California High-Speed Rail Authority

Palmdale to Burbank Project Section

Final Record of Decision

August 2024

CALIFORNIA High-Speed Rail Authority

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being or have been carried out by the State of California pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated July 23, 2019 (renewed July 22, 2024), and executed by the Federal Railroad Administration and the State of California.

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ACRONYMS AND ABBREVIATIONS

Acronym	Definition
ANF	Angeles National Forest
APE	Area of potential effects
Authority	California High-Speed Rail Authority
BA	Biological Assessment
BGPAA	Burbank-Glendale-Pasadena Airport Authority
BLM	United States Bureau of Land Management
BMP	Best management practice
BO	Biological opinion
Caltrans	California Department of Transportation
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
C.F.R.	Code of Federal Regulations
CMF	Central Maintenance Facility
CMP	Construction Management Plan
CO	Carbon monoxide
CWA	Clean Water Act
EIR	Environmental impact report
EIS	Environmental impact statement
EJ	Environmental Justice
EMF/EMI	Electromagnetic Fields/Electromagnetic Interference
FAA	Federal Aviation Administration
FESA	Federal Endangered Species Act
FOE	Finding of Effect
FRA	Federal Railroad Administration
GHG	Greenhouse gas
HSR	High-speed rail
I-5	Interstate 5
IAMF	Impact Avoidance and Minimization Features
KVP	Key Viewpoint
LEDPA	Least Environmentally Damaging Practicable Alternative
LOS	Level of Service
MCY	Million cubic yards
MMEP	Mitigation Monitoring and Enforcement Plan

Acronym	Definition
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxides
OMM	Offsetting Mitigation Measure
PA	Programmatic Agreement
PAA	Preliminary Alternatives Analysis
PCT	Pacific Crest Trail
ROD	Record of Decision
RSA	Resource Study Area
SAA	Supplemental Alternatives Analysis
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SEA	Significant Ecological Area
SFHA	Special Flood Hazard Area
SGMNM	San Gabriel Mountains National Monument
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SR	State Route
SSMP	Safety and Security Management Plan
SSPP	System Safety Program Plan
STB	Surface Transportation Board
TBM	Tunnel boring machine
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	U.S. Code
USDOT	U.S. Department of Transportation
USEO	U.S. Presidential Executive Order
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VMT	Vehicle miles traveled

CALIFORNIA HIGH-SPEED RAIL AUTHORITY PALMDALE TO BURBANK PROJECT SECTION FINAL RECORD OF DECISION APPROVAL OF SR14A BUILD ALTERNATIVE

1 INTRODUCTION

This document is the California High-Speed Rail Authority's (Authority) Record of Decision (ROD), under the National Environmental Policy Act (NEPA), for the California High-Speed Rail (HSR) Palmdale to Burbank Project Section (Project Section, or project), which is part of the statewide HSR system. The Authority is the NEPA federal lead agency under what is commonly referred to as NEPA Assignment. More specifically, the environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being or have been carried out by the State of California pursuant to 23 U.S. Code (U.S.C.) Section 327 and a Memorandum of Understanding (MOU) effective July 23, 2019 (renewed July 22, 2024), and executed by the Federal Railroad Administration (FRA) and the State of California (NEPA Assignment MOU) (FRA and State of California 2019). The Authority is also the lead agency for state environmental reviews under the California Environmental Quality Act (CEQA).

This ROD approves the SR14A Build Alternative as described in the *Palmdale to Burbank Project Section Final Environmental Impact Report (EIR)/Environmental Impact Statement (EIS)* (Final EIR/EIS) dated May 24, 2024 (Authority 2024c) and reaffirms the selection of the Burbank Airport Station Subsection as part of the Selected Alternative. The Palmdale Station was evaluated and approved by the Authority as part of the adjacent Bakersfield to Palmdale Project Section on August 19, 2021, as described in that project's ROD. The Burbank Airport Station was evaluated and approved by the Authority as part of the adjacent Burbank to Los Angeles Project Section on January 20, 2022, as described in that project's ROD. As set forth in this ROD, the SR14A Build Alternative best serves the Purpose and Need for this project and minimizes economic, social, and environmental impacts. It is therefore the Selected Alternative.

The Authority proposes to construct and operate the project after receiving the required approvals from the appropriate federal agencies. These agencies include the federal cooperating agencies—the United States Forest Service (USFS), the U.S. Army Corps of Engineers (USACE), the Surface Transportation Board (STB) and the United States Bureau of Land Management (BLM) and the Federal Aviation Administration (FAA). To the extent practicable, this environmental document will serve as the environmental document for the cooperating and other federal agencies' evaluation of the Authority's proposals for federal agency authorizations. Multiple other federal agencies that are not cooperating agencies have been involved in and have contributed to the environmental review, including the FRA, U.S. Environmental Protection Agency (USEPA), and the U.S. Fish and Wildlife Service (USFWS). Refer to Table 1.1-1 for a list of major milestones related to compliance with NEPA and other federal environmental laws.

To comply with NEPA and CEQA, the Authority issued the *Palmdale to Burbank Project Section Draft Environmental Impact Report/Environmental Impact Statement* (Draft EIR/EIS) for the project on September 2, 2022. Following public review of the Draft EIR/EIS, the Authority considered and responded to public comments; revised the Draft EIR/EIS to address public comments as appropriate; incorporated minor design refinements to further reduce environmental impacts and improve safety; and published the Final EIR/EIS on May 24, 2024. Consistent with 40 Code of Federal Regulations (C.F.R.) Section 1506.2,[1] the Final EIR/EIS is one document that

[1] On April 20, 2022, CEQ issued Phase 1 Final Rule restoring regulatory provisions that were in effect before the 2020 rule modified them for the first time. On July 28, 2023, CEQ announced a Phase 2 Notice of Proposed Rulemaking—the "Bipartisan Permitting Reform Implementation Rule"—to revise its regulations for implementing the procedural provisions of the NEPA, including to implement the amendments to NEPA by the Fiscal Responsibility Act of 2023. CEQ issued the Phase 2 Final Rule on May 1, 2024, and the text of the regulation indicates the regulations apply to any NEPA process

covers both state and federal environmental requirements. However, because this ROD contains only the decision of the Authority under its assigned responsibilities for NEPA, the documents are henceforth referred to in this ROD as the "Draft EIS," and "Final EIS." In making its decision, the Authority considered the information and analysis contained in the 2022 Draft EIS and the 2024 Final EIS (collectively, "EIS Documents"). The Authority also considered public and agency comments received on the EIS Documents. Table 1.1-1 summarizes major NEPA milestones and completion dates for the EIS Documents.

Table 1.1-1 Summary of Major Milestones for Compliance with Federal Environmental Laws

Milestone	Date
Notice of Intent published in Federal Register (amended in 2014)	March 15, 2007
Public and Agency Meetings	June 2014 – March 2024[1]
Notice of Intent Published in Federal Register	July 24, 2014
Public Scoping Meetings (7)	August 5, 2014 – August 19, 2014, and December 2, 2014 – December 14, 2014
Public and Agency Meetings	August 2014 – December 2014, November 2020, January 2021, April 2021
SHPO concurrence with Section 106 Finding of Effect Report	September 3, 2021
NMFS Issues Endangered Species Act Section 7 Concurrence Not Likely to Adversely Affect Determination	May 25, 2022
Notice of Availability Published and Issuance of Draft EIS and Section 4(f) Evaluation	September 2, 2022
Public Hearing to Receive Public Comment	October 18, 2022
Section 106 MOA executed by Authority and SHPO	December 14, 2023
USACE and USEPA Letters of Concurrence on Preliminary LEDPA Determination	January 5, 2024 (USACE) /January 9, 2024 (USEPA)
FRA Publication of Draft General Conformity Determination	April 2, 2024
Notice of Availability and Issuance of Final EIS and Section 4(f) Evaluation	May 24, 2024
U.S. Fish and Wildlife Service Biological Opinion Issued	June 25, 2024
FRA Approval of Final General Conformity Determination	June 10, 2024
End of Waiting Period for Final EIS	June 23, 2024

[1] See Chapter 9, Table 9-5, in the Final EIS for certain organizational/individual meetings and dates held.

Authority = California High-Speed Rail Authority
EIS = Environmental Impact Statement
FRA = Federal Railroad Administration
LEDPA = Least Environmentally Damaging Practicable Alternative
NMFS = National Marine Fisheries Service
SHPO = California Historic Preservation Officer
USACE = U.S. Army Corps of Engineers
USEPA = U.S. Environmental Protection Agency

begun after July 1, 2024 (40 CFR 1506.12). The NEPA process for the project was initiated before the effective date of the 2020, 2022, and 2024 CEQ regulations and is not subject to the current regulations, relying on the 1978 regulations [amended in 1986, 51 Federal Register 15618 (April 25,1986)] as they existed prior to September 14, 2020. All subsequent citations to CEQ regulations in this environmental document refer to the 1978 regulations, pursuant to 40 C.F.R. 1506.13 (2020) and 40 C.F.R. 1506.12 (2024).

The Palmdale to Burbank Section will connect to the already approved portions of the HSR system between San Francisco and Palmdale and between Burbank and Los Angeles. This ROD outlines all relevant information used by the Authority, as the NEPA lead agency, for approval of the Selected Alternative (SR14A Build Alternative). The Selected Alternative includes both the Central Subsection and the Burbank Subsection, as defined in the Final EIS, including the previously approved Burbank Station (CHSRA Resolutions # HSRA 22-02 and HSRA 22-03). The northern terminus of the Selected Alternative is Spruce Court in the City of Palmdale, which connects the Palmdale to Burbank Project Section to the approved Bakersfield to Palmdale Project Section. The southern terminus of the Selected Alternative is north of Winona Avenue and north of the Burbank Airport east/west runway in the City of Burbank. With the decision to select the SR14A Alternative, the Authority updates its analysis to reflect Authority responses to comments received on both the Central Subsection and the Burbank Subsection during the Palmdale to Burbank Draft EIS comment period and reaffirms its prior approval of all HSR facilities in the Burbank Subsection, without any change to the previously approved Burbank Subsection design. This reaffirmation confirms that, even with the updated analysis for the Burbank Subsection in the Palmdale to Burbank Final EIS, the prior approval's conclusions and design remain unchanged.

As depicted in Figure 1.1-1 and described in further detail in Chapter 2, Alternatives, of the Final EIS, the Selected Alternative alignment would be approximately 38 miles in length. The northern portion of the alignment would continue south of Spruce Court at grade, curving eastward and traveling south approximately 300 feet east of Una Lake. South of Una Lake, the Selected Alternative alignment would curve westward, cross over the Southern California Regional Rail Authority Antelope Valley Line, Sierra Highway and the Soledad Siphon, and continue southwest and enter a tunnel portal near the Sierra Highway/Pearblossom Highway intersection. The Selected Alternative alignment would continue westward, in a tunnel before surfacing near Agua Dulce Canyon Road. The alignment would then transition between at-grade and elevated profiles closely paralleling the SR 14 freeway before entering an approximately 1-mile-long tunnel. Transitioning from tunnel to at-grade, the Selected Alternative alignment would extend at grade in the Bee Canyon area through to the Vulcan Mine site. The remaining Selected Alternative alignment south of the Vulcan Mine site would be situated under the Angeles National Forest (ANF) and then would transition above ground between Montague Street and Olinda Street in the San Fernando Valley, and then entering an approximately 1-mile-long cut-and-cover tunnel before reaching the Burbank Airport Station and ending with its southern terminus north of Winona Avenue and north of the Burbank Airport east/west runway in the City of Burbank, in the Burbank subsection. More detail on the Selected Alternative for the Palmdale to Burbank Project Section is provided in the Final EIS, including its Chapter 2, Alternatives.

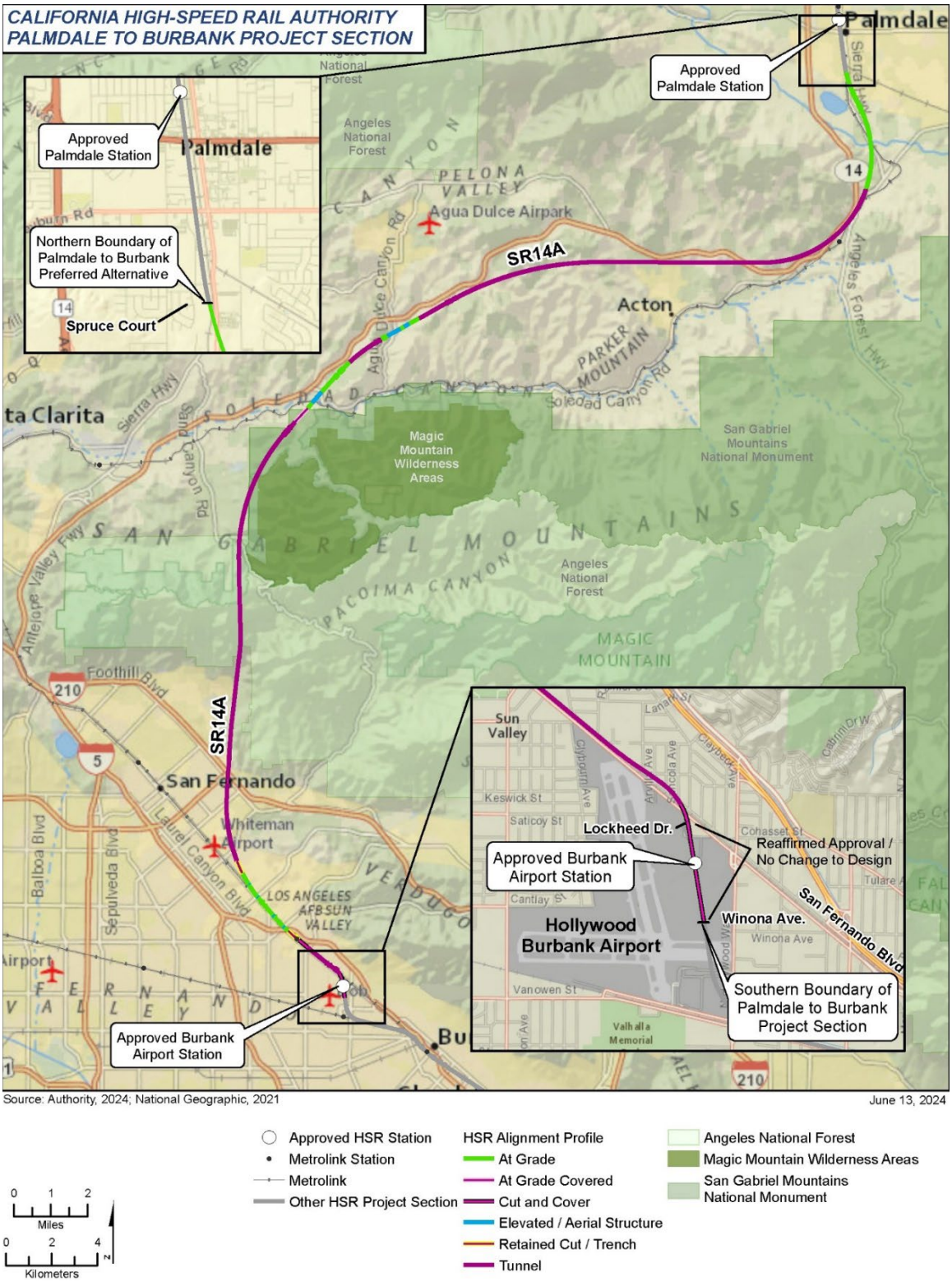

Figure 1.1-1 Palmdale to Burbank Project Section Selected Alternative and Station

In making its decision, the Authority considered the information and analysis contained in the EIS documents and the associated administrative record and input received from the public, tribes, and other agencies.

The Authority has prepared this ROD in accordance with applicable provisions of the NEPA Assignment MOU dated July 23, 2019; the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 C.F.R. §§ 1505.2 and 1506.10), 23 U.S.C. § 139, and FRA's Procedures for Considering Environmental Impacts (64 *Federal Register* [Fed. Reg.] 28545, May 26, 1999), as modified by 78 Fed. Reg. 2713 (January 14, 2013).

Specifically, this ROD:

- Provides background on the NEPA process leading to the Final EIS, including a summary of public involvement and agency coordination
- States and reaffirms the project's Purpose and Need
- Summarizes the process that led to the development of the alternatives for study in the Draft EIS and Final EIS
- Discusses agency roles and responsibilities
- Identifies the project alternatives considered in the EIS Documents
- Identifies the SR14A Build Alternative as the Selected Alternative
- Identifies the environmentally preferable alternative
- Summarizes environmental benefits and adverse effects of the Selected Alternative
- Discusses and/or makes determinations required under other relevant laws and guidance, including:
    - Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA) (54 U.S.C. §§ 306101–307106 et seq.)
    - Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. § 303)
    - Clean Air Act (42 U.S.C. §§ 7401–7671q)
    - Section 7 of the Endangered Species Act of 1973 (16 U.S.C. §§ 1531–1544)
    - Section 404 of the Clean Water Act (CWA) (33 U.S.C. §§ 1251–1387)
    - USEO 11990 (Protection of Wetlands, May 24, 1977)
    - USEO 11988 (Floodplain Management, May 24, 1977)
    - U.S. Presidential Executive Order (USEO) 12898 (Federal Actions to Address Environmental Justice in Minority and/or Low-Income Communities, February 11, 1994)
- Summarizes the comments received on the Final EIS and responds to substantive comments that have not been previously addressed
- Imposes impact avoidance and minimization features (IAMF) and mitigation measures that will avoid, minimize, and mitigate environmental harm and sets forth a binding monitoring and enforcement program for all such features and measures
- Presents the Authority's decision, determinations, and findings on the proposed project and identifies and discusses the factors that were balanced by the Authority in making its decision
- Summarizes the status of compliance with permitting and other environmental requirements
- The ROD also includes the following appendices:
    - Appendix A: Final General Conformity Determination, June 10, 2024

- Appendix B: Final U.S. Fish and Wildlife Service Biological Opinion, June 25, 2024
- Appendix C: Mitigation Monitoring and Enforcement Plan
- Appendix D: State Historic Preservation Officer Section 106 Concurrence Letter, September 3, 2021, and Memorandum of Agreement, December 14, 2023
- Appendix E: National Marine Fisheries Service Section 7 Concurrence Letter, May 25, 2022
- Appendix F: U.S. Army Corps of Engineers Preliminary Least Environmental Damaging Practicable Alternative (LEDPA) Concurrence Letter, January 5, 2024, and U.S. Environmental Protection Agency Preliminary LEDPA Concurrence Letter, January 9, 2024
- Appendix G: Section 4(f) Concurrence Letters
- Appendix H: Comments Received Between the Publication of the Final EIS and the June 26-27, 2024, Board Meeting
- Appendix I: Errata for the Final EIS
- Appendix J: Final Individual Section 4(f) Evaluation for Lang Station Open Space

1.1 California HSR System

The Authority is responsible for planning, designing, constructing, and operating the California HSR System. Its state statutory mandate is to develop an HSR system that coordinates with the state's existing transportation network, which includes intercity rail and bus lines, regional commuter rail lines, urban rail and bus transit lines, highways, and airports.

The California HSR System would provide intercity, high-speed service on more than 800 miles of track throughout California, connecting the major population centers of Sacramento, the San Francisco Bay Area, the southern Central Valley, Los Angeles, the Inland Empire, Orange County, and San Diego, as depicted on Figure 1.1-2. The Authority and FRA prepared three programmatic (Tier 1) EIR/EIS documents to select preferred alignments and station locations to advance for project-level analysis in Tier 2 EIR/EISs. See Chapter 1, Project Purpose, Need, and Objectives, of the Final EIS for a detailed description of the HSR system and the history of Tier 1 documents. The HSR system would use state-of-the-art, electrically powered, high-speed, steel-wheel-on-steel-rail technology, including contemporary safety, signaling, and automatic train-control systems that would incorporate positive train control infrastructure and be compliant with the requirements of 49 C.F.R. Part 236 Subpart I, with trains capable of operating up to 220 miles per hour in HSR project sections that are fully grade separated and on a dedicated guideway alignment.

Source: *Authority 2021*

Figure 1.1-2 Statewide High-Speed Rail System, Phase 1 and Phase 2—Project Sections

The Authority plans two phases of California HSR System development. The California High-Speed Rail Program 2024 Business Plan (Authority 2024a) describes in detail how the California HSR System would be implemented and recognizes current budgetary and funding realities. The California HSR System Phase 1, as approved through Tier 1 decisions, has been divided into eight individual sections for site-specific, Tier 2 analysis. The Authority and FRA defined HSR project sections so that they would have independent utility or independent significance (i.e., be usable even if later sections of the HSR system are not completed). As of May 2024, the following project sections are under construction:

- Merced to Fresno
- Fresno to Bakersfield

The Tier 2 environmental reviews (Final EIR/EIS and ROD) have been completed for the following project sections:

- Bakersfield to Palmdale (ROD issued September 2021)
- Burbank to Los Angeles (ROD issued March 2022)
- San Jose to Merced (ROD issued June 2022)
- San Francisco to San Jose (ROD issued September 2022)

1.2 Palmdale to Burbank Project Section

The Palmdale to Burbank Project Section is a component of the California HSR system and would serve as the system's connection between Palmdale and Burbank. It would connect HSR between the previously approved station in Palmdale to a station in Burbank, where it would connect to the Burbank to Los Angeles Project Section. The Palmdale to Burbank Project Section Final EIS studied six build alternatives that extend approximately 31 to 38 miles in length, depending on the alternative, from Spruce Court in the City of Palmdale to immediately north of Winona Avenue in the City of Burbank. The geography and topography of this section are extremely diverse—characterized by desert, foothill, and mountainous environments including rural, suburban, and urban communities.

The Authority and FRA received comments during scoping meetings held in August 2014, and open house meetings in December 2014.[2] As part of public outreach for the development of the Draft EIS, seven public and agency scoping meetings were held between August 5, 2014, and August 19, 2014, in Santa Clarita, Burbank, Palmdale, Acton/Agua Dulce, Sylmar, Lake View Terrace, and downtown Los Angeles. These meetings introduced the split of the alignment between Bakersfield to Palmdale and Palmdale to Burbank. Seven additional follow-up meetings were conducted between December 2, 2014, and December 14, 2014, in Santa Clarita, Sun Valley, Palmdale, Burbank, San Fernando, Sylmar, and Acton. The additional meetings introduced the potential for alignments to traverse the ANF.

Between 2014 and 2020, the Palmdale to Burbank Project Section initially evaluated three subsections: the Palmdale Subsection, which included the Palmdale HSR Station and an alignment extending to Spruce Court in Palmdale, the Central Subsection (between Spruce Court in Palmdale to Lockheed Drive in Burbank), and the Burbank Subsection (between Lockheed Drive and Winona Avenue in Burbank) including the Burbank Airport HSRA Station. Since 2014, the Authority hosted more than 450 meetings with the public, stakeholders, and agencies to provide project updates and obtain additional feedback on the proposed alternatives. Federal agencies consulted included the U.S. Army Corps of Engineers, Surface Transportation Board, U.S. Bureau of Land Management, U.S. Forest Service, Federal Aviation Administration, the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, National Marine Fisheries Service, the National Park Service, and the Advisory Council on Historic Preservation.

At its November 15, 2018, meeting, the Board concurred with the Authority staff recommendation to identify the Refined SR14 Alternative as the Authority's Preferred Alternative for the Palmdale

[2] In response to a number of stakeholder requests, the original comment submittal deadline was extended from August 31, 2014, to September 12, 2014.

to Burbank Project Section. Resolution #HSRA 18-19 can be found on the Authority's website (2018 Board Meeting Schedule & Materials - California High Speed Rail) (Authority 2018). This identification was based on balancing the beneficial and adverse impacts of the project alternatives on the natural environment and community resources in the context of CEQA, NEPA, stakeholder input, and feasibility considerations. The Authority worked closely with federal, state, and regional agencies to meet regulatory requirements by refining the Selected Alternative to avoid and minimize impacts, and where necessary, to refine mitigation measures for adverse impacts that cannot be avoided.

The Authority refined its Preferred Alternative for the Palmdale to Burbank Project Section to the SR14A Alternative in August of 2020, as reflected in the minutes of the Authority Board of August 20, 2020. The new Preferred Alternative was proposed to avoid impacts to Una Lake south of Palmdale as well as to avoid and lessen impacts on communities and other natural resources south of Una Lake. The change in alignment for the SR14A, E1A, and E2A Build Alternatives would avoid direct impacts to Una Lake and reduce impacts to the Acton community. Following approval of the Palmdale Station and Alternative 2 with the Refined CCNM Design Option as part of the Bakersfield to Palmdale Project Section Final EIR/EIS and 2021 Record of Decision, the Palmdale Section was not further analyzed in the Palmdale to Burbank EIS. The Palmdale to Burbank Project Section, retained for continued and full evaluation in the Draft EIS and the Final EIS, includes only the Central Subsection and the Burbank Subsection.

The Draft EIS was released on September 2, 2022, for an initial 60-day public comment period that initially anticipated to be closed on November 1, 2022. Subsequently, the Authority notified USEPA that the review and comment period was being extended to end of December 1, 2022, and USEPA published the revised notice in the Federal Register on October 24, 2022. The Draft EIS presented the Purpose and Need for the project; a reasonable range of six build alternatives for the rail alignment; the existing setting; effects (both beneficial and adverse) from construction and operation of the alternatives; and project design features and mitigation measures to avoid, reduce, or mitigate adverse environmental effects.

The Authority received 2,489 individual, delimited comments on the Draft EIS. (A single comment letter may include multiple delimited comments.) The Authority considered the information presented in the comments received, and the Final EIS includes responses to all substantive comments on the Draft EIS. The Final EIS also includes minor design refinements to the project alternatives since publication of the Draft EIS to respond in part to concerns raised by stakeholders. Additionally, although the Burbank Subsection (as depicted in Figure 2-46 of the Final EIS) was previously approved as a part of the Burbank to Los Angeles Project Section EIR/EIS and 2022 Record of Decision, the Authority retained the Burbank Subsection in the Palmdale to Burbank Final EIS so as to provide responses to comments received on the Burbank Subsection during the Palmdale to Burbank DEIS comment period. As the Burbank Subsection designs have not changed since their 2022 approval and the Palmdale to Burbank Final EIS conclusions for the subsection remain consistent with the 2022 approval, the Burbank to Los Angeles Final EIR/EIS was also incorporated by reference to the Final EIS. Where applicable, specific content from these prior documents is summarized.

On May 24, 2024, the Authority published the Final EIS with a Notice of Availability in the Federal Register, on the Authority website, and with wide distribution to public libraries in the project area, individualized notices to every individual or entity who commented on the Draft EIS, notices to property owners within or adjacent to the project footprint, and notices in newspapers of general circulation.

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2 AGENCY ROLES AND RESPONSIBILITIES

The Authority is the NEPA lead agency, pursuant to the NEPA Assignment MOU. The STB, the BLM, the USFS, and the USACE are NEPA cooperating agencies. Multiple other federal agencies that are not cooperating agencies have been involved with and contributed to the environmental review, including the FRA, USEPA, USFWS, FAA, and the Advisory Council on Historic Preservation. The specific roles and responsibilities of the federal agencies involved in the Palmdale to Burbank Project Section including lead, cooperating, and permitting agencies, are further described below.

2.1 Federal Railroad Administration

The FRA's responsibilities for environmental review, consultation, and other actions required by applicable federal environmental laws, including NEPA, for the proposed Project are being carried out by the Authority, acting on behalf of the State of California pursuant to 23 U.S.C. Section 327 and the NEPA Assignment MOU. Under the MOU, FRA assigned federal environmental review responsibilities for the Project to the State of California. Since July 23, 2019, the Authority has performed as the lead NEPA agency in this program, known as NEPA Assignment.

As required by law and the NEPA Assignment MOU, the FRA has retained responsibility making air quality conformity determinations under the Clean Air Act (42 U.S.C. § 7506) and government-to-government consultation with Indian tribes (23 C.F.R. § 773.105(b)(4)). FRA issued the federal Clean Air Act General Conformity Determination on June 10, 2024 (see Appendix A).

The NEPA Assignment MOU also requires the Authority to consult with FRA prior to making any proposed constructive use determinations under Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. § 303); however, there are no such determinations associated with the Selected Alternative, as explained in Chapter 4, Section 4(f) and Section 6(f) Evaluations of the Final EIS.

Additionally, FRA also administers certain grant funds provided to the Authority under the American Recovery and Reinvestment Act of 2009 (Public Law 111-5) and oversees the Authority's compliance with its grant agreement and relevant amendments for the CHSRA system.

2.2 Surface Transportation Board

The STB has authority over construction and operation of new rail lines (49 U.S.C. § 10901). As the STB explained in its June 13, 2013, decision authorizing construction of the 65-mile section of the California HSR System between Merced and Fresno (Docket No. FD_35724_0), 49 U.S.C. Section 10501(a)(2)(A) gives the STB jurisdiction over transportation by rail carrier in one state, as long as that intrastate transportation is carried out, "as part of the interstate rail network." The STB determined that the California HSR System will be constructed as part of the interstate rail network and therefore concluded that it has jurisdiction over the California HSR System.

The STB has participated as a cooperating agency in the environmental review process for the Palmdale to Burbank Project Section. Following completion of this process, the STB may adopt the Authority's EIS (or conduct additional review, as appropriate) and issue a separate ROD authorizing the Project.

2.3 U.S. Army Corps of Engineers

USACE is responsible for issuing permits under the CWA Section 404 (33 U.S.C. § 1344) (Section 404) and authorizations under the Rivers and Harbors Act of 1899, Section 14 (33 U.S.C. § 408) (Section 408). USACE is required to comply with NEPA and issue its own NEPA decision before it can issue a permit under Section 404 or grant permission under Section 408.

As an initial step in the environmental review and permitting processes for the project, the Authority, the FRA, USACE, and USEPA executed an MOU (NEPA/404/408 MOU) in November 2010 (FRA et al. 2010). The MOU outlines a process to coordinate the NEPA environmental review process with certain steps in the Section 404 and Section 408 permitting processes. The

purpose of the MOU is to facilitate USACE decision making under Section 404, Section 408, and NEPA.

Under Section 404, the USACE and USEPA regulate the discharge of dredged and fill materials into the waters of the U.S. Project sponsors must obtain a permit from the USACE for discharges of dredged or fill materials into waters of the U.S. Aquatic resources in the project vicinity include several types of wetlands as well as other waters (i.e., streams, lakes, and other open water features) as verified by the USACE under a preliminary jurisdictional determination issued on December 5, 2019. Based on the Authority's analysis of permanent impacts on waters of the U.S. and coordination with the USACE, the Authority anticipates seeking an individual permit under Section 404 for the Palmdale to Burbank Project Section.

The project alternatives that were considered in the EIS Documents incorporated various combinations of a range of design options for the project. Pursuant to the MOU, the Checkpoint B Summary Report identified the range of alternatives to be carried forward in the Draft EIS. USEPA and USACE concurred with the selection of these alternatives on December 16, 2020, and December 17, 2020, respectively (Authority 2024b). All six of these project alternatives are evaluated in the Final EIS.

Pursuant to CWA Section 404, USACE and USEPA concurred in January 2024 that the Authority's Selected Alternative is the preliminary least environmentally damaging practicable alternative (LEDPA).

The information contained in the Final EIS will provide information that will facilitate USACE's consideration and issuance of any necessary permits and approvals. Further, any USACE documents produced using information from the Final EIS can be used to assess proposed alterations/modifications of federal flood risk management facilities and any associated operation and maintenance activities.

2.4 U.S. Fish and Wildlife Service and National Marine Fisheries Service

Concurrently with the NEPA process, the Authority initiated consultation under the federal Endangered Species Act (FESA) Section 7 (16 U.S.C. § 1536), pursuant to 50 C.F.R. Part 402. Section 7 of FESA requires federal agencies to consult with USFWS and/or National Marine Fisheries Service (NMFS), depending on the type of species or habitat affected, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered fish, wildlife, or plant species or result in the destruction or adverse modification of designated critical habitat for any such species. Impacts associated with threatened and endangered species and habitat are addressed through a consultation process with USFWS and/or NMFS that is outlined under Section 7 of FESA and the implementing regulations. The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.) requires federal agencies to consult with NMFS on activities that may adversely affect Essential Fish Habitat for species that are managed under federal fishery management plans in U.S. waters. Impacts associated with Essential Fish Habitat are addressed through a coordination process with NMFS that may be combined with FESA Section 7 consultation.

In April 2022, the Authority informally consulted with NMFS under Section 7 of the ESA by sending a letter requesting NMFS concur with the Authority's determination that the Proposed Action was not likely to adversely affect the Southern California steelhead (Oncorhynchus mykiss), with a Biological Assessment (BA) supporting that determination. In May of 2022, NMFS issued a concurrence letter stating that the project was not likely to adversely affect Southern California steelhead. Appendix E of this ROD contains the concurrence letter from NMFS.

Because the project may affect threatened or endangered species and critical habitat subject to USFWS jurisdiction, the Authority prepared a BA for the project and consulted with USFWS, as required under Section 7 of FESA. The Authority submitted a draft BA and initiated formal Section 7 consultation with USFWS in June 2023. The BA evaluates the potential adverse effects of the project on federally listed species and designated critical habitat. USFWS issued a biological opinion (BO) on June 25, 2024 concluding that the Selected Alternative is not likely to jeopardize

the continued existence of the five listed wildlife and plant species and is not likely to adversely modify or destroy designated critical habitat for arroyo toad that occur in the action area. Appendix B of this ROD contains the USFWS BO.

2.5 Advisory Council on Historic Preservation

The Advisory Council on Historic Preservation is an independent federal agency that promotes the preservation, enhancement, and productive use of our nation's historic resources and advises the President and Congress on national historic preservation policy. Established by the National Historic Preservation Act in 1966, the Advisory Council on Historic Preservation has the legal responsibility to encourage federal agencies to factor historic preservation into federal project requirements (50 C.F.R. § 1502.25). The Advisory Council on Historic Preservation is a signatory to the Authority's Section 106 Programmatic Agreement.

2.6 Federal Aviation Administration

FAA agreed by letter dated March 4, 2021, to serve as cooperating agency. Regular meetings (quarterly) have been held between FAA and the Authority to specifically discuss FAA's requirements for this project segment. FAA has provided comments to the Authority regarding project components that may impact the Burbank Airport and its facilities. Coordination with FAA is required as a part of advanced design as outlined in SS-IAMF#5: Aviation Safety. For example, this mitigation measure requires that the Authority submit construction plans and/or information to the FAA as required by Code of Federal Regulations, Title 14, Part 77, and implement measures required by the FAA to ensure continued safety of air navigation during HSR construction and operation, pursuant to 14 C.F.R. section 77.5(c). Furthermore, SS-IAMF#6: Stakeholder Coordination for the Hollywood Burbank Airport requires that, as design of the Burbank to Los Angeles Project Section progresses, the Authority shall continue to coordinate with the FAA and Burbank-Glendale-Pasadena Airport Authority (BGPAA) to avoid conflicts due to overlapping construction schedules and future operations at the Hollywood Burbank Airport. The Authority's commitment to coordinate with the BGPAA has further been augmented through a November 2023 executed agreement between the Authority and BGPAA, where both parties made certain and mutual coordination commitments over the lifecycle of the proposed project from design through to long-term operations.

2.7 Bureau of Land Management

U.S Department of the Interior, BLM agreed by letter dated November 6, 2012, to serve as cooperating agency for the Project Section. The Selected Alternative traverses three BLM parcels in underground tunnels with no surface infrastructure. The Authority would apply for a grant of right-of-way for the three BLM properties crossed by the Selected Alternative.

2.8 United States Forest Service

USFS agreed by letter dated August 25, 2014, to serve as cooperating agency for the Project Section. The Authority will apply for a Special Use Authorization from USFS under the Federal Land Policy and Management Act. Such authorization will include conditions to avoid or minimize impacts on forest land or management of forest resources within the ANF, including the San Gabriel Mountains National Monument (SGMNM). A Special Use Authorization will be required because HSR tunnels and other facilities will be constructed in the ANF, including within portions of the SGMNM.

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3 PURPOSE AND NEED

3.1 Purpose of the High-Speed Rail System

The *Final Program EIR/EIS for the Proposed California High-Speed Train System* (Statewide Program EIS) established the purpose of the statewide HSR system, and identified and evaluated alternative HSR corridor alignments and stations as part of a statewide HSR system (Authority and FRA 2005).

> *The purpose of the statewide HSR system is to provide a reliable high-speed electrified train service that links the major metropolitan areas of the state and delivers predictable and consistent travel times. A further objective is to provide an interface with commercial airports, mass transit, and the highway network and relieve capacity constraints of the existing transportation system as increases in intercity travel demand in California occur, in a manner sensitive to and protective of California's unique natural resources.*

3.2 Purpose of the Palmdale to Burbank Project Section

The purpose of the Palmdale to Burbank Section of the California HSR system is to provide the public with electric-powered HSR service that provides predictable and consistent travel times between the Antelope Valley and the San Fernando Valley, provide connectivity to airports, mass transit systems, and the highway network in the Antelope Valley and the San Fernando Valley; and to connect the northern and southern portions of the Statewide HSR system.

3.3 Statewide and Regional Need for the High-Speed Rail System in the Palmdale to Burbank Project Section

The approximately 31- to 38-mile-long Palmdale to Burbank Project Section is an essential component of the statewide HSR system. The Palmdale to Burbank Project Section would provide access to a new transportation mode and contribute to increased mobility throughout California. The Palmdale to Burbank Project Section would connect to both the Bakersfield to Palmdale and Burbank to Los Angeles Project Sections.

The need for an HSR system exists statewide, with regional demand contributing to this need. The Palmdale to Burbank Project Section would contribute considerably to filling the statewide need for a new intercity transportation service that would connect it with the major population and economic centers and to other regions of the state.

The capacity of California's intercity transportation system, including within the Palmdale and Burbank Project Section vicinity, is insufficient to meet existing and future travel demands. The current and projected future system congestion will continue to result in deteriorating air quality, reduced reliability, and increased travel times. The system has not kept pace with the tremendous increase in population, economic activity, and tourism in the state, including that in the project vicinity. The interstate highway system, commercial airports, and the conventional passenger rail system[3] serving the intercity travel market are operating at or near capacity and will require large public investments for maintenance and expansion to meet existing demand and future growth over the next 25 years and beyond. Moreover, the feasibility of expanding many major highways and key urban airports is uncertain; some needed expansions may be impractical or may be constrained by physical, political, and other factors. The need for improvements to intercity travel in California, including intercity travel between the Palmdale and Burbank Project Section vicinity, greater Southern California, the San Francisco Bay Area, and Sacramento, relates to the following issues:

[3] Conventional passenger rail systems include inter-regional commuter rail services such as Amtrak and Metrolink. These are not to be confused with local, light, and heavy rail transit systems that generally operate within a smaller sub-regional area (e.g., Los Angeles County's Metro Rail System).

- Future growth in demand for intercity travel, including the growth in demand within the Palmdale to Burbank Project Section corridor.
- Capacity constraints that will result in increasing congestion and travel delays, including those in the Antelope Valley (cities of Lancaster and Palmdale) and in the city of Los Angeles.
- Unreliability of travel stemming from congestion and delays, weather conditions, accidents, and other factors that affect the quality of life and economic well-being of residents, businesses, and tourism in California, including within the Palmdale to Burbank Project Section corridor.
- Increased frequency of accidents on intercity highways and passenger rail lines, including in the project vicinity.
- Reduced mobility as a result of increasing demand on limited modal connections between major airports, transit systems, and passenger rail in the state, including within the Palmdale to Burbank Project Section corridor.
- Poor and deteriorating air quality and increasing pressure on natural resources and agricultural lands due to the expansion of highways and airports, as well as continued urban development pressures, including those in the Palmdale to Burbank Project Section corridor.
- Legislative mandates to moderate the effects of transportation on climate change, including required reductions in greenhouse gas (GHG) emissions caused by vehicles powered by the combustion of carbon-based fuels.

4 ALTERNATIVES CONSIDERED

This section summarizes the Alternatives Analysis process, describes the alternatives evaluated in the EIS Documents, and identifies the Selected Alternative and environmentally preferable alternative.

The Authority undertook an extensive public screening process to identify and refine alternatives for study in the project-level EIS. The Authority prepared Alternatives Analysis reports to explore alignment alternatives in an iterative process from 2010 to 2016, and the continued refinement thereafter of alternatives and development of design options. The Preliminary Palmdale to Los Angeles Alternatives Analysis Report (PAA) was completed in 2010 (Authority and FRA 2010), the Supplemental Alternatives Analysis (SAA) Report (Authority and FRA 2012a, 2012b) was prepared in 2012, and the Palmdale to Burbank Project Section SAA Report was completed in 2016 (Authority and FRA 2016).

Although the Alternatives Analysis process considered multiple criteria, the project objective to maximize the use of existing transportation corridors and available rights-of-way to the extent feasible was emphasized as a way of minimizing impacts otherwise caused by creating an entirely new linear transportation corridor. Additionally, the engineering, geologic, and grade-requirement challenges in this project section have influenced the Build Alternatives. The following sections summarize the alternatives included in the Statewide Program EIR/EIS, the PAA Report, and the SAA Reports.

Based on the foundational efforts in the 2010 PAA Report, the 2012 SAA Reports, and the 2014 SAA Report, followed by the refinements and new alternatives evaluated in the 2015 SAA Report, the 2016 SAA Report, and the Una Lake Avoidance Alternatives, the alignment and station alternatives proposed within the limits of the Palmdale to Burbank Project Section (first defined in the 2014 SAA Report) eliminated from further study are described below. Generally, the alternatives that were not carried forward for detailed analysis had greater direct and indirect environmental impacts, were impracticable, or failed to meet the project's purpose and need. This section then describes the six Build Alternatives carried forward for evaluation in the EIS.

4.1 Alternatives Considered but Eliminated from Detailed Study

This section of the ROD describes alignment alternatives not carried forward, including a brief narrative to describe the alternatives eliminated during screening during the process described above.

4.1.1 Tier 2 Palmdale to Los Angeles Alternatives Analysis

In consideration of the varying setting and terrain covered in the 2010 PAA Report, the Palmdale to Los Angeles Project Section was divided into four subsections (described in Section 2.4.2.1 of the Draft EIS): Sylmar to Palmdale, SR 2 to Sylmar, Metrolink Central Maintenance Facility (CMF) to SR2, and LAUS to Metrolink. The Station Options considered included stations in Los Angeles, San Fernando Valley, and Palmdale.

Through the 2010 PAA Report, the Authority determined that several potential alignment and station alternatives did not merit continued consideration. Between Sylmar and Palmdale, the SR14 South and Soledad Canyon alignments were eliminated from further consideration based on greater environmental impacts, along with greater route mileage and journey time, as compared to the SR14 East and SR14 West alternatives that were carried forward (see Figure 2-34 in Chapter 2, Alternatives, of the Draft EIS). The Soledad Canyon alignments would traverse areas granted by the Bureau of Land Management for mineral extraction and negatively impact the ANF. The SR 14 South alignment would negatively impact the existing visual setting and also traverse areas granted by the Bureau of Land Management for mineral extraction. Additionally, USEPA and other resources agencies raised concerns regarding impacts on sensitive resources in the Soledad Canyon and Santa Clara River environments.

A potential station in Santa Clarita was eliminated from further consideration based on comparatively higher residential displacements. A potential station in Lancaster was eliminated

based on not sufficiently meeting the project purpose and objectives of providing transportation connectivity as compared to station sites in Palmdale. Between Sylmar and SR 2, alternatives that would have placed HSR outside the existing right-of-way to the east and west were eliminated from further consideration due to high displacement of residential, commercial, and industrial properties, and an alternative that would have required several long viaducts sharing the existing right-of-way was eliminated due to the complexity and visual intrusiveness of the long viaducts. The use of the existing right-of-way would also reduce train travel times. Non-HSR trains between Palmdale and downtown Burbank currently have a run time that varies from 1 hour 24 minutes to 1 hour 53 minutes. Proposition 1A travel time objectives for HSR travel from San Francisco to Los Angeles of 2 hours and 40 minutes would not be achievable if the section between Palmdale and Burbank required this much time to traverse.

Potential stations at Burbank North and South, Hollywood Way, Sunland Boulevard, and Sylmar North were eliminated from further consideration based on location/proximity to other stations, constructability issues and costs, and environmental impacts compared to the station alternatives carried forward.

4.1.2 2011 Los Angeles Supplemental Alternatives Analysis Report: LAUS to Sylmar (2011 SAA Report)

The 2011 SAA Report refined alignment corridors and station sites in the southern portion of the Palmdale to Los Angeles corridor between Sylmar and LAUS, utilizing the three separate "subsections" as presented in the 2010 PAA Report: Sylmar to SR 2, SR 2 to Metrolink CMF, and Metrolink CMF to LAUS (Authority 2011).

Within the SR 2 to Sylmar Subsection, the Authority Board requested evaluation of a station located in downtown Burbank at the existing Burbank Metrolink station. A nonstandard layout to bring the tracks closer to the existing right-of-way, reducing some of the impacts illustrated in the 2010 PAA Report, was considered. As a result of the remaining impacts of this station location on the surrounding area and the need to reconstruct the existing bridges over the alignment, this alternative was not recommended to be carried forward for evaluation. The seismic risk associated with the Verdugo Fault, the impacts on new development south of SR 118, and the construction challenges and visual impact associated with the elevated Pacoima Wash Station were reasons the LAUS to Sylmar alternative was no longer recommended to be carried forward. An alternative at-grade Pacoima Wash option was not recommended to be carried forward due to extensive adverse impacts on adjacent freeways and intersections.

4.1.3 2012 Palmdale to Los Angeles Supplemental Alternatives Analysis Report, Sylmar to Palmdale (2012 SAA Report)

The 2012 SAA Report split the Palmdale to Sylmar Subsection as previously included in the 2010 PAA Report into the Santa Clarita Subsection and the Palmdale Subsection and further evaluated potential alignment alternatives within these two new subsection limits. The 2012 SAA Report focused solely on the Santa Clarita and Palmdale Subsections (see Figure 2-36 in Chapter 2, Alternatives, of the Draft EIS) and made no other changes to the alignment or station options within other subsections carried forward from the previous 2012 SAA Report (Authority 2012a). The 2012 SAA Report refined the SR14 East and the SR14 West Alignments to create an East/West Hybrid option. The 2012 SAA Report recommended that certain alternatives (SR14 East Option, SR14 West Option, SR 14 East/West Hybrid Option, Sand Canyon Preliminary AA Option, Sand Canyon Metrolink 200 Option) be carried forward for further study.

4.1.4 2014 Palmdale to Los Angeles Supplemental Alternatives Analysis Report (2014 SAA Report)

The 2014 SAA Report recommended that the Palmdale to Los Angeles Project Section would be better advanced if divided into two project sections (Palmdale to Burbank and Burbank to Los Angeles) (Authority and FRA 2014). In addition, the 2014 SAA Report evaluated project alternatives from the 2012 SAA Report in light of California HSR System phasing in the Authority's 2012 and 2014 Business Plans. Both Business Plans called for an Initial Operating

Segment with a temporary terminus station in the San Fernando Valley that would be fully integrated with the existing metropolitan rail infrastructure, to provide connections to all of Southern California while construction of the California HSR System to LAUS and beyond continued. The Business Plans' phased implementation strategy contained the following goals intended to make the best use of existing railroad infrastructure:

- A commitment to a blended system that focuses on new high-speed infrastructure development between the State's metropolitan regions while using, to the maximum extent possible, existing regional and commuter rail systems in urban areas.
- A commitment to blended operations at all phases of development that seeks to use new and existing rail infrastructure more efficiently through coordinated delivery of services, including interlining of trains from one system to another as well as integrated scheduling to create seamless connections.
- An Initial Operating Segment to connect the Central Valley to the Los Angeles Basin in the San Fernando Valley, integrating high-speed infrastructure with existing modes of transportation and closing the rail gap between Bakersfield and Palmdale.
- Making early investments in the "bookends", defined as San Francisco and the Los Angeles Basin, to upgrade existing services, build ridership, and lay the foundation for expansion of the California HSR System.

The 2014 SAA Report also considered new information that had developed since the 2012 SAA Report, including the emergence of the Brightline West HSR project (Brightline West Project) from Las Vegas to Victorville, the addition of the high-speed rail corridor of the High Desert Corridor project from Victorville to Palmdale, the incorporation of a Transit Village Specific Plan into the Palmdale General Plan, and planning for land use and transportation by the City of Burbank and the Burbank-Glendale-Pasadena Airport Authority around the Hollywood Burbank Airport. The 2014 SAA Report recommended certain alternatives for further investigation (mapped on Figure 2-37 in Chapter 2, Alternatives, of the Draft EIS) and eliminated others.

4.1.4.1 Santa Clarita Subsection

The 2014 SAA Report revaluated and updated the Santa Clarita North profile to eliminate nonstandard alignment features and meet geometric standards for curvature and segment lengths.

4.1.4.2 San Fernando Valley Subsection

The San Fernando and Branford Street station options were eliminated from further consideration because of their lack of consistency with the 2012 and 2014 Business Plans' criteria and goals.

4.1.4.3 Los Angeles Subsection

The Surface Alternative and LAPT3 remained unchanged in the 2014 SAA Report. However, LAPT1 was refined to utilize a higher platform at LAUS.

4.1.5 Palmdale to Burbank Project Section Supplemental Alternatives Analysis Report (2015 SAA Report)

Informed by the 2014 scoping process, the Authority and FRA continued to refine and consider alternatives between Palmdale and Burbank, including refining the SR 14 corridor and introducing alternatives on the east corridor.

4.1.5.1 SR 14 Corridor

The 2015 SAA Report shifted the proposed station in Palmdale to begin near Avenue O, which would avoid Lake Palmdale (requiring relocation of Una Lake) and minimize impacts in the community of Acton. The report also refined the Santa Clarita North option (now known as Santa Clara Long Tunnel) to have the same horizontal location as the Santa Clarita South alignment and withdrew consideration of HSR tracks east of the Metrolink corridor in the San Fernando

Valley Subsection. Alignment alternatives along the SR 14 corridor were analyzed on an end-to-end basis by combining the Palmdale Subsection options (East, West, and Hybrid), the Santa Clarita Subsection options (Santa Clarita South and Santa Clara Long Tunnel), and the San Fernando Valley Subsection alignment options (HSR aligned west of the Metrolink corridor). The 2015 SAA Report recommended eliminating the following alternatives along the SR 14 Corridor: SR 14-3 (East/Santa Clara Long Tunnel/SCN/San Fernando West) and SR 14-4 (East/SCS /San Fernando West). SR 14-3 and SR 14-4 encountered the most schools located within a 1.25-mile radius of the alignment (21). In particular, these alignments passed near Vasquez High School and High Desert Middle School in the community of Acton with an at-grade profile. High Desert Middle School serves a variety of functions for the small, rural community of Acton, and thus, these alignments would result in substantial community impacts. As such, SR 14-3 and SR14-4 were not carried forward.

4.1.5.2 East Corridor

The 2015 SAA Report also introduced additional alignments that generally follow a second proposed corridor, the East Corridor, through a portion of the San Gabriel Mountains. The East Corridor alignments were introduced to reduce travel time, avoid surface impacts along the SR 14 Corridor, and respond to public comments for consideration of more direct routes between Palmdale and Burbank by way of the ANF, including the SGMNM. East of the community of Acton, these routes would enter a tunnel beneath the ANF, including the SGMNM, emerging at the surface in the northeast San Fernando Valley to share an aboveground corridor with the existing Metrolink Antelope Valley Line. These alignments were developed to use deep tunnels beneath the San Gabriel Mountains to avoid surface impacts within the ANF, including the SGMNM, and the Magic Mountain Wilderness Area. The 2015 SAA Report proposed six new East Corridor alignments: E1a, E1b, E2a, E2b, E3a, and E3b. The E3 alignments were proposed as the easternmost alignments, and the E1 alignments were proposed as the westernmost alignments. The East Corridor alignments would be constructed through the east side of the community of Acton, cross the ANF, including the SGMNM, and enter the northeast San Fernando Valley, eventually sharing the corridor with the existing Metrolink Antelope Valley Line.

4.1.5.3 Station Options

The 2015 SAA Report identified a Burbank Airport Station as the proposed station alternative within the San Fernando Valley. Station Option A shifted the station location northwest within the existing railroad right-of-way to improve connectivity with the Hollywood Burbank Airport.

4.1.6 Palmdale to Burbank Project Section Supplemental Alternatives Analysis Report (2016 SAA Report)

The 2016 Palmdale to Burbank Project Section SAA Report reevaluated all SR 14 Corridor and East Corridor alignment alternatives and station options carried forward from the 2015 SAA Report (see Figure 2-41 in Chapter 2, Alternatives, of the Draft EIS). The 2016 SAA Report incorporated alignment and station refinements originally presented in the 2015 SAA Report to reduce environmental impacts and improve operational performance and travel time. Furthermore, the SR 14 and East Corridor alignments were further refined to minimize surface encounters with sensitive community and environmental resources by tunneling in a more direct route between Palmdale and Burbank. In coordination with USFS, geotechnical investigations were completed within the ANF, including the SGMNM, to obtain subsurface field data to help evaluate potential environmental impacts (i.e., groundwater, hydrogeology, and surface water resources), design constraints, and construction considerations for the tunnel portions of alignments.

4.1.6.1 SR 14 Corridor

The 2016 SAA Report evaluated the two SR14 alternatives carried forward in the 2015 SAA Report (SR 14-1 and SR 14-2) and introduced the Refined SR14 Build Alternative. The Authority reviewed the critical environmental issues associated with SR 14-1 and SR 14-2, especially the strong potential for environmental justice effects on communities in the northeast San Fernando

Valley (including the city of San Fernando). Furthermore, adhering closely to the SR 14 freeway corridor through this area increased the mileage and travel time between Palmdale and Burbank, particularly relative to the Eastern Corridor alignments that took a more direct route underground. The 2016 SAA Report withdrew SR 14-1 and SR 14-2 and proposed SR14 Refined for further evaluation because SR14 Refined would tunnel under the ANF, including the SGMNM, resulting in fewer residential and business displacements, fewer impacts on minority or environmental justice communities, fewer noise and vibration effects on residential properties and schools, and fewer visual impacts than SR 14-1 or SR 14-2.

4.1.6.2 East Corridor

The E1 Refined alternative introduced in the 2016 SAA Report was designed to improve constructability by reducing tunnel grade and depths. Overall travel time would be reduced under E1 Refined in comparison to the SR14 alternatives proposed because of reduced track curvature (which would allow for higher travel speeds). The 2016 SAA Report withdrew E1a and E1b and proposed E1 Refined for further evaluation based on the following key criteria:

- E1 Refined would be approximately 1 mile longer than E1a or E1b. However, near the Arrastre Canyon area, E1 Refined would include an additional 4 to 6 miles of trackway within tunnels compared to the extent of tunnels in E1a and E1b. This would reduce the amount of at-grade or elevated alignment overall. E1 Refined would tunnel beneath the ANF, including the SGMNM, thereby reducing potential surface effects.
- In comparison to the E1a and E1b alignments, E1 Refined would avoid impacts on critical biological habitat of the arroyo toad. The number of miles of elevated and at-grade alignment within a floodplain or within 1 mile of perennial streams or springs would be reduced.
- Less of the E1 Refined alignment would fall within a fire hazard area, and E1 Refined would cross fewer faults in comparison to the E1a and E1b alternatives.

The E2 Refined alternative introduced in the 2016 SAA Report was designed to reduce surface impacts by increasing tunnel length and avoiding the Big Tujunga Wash Mitigation Area.[4] The 2016 SAA Report withdrew E2a and E2b and proposed E2 Refined for further evaluation based on the following key criteria:

- The overall length of E2 Refined would be similar to the length of E2a and E2b. However, an additional 2 miles would be within tunnels near Arrastre Canyon in the E2 Refined alternative, reducing the amount of at-grade or elevated alignment overall. E2 Refined would also tunnel beneath the ANF, including the SGMNM, thereby reducing surface effects, including reduced impacts on critical biological habitat, wetlands, streams, creeks, and canals; it would also have fewer visual impacts due to less aboveground alignment.
- Less of the E2 Refined alignment would fall within a fire hazard area compared to the E2a and E2b alternatives.
- E2 Refined would optimize the Big Tujunga Wash crossing design to avoid crossing over a designated mitigation area within the wash that is owned by the Los Angeles County Flood Control District.
- Although E2 Refined would potentially displace more businesses than E2a and E2b, E2 Refined would potentially displace fewer residences than E2a and E2b.

During the refinement process, the Authority explored possible modifications to improve E3a and E3b. The potential E3 Refined alignment considered by the Authority had the same key design, constructability, and operational issues as the E3a and E3b alternatives. Although the potential E3 Refined alignment would have followed the most direct route of the alignments explored during the refinement process, it would have had the deepest tunnels, the most constrained

[4] The Big Tujunga Wash Mitigation Area was purchased by the Los Angeles County Flood Control District in 1998 to compensate for habitat loss from regional projects. The Mitigation Area is approximately 210 acres and is located in the city of Los Angeles-Sunland area.

design, the longest construction schedule, major restrictions during operation, and increased maintenance costs. Therefore, the E3 corridor was not carried forward for further consideration.

4.2 Alternatives Carried Forward for Study in the EIS

As a result of a comprehensive alternative analysis process, the EIS evaluated six Build Alternatives: Refined SR14, SR14A, E1, E1A, E2, and E2A. The six Build Alternatives differ in linear mileage, location, and extent of tunnel, at-grade, and elevated sections of alignment. Table 4.2-1 summarizes key design metrics. Please refer to Chapter 2, Alternatives, of the Final EIS, for a more detailed discussion of the development of the six Build Alternatives, including the options previously considered for the Burbank Airport Station.

Table 4.2-1 Summary of Design Features for the Build Alternatives

Design Feature	SR14A (Selected Alternative)	Refined SR14	E1	E1A	E2	E2A
Total length (linear miles)	38.15	37.08	35.04	35.20	31.20	31.36
At-grade profile (linear miles)	6.91	6.80	7.15	6.47	5.55	4.85
At-grade covered tunnel (linear miles)	0.47	0.47	0	0	0	0
Cut-and-cover tunnel (linear miles)	1.52	1.52	2.61	1.60	1.85	0.85
Bored/Mined tunnel (linear miles)	27.95	25.58	24.64	26.31	22.48	24.14
Elevated profile (linear miles)	1.31	2.71	0.64	0.82	1.32	1.51
Number of straddle bents	2	1	1	2	1	2
Number of railroad crossings	5	3	3	5	2	5
Number of major water crossings	19	25	12	12	13	13
Number of at-grade road crossings	0	0	0	0	0	0
Approximate number of public and private roadway closures	5	9	13	12	11	10
Number of new roadway overcrossings and undercrossings	9	11	10	9	11	10

Source: Volume 1, Chapter 2, Alternatives, Table 2-12, page 2-87

Each of the six Build Alternatives would begin and end at the same locations. The northern terminus of the Build Alternatives is Spruce Court in the city of Palmdale, which connects the Palmdale to Burbank Project Section to the approved Bakersfield to Palmdale Project Section. The southern terminus of the six Build Alternatives is north of Winona Avenue and north of the Burbank Airport east/west runway in the City of Burbank.

The No Action Alternative (synonymous with the No Build Alternative) was also analyzed in the EIS Documents. The alternatives analyzed in the EIS Documents are the alternatives that the Authority identified as reasonable and potentially feasible and capable of meeting the project Purpose and Need.

The following sections describe the six Build Alternatives and associated facilities evaluated in the EIS Documents, which are described in detail in Chapter 2, Alternatives, of the Final EIS. As explained in Section S.13, Summary of Changes between Draft and Final EIS, in the Final EIS Summary, the Authority considered and incorporated a few minor engineering and design refinements after the publication of the Draft EIS. The refinements were considered and

incorporated for several reasons, including (1) in response to comments on the Draft EIS from agencies, stakeholders, and the public; and (2) to further minimize environmental impacts.

4.2.1 SR14A Build Alternative (Selected Alternative)

The SR14A Build Alternative would begin at grade in the vicinity of Spruce Court, crossing the current alignment of Sierra Highway just north of the East Avenue S, continuing south and curving eastward approximately 300 feet east of Una Lake. South of Una Lake, the SR14A Build Alternative would curve westward, cross over the Metrolink Antelope Valley line, Sierra Highway, and the Soledad Siphon, and continue southwest and enter a tunnel portal northeast of the Sierra Highway/Pearblossom Highway intersection. The SR14A Build Alternative would then continue westward in an approximately 13-mile-long tunnel before surfacing east of Agua Dulce Canyon Road. The alignment would transition between at-grade and elevated profiles closely paralleling SR 14 before entering an approximately 1-mile-long tunnel.

The alignment then transitions from tunnel to at grade, and then elevated profile as it passes over the Santa Clara River. Continuing from the Santa Clara River toward Lang Station Road, the SR14A Build Alternative would enter approximately short at-grade and covered twin tunnels south through the Vulcan Mine within the boundaries of the ANF, including areas within the SGMNM. On completion of the tunnels, the Vulcan Mine site will be regraded and restored to a condition better reflecting the surrounding topography.

After crossing the Vulcan Mine in at-grade and covered twin tunnels, the SR14A Build Alternative would enter approximately 12-mile-long twin tunnels with a maximum depth of approximately 2,080 feet. Construction of a portion of these tunnels would occur in the existing Vulcan Mine site and would pass underneath portions of the ANF.

South of Vulcan Mine, the SR14A Build Alternative would pass in twin tunnels beneath portions of the ANF. The SR14A Build Alternative would emerge from tunnels east of the existing Antelope Valley Metrolink Corridor near Montague Street in the Pacoima neighborhood of Los Angeles.

From Montague Street, the SR14A Build Alternative would continue south in a retained cut/trench, transitioning up to ground level, passing over the existing Hansen Spreading Grounds on embankment, before going over the Los Angeles County Flood Control Channel on a bridge and entering the existing Metrolink corridor near Sheldon Street. Continuing along the eastern side of the Metrolink Corridor, the SR14A Build Alternative would then continue south at grade, where it would cross over Tuxford Street and under the Interstate 5 (I-5) freeway. Continuing southeast from the I-5 undercrossing, the SR14A Build Alternative would transition below grade in an open trench to just north of Olinda Street. From just north of Olinda Street to just south of Sunland Boulevard, the SR14A Build Alternative would be below ground in a cut-and-cover box structure. Metrolink would remain on the surface and the Sun Valley Metrolink station would be reconstructed south of Olinda Street on the surface. South of Sunland Boulevard, the SR14A Build Alternative would continue in a mined or bored tunnel until reaching Lockheed Drive. Lockheed Drive represents the northern limit of the Burbank Subsection of the SR14A Build Alternative. From Lockheed Drive, the SR14A Build Alternative would continue in a cut-and-cover box until entering the Burbank Airport Station.

The Burbank Airport Station was also analyzed in the Burbank to Los Angeles Project Section Final EIR/EIS, and was approved by the Authority Board in January 2022 as part of its approval of the Burbank to Los Angeles Project Section. During the comment period on the Palmdale to Burbank Project Section Draft EIR/EIS, the Authority received comments specific to the Burbank Subsection, and the Final EIR/EIS includes updated analysis in response to those comments. Section 6 of this document describes updates to certain IAMFS and mitigation measures. The design for the Burbank Subsection has not changed from what was previously approved by the Authority Board, and the impact conclusions in the Palmdale to Burbank Project Section Final EIR/EIS are consistent with the conclusions in the Burbank to Los Angeles Project Section Final EIR/EIS for the Burbank Subsection (Authority 2024b).

The Burbank Airport Station will have both underground and aboveground facilities. Aboveground facilities will span approximately 70 acres and would include a station building (which would house ticketing areas, passenger waiting areas, restrooms, and related facilities), pickup/drop-off facilities for private automobiles, a transit center for buses and shuttles, surface parking areas, and stormwater capture/drainage facilities. Underground portions of the station, which include the train boarding platforms, would be beneath Cohasset Street, along which runs the boundary between the city of Los Angeles to the north and the City of Burbank to the south. There will be two HSR tracks at the Burbank Airport Station.

The Burbank Airport Station would be an underground station, beginning near Kenwood Street and extending to just north of Winona Avenue and north of the Burbank Airport east/west runway in the City of Burbank. South of the approved Burbank Airport Station, the Build Alternatives would join with the tunnel alignment that was studied in the Burbank to Los Angeles Project Section EIR/EIS.

4.2.2 Refined SR14 Build Alternative

The Refined SR14 alignment would begin at grade in the vicinity of Spruce Court, west of the current alignment of Sierra Highway near the intersection of Avenue S. The alignment would cross Una Lake on an embankment, requiring partial filling of the lake. North and south of Una Lake, the alignment would cross the San Andreas Fault Zone. Approximately 0.25 mile south of the current location of Una Lake, the Refined SR14 alignment would cross the current alignments of Sierra Highway and the Metrolink rail line, each of which would be relocated within the Refined SR14 Central Subsection.

As further described below, in the 19 miles between Una Lake and Lang Station, the Refined SR14 alignment would traverse a series of short tunnels, viaducts, and at-grade sections.

Continuing south from where the alignment would cross the current Sierra Highway and Metrolink corridor alignments, the Refined SR14 alignment would cross over Barrel Springs Road and continue for approximately 0.6 mile at grade before entering twin tunnels for 7.3 miles. These tunnels would have a maximum depth of 920 feet below ground surface. The tunnels would pass beneath the California Aqueduct, the SR 14 freeway, and various residential communities (including Peaceful Valley Road and other residential areas north of SR 14 freeway near the unincorporated Acton area of Los Angeles County).

After emerging from the tunnel east of Red Rover Mine Road, the Refined SR14 alignment would continue west at grade and on a viaduct over Red Rover Mine Road, Sierra Highway, the SR 14 freeway, and Escondido Canyon Road. The Refined SR14 alignment would then enter twin-bored tunnels approximately 3.1 miles long (maximum depth approximately 780 feet) and would emerge east of Big Springs Road.

Continuing southwest from Big Springs Road, the Refined SR14 alignment would be constructed at grade and on viaduct for approximately 1.5 miles before entering 0.5-mile-long twin tunnels (maximum depth approximately 250 feet). The alignment would emerge from the tunnels approximately 1.0 mile east of Agua Dulce Canyon Road. From this point, the Refined SR14 alignment would continue southwest at grade and on viaducts for approximately 1.5 miles, passing over Agua Dulce Canyon Road on a viaduct structure.

From a point about 0.5 mile west of Agua Dulce Canyon Road, the alignment would enter approximately 0.9-mile-long twin tunnels (maximum depth approximately 470 feet), following a southwesterly direction. On emerging from the tunnels, the alignment would continue at grade or on viaduct for approximately 1.7 miles, crossing the Santa Clara River, Soledad Canyon Road, and the existing Metrolink rail alignment on viaduct structures.[5] Bents and columns of the

[5] Following public circulation of the Draft EIS and through consultation with resource agencies, the Authority developed a design refinement in the vicinity of Bee Canyon that minimized the temporary and permanent footprint for the Refined SR14 and SR14A Build Alternatives. The temporary footprint for both Build Alternatives was eliminated between Agua

viaducts would be placed to avoid/minimize disturbance within ecologically sensitive portions of the river.

Continuing from the Santa Clara River toward Lang Station Road, the Refined SR14 Build Alternative would enter approximately 0.5-mile-long, at-grade, covered twin tunnels that would be constructed to the south through the Soledad Canyon Mining Operations (Vulcan Mine), California Mine Identification Number 91-19-0038, which is almost entirely within the boundaries of the ANF, including the SGMNM. All features south of Vulcan Mine for the Refined SR14 Build Alternative, including alignment, ancillary features, and station sites, would be identical to the features described for the SR14A Build Alternative.

4.2.3 E1 Build Alternative

The 2015 SAA Report introduced several East Corridor alignments to make a more direct connection between Palmdale and Burbank than previous options, by incorporating long tunnels beneath portions of the ANF, including the SGMNM. The E1 Build Alternative was one of several options introduced in the 2015 SAA Report, substantially refined in the 2016 SAA Report, and recommended in the Checkpoint B Summary Report for further analysis in the Final EIS. The E1 Build Alternative was intended to provide a shorter, faster, less disruptive route to connect Palmdale and Burbank compared to a corridor along the SR 14 freeway.

The E1 Build Alternative is more fully described in Chapter 2, Alternatives of the Final EIS, but some features are highlighted here. The E1 alignment would require relocation of an approximately 0.9-mile-long portion of the California Aqueduct. This alternative would also cross an unnamed wash area northwest of the existing Vincent Substation. After crossing beneath Little Tujunga Canyon Road and the San Gabriel fault, the E1 alignment would continue in a more southwesterly direction, in tunnels approximately 0.3 mile east of the Pacoima Reservoir, and would exit the ANF (remaining underground) beneath the Sylmar neighborhood of the city of Los Angeles. The E1 alignment would continue underground, crossing the Sierra Madre Fault Zone, and then passing beneath the I-210/SR 118 interchange in the Pacoima neighborhood of the city of Los Angeles, where the alignment would curve from a southerly to southeasterly direction. The E1 alignment would emerge from the tunnels immediately after passing beneath Montague Street in Pacoima.

From Montague Street, the E1 alignment would follow the same routing as described for the Selected Alternative (and the Refined SR14 Build Alternative) from the alignment's emergence near Montague Street to the end of the Central Subsection at Lockheed Drive.

Lockheed Drive represents the northern limit of the E1 Burbank Subsection. South of Lockheed Drive, all E1 Build Alternative, ancillary features, and station sites within the Burbank Subsection would be identical to the features described for the Selected Alternative.

4.2.4 E1A Build Alternative

The Authority developed the E1A Build Alternative to reduce impacts on aquatic resources south of the city of Palmdale. Because the E1A Build Alternative was developed based on the E1 Build Alternative, the above description of the E1 Build Alternative applies to the E1A Build Alternative, except as follows.

The E1A Build Alternative would begin at grade in the vicinity of Spruce Court, crossing the current alignment of Sierra Highway just north of East Avenue S, continuing south and curving eastward approximately 300 feet east of Una Lake. In contrast to the E1 Build Alternative, the E1A Build Alternative would include elevated structures to cross over the California Aqueduct before entering a tunnel portal approximately 1,900 feet southwest of the Sierra Highway/Pearblossom Highway intersection. After continuing underground for approximately 1.5

Dulce Canyon Road and Soledad Canyon Road. The permanent footprint along this area prior to the Bee Canyon design refinement was 132.74 acres (Refined SR14 Build Alternative) and 129.41 acres (SR14A Build Alternative). The Bee Canyon design refinement reduced the permanent footprint to 105.78 acres and 100.87 acres, respectively, for a reduction of 26.96 acres for the Refined SR14 Build Alternative and 28.54 acres for the SR14A Build Alternative.

miles, the E1A Build Alternative would transition to an at-grade profile approximately 350 feet north of Vincent View Road. Just south of Vincent View Road, the E1A Build Alternative would converge with the E1 Build Alternative. The remaining E1A Build Alternative south of Vincent View Road, under the ANF, including the SGMNM, into the San Fernando Valley, and to the southern terminus of the Central Subsection, would be identical to the E1 Build Alternative.

Lockheed Drive represents the northern limit of the E1A Burbank Subsection. South of Lockheed Drive, all E1A Build Alternative, ancillary features, and station sites within the Burbank Subsection would be identical to the features described for the Selected Alternative and E1 Burbank Subsection.

4.2.5 E2 Build Alternative

The E2 alignment was one of several options introduced in the 2015 SAA Report, substantially refined in the 2016 SAA Report, and recommended in the Checkpoint B Summary Report for further analysis in this Final EIS. E2 is intended to provide a shorter, faster, and potentially less disruptive route to connect Palmdale and Burbank than alignments more strictly following the SR 14 freeway corridor.

The E2 Build Alternative would be identical to the E1 alignment from Spruce Court to Aliso Canyon Road. This includes the area passing through Una Lake, the San Andreas Fault Zone, the California Aqueduct, the Santa Clara River tributary, and Aliso Canyon Road itself.

To the immediate west of Aliso Canyon Road, the E2 alignment would enter twin 16.6-mile-long tunnels, initially following a path to the southwest (maximum depth of 2,670 feet). The initial 7 miles of this tunnel would be constructed beneath the ANF, including the SGMNM. The alignment would continue southwesterly, curving to a more south-southwesterly direction as the alignment passes beneath Mendenhall Ridge Road, and then through the San Gabriel Fault.

The E2 alignment would transition from tunnel to at grade in the hills above the Lake View Terrace neighborhood of Los Angeles, near the private, unimproved BP&L Road. This tunnel portal would require approximately 28.9 acres of additional surface area disturbance in the ANF for grading and slope stabilization. After crossing the Sierra Madre Fault Zone, the alignment would continue at grade for approximately 0.2 mile before transitioning to an elevated viaduct structure. The 0.75-mile viaduct would cross over Arnwood Road, Foothill Boulevard, and the I-210 freeway, and then would continue to cross Big Tujunga Wash and cross below Wentworth Street in the Shadow Hills neighborhood of the city of Los Angeles.

After crossing Wentworth Street, the E2 alignment would continue along a relatively short (200-foot) at-grade section before transitioning to a bored/mined tunnel (maximum depth of 240 feet) for approximately 1.5 miles. This portion of the alignment would continue in the same south-southwesterly direction until approximately Peoria Street in the Sun Valley neighborhood of the city of Los Angeles. Beneath Peoria Street, the E2 alignment would curve to the southeast. At Peoria Street, the tunnel construction method could also change. North of Peoria Street, the tunnels would be bored, but between Peoria Street and approximately Fleetwood Street (0.9 mile), they would either be open cut-and-cover (maximum depth approximately 120 feet) or in continuous bored tunnels. For the purpose of this environmental review, it is assumed that the alignment would transition to a cut-and-cover tunnel in this location. Cut-and-cover is assumed because it would have impacts at the ground surface, and therefore would capture the maximum extent of effects. At Fleetwood Street, bored/mined tunneling would resume (maximum depth of 120 feet) because the E2 alignment would pass beneath Sunland Boulevard, I-5, and San Fernando Road. This tunnel would extend until San Fernando Road. At this point, the alignment would transition into a cut-and-cover tunnel that would cross San Fernando Road until Lockheed Drive, which is the southern limit of this subsection within the E2 alternative.

Lockheed Drive represents the northern limit of the E2 Burbank Subsection. South of Lockheed Drive, all E2 Build Alternative ancillary features and station sites within the Burbank Subsection would be identical to the features described for the Selected Alternative in the Burbank Subsection.

4.2.6 E2A Build Alternative

Through consultation with resource agencies, the Authority developed the E2A Build Alternative to reduce impacts on aquatic resources south of the city of Palmdale.

The E2A Build Alternative would be identical to the E1A Build Alternative from Spruce Court to Vincent View Road, where it would rejoin with the E2 Build Alternative. The remaining alignment of the E2A Build Alternative south of Vincent View Road, under the ANF, into the San Fernando Valley, and to the southern terminus of the Central Subsection would be identical to the E2 Build Alternative.

Lockheed Drive represents the northern limit of the E2A Burbank Subsection. South of Lockheed Drive, all E2A Build Alternative ancillary features and station sites within the Burbank Subsection would be identical to the features described for the Selected Alternative in the Burbank Subsection. The track alignment would be slightly different, but within the same footprint.

4.3 Reducing Adverse Effects on Environmental Justice (EJ) Communities through Range of Alternatives Refinement and Selection

The Authority has paid particular attention to reducing impacts to EJ communities where feasible and has considered this throughout the alternatives definition process. For the Palmdale to Burbank Project Section, the Authority prepared a PAA Report in 2010. This was followed by SAA Reports in 2011, 2012, 2014, and 2016. Prior to 2016, the alternatives focused on alignments that followed the SR14 freeway from Palmdale to Santa Clarita, and then followed the existing Metrolink corridor from Sylmar to Burbank (refer to Chapter 2, Alternatives, of the Final EIS for a detailed discussion of alternatives previously considered). The alignment through EJ communities in the northern part of the San Fernando Valley was met with significant opposition due to its impacts on those communities.

The 2016 SAA Report introduced the Refined SR14 Alternative into the project (the SR14A Build Alternative is identical to the Refined SR14 Build Alternative in the Pacoima and Sun Valley area). The Refined SR14 Alternative was developed to be less impactful to EJ communities than the previously developed SR14 alternatives. Specifically, the Refined SR14 Build Alternative avoided impacts to the City of San Fernando and had reduced impacts to the communities of Sylmar and Pacoima. As documented in the 2016 SAA, the Refined SR14 Build Alternative reduced residential impacts by 8 multifamily homes and 32 single-family homes. Business displacements were reduced by 125 commercial parcels and 85 industrial parcels. The number of residential properties within 2,500 feet of the HSR centerline was reduced by more than 7,000. Following a presentation of the 2016 SAA to the Authority's Board in April 2016, the Refined SR14 Build Alternative was carried forward and the previous SR 14 alternatives were dropped from consideration. The primary reason for these changes was to reduce impacts to EJ communities.

As presented in the 2016 SAA Report, the Refined SR14 Build Alternative, as well as the E1 alternative that is identical to the Refined SR14 Build Alternative in the San Fernando Valley, entered the Metrolink corridor in the vicinity of Sheldon Street. At that time, the Refined SR14 Build Alternative included a viaduct structure to carry the project up and over the Metrolink tracks so that the HSR line could enter the Metrolink corridor on the southwestern side. As the design was further developed in 2017 and 2018, and public meetings were held in 2018, significant input was received from the community and elected officials opposing the viaduct that would carry HSR over Metrolink near Sheldon Street. The primary concerns were noise and visual impacts of having the train elevated in close proximity to residential neighborhoods. As a result, the design was modified in 2018 to bring HSR into the Metrolink corridor on the northeastern side (avoiding the need for HSR to cross over Metrolink) and keeping the project at ground level through Sun Valley. This design refinement was incorporated into the design of the Refined SR14 and E1 Build Alternatives when the Palmdale to Burbank Project Section was presented to the Authority's Board at the November 2018 Board meeting. At that meeting the Board adopted the Refined

SR14 Build Alternative as the State's Preferred Alternative. The Board subsequently adopted the SR14A Build Alternative as the State's Preferred Alternative in 2020 to avoid impacts to Una Lake, a sensitive aquatic resource south of Palmdale.

4.4 Description of the Selected Alternative

The Authority has identified the SR14A Build Alternative—which consists of six different track profiles: at grade, at grade covered, cut-and-cover, retained cut/trench profile, tunnel, and elevated/aerial structure in a variety of land uses and ecoregions, including urban, rural, and mountainous terrain in Southern California, as the Selected Alternative. The Selected Alternative would include approximately 38 miles of alignment, designed at speeds that would support a 13-minute nonstop travel time, with operation time of about 17 minutes. The Selected Alternative begins at Spruce Court in Palmdale and ends near Winona Avenue in Burbank, including both the Central Subsection and the Burbank Subsection, including its Burbank Airport Station, as these subsections are described in the Final EIR/EIS.

The Burbank Airport Station was also analyzed in the Burbank to Los Angeles Project Section Final EIR/EIS, and was approved by the Authority Board in January 2022 as part of its approval of the Burbank to Los Angeles Project Section. During the comment period on the Palmdale to Burbank Project Section Draft EIR/EIS, the Authority received comments specific to the Burbank Subsection, and the Palmdale to Burbank Final EIR/EIS includes updated analysis in response to those comments. The design for the Burbank Subsection has not changed from what was previously approved by the Authority Board, and the impact conclusions in the Palmdale to Burbank Project Section Final EIR/EIS are consistent with the conclusions in the Burbank to Los Angeles Project Section Final EIR/EIS for the Burbank Subsection (Authority 2024d).

For a more detailed description of the Selected Alternative, refer to Section 4.2.1, Section SR14A Build Alternative.

4.5 Environmentally Preferable Alternative

The CEQ NEPA regulations require that the ROD identify "all alternatives that were considered by the agency in reaching its decision, specifying the alternative or alternatives which were considered to be environmentally preferable." (40 C.F.R. § 1505.2(b)). In determining an environmentally preferable alternative, the Authority weighed and balanced the physical environmental effects associated with all six project alternatives/build alternatives as well as those associated with the No Action (no build) Alternative. The Authority identified the environmentally preferable alternative by balancing the adverse and beneficial impacts of the alternatives on the human and natural environment. A determination of which alternative is environmentally superior necessarily involves a series of judgment calls about potential environmental effects, the weight to give each environmental effect, and technical realities.

The Authority determined that the adverse environmental effects associated with the project alternatives/build alternatives would be less substantial than the adverse environmental effects associated with the No Action (no build) Alternative. From a statewide perspective, this section is an essential component of the statewide HSR system and serves as the last link in the chain to achieving the benefits identified in Phase 1 of the Tier 1 analysis for San Francisco to Los Angeles Union Station. Without the HSR system, the current and projected future congestion of California's intercity transportation system will result in deteriorating air quality, reduced reliability, and increased travel times. In the meantime, California's population will likely increase by over 26 percent from 2010 to 2040, from 37.3 million people to 47.2 million people and to 52 million by 2060.

The Phase 1 system provides many benefits. The average annual savings of the Phase 1 system through 2040 is projected to be just over 1 million metric tons of carbon dioxide equivalents and, through 2079, would cumulatively total 24.7 million metric tons of carbon dioxide equivalents. The HSR system would also reduce the need for expanding airports and freeways. That would relieve pressure on existing open space areas and agricultural lands, and consequently natural resources. A new transportation option would provide an opportunity to create and support transit

centers in the central business districts, where mixed land uses (residential, commercial, and business uses) and urban densities are best suited.

In the metropolitan coastal areas and in Southern California's Inland Empire, growth and development have become increasingly challenged because of environmental constraints and quality-of-life issues, including high housing prices. Los Angeles County will likely grow by 13 percent by 2040, and the cities of Lancaster and Palmdale will likely grow by 30 and 27 percent by 2040, respectively. Many residents in the city of Los Angeles commute long distances to work. Approximately 27 percent of residents commute for 30 to 44 minutes and approximately 12 percent commute for 60 or more minutes. The percentage of commuters with a 60-minute or longer commute is higher for residents of the city of Los Angeles than for residents of Burbank and the state overall. The substantial number of commuters places a strain on the regional transportation system. Due to a large dependency on automobile transportation, the greater Los Angeles area experiences some of the worst traffic congestion among the nation's metropolitan areas. Despite past improvements to roadways, population growth and travel demand continue to strain local infrastructure. This has consequently resulted in increased congestion and delays, increased fuel consumption, and decreased air quality (SCAG 2016).

The transportation sector is responsible for about 41 percent of California's GHG emissions (CARB 2018b). Therefore, meeting federal and state air quality standards over the next 20 to 40 years will require reductions in VMT, integration of land use and transportation planning and development, development of transportation demand strategies, implementation of operational improvements, and use of new technologies that improve transportation efficiencies and increase transportation alternatives to single-occupancy automobiles. The statewide system would result in overall reductions in single-occupancy vehicle trips and aircraft activity to achieve emissions benefits; with a greater number of people traveling on the California HSR System, VMT and airplane miles would be reduced.

The build alternatives would support state and local goals of improving air quality and reducing GHG emissions. The Palmdale to Burbank Project Section would also improve access to the Hollywood Burbank Airport for residents of the Antelope Valley and Southern Central Valley. The Final EIS has shown adverse impacts from the Selected Alternative, in the absence of mitigation, from construction and operation noise, air quality, traffic, public utilities and energy, biological and aquatic resources, hydrology and water quality, paleontological resources, hazardous materials and wastes, socioeconomics and communities, parks, recreation, and open space, aesthetics, cultural resources, Section 4(f) resources, and cumulative impacts. The Authority has weighed these impacts and concluded that the benefits to transportation, mobility, air quality, and land-use pressures make the SR14A Build Alternative environmentally preferable to the No Build Alternative.

As discussed in Section 2.3 of this ROD, USACE and USEPA concurred in January 2024 that the Authority's Selected Alternative is the preliminary LEDPA, consistent with USACE's permit program (33 C.F.R. Parts 320–331) and USEPA's Section 404(b)(1) Guidelines (40 C.F.R. Parts 230–233).

The SR14A Build Alternative performs the best of the Build Alternatives on metrics for several resource areas. The descriptions below describe these areas in detail:

- **Operational Noise:** The SR14A Build Alternative would result in the fewest number of sensitive residential receivers that would experience operational noise impacts. This is primarily due to the fact this alternative would be underground, in bored tunnel through the community of Acton. After mitigation, the SR14A would result in severe effects at 11 receptors, whereas the second least impactful alternative (Refined Alternative SR14) would affect 36, with the maximum number of receptors subject to severe impacts being 69.
- **LEDPA and Waters of the U.S.:** The SR14A Alternative (in addition to the E1A Build Alternative) would have the least impact on wetland waters of the U.S. While the E2A Build Alternative would have the least impact on nonwetland waters of the U.S., the SR14A Alternative would affect lower-quality non-wetland waters than the E2A Alternative. As stated

above, the SR14A Build Alternative is the preliminary LEDPA, indicating there is no other alternative that would have a lesser adverse impact on the aquatic ecosystem. Additionally, the preliminary LEDPA determination reflects USACE and EPA's preliminary concurrence that there are no other less environmentally damaging practicable alternatives.

- **Hydrology Surface Water Resources within the ANF:** The SR14A Build Alternative (as well as the Refined SR14 Alternative) would have the lowest and least potential risk to groundwater and surface water resources because the alignment traverses areas with lower groundwater pressures and no known groundwater-dependent resources among the one High Risk Area and three Moderate Risk Areas along the alignment in the ANF. The E2 and E2A Build Alternatives would have the highest potential risk to groundwater and surface water resources when compared to Refined SR14, SR14A, E1, and E1A because of the comparatively higher groundwater pressures and greater prevalence of springs and streams with the identified High and Moderate Risk Areas.
- **Built Historic Resources:** The SR14A Build Alternative (as well as the Refined SR14 Alternative) would have the least potential for direct and indirect effects on built historic cultural resources compared to the other Build Alternatives, with two built historic resources being affected and all such effects *de minimis*. The SR14A Build Alternative (as well as the Refined SR14 Alternative) would have no effect on the Blum Ranch, the Blum Ranch Farmhouse, and the Eagle and Last Chance Mine Road because these resources are outside of their respective resource study areas (RSAs).
- **Vulcan Mine:** The SR14A Build Alternative (as well as the Refined SR14 Build Alternative) would help restore the Vulcan Mine site by depositing some spoils there to restore a more natural topography. Vulcan Mine is an inactive sand and gravel mining site, south of Lang Station Road within the ANF. GEO-MM#1 requires a restoration plan for Vulcan Mine. Restoration would improve a landscape within the ANF boundary that was affected by previous mine activities.
- **Una Lake:** The SR14A Build Alternative (as well as the E1A, and E2A Build Alternatives) would avoid adverse impacts to Una Lake. Substantial concern was raised during preparation of the EIS around this aquatic resource and the biological resources and habitat associated with Una Lake.
- **Pacific Crest Trail:** In further contrast to the Refined SR14 Build Alternative, the SR14A Alternative would not need a viaduct over the Pacific Crest Trail (PCT). The PCT is a series of ridgeline trails that extend approximately 2,659 miles along the Sierra Nevada and Cascade mountain ranges, from Mexico through California, Oregon, and Washington to Canada. The Refined SR14 Build Alternative would pass over the PCT in two locations on a viaduct, potentially affecting about 0.7 mile of trail. The SR14A, E1, E1A, E2, and E2A Build Alternatives would tunnel underneath the PCT where the PCT travels through the ANF.
- **Hansen Dam Open Space:** The SR14A Build Alternative (and the Refined SR14, SR14A, E1, and E1A Build Alternatives) would cause fewer impacts than the E2 and E2A Build Alternatives by avoiding the Hansen Dam Open Space. E2 and E2A Build Alternatives would result in direct impacts on the Hansen Dam Open Space. The direct and indirect impacts on the Hansen Dam Open Space under the E2 and E2A Build Alternatives would represent the one of the largest direct and indirect impacts on park and recreational resources among Build Alternatives. During the development of the EIS, substantial concerns from the public and agencies were raised regarding construction and operation impacts of certain build alternatives (not SR14A) on recreational uses in the Big Tujunga Wash and the Hansen Dam Open Space Areas.
- **Aesthetics:** In general, during construction the SR14A Build Alternative (and the E1, and E1A Build Alternatives) would cause fewer and less variety of visual impacts than the Refined SR14, E2, and E2A Build Alternatives would cause. Although the SR14A Build Alternative would potentially cause aesthetic effects to areas such as near Agua Dulce Canyon Road and Soledad Siphon, the SR14A, E1, and E1A Build Alternatives would include the greatest

extent of tunnels in terms of distance and would thus result in the least visual impact on its surroundings.

- **Residential Displacements:** The SR14A Alternative would be roughly tied with the E1A alternative for second-least residential displacements among the Build Alternatives, although it could potentially result in fewer displacements than E1A. E2A would have the most (64), followed by Refined SR14 (51–54), then E2 (49), then E1A (39–44) and SR14A (39–42), then E1 (24–29). Additionally, the EIS found that there is no deficit of available replacement housing units for the SR14A Build Alternative.
- **Hansen Dam Spreading Grounds:** The SR14A Alternative crosses the Hansen Spreading Grounds. However, several other alternatives (Refined SR14, E1, and E1A Build Alternatives alignments) will also similarly cross these Grounds and have similar impacts. Additionally, mitigation has been designed to offset impacts to the spreading grounds in coordination with the Los Angeles County Flood Control District to maintain the groundwater recharge function and capacity of the Spreading Grounds.

For these reasons, the Authority has identified the SR14A Build Alternative as the Environmentally Preferable Alternative.

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5 SUMMARY OF POTENTIAL EFFECTS

Construction and operation of the Selected Alternative has the potential to affect a variety of environmental and social resources. Impacts on these resources could be adverse or beneficial. A NEPA impact determination requires consideration of both context and intensity. Chapter 3, Affected Environment, Environmental Consequences, and Mitigation Measures, of the Final EIS includes a full discussion of the potential impacts of the Palmdale to Burbank Project Section, organized by resource area. To fully understand the potential range of impacts of the Selected Alternative, the Final EIS analyzed all reasonably foreseeable environmental impacts resulting from its construction and operation.

Although there would be no adverse impacts in certain resource areas after mitigation, this document includes a discussion of the Authority's effects analysis for some of these resources due to the strong public and agency interest in these issues throughout the process.

The following sections summarize the adverse and the beneficial impacts that may occur with construction and operation of the Selected Alternative.

5.1 Transportation

5.1.1 Construction

For all the Build Alternatives, spoils hauling will result in adverse effects on transportation. For the Selected Alternative, spoils hauling would cause adverse effects at five roadway segments, two freeway segments, and fifteen intersections. Spoils hauling would not only affect drivers, but also transit riders. Transit delays could conflict with the efficiency goals of regional and local transportation plans. However, spoils hauling would only occur during the construction period, and would not permanently interfere with the transit system. Additionally, the Authority would implement numerous IAMFs to avoid or minimize effects during construction spoils hauling, such as contractor requirements to avoid or minimize circulation impacts due to road closures and impacts due to construction within existing railroad rights-of-way. The Authority would also develop a Transportation Construction Management Plan (CMP) to address traffic circulation during spoils hauling activities, including by relocating spoils collection areas and access to minimize effects during peak hours. The CMP would also mitigate these effects by outlining transportation detours, plans to accommodate emergency service routes, and outreach activities to manage expectations and traffic constraints, among other items. Spoils hauling impacts on roadway segments, intersections, and freeway segments would remain adverse after mitigation.

Existing freight and passenger rail services would continue without interference with implementation of the six Build Alternatives. While each Build Alternative has slightly different impacts, temporary tracks (TR-IAMF#9) would ensure existing rail services continue without interference. Travel delay to transit services induced by the Palmdale to Burbank Project Section would result in a conflict with policies and plans related to transit circulation. Project construction could interfere with transit service schedules such that routes may not operate on schedule. Mitigation measures would require a Transit Coordination Plan as well as In-Lieu Traffic Improvements to reduce impacts on transit providers. Impacts would not be adverse.

Construction activities associated with the six Build Alternatives could require temporary lane or road closures, underground utility work, or construction-related trips that could interfere with vehicles, pedestrians, bicyclists, transit routes, and local access throughout the Palmdale to Burbank Project Section. Implementation of TR-IAMF#1 through TR-IAMF#7, TR-IAMF#11, and TR-IAMF#12 will prevent circumstances that substantially would interfere with vehicle, pedestrian, bicyclist, and transit circulation or access during construction. Implementation of the IAMFs will repair structural damage to public roadways resulting from construction, require that construction-related trips would occur in off-peak hours, and would require the contractor to prepare and implement specific CMPs to ensure access during construction. These measures include scheduling a majority of construction-related travel during off-peak hours and, where feasible, temporarily removing on-street parking to maximize vehicular capacity, transit capacity, and bicycle circulation at locations affected by construction closures. On completion of construction,

facilities would be restored to a condition equivalent to or better than their pre-construction condition. Impacts would not be adverse.

Construction could create temporary increases in automobile delay and travel time on roadway segments and intersections during construction of the Palmdale to Burbank Project Section. Impacts would not be adverse.

Freeway segments within the transportation RSA would not be affected by the six Build Alternatives under Existing (2015) Plus Construction Conditions. Freeway segments in the Central Subsection were not anticipated to have more than 50 project-related trips on any segment because trips would be distributed throughout the subsection. Therefore, none of the freeway segments in the Central Subsection met the threshold for further analysis. All freeway segments in the Burbank Subsection would operate at adequate LOS and would not increase V/C by 0.02 or more. Impacts would not be adverse.

The Burbank Subsection would require the realignment of San Fernando Boulevard, which would close the current pedestrian access along San Fernando Boulevard, Arvilla Avenue, Lockheed Drive, Cohasset Street, and Hollywood Way. The proposed San Fernando Boulevard realignment would provide sidewalks, curb ramps, and crosswalks along the roadway and at the intersection realignments with Arvilla Avenue, and Hollywood Way. The Burbank Subsection proposes two pedestrian overpasses that would provide access from San Fernando Boulevard to the Burbank Airport Station, plus one pedestrian overcrossing that would link the two sides of the approved Burbank Airport Station. The Burbank Airport Station would include bike racks, pedestrian connections to the existing sidewalks, and bike lanes/facilities, where feasible. Existing and planned pedestrian and bicycle facilities serving the vicinity of the approved Burbank Airport Station would adequately meet the Palmdale to Burbank Project Section demand. However, coordination with the City of Burbank during the station planning and roadway design phase would be required to address impacts on pedestrian and bicyclist access and circulation. Impacts would not be adverse.

5.1.2 Operation

Operation would generate new trips near the Burbank Airport Station, which would result in roadway segment and intersection impacts. Nevertheless, with mitigation like new traffic signals and widening an intersection, existing freeway infrastructure could accommodate that traffic without affecting any freeway's LOS. The Selected Alternative (as well as all five other Build Alternatives) would also reduce vehicle miles traveled (VMT) from the regional roadways as people use the HSR instead of driving. Project features to address nonmotorized travel impacts include providing and maintaining pedestrian and bicycle accessibility across the HSR corridor, to and from stations, and on station property. The Selected Alternative's overall impact on transportation resources in the region and state will be beneficial through substantial reductions in VMT, increased transit connectivity, and reduction in the need to expand freeways and airports.

5.2 Air Quality and Global Climate Change

5.2.1 Construction

Construction emissions would exceed the annual applicable South Coast Air Basin *de minimis* General Conformity level(s) and applicable South Coast Air Quality Management District (SCAQMD) threshold(s). The specific construction year and pollutant-type exceedances vary between the Build Alternatives, yet no deviations are large enough to make one Build Alternative substantially less impactful than another. Within the South Coast Air Basin, construction of the Selected Alternative (as well as the Refined SR14, and E2A Build Alternatives Build Alternatives) would result in exceedance of nitrogen oxides (NO_x), and subsequently an exceedance of nitrogen dioxide (NO_2) as a subset of NO_x, and carbon monoxide (CO) levels, while construction of the E1, E1A, and E2 Build Alternatives would result in exceedance of the NO_x level. Within the Mojave Desert Air Basin, construction of the E2A Build Alternative would result in exceedance of the Mojave Desert Air Basin *de minimis* General Conformity level and Antelope Valley Air Quality

Management District CEQA threshold for NO_x. The Selected Alternative (as well as the Refined SR14, E1, E1A, and E2 Build Alternatives) would avoid this impact.

To reduce impacts on the environment, the Selected Alternative will employ measures to reduce fugitive dust emissions, use renewable diesel fuel in construction diesel equipment and on-road diesel trucks, and reduce criteria exhaust emissions from both on-road construction vehicles and heavy-duty off-road construction equipment.

5.2.2 Operation

Operation is anticipated to have a beneficial effect on (i.e., a net reduction of) statewide GHG emissions over the No Action Alternative. There would be no difference in operating GHG emissions between the Selected Alternative and the five other Build Alternatives because the regional change in vehicle emissions and indirect energy use would be the same. Annual reductions would range from 1.1 million metric tons carbon dioxide equivalent to 1.7 million metric tons carbon dioxide equivalent in 2040, depending on the ridership scenario.

5.3 Noise and Vibration

5.3.1 Construction

While the intensity of construction-related noise effects would be similar between the Selected Alternative and the other five Build Alternatives, the E2 Build Alternative and the E2A Build Alternative would require at-grade construction work adjacent to more communities than the other Build Alternatives, resulting in more sensitive receivers being exposed to construction noise. The Selected Alternative (as well as the Refined SR14 Build Alternative) would be constructed above ground in an area of low-density residential development in Agua Dulce. While the E1, E1A, E2, and E2A Build Alternatives would avoid that community, they would involve at-grade construction work in a community located near the SCE Vincent Substation. Additionally, the E2 and E2A Build Alternatives would involve at-grade construction work in the communities of Lake View Terrace and Sun Valley.

Removing spoils from tunnel portals could take over 6 years, depending on the Build Alternative and portal. Trucks would haul most spoils from tunnel portals to disposal sites, but some spoils would be transported by conveyor systems. A noise assessment was conducted to determine the impacts of spoils haul trucks enroute to the spoils site. Spoils hauling for most Build Alternatives would cause severe noise impacts, but for the Selected Alternative, the spoils hauling would not result in adverse noise effects on sensitive receptors.

5.3.2 Operation

Operation would generate noise levels above ambient levels from train passbys and/or train horns (to provide advance warning of trains approaching HSR platforms), resulting in adverse impacts from the exposure of sensitive receptors to severe noise. With the mitigation measures identified in the Mitigation Monitoring and Enforcement Plan (MMEP), which include noise barriers, the Selected Alternative would result in less noise effects. After mitigation, the Selected Alternative would result in 11 severe impacts, while the other Build Alternative would result in severe impacts to 36 to 69 receptors. Overall, the Selected Alternative would result in the fewest number of sensitive residential receivers that would experience operational noise impacts.

5.4 Public Utilities and Energy

5.4.1 Construction

The Selected Alternative (and the E1A, and E2A Build Alternatives) would require reconfiguring the Acton Water Treatment Plant. The Authority has committed to coordinating with Antelope Valley-East Kern Water Agency to ensure that all replacement/relocated facilities are in place, tested, and operational before any part of the existing Acton Water Treatment Plant is taken offline so that the Acton Water Treatment Plant would remain operable.

Although construction would generate wastewater, none of the wastewater would be directly piped back into local wastewater treatment systems, collection systems, or treatment plants. Some of this wastewater would also be collected in water retention ponds or treated in the same capacity, and like the tunnel spoils, would be hauled off site. Although the total amount of wastewater generated during construction would differ between the six Build Alternatives based on construction factors (e.g., length of tunnels), the Build Alternatives would result in similar types of wastewater effects during construction.

Construction of the Selected Alternative (as well as the five other Build Alternatives) would require water use for tunnel boring machine operations, for increasing the water content of soil to optimize tunneling and to prepare concrete. It would also use smaller amounts for dust control, for reseeding construction areas, for construction worker consumption, and for other reasons. Under the No Action Alternative, local water providers predict availability of sufficient water supplies to meet future demands, assuming normal rainfall conditions. The EIS, however, also assessed a more conservative scenario where, in the event of single or multiple dry year conditions, water demands could exceed supplies.

While the Selected Alternative would have among the higher amounts of annual water demand due to its higher use of tunnel boring machines, a detailed analysis of water service providers, including both potable and recycled water, was completed for the EIS. Based on review of water providers in the project area, including review and analysis of existing plans such as Urban Water Management Plans and communications with staff at water agencies, the Authority has identified a portfolio of water supplies that could meet the project's temporary water demand during construction during normal years, as well as dry and multiple dry years. The Authority has also identified recycled water providers with available supply during dry and multiple dry years that can be used in the event of water curtailment for the project.

5.4.2 Operation

Operating high-speed trains, stations, and maintenance facilities requires water. Because no Build Alternative would have planned stations or maintenance facilities in the Central Subsection, the operation of the railway tracks would have no permanent operations water demand there. The Burbank Water and Power UWMP shows adequate capacity to serve the planned land uses within that service area. Regardless of the Build Alternative selected, the operation of the Burbank Airport Station would result in a 15 percent decrease in water demand when compared to the existing land uses.

5.5 Biological and Aquatic Resources

5.5.1 Construction

All Build Alternatives would have the potential to affect biological resources, including plant species and habitat, fish and wildlife species and habitat, and wetlands and other waters. The degree to which the Build Alternatives could affect each biological and aquatic resource varies, as do the specific resources that each Build Alternative could affect.

The Selected Alternative (and the Refined SR14 Build Alternative) would have the least potential effects on groundwater that supports habitat for plant species and communities as well as habitat for wildlife. The Selected Alternative (and the Refined SR14 Build Alternative) would have the least number of impacts from groundwater loss on state and federally protected aquatic resources and on aquatic resources.

For FESA-listed plant species, the Selected Alternative has the same effects as the other Build Alternatives, absent mitigation. The six Build Alternatives would also affect the same 42 non-FESA–listed special-status plant species, and 7 special-status plant communities. The Refined SR14 Build Alternative would affect the most acres of special-status plant species habitat and special-status plant communities and the E2 Build Alternative would affect the most acres of special-status plant communities.

All Build Alternatives would affect approximately the same number of FESA-listed wildlife species. The Selected Alternative (as well as the Refined SR14 Alternative) may affect the second fewest non-FESA–listed species (46 species each). The E2 and E2A Build Alternatives may affect the most non-FESA–listed species (47 species each), and the E1 and E1A Build Alternatives may affect the fewest (43 species each). With mitigation and related measures, the Selected Alternative was found to have no adverse effects.

Without mitigation and related measures, the Selected Alternative has similar impacts to the Refined SR14, E2, and E2A Build Alternatives with respect to federally designated critical habitat. However, several mitigation measures would provide avoidance, minimization, and compensatory mitigation for the impact such that it would no longer be a substantial adverse effect on designated critical habitat, avoiding the adverse impact for the Selected Alternative (in addition to the Refined SR14, E2, and E2A Build Alternatives).

To avoid adverse effects on these species and this habitat, the Authority conducted a thorough analysis of impacts with implementation of the associated IAMFs and where it was determined that the impacts were significant after application of IAMFs, the Authority developed mitigation measures (MMs) to further reduce impacts. With implementation of mitigation measures, the Selected Alternative would result in no adverse effect under NEPA.

5.5.2 Operation

Ongoing operations and maintenance activities (e.g., routine inspection and maintenance of the HSR right-of-way, including tunnel portals) could directly or indirectly affect special-status species and habitat as activities may occur in areas where impacts on special-status species habitat had previously been restored. Noise created by train operations has the potential to affect wildlife movement and use of habitat. These effects are moderated by the extensive tunnel portions of the alignment (where train noise effects are avoided), the presence of an extended quiet period during defined nighttime hours for surface infrastructure, and proposed sound barriers where train noise from surface alignments exceed thresholds.

The Selected Alternative would have the least effect on wildlife movement when compared to the E2A, E1, and E2 Build Alternatives because it has the longest total distance of tunnels and viaducts in critical wildlife movement areas. The Selected Alternative would have the same wildlife corridor permeability percentage when compared to the Refined SR14 and E1A Build Alternatives. These permeable areas, which are conducive to wildlife connectivity, occur where the Build Alternatives would be elevated on a viaduct or underground in a tunnel.

The Selected Alternative would also have the fewest at-grade segments (two segments versus between three to four segments on the other Build Alternatives) that could represent a barrier to wildlife movement, as identified by the *Palmdale to Burbank Project Section: Wildlife Corridor Assessment Report* (Authority 2019).

For the Selected Alternative, the Authority identified all feasible opportunities for wildlife crossings to support permeability near or around at-grade segments. The Authority has committed to installing one wildlife crossing south of the California Aqueduct and one wildlife crossing east of Una Lake. Of the remaining nonurban at-grade segments that exceed the recommended crossing interval threshold length mentioned above, none would benefit from wildlife crossings because they would be adjacent to existing constraints, making crossing opportunities neither feasible nor beneficial to wildlife.

Collectively, the above MMs would avoid and minimize operational impacts. With implementation of MMs, the Build Alternatives would result in no adverse effect.

5.6 Hydrology and Water Resources

Groundwater and Related Surface Water Resources within the ANF

The Selected Alternative (as well as the Refined SR14 Build Alternative) would have the lowest risk of potential impacts on surface water resources of the Build Alternatives because the alignment traverses areas with lower groundwater pressures and no known groundwater

dependent resources within identified High and Moderate Risk Areas of the ANF. High Risk areas include areas where faults are present and groundwater pressure is highest. Without appropriate design, tunnels anticipated in all Build Alternatives could provide a conduit for groundwater to seep into excavated areas as the advancing tunnel construction intersects subsurface fractures and faults in bedrock that contain water. The Authority accounted for the possible risks on surface hydrologic resources related to tunnel by implementing state-of-the-art design features and construction methods to avoid and minimize such impacts, including through the use of tunnel boring machines (TBMs) with technical features like grouting to reduce or prevent inflows and water seepage.

Additionally, the Authority chose the Selected Alternative because it (and the Refined SR14 Alternative) intersects the fewest known groundwater risk areas (3 moderate, 1 high) when compared to the other four Build Alternatives (6 high and 5 moderate for E2 and E2A Alternatives; 4 moderate and 2 high for the E1 and E1A alternatives). The Selected Alternative (as well as the Refined SR14 Build Alternative) alignment have the fewest total known springs, streams, and known active wells within Moderate and High Risk Areas (0 streams, 0 known springs, 0 known active wells), when compared to the other Build Alternatives (8 streams, 6 springs, and 1 active well for the E2 and E2A alternatives' risk areas and 4 streams, 1 spring, and 1 known active wells for E1/E1A alternatives). The Authority also has identified a number of IAMFs and mitigation measures (HWR-MM#s) in its MMEP to avoid, reduce, or mitigate the risk of adverse effects to groundwater.

With the choice of the Selected Alternative, the project's TBM design features, construction methods, and the Authority's proposed mitigation measures, tunnel construction is not expected to result in groundwater-related impacts to surface resources or wells, and is not anticipated to need supplemental water for surface resources.

Private Wells

Outside the ANF, tunnel depths would be shallower than in the ANF and the tunnels would not encounter high water pressures during construction. Because of the shallow depth of the tunnels, and the correspondingly relative low water pressures at those depths, the risk of effects are lesser, fewer measures are needed, and the effects on groundwater would be avoided through the Authority's proposed IAMFs, which include tunnel design and construction methods outlined in the IAMFs.

Tunnel construction outside the ANF could result in the inflow of groundwater into tunnels where the tunnel depth may encounter the groundwater table or perched groundwater. This could lower groundwater levels locally in proximity to the tunnel alignment of the Preferred Alternative, which could adversely affect groundwater and wells if present nearby. HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 require design features and construction methods that will address potential groundwater seepage, including the installation of tunnel linings. Because of the low water pressures expected to be encountered, these measures would be sufficient to effectively avoid and minimize inflows into the tunnels. As such, groundwater inflow during construction, if any, would be minimal and temporary, and would not cause a substantial decrease in groundwater supplies or interfere substantially with groundwater recharge such that the Preferred Alternative may impede sustainable groundwater management.

The Final EIR/EIS concluded that available information on the location of private wells outside the ANF is limited, and it is unknown whether tunnel construction would directly impact private water supply wells. Because of the limited information, there is the potential that all Build Alternatives (including the Selected Alternative) could affect wells, absent additional measures from the Authority, their quality and quantity of water and/or their physical integrity, if any wells are located directly in the path of the tunnels.

To avoid or reduce the risk of adverse effects to wells outside the ANF, the Authority identified a number of measures such as HYD-IAMF#8, which include measures to continuously monitor groundwater quality or quantity in private water wells before, during, and after tunnel construction

and options to replace wells, including measures to ensure replacement wells are equivalent in water capacity and quality.

Groundwater Recharge Resources

The Selected Alternative would also avoid adverse impacts to groundwater recharge in the Una Lake area caused by other Build Alternatives (Refined SR14, E1, and E2). These other alternatives would have partially filled Una Lake and crossed the lake on an embankment, which would reduce Una Lake's potential for recharge of underlying groundwater basins. Generally, impermeable surfaces created by the Build Alternatives can disrupt the infiltration of water from the surface to groundwater basins, permanently affecting groundwater recharge. Some areas of impermeable surface and some design features (permeable ballast and sub-ballast for at-grade alignment profiles) would reduce or not result in impacts on recharge. The Selected Alternative has the same effects to groundwater recharge at the Hansen Spreading Grounds as the Refined SR14, E1, and E1A Build Alternatives, as these grounds recharge the San Fernando Groundwater Basin. With mitigation identified by the Authority in the MMEP, effects to these grounds would not be adverse.

Other Effects

The presence of infrastructure, as well as the discharge of fill associated with the construction, in surface waterbodies could permanently alter waterbody capacity and drainage patterns. The Selected Alternative has comparable numbers of surface water crossings with the other Build Alternatives, with the Selected Alternative (in addition to the E1A and E2A Build Alternatives) having the fewest (3) viaduct crossings. Water crossings will be required to maintain preconstruction hydraulic capacity.

While excavation and tunneling in areas of high groundwater could introduce pollutants and mobilize existing soil or groundwater contamination within the groundwater basins traversed by all the Build Alternatives, the choice of the Selected Alternative reduces effects in this area. The Refined SR14 Build Alternative would result in the largest amount of footprint overlying groundwater basins and would pose the highest risk of groundwater contamination from dewatering and excavation in areas with high groundwater.

5.7 Geology, Soils, Seismicity, and Paleontological Resources

5.7.1 Construction

During construction, earthquakes could create risks to in-progress structures, construction equipment, workers, and members of the public by ground shaking and seismically induced dam failures. The Authority will implement engineering and safety protocols to limit fault rupture and ground shaking hazards during construction.

The Selected Alternative (as well as the five other Build Alternatives) would have similar likelihoods of encountering abandoned mine facilities. IAMFs would require monitoring and construction practices to reduce or avoid most impacts associated with hazardous mine conditions. GEO-MM#2 would require a slope failure evaluation and evacuation plan for areas where grading, building, or disposal activities would occur underground or below grade. This plan would evaluate slope failure hazards at existing mine disposal sites and would implement evacuation procedures to minimize the risk of injury resulting from accident conditions.

Several geologic units within the Selected Alternative's (as well as the five other Build Alternatives') paleontological resources RSA would have potential to yield paleontological resources during construction. The Selected Alternative (as well as the Refined SR14 Build Alternative) would have the most surface profile and surface footprint through geologic units with high or low paleontological sensitivity and would have the highest likelihood to encounter paleontological resources during surface construction activities. IAMFs would require paleontological monitoring and recovery plans to protect paleontological resources encountered by construction activities.

During the design phase of the approved project and prior to start of construction, the Authority plans to complete several hundred borings, cone penetration tests, fault trenches, and geophysical surveys. The estimated number, type, and depth of explorations will depend on the design features and will be determined as the design progresses, in consultation with the USFS. To address one of the most important features of the TBMs tunneling in rock, the project will require advanced exploration ahead of the machine and pre-excavation grouting as a measure to detect and improve rock/soils conditions for tunneling in zones of sharply contrasting rock properties, highly fragmented rock that could be encountered in an inactive fault zone, and potential of water inflow.

5.7.2 Operation

During operation, seismic hazards include seismicity and the direct impacts of an earthquake, such as damage to project elements and injury or loss of life of passengers or personnel. A seismic event in one of these fault systems could result in fault rupture or ground shaking at or near project trackway (including at grade, viaduct, and tunneled profiles) or ancillary features (tunnel portals, adits, access roads, power substations, utility corridors, spoil disposal sites, and drainage facilities). Project design would incorporate early warning systems to track strong ground motion associated with fault rupture. Earthquake early warning systems like ShakeAlert in California work because the warning message can be transmitted almost instantaneously. Other countries have used these systems effectively.

Project design will account for the possibilities that fault rupture could affect the tunnel structures, could alter tunnel integrity, or could damage or destroy project elements. At the San Gabriel and Sierra Madre Fault Zones, the tunnel design would include fault chambers, which are additional excavated spaces designed to help accommodate fault displacement at subsurface fault crossings.

5.8 Hazardous Materials and Wastes

5.8.1 Construction

Construction of any of the six Build Alternatives would involve the use, storage, transport, and disposal of the following types of hazardous materials and wastes:

- Substances commonly used at construction sites, such as diesel fuel, welding materials, lubricants, paints, solvents, and cement products
- Waste materials generated during tunneling, such as ACMs, mercury, heavy metals, drilling fluids, and/or groundwater removed by dewatering
- Waste materials generated through the demolition of structures, such as ACM, LBP/LCM, and PCBs
- Existing soil or groundwater contaminated by VOCs, petroleum hydrocarbons, ADL, pesticides, herbicides, asbestos, heavy metals, or other hazardous materials or wastes

Various IAMFs and mitigation measures would be implemented to reduce impacts, such as through establishing plans for the safe handling of hazardous materials during construction, including those materials associated with contaminated soils or groundwater.

The Selected Alternative will tunnel for longer distances and will have fewer portals than the Refined SR14 Build Alternative and the same number as the other Build Alternatives. Having fewer portals would reduce the number of locations where the project would handle hazardous materials and wastes such as potentially contaminated soils from tunnel spoils.

Nonetheless, in all the Build Alternatives, tunneling would excavate potentially contaminated soils (tunnel spoil materials) that would require extraction, transport, and safe disposal. The quantities of Class I/II Hazardous, Designated Waste and Class III Nonhazardous, Contaminated Waste for the Selected Alternative and the Refined SR14 Alternative are estimated to be greater than their quantities in the other Build Alternatives.

All hazardous materials, soils, drums, trash, and debris generated during construction would be handled and disposed of in accordance with to State and federal regulations, and complying with existing regulations and would protect the public and environment from exposure to substantial hazards. Indeed, the Authority would implement numerous IAMFs to establish plans for the safe handling of hazardous materials during construction, including those materials associated with contaminated soils to ensure hazardous materials are properly handled and there are no adverse environmental or safety impacts.

5.8.2 Operation

Operations of the six Build Alternatives would require the use of hazardous materials and would generate hazardous wastes associated with routine maintenance, but measures would prevent an adverse impact. Hazardous materials would include wastes such as herbicides, lubricants, and janitorial supplies, which would be used at the station areas, ancillary facilities, and along the trackway. The Selected Alternative would operate along the longest linear alignment and would thus have the potential to experience the most operational hazards associated with the use, storage, transport, and disposal of hazardous materials. Overall, operations would have a low risk of creating potential accident conditions that could result in a large hazardous materials release. HSR trains would not transport hazardous materials and would not risk collision with other vehicles handling hazardous materials. Adherence to federal and state regulations would regulate the proper use, transportation, storage, and disposal of hazardous materials. IAMFs will minimize the use of hazardous materials for each of the six Build Alternatives and would require preparation of hazardous materials monitoring plans during operations.

5.9 Safety and Security

5.9.1 Construction

Construction would require permanent road closures that could disrupt traffic patterns, including emergency vehicle access. The Selected Alternative would result in 5 permanent road closures, the fewest of all six Build Alternatives. The Refined SR14, E1, and E2 Build Alternatives would involve 9, 13, and 11 permanent roadway closures, respectively. The E1A, and E2A Build Alternatives would involve 12, and 10 permanent roadway closures, respectively.

Causing fewer road closures reduces the possible impacts on emergency response times compared to the other Build Alternatives. The Authority will mitigate any effects by developing and implementing a construction safety transportation management plan (SS-IAMF#1) that will incorporate emergency vehicle access procedures.

5.9.2 Operation

HSR trainsets and fixed infrastructure would employ the latest safety features and designs to enable the trains to stay upright and in-line in the event of a derailment. A basic design feature of an HSR system is to contain trainsets within the right-of-way. Strategies to ensure containment include operations and maintenance plan elements that would ensure high-quality tracks and vehicle maintenance to reduce the risk of derailment. Also, physical elements, such as containment parapets, check rails, guard rails, and derailment walls, would be used in specific areas with a high risk of or high impact from derailment. Concrete derailment walls are like tall curbs that run close to the train wheels. In the event of a derailment, these walls keep the train within the right-of-way and upright.

The Build Alternatives each include provisions for emergency service access to tunnels including, but not limited to, the following:

- Permanent access roads would be built to provide at least one access portal for each tunnel to support tunnel operations and maintenance activities. Tunnel portal areas would include areas for staging of emergency response vehicles and personnel and safe evacuation and assembly of passengers.

- For tracks in tunnels, passenger walkways would be incorporated to allow emergency access and evacuation routes. Passenger walkways would be located along the tunnel walls on the same side as the access/egress points, where possible, and would be illuminated to provide safe passage in the event of an emergency.
- Tunnel design would include a central, fire-rated dividing wall that would separate the two tracks of each single tunnel into two independently ventilated railways to allow access in the event of an emergency. Safety egress would be achieved via fire-rated doorways through the tunnel dividing wall (Authority 2010).

Finally, the Build Alternatives would not include at-grade road crossings, thereby preventing vehicles, bicycles, and pedestrians from crossing the tracks. There would be no crossings where motor vehicles, bicycles, or pedestrians could cross the tracks at-grade. As a result, the potential hazards of at-grade crossings would be eliminated.

5.10 Socioeconomics and Communities

5.10.1 Construction

During construction, all Build Alternatives could temporarily disrupt communities where aboveground construction activities would take place. Effects would include increased noise levels, fugitive dust, increased traffic and congestion, and additional light and glare.

The Selected Alternative would affect the fewest number of residential communities. The Selected Alternative (as well as the Refined SR14, E1, and E1A Build Alternatives) would require at-grade construction work near single-family residences in the Sylmar neighborhood and all the Build Alternative would require at-grade construction within the community at the Boulders at the Lake Mobile Home Park just south of Lake Palmdale.

The Refined SR14 Build Alternative would, however, also require the construction of at-grade and elevated alignment near Acton along Red Rover Mine Road, Big Springs Road, and Rolling Ranch Road, and would cause temporary construction impacts that would introduce new physical barriers which would divide the unincorporated community of Acton.; the Refined SR14, E1, and E2 Build Alternatives would involve at-grade construction activities in the community of Harold within the city of Palmdale, as well.

The E1, E1A, E2, and E2A Build Alternatives would involve at-grade construction work near single-family residences in the unincorporated community surrounding the Southern California Edison (SCE) Vincent Substation (which the E2 and E2A Build Alternatives would avoid). The E2 and E2A Build Alternatives would involve at-grade construction work in the Los Angeles communities of Lake View Terrace and Sun Valley (which the other Build Alternatives would avoid). Although the intensity of construction-related effects would be similar for all the Selected Alternative and the five other Build Alternatives, the E2 Build Alternative would require at-grade construction work adjacent to the most communities compared to the other Build Alternatives.

During operations, the Selected Alternative (as well as the Refined SR14, E1, and E1A Build Alternatives) would not result in the displacement of community facilities. A portion of the E2 and E2A Build Alternatives would involve cut-and-cover tunnel construction near Glen Oaks Boulevard in Sun Valley which would displace a Los Angeles County Department of Public Social Services facility. The Selected Alternative would avoid this impact.

5.10.2 Operation

Once constructed, operations of the Selected Alternative would not displace community facilities or further divide communities.

5.11 Station Planning, Land Use, and Development

5.11.1 Construction

Construction of the Selected Alternative (as well as the other five Build Alternatives) would require the temporary use of land as construction staging areas. Construction staging areas within the Selected Alternative would result in approximately 100 acres of temporary impacts, and the other Build Alternatives would impact between 66 and 144 acres. Construction staging areas would temporarily change the intensity of the planned land use during the construction period; however, conflicts with the land use designation would not be permanent.

During construction, the Selected Alternative (and the Refined SR14 Build Alternative) would impact Acton, Agua Dulce, Sun Valley, and Burbank near Hollywood Burbank Airport. The E1 and E1A Build Alternatives would also result in impacts to the communities of Acton, Sun Valley and Burbank. The E2 and E2A Build Alternatives would result in impact to the Lake View Terrace and Shadow Hills communities, which would not be impacted under the Selected Alternative, in addition to the Acton