NEPA and CEQA.

6.4.2 Section 106 Coordination

The extensive effort to contact, identify, and consult with various cultural groups and agencies to identify traditional cultural properties and cultural practices during the environmental planning process has been documented for the Section 106 consultation process. The purpose of consultation is to identify cultural resources and other concerns relating to the Project's potential effects on cultural resources. Information is sought from individuals and organizations likely to have knowledge of potential resources in the Study Area.

During the process of completing archival research and conducting field studies for historic resources, the team maintained communication with the State Historic Preservation Officer (SHPO) and other jurisdictional agencies including the California Native American Heritage Commission (NAHC) in Sacramento.

In accordance with 36 CFR Part 800.4(a)(3), on April 4, 2012, letters were sent to consulting and interested parties who may have knowledge or concerns with historic properties in the area, and to request information regarding any historic buildings, districts, sites, objects, or archaeological sites of significance within the APE. The letters were sent to the following recipients:

- California Historical Society
- City of San Bernardino Planning Department
- Orange Empire Railway Museum
- Riverside Historical Society
- City of Redlands Planning Department
- Redlands Area Historical Society
- Redlands Historical Museum Association, Inc.
- San Bernardino County Museum
- San Bernardino History and Railroad Museum
- San Bernardino Historical and Pioneer Society
- San Bernardino Railroad Historical Society
- Loma Linda Parks and Historical Society
- City of Loma Linda Planning Department

Based on the letter received from the NAHC on April 18, 2012, a search of the sacred lands file identified no Native American Cultural Resources within the area of potential effect (APE). As recommended by the NAHC, individuals who may have further knowledge on sacred or prehistoric cultural resources within the Study Area were contacted. These included individuals from the Fort Mojave Indian Tribe, Gabrielino Tongva Nation, Gabrielino Tongva San Gabriel Band of Mission Indians, Morongo Band of Mission Indians, Pechanga Band of Luiseno Mission Indians, Ramona Band of Cahuilla Mission Indians, San Manuel Band of Mission Indians, Serrano Nation of Indians, and the Soboba Band of Luiseno Indians. On February 14, 2013, tribal consultation letters were sent from FTA. No response letters have been received prior to the release of the Draft EIS/EIR.

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires Federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by ACHP. Revised regulations, "Protection of Historic Properties" (36 CFR Part 800), became effective January 11, 2001. In accordance with these regulations, on August 24, 2012, FTA sent a letter to SHPO initiating formal consultation for cultural, archaeological, and historical resources (see Appendix O). The letter also requested SHPO concurrence on the APE for the Project and delegation of Section 106 coordination to SANBAG. In a conference call held on October 17, 2012, FTA consulted with SHPO to discuss the Project and to determine the Section 106 identification effort. On November 29, 2012, SANBAG sent a formal letter requesting SHPO's approval of the APE and the use of a streamlined methodology for determining important architectural properties. On January 14, 2013, SHPO concurred with the streamlined approach to determining important architectural properties. SHPO's January 14, 2013 letter also requested that the APE should include historic properties in their entirety. Consequently, on March 15, 2013, SANBAG sent a formal letter including a hardcopy map of the updated APE that more clearly demonstrates the inclusion of historical properties (in their entirety) within the APE. On April 24, 2013, SHPO concurred with the revised APE and on June 4, 2013, SHPO approved the testing plan for archaeological resources within Redlands Chinatown. On August 14, 2014, SHPO concurred that the Project would have no adverse effect to the following historic properties:

- Redlands Santa Fe Historic District and contributing properties, including the Redlands Santa Fe Depot;
- Second Baptist Church;
- Victoria Elementary School; and
- Redlands Lawn Bowling Club.

On October 30, 2012, SANBAG initiated consultation with the Chinese Historical Society of Southern California and Redlands Conservancy (see Appendix N) notifying them of known cultural resources within the APE and requesting comments in regards to those resources. Additionally, on February 14, 2013, FTA initiated consultation with appropriate tribes (see Appendix N) notifying them of known cultural resources within the APE and requesting comments in regards to those resources. The following cultural resources have been identified within the APE:

- The Gage Canal (CA-SBR-7168);
- The Elephant Orchards Packing House site (CA-SBR-11856H);
- The Redway House (CA-SBR-5313H);
- The Redlands Chinatown site (CA-SBR-5314H); and
- The Mill Creek Zanja (CA-SBR-8092H).

SANBAG provided a preliminary draft of the Cultural Resources TM to SHPO for review and comment on August 20, 2013. SHPO provided comments on the preliminary draft Cultural Resources TM on October 9, 2013. On July 28, 2014, SANBAG provided a response letter and updated Cultural Resources TM to SHPO. On August 14, 2014, SHPO concurred that the segment of the Mill Creek Zanja within the APE is not eligible to the NRHP due to lack of integrity and setting. SHPO also concurred that portions of the Redway House and Redlands

Chinatown within the Project APE were not eligible for the NRHP. The Cultural Resources TM (Revised) provided in Appendix M of this EIS/EIR was subsequently updated in response to SHPO's concurrence letter on August 14, 2014 and reflects minor updates requested.

6.4.3 Section 4(f) Resources Notification

In accordance with 23 CFR – Part 774, FTA and SANBAG are required to coordinate with entities having jurisdiction or ownership over existing or planned park and recreation amenities, including trails. On August 1, 2012, letters were mailed to provide notice that improvements associated with the Project would occur in close proximity to resources owned and/or managed by the following entities:

- City of Redlands: East Valley Corridor Multi-Purpose Trail, Jennie Davis Park, Orange Blossom Trail, and Sylvan Park
- City of San Bernardino: Meadowbrook Fields and Meadowbrook Park
- Redlands Unified School District: Victoria Elementary School (Victoria Park), Franklin Elementary School, and Orangewood High School
- San Bernardino County Parks and Recreation Department: Santa Ana River Trail

The letters are intended to provide notification about the start of the environmental review process for the Project and to seek the abovementioned entities' input on potential impacts to their existing or planned park and recreation amenities. On August 6, 2012, subsequent contact with the entities included an email summarizing the contents of the notification letter sent the week prior. On June 7, 2013, letters were mailed to the entities concerning the contents of the notification letters and potential 4(f) uses of existing or planned park and recreation amenities as written concurrence has yet to be received. Coordination letters were also sent out on September 24, 2014 during the Draft EIS/EIR public review period. The San Bernardino County Parks and Recreation Department provided a concurrence letter on November 6, 2014. The City of Redlands provided a concurrence letter in February 2015. A copy of the Section 4(f) notification letters are provided in Appendix O.

6.4.4 Section 7 Consultation

FTA sent a letter to the U. S. Fish and Wildlife Service (USFWS) on May 1, 2013 requesting to initiate formal Section 7 Consultation for direct and indirect Project-related impacts to habitat occupied by federally listed species and federally designated critical habitat (see Section 3.7, Biological Resources and Appendix I4). SANBAG and USFWS conducted a field walk on July 15, 2013 to go over the Project features proposed by SANBAG and observe habitats adjacent to the ROW that may be affected by construction activities, including those at the Santa Ana River. USFWS forwarded a letter dated August 9, 2013 requesting additional information in order to complete the initiation package, including concurrence from the U. S. Army Corps of Engineers (USACE) that FTA will act as the lead Federal agency for the Section 7 Consultation process. On December 12, 2013, FTA provided USFWS with a letter requesting initiation of Section 7 consultation. The letter also included information requested in USFWS's August 9, 2013 letter, including a draft BA (Appendix I3) for USFWS's review and concurrence. On January 31, 2014, USFWS issued a letter indicating that formal Section 7 Consultation for the Project started on January 7, 2014, and that USFWS would issue a biological opinion within 135 days (see Appendix I4). On May 13, 2014, USFWS requested and was granted a 60-day extension until July 21, 2014. An additional request for a subsequent 30-day extension to August 21, 2014 was filed on July 23, 2014.

Due to overlapping Federal and State listings for both LBV and Wooly star, coordination on the mitigation for these species was conducted with the California Department of Fish and Wildlife (CDFW) in December 2014 and January 2015. USFWS issued the final BO on February 9, 2015, which is included as Appendix I6.

6.5 ANTICIPATED AGENCY APPROVALS AND PERMITS

As previously presented in Section 2.13, the lead agency for the Project is SANBAG for CEQA compliance and FTA for NEPA compliance. It is anticipated that coordination with federal, state, and local agencies will be required for approvals and the issuance of permits for the construction of the Project. A list of the identified approvals and permits, including brief descriptions of the jurisdiction and purpose is presented in Table 2-8.

6.6 PUBLIC INFORMATION MEETINGS AND COMMUNITY OUTREACH

6.6.1 Alternatives Analysis Outreach

During the initial planning phase of the Project, including the initial Alternatives Analysis (AA) phase and the subsequent Strategic Plan phases, public involvement activities were primarily focused on public meetings to engage the public at key milestones. During the AA phase of the project, one public meeting was held on September 13, 2010 at the City of Redlands - ESRI Café, to present alternative transit modes (commuter rail, light rail, diesel multiple units and bus rapid transit) being considered for the Project, and transit-oriented land use development scenarios. A second round of informational meetings was conducted on May 11, 2011at the City of Redlands - ESRI Café and May 12, 2011 at the Santa Fe Depot in San Bernardino.

These three-hour meetings were held to inform the public about each of the alternatives being analyzed by the project development team and to solicit public feedback/input before recommending a Locally Preferred Alternative (LPA) to SANBAG for adoption.

Nearly 200 people, consisting of residents, employees, community leaders and city officials, attended the two meetings held at the ESRI Cafe in Redlands and City of San Bernardino Economic Development Agency Business Center in Downtown San Bernardino. Holding two meetings – one on each end of the project area – allowed the project development team to maximize attendance and better reach the target audiences.

The meeting format consisted of a short welcome given by SANBAG Public Information Officer Jane Dreher, a brief overview of the projects by Mitch Alderman, Director of Transit and Rail Programs, SANBAG, and a 10-minute presentation about the specifics of the Redlands Corridor Alternatives Analysis. Following the presentation, the meeting broke into an open house format. This format allowed participants to go to several information areas to discuss and learn about potential transit alternatives under consideration, station locations, transit oriented development, environmental considerations and funding issues. Project staff members were at each information area that corresponded with their area of expertise to address specific questions from attendees.

6.6.2 Stakeholder and Community Outreach

As a first step prior to scoping, SANBAG identified and met with a mix of agencies, local community members, environmental and other stakeholders during the course of 2011 for early input on issues and interests to consider as well as the preferred methods of informing and involving them throughout the Project development. This process led to the compilation of a list of interested parties to be included in future public noticing. Moving forward, SANBAG will be engaging these representatives and groups through the following means:

- Presentations and updates at standing meetings/bodies
- Small group meetings on specific topics of interest
- Newsletters and media outreach

Pursuant to NEPA, a Notice of Intent (NOI) was prepared for the Project to inform interested parties of the plan to prepare an EIS/EIR, provide information on the nature of the Project, invite participation in the EIS/EIR process, provide opportunity for the public and agencies to comment on the scope of the EIS/EIR, and to announce that public scoping meetings that would be conducted as part of the EIS.

The NOP, NOI, Distribution List for the public comment period, and a Final Scoping Report are provided under Appendix A to this EIS/EIR. The Preliminary Agency Coordination Plan and Public Involvement Plan are included under Appendix B to this EIS/EIR.

6.6.3 Notice of Preparation

Early in 2012, SANBAG began preparation of a joint Environmental Assessment (EA)/EIR to satisfy NEPA and CEQA compliance for the Project. In accordance with Section 15063 of the CEQA Guidelines, a Notice of Preparation (NOP) was prepared and distributed to the State Clearinghouse (SCH), responsible and trustee agencies, as well as private organizations and individuals that may have an interest in the Project. The 30-day public comment period for the NOP began on April 10, 2012, and ended on May 12, 2012. The NOP was posted with the San Bernardino County Clerk's office and SCH at the Governor's Office of Planning and Research (OPR) to officially solicit statewide agency comments on the scope of the environmental document. The purpose of the NOP was to provide notification that SANBAG, as the lead agency under CEQA, planned to prepare an EIR for the Project. The NOP was mailed to adjacent property owners and other interested agencies, organizations, and individuals. At the end of the 30-day public comment period for the NOP, 17 comment letters were received from individuals, organizations, and public agencies (see Appendix A).

Two scoping meetings were scheduled during the course of the 30-day NOP public review period. These meetings were held at the following locations located along the Study Area:

- April 24, 2012, 5:00–7:00 PM. ESRI Café, 380 New York Street, Redlands, CA 92373
- May 2, 2012, 5:00–7:00 PM. San Bernardino Hilton, 285 East Hospitality Lane, San Bernardino, CA 92408, University Room

6.6.4 Notice of Intent

Based on the amount of comments received during the NOP public comment period and the nature of those comments received, the controversial nature of project implementation and potential for adverse environmental effects became apparent. In addition, based on the preliminary results of several technical studies made available in support of the EA, and after careful review and assessment of potential adverse impacts of the Project on the quality of the human, physical, and biological environment, SANBAG and FTA were not confident that the results of these analyses would support the preparation of a Finding of No Significant Impact (FONSI) after the preparation of an EA. For this reason and based on the schedule and budget implications of continuing with the preparation of an EA, the decision was made to transition the NEPA document to an EIS due to probable environmental effects associated with the Project that may result in significant impacts. As such, this EIS/EIR is being prepared for the Project and provides the basis for a Record of Decision.

FTA filed a Notice of Intent (NOI) to prepare an EIS on July 31, 2012 per the requirements of NEPA. The purpose of the NOI is to describe the proposed action, possible alternatives, and the lead agency's proposed scoping process. The notice was filed in the Federal Register and coordinated with notification to the print media (newspapers) in the local communities. The issuance of the NOI starts an additional 30-day public comment period, which provides the public and agencies with another opportunity to comment on the RPRP. In conjunction with the release of the NOI, a notice for two new project scoping meetings was provided and scheduled to occur during the course of the 30-day comment period. Following the release of the NOI, it was determined that the NOI contained an address for the meeting in San Bernardino that was different than the address contained in the public notice circulated in local newspapers and mailings. As a result and to avoid confusion, FTA issued a Notice of Correction on August 17, 2012 to clarify the location of the scoping meetings in the Federal Register, which required a change in the dates for the scoping meetings and duration of the noticing period. This correction extended the comment period, which originally had ended on August 31 to October 11, 2012. The two additional scoping meetings were held on September 25, 2012 in the City of Redlands and on September 27, 2012 in the City of San Bernardino. The rescheduled dates and locations are provided in Table 6-1. At the end of the public comment period for the NOI, 14 comment letters were received from individuals, organizations, and public agencies (see Appendix A).

6.6.5 Notice of Availability

The Notice of Availability (NOA) of the Draft EIS/EIR was published in the Federal Register on August 15, 2014. In addition, on August 6, 2014, the NOA for the Project's Draft EIS/EIR was filed with the San Bernardino County Clerk's Office, State Clearinghouse, and sent to the mailing list (i.e., government agencies, interested parties, and property owners and mailing addresses for all parcels adjacent to the nine-mile stretch of the Project). The NOA was noticed via an email blast, SANBAG's Home Page, and in the San Bernardino Sun and the Redlands Daily Facts. Copies of the Draft EIS/EIR, including the NOA, were also mailed to each of the Participating and Cooperating Agencies in the NEPA process (which also included Responsible Agencies as defined by CEQA). The public review period for the Draft EIS/EIR concluded on September 29, 2014.

A copy of the Draft EIS/EIR was available for public review at the following locations:

- SANBAG – 1170 West 3rd Street, 2nd Floor, San Bernardino, CA
- City of San Bernardino – 300 North "D" Street, 3rd Floor, San Bernardino, CA
- City of Redlands, Development Services Department, Planning Division – 210 East Citrus Avenue, Redlands, CA

- Norman F. Feldheym Public Library – 555 West 6th Street, San Bernardino, CA
- University of Redlands Library – 1249 E. Colton Avenue, Redlands, CA.

An electronic version of the document was also made available on http://www.sanbag.ca.gov.

6.6.6 Scoping Meetings

As part of the community outreach for the Project, scoping meetings were held to provide the public the opportunity to comment on the project purpose and need, the alternatives to be considered, and issues and areas of concern to be considered in the EIS/EIR. Prior to the public meetings, information regarding the opportunity for public comments on the Project were made available through a variety of sources, including display advertisements, certified mail, email blasts, and information flier distribution. The locations, dates, and number of attendees at each of these meetings are shown below in Table 6-1.

Table 6-1. RPRP Scoping Meetings

Location	Date and Time	Number of Attendees	Notice Type
ESRI Café 380 New York Street Redlands, CA 92373	Tuesday, April 24, 2012 5:00 p.m. to 7:00 p.m.	70	NOP
San Bernardino Hilton, University Room 285 East Hospitality Lane San Bernardino, CA 92408	Wednesday, May 2, 2012 5:00 p.m. to 7:00 p.m.	40	NOP
San Bernardino Hilton, University Room 285 East Hospitality Lane San Bernardino, CA 92408	Tuesday, September 25, 2012 5:30 to 7:30 p.m.	32	NOI
ESRI Café 380 New York Street Redlands, CA 92373	Thursday, September 27, 2012 5:30 to 7:30 p.m.	30	NOI

The scoping meetings were conducted in the following format:

- Introduction: 10-15 minutes
- Presentation and Project Overview: 30 minutes
- Public Comment and Open Forum: 45 minutes

The meetings started with a brief introduction of SANBAG's representatives for the Project and its consultant team. As part of the introduction, SANBAG provided a brief overview of the goals and objectives for the meeting along with the format of the meeting.

Following the introductions, a PowerPoint presentation provided a general overview of the Project. The presentation provided information regarding the purpose of scoping and information on the Project's purpose and need, background, and the alternatives being carried forward for consideration in the EIS/EIR.

An open forum comment period followed the presentation which provided attendees the opportunity to state their comments. This included an opportunity for the public to have the comments transcribed. A language interpreter was present during the public meetings to assist any non-English speaking community members. This portion of the scoping meeting was utilized to hear the community's comments and concerns on the Project. Comment cards were provided to allow the public to note any questions or concerns. Following the open forum comment period, the meeting transitioned into an open house forum to provide attendees with an opportunity to review project information and to ask project team members with questions. Five members of the Project team were oriented at different locations in the room to provide information on particular aspects of the Project (i.e., engineering, environmental, grade crossings). Project information was provided on large-sized display boards. The display boards were utilized to depict the general location of the Project as well as the locations of proposed track improvements, platforms, bridges, layover facilities, and grade crossings.

In conjunction with the release of the Draft EIS/EIR for public review, SANBAG held additional public meetings concurrent with the public review period. The public meetings were held on:

1. September 4, 2014, 5:00–7:00 PM, at the ESRI Café, 380 New York Street, Redlands, CA 92373; and
2. September 9, 2014, 5:00–7:00 PM, at the Hotel, 285 East Hospitality Lane, San Bernardino, CA 92408

In addition to receiving written comments on the Draft EIS/EIR, SANBAG had a report reporting in attendance to transcribe verbal comments on the Draft EIS/EIR. Both a Spanish and ASL interpreter were also in attendance at each of the meetings.

Advertisements

Display advertisements for the scoping meetings were placed in newspapers within the local communities, selected based on geographic focus and language needs. Newspaper advertisements were strategically placed in local newspapers to reach out to the population residing and/or working along the entire nine-mile stretch of the Study Area. To date, scoping meetings were advertised in the *San Bernardino Sun, Redlands Daily Facts,* and *Inland Empire Community Newspapers.* These newspapers target the following audience: San Bernardino County, City of Redlands, communities in Loma Linda, Highland, Rialto, and Colton, and Spanish-speakers.

Scoping meeting information for the NOP was advertised in the *San Bernardino Sun*, *Redlands Daily Facts*, and *Inland Empire Community Newspapers* on April 12, 2012. Two additional project scoping meetings were provided and scheduled in conjunction with the release of the NOI. Scoping meeting information for the NOI was advertised in the *San Bernardino Sun* and *Redlands Daily Facts* on July 31, 2012. As mentioned previously, following the release of the NOI, it was determined that the NOI contained an address for the meeting in San Bernardino that was different than the address contained in the public notice circulated in local newspapers and mailings. Consequently, advertisements were published in the *San Bernardino Sun* and *Redlands Daily Facts* on August 13 and August 14, 2012, respectively to inform the public of the rescheduled scoping meeting in San Bernardino and the extension of the NOI public comment period. Another round of advertisements with NOI scoping meeting information was published in the *San Bernardino Sun* on September 24, 2012 and in the *Redlands Daily Facts* and *Inland Empire Community Newspapers* on September 25, 2012.

A list of newspapers and advertisement publication dates is provided in Table 6-2. A representative sampling of the advertisements and notifications is presented as Appendix A5, Public Notices.

Table 6-2. RPRP Scoping Period Display Advertising

Newspaper(s)	Publication Date	Notice Type
San Bernardino Sun, *Redlands Daily Facts, and* *Inland Empire Community Newspapers*	April 12, 2012	NOP
San Bernardino Sun	July 31, 2012 August 13, 2012 September 24, 2012	NOI
Redlands Daily Facts	July 31, 2012 August 14, 2012 September 25, 2012	NOI
Inland Empire Community Newspapers	September 25, 2012	NOI

Agency Mailings

To support SANBAG and FTA's outreach and scoping requirements, an agency mailing list was developed to ensure early notification is provided to applicable federal, state, and local agencies who would not otherwise receive formal notification from the State Clearinghouse. This list was used to distribute meeting and milestones notices such as the release of the NOP, NOI, scoping meetings, and release of the Draft EIS/EIR. Based on the combined outreach efforts through the NOP and NOI comment periods, the outreach team developed a targeted list of approximately 200 agency/key stakeholder contacts to receive a mailing of the Draft EIS/EIR to inform them of its availability along with an opportunity to provide comments during the public review period.

City Council Notification

Scoping meeting information was announced at the San Bernardino city council meeting on April 16, 2012. Additionally, the outreach team requested that the City of Redlands announce scoping meeting information at the April 17, 2012 City Council meeting.

Mailing to Adjacent Properties

In addition to the agency mailing list, a broader mailing list was developed to include all property owners and mailing addresses for all parcels adjacent to the nine-mile stretch of the Study Area. This will be used to distribute meeting and milestones notices such as the release of the NOP, NOI, scoping meetings, release of the Draft EIS/EIR and associated public hearings. Mailing addresses were obtained from the City of San Bernardino Economic Development Agency. To date, approximately 400 NOPs were mailed out to property owners on April 11 and 12, 2012. A similar number of NOIs were mailed out on July 31, 2012 in conjunction with the publishing of the NOI in the Federal Register.

Informational Flier Distribution

The outreach team strategically distributed approximately 200 informational fliers in the cities of San Bernardino and Redlands where planned platform improvements would be located.

Database Notification

The database is used to distribute meeting and milestones notices such as the release of the NOP, NOI, scoping meetings, release of the Draft EIS/EIR and associated public hearings. To date, notification of the NOP and scoping meeting information was sent to approximately 900 contacts in the project database. The first round of notification emails were sent on

April 18, 2012, followed by reminder emails on April 23, 2012 and May 1, 2012. A second round of emails were sent on September 18, 2012 and followed by reminder emails on September 25, 2012 to notify database contacts about the NOI and scoping meetings. The distribution list is provided in Appendix A.

Other Channels of Communication Used to Notify the Public

In addition to the NOP filed with the State Clearinghouse and the NOI published in the Federal Register, the following are other activities implemented to inform the public of the Project:

- The NOP was made available on the SANBAG website on April 10, 2012 throughout the 30-day review period.
- The notification of scoping meetings was sent to SANBAG board of directors and announced at the SANBAG board meeting.
- The notification of the scoping meeting at ESRI was sent to all ESRI employees via email on behalf of the company encouraging attendance.
- The Downtown San Bernardino Constant Contact database notification was sent to approximately 400 local business leaders, residents, elected officials, and community-based organizations.
- A pre-meeting media outreach was conducted to get information covered in local newspapers, which resulted in coverage in the April 17, 2012 edition of the *Redlands Daily Facts.*
- The PowerPoint presentation used at scoping meetings for the NOP and NOI was made available to the public on the SANBAG website on April 25, 2012 and September 26, 2012, respectively – providing people unable to attend the meeting an opportunity to see the information presented.

Media Outreach

Notice of milestone meetings and events will be provided to local and regional media. To date, proactive and targeted media outreach resulted in the following coverage of the meetings and the Project.

- April 17, 2012 – The San Bernardino Sun and Redlands Daily Facts
  - Description: Pre-notification of meetings at ESRI on April 24 and in San Bernardino on May 2, 2012.
- April 25, 2012 – The San Bernardino Sun and Redlands Daily Facts
  - Description: Recap of meeting held at ESRI.
- April 26, 2012 – Metro's Los Angeles Transportation Headlines
  - Description: Link to Redlands Daily Facts article on coverage of April 24 meeting.
- May 6, 2012 – Redlands-Loma Linda Patch
  - Description: Recap of the meeting held in San Bernardino.

6.7 ACCOMMODATIONS FOR MINORITY, LOW-INCOME, AND PERSONS WITH DISABILITIES

SANBAG made significant efforts to ensure minority, low-income, and disabled persons were included in all outreach efforts. This has included sensitivity to multiple distribution channels and language needs, but also the selection of transit accessible venues in compliance with the Americans with Disabilities Act.

Display advertisements were advertised in Spanish and translations were provided at the scoping meetings. Both a Spanish and American Sign Language (ASL) interpreter were in attendance at each of the meetings.

CHAPTER 7.0 RESPONSE TO COMMENTS ON THE DRAFT EIS/EIR

7.1 INTRODUCTION

The Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the Project was circulated to the public for comment over a 54-day review period that concluded on September 29, 2014. Appendix P of the Final EIS/EIR contains all comments received on the Draft EIS/EIR during the public review period, as well as the responses to these comments. Responses to comments are cross-referenced in a table at the beginning of Appendix P to allow commenters to easily locate the response to their comment. Under the requirements of NEPA as outlined in 40 CFR 1503.4(a) and 23 CFR 771.125, the Final EIS shall include discussion of substantive comments on the Draft EIS and responses thereto, summarize public involvement, and describe the mitigation measures that are to be incorporated into the proposed action. Under CEQA, Section 15088(c) of the CEQA Guidelines describes the evaluation that is required in the response to comments:

> *The written response shall describe the disposition of significant environmental issues raised (i.e., revisions to the proposed project to mitigate anticipated impacts or objections). In particular, the major environmental issues raised when the lead agency's position is at variance with recommendations and objections raised in the comments must be addressed in detail giving reasons why specific comments and suggestions were not accepted. There must be a good faith, reasoned analysis in response. Conclusory statements unsupported by factual information will not suffice.*

In order to comply with Section 15088(c) of CEQA, reasoned, factual responses have been provided to all comments received, with a particular emphasis on significant environmental issues. Generally, the responses to comments provide explanation, clarification, or amplification of information contained in the Draft EIS/EIR. All comments and responses to comments are included in the Final EIS/EIR and will be considered by the SANBAG Board of Directors prior to certification and in any approval of the Project.

In responding to comments, CEQA and NEPA do not require a Lead Agency such as SANBAG and FTA to conduct every test or perform all research, study, or experimentation recommended or requested by commenters. Rather, a Lead Agency need only respond to significant environmental issues and does not need to provide all information requested by reviewers, as long as a good faith effort at full disclosure is made in the EIS/EIR (CEQA Guidelines §15204). Further, disagreement among experts regarding conclusions in the EIR is acceptable, and exhaustive treatment of issues is not required (CEQA Guidelines §15151).

7.2 COMMENTS RECEIVED ON THE DRAFT EIS/EIR

Sixty-seven (68) comments letters were submitted on the Draft EIS/EIR consisting of 431 individual comments. Table 7-1 lists the comments received on the Draft EIS/EIR. Each commenter has been assigned an identification (ID) code, as shown in Table 7-1 (i.e., for United States Environmental Protection Agency, the code is USEPA). In addition, each individual comment made by the commenter has been assigned a tracking number. Therefore, each individual comment received has a commenter ID and comment tracking number (e.g., USEPA-1, USEPA-2, etc.). Responses are provided for each individual comment received in Appendix P. Appendix P includes each of the comment letters received followed by responses to the comments contained in each letter. In addition, transcripts from the public meetings are also included in its entirety, followed by responses to the public comments received.

Table 7-1. Comments Received on the Draft EIS/EIR

Letter No.	Commenter	Comment Type[1]	Date Received	Response Section and Coded Responses
Federal Agency				
USEPA-1	U.S. Environmental Protection Agency	Letter	9/25/2014	2.2.1 (USEPA-1 to USEPA-4)
USDOI-1	U.S. Department of the Interior	Letter	9/29/2014	2.2.2 (USDOI-1)
State Agency				
CAHSR-1	California High Speed Rail Authority	Letter	9/26/2014	2.3.1 (CAHSR-1)
CDFW-1	California Department of Fish and Wildlife	Letter	9/29/2014	2.3.2 (CDFW-1 to CDFW-8)
OPR-1	Governor's Office of Planning and Research	Letter	9/30/2014	2.3.3 (OPR-1 to OPR-3)
Local Agencies				
LL-1	Jarb Thaipejr, City of Loma Linda	Letter	9/17/2014	2.4.1 (LL-1 to LL-3)
REDLANDS-1	Chris Diggs, City of Redlands	E-mail	9/8/2014	2.4.2 (REDLANDS-1)
REDLANDS-2	Don Young, City of Redlands	Letter	9/29/2014	2.4.3 (REDLANDS-2 to REDLANDS-35)
SBCPW-1	Sundaramoorthy Srirajan, San Bernardino County Department of Public Works	Letter	9/22/2014	2.4.4 (SBCPW-1 to SBCPW-8)
SB-1	Robert Eisenbeisz, City of San Bernardino	E-mail	9/25/2014	2.4.5 (SB-1)
Individuals and Organizations				
AREFFI-1	Patrick Areffi	Comment card	9/9/2014	2.5-1 (AREFFI-1 to AREFFI-5)
BATY-1	Jonathan Baty	E-mail	9/8/2014	2.5-2 (BATY-1 to BATY-9)
BELL-1	D. Bell	Comment card	9/4/2014	2.5-3 (BELL-1)
BELTZ-1	Renate Beltz	E-mail	9/28/2014	2.5-4 (BELTZ-1 to BELTZ-10)
BERRY-1	John Berry	E-mail	9/26/2014	2.5-5 (BERRY-1 to BERRY-4)
BOTTS-1	Robert Botts	E-mail	8/12/2014	2.5-6 (BOTTS-1.1 to BOTTS 1. 4)
BOTTS-2	Robert Botts	Letter	8/25/2014	2.5-7 (BOTTS-2.1 to BOTTS-2.25)
BOTTS-3	Robert Botts	E-mail	9/6/2014	2.5-8 (BOTTS-3.1 to BOTTS 3.3)
BOTTS-4	Robert Botts	E-mail	9/9/2014	2.5-9 (BOTTS-4.1 to BOTTS 4.9)

Table 7-1. Comments Received on the Draft EIS/EIR

Letter No.	Commenter	Comment Type[1]	Date Received	Response Section and Coded Responses
BRITTAIN-1	Gregory Brittain	Letter	9/30/2014	2.5-10 (BRITTAIN-1 to BRITTAIN-20)
BROWER-1	Sandra J. Brower (Higgs, Flectcher & Mack)	Letter	9/25/2014	2.5-11 (BROWER-1.1 to BROWER-23)
BROWER-2	Sandra J. Brower (Higgs, Flectcher & Mack)	E-mail	9/26/2014	2.5-12 (BROWER-2.1 to BROWER-2.2)
CAGL-1	California Gas and Liquor (Mike Polsky)	E-mail	8/5/2014	2.5-13 (CAGL-1 to CAGL-2)
CHANDLER-1	Evelyn Chandler	E-mail	9/30/2014	2.5-14 (CHANDLER-1 to CHANDLER-4)
CORONADO-1	Katherine Coronado	Comment card	9/4/2014	2.5-15 (CORONADO-1)
CROWE-1	Samuel Crowe (Attorney at Law)	Letter	9/30/2014	2.5-16 (CROWE-1)
DILL-1	Monty Dill	Letter	10/1/2014	2.5-17 (DILL-1 to DILL-6)
EGAN-1	John G. Egan	Letter	8/27/2014	2.5-18 (EGAN-1.1 to EGAN-1.10
EGAN-2	John Egan	Oral comment	9/9/2014	2.5-19 (EGAN-2.1 to EGAN 2.5)
EGAN-3	John Egan	E-mail	9/28/2014	2.5-20 (EGAN-3.1 to EGAN 3.6)
FARQUHAR-1	William T. Farquhar	Comment card	9/4/2014	2.5-21 (FARQUHAR-1)
FRAME-1	Monica Frame	Comment card	9/4/2014	2.5-22 (FRAME-1)
FRANKE-1	Elizabeth Franke	Oral comment	9/4/2014	2.5-23 (FRANKE-1)
GLASER-1	Stacy Glaser	E-mail	9/26/2014	2.5-24 (GLASER-1 to GLASER-4)
GRAMES-1	George Grames	E-mail	9/26/2014	2.5-25 (GRAMES-1.1 to GRAMES 1.9)
GRAMES-2	George Grames	Letter	9/29/2014	2.5-26 (GRAMES-2.1 to GRAMES 2.9)
GRENDA-1	Donn Grenda	Comment card	9/4/2014	2.5-27 (GRENDA-1.1 to GRENDA 1.9)
GRENDA-2	Donn Grenda	E-mail	9/4/2014	2.5-28 (GRENDA-2121 to GRENDA 2.12)
GRENDA-3	Donn Grenda	Letter	9/5/2014	2.5-29 (GRENDA-3.1 to GRENDA 3.4)
GRENDA-4	Donn Grenda	E-mail	9/30/2014	2.5-30 (GRENDA-4.1 to GRENDA 4.7)
HAMMOND-1	James Hammond	Comment card	9/4/2014	2.5-31 (HAMMOND-1.1 to HAMMOND 1.3)
HAMMOND-2	James Hammond	E-mail	9/8/2014	2.5-32 (HAMMOND-2.1 to HAMMOND 2.4)

Table 7-1. Comments Received on the Draft EIS/EIR

Letter No.	Commenter	Comment Type[1]	Date Received	Response Section and Coded Responses
HARRIS-1	M. Harris	E-mail	9/9/2014	2.5-33 (HARRIS-1)
HATFIELD-1	Bill Hatfield	E-mail	9/24/2014	2.5-34 (HATFIELD-1 to HATFIELD-9)
IEBA-1	Inland Empire Biking Alliance	Letter	9/28/2014	2.5-35 (IEBA-1 to IEBA-16)
KARSTENSEN-1	Cecil Karstensen	Comment card	9/4/2014	2.5-36 (KARSTENSEN-1)
KOGEL-1	Deanna Kogel	E-mail	9/27/2014	2.5-37 (KOGEL-1.1 to KOGEL 1.3)
KOGEL-2	Frank Kogel	E-mail	9/28/2014	2.5-38 (KOGEL-2.1 to KOGEL 2.4)
LEONARD-1	Larry Leonard	E-mail	9/21/2014	2.5-39 (LEONARD-1 to LEONARD-10)
LOPEZ-1	Rosa Lopez	Oral comment	9/4/2014	2.5-40 (LOPEZ-1)
MADAI-1	Tamara Madai	E-mail	9/29/2014	2.5-41 (MADAI-1 to MADAI-7)
MCCANN-1	Aaron McCann	E-mail	9/21/2014	2.5-42 (MCCANN-1 to MCCANN-4)
MILLS-1	John Mills	Comment card	9/4/2014	2.5-43 (MILLS-1 to MILLS-3)
MOORE-1	Cheryl Moore	Oral comment	9/9/2014	2.5-44 (MOORE-1 to MOORE-3)
NASH-1	John F. Nash	E-mail	9/23/2014	2.5-45 (NASH-1 to NASH-3)
NIELSON-1	Lucy Nielson	Oral comment	9/4/2014	2.5-46 (NIELSON-1 to NIELSON-9)
PARKER-1	Victor M. Parker, Sr.	Comment card	9/4/2014	2.5-47 (PARKER-1)
PETERSON-1	Sandra Peterson	E-mail	8/26/2014	2.5-48 (PETERSON-1 to PETERSON-4)
RALEY-1	Tony Raley	E-mail	9/26/2014	2.5-49 (RALEY-1.1 to RALEY-1.7)
RALEY-2	Tony Raley	Letter	9/26/2014	2.5-50 (RALEY-2.1 to RALEY 2.7)
ROCK-1	James and Julie Rock	E-mail	9/27/2014	2.5-51 (ROCK-1 to ROCK-7)
SPARKS-1	Wayna Sparks	Oral comment	9/9/2014	2.5-52 (SPARKS-1 to SPARKS-6)
SUMPTER-1	Dan Sumpter	E-mail	9/29/2014	2.5-53 (SUMPTER-1 to SUMPTER-6)
VALERIE-1	Valerie	E-mail	9/26/2014	2.5-54 (VALERIE-1 to VALERIE-3)
VERSTEEG-1	Jim VerSteeg	Comment card	9/4/2014	2.5-55 (VERSTEEG-1 to VERSTEEG-2)
WALTERS-1	Andrew M. Walters	Letter	9/25/2014	2.5-56 (WALTERS-1 to WALTERS-21)

Table 7-1. Comments Received on the Draft EIS/EIR

Letter No.	Commenter	Comment Type[1]	Date Received	Response Section and Coded Responses
WONG-1	Sam Wong	E-mail	9/6/2014	2.5-57 (WONG-1.1 to WONG1.5)
WONG-2	Sam Wong	E-mail	9/28/2014	2.5-58 (WONG-2.1 to WONG-2.12)

7.3 SUMMARY OF COMMENTS RECEIVED ON THE DRAFT EIS/EIR

A brief summary of the public comments that were received, organized by key topic areas, is provided below:

- **At-Grade Crossing Closures** – Many comments expressed concerns relating to closures at existing at-grade crossings (emphasis on D Street in San Bernardino and 7th and 9th in Redlands).
- **Ridership** – Several comments had questions regarding the Project’s anticipated ridership.
- **Project Cost** – Several commenters were interested in the Project’s estimated construction and operational costs. Several comments had questions of whether the cost estimate incorporates any costs of financing the project. Several comments were interested in understanding private funding sources that may become involved.
- **Stations** – Several commenters requested an additional station stop at California Street. Several comments also requested a reduction in the number of stops currently proposed.
- **Train Noise** – Many comments expressed concerns related to train noise and how individuals should interpret the noise analysis, methods used, and thresholds applied. Several comments requested additional information on the proposed quiet zone mitigation.
- **Vibration** – Several comments identified concerns related to construction and operational sources of vibration.
- **Acquisitions/Relocations** – Multiple comments inquired as to whether SANBAG would require a portion or all of their property in order to construct the Project.
- **Public Noticing** – A couple of the comments raised questions relating to project noticing and coordination under the NEPA and Section 106 process
- **Air Quality and Health Risk** – Several comments raised questions relating to the Project’s air quality and health effects.
- **Historic Resources** – Several comments identified concerns related to the effects of the Project on the Redlands Santa Fe Depot Historic District

- **Public Safety** - Stakeholders articulated concern over Project operations due to its proximity to schools and the safe interaction between trains and vehicular/pedestrian traffic, particularly at grade crossings. Several commenters also noted concerns related to safety and security at the stations.
- **Traffic and Circulation** – Several comments expressed concerns related to the Project's operation and potential to result in increased congestion and traffic delay. Others comments on concerns about vehicle safety at the at-grade crossings and the potential for spill back. Some comments identified concerns related to intersection turning movements.
- **Visual Impacts** – A few comments raised concerns related to the visual effects of sound barriers and their potential to result in further separation of existing communities.
- **Non-Motorized Transportation** Facilities – Several comments identified concerns related to the integration of bicycle facilities and hazards where intersection widening is proposed.
- **Economic Development** - A few comments referenced the potential for transit to allow for enhanced economic vitality. Others expressed concern for the perceived potential loss of existing businesses along one or more of the proposed at-grade crossing closures. Concerns were also raised regarding changes in property values.

7.4 MASTER RESPONSES

Upon review of the comments received, common topics emerged and a Master Response was developed for these similar questions and comments. The purpose of a Master Response is to address broad issue areas where there was extensive public comment and to address the various comments in a comprehensive manner. Specifically, Master Responses are provided to address the following topics:

- Master Response 1: Train Noise Impact Methodology and Results
- Master Response 2: Mitigation for Train Noise
- Master Response 3: Quiet Zone Mitigation
- Master Response 4: Closures of Existing At-Grade Crossings
- Master Response 5: Projected Ridership
- Master Response 6: Project Cost
- Master Response 7: Vibration Assessment
- Master Response 8: Land Acquisition Requirements
- Master Response 9: Project Noticing
- Master Response 10: Air Quality and Health Effects
- Master Response 11: Effects to the Redlands Santa Fe Depot Historic District
- Master Response 12: Project Safety and Security
- Master Response 13: Traffic Circulation
- Master Response 14: Mill Creek Zanja
- Master Response 15: Property Values

Table 7-2. Master Responses to Comments Received on the Draft EIS/EIR

General Comment	Master Response
Master Response 1: Train Noise Impact Methodology and Results	
Several commenters had questions regarding the methodology applied in the Draft EIS/EIR for considering noise impacts resulting from the Project. Commenters also had questions relating to the interpretation of the noise analysis, the criteria used, and applying the results to their property of interest.	The Draft EIS/EIR evaluates Project-related noise impacts using models that follow methodologies contained in FTA's Transit Noise and Vibration Impact Assessment Manual (FTA Manual 2006) (see pages 3.6-10 through 3.6-13 of the Draft EIS/EIR). The noise impact criteria contained in FTA's Manual (2006) are based on the potential annoyance of project noise on people, and are not based on the potential audibility of a noise source. The noise impact criteria and descriptors depend on land use, designated either Category 1, Category 2, or Category 3. Category 1 includes uses where quiet is an essential element in their intended purpose, such as indoor concert halls, outdoor concert pavilions, or National Historic Landmarks where outdoor interpretation routinely takes place. Category 2 includes residences and buildings where people sleep, while Category 3 includes institutional land uses with primarily daytime and evening use such as schools, places of worship and libraries. The criteria are then used to define the resulting noise impact using a sliding scale in which there is greater potential for impact in areas where existing noise levels are quieter (i.e., rural areas) and less potential for noise impacts where existing noise levels are higher (i.e., suburban and urban areas) (see Figure 2-1 of Appendix H1 of the Draft EIS/EIR). Noise impacts in the Draft EIS/EIR were determined following FTA's noise criteria based on a comparison of existing noise levels to future noise levels with the addition of Project noise sources. Existing noise levels were determined throughout the corridor by taking direct field noise measurements at certain noise-sensitive receptors following FTA's methodology (see Table 3.6-2 of the Draft EIS/EIR). Noise measurements were taken at specific noise-sensitive locations near the alignment in the study area that were considered representative of conditions and were applied to several neighborhoods with similar noise sources (see Figures 3.6-3A and 3.6-3B of the Draft EIS/EIR). Specific measurement locations were then selected based on their physical relationship to existing noise sources, such as major roads. For project noise levels, all the noise sources during a train pass-by are combined to provide the noise model with a single reference noise level for a train pass-by. FTA methods take this single reference noise level and, using the number of trains per hours during daytime and nighttime, use it to compute either the peak hour noise level or the Ldn (Day and Night Level) noise level. The peak hour noise level is used to identify noise levels at places that are used primarily for daytime activities, such as schools and parks. The Ldn is used to identify noise levels at places with sleep-related activities, such as homes, apartments, hospitals, and hotels. The Ldn adds a 10-dBA penalty to the hours between 10 p.m. and 7 a.m. to account for people being more sensitive to noise during these hours. The steps described in the FTA Manual (2006) were used to evaluate the environmental effects of the Project. The FTA Manual (2006) identifies a screening procedure, a general noise assessment, and a detailed noise assessment. Under the noise screening procedure, the project type is identified (e.g.,

General Comment	Master Response
	commuter rail mainline, commuter rail station, light rail transit station, busway). In addition, Project-to-receiver screening distances are given in the manual for each type of project. Adjustments to the generic screening distances are then tailored to the Project using the methodology in Chapter 5, the FTA spreadsheet model and, where horns and warning bells are used (as is the case with the proposed Project), the FRA's horn noise model. Receivers within the indicated screening distance of the Project are identified and, if they exist within the screening distance, then that distance defines the study area for the detailed noise assessment. Receivers of interest were selected using the guidance provided in Chapter 6 and Appendix C of the FTA manual (see Figures 3.6-3A and 3.6-3B in Appendix H1 of the Draft EIS/EIR). The FTA detailed noise assessment method was used to quantify the Ldn noise levels at the identified receiver locations due to train operations on the rail alignment under the existing, with-Project, future-no-Project, and future-with-Project scenarios. For the with Project scenarios, the EIS/EIR considers four operational scenarios including: (1) locomotive with no quiet zones, (2) locomotive with quiet zones, (3) diesel multiple unit (DMU) without quiet zones, and (4) DMU with quiet zones. A DMU is a multiple-unit train powered by on-board engines and requires no separate locomotives as the engines are incorporated into one or more of the carriages. The modeling accounted for the number of trains anticipated to pass along the railroad corridor during daytime and nighttime hours (22 and 3 trains, respectively), the typical train speed along the railroad corridor (20 to 35 miles per hour), the typical future train consist (i.e., one engine and two cars), and the use of locomotive horns at crossings. A reference sound exposure level (SEL) value of 92 dBA was applied for the locomotive driven trainset. For the DMU vehicle option, a reference SEL value of 85 dBA was applied in the noise calculations. Additionally, wayside signal bells at crossings were accounted for as part of the detailed noise analysis (see page 5-1 of Appendix H1 of the Draft EIS/EIR). Figures 3.6-5A and 3.6-5B (Revised) of the Draft EIS/EIR illustrate the differences in noise impacts from the diesel locomotive and DMU for each of the modeled receivers in Appendix H1 and H2. Tables 3.6-6 and 3.6-7 of the Draft EIS/EIR summarize the pre- and post-post noise levels for receivers moderately and severely impacted by noise from the locomotive and DMU vehicle options. Table 6-1 of Appendix H1 of the Draft EIS/EIR provides the results of the rail noise modeling for all receiver locations under the locomotive vehicle option in the absence of mitigation (see Figures 6-1A through 6-1J of Appendix H1 of the Draft EIS/EIR). Table 1 in Appendix H2 provides the results of the rail noise modeling for all receiver locations under the DMU vehicle option in the absence of mitigation. As provided, the resulting noise levels under the DMU would be comparable to those of the locomotive as illustrated in Figures 6-1A through 6-1J of Appendix H1 of the Draft EIS/EIR in the absence of mitigation. Based on the identification of both moderate and severe noise impacts from train operations, SANBAG is proposing several mitigation measures to minimize operational-related, which are discussed under Master Response 2.

General Comment	Master Response
Master Response 2: Mitigation For Train Noise	
Several commenters expressed concerns relating to the types of noise mitigation available to reduce train-related sources of noise and methods being proposed by SANBAG.	Operational sources of noise associated with the Project-related train movements would include pass-bys, horns, warning signals, and wheel squeal at tight curves. The mitigation for train-related noise is multifaceted and the measures, in certain instances, have corresponding indirect effects that also require consideration. As provided in the Draft EIS/EIR (see pages ES-8 and 3.6-33), the Project would result in a permanent increase in ambient noise levels as a result of these noise sources associated with the proposed passenger train operations. Consistent with the FTA Manual (2006) as described in Master Response 1, mitigation measures proposed as part of the Project are focused towards mitigating moderate and severe noise impacts to Category 2 and 3 land uses that border the railroad corridor. SANBAG is proposing Mitigation Measure NV-3 (Quiet Zones) as the primary mitigation measure to mitigate the loudest source of noise (i.e., train horns) from the Project (See Master Response 3). Other noise mitigation measures proposed in the Draft EIS/EIR to address operational noise in addition to quiet zones include sound barriers (Mitigation Measure NV-4), rail lubricators at tight curves (Mitigation Measure NV-5), and building insulation (NV-7). Sound barriers in the form of solid walls were considered for the four operational scenarios discussed in Master Response 1. For the locomotive vehicle option, the sound barriers shown in Figure 8-2 and summarized in Table 8-2 of Appendix H1 of the Draft EIS/EIR would be required to mitigate moderate or severe impacts in the absence of quiet zones. In total, up to 23,910 linear feet of sound barrier would be required. With the implementation of quiet zones, the length of sound barrier required to mitigate for moderate and severe noise impacts is 10,740 linear feet and as shown in Draft EIS/EIR Appendix H1, Figure 8-3 and summarized in Table 8-3. The sound barriers required under each scenario are illustrated in Figures 2-1A and 2-1B and listed below: • Locomotive (no Quiet Zones): Sound barriers 1NQZ, 2NQZ, 3NQZ, 4NQZ, 5NQZ, 6NQZ, 7NQZ, 8NQZ, 9NQZ, 10NQZ, 11NQZ, 12NQZ, 13NQZ, 14NQZ, 15NQZ, 16NQZ, 17NQZ, 17A-NQZ, 17B-NQZ, 17C-NQZ, 18NQZ, 19NQZ, 20NQZ, 21NQZ, 22NQZ, and 23NQZ (see Table 8-2 and Figures 8-2A through 8-2H in Appendix H1 of the Draft EIS/EIR). • Locomotive (with Quiet Zones): Sound barriers 1WQZ, 2WQZ, 3WQZ, 4WQZ, 5WQZ, 6WQZ, 7WQZ, 8WQZ, 9WQZ, 10WQZ (see Table 8-3 and Figures 8-3A through 8-3F in Appendix H1 of the Draft EIS/EIR in Appendix H1 of the Draft EIS/EIR). With the integration of a DMU vehicle option and in the absence of quiet zones, the same sound barriers required for the locomotive vehicle option would be required to mitigate for moderate and severe noise impacts resulting from the DMU (see Table 2 and Figures 1A through 1H in Appendix H2 of the Draft EIS/EIR). However, as shown in Figures 2-1A and 2-1B, with the application of quiet zones the DMU vehicle option would eliminate all severe noise impacts and lessen the number and length of sound barriers to 5,900 linear feet. The barriers identified below would be required to mitigate the remaining moderate noise impacts:

General Comment	Master Response
	• DMU (with Quiet Zones): Sound barriers 1WQZ, 2WQZ (reduced), 3WQZ (reduced), 4WQZ (reduced), 5WQZ (reduced), 8WQZ, 9WQZ, 10WQZ (see Table 4 and Figures 2A through 2F in Appendix H2 of the Draft EIS/EIR). Although sound barriers would further reduce operational noise impacts, the direct and indirect impacts of their placement may outweigh their noise reduction benefits, which depending on the operational scenario (i.e., locomotives versus DMU), may be relatively minor and unnoticeable. For example, as provided in Table 4 of Appendix H2 of the Draft EIS/EIR, under the DMU vehicle option with quiet zone scenario, the exceedance of the threshold for moderate noise impacts at multiple receiver locations (e.g., Receivers 8, 13, 18, 61, and 68) would be 2 dBA or less. Given that the human ear is generally unable to detect a change of 3 dBA or less, the minor noise reduction offered by a sound barrier may not outweigh their other indirect impacts. Such indirect impacts may include, but are not limited to, the obstruction of views, concerns related to graffiti, further division of neighborhoods, and new land requirements as discussed in Sections 3.2 (pages 3.2-23 to 3.2-24 and 3.2-26 to) and 3.4 (pages 3.4-16 to 3.4-17) of the Draft EIS/EIR. In this context, sound barriers may not be constructed at or more locations given other extenuating circumstances as provided below: • Sound Barriers 2WQZ, 3WQZ, 4WQZ, 9WQZ, and 10WQZ: Each barrier is proposed to address an exceedance of the moderate noise impact threshold by 3 dBA or less. Given that this exceedance would barely perceptible to adjacent sensitive uses, with the selection of a DMU combined with the implementation of quiet zones, these barriers would not be constructed. • Sound Barrier 1WQZ: This barrier is proposed for Receiver #3, which is represented by three noise-sensitive sites. Based on the limited number of sites, building insulation is proposed for this receiver as opposed to a sound barrier (see MM NV-7). • Sound Barrier 5WQZ: This barrier is proposed for Receiver #22, which is represented by one noise-sensitive site. Based on the limited number of sites, building insulation is proposed for this receiver as opposed to a sound barrier (see MM NV-7). • Sound Barrier 8WQZ: This barrier is proposed for Receiver #41, which is represented by six noise-sensitive sites. Based on the limited number of sites, building insulation is proposed for this receiver as opposed to a sound barrier (see MM NV-7). To address rail squeal at tight curves, SANBAG proposed to implement two mechanisms: (1) optimization of the rail curvature during final design and construction, and (2) the application of rail lubricators at curves along the alignment. These measures are identified in Mitigation Measure NV-5 of the Draft EIS/EIR (see page 3.6-32). The mitigation requires the implementation of the two mechanisms above in order to achieve an acceptable level of squeal. Although there is no quantitative reduction in noise levels for curvature optimization or rail lubricators beyond their effect in reducing (or avoiding) rail

General Comment	Master Response
	squeal (see Table 6-12 of Appendix H1), rail squeal is a component of project-related train noise, which is evaluated according to noise impact criteria in the FTA Manual (2006 – see Master Response 1). In the Draft EIS/EIR (pages ES-8, 3.6-34, and 5-16), SANBAG acknowledges that the Project would result in a permanent increase in operational noise along the Project alignment. Notwithstanding this circumstance, SANBAG is committed to operating the Project in a manner that minimizes noise disruptions to adjacent uses to the maximum extent practicable. The selection of the DMU combined with the implementation of quiet zones are expected to be effective in achieving this goal. Additionally, through the implementation of the MOU (February 4, 2015), noise mitigation would be extended to all uses along the corridor as opposed to site-specific as in the case of sound barriers. Site-specific measures will be implemented where they would function effectively pending the approval of the affected properties. Additionally, once operational, SANBAG will respond to noise complaints and work will local owners to address their site-specific concerns on a case-by-case basis.
Master Response 3: Quiet Zone Mitigation	
Multiple commenters requested additional information and definition on quiet zones. Several commenters requested their implementation of quiet zones at locations not proposed in Mitigation Measure NV-3 including, but not limited to D Street in San Bernardino and Texas Street, Eureka Street, and Orange Street in Redlands.	To minimize Project-related train noise for all uses adjacent to SANBAG's right-of-way (ROW), including sensitive land uses (e.g., Category 2 and 3 uses), SANBAG proposes the implementation of quiet zones (see Draft EIS/EIR page 2-31) through the implementation of Mitigation Measure NV-3). Quiet zones are a means to reduce locomotive horn noise at at-grade crossings, which are also required under the Train Horn Rule (49 CFR Part 222), which requires locomotive engineers to sound train horns at least 15 seconds, and no more than 20 seconds, in advance of all public grade crossings. In a quiet zone, railroads have been directed to cease the routine sounding their horns when approaching public highway-rail grade crossings; although, train horns may still be used in emergency situations. Mitigation Measure NV-3 would require SANBAG to design the applicable at-grade crossing(s) for the application of quiet zones to reduce moderate noise impacts at 14 receivers representing 49 Category 2 lands uses and severe noise impacts at four receivers representing 11 Category 2 land uses for a locomotive driven trainset. Noise levels following the implementation of quiet zones for a DMU, would reduce moderate noise impacts at an additional 10 receivers representing 24 Category 2 land uses (73 total) and eliminate the remaining four severe noise impacts representing 14 Category 2 land uses (25 total) (see Figures 3.6-5A and 3.6-5B). As provided in the Draft EIS/EIR, the combined implementation of quiet zones and selection of a DMU vehicle provides the greatest practicable noise reduction compared to the other scenarios discussed in Master Response 2. The implementation of Mitigation Measure NV-3 would ultimately require the Cities of San Bernardino and the City of Redlands to adopt quiet zones at each of the designated locations. Following construction of the supplemental safety measures (SSMs), each jurisdiction would be required to complete the Quiet Zone Creation Process in accordance with the regulations, policies and procedures established by the Federal Railroad Administrations (FRA) in their Train Horn Final Rule as amended on August 17, 2006 (49 CFR Part 222). Therefore, the full implementation of the measures is in part the

General Comment	Master Response
	responsibility of the Cities of Redlands and San Bernardino. To facilitate completion of the Quiet Zone Creation Process, SANBAG has entered into a MOU dated February 4, 2015, with the Cities of Redlands and San Bernardino. To facilitate the implementation of a quiet zone and a corresponding absence in the routine sounding of the train horn, SANBAG is required to mitigate for the additional safety risks at the at-grade crossings. At a minimum, each public highway–rail crossing within a quiet zone must be equipped with active warning devices: flashing lights, gates, constant warning time devices (except in rare circumstances) and power out indicators. Additionally, in order for SANBAG and the Cities to create a quiet zone, one of the following conditions must be met: 1. The Quiet Zone Risk Index (QZRI) is less than or equal to the Nationwide Significant Risk Threshold (NSRT) with or without additional safety measures such as SSMs or Alternative Safety Measures (ASMs). The QZRI is the average risk for all public highway-rail crossings in the quiet zone, including the additional risk for absence of train horns and any reduction in risk due to the risk mitigation measures. The NSRT is the level of risk calculated annually by averaging the risk at all of the Nation's public highway-rail grade crossings equipped with flashing lights and gates where train horns are routinely sounded. 2. The QZRI is less than or equal to the Risk Index with Horns (RIWH) with additional safety measures such as SSMs or ASMs. The RIWH is the average risk for all public highway-rail crossings in the proposed quiet zone when locomotive horns are routinely sounded. 3. Install SSMs at every public highway-rail crossing. SSMs are pre-approved risk reduction engineering treatments installed at certain public highway-rail crossings within the quiet zone and can help maximize safety benefits and minimize risk. SSMs include: medians or channelization devices, one-way streets with gates, four quadrant gate systems, and temporary or permanent crossing closures. As currently proposed in the MOU dated February 4, 2015, SANBAG would implement a quiet zone for the entire railroad corridor covering all at-grade crossings within each jurisdiction. In contrast, Mitigation Measure NV-3 would only require the implementation of quiet zones for at-grade crossings adjacent to Category 2 and 3 land uses (see Master Response 1). For this reason, the MOU is expected to achieve greater noise reduction benefits across the entire community as compared to the implementation of Mitigation Measure NV-3. SANBAG remains in the process of determining which of the above conditions it will pursue for implementing quiet zones for the Project consistent with the MOU. This decision will be influenced by the costs of the specific SSMs at each crossing and the number of crossings requiring SSMs, which will require additional engineering during the Project's final design. Once these details are developed, SANBAG will perform another diagnostic meeting with FRA, CPUC, and each city to facilitate their eventual implementation.

<table>
<tr><th>General Comment</th><th>Master Response</th></tr>
<tr><td colspan="2">Master Response 4: Closures of Existing At-Grade Crossings</td></tr>
<tr><td>Several commenters expressed opposition to the one or more of the proposed roadway closures at D Street in San Bernardino and 7th and 9th Streets in Redlands. Commenters indicated that the proposed closures would result in disruptions to their current business operations, such as re-routing truck deliveries and test drives.</td><td> SANBAG’s right-of-way (ROW) traverses 30 existing roadway crossings. Two of these existing roadway crossings consist of grade separations at Interstate 10 (I-10). In addition, two roadway crossings (located at Bryn Mawr Avenue and New York Street) were officially closed before the consideration of the Project. Each at-grade crossing improved (or closed) as part of the Project would also include corresponding improvements to adjoining roadway segments, where required, to maintain safety for both motorized and non-motorized forms of transportation in accordance with California Public Utility Commission (CPUC) General Orders (see page 2-24 of the Draft EIS/EIR)..
The public roadway closures proposed as part of the Project and analyzed in the Draft EIS/EIR include D Street, Stuart Avenue, 7th Street (pedestrian crossing), and 9th Street. Additionally, Hilda Street (adjacent to Arrowhead Road) is proposed for closure, Dorothy Street (east of Sierra Way) would be modified to become a one-way right turn out only roadway, and an existing licensed, private at-grade crossing that provides access to the Caliber Collisions business near New York Street would be closed. These modifications to the existing roadway network are proposed first and foremost to maintain safety for vehicles, pedestrians, and bicyclists during passenger train operations. The alternatives to full closure of these at-grade crossings along with SANBAG’s basis for selecting or not selecting each is provided as follows

Full Grade-Separation: Given the limited width of the City’s public right-of-way at these crossings (i.e., 30 feet or less), a grade-separated crossing at these locations would be infeasible in the absence of significant property acquisition. The scale of the improvements required for a grade-separation would extend well beyond the Project’s construction footprint and could potentially require full takes of adjacent private property. For these reason, no grade-separations were proposed.
Partial Closures: A partial closure of the crossing is the next safest option to full closure whereby the crossing is closed to automobile traffic, but maintains pedestrian access. This type of crossing is proposed at 7th Street in Redlands to minimize the increase in pedestrian travel from north to south across SANBAG’s right-of-way. .
Maintain At-Grade Crossing with SSMs: In lieu of a full closure, it is possible that SANBAG could implement additional SSMs at the proposed crossings to maintain a safe crossing environment. However, this requires additional risk calculations that would be performed in conjunction with the Project’s final design in coordination with the respective cities.

Based on the results of the traffic analysis provided in Appendix E of the Draft EIS/EIR and summarized in Section 3.3, the redistribution of traffic as a result of the proposed roadway closures would not change the current level of service at the adjacent roadway intersections. The modeling results are presented in </td></tr>
</table>

General Comment	Master Response
	Tables 3-1, 3-2, 4-2, 4-4, 5-2 and 5-4 in Appendix E of the Draft EIS/EIR. Although the closures would require changes in local business operations, including truck delivery routes, the results of the analysis indicate that the existing roadway network would continue to function similar to existing conditions (see Master Response 13). SANBAG has been and continues to be in frequent coordination with the California Public Utilities Commission (CPUC) as part of the Project's environmental review. Early in the process, in order to address public safety as part of the Project's conceptual engineering, SANBAG held field diagnostic meetings with the CPUC and both cities in December 2012. CPUC has provided SANBAG with multiple correspondence recommending the closure of the proposed at-grade crossings with safety as the principle consideration. Based on these considerations, the Draft EIS/EIR considered the full closures at each crossing (except at 7th Street) as the worst-case scenario. These crossings and closures will be subject to refinements during final design and coordination with the affected jurisdiction. As currently proposed, in addition to maximizing crossing safety, the closure of these at-grade crossings would also assist SANBAG and the cities in achieving the necessary risk index to facilitate quiet zones along the railroad corridor (see Master Response 3). If during the Project's final design SANBAG determines that one or more of the crossing can be maintained with SSMs (as opposed to full or partial closure) while still maintaining a satisfactory risk index, it may be possible to maintain the crossing. This would also include consideration of the safety of non-motorized transportation facilities for pedestrians and bicyclists. Prior to implementation, each closure with the exception of the private crossing between Alabama Street and New York Street would require approval from the CPUC, the Surface Transportation Board (STB), and the respective cities in which they are located. In conjunction with these final approvals for each crossing, a final decision will be made on whether to implement a full or partial closure or additional SSMs at each crossing proposed for closure.
Master Response 5: Projected Ridership	
Several commenters requested information on the Project's estimated ridership.	Ridership projections for existing conditions (2012), opening day (2018), and future conditions (2038) were calculated for the Project through the application of the San Bernardino Valley Focus Model (SBVFM). The SBVFM is a focused model derived from the Southern California Association of Governments (SCAG) regional model as documented in SCAG's 2003 Model Validation and Summary – Regional Transportation Model (January 2008). The model was used to produce travel forecasts and user benefits for future year conditions to assess future year transit ridership sensitivity along the Redlands Corridor (see Appendix C of the Draft EIS/EIR). The analysis provided in the Draft EIS/EIR considers ridership estimates that fall on the lower end of the range of potential ridership, so as not to overstate (or estimate) the Project's reductions in vehicle miles traveled (VMT). This has important implications for both the analysis of traffic and air quality and greenhouse gases. As indicated in Draft EIS/EIR Chapter 2 (Section 2.4.2.1 – Description of Passenger

General Comment	Master Response
	Rail Operations), ridership in the opening year is conservatively estimated at 820 daily riders and 1,330 daily riders in 2038. However, there is a strong possibility in future years that ridership demand will increase beyond these estimates, especially if any intensification in land use occurs along the railroad corridor in the future. As provided in Chapter 4, once the Project infrastructure is in place, up to 2,620 daily ridership trips could occur in future years (see page 4-16 and Table 4-2 of Appendix C in the Draft EIS/EIR), which in turn would result in further decreases in VMT from those originally considered in Sections 3.3 (Transportation) and 3.5 (Air Quality) of the Draft EIS/EIR. Additionally, if there is an increase in the number of stations or an increase in the service frequency, ridership could increase upwards of 6,100 (Table 4-2 in Appendix C of the Draft EIS/EIR), thereby incrementally adding to the Project's daily ridership and associated direct and indirect benefits as identified in Sections 3.2 (page 3.2-34) and 3.3 (page 3.3-32) of the Draft EIS/EIR.
Master Response 6: Project Cost	
Several comments requested information on the Project's construction and operational costs. Several comments also requested information on the anticipated sources of funding for the project as well as the cost of riding the passenger rail service.	As stated in Section 2.6 of the Draft EIS/EIR (page 2-60), the Project's estimated cost for construction is $202 million. The construction cost estimate is based on a pay-as-you go scenario and does not factor in potential interest payments from a scenario involving a construction loan. SANBAG developed the Project's construction cost in 2012 (see Appendix N of the Draft EIS/EIR). As a result and given the lapse in time since the development of the Project's initial cost, SANBAG expects some refinement in the cost estimate during final design and escalation of increases in the costs of some raw materials and the potential use of construction loans. Once operational, the cost to operate the service is estimated at $7.9 million annually (see pages 2-60 through 2-62 of the EIS/EIR). Additional details and breakdown of these costs is provided in Appendix N of the Draft EIS/EIR. The Project would be funded by a variety of federal, state, and local funds, including private funding sources for the New York Street and University of Redlands Stations. Funding from private entities remains undetermined and subject to future negotiations with the adjacent property owner(s). Federal funds being applied to the project are estimated at approximately $72 million. These funding sources are listed below: • Federal Transit Administration: State of Good Repair Rail; • Federal Transit Administration: Urbanized Area Formula Grant; • Federal Congestion Mitigation and Air Quality; • State Transit Assistance Fund – Population; • Measure I Senior & Disabled Transit Service: (8% of Valley subarea revenue); • Measure I Metrolink/Rail Service – For Rail Projects (8% of Valley subarea revenue); • Public Transportation, Modernization, Improvement, and Service Enhancement Account Program; and, • Prop 1B Security – Transit System Safety, Security, and Disaster Response Account.

General Comment	Master Response
	Passenger train operations over the long term would be funded through a combination of Measure I Metrolink/Rail Service and fare revenues; however, a fare structure has yet to be developed. It is important to note that if the Project is not implemented, SANBAG estimates the capital cost for the No Build Alternative at $30 million. These funds would be required to fund needed track and bridge upgrades to facilitate continued freight service consistent with SANBAG's purchase agreement with the Burlington Northern Santa Fe (BNSF) Railway.
Master Response 7: Vibration Assessment	
Several commenters expressed concerns related to Project-related vibration and vibration-related damage to structures, including those in close proximity to the rail alignment. Comments also expressed questions regarding the method of vibration assessment used in the EIS/EIR.	The FTA noise and vibration impact assessment methods identify categories of vibration-sensitive land uses (e.g., Land Use Category 1, 2 and 3) in FTA's Noise and Vibration Assessment Manual (2006). The vibration impact assessment is primarily intended to identify the potential for transit-based vibration that may interfere with: vibration-sensitive activities in buildings (Land Use Category 1), human annoyance where overnight sleep occurs (Land Use Category 2), and institutional and lands primarily used during daytime (Land Use Category 3). In assessing Project-related sources of vibration, the Noise and Vibration Technical Memorandum (TM) prepared in support of the EIS/EIR follows FTA's methods. According to the FTA (2006), when conducting a general assessment of vibration impacts, the type of vibration source (i.e., diesel locomotive or DMU) and the vibration propagation pathway characteristics are the most important criteria to consider. In terms of propagation pathway characteristics, the geologic substrate (i.e., bedrock verses alluvium) is a key component in the evaluation. Since vibration problems occur almost exclusively inside buildings, "the vibration levels inside a building are dependent on the vibration energy that reaches the building foundation, the coupling of the building foundation to the soil, and the propagation of the vibration through the building (FTA 2006)." The structural composition of the building in question affects vibration levels at the receiver. The general guideline is that the heavier a building is, the lower the response will be to the incident vibration energy (FTA 2006). As provided in FTA's Guidance, structural damage from vibration is rare and generally tied to unique circumstances, such as older historic structures and site geology, such as the presence of shallow bedrock or stiff clay soils (FTA 2006). As provided in Section 3.10 of the Draft EIS/EIR, the geologic conditions underlying the railroad corridor are comprised of alluvium of a relatively young in origin. Therefore, these types of shallow bedrock or stiff clay soil conditions that could propagate vibration are unlikely. Based on these geologic conditions, the vibration analysis assumes that ground-borne energy propagates normally through the soil (as opposed to efficient propagation). The Draft EIS/EIR Appendix H1 and H2 for the vibration calculations completed for the Project. Based on these existing conditions and circumstances, once operational and as provided in Table 6-5 of Appendix H1, the predicted vibration level from rail pass-bys at the Redlands Depot (and other contributing properties within the Redlands Santa Fe Depot Historic District) would be approximately 74 VdB; substantially lower than the corresponding damage criteria of 90 VdB. Analysis results indicate that the proposed Project has potential to cause severe vibration impacts (as defined by FTA) at multiple receiver locations during train pass-by events (see page 3.6-30 and

General Comment	Master Response
	Appendices H1 and H1 of the Draft EIS/EIR for additional detail). These are annoyance-based impacts, not structural damage impacts. To minimize these vibration annoyance impacts from train operations, SANBAG is proposing the placement of ballast matts or similar technologies per Mitigation Measure NV-5 in the Draft EIS/EIR. Further site-specific studies would be conducted during the final design process to determine the precise placement of these mitigation features along the ROW (see Mitigation Measure NV-5). Construction vibration impacts are considered separately (see pages 3.6-30 to 3.6-31 of the Draft EIS/EIR). Construction activities can also produce varying degrees of ground vibration depending on the equipment and methods employed and the soil conditions within the area. The analysis provided in Effect 3.6-2 of the Draft EIS/EIR, applies construction vibration levels associated with a vibratory roller (0.210 PPV at 25 feet). This type of equipment would be used in conjunction with construction activities in downtown Redlands, which includes historic structures (and the subject property). Based on criteria presented in FTA's Noise and Vibration Manual (2006) fragile buildings and extremely fragile buildings are potentially subject to damage when vibration exceeds 0.20 PPV (approximately 100 VdB at 25 feet) and 0.12 PPV (approximately 95 VdB at 25 feet), respectively. Analysis results indicate that the calculated vibration levels have potential to exceed the thresholds if construction activities occur within a distance of 25 feet from several fragile structures within the Redlands Santa Fe Depot Historical District. Therefore, Mitigation Measure CUL-1 is proposed to reduce vibration impacts. However, for most typical buildings along the railroad alignment such as residences or commercial buildings (1960s or newer), vibration levels would not have the potential for damage from vibration.
Master Response 8: Land Acquisition Requirements	
Multiple commenters expressed interest in knowing whether SANBAG required acquisition of their property to facilitate construction of the Project.	The Project primarily occurs within existing SANBAG right-of-way (ROW). In limited circumstances, the Project requires acquisition of new ROW along certain constrained sections of the existing railroad ROW, potentially at the layover site (west of California Street), and in areas near the proposed rail stations (see page 2-43 of the Draft EIS/EIR). The physical improvements associated with the Project may require up to 58 partial property acquisitions, up to 4 full property acquisitions, up to 31 roadway easements (roadway, temporary construction, sidewalk, utility, and alley vacations), and potentially two (2) business relocations. Both private and public properties could be affected by the Project. It is anticipated that the majority of properties affected would be subject to temporary construction easements (TCEs) (up to 60 properties), which may be established for appropriate lengths of time within the approximately 36-month construction period. Mitigation Measure LU-1 is proposed to mitigate this effect through compliance with Federal and State Relocation laws and minimizing the Project's land requirements through final design refinements. As identified in Draft EIS/EIR Section 3.2, Mitigation Measure LU-1 (page 3.2-39), SANBAG shall provide just compensation consistent with the requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act and California Relocation Act for properties to be acquired.

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	Appendix D2 of the Final EIS/EIR provides a list of the property acquisitions and TCEs based on preliminary engineering for the Project. Appendix D2 was modified for the Final EIS/EIR to include the property addresses in addition to the property assessor parcel numbers as provided in the Draft EIS/EIR. The list of property acquisitions and TCEs is subject to revision pending the completion of final design refinements and implementation of Mitigation Measure LU-1 which may reduce the amount of property required for the Project.
Master Response 9: Project Noticing	
Several commenters stated that the public were not given sufficient notice of the Project by SANBAG.	The Project has been part of SANBAG's vision to expand public transit in San Bernardino County since the approval of Measure I in 1989 (and reauthorized in 2006) followed by the purchase of the right-of-way (ROW) from AT&SF (Santa Fe) Railroad in 1993. At each stage of the Project's development, SANBAG has solicited input from the public and public agencies starting with the Measure I 2010-2040 Strategic Plan (2009) and Long Range Transit Plan, Interim Project Report (2009). As detailed below and identified in Final EIS/R Chapter 6 (Section 6.6 – Public Information Meetings and Community Outreach), a total of nine public meetings have been held for the project; six of which were conducted during the formal NEPA/CEQA process. Since 2010, SANBAG has completed the following outreach activities to solicit feedback on the Project and provided the opportunity for public comment: Redlands Corridor Alternatives Analysis: • Public Meeting - City of Redlands - ESRI Café: September 13, 2010 Redlands Passenger Rail: • Public Meeting - City of Redlands - ESRI Café: May 11, 2011 • Public Meeting - City of San Bernardino – Santa Fe Depot: May 12, 2011 CEQA Notice of Preparation (NOP) Mailing/Advertisement and Scoping Meetings: • NOP filed with County Clerk and State Clearinghouse (SCH) on April 10 (Comment Period April 10, 2012 to May 12, 2012) • Newspaper publications on April 10, 2012: (1) San Bernardino Sun, (2) Inland Empire Community Newspapers and (3) Redlands Daily Facts • NOP Scoping Meeting - City of Redlands - ESRI Café: April 24, 2012 • NOP Scoping Meeting - City of San Bernardino - San Bernardino Hilton: May 2, 2012 NEPA Notice of Intent (NOI) Mailing/Advertisement and Scoping Meetings: • NOI filed in Federal Register on July 31, 2012 (NOI Comment Period: July 31, 2012 to October 11, 2012)

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	• Newspaper publications on July 31, 2012: (1) San Bernardino Sun, (2) Inland Empire Community Newspapers and (3) Redlands Daily Facts • NOI Scoping Meeting - City of San Bernardino - Hilton: September 25, 2012 • NOI Scoping Meeting - City of Redlands - ESRI Café: September 27, 2012 CEQA/NEPA Draft EIS/EIR: • Draft EIS/EIR made available to California state agencies by the State Clearinghouse beginning August 6, 2014 through September 29, 2014. • Formal notice was published in the Federal Register on August 15, 2014 through September 29, 2014. • The Draft EIS/EIR was noticed and posted on SANBAG's website for public review on August 6, 2014. • Newspaper publications on August 6, 2014 and August 29, 2014: (1) San Bernardino Sun, (2) Inland Empire Community Newspapers, and (3) Redlands Daily Facts • Draft EIS/EIR Public Meeting - City of Redlands - ESRI Café: September 4, 2014 • Draft EIS/EIR Public Meeting - City of San Bernardino - Hotel: September 9, 2014 At the various public meetings identified above, SANBAG has requested feedback (verbal and written) on the range of alternatives being considered and the evaluation of potential environmental effects. To facilitate this feedback, comment cards, a court reporter, and Spanish bilingual staff have been available at all of the public meetings. In addition, SANBAG established a project-specific email address: RPRP_Public_Comments@sanbag.ca.gov to accept public input and comment on the Draft EIS/EIR. To maximize meeting attendance during the Draft EIS/EIR, email blasts and newspaper advertisements were sent out following the initial noticing. These materials are included in Appendix A5 of the Final EIS/EIR. Direct mailings were sent out to all properties adjoining SANBAG's ROW and listed in Appendix A3. With the comments received, SANBAG has considered the range of topics raised and prepared a Final EIS/EIR that includes responses to comments on the Draft EIS/EIR and mitigation monitoring and reporting program (MMRP) that will be used by SANBAG to verify compliance with mitigation measures adopted.
Master Response 10: Air Quality and Health Effects	
Several Commenters raised concern about air quality and health impacts (for example, respiratory diseases) due to fugitive dust emissions caused by moving and idling passenger trains.	Since diesel-related exhaust, specifically diesel particulate matter (DPM), is considered a toxic air contaminant (TAC) by the Air Resources Board (ARB), a health risk assessment (HRA) was conducted to assess the risk associated with the Build Alternatives and Design Options. An HRA consists of three parts: (1) a TAC emissions inventory, which is described in Section 4.2 of the Draft EIS/EIR, (2) air dispersion modeling to evaluate off-site concentrations of TAC emissions, and (3) assessment of risks

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	associated with predicted concentrations. The HRA was conducted using the guidelines provided by the California Office of Environmental Health Hazard Assessment (OEHHA) for the Air Toxics Hot Spots Program and the HRA guidelines developed by the California Air Pollution Control Officers Association (CAPCOA) and South Coast Air Quality Management District (SCAQMD). The Project involves both a new local transit service along a dedicated right-of-way and extension of diesel regional passenger rail service. The Project is considered to be a "regionally significant project" under 40 CFR 93.101; however, it would not result in an adverse number of diesel vehicles that would congregate at a single location. In addition, dispersion modeling conducted for the vehicle technologies (diesel locomotive or DMU) under consideration for the Project indicates that rail emissions associated with the Build Alternatives and Design Options would not exceed the thresholds for PM2.5 or PM10. This finding is largely based on the Project's incorporation of Tier IV engine technology and the minimal; duration that trains would be idling at any one location. Consequently, the Project is not considered a project of air quality concern (POAQC) for PM10/PM2.5 and the CAA and 40 CFR 93.116 requirements are met without a hot-spot analysis. SCAG's Transportation Conformity Working Group's (TCWG) interagency consultation (IAC) provided concurrence with this determination on October 2, 2014 following the TCWG Committee Meeting on August 26, 2014 (see Draft EIS/EIR Appendices G1 and G2). Therefore, the health risks associated with long-term operations of the Project would not result in an increased cancer risk to the nearby sensitive receptors (see Table 3.5-12 of the Draft EIS/EIR). Additionally, as evaluated under Effect 3.5-1 above, the Project is not expected to result in violations of the state or federal 1- or 8-hour CO standards. Based on these results, no adverse effect would result under NEPA and the impact would less than significant under CEQA. Tables 3.5-9 and 3.9-10 of the Draft EIS/EIR summarize the incremental daily operational emissions for the opening year 2018 and future conditions (2038) compared to No Project conditions. As shown, the Project would result in an increase in emissions over the No Project scenario in 2018, except PM10, which would show minor decreases under the "Without Express Service" scenarios. The DMU vehicle option would result in lower daily operational emissions when compared to the MP36 and F59 locomotives. Based on the result of the air quality analysis contained in Appendix G1 and G2 of the Draft EIS/EIR, Project-related increases in emissions of criteria air pollutants for all the vehicle technologies under consideration would be below SCAQMD's thresholds of significance.
Master Response 11: Effects to the Redlands Santa Fe Depot Historic District	
Several comments expressed concerns related to the Project's construction and operational affects to the Redlands Santa Fe Depot Historic District.	Implementation of the Project would require construction through the NRHP-listed Redlands Santa Fe Depot Historic District. Once operational, passenger train service would involve trains passing through the district on a daily basis. This historic district was originally evaluated and listed in the National Register of Historic Places (NRHP) in 1991 (1S status code; Draft EIS/EIR Appendix M). It currently consists of 23 contributing properties of which eight are located within the Project's area of potential

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	effect (APE) and listed below. Dating from 1888 through 1946, the buildings visually document the district's economic and social history (see Appendix M, pages 4-01 through 4-2). The analysis provided in the Section 3.12 Draft EIS/EIR for the historic district summarizes the assessment of effects as provided on pages 5-3 through 5-14 of Appendix M. This includes consideration of potential affects to the Downtown Redlands Station (351 Orange Street), which is a NRHP-listed contributor to the district. As stated in the methodology in Section 5 of Appendix M, an adverse effect is found when an "project" may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. The Build Alternatives and Design Options would result in no direct physical destruction or damage to the historic district or to any of its contributors. Construction in the historic district would be limited to sidewalk improvements to the north and east of the Redlands Depot and track improvements within SANBAG's right-of-way. These improvements would be consistent with the district's existing character and the Depot would continue to exhibit its essential Classical Revival architectural features thereby maintaining its status as a contributor to the district. Indirect effects related to construction-related vibration impacts at historic structures adjacent to SANBAG's ROW would be minimized through the implementation of Mitigation Measure CUL-1. SHPO concurred with this finding on August 16, 2014. Please also refer to Master Response 7 for additional discussion of construction-related vibration impacts at historic structures.
Master Response 12: Project Safety and Security	
Multiple commenter's expressed concerns related to Project safety and security. Several commenters had concerns with pedestrian and automobile safety at the at-grade roadway crossings, including those commonly used by students. Security at the proposed stations was also raised as a concern.	One of SANBAG's stated objective for the Project is to implement safety improvements that will benefit both existing freight and proposed passenger operations per Federal Railroad Administration (FRA) safety guidelines and SANBAG's purchase agreement with the Burlington Northern Santa Fe (BNSF) Railway (see Draft EIS/EIR Chapter 1, page 1-6). As part of the Project, existing at-grade crossings would be designed to include raised medians, widened sidewalks, traffic striping, flashing lights, pedestrian gate arms, and swing gates where appropriate, or where requested by the California Public Utilities Commission (CPUC) (see Mitigation Measure TR-3, Approval from CPUC fro Grade Crossings and Safety Measures). New warning devices would include passive railroad crossing signs, a simple bell, flashing light signals, and flashing light signals with gates. Where appropriate, SANBAG would reuse the existing modern signal equipment and warning devices to the greatest extent feasible. These collective improvements would maximize safety for at-grade crossings for both vehicles and non-motorized forms of transportation. During construction, compliance with Mitigation Measure TR-1 (Prepare Traffic Management Plan) would minimize Project-related safety hazards. Pedestrians and bicycle movements would be permitted to cross the tracks only when trains are not present and at designated crossings. Similar to existing conditions, unauthorized crossings at undesignated locations would be prohibited and considered trespassing. To minimize unauthorized

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	crossings and in compliance with CPUC requirements to minimize risks to pedestrians and cyclists, fencing and signage would be erected to notify pedestrians and bicyclists of potential train hazards and to discourage trespassing. SANBAG will conduct additional outreach with San Bernardino Unified and Redlands Unified School Districts to verify that sufficient safety measures are included at crossings heavily used by students. At each proposed station, the facility layout would be designed to provide a safe and secure transit system with limited amenities (i.e., bike racks). Safety control features proposed as part of the Project include security lighting, in-station pedestrian crossings at select stations with railroad/pedestrian crossing equipment, and small shade canopy areas. In addition, SANBAG would include security-related design features such as emergency telephones, public address systems, and video surveillance systems. The specific improvements for each station location would be further defined during the Project's final design and in compliance with Mitigation Measure SS-1 (Develop Safety and Security Management Plan).
Master Response 13: Traffic Circulation	
Several commenters expressed concerns related to the Project's affect on existing roadway congestion.	SANBAG performed a comprehensive traffic impact analysis in support of the EIS/EIR (see Appendix E) to assess the Project's impact to the local roadway network and current levels of service (LOS). The traffic analysis models peak hour turning movements in the morning and evening for 39 intersections under existing (No Project) and with Project conditions for 2012 (base year), 2018 (opening day), and 2038 (future conditions). In analyzing the Project's affects to the local roadway network, it is important to understand that the Project is would not be a high trip-generating use. According to the Ridership Study (Appendix C of the Draft EIS/EIR), only three (3) percent of the commuters would utilize vehicles to access the stations, with the highest percentage people commuting by vehicles going to the Downtown Redlands Station. In this context, the Project would not result in a substantial increase in the amount of trips generated due to the low percentage of vehicle use by projected riders, but rather a redistribution of existing vehicle trips that a travel a shorter distance (i.e., fewer vehicle miles traveled - VMT). Table 4-1in Appendix G1 of the Draft EIS/EIR provides the VMT with and without the Project in 2018 and 2038. The conclusions of the traffic analysis generally support this general overview. As provided in Appendix E and summarized in Section 3.3 of the Draft EIS/EIR, the results of the traffic analysis with the implementation of the Project are as follows: • Year 2012 (Existing with Project) Intersection LOS and Vehicle to Capacity Ration (V/C). Of the 39 intersections modeled, one intersection, California Street and I-10 East Ramps would operate at a LOS of F in the AM and PM peak hours with the Project. In addition, California Street and Redlands Boulevard would operate at below the V/C standard. The remaining modeled intersections would either not be impacted or would experience an overall improvement from the 2011 (No Project) existing conditions.

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	• Year 2018 (With Project) Intersection LOS and V/C. Once operational, of the 39 intersections analyzed, two intersections (Orange Street and Pearl Avenue and 6th Street and Pearl Avenue), would not operate at satisfactory LOS in the PM peak hour (LOS D or E). Additionally, the V/C for two intersections (California Street and I-10 West Ramps and California Street and I-10 East Ramps) would exceed V/C thresholds (1.08 V/C and 1.10 V/C, respectively). The remaining modeled intersections would either not be impacted or would experience an overall improvement from the 2011 (No Project) existing conditions. • Forecast Year 2038 (With Project) Intersection LOS and V/C. In 2038, train operations are assumed to be similar to those proposed in 2018. Table 3.3-12 presents the Year 2038 scenario for traffic intersection impacts resulting under 2038 conditions with the Project, a total of four intersections in the AM peak hour and 14 intersections in the PM peak hour intersections would operate at an unsatisfactory LOS. A total of 11 intersections would have an unsatisfactory V/C in the PM peak hour and two intersections in the AM peak hour under 2038 conditions with the Project; however, in most instances, the Project-related changes are marginal (i.e., difference of 0.01 change). Overall the Project would have minimal disruptions to existing traffic patterns and intersection operating conditions. However, there are a few intersections that would be impacted. These impacts were identified as significant under CEQA and adverse under NEPA in the Draft EIS/EIR and Mitigation Measure TR-2 (Existing LOS and V/C Year 2018 and 2038 Impact Roadway Improvements) is proposed to minimize Project-related deterioration in LOS. Additionally, Mitigation Measure TR-3 (Approval from CPUC for Grade Crossings and Safety Measures) and Mitigation Measure TR-4 (Recommended Pre-Signals for Queuing) are proposed to minimize traffic hazards at existing at-grade crossings. With the application of the proposed mitigation, the Project would result in no adverse effect to existing travel patterns under NEPA and impacts under CEQA would be less than significant.
Master Response 14: Mill Creek Zanja Eligibility	
Commenters expressed concerns and disagreement regarding the eligibility determination made for the segment of the Mill Creek Zanja identified within the Project's Area of Potential Effect (APE). Multiple commenters requested clarification on the methodologies and considerations used to determine the ineligible determination for the segment of the Mill Creek Zanja located within the Project area.	As identified in Draft EIS/EIR Appendix M, the Mill Creek "Zanja," east of Division Street, is listed on the National Register of Historic Places (NRHP). Portions of Mill Creek to the west of Division Street were determined to lack integrity and, thus, was determined ineligible for the NRHP. Specifically, the portion of the Mill Creek Zanja within the Project's APE was interpreted as not part of the Mill Creek Zanja segment nominated in the NRHP 1976 Nomination Form for the resource. Granted, this form offers contradictory descriptions of the extent of the Zanja segment nominated for NRHP listing as identified as follows (see pages 3-3 to 3-16 of Appendix M of the Draft EIS/EIR). Item 2 - Location, the form describes the west boundary as "just west of Division Street at Sylvan Blvd." In consideration of other information in the form the quoted statement was interpreted to mean that the nominated segment ends in the vicinity of Division Street.

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	Item 10 – Geographical Data, states that "six miles downstream from [west of] the intake, just west of Sylvan Park in Redlands, it [the water-conveyance course] goes into the business area of Redlands, and this is the end of the proposed district." While this statement could be read as indicating that the nominated Zanja segment ends at the business area, where the feature is undergrounded, in light of other information in the form, the quoted statement was interpreted to mean that the nominated segment ends in the vicinity of Division Street. Item 10 – Geographical Data, the form also states that the "End" of the nominated segment is in the "SW quarter of Sec. 26 T3W R1S, San Bernardino Base and Meridian," which could be interpreted as in the vicinity of Division Street or as far west as Church Street, but not west of Church Street, where the course extends another 1,000 feet west before it is undergrounded beneath the business area. Item 10 – Geographical Data (page 4), the nomination describes the west end of the nominated segment as "University Ave. to Division St. University of Redlands." Here the form states that the nominated segment is 5.5 miles long rather than 6 miles long. Nomination Form, includes a photo looking west from Division Street toward I-10 that states: "this portion to I-10 could be included, but is not beautiful." A map included in the nomination form package and labeled "6 miles of Mill Creek Zanja shown in Red" offers a visual representation of the nominated segment. This map locates the western boundary of segment at Division Street. Although the identified Zanja segment continues to convey water, it now functions as a flood-control channel west of Division Street. The water-conveyance course west of Division Street was evaluated based on current conditions, and setting. Setting and feeling are important aspects of integrity for linear resources—historically significant trails, for example, have been divided into eligible and ineligible segments as a result of altered setting and feeling. Since the segment between Division Street and I-10 was photographed for the 1976 Nomination Form, that segment was widened and its upper banks appear to have been graded. The resource retains integrity of location, but its widening, grading, modern pipe outfalls, rip-rap, and other features diminish its integrity of design, workmanship, setting, and feeling. The setting and feeling of the Mill Creek Zanja, west of Division Street, have been diminished for this segment to when it was photographed for the 1976 Nomination. De-listing of the resource or any portion of it is not the intent of the Zanja evaluation completed as part of the cultural resources study for the Project. Rather, the portion of the resource within the Project APE was evaluated in light of its contradictorily defined western boundary in the 1976 Nomination Form. With the contradictory boundary information provided by the 1976 Nomination Form in mind, the portion of the Zanja west of Division Street was evaluated in good faith as part of the cultural resources study (Appendix M of the Draft EIS/EIR), and found not eligible for NRHP or CRHR listing. The State Historic Preservation Officer (SHPO) concurred with this eligibility determination in its letter provided on August 14, 2014 (see Section 3.12.1, Final EIS/EIR and Appendix M).

General Comment	Master Response
Master Response 15: Property Values	
Commenters expressed concerns about property values in the area with implementation of the Project. Multiple commenters requested clarification on if property values in their area would be affected by the Project.	No studies were found that definitively answered the specific question of rail impacts on real estate property values. However, several studies did evaluate the broader impacts of rail projects on growth and development trends and regional economies. The evidence from different studies on the effect of rail transit is mixed and the conclusion is that the introduction of rail transit alone is not sufficient for social-economic impacts to take place. Such impacts depend on other prevailing conditions, especially a buoyant local economy that can take advantage of new opportunities offered by improved accessibility, supported by local planning policies. Station accessibility, commute-time savings, and commute costs may all contribute to the complex of factors that can influence (or not influence) real estate values in the vicinity of rail transit projects. In summary, there is no agreement on the extent to which the rail transit infrastructure leads to wider socioeconomic impacts. The evidence is mixed and there seems to be disagreement on whether overall impacts, if they exist, are positive or negative. The independent studies show that the potential exists for the values of residential and commercial properties to appreciate as a result of rail transit projects. Property value increases can result from both the new access to a train transportation system and the associated intensification of development that can occur around station locations. However, given the potential for nuisance impacts (such as noise and visual impacts) resulting from trains passing in close proximity, it is possible that some properties could experience a decrease in value. This potential for a decrease in property value may be particularly true for residences and businesses in locations considerably removed from train stations but exposed to some nuisance impacts of the project. This balance between the amount of project benefit enjoyed compared to the nuisance factor endured would be unique for each property and would be only one of the many factors influencing the ultimate market value of any particular property. SANBAG is not aware of any evidence that suggests the Project would result in an adverse effect to local property values. CEQA Guidelines Section 15145 states that "if, after thorough investigation, a Lead Agency finds that a particular impact is too speculative for evaluation; the agency should note its conclusion and terminate discussion of the impact." However, as provided on page 4-37 of the Draft EIS/EIR, once constructed, the Project in conjunction with other reasonably foreseeable projects is likely to entail desirable economic benefits, which may included, but is not limited to, increases in property values.

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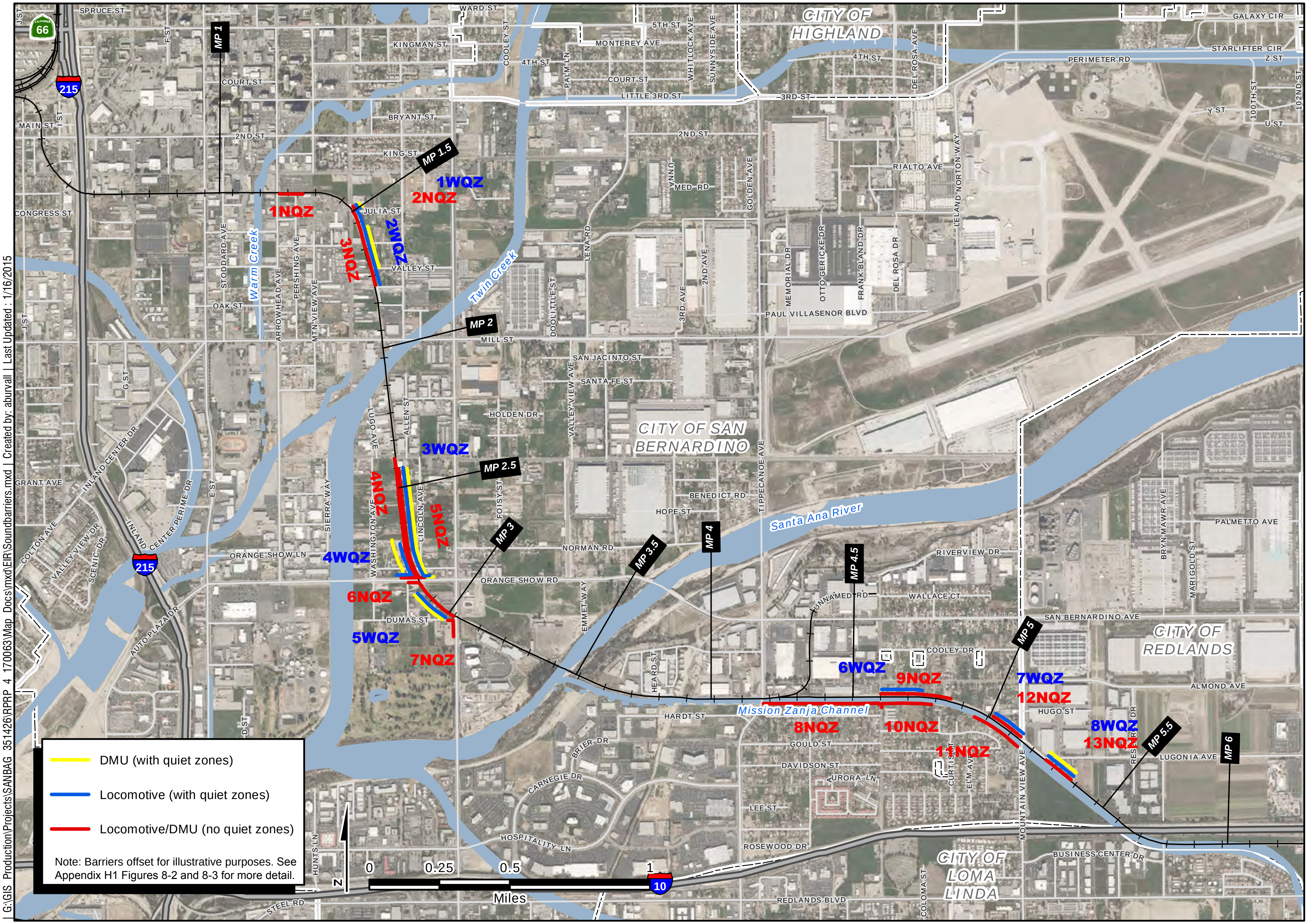

Sound Barrier Locations for Each Project Operational Scenario - Western Study Area

Figure 7-1 A

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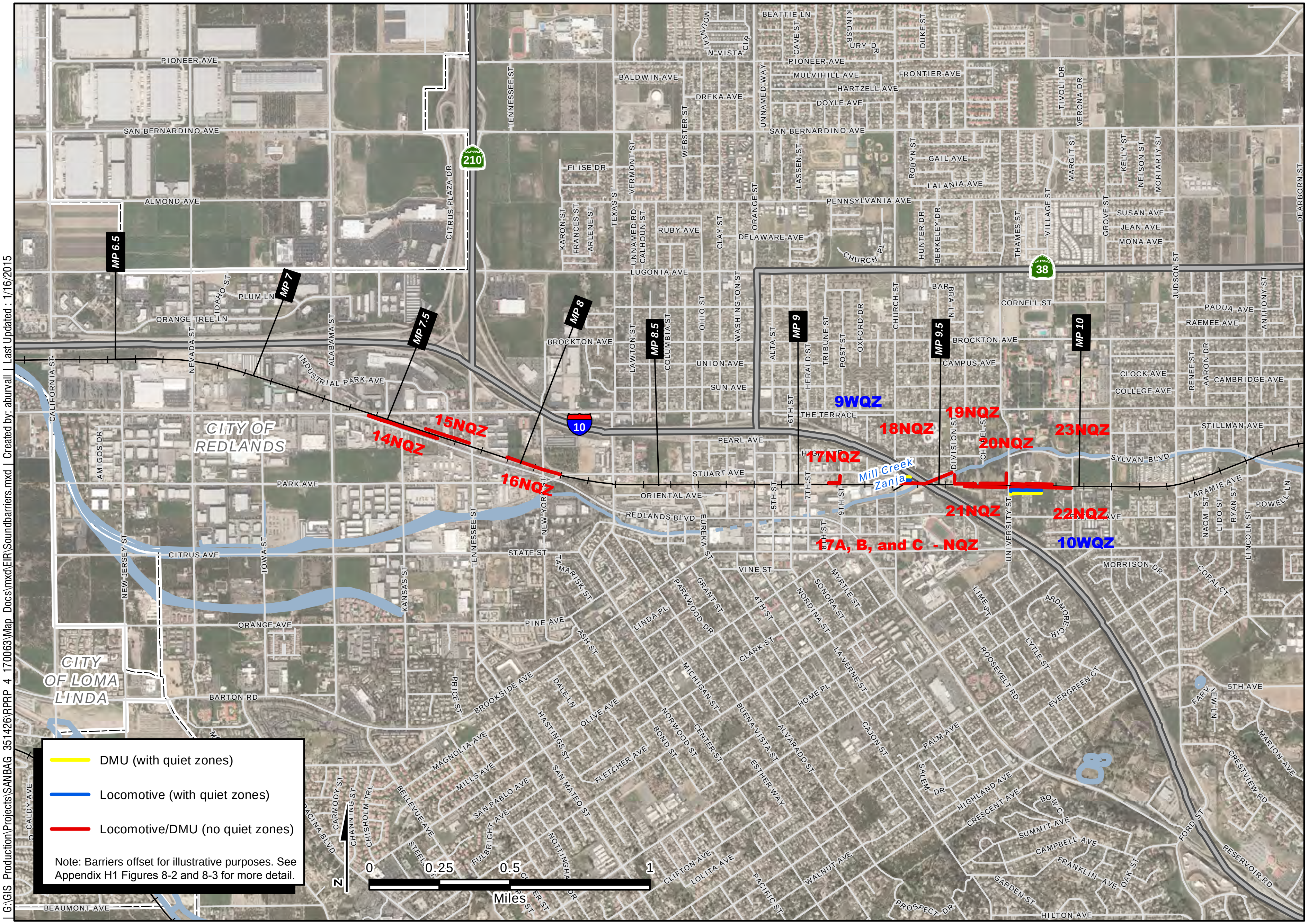

Sound Barrier Locations for Each Project Operational Scenario - Eastern Study Area

Figure 7-1 B

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7.5 CHANGES AND UPDATES TO THE DRAFT EIS/EIR

Since the release of the Draft EIS/EIR, minor updates to the description of alternatives considered, the evaluation of environmental effects, and mitigation measures presented in the Draft EIS/EIR have been made as a part of SANBAG's ongoing coordination with agencies with jurisdiction over the Project. The changes described here do not change the conclusions presented in the Draft EIS/EIR. These changes are intended to clarify and update the description of the Build Alternatives and Design Options considered, and to ensure that the Project is carried out in a manner consistent with the laws and policies governing the project area and the resources in it.

Where changes to the text of the Draft EIS/EIR have been made, the modifications are shown in the response. Text additions are shown in double-underline and text deletions are shown in ~~strikethrough~~. Text changes are referenced by the page number, paragraph on that page, and the major heading under which the text falls. If a figure was revised, the figure number was changed to include "Revised" (i.e., Revised Figure 3.6-1), and a description of the revision is included in this appendix.

Revisions and updates to the EIS/EIR also included the modification of appendices. The modifications are described in this appendix, and the title of the appendix was modified to include "Revised" (i.e., Revised Appendix B, Air Quality).

Each section below identifies the minor changes and edits to each chapter of the draft EIS/EIR are by chapter below. If no changes or edits are proposed, this fact is noted.

7.5.1 Signature Page: Combined Final EIS/Record of Decision

After consideration of the comments received on the Draft EIS/EIR, FTA decided to issue a single document that combines the Final EIS and Record of Decision (ROD) pursuant to the Moving Ahead for Progress in the 21st Century Act (Public Law 112-141, 126 Stat. 405, Section 1319[b]). The ROD is included in the Final EIS/EIR as Appendix R. In addition, the following addition is made to the EIS/EIR to include a citation to Public Law 112-141 which allows FTA to file a combined Final EIS and ROD.

> National Environmental Policy Act of 1969, §102 (42 United States Code [USC] §4332); Federal Transit Law (49 USC §5301[e], §5323[b], and §5324[b]); Public Law 112-141, 126 Statute 405, Section 1319(b); 49 USC §303 (formerly Department of Transportation Act of 1966 §4[f]); National Historic Preservation Act of 1966, §106 (16 USC §470f); Executive Order 11990 (Protection of Wetlands); Executive Order 11988 (Floodplain Management); Executive Order 12898 (Environmental Justice); California Environmental Quality Act, Public Resources Code 21000 et seq.; and the State of California's California Environmental Quality Act Guidelines, California Administrative Code, 15000 et seq.

7.5.2 Cover, Title Page, Signature Page, and Abstract

"Draft Environmental Impact Statement/Environmental Impact Report" is replaced with "Final Environmental Impact Statement and Record of Decision/Environmental Impact Report."

7.5.3 Executive Summary

The Introduction on page ES-1 is revised as follows:

> This document is a joint Environmental Impact Statement/Environmental Impact Report (EIS/EIR) <u>and Record of Decision (ROD)</u> intended to comply with both the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). This EIS/EIR was prepared by the Federal Transit Administration (FTA), Region 9, as Federal lead agency under NEPA and the San Bernardino Associated Governments (SANBAG), as lead agency under CEQA. This EIS/EIR was prepared as a "project" EIS/EIR to evaluate the environmental impacts or effects associated with implementing the Redlands Passenger Rail Project (RPRP or Project).
>
> <u>On August 6, 2014, SANBAG released the Draft EIS/EIR for public review and comment. The comment period closed on September 29, 2014. The Draft EIS/EIR evaluated the potential environmental effects of the Project and considered three alternatives, three design options, and three vehicle technology options. Two public meetings were at held on September 4 and 9, 2014 to receive public input on the Draft EIS/EIR. Written comments were received from federal, state, regional and local agencies, as well as from organizations and individuals; comments were also received during the public meetings. SANBAG and FTA considered the comments received on the Draft EIS/EIR.</u>
>
> <u>The Final EIS/EIR consists of the entire Draft EIS (Volumes I through IX), the comments, responses to comments, and revisions to the Draft EIS/EIR (Volume X), the Mitigation Monitoring and Reporting Program (MMRP), and Record of Decision (ROD) (Volume XI).</u>

The following text was added to page ES-7 to reflect SANBAG's selection of a Locally Preferred Alternative. This resulted in a shifting of the numbering for the subsequent sections from ES-6 to ES-12 to ES-7 through ES-13.

ES.6 LOCALLY PREFERRED ALTERNATIVE

> <u>SANBAG has considered comments received on the Draft EIS/EIR and, where appropriate, updates made to the description of the Preferred Project Alternative, its anticipated impacts, and proposed mitigation measures. The Preferred Project Alternative, as described in the Final EIS/EIR with the integration of Design Options 2 (Use of Existing Layover Facilities) and 3 (Waterman Avenue Station), is SANBAG's Locally Preferred Alternative (LPA) that will be carried forward for approval in conjunction with the certification of the Final EIR by SANBAG and issuance of the Final EIS and Record of Decision (ROD) by FTA. Based on a combination of public comment and SANBAG's consideration of environmental effects as provided in the Final EIS/EIR, SANBAG has selected the Diesel Multiple Unit (DMU) as the locally preferred vehicle option for the LPA. Additionally, SANBAG has selected to implement quiet zones as the preferred noise mitigation for the LPA per the Memorandum of Understanding (MOU) it has executed with the cities of Redlands and San Bernardino on February 4, 2015.</u>

Page ES-8 was revised to include updates from FTA and SANBAG's consultations with USFWS and SHPO under Section 7 of the ESA and Section 106 of the NHPA, respectively.

- ***Biological Resources***. The Project would include construction activities within the vicinity of the Santa Ana River. The Santa Ana River includes suitable habitat for federally listed species, including least Bell's vireo, and is identified as critical habitat for federally listed species including the San Bernardino kangaroo rat and Santa Ana sucker. SANBAG and FTA are currently in consultation with the U. S. Fish and Wildlife Service (USFWS) and attempting to avoid or minimize potential adverse effects to listed species. USFWS provided its biological opinion for the Project on in February 2015.

- ***Cultural Resources*.** Multiple cultural resources are located within the Area of Potential Effect (APE) for the Project. These resources include, but are not limited to, the Redlands Santa Fe Depot, Second Baptist Church, and Redlands Chinatown. SANBAG and FTA are currently in consultation with the California State Historic Preservation Officer (SHPO) and attempting to avoid or minimize potential adverse effects to local cultural and historic resources. SHPO provided its concurrence with the eligibility determinations and findings of effect provided in Section 3.12 on August 14, 2014.

Page ES-8 was revised to reflect SANBAG's execution of an MOU with the cities of Redlands and San Bernardino.

....measures, this EIS/EIR acknowledges that SANBAG may not have complete control over their implementation (i.e., quiet zones) and/or the measures trigger other indirect environmental effects (i.e., sound barriers). Based on these circumstances, this EIS/EIR identifies a full range of noise mitigating measures for the Project. As described under ES-6, SANBAG has proposed the implementation of corridor-wide quiet zones per the executed MOU (February 4, 2015) and Mitigation Measure NV-3 combined with the selection of the DMU vehicle option as part of the LPA.

Page ES-8, third bullet was revised to reflect noise impacts determinations in Sections 3.6.4 and 5.6 of the Draft EIS/EIR.

- Noise (Permanent increase in ambient noise from passing trains and construction).

Page ES-9, fourth paragraph is revised to reflect a reduction if the footprint for the Preferred Project Alternative.

Of the Build Alternatives and Design Options considered, Alternative 3, Reduced Project Footprint, would minimize adverse effects to biological resources, including those in the vicinity of ~~of the Santa Ana River and~~ the Mission Zanja Flood Control channel.

Table ES-1 is modified to reflect SHPO's concurrence with the findings of effect for the proposed undertaking. The following test is added to page ES-14.

On August 14, 2014, SHPO concurred that the Project would have no adverse effect the Redlands Santa Fe Historic District and contributing properties, including the Redlands Santa Fe Depot, Second Baptist Church, Victoria Elementary School and Redland Lawn Bowling Club. to the following historic properties.

Section ES.12 (now ES.13) was revised to reflect SANBAG's release of the Final EIR and FTA's release of a combined Final EIS/ROD.

This Final EIS/EIR is being distributed to interested agencies, stakeholder organizations, and individuals who commented on the Draft EIS/EIR. This distribution ensures that interested parties have an opportunity to express their views regarding the environmental effects of the Project, and to ensure that information pertinent to permits, authorizations, and approvals is provided to decision makers for the lead agencies and CEQA responsible and trustee agencies. This document is available for review by the public during normal business hours at SANBAG's Office during normal business hours. The document will also be available on SANBAG's website at: http://sanbag.ca.gov/projects/redlands-transit.html.

~~Written comments should be sent to the following address:~~

~~Mitchell A. Alderman~~
~~Director of Transit & Rail Programs~~
~~San Bernardino Associated Governments~~
~~1170 W. 3rd St., 2nd Floor~~
~~San Bernardino, CA 924104~~

~~If comments are provided via e-mail, please include the project title in the subject line, attach comments in MS Word format, and include the commenter's U.S. Postal Service mailing address. Email comments should be directed to: RPRP_Public_Comments@sanbag.ca.gov.~~

Two public meetings were held during the Draft EIS/EIR public review period~~A joint public meeting on the draft EIS/EIR will be conducted by SANBAG and FTA on~~:

1. September 4, 2014, 5:00-7:00 PM, at the ESRI Café, 380 New York Street, Redlands, CA 92373; and
2. September 9, 2014, 5:00-7:00 PM, at the Hotel, 285 East Hospitality Lane, San Bernardino, CA 92408

SANBAG and FTA have reviewed and assembled all of the comments received on the Draft EIS/EIR, including those received at the public meetings, and prepared responses to address significant environmental issues raised in the comments. These responses are included in Appendix P and summarized in Chapter 7 of the EIS/EIR.

Following completion and publication of the Final EIR, the SANBAG Board of Directors will hold a public hearing to consider certification of the EIR and to decide whether or not to approve the LPA, at which time the public and interested agencies and organizations may comment on the Project. SANBAG's Board of Directors will consider certification of the Final EIR, including the findings of effect, and adoption of the Project's mitigation monitoring and reporting program (MMRP) at its regularly scheduled meeting at 10:00 AM, Wednesday, March 4, 2015. A notice of determination (NOD) will then be filed. If the Board approves the LPA (or another alternative), it will adopt written findings of fact for each significant environmental impact identified in the EIR; a statement of overriding considerations, if needed; and a MMRP. The proposed MMRP is includes as Appendix Q.

After consideration of the comments received on the Draft EIS/EIR, FTA decided to issue a single document that combines the Final EIS and ROD pursuant to the Moving Ahead for Progress in the 21st Century Act (Public Law 112-141, 126 Stat. 405, Section 1319[b]). NEPA regulations require that the federal agency prepare a concise public record of its decision (40 Code of Federal Regulations [CFR] Section 1505.2). The ROD notifies the public of the agency's selection of an alternative to be carried forward for more detailed engineering and design, and the rationale for that decision. The ROD is included in the Final EIS/EIR as Appendix R.

Table ES-2 is revised to reflect minor changes and edits to the mitigation measures proposed in Chapter 3 (see below).

7.5.4 Chapter 1.0 - Purpose and Need

The last paragraph on page 1-1 is revised to reflect the inclusion of Chapter 7, Responses to Comments on the Draft EIS/EIR, in the Final EIS/EIR.

This EIS/EIR is comprised of ten chapters with supporting appendices. The purpose and need of the Project is outlined in this chapter (Chapter 1). The alternatives and design options considered in the environmental analysis along with those rejected from further environmental analysis are discussed in Chapter 2, *Alternatives Considered*. Chapter 3 provides an environmental analysis of the environmental issue areas. Chapter 4 provides a discussion of the cumulative effects that could result from the Project in conjunction with other reasonably foreseeable projects. Chapter 5 provides a discussion of the other statutory considerations pursuant to CEQA and NEPA. Chapter 6 outlines the public and agency outreach efforts by SANBAG and FTA, Chapter 7 provides a summary of the comments received on along with the minor changes and edits to the Draft EIS/EIR, and Chapters ~~7~~8 through 12~~1~~ include the references, list of preparers, acronyms and abbreviations, and an index.

The paragraph below is added to page 1-3 to clarify the organization of the Final EIS/EIR appendices.

Appendices A through O provide public outreach and notification materials and technical data, studies, and reports used in support of the environmental analysis. Appendix P contains a complete list of letters received on the Draft EIS/EIR and responses to individual comments. Appendix Q contains the SANBAG's proposed Mitigation Monitoring and Report Program (MMRP). Appendix R contains FTA's Record of Decision (ROD) document that was filed in the Federal Register on February 20, 2015.

7.5.5 Chapter 2 - Alternatives Considered

The third paragraph on page 2-1 is revised to reflect the current stage of the Project's development.

~~The Moving Ahead for Progress in the 21st Century (MAP-21) Act became effective in October 2012, and eliminated the AA as a standalone requirement in the project approval process. With MAP-21, agencies now may rely on the review of alternatives during the metropolitan planning organization (e.g., Southern California Association of Governments [SCAG]) planning and NEPA environmental review processes. Based on this direction,~~SANBAG is proposing the Redlands Passenger Rail Project (RPRP or Project) as the means to implement a new mode of transit service to serve key markets in the Redlands Corridor while still accommodating freight service in the corridor and is considering several alternatives and design options for the Project in this EIS/EIR. SANBAG and FTA released the draft environmental impact statement and environmental impact report (EIS/EIR) for public review and comment on August 6, 2014. The public and agency review and comment period closed on September 29, 2014. This final EIS/EIR has been prepared to respond to comments received on the Draft EIS/EIR for the Project per the requirements of NEPA (40 CFR 1503(a) and CEQA (CEQA Guidelines, Section 15008(c).

Figure 2-1D (Revised) is revised to reflect the modification of the construction footprint to exclude bank improvements from the western-most section of the Mission Zanja Flood Control Channel in order to reduce adverse impacts to suitable habitat for listed species, including LBV.

The second to last sentence in the last paragraph on page 2-19 is revised to remove reference to a 10 percent nominal increase.

~~In assuming a nominal ten percent increase, r~~Ridership projections in future conditions (2038) would ~~to~~ increase to 1,330 daily trips (see Appendix C). Projections beyond these initial estimates based on future cumulative projects are discussed in Chapter 4, Cumulative Effects. These ridership projections assume no changes in existing bus routes.

Additional text was added to the second paragraph on page 2-31 to include discussion of the MOU executed between SANBAG and the cities of Redlands and San Bernardino:

> SANBAG has entered into a Memorandum of Understanding (MOU) dated February 4, 2015, with the cities of San Bernardino and Redlands that outlines each entities roles and responsibilities to facilitate the implementation of "corridor-wide" quiet zones.

This page 2-43 is revised to reflect an additional easement for the project:

> The physical improvements associated with the Project may require up to 58 partial property acquisitions, up to 4 full property acquisitions, up to ~~31~~32 roadway easements (roadway, temporary construction, sidewalk, utility, and alley vacations), and potentially two (2) business relocations.

The acreage subject to construction-related ground disturbance in the first paragraph on page 2-45 is revised to reflect the reduction of the Project's construction footprint, just east of the Santa Ana River.

> Construction of the Project may begin in 2015 and take up to 36 months to complete. Construction would proceed generally from the west of E Street to the SAR and similarly from the SAR east to the University of Redlands. In total, the anticipated construction disturbance area is estimated at 134.9~~7.3~~ acres. Of this total construction area, up to 10 acres could be subject to disturbance during the course of construction on any given day.

Figure 2-6B (Revised) is revised to reflect the modification of the construction footprint to exclude bank improvements from the western-most section of the Mission Zanja Flood Control Channel.

The acreage under Design Option 1 construction footprint for the Project facilities and alternate train layover facility was updated.

> Under Design Option 1, the construction footprint for the Project facilities and alternate train layover facility would be approximately 14~~3.3~~0.9acres.

The acreage under Design Option 2 construction footprint for the Project facilities and alternate train layover facility was updated.

> Design Option 2 the construction footprint would be reduced to approximately 12~~7.1~~9.5 acres.

The acreage under Design Option 3 construction footprint for the Project facilities and alternate train layover facility was updated.

> Design Option 3 the construction footprint would be reduced to approximately 13~~9~~6.6 acres.

Figure 2-10 (Revised) is revised to reflect Omnitrans' revised operational budget expenditures based on its adopted 2015 - 2020 Short Range Transit Plan.

7.5.6 Chapter 3 - Environmental Analysis, Consequences, and Mitigation

Section 3.1, Introduction to the Joint NEPA/CEQA Analysis

No changes or edits are proposed.

Section 3.2 Land Use, Planning, and Communities

Page 3.2-33, first paragraph is revised to restate the anticipated construction-related impacts to traffic in terms of temporary closure in terms of weeks and not months.

> Temporary sidewalk and street closure locations have not yet been defined at the current stage of design and, therefore, it is possible that some locations may be subject to prolonged closures that could range from a few days to several ~~months~~ weeks.

Table 3.2-9 is revised to include discussion of potential easement requirements on adjacent parcels.

Table 3.2-9. Summary of Acquisitions and Relocations by Alternative and Design Options

	Alternative 1 (No Build)	Alternative 2 (Preferred Project)	Alternative 3 (Reduced Project Footprint)	Design Option 1 (Train Layover Facility - Waterman Avenue)	Design Option 2 (Existing Layover Facilities)	Design Option 3 (Waterman Avenue Rail Station)
TCEs*	0	60	60	60	60	60
Easements (Roadway)	0	~~31~~32	~~31~~32	~~31~~32	~~31~~32	~~31~~32

Page 3.2-37, second paragraph is revised to include discussion of potential easement requirements on adjacent parcels.

> None of the potential full property acquisitions would require a relocation of an existing business or residence. However, the Build Alternatives and Design Option 1 would result in the displacement of numerous structures or facilities during the construction phase to accommodate TCEs or the Project's ROW requirements. Additionally, easements may be necessary from adjacent landowners to facilitate access following the closure of one or more at-grade crossings. Under NEPA, these effects are considered adverse. Under CEQA, this impact is considered significant. Mitigation Measure LU-1 (Minimize Project Land Requirements and Comply with Federal and State Relocation Laws**)** is proposed to mitigate this construction-related effect.

Page 3.2-39 is modified to include reference to Mitigation Measure NV-7.

Section 3.3 Transportation

Mitigation Measures TR-1 is revised on page 3.3-33 in response to comments provided by the City of Redlands.

TR-1 **Prepare and Implement a Traffic Management Plan.** SANBAG shall prepare a Traffic Management Plan prior to the start of construction, and the provisions of the Traffic Management Plan shall be implemented prior to, and during construction, as appropriate, to address traffic considerations of pedestrian and bicycle access and safety, and vehicular flow. The objective of the Traffic Management Plan will be to reduce construction related effects to traffic, non-motorized forms of transportation (i.e., bicycle and pedestrians), and existing public transit (i.e., buses) and will include the following:

- Construction detour plans and designated construction truck access routes for each phase of construction;
- Maintain maximum travel lane capacity to the greatest extent possible during construction periods and provide advanced notice to drivers or roadway changes or closures;
- Signage indicating the construction limits, access routes, and entrances to individual business sites and community facilities that may be affected by construction activities. In addition, the construction contractor would supply "open for business" signs to encourage normal business activity during construction;
- Pre-planning, outreach, and signage indicating pedestrian and bicycle routes detours;
- Coordination with public transit service providers, as necessary;
- Heavy trucks and other construction transport vehicles shall avoid the busiest commute hours to the greatest extent possible (weekdays 7 a.m. to 8 a.m. and 5 p.m. to 6 p.m. – High traffic intersections (greater than 10,000 ADT) – 6:30 a.m. to 8:30 a.m. and 4:30 p.m. to 6:30 p.m.);
- Early notification to emergency service providers and area drivers of any road closures or detours and the time frames of the closures or detours. This information will be posted in a local newspaper, via SANBAG's web site and will be updated on a monthly basis;
- Coordination with the cities of San Bernardino, Loma Linda, and Redlands for community events in the area to accommodate crowds and road closures;
- Pavement damage resulting from project construction will be repaired prior to the completion of construction; and
- SANBAG shall maximize opportunities for coordinated construction and installation of improvements that occurs outside the SANBAG ROW with the cities of San Bernardino, Loma Linda, and Redlands to the greatest extent practicable~~l~~.

Mitigation Measures TR-2 is revised on page 3.3-35 in response to comments provided by the IEBA to include consideration for existing pedestrian and bicycle facilities.

TR-2 **Existing LOS and V/C Year 2018 and 2038 Impact Roadway Improvements.** As part of the Project construction, SANBAG shall coordinate with the appropriate agency in which the intersection improvement is located (cities of San Bernardino, Loma Linda, Redlands, or Caltrans) to pay SANBAG's "fair share" of the identified roadway improvements prior to the start of operations of the Project in 2018:

- ***California Street and I-10 Eastbound Off-Ramp*** – SANBAG shall coordinate with Caltrans to fund its fair share of construction for a ramp improvement to include a right-turn pocket. The existing right-turn lane will become a shared right-turn lane to accommodate the high number of right turns. The improvements will include replacing existing pedestrian and bicycle facilities, where present.

SANBAG shall provide its fair share for the funding of the following improvements prior to the year 2038:

- ***California Street and I-10 West On-Ramp*** – SANBAG shall coordinate with Caltrans to fund its fair share to the construction of a dual southbound right and a dual northbound left turn pocket. The improvements will include replacing existing pedestrian and bicycle facilities, where present.
- ***Alabama Street and Industrial Avenue*** – SANBAG shall coordinate with the City of Redlands to stripe an exclusive westbound right turn lane with 50-feet of storage to accommodate a high number of right turns. The improvements will include replacing existing pedestrian and bicycle facilities, where present.

Mitigation Measures TR-4 is revised on page 3.3-35 in response to comments provided by the City of Redlands.

TR-4 **Recommended Pre-Signals for Queuing.** Prior to the start of operations, pre-signals shall be implemented at the following grade crossing locations and shall be operational prior to the start of 2018:

- Eastbound I-10 Ramps and California Street crossing;
- Industrial Park Avenue and Alabama Street crossing; and
- Redlands Boulevard and Tennessee Street crossing.

Prior to 2038 and if warranted based on future intersection operations (as determined through reevaluation in 5-year increments by SANBAG following procedures in the Los Angeles Metropolitan Transportation Authority (MTA) Grade Crossing Policy for Light Rail Transit), pre-signals will be implemented at the following grade crossing locations:

- Waterman Avenue and Orange Show Road Crossing (Northbound Approach);
- Orange Show Road and Waterman Avenue Crossing (Eastbound Approach;
- Redlands Boulevard and California Street Crossing; and
- Redlands Boulevard and Alabama Street Crossing.

Section 3.4 Visual Quality and Aesthetics

Mitigation Measure VQA-1 is revised in response to a comment from the City of Redlands.

VQA-1 **Screening of Construction Staging Areas.** For construction staging areas within 500 feet of a residence, park, or educational facility, the contractor will be required to shield the staging area to the extent feasible and coordinate with the local jurisdiction regarding the type and method of screening, which may include but is not limited to, the use of fence slats, netting, or mesh or tarps. SANBAG shall limit construction to daylight hours to the extent possible. If nighttime lighting or construction is necessary, the SANBAG shall ensure that unshielded lights, reflectors, or spotlights are not located and directed to shine toward or be directly visible from adjacent properties or streets. To the extent possible, SANBAG shall minimize the use of nighttime construction lighting within 500 feet of existing residences. This measure shall be identified on grading plans and in construction contracts.

VQA-3 **Tree Replacement.** Prior to construction, SANBAG shall have a registered arborist conduct a tree survey to identify native and ornamental trees requiring removal outside SANBAG's ROW. The arborist will identify measures to avoid and minimize indirect impacts on trees, where feasible, and develop a plan for the replacement of trees that cannot be avoided. The plan will include planting and irrigation design details and a weaning schedule for the establishment period. Trees with a diameter at breast height of 12 inches or greater will be replaced at a minimum ratios of 1:1 and consistent with City of Redlands and San Bernardino standards.

The last sentence on page 3.4-34 is revised to clarify the magnitude and extent of sound barriers required in the absence of quiet zones.

With the implementation of Mitigation Measure NV-4, SANBAG may construct sound barriers at one or more locations within Landscape Units 1, 2, 3, 4, and 5. Sound barriers although effective in their reduction of noise levels, also create new long, linear physical obstructions in the landscape that could be considered disruptive visually to one or more individuals by eliminating existing middle or background views of moderate value. Figures 8-2A through 8-2H in Appendix H1 identify the locations of each sound barrier, which total approximately 23,910 linear feet (or 4.5 miles) in the absence of quiet zones (see Mitigation Measure NV-3). Even with the inclusion of surface treatments, the magnitude of these physical features would visually dominate the railroad corridor, ~~where constructed~~ in the absence of quiet zones, thereby resulting in an adverse effect under NEPA. Under CEQA, the proposed mitigation would not be sufficient in reducing the indirect impact of sound barriers in the absence of quiet zones and the residual impacts on the visual character of Landscape Units 2 and 5 is considered significant and unmitigable.

With the implementation of quiet zones as proposed in Mitigation Measure NV-3 in combination with other noise mitigation measures, including but not limited to sound barriers, and the vehicle type selected (e.g. DMU verse locomotive) the length of sound barriers would be substantially less. For example, under the locative vehicle option, the length of sound barrier would be reduced to 10,740 linear feet (or 2.2 miles) with the sound walls being more evenly distributed throughout the corridor (e.g. less than 1,000 feet). Under the DMU vehicle option, the length of sound barrier would be further reduced to 5,900 linear feet (or 1.1 mile). In this context and with the implementation of a quiet zone, the magnitude of the sound barriers would be substantially less, such that Mitigation Measure VQA-4 would be effective in minimizing the adverse effects of sound barriers under NEPA. Under CEQA, the visual impact would be reduced to a less than significant level.

Section 3.5 Air Quality and Climate Change

The first paragraph on page 3.5-5 and Table 3.5-2 are modified to reflect USEPA's recent change in the SCAB's attainment stats for PM_{10}.

The SCAQMD has divided the SCAB into air monitoring areas and maintains a network of air quality monitoring stations located throughout the SCAB. The Study Area is located in the Central San Bernardino Valley Monitoring Area (Source Receptor Area [SRA] 34) (see Appendix G1). With respect to NAAQS, the Study Area is located in an area designated “extreme nonattainment” for ozone~~, “serious nonattainment” for PM_{10},~~ “nonattainment” for $PM_{2.5}$, “~~serious~~ maintenance” for CO and PM_{10}, and “attainment” for NO_2, SO_2, and Pb (see Table 3.5-2). Based on this attainment status, the air pollutants of greatest concern in San Bernardino County are O_3 and PM_{10} and a conformity determination is required for the Project. In general, the worst air quality conditions occurs in the southwestern portion of San Bernardino County, including the Study Area, due to presence of the San Bernardino, San Jacinto, and San Gabriel Mountains, which restrict air movement further east.

Table 3.5-2. Federal and State Attainment Status for the San Bernardino County Portion of the South Coast Air Basin

Pollutants	Federal Classification	State Classification
~~O_3 (1-hour standard)~~	~~--~~	~~Nonattainment~~
O_3 (8-hour standard)	Extreme Nonattainment	--
PM_{10}	~~Serious Nona~~ Attainment/Maintenance	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Serious Maintenance	Attainment
NO_2	Unclassified/Attainment	~~Nona~~Attainment
SO_2	Attainment	Attainment
Pb	Unclassified/Attainment*	Attainment*

Source: Appendix G1

The second paragraph on page 3.5-11 is revised to reflect USEPA’s recent change in the SCAB’s attainment stats for PM_{10}.

However, because the Project would be located in an area classified as a nonattainment or maintenance area for both the PM_{10} and $PM_{2.5}$ standards, a determination must be made as to whether it would result in a PM hot spot.

Page 3.5-15, Section 3.5, Effect 3.5-1, fourth paragraph is revised as follows to reflect FHWA’s approval of SCAG’s FTIP (2013).

Under federal and state mandates, SCAG is tasked with developing a FTIP and RTP every 4 years. The Project, which extends from the San Bernardino Transit Center and E Street ~~Metrolink~~ Station to the University of Redlands ~~approximately Wabash/Colton Avenue~~ is listed as project number 20131901~~20061012~~ within SCAG’s 2013~~1~~ FTIP and ~~draft 2013 FTIP~~ RTP ID 4TR0101 in SCAG’s 2012 RTP/SCS (Appendix G1). The 2013~~1~~ FTIP (Amendment #19) was adopted by SCAG on June 16, 2014~~September 2, 2010~~ and was found to conform by FHWA on July 17, 2014~~December 14, 2010~~. ~~SCAG’s draft 2013 FTIP wad adopted by SCAG on September 19, 2012.~~ The 2012-2035 RTP was adopted by SCAG on April 4, 2012 and found to conform by FHWA on June 4, 2012. The Federal Highway Administration and FTA determined that the 2012-2035 RTP/SCS through Amendment No. 1 and the 2013 FTIP through Amendment No. 13-04 (adopted on June 6, 2013) conformed to the SIP on July 15, 2013.

Page 3.5-16, Section 3.5, Effect 3.5-1, second and third paragraphs are revised as follows to reflect the composition of Omnitrans bus fleet and the SCAG Transportation Conformity

Working Group's (TCWG) determination that the Project is not a Project of Air Quality Concern (POAQC):

> The Project involves both a new local transit service along a dedicated roadway and extension of diesel regional passenger rail service. The Project is considered to be a "regionally significant project"[1] under 40 CFR 93.101; however, it would not result in an adverse number of diesel vehicles that would congregate at a single location~~. In addition, d~~ Dispersion modeling conducted for the vehicle technologies under consideration for the Project indicates that rail emissions associated with the Build Alternatives and Design Options would not exceed the $PM_{2.5}$ nor would the PM_{10} NAAQS, see Table 3.5-5 below. Interconnecting bus transit is powered by compressed natural gas (CNG) and, therefore, would not represent a significant source of PM_{10} or $PM_{2.5}$ emissions that could incrementally add to the emissions estimates presented in Table 3.5-5.
>
> Consequently, the Project is not considered a POAQC for $PM_{10}/PM_{2.5}$ and the CAA and 40 CFR 93.116 requirements were met without a hot-spot analysis. Confirmation of this determination ~~will~~ was~~be~~ made during SCAG's Transportation Conformity Working Group's (TCWG) interagency consultation (IAC) with the appropriate local, state, and federal agencies on October 3, 2014. ~~and the final analysis will be identified in the final environmental document.~~ There would be no adverse effect under NEPA. A less than significant impact would occur under CEQA.

Section 3.6 Noise and Vibration

The description of the existing noise environment is modified on page 3.3-6 to identify areas east of 7th Street along Stuart Avenue is Redlands.

> ***MP 8.5 to 10.*** This portion of the Study Area is comprised mainly of commercial land uses zoned Commercial (C) per the Downtown Redlands Specific plan; however, several residences exist along Stuart Avenue, from east of Eureka Street to Church Street, zoned Medium Density Residential (MDR). A historic church also exists in this area, just west of 9th Street and north of the railroad. Residences also exist to the south of the railroad corridor, along Central Avenue between 9th Street and the I-10, and are zoned MDR per the Redlands Zoning map. Scattered residences are also located north of the railroad along Stuart Avenue, east of 7th Street. East of the I-10, residences of varying densities are located to the north and south of the railroad corridor. Additionally, Sylvan Park and the University of Redlands are located north of the railroad corridor and zoned as Open Space and Public Institutional (PI) per the Redlands Zoning map.

Page 3.6-17, first paragraph, is revised to reflect the representation of six noise sensitive receptors for Receiver #54

> Table 3.6-6 presents an estimation of existing noise conditions and Project noise impacts using a locomotive driven trainset with and without the implementation of quiet zones based on the methodology presented in Section 3.6.3.2. A complete list of all modeled receivers is presented in Appendix H1. As presented in Table 3.6-6, moderate impacts from rail noise would occur at a total of 21 receivers representing 115 Category 2 land uses, and three Category 3 land uses, including a church, a public park, and the University of Redlands.

[1] Regionally significant projects are those projects that serve regional transportation needs. Regionally significant projects can include projects that provide access to areas outside region, such as a highway, major activity centers in region, such as a sports complex, major planned developments, such as a new retail mall, and transportation terminals, such as a train depot.

> Severe impacts from rail noise would occur at a total of 22 receivers representing 86~~3~~ Category 2 land uses. Noise levels with the addition of the Project using a locomotive vehicle type are illustrated in Figures 3.6-4A through 3.6-4B.

Page 3.6-17, second paragraph, was revised to reflect the representation of six noise sensitive receptors for Receiver #54.

> As shown in Table 3.6-7, under the DMU vehicle option, moderate impacts from rail noise would occur at a total of 19 receivers representing 104 Category 2 land uses, and three Category 3 land uses. Similar to the locomotive driven trainset severe impacts from rail noise would occur at a total of 22 receivers representing 86~~3~~ Category 2 land uses. Noise levels for the Project using a DMU vehicle type are illustrated in Figures 3.6-4A through 3.6-4B.

Page 3.6-17, third paragraph, was revised to introduce the new noise mitigation measures.

> Under CEQA, this impact is significant. Mitigation Measures NV-3 (Establish Quiet Zones), NV-4 (Construct Sound Barriers), NV-5 (Wayside Rail Lubrication), and NV-7 (Provide Building Noise Insulation to Severe- and Moderate-Impact Residences) are proposed to minimize operational noise associated with the movement of passenger trains along the rail corridor.

Table 3.6-6 is revised to reflect the representation of six noise sensitive receptors for Receiver #54.

Table 3.6-6. Existing and Projected Noise Levels (Locomotives)

Receiver #	Receiver Location Description	Land Use Category	Jurisdiction General Plan Land Use and Zoning	Number of Noise-Sensitive Sites Represented	Existing Noise Exposure (dBA Ldn)	Closest Distance to Project (Feet)	Project Noise Exposure (dBA Ldn)	FTA Level of Noise Impact without Quiet Zone	Project Noise Exposure (dBA Ldn) With Quiet Zone Implementation	FTA Level of Noise Impact t[2] With Quite zone Implementation
MP 8.5 to MP 10: Texas Street to east of North University Street (Project End)										
54	50' to 100' n of alignment, w of 9th St	Residential/2	Downtown Redlands Specific Plan (DRSP) Commercial/ Industrial	~~3~~6	67	75	68	**Severe Impact**	62	No Impact

Table 3.6-7 is revised to reflect the representation of six noise sensitive receptors for Receiver #54.

Table 3.6-7. Existing and Projected Noise Levels (DMU Option)

Receiver #	Receiver Location Description	Land Use Category	Jurisdiction General Plan Land Use and Zoning	Number of Noise-Sensitive Sites Represented	Existing Noise Exposure (dBA Ldn)	Closest Distance to Project (Feet)	Project Noise Exposure (dBA Ldn)	FTA Level of Noise Impact without Quiet Zone	Project Noise Exposure (dBA Ldn) With Quiet Zone Implementation	FTA Level of Noise Impact t[3] With Quite zone Implementation
MP 8.5 to MP 10: Texas Street to east of North University Street (Project End)										
54	50' to 100' n of alignment, w of 9th St	Residential/2	Downtown Redlands Specific Plan (DRSP) Commercial/ Industrial	~~3~~6	67	75	68	**Severe Impact**	59	No Impact

[2] Represents FTA Impact criteria.

Page 3.6-32, Mitigation Measure NV-7 is added to provide SANBAG an additional option for mitigating noise impacts at locations where sound barriers might be ineffective or impractical.

NV-7 Provide Building Noise Insulation to Severe- and Moderate-Impact Residences. For the ten residential structures represented by Receivers 3, 22, and 41, SANBAG will offer to install sound insulation. Treatments may include sealing and relocating vents, caulking and sealing gaps in the building façade and installing new doors and windows that are specially designed to meet acoustical transmission-loss requirements. Acoustical performance ratings are published in terms of Sound Transmission Class (STC) for these special windows. A minimum STC rating of 39 will be used on any window exposed to the noise source.

Page 3.6-34, second paragraph, is revised to reflect the representation of six noise sensitive receptors for Receiver #54.

The Build Alternatives and Design Options would result in a permanent increase in ambient noise levels as a result of passenger train operations. Implementation of Mitigation Measure NV-3 would require SANBAG to design 13 grade crossings for quiet zones as a means to reduce locomotive horn noise at crossings. Designing the at-grade crossing for the application of quiet zones would reduce moderate impacts at 14 receivers representing 49 Category 2 land uses and severe impacts at four receivers representing 14~~1~~ Category 2 land uses for a locomotive driven trainset. Noise levels following the implementation of quiet zones for a DMU vehicle option would reduce moderate impacts at an additional 10 receivers representing 27~~4~~ Category 2 land uses and severe impacts at an additional four receivers representing 11 Category 2 land uses. Noise levels with Project operations and following the implementation of quiet zones is illustrated in Figures 3.6-5A through 3.6-5B. As a result, Mitigation Measure NV-3 would be capable of achieving desired reductions in operational noise but would ultimately require the approval of the City of San Bernardino and the City of Redlands to adopt the quiet zones at each of these locations. Hence, the implementation of the measures is partly beyond SANBAG's jurisdiction and, thus, full implementation cannot be assumed for the purposes of this analysis. For this reason, SANBAG has entered into a Memorandum of Understanding (MOU), dated February 4, 2014, with the cities of San Bernardino and Redlands to memorialize each agency's roles and responsibilities towards the implementation of quiet zones.

In addition to Mitigation Measure NV-3, Mitigation Measure NV-4 proposes the construction of sound barriers to further minimize operational noise effects. With the implementation of quite zones, the installation of up to 10,740 linear feet of sound ~~noise~~ barriers for receivers 3, 4, 8, 9, 13, 14, 15, 17, 18, 19, 22, 23, 24, 31, 39, 41, 61, and 68 (representing 60 Category 2 land uses) would further reduce operational noise effects. The locations of the noise barriers are illustrated in Figures 8-2A through 8-2J of Appendix H1 and Figures 1A through 1F of Appendix H2 for sound barrier locations without implementation of quiet zones for the locomotive driven trainset and DMU, respectively. Figures 8-3A through 8-3J of Appendix H1 and Figures 1A through 1F of Appendix H2 illustrate the location of sound barriers with implementation of quiet zones for the locomotive driven trainset and DMU, respectively. Under a DMU with quiet zone scenario, the total length would be reduced to 5,900 linear feet.

Figures 3.6-5A and 3.6-5B are revised to correctly reflect the impact determinations provided in Appendix H2 for the DMU vehicle option.

Page 3.6-36 second paragraph, the total linear feet of sound barrier was included for the DMU vehicle option.

> Further, in the event that quiet zones are not implemented, noise impacts would be greater, thus requiring the construction of sound barriers in more locations. The number of sound barriers would increase from 10 sound barriers to 23, thereby more than doubling the Project's potential financial expenditure for sound barriers. In total, up to 23,910 linear feet of sound barrier would be required for a locomotive or DMU in the absence of quiet zones.

Section 3.7 Biological and Wetland Resources

Page 3.7-1 includes the addition of the Mitigation Monitoring Plan as Appendix I5 and the U.S. Fish and Wildlife Service Biological Opinion (Appendix I6).

> The information and findings contained in this section are based on a Biological Resources Technical Report (BTR; Appendix I1), Wetland Delineation and Preliminary Jurisdictional Determination (Appendix I2), Biological Assessment (BA; Appendix I3), correspondence with the U. S. Fish ~~and~~ Wildlife Service (USFWS; Appendix I4), Mitigation Monitoring Plan (Appendix I5), and the USFWS Biological Opinion (Appendix I6).

Table 3.7-1 is revised as follows to reflect the issuance of USFWS's biological opinion (BO) for the Project:

> The Federal Endangered Species Act (ESA) defines and lists species as "endangered" or "threatened" and provides regulatory protection for the listed species. Listed species were detected during focused species surveys within the Study Area and, therefore, consultation with U. S. Fish and Wildlife Service (USFWS) under Section 7 will be required for the Project. FTA initiated formal Section 7 consultation with the USFWS on January 21, 2014. The USFWS concurred with FTA's effects determinations and issued a Biological Opinion (BO) in February 2015 Refer to Appendix I6 for additional information.

Table 3.7-2 is revised to include a small area of Riversidean alluvial fan sage scrub (RAFSS) habitat, which was previously mapped SCWRF and disturbed vegetation mapping units.

Table 3.7-2. Existing Vegetation Communities within the Project Study Area

Vegetation Communities	Study Area Acreage
Disturbed Habitat	24.50~~54~~
Disturbed Wetland	0.02
Eucalyptus Woodland	2.78
Flat-top Buckwheat Scrub (disturbed)	0.91
Mulefat Scrub	0.04
Non-Jurisdictional Ditch	1.31
Non-Native Grassland	61.90
Non-Vegetated Channel	29.22
Oak Woodland	9.62
Orchards and Vineyards	5.28
Southern Cottonwood Willow Riparian Forest	8.21~~7~~
Southern Willow Scrub	0.64
Tamarisk Scrub	0.47
Riversidean alluvial fan sage scrub	0.10
Urban/Developed	388.88
Total	**533.88**

Source: Appendix I1

Figure 3.7-1 (Revised) is revised to reflect a modification to the construction footprint to exclude bank improvements from the western-most section of the Mission Zanja Flood Control Channel in order to reduce adverse impacts to suitable habitat for listed species, including LBV.

Page 3.7-8 is revised to incorporate discussion of the Final Phase 1 Report: Upper Santa Ana River Habitat Conservation Plan (HCP), March 2014:

> The Project does not occur within an approved Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan. The nearest adopted HCP area, which is located east and north of the Study Area in the cities of Highland and Redlands, is part of the Upper Santa Ana River Wash Land Management and Habitat Conservation Plan.
>
> USFWS in cooperation with the San Bernardino Valley Municipal Water District (and other stakeholders) are proposing the implementation of a mitigation and conservation strategy for the Upper Santa Ana River HCP. To date, most of the focus on mitigation and conservation related to this HCP has been on the Santa Ana sucker (ICF 2014). Possible Santa Ana sucker restoration sites and translocation sites have been identified and will be further evaluated to be included as a part of the mitigation and conservation strategy. None of these contemplated restoration sites occur with the Project Study Area.

Page 3.7-16, first and fourth paragraphs, and page 3.7-21, third paragraph, are revised to reflect the inclusion of Mitigation Measure BIO-7.

> Mitigation Measures BIO-1, BIO-4, and BIO-7 are proposed to mitigate this effect.

Pages 3.7-16 and 3.7-17 are revised to reflect the modification of the construction footprint to exclude bank improvements from the western-most section of the Mission Zanja Flood Control Channel.

Alternative 2 – Preferred Project and Design Options

Direct Effects from Temporary Construction

> Implementation of the Preferred Project and Design Options would result in direct impacts to waters of the U.S. as result of the placement of fill materials or excavation within jurisdictional waters of the U.S. and state, including wetlands, within the railroad corridor. Based on preliminary engineering, total effects to waters of the U.S., including wetlands, are estimated at ~~6.~~07~~80~~ acres. Of this total, permanent effects to USACE jurisdiction for the Preferred Project and the Design Options total up to ~~0.31~~0.30 acres with the remaining ~~6.49~~5.71 acres subject to temporary effects of which 0.02 acres consists of disturbed wetlands. A majority of these effects occur at the SAR, Twin ~~Warm~~ Creek ~~(Historic)~~, and along the Mission Zanja Channel (Appendix I1). Direct effects to USACE jurisdictional areas are considered adverse under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measure BIO-6 (Secure Clean Water Act Section 404 Permit and Implement All Permit Conditions to Ensure No Net Loss of Functions of Wetlands, Other Waters of the U.S., and Waters of the State) is proposed to mitigate effects to USACE jurisdictional areas.
>
> Additionally, construction of the Preferred Project and the Design Options would result in effects to a total of ~~16.39~~14.7 acres of CDFW jurisdiction with temporary effects occurring to up to ~~15.47~~13.05 acres, of which includes ~~12.33~~12.18 acres of non-vegetated channel. Permanent effects to CDFW jurisdiction would occur on the remaining ~~0.92~~1.65 acres of which include 0.50~~6~~ acres of non-vegetated channel. Based on these combined construction-related impacts, the Project has the potential to result in adverse effects to

state-protected wetlands through direct fill or excavation, and hydrological interruption. Direct effects to CDFW jurisdictional areas are considered a significant impact under CEQA. Mitigation Measure BIO-6 is proposed to mitigate this effect.

Pages 3.7-18 is revised to reflect the modification of the construction footprint to exclude bank improvements from the western-most section of the Mission Zanja Flood Control Channel.

Impacts to USACE and CDFW jurisdictional areas under the Reduced Project Footprint Alternative would occur similar to the Preferred Project and Design Options; however, the jurisdictional areas subject to direct impacts would be reduced as a function of the alternative's intent (i.e., reduce the Project's physical footprint). Based on preliminary engineering, total effects to waters of the U.S., including wetlands are estimated at 5.~~1~~09 acres. Of this total, permanent effects to USACE jurisdiction for the Reduced Project Footprint total up to 0.30~~21~~ acres with the remaining 4.~~89~~79 acres subject to temporary effects.

Under the Reduced Project Footprint, up to ~~12.01~~13.1 total acres of CDFW jurisdiction would be impacted with permanent effects totally up to ~~0.79~~1.65 acres, which includes 0.~~43~~52 acres of non-vegetated channeled. Temporary effects would occur within the remaining 11.45~~1~~ acres, which includes 10.32 acres of non-vegetated channel.

The Reduced Project Footprint Alternative 3 reduces temporary ~~and permanent~~ effects to USACE jurisdictional areas by ~~1.39~~0.92 ~~and 0.10~~ acres~~, respectively~~, compared to the Preferred Project and the Design Options. Compared to Preferred Project, this alternative reduces temporary effects to CDFW jurisdictional areas by ~~4.26~~1.26 acres. Although this alternative reduces the acreage of jurisdictional areas affected, direct effects to jurisdictional areas would still occur and permanent impacts would be the similar. Effects to USACE and CDFW jurisdictional areas are considered adverse under NEPA. This is considered a significant impact under CEQA. Mitigation Measure BIO-6 is proposed to mitigate this effect.

Page 3.7-20, third paragraph is revised to include the RAFSS habitat acreage and changes and the addition of mitigation measure BIO-7.

The construction of the Project under Alternative 2 and the Design Options would result in temporary and permanent effects to the following 12 vegetation communities: disturbed habitat (DH), disturbed wetland (DW), eucalyptus woodland (EW), Flat-top buckwheat scrub (FBS), (non-jurisdictional ditch (NJD), non-native grassland (NNG), non-vegetated channel (NVC), oak woodland (OW), orchards and vineyards (OV), southern cottonwood willow riparian forest (SCWRF), southern willow scrub (SWS), Riversidean alluvial fan sage scrub (RAFSS), and urban/developed (UD). With the exception of SCWRF, RAFSS, and SWS, the remainder of the vegetation communities are not identified as sensitive natural communities by CDFW and effects (temporary and permanent) would not be considered adverse. Of the 8.91 acres of sensitive vegetation communities within the Study Area, approximately ~~3.35~~1.53 acres of SCWRF (Temporary: ~~2.83~~ 0.62 acres, Permanent: 0.~~52~~0.96 acres), 0.05 acre of RAFSS (Temporary: 0.05 acre), and 0.12 acre of SWS (Temporary: 0.10 acres, Permanent: 0.02 acres) would be affected by the physical footprint for the Preferred Project and the Design Options. The physical disturbance to sensitive vegetation communities is considered an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measures BIO-4 and BIO-7 ~~is~~ are proposed to mitigate effects to sensitive communities.

Page 3.7-22, third paragraph is revised to include the RAFSS habitat acreage and updates from project-related permitting.

Compared to Preferred Project and Design Options, Alternative 3 provides no reduction in the acreage of impact to sensitive vegetation communities. ~~Approximately 1.24 acres of SCWRF would be directly affected compared to 3.35 acres under the Preferred Project and Design Options, which is a reduction of 2.11 acres. Approximately 0.12 acres of SWS and 0.1 acre of RAFSS would be affected under both the Preferred Project and the Reduced Project Footprint. Based on these considerations, although the effects are slightly reduced under this alternative, effects related to sensitive vegetation communities would still occur.~~ Similar to the Preferred Project, the direct effect to sensitive vegetation communities is considered an adverse effect under NEPA. Under CEQA, this is considered a significant impact. Mitigation Measures BIO-4 and BIO-7 are proposed to mitigate this effect.

Mitigation Measure BIO-3 is revised per comments received from CFDW.

BIO-3 **MBTA Covered Species.** Prior to habitat removal during the avian breeding season (February 15-August 31), a qualified biologist shall conduct a pre-construction nest survey (in suitable areas) no more than 3 days prior to ground disturbing activities for migratory birds~~prior to construction~~. Pre-construction surveys will be performed year-round between MP 3.3 and 4.0 with the . timing and implementation be done in coordination with the CDFW and USFWS. Should an active nest of any MBTA covered species occur within or adjacent to the project impact area, a 100-foot buffer (300 feet for raptors) shall be established around the nest and no construction shall occur within this area until a qualified biologist determines the nest is no longer active or the young have fledged.

Mitigation Measure BIO-4 Section 3 is updated to include RAFSS habitat.

Prior to construction, SANBAG shall delineate the construction area (including staging and laydown areas) between Mile Posts 3.3 and 4.0 and erect exclusionary construction fencing along the perimeter of the identified construction area to protect adjacent sensitive habitats (SWS, SCWRF, RAFSS, and Santa Ana wooly star).

Mitigation Measure BIO-6 to include the RAFSS habitat to the CDFW Riparian mitigation ratios.

- CDFW Riparian
  - Permanent: 3:1 (SWS, RAFSS, and SCWRF)

Mitigation Measure BIO-7 is added to incorporate Conservation Measure 2 from the Biological Assessment (see Appendix I3) and in response to CFDW's comment regarding consideration of RAFSS.

BIO-7 **Reseeding for Wooly Star.** Seeds from the closest known occurrences of woolly-star plants found both upstream and downstream of Bridge 3.4 shall be collected in the fall prior to construction of the SAR crossing. If construction activities require the loss of the single wooly-star at the SAR crossing, the collected seeds will be broadcast in the temporary impact areas, near the impacted woolly-star plant, after construction activities are complete and soils have been restored to pre-Project contours.

a. Seed collection and broadcast methodologies will be proposed by a qualified seed collector approved by the Service prior to seed collection in a Santa Ana Woolly-Star Management Plan.

b. Seed harvest shall be from a minimum of three plants per collection location, limited to no more than 50 percent of the available seeds from any one woolly-star plant.

c. Seeds shall be held at the appropriate temperature and humidity for the shortest length of time necessary prior to planting.

d. Planting of seeds shall be coordinated to occur prior to the first rains of the season, typically during early fall.

e. If the woolly-star plant known in the Project area is avoided, collected seeds will be hand broadcast near the parental plants where they were collected.

If SANBAG confirms that removal of an individual is required during final design, SANBAG will purchase ILF or mitigation credits from a qualified mitigation program to address the Project's temporal affect on woolly-star during the up to three-year construction period. Credits will be purchased to cover affects to the on-site individual and off-site parental plants.

Section 3.8 Floodplains, Hydrology, and Water Quality

The first sentence in the last paragraph on page 3.8-34 is revised to reflect a reduction in the acreage of the Project's construction limits.

> During construction, the total disturbed area affected by the Build Alternatives and Design Options would be up to 141.6~~3~~ acres over the course of 36 months.

The first sentence in the last paragraph on page 3.8-36 is revised to reflect a reduction in the acreage of the Project's construction limits.

> Implementation of the Build Alternatives and Design Options would include substantial construction activity over an area of up to 137.6~~40~~ acres (depending on alternative and design option) and would include ballast removal, track and bridge installation, drainage improvements, grading, and revegetation..

Section 3.9 Geology, Soils, and Seismicity

Mitigation Measure GEO-1 is revised as follows:

GEO-1 **Prepare Final Geotechnical Report for the Project and Implement Recommended Measures.** A Final Geotechnical Report shall be prepared to verify conditions identified in the Preliminary Geotechnical Evaluation prepared for the Project and to support the refinement of the Project's final design. Facility design for all Project components along the alignment shall comply with the site-specific design recommendations as provided by a licensed geotechnical or civil engineer to be retained by SANBAG. The final geotechnical and/or civil engineering report shall address and make recommendations on the following:

Section 3.10 Hazardous Waste and Materials

No changes or edits are proposed.

Section 3.11 Energy

No changes or edits are proposed.

Section 3.12 Cultural and Historic Resources

The first paragraph on page 3.12-1 is revised as follows to reflect SHPO's concurrence letter received on August 14, 2014:

> This section provides a description of the existing cultural and historical resources within the defined Area of Potential Effect (APE) and describes applicable Federal, State, and local regulations. Potential adverse effects to cultural and historical resource as a result of the Build Alternatives and Design Options are considered in this section and, if necessary, mitigation is proposed in instances where adverse effects are identified. The findings and conclusions presented in this section are based on the Cultural Resources Technical Memorandum (ICF 2014d), which is provided as Appendix M. On August 14, 2014, the State Historic Preservation Officer (SHPO) concurred with both the eligibility determination and the effects analysis as presented in this section (see Appendix M).~~Concurrence of resource eligibility and effects determinations are pending conclusion of ongoing SHPO consultation.~~

Table 3.12-1, under the State Office of Preservation, the date was changed.

> The Office of Historic Preservation implements the policies of the NHPA on a statewide level. The SHPO is an appointed official who implements historic preservation programs within the state's jurisdictions. FTA initiated consultation with SHPO per the requirements of Section 106 for the Project on August 12, 2012 and delegated section 106 coordination to SANBAG. Appendix M contains the correspondence between SHPO, FTA, and SANBAG through ~~July~~ November 2014.

Page 3.12-10 and Table 3.12-4 the date of the SHPO concurrence of eligibility determination was added. The architectural properties eligible for listing on the national register status was updated to reflect.

> 3S. ~~Deemed potentially e~~Eligible for the NRHP based on the current survey
>
> On August 14, 2014, the SHPO concurred with eligibility determinations provided in Table 3.12-4.

Table 3.12-4 is revised to reflect SHPO's concurrence with the architectural properties identified as eligible for listing on the National Register. Footnote 1 is modified as follows:

> [1] ~~Eligibility determinations pending SHPO concurrence~~SHPO concurred with eligibility determinations on August 14, 2014.

Table 3.12-5 is revised to reflect SHPO's concurrence with the eligibility determination provided for archaeological resources in the Project APE. Footnote 2 is modified as follows:

Site	Description	Status [1]
CA-SBR-7168	Gage Canal	6Y. Not eligible for CRHR or NRHP based on previous evaluation by others (1995)
CA-SBR-8092H	Mill Creek Zanja	6Z. Portion of the resource within the ROW found not eligible for CRHR or NRHP based on a lack of integrity and setting as a result of the current survey and evaluation [2]
P-36-11856H	Elephant Orchards Packing House Site	6Y. Not eligible for CRHR or NRHP based on previous evaluation by others (2005)
CA-SBR-5314H	Redlands Chinatown	N/A. Site not detected in the APE; therefore, eligibility criteria could not be applied. Portions of the site outside SANBAG's ROW are assumed to be eligible for the CRHR or NRHP.[2]
CA-SBR-5313H	Redway House	N/A. Site not detected in the APE; therefore, eligibility criteria could not be applied. Portion of the site outside SANBAG's ROW are assumed to be eligible for CRHR or NRHP. [2]

[2] SHPO concurred with eligibility determinations on August 14, 2014.~~Eligibility determinations pending SHPO concurrence.~~

The first paragraph on page 3.12-15 is revised as follows to reflect SHPO's concurrence letter received on August 14, 2014:

> The following section is based on resource eligibility recommendations and effects analysis presented in the technical memorandum prepared for the Project (Appendix M). SHPO ~~C~~concurre~~nce of~~d with the resource eligibility and effects determinations ~~are pending conclusion of ongoing SHPO consultation~~ on August 14, 2014.

Section 3.13 Parklands, Community Services, and Other Public Facilities

Mitigation Measure PCS-1 is revised per the request of the San Bernardino County.

PCS-1 **Coordinate Trail Planning with Local Jurisdictions.** SANBAG will implement the following activities to minimize Project-related conflicts with proposed trails:

- Santa Ana River Trail - SANBAG shall coordinate final design and construction of Bridge 3.4 with the San Bernardino County Department of Public Works, Transportation Design Division, and Parks and Recreation Department to integrate the trail as contemplated in the SANBAG's Non-Motorized Transportation Plan (2011) (NMTP), so as to maintain it's planned future continuity along the Santa Ana River. If the trail is constructed and operational in advance of the bridge structure, SANBAG will maintain trail access during the course of construction, to the extent feasible. In instances, where trail closures are required the construction contractor will be required to minimize the duration of the closure and support the County with any noticing, outreach, or implementation of temporary detours.
- Orange Blossom Trail - SANBAG shall update the NMTP (2011) as part of it's next cycle update, to include the realignment of the trail segment of the Orange Blossom Trail that is currently shown as being located within the railroad right-of-way, so as to not conflict with the proposed project.

SANBAG will coordinate with the City of Redlands and the County Flood Control District to determine available rights-of-way for the placement of the trail and, if necessary, realign the trail to take advantage of connections via existing roadway and other public right-of-ways.

Section 3.14 Economic and Fiscal Impacts

No changes or edits are proposed.

Section 3.15 Safety and Security

Mitigation Measure SS-1 is revised per the request of the City of Redlands.

SS-1 Develop Safety and Security Management Plan. Prior to construction, SANBAG shall coordinate and consult with local safety and crime prevention authorities to develop a Safety and Security Management Plan (SSMP) for the track alignment, bridges, parking facilities, and station areas. The SSMP shall include a station surveillance element to be developed in coordination with the local jurisdiction and private properties owners, as applicable. If a non-FRA compliant DMU vehicle type is selected for the Project, the SSMP shall include a plan element that includes appropriate levels of safety as may be necessary to facilitate a shared-use operation.

Section 3.16 Section 4(F) Resources

Footnote 3 in Tables 3.16-1 and 3.16-2 is revised as follows:

[3] Only if sound barriers are constructed per Mitigation Measures NV-4. With the adoption of the MOU for the implementation of quiet zones, sound barriers in the vicinity of the Section 4(f) resource would not be constructed under the Preferred Project Alternative.

Page 3.16-10 through 11, the last sentence was updated to state the following.

Prior to preparation and release of this EIS/EIR, a formal response concerning the contents of the notification letter and potential Section 4(f) use of Meadowbrook Park and Meadowbrook Fields was not received by SANBAG. ~~Coordination with the City of San Bernardino remains ongoing in parallel with the environmental review process.~~

The last sentence in the second paragraph on page 3.16-14 and the last sentence in the next to last paragraph on the same page are revised as follows to reflect SANBAG's coordination with the Redlands Unified School District.

SANBAG submitted a response letter following the release of the Draft EIS/EIR on September 24, 2014 indicating that SANBAG and the City of Redlands would be entering into a MOU to facilitate the implementation of quiet zones. The MOU was adopted on February 4, 2014. ~~Coordination with RUSD remains ongoing in parallel with the environmental review process.~~

Figure 3.16-3 is revised to reflect a change in the construction footprint along the Mission Zanja Flood Control Channel.

The last sentence in the third paragraph on page 3.16-18 is revised as follows to reflect SANBAG's coordination with the San Bernardino County Parks and Recreation Department.

SANBAG submitted an additional letter following the release of the Draft EIS/EIR on September 24, 2014. The County provided a concurrence letter on November 6, 2014. ~~On November 6, 2014, the County submitted a reply indicating their concurrence with the use determinations provided in the response letter and Draft EIS/EIR. Coordination with the San Bernardino County Parks and Recreation Department remains ongoing in parallel with the environmental review process~~.

The last sentence in the fifth paragraph on page 3.16-21 is revised as follows to reflect SANBAG's coordination with RUSD.

SANBAG submitted a response letter following the release of the Draft EIS/EIR on September 24, 2014 indicating that SANBAG and the City of Redlands would be entering into a MOU to facilitate the implementation of quiet zones. The MOU was adopted on February 4, 2014~~. Coordination with RUSD remains ongoing in parallel with the environmental review process.~~

The last sentence in the fourth paragraph on page 3.16-25 is revised as follows to reflect SANBAG's coordination with the City of Redlands.

SANBAG submitted a response letter following the release of the Draft EIS/EIR on September 24, 2014 indicating that SANBAG and the City of Redlands would be entering into a MOU to facilitate the implementation of quiet zones. The MOU was adopted on February 4, 2014. ~~Coordination with the City of Redlands remains ongoing in parallel with the environmental review process.~~

The last paragraph on page 3.16-25 is revised as follows to reflect SANBAG's coordination with the City of Redlands.

With the implementation of mitigation measures, the impacts would be de minimis. The City of Redlands concurred with this determination in February 2015 (see Appendix O).

The last paragraph on page 3.16-25 is revised to reflect SHPO's concurrence with the findings of effect under Section 106 as presented in Section 3.12.

Section 3.12, Historic and Cultural Resources, identifies the cultural and historic properties within the Project APE. This section identifies the historic resources that occur within APE that qualify for protection under Section 4(f)~~, pending concurrence from SHPO~~, and have a potential to result in a Section 4(f) use (see Table 3.16-2). Based on those historic resources identified in Table 3.16-2, this section evaluates the potential for the Build Alternatives and Design Options to result in a direct use, temporary occupancy, or constructive use under Section 4(f).

The last sentence in the fourth paragraph on page 3.16-28 is revised as follows to reflect SHPO's concurrence with the findings of effect under Section 106 as presented in Section 3.12.

SHPO concurred with this determination with the implementation of Mitigation Measure CUL-1 on August 14, 2014 (see Appendix M). ~~This finding is subject to the completion of consultation with SHPO in accordance with Section 106 of the NHPA (see Section 3.12).~~

The last sentence in the seventh paragraph on page 3.16-29 is revised as follows to reflect SHPO's concurrence with the findings of effect under Section 106 as presented in Section 3.12.

SHPO concurred with this determination with the implementation of Mitigation Measure CUL-1 on August 14, 2014 (see Appendix M). ~~This finding is subject to the completion of consultation with SHPO in accordance with Section 106 of the NHPA (see Section 3.12).~~

The last sentence in the first paragraph on page 3.16-31 is revised as follows to reflect SHPO's concurrence with the findings of effect under Section 106 as presented in Section 3.12.

SHPO concurred with this determination with the implementation of Mitigation Measure NV-3 on August 14, 2014 (see Appendix M). However, if quiet zones are not implemented,~~T~~ this finding remains ~~is~~ subject to further ~~the completion of~~ consultation with SHPO~~ in accordance with Section 106 of the NHPA (see Section 3.12).~~

The last sentence in the second paragraph on page 3.16-33 is revised as follows to reflect SHPO's concurrence with the findings of effect under Section 106 as presented in Section 3.12.

SHPO concurred with this determination with the implementation of Mitigation Measure NV-3 on August 14, 2014 (see Appendix M). However, if quiet zones are not implemented, ~~T~~ this finding remains subject to ~~written concurrence from~~ further consultation with SHPO.

The last sentence in the fifth paragraph on page 3.16-34 is revised as follows to reflect SHPO's concurrence with the findings of effect under Section 106 as presented in Section 3.12.

SHPO concurred with this determination with the implementation of Mitigation Measure NV-3 on August 14, 2014 (see Appendix M). However, if quiet zones are not implemented, ~~T~~this finding ~~is~~ remains subject to further ~~to the completion of~~ consultation with SHPO~~ in accordance with Section 106 of the NHPA (see Section 3.12).~~

Pages 3.16-33 and 3.16-34, Redlands Lawn bowling, first and fourth paragraphs in this section are revised to reference the correct figure in Section 3.12:

The Redlands Lawn Bowling Club is located at the southeast end of Sylvan Park in Redlands. It consists of a large grass green for lawn bowling and three structures set at the north end of the lawn as described in Section 3.12. Grass lawn, mature trees, and mature shrubs surround the perimeter of the bowling green (see Figure 3.12-7~~5~~). Section 3.12 provides additional description on this historic property.

Temporary Occupancy. Similar to the discussion for Sylvan Park, improvements along the southern border of the Lawn Bowl Alley would be required to facilitate construction of the Built Alternatives (see Figure 3.12-7~~5~~).

The last sentence in the third paragraph on page 3.16-35 is revised as follows to reflect SHPO's concurrence with the findings of effect under Section 106 as presented in Section 3.12.

~~SANBAG and FTA currently remain in consultation with SHPO per the requirements of Section 106 of the NHPA and FTA's procedures for implementing NEPA.~~ On August 14, 2014, SHPO concurred that the Project would have no adverse effect to historic properties. SHPO also concurred that the segment of the Mill Creek Zanja within the APE is not eligible to the NRHP due to lack of integrity and setting. SHPO concurred with the NRHP-eligibility determinations for the Redlands Lawn Bowling Alley, the Second Baptist Church, and Victoria Elementary School. SHPO concurred with the Project's findings of effect as presented in Section 3.12.

The last sentence in the third paragraph on page 3.16-35 is revised as follows to reflect SHPO's concurrence with the findings of effect under Section 106 as presented in Section 3.12.

Additionally, SANBAG ~~is currently in~~and FTA consulted~~ation~~ with SHPO for cultural and historic properties that would be subject to potential use.

Section 3.17 Environmental Justice

Page 3.17-19 and 3.17-26 are revised to reflect the inclusion of Mitigation Measure NV-7.

As part of the mitigation measures proposed in Section 3.6, Noise and Vibration, Mitigation Measures NV-3, NV-4 (Construct Sound Barriers), NV-5 (Wayside Rail Lubrication), NV-6 (Use Ballast Mats, Resiliently Supported Ties, or Measures of Comparable Effectiveness on Portions of the Rail near Sensitive Receivers), and NV-7 (Provide Building Noise Insulation to Severe- and Moderate-Impact Residences.

Page 3.17-26 is revised to reflect the completion of additional public meetings during the public comment review period for the Draft EIS/EIR.

In conjunction with the release of the draft EIS/EIR for public review, SANBAG ~~will hold~~held public meetings concurrent with the ~~45-day~~ public review period. The public meetings ~~will~~ were ~~be~~ held on:

1. September 4, 2014, 5:00–7:00 PM, at the ESRI Café, 380 New York Street, Redlands, CA 92373; and
2. September 9, 2014, 5:00–7:00 PM, at the Hotel, 285 East Hospitality Lane, San Bernardino, CA 92408

In addition to receiving written comments on the draft EIS/EIR, SANBAG ~~and FTA will be~~ had a court reporter in attendance to transcribe ~~encouraging~~ verbal comments during the public meeting. ~~on the content and findings of the draft EIS/EIR~~. Spanish and American sign language (ASL) translators were also in attendance. Responses to the comments provided are contained in Appendix P of the Final EIS/EIR.

7.5.7 Chapter 4 - Cumulative Effects

The fourth paragraph on page 4-13 is revised to include the new noise mitigation measure.

These adverse effects would be cumulatively considerable under NEPA. Under CEQA, these impacts are considered cumulatively significant. Mitigation Measures NV-3 (Establish Quiet Zones), NV-4 (Construct Sound Barriers), NV-5 (Wayside Rail Lubrication), ~~and~~ NV-6 (Use Ballast Mats, Resiliently Supported Ties, or Measures of Comparable Effectiveness on Portions of the Rail near Sensitive Receivers), and NV-7 (Provide Building Noise Insulation to Sever- and Moderate-Impact Residences are proposed to minimize adverse effects to land use compatibility.

The first sentence in the third paragraph on page 4-20 is revised as follows to reflect USEPA's re-designation of the SCAB as "maintenance" for PM-10.

The SCAB is currently in extreme nonattainment for O_3, ~~serious nonattainment~~ maintenance for particulate matter less than 10 microns (PM_{10}), nonattainment for particulate matter less than 2.5 microns ($PM_{2.5}$), serious maintenance for CO under NAAQS, and nonattainment for O_3, $PM_{10,}$ $PM_{2.5}$, and NO_2 under CAAQS.

The second sentence in the third paragraph on page 4-20 is revised as follows to reflect USEPA's re-designation of the SCAB as "maintenance" for PM-10.

The Project is listed in a conforming RTP and FTIP and is, therefore, consistent with the AQMP and SIP. The SCAB is currently classified as extreme nonattainment for ozone, ~~serious nonattainment~~ maintenance for PM_{10}, nonattainment for $PM_{2.5}$, serious maintenance for CO under NAAQS, and nonattainment for ozone, PM_{10}, $PM_{2.5}$, and NO_2 under CAAQS.

The second to last sentence in the fourth paragraph on page 4-25 is revised to reference Mitigation Measure BIO-7.

However, through the implementation of Mitigation Measures BIO-1 (Pre-Construction Survey - Conduct Preconstruction Survey for Special Status Plants and Wildlife and, if Found, Implement Avoidance and Compensation Measures), BIO-2 (LBV), ~~and~~ BIO-4 (Protection of Sensitive Plants and Habitats, and BIO-7 (Re-seeding for Wooly Star), no net loss of these resources would occur. Following the application of the prescribed mitigation, cumulative impacts would not be adverse under NEPA and less than significant under CEQA.

The last paragraph on page 4-25 is revised to include the Riversidean alluvial fan sage scrub (RAFSS) as a sensitive habitat and the revisions to mitigation measure BIO-7.

Implementation of the Project would result in effects to sensitive vegetation communities such as Southern Willow Scrub (SWS), Riversidean alluvial fan sage scrub (RAFSS), and Southern Cottonwood Willow Riparian Forest (SCWRF) as a result of bridge replacements, track improvements, and bank reinforcement within the Mission Zanja Channel. Implementation of other cumulative projects, such as the SAR Trial, I-10 HOV, and SBCFCD's Long-Term Maintenance Program, are anticipated to result in similar effects to sensitive vegetation communities (e.g., SWS, RAFSS, and SCWRF). Absent mitigation, a loss to valuable habitat and associated sensitive vegetation communities from Project construction and other cumulative projects would be considered an adverse effect under NEPA. Under CEQA, this impact would be cumulatively significant. However, through the implementation of Mitigation Measures BIO-1 (Pre-Construction Survey - Conduct Preconstruction Survey for Special Status Plants and Wildlife and, if Found, Implement Avoidance and Compensation Measures), BIO-2 (LBV), ~~and~~ BIO-4 (Protection of Sensitive Plants and Habitats, and BIO-7 (Reseeding for Wooly Star), no net loss of these resources would occur.

The last and third to the last sentences in the first paragraph on page 4-26 is revised as follows to reference Mitigation Measure BIO-7.

Implementation of the Project would result in a direct effect to one federally endangered Santa Ana River woolly star individual located immediately south of the existing Bridge 3.4 located in the SAR. The plant is a single individual that is not part of a larger population in the Study Area, and is located approximately 0.7 miles downstream from the closest, locally established population. Although the direct effect to the individual Santa Ana River woolly star may be unavoidable, it would not be considered a cumulative adverse effect to the species' population as a whole with the application of Mitigation Measures BIO-1, ~~and~~ BIO-4, and BIO-7. Given that other projects considered in the cumulative analysis would be required to mitigate for direct and indirect impacts to the Santa Ana River woolly star population, the cumulative effect of the Project would not be adverse under NEPA. Under CEQA, this significant impact would not be cumulatively considerable with implementation of Mitigation Measures BIO-1, ~~and~~ BIO-4, and BIO-7.

The first sentence of the second paragraph on page 4-26 is revised to include RAFSS as a sensitive habitat for zoological communities.

> Implementation of the Project would result in direct effects to SWS, RAFSS, and SCWRF, which are habitats that support the federally endangered LBV and other sensitive avian species such as yellow warbler and those protected under the MBTA.

The second sentence of the last paragraph on page 4-26 is revised based on updates during the initial permitting process.

> Total permanent impacts to USACE jurisdictional areas are estimated at up to 0.~~39~~41 acres (Preferred Project) and ~~0.92~~1.34 acres for CDFW jurisdiction.

7.5.8 Chapter 5 - Other Statutory Considerations

The second to last sentence of the first paragraph on page 5-18 is revised based on updates during the initial permitting process.

> This reduction would reduce temporary and permanent impacts to USACE and CDFG jurisdictional areas by ~~1.55~~0.29 and ~~0.29~~1.20 acres respectively.

7.5.9 Chapter 6 - Public Outreach and Coordination

The last sentence in the first paragraphs on page 6-5 is revised as follows to reflect ongoing consultation with SHPO and its concurrence with the eligibility determinations and findings of effect.

> On April 24, 2013, SHPO concurred with the revised APE and on June 4, 2013, SHPO approved the testing plan for archaeological resources within Redlands Chinatown. On August 14, 2014, SHPO concurred that the Project would have no adverse effect to the following historic properties:
>
> ~~SANBAG is currently in consultation with SHPO for the following historic and archaeological properties:~~
>
> - Redlands Santa Fe Historic District and contributing properties, including the Redlands Santa Fe Depot;
> - Second Baptist Church;
> - Victoria ~~elementary~~ Elementary School; and
> - Redlands Lawn Bowling Club.
> - ~~Mill Creek Zanja; and~~
> - ~~Redlands Chinatown.~~

The following paragraph is added to page 6-6 to reflected SHPO's concurrence letter, dated August 14, 2014.

> The Gage Canal and Elephants Orchards Packing House have been previously determined not to be eligible for the NRHP. On August 14, 2014, SHPO concurred that the segment of the Mill Creek Zanja within the APE is not eligible to the NRHP due to lack of integrity and setting. SHPO also concurred that portions of the Redway House and Redlands Chinatown within the Project APE were not eligible for the NRHP.

SANBAG provided a preliminary draft of the Cultural Resources TM to SHPO for review and comment on August 20, 2013. SHPO provided comments on the preliminary draft Cultural Resources TM on October 9, 2013. On July 28, 2014, SANBAG provided a response letter and updated Cultural Resources TM to SHPO. The Cultural Resources TM (Revised) provided in Appendix M of this EIS/EIR was subsequently updated in response to SHPO's concurrence letter on August 14, 2014 and reflects minor updates ~~in response to~~requested ~~by SHPO's comments~~.

The third paragraph on page 6-7 is revised remove the Orange Blossom Trail and San Bernardino Gold Club as 4(f) resources.

In accordance with 23 CFR – Part 774, FTA and SANBAG are required to coordinate with entities having jurisdiction or ownership over existing or planned park and recreation amenities, including trails. On August 1, 2012, letters were mailed to provide notice that improvements associated with the Project would occur in close proximity to resources owned and/or managed by the following entities:

- City of Redlands: East Valley Corridor Multi-Purpose Trail, Jennie Davis Park, Orange Blossom Trail, and Sylvan Park
- City of San Bernardino: Meadowbrook Fields and Meadowbrook Park
- ~~Redlands Conservancy: Orange Blossom Trail~~
- Redlands Unified School District: Victoria Elementary School (Victoria Park), Franklin Elementary School, and Orangewood High School
- San Bernardino County Parks and Recreation Department: Santa Ana River Trail
- ~~San Bernardino Golf Club: San Bernardino Public Golf Course~~

The last sentence of the fourth paragraph on page 6-6 is revised to identify additional 4(f) correspondence that occurred during the public review period for the draft EIS/EIR.

Coordination letters were also sent out on September 24, 2014 during the Draft EIS/EIR public review period. The San Bernardino County Parks and Recreation Department provided a concurrence letter on November 6, 2014. A copy of the Section 4(f) notification letters are provided in Appendix O.

An additional statement was added to the fifth paragraph on page 6-7 to reflect consultation with USFWS under Section 7 of the ESA.

On May 13, 2014, USFWS requested and was granted a 60-day extension until July 21, 2014. An additional request for a subsequent 30-day extension to August 21, 2014 was filed on July 23, 2014.

Due to overlapping Federal and State listings for both LBV and Wooly star, coordination on the mitigation for these species was conducted with the California Department of Fish and Wildlife (CDFW) in December 2014 and January 2015. USFWS issued the final BO in February 2015, which is included as Appendix I6.

On Page 6-7 additional information was updated to show the community outreach meetings that were conducted.

During the initial planning phase of the Project, including the initial Alternatives Analysis (AA) phase and the subsequent Strategic Plan phases, public involvement activities were primarily focused on public meetings to engage the public at key milestones. During the AA phase of the project, one ~~two~~ public meeting was ~~were~~ held on September 13, 2010 at the City of Redlands - ESRI Café, to present alternative transit modes (commuter rail, light rail, diesel multiple units and bus rapid transit) being considered for the Project, and transit-oriented land use development scenarios. A second round of informational meetings was conducted on May 11, 2011 at the City of Redlands - ESRI Café and May 12, 2011 at the Santa Fe Depot in San Bernardino.

Pages 6-9 and 6-10 were revised to incorporate Section 6.6.5 Notice of Availability as follows:

6.6.5 Notice of Availability

The Notice of Availability (NOA) of the Draft EIS/EIR was published in the Federal Register on August 15, 2014. In addition, on August 6, 2014, the NOA for the Project's Draft EIS/EIR was filed with the San Bernardino County Clerk's Office, State Clearinghouse, and sent to the mailing list (i.e., government agencies, interested parties, and property owners and mailing addresses for all parcels adjacent to the nine-mile stretch of the Project). The NOA was noticed via an email blast, SANBAG's Home Page, and in the San Bernardino Sun and the Redlands Daily Facts. Copies of the Draft EIS/EIR, including the NOA, were also mailed to each of the Participating and Cooperating Agencies in the NEPA process (which also included Responsible Agencies as defined by CEQA). The public review period for the Draft EIS/EIR concluded on September 29, 2014.

A copy of the Draft EIS/EIR was available for public review at the following locations:

- SANBAG – 1170 West 3rd Street, 2nd Floor, San Bernardino, CA
- City of San Bernardino – 300 North D Street, 3rd Floor, San Bernardino, CA
- City of Redlands, Development Services Department, Planning Division – 210 East Citrus Avenue, Redlands, CA
- Norman F. Feldheym Public Library – 555 West 6th Street, San Bernardino, CA
- University of Redlands Library – 1249 E. Colton Avenue, Redlands, CA.

An electronic version of the document was also made available on http://www.sanbag.ca.gov.

The second and third paragraphs on page 6-11 were revised as follows to document the public meetings held during the draft EIS/EIR review period.

In conjunction with the release of the Draft EIS/EIR for public review, SANBAG ~~will hold~~held additional public meetings concurrent with the ~~45-day~~ public review period. The public meetings ~~will be~~were held on:

1. September 4, 2014, 5:00–7:00 PM, at the ESRI Café, 380 New York Street, Redlands, CA 92373; and
2. September 9, 2014, 5:00–7:00 PM, at the Hotel, 285 East Hospitality Lane, San Bernardino, CA 92408

In addition to receiving written comments on the Draft EIS/EIR, SANBAG ~~and FTA will be encouraging~~ had a report reporting in attendance to transcribe verbal comments ~~during the public meeting on the content and findings of~~on the Draft EIS/EIR. Both a Spanish and ASL interpreter were also in attendance at each of the meetings.

The first paragraph on page 6-12 was revised to include the addition of Appendix A5, Public Notices.

> A list of newspapers and advertisement publication dates is provided in Table 6-2. A representative sampling of the advertisements and notifications is present as Appendix A5, Public Notices.

The last sentence in the first paragraph on page 6-12 was revised as follows.

> Based on the combined outreach efforts through the NOP and NOI comment periods, the outreach team ~~has~~ developed a targeted list of approximately 200 agency/key stakeholder contacts to receive a mailing of the Draft EIS/EIR to inform them of its availability along with an opportunity to provide comments during the ~~45-day~~ public review period.

Page 6-14 was revised to incorporate Section 6.7 Accommodations for Minority, Low-Income, and Persons with Disabilities as follows:

Display advertisements were advertised in Spanish and translations were provided at the scoping meetings. Both a Spanish and American Sign Language (ASL) interpreter were in attendance at each of the meetings.

7.5.10 Chapter 7 – Summary of Responses to Comments on the Draft EIS/EIR (New)

Chapter 7 of the Final EIS/EIR contains a list of the comments received on the Draft EIS/EIR, a summary of the comments received, and master responses to commonly raised topics by individual commenters. This chapter is new and was not contained in the Draft EIS/EIR.

7.5.11 Chapter 8 – References

Chapter 7 of the Draft EIS/EIR was moved to Chapter 8 for the integration of Chapter 7, Responses to Comments on the Draft EIS/EIR.

The following reference was added to Figure 2-10 (revised) to support the discussion on page 2-61.

> Omnitrans 2014. Omnitrans 2015 - 2020 Short Range Transit Plan. 2014

7.5.12 Chapter 9 – List of Preparers

Chapter 8 of the Draft EIS/EIR was moved to Chapter 9 for the integration of Chapter 7, Responses to Comments on the Draft EIS/EIR.

7.5.13 Chapter 10 – List of Acronyms and Abbreviations

Chapter 9 of the Draft EIS/EIR was moved to Chapter 10 to allow for the integration Chapter 7, Responses to Comments on the Draft EIS/EIR.

7.5.14 Chapter 11 – Index

Chapter 10 of the Draft EIS/EIR was moved to Chapter 11 to allow for the integration of Chapter 7, Responses to Comments on the Draft EIS/EIR.

7.5.15 Appendices

Appendix A3 was updated to include the public notice of FTA's consideration of the combined Final EIS and ROD.

Appendix A5 was added to include the public notices posted for the proposed project.

Appendix D2 was revised to reflect the current land acquisitions, displacements, and relocations required.

Appendix G1 was revised to reflect the SCAG TCWG's concurrence with the analysis and determination that the Project is not a project of air quality concern.

Appendix H and H1 were revised to add three additional Category 2 for Receiver #54.

Appendix I1 was revised to incorporate comments from the California Department of Fish and Wildlife.

Appendix I4 was modified to include the draft biological opinion (BO) forwarded from U. S. Fish and Wildlife Service on December 18, 2014.

Appendix I5 was added to provide an updated version of SANBAG's proposed mitigation monitoring plan (MMP).

Appendix I6 was added to include the USFWS Final BO.

Appendix M was revised to incorporate comments from the State Historic Preservation Officer (SHPO) and its concurrence with the eligibility determinations and findings of effect for the proposed undertaking.

Appendix O was revised to incorporate additional correspondence with the City of Redlands, San Bernardino County, and the Redlands Unified School District.

A new Appendix P was added that includes the Comment Letters on the Draft EIS/EIR, responses to those comments, and minor changes and edits to the Draft EIS/EIR.

A new Appendix Q was added that includes the Mitigation Monitoring and Reporting Program for the Project.

A new Appendix R was added that includes FTA's Record of Decision.

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8.1 Organizations and Persons Consulted

The following persons or organizations were contacted in the preparation of this document.

Charlene Drake
Base and Birge Engineering
600 North Mountain Avenue, Suite B-204
Upland, CA 91786
Chris Boatman, Associate Planner
City of Redlands
Personal communication, September 11, 2012

Antonette Llamas, Facilities Technician
Redlands Unified School District
Personal communication, July 19, 2012 and August 14, 2012

Miles Wagner, Emergency Service Officer
San Bernardino Office of Emergency Services
Personal conversation, July 10, 2012

City of Redlands
Municipal Utilities and Engineering
Donald Young, Engineering Manager
Coordination Meeting, February 1, 2012

City of Redlands
Development Services Department, Planning Division
Robert Dalquest, Assistant Development Services Director
Personal conversation, April 15, 2014

Robert G. Eisenbeisz, P.E.
Interim Director of Public Works
City of San Bernardino
Public Works Department
Coordination Meeting, February 1, 2012

Sergio Licon
Utilities Engineer
Rail Crossings Engineering Section
California Public Utilities Commission
Coordination Meeting, November 1 and 15, 2011

Kathleen Forrest
Historian, Review & Compliance
Office of Historic Preservation
Coordination Meeting, August 15, 2012

Michele Derry
Senior Planner
County of San Bernardino
Department of Public Works
Environmental Management Division
Coordination Meeting, March 26, 2013

Shannon Pankratz
Regulatory Division
U.S. Army Corps of Engineers
Coordination Meeting, June 13, 2013
William O'Neill
Fish & Wildlife Biologist
U.S. Fish and Wildlife Service - Palm Springs Office
Field Meeting on, July 15, 2013

Heather Dyer
Fish & Wildlife Biologist
U.S. Fish and Wildlife Service - Palm Springs
Field Meeting on, July 15, 2013

Kimberly Freeburn Marquez
Environmental Scientist
California Department of Fish and Wildlife
Inland Deserts Region
Field Meeting on, July 15, 2013

Marty Mish
Flood Control Permit Coordinator
Department of Public Works
County of San Bernardino
Email Correspondence, June 18, 2013

Kai Palenscar, Ph. D.
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service - Palm Springs Office
Email Correspondence, Multiple dates

Tjarb Thaipejr, P. E.
City Manager / Public Works Director
City of Loma Linda
Meeting on November 24, 2014

CHAPTER 9.0 LIST OF PREPARERS

NEPA Lead Agency

U.S. Department of Transportation
Federal Transit Administration, Region IX (FTA)
201 Mission Street, Suite 1650
San Francisco, CA 94105

Raymond Sukys, Director of Planning and Program Development
Dominique Paukowits, Transportation Program Specialist
Hymie Luden, Transportation Program Specialist
Mary Nguyen, Environmental Protection Specialist

CEQA Lead Agency

San Bernardino Associated Governments (SANBAG)
1170 W. Third Street, 2nd Floor
San Bernardino, CA 92410-1715

Mitchell A. Alderman, Director of Transit & Rail Programs
Justin Fornelli, Chief of Transit and Rail Programs
Casey Daley, Transportation Planning Analyst

Lead Environmental Consultant

HDR Engineering, Inc.
2280 Market Street, Suite 100
Riverside, CA 92501-2110

Rob Klovsky, Project Director
Michael Boraks, Engineering Project Manager
Patrick O'Neill, Environmental Project Manager
Tim Gnibus, Lead QA/QC Reviewer
Clint Meyer, Deputy Project Manager
Mario Osorio, Environmental Planner
Sharyn Del Rosario, Environmental Planner
Ingrid Eich, Senior Biologist
Allegra Simmons, Associate Biologist
Kelly Kading, Environmental Scientist
Stephanie Tsai, Environmental Planner
Lori Arena, Environmental Analyst
Anders Burvall, GIS Analyst

Engineering Support

Michael Shaver, Senior Engineer
Mark Hemphill, Director- Railway Consulting Services
Joe Molinaro, Project Engineer Rail
Charles Christoplis, Engineer
Gerard Reminiskey, Engineer
Leonardo Hernandez, Engineer

Jessica Kessinger, Highway Engineer
Eric D. Chase, Senior Engineering Geologist
Gary R. Goldman, Geotechnical Section Manager
Mike Williams, Right-of-Way Agent

Subconsultants

ICF International, Inc. – Cultural Resources, Air Quality, and Noise and Vibration

Mike Davis, Senior Technical Analyst – Air Quality
Tony DeJulio, Project Manager
Debra Einstein Leight, Lead Planner
Keith Cooper, Technical Analyst – Air Quality
Shannon Hatcher, Technical Analyst – Air Quality
Matthew McFalls, Environmental Planner – Air Quality
Karen Crawford, Senior Archaeologist
Mark Robinson, Senior Archaeologist
Cate M. Wood, Archaeologist
Karolina Chmiel, Archaeologist
Rick Starzak, Senior Architectural Historian
Carson Anderson, Architectural Historian
Daniel Paul, Architectural Historian
Elizabeth Hilton, Architectural Historian
Paul Shattuck, Architectural Historian
Peter Moruzzi, Architectural Historian
Mike Davis, Project Director
Mike Greene, Senior Technical Analyst – Noise
Peter Hardie, Environmental Planner – Noise

Westbound Communications – Public Outreach

Robert Chevez, Account Supervisor
Angela Meluski, Senior Account Executive
Amanda Marzullo

CHAPTER 10.0 LIST OF ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
4F	Section 4(f) Evaluation
AA	Alternatives Analysis
AASHTO	American Association of State Highway and Transportation Officials
AB	Assembly Bill
ACB	articulated concrete block
ACM	Asbestos Containing Material
ADA	Americans with Disabilities Act
ADR	Land Acquisitions, Displacements, and Relocations
AEP	annual exceedance probability
AFY	acre feet per year
AG	Agricultural Resources
Alquist-Priolo Act	Alquist-Priolo Special Studies Zone Act
ALUCP	Airport Land Use Comprehensive Plan
AMSL	above mean sea level
AP	Alquist-Priolo
APE	Area of potential effect
APN	Assessor's parcel number
AQ	Air Quality
AQMP	Air Quality Management Plan
AR	Airport Safety Review Area
AREMA	American Railway Engineering and Maintenance-of-Way Association
ASB	California Contractor License
ASL	American Sign Language
ASPBR	San Bernardino County Paleontological Background Report
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
AT&SF	Atchison Topeka & Santa Fe Railroad or "Redlands Spur"
B	beneficial impact
BACT	Best Available Control Technology
BCC	Birds of Conservation Concern
BIO	Biology and Wetland Resources
BMPs	Best Management Practices
BNSF	Burlington Northern and Santa Fe Railway
Bridge 1.1	Historic Warm Creek
Bridge 2.2	Twin Creek
Bridge 3.2	Santa Ana River
Bridge 3.9	Gage Canal
Bridge 5.78	Bryn Mawr Bridge
Bridge 9.4	Mill Zanja Creek
BRT	Rapid Bus Transit
BTR	Biological Technical Report
BUOW	Burrowing Owl
CAA	Clean Air Act

CAAQS	California Ambient Air Quality Standards
CAL ARP	California Accidental Release Prevention Program
CAL EPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CERFA	Community Environmental Response Facilitation Act of 1992
CFP	California Department of Fish and Game Fully Protected
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey
CH_4	methane
CIDH	cast-in-drilled hole
CIP	cast-in-place
CISS	cast-in-steel shell
CM	Cumulative Impacts
CMAQ	Congestion Management and Act Quality Improvement Program
CMF	Central Maintenance Facility
CMP	Congestion Management Program
CN	Community & Neighborhood Impacts
CNDDB	California Natural Diversity Database
CNEL or L_{dn}	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
COA	Comprehensive Operational Analysis
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CP	Cajon Pass
CPUC	California Public Utilities Commission
CRHR	California Register of Historic Resources
CSRR	California Southern Railroad
CTC	California Transportation Commission
CTR	California Toxics Rule
CTSGP	California Transit Security Grant Program
CUL	Cultural & Historic Resources
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
cy	cubic yards
dB	decibel
dBA	A-weighted sound pressure level

DH	Disturbed Habitat
DNL	day-night average sound level
DOC	Department of Conservation
DODS	Department of Dam Safety
DOT	Department of Transportation
DMU	diesel multiple unit
DPM	diesel particulate matter
DRSP	Downtown Redlands Specific Plan
DSBPRP	Downtown San Bernardino Passenger Rail Project
DTSC	Department of Toxic Substances Control
EA	Environmental Assessment
EDD	Employment Development Department
EF	Economic & Fiscal Impacts
EG	egress easement
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EJ	Environmental Justice
EMD	Emergency Medical Dispatch
EMF	Eastern Maintenance Facility
EMFAC	Emission FACtors
EN	Energy
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESAU	Environmental Site Assessment Update
EVA	emergency vehicle access easement
EVCSP	East Valley Corridor Specific Plan
EVWD	East Valley Water District
FAA	Federal Aviation Administration
FAR	floor area ratio
FE	Federally Endangered
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FHSZ	Fire Hazard Severity Zone
FHWA	Federal Highway Administration
FIA	Federal Insurance Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FIRMs	Flood Insurance Rate Maps
FMMP	Farmland Mapping and Monitoring Program
FPPA	Farmland Protection Policy Act
FRA	Federal Railroad Administration
FS	Fire Safety
FSZ	Farmland Security Zone
FT	Federally Threatened
FTA	Federal Transit Administration
FTIP	Federal Transportation Improvement Program
GCOR	General Code of Operating Rules
GEO	Geology & Soils
GHGs	greenhouse gases
gpd	gallons per day

GPR	ground-penetrating radar
Gr	Grangeville fine sandy loam
Gs	Grangeville fine sandy loam, saline-alkali
HA	Hydrologic Area
HaC	Hanford coarse sandy loam, 2-9 percent slopes
HAP	hazardous air pollutants
HAZ	Hazardous Waste & Materials
HbA	Hanford sandy loam, 0-2 percent slopes
HCM	Highway Capacity Manual
HCP	Habitat Conservation Plan
HHS	Department of Health and Human Services
HMMP	Hazardous Materials Management Plan
HOV	High Occupancy Vehicle
HQTA	High Quality Transit Area
HRA	Health Risk Assessment
HREC	Historic Recognized Environmental Concern
HSA	Hydrologic Sub Areas
HVAC	heating, ventilation, and air-conditioning
HWCL	Hazardous Waste Control Law
HWP	Hazardous Waste Permitted-facility
HWT	Hazardous Waste Transporter
HYD	Floodplain and Hydrology
I-10	Interstate 10
IAC	interagency consultation
ICBO	International Conference of Building Officials
ICCTA	Interstate Commerce Commission Termination Act
IE	Industrial Extractive
IEMF	Inland Empire Maintenance Facility
IEOC	Inland Empire-Orange County
IG	ingress easement
IL	Industrial Light
ISO	California Independent System Operator
ISTEA	Intermodal Surface Transportation Efficiency Act
ISWMP	Integrated Solid Waste Management Program
kV	kilovolt
kWh	kilowatt hours
LASD	Los Angeles County Sheriff's Department
LBV	Least's Bell vireo
LCFS	Low Carbon Fuel Standard
Ldn	day-night average sound level
LED	light emitting diode
Leq	equivalent sound level
Leq(h)	equivalent sound level, typically specified for 1 hour
LID	low impact development
LOS	Level of Service
LPA	Locally Preferred Alternative
LRA	Local Responsibility Area
LRT	Light Rail Transit
LST	localized significant threshold

LTF	Local Transportation Funds
LTS	less than significant
LTSM	less than significant after mitigation
LU	Land Use & Planning
LUST	Leaking Underground Storage Tank
MAP-21	Moving Ahead for Progress in the 21st Century
MARTA	Mountain Area Regional Transit Authority
MATES III	Multiple Air Toxics Exposure Study III
MBTA	Migratory Bird Treaty Act
MCE	maximum considered earthquake
MGD	million gallons per day
mg/m^3	milligrams per cubic meter
MM	mitigation measure
MMRP	Mitigation Monitoring and Report Program
MOU	Memorandum of Understanding
MOW	Maintenance of the railroad ROW
MP	Mile Post
mpg	miles per gallon
mph	miles per hour
MPO	Metropolitan Planning Organization
MRZs	Mineral Resource Zones
MS4 Permit	Municipal Separate Storm Sewer Systems
MSAT	mobile source air toxics
MSDS	Materials Safety and Data Sheets
MSL	mean sea level
MT	metric tons
MTA	Metropolitan Transportation Authority
MUTCD	Manual on Uniform Traffic Control Devices
mw	megawatts
NAAQS	National Ambient Air Quality Standards
NCCP	Natural Community Conservation Plan
NCP	National Contingency Plan
NEHRP	National Earthquake Hazard Reduction Program
NEHRPA	National Earthquake Hazard Reduction Program Act
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NI	no impact
NMTP	Non-Motorized Transportation Plan
NNG	Non-native Grassland
NOI	Notice of Intent
NOP	Notice of Preparation
NO_x	nitrogen oxide
N_2O	nitrous oxide
NO_2	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
NV	Noise and Vibration

O_3	ozone
O&M	operations and maintenance
OCDs	Ozone Depleting Compounds
OCTA	Orange County Transit Authority
OEHHA	Office of Environmental Health Hazard Assessment
OHP	Office of Historic Preservation
OHWM	Ordinary High Water Mark
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PADS	PCB Activity Database
PAHs	polycyclic aromatic hydrocarbons
Pb	lead
PCE	passenger car equivalents
PCS	Parklands & Community Services & Facilities
PE	permanent easement
PEIR	Program Environmental Impact Report
PGA	Peak Horizontal Ground Accelerations
Phase 1	Environmental Site Assessment
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
Porter-Cologne Act	Porter-Cologne Water Quality Control Act of 1969
POAQC	Project of Air Quality Concern
PPD	annual per capita disposal rate per employee
ppm	parts per million
PPV	peak particle velocity
PRC	Public Resources Code
PRD	Permit Registration Documents
Ps	Psamments and fluvents
PTC	positive train control
PTMISEA	Public Transportation Modernization, Improvement, and Service Enhancement Program
RCAA	Redlands Corridor Alternatives Analysis
RCB	reinforced concrete box culvert
RCC	rectangular concrete channel
RCP	Regional Comprehensive Plan
RCPG	Regional Comprehensive Plan and Guide
RCRA	Resource Conservation and Recovery Act of 1976
REC	Recognized Environmental Concern
RFD	Redlands Fire Department
RMS	root-mean square
RMUED	The City of Redlands Municipal Utilities and Engineering Department
ROD	Record of Decision
ROG	reactive organic gases
ROW	right-of-way
RPD	Redlands Police Department
RPLI	Regional Paleontologic Locality Index
RPRP	Redlands Passenger Rail Project
RTIP	Regional Transportation Improvement Program
RTP	Regional Transportation Plan

RTPA	Regional Transportation Planning Agency
RUSD	Redlands Unified School District
RWQCB	Regional Water Quality Control Boards
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users
SANBAG	San Bernardino Associated Governments
SAR	Santa Ana River
SARA	Superfund Amendments and Reauthorization Act
SART	Santa Ana River Trail
SAS	Santa Ana sucker
SAWPA	Santa Ana Watershed Project Authority
SB	Senate Bill
SBAIC	San Bernardino Archaeological Information Center
SBCFCD	San Bernardino County Flood Control District
SBCFD	San Bernardino County Fire Department
SBCUSD	San Bernardino City Unified School District
SBD	San Bernardino International Airport
SBFD	San Bernardino Fire Department
SBGPU	San Bernardino's General Plan Update
SBKR	San Bernardino kangaroo rat
SBMWD	San Bernardino Municipal Water Department
SBPD	San Bernardino Police Department
SBUSD	San Bernardino Unified School District
SBVMWD	San Bernardino Valley Municipal Water District
sbX BRT	San Bernardino bus rapid transit
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCBR	County of San Bernardino Conservation Background Report
SCE	Southern California Edison
SCEA	Sustainable Communities Environmental Assessment
SCH	State Clearinghouse
SCRRA	Southern California Regional Railroad Authority
SCS	Sustainable Communities Strategy
SCWRF	Southern Cottonwood Willow Riparian Forest
SE	State Endangered
SHPO	State Historic Preservation Officer
SIC	Standard industrial classification
SIP	State Implementation Plan
SLIC	Spills, Leaks, Investigations and Cleanup
SMARA	Surface Mining and Reclamation Act
SO_2	sulfur dioxide
SP	Southern Pacific Railroad
SPA	Specific Plan Amendment
SPCC	Spill Prevention Control and Countermeasure Plan
SPF	standard project flood
SRA	supplemental risk assessment
SS	Safety & Security
SSC	State Species of Concern

SSMs	Supplemental Safety Measures
SSPP	System Safety Program Plan
ST	State Threatened
STA	State Transit Assistance
STB	Surface Transportation Board
STC	Sound Transmission Class
STIP	State Transportation Improvement Program
STPs	shovel test pits
ST VAC	street vacation
SU	significant and unmitigable
SF_6	sulfur hexafluoride
SWFL	Southwestern willow flycatcher
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SWS	Southern Willow Scrub
TAC	Toxic Air Contaminants
TAZ	Traffic Analysis Zone
TCE	temporary construction easement
TCMs	transportation control measures
TD	Transit Overlay District
TDM	Travel Demand Management
TDS	total dissolved solids
TIP	Transportation Improvement Program
TMDL	total maximum daily load
TNM	Traffic Noise Model
TOD	transit oriented development
TPP	Transit Priority Project
TR	Transportation
TRB	Transportation Research Board
TSA	Transportation Security Administration
TuB	Tujunga gravelly loamy sand, 0-9 percent slopes
TvC	Tujunga loamy sand, 0-5 percent slopes
UBC	Uniform Building Code
UD	Urban/Developed
UFC	Uniform Fire Code
$\mu g/m^3$	microgram per cubic meter
Uniform Act	Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended
UP	Union Pacific
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Conservation
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
UT	Utilities

UWMP	Urban Water Management Planning Act
V/C	volume to capacity ratio
VdB	velocity decibel
VHT	vehicles hours traveled
VIA	Visual Impact Assessment
VMT	vehicle miles traveled
VOCs	volatile organic compounds
VQA	Visual Quality & Aesthetics
VVTA	Victor Valley Transit Authority
Williamson Act	California Land Conservation Act
WQ	Water Quality
WQMP	Water Quality Management Plan
WRP	water reclamation plant
WWTP	Redlands Wastewater Treatment Plant
WYBC	Western Yellow-Billed Cuckoo
Z2DA	Zone 2 Drainage Area
Z3DA	Zone 3 Drainage Area

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CHAPTER 11.0 INDEX

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Z


STOP
DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA
Governments
SANBAG
Working Together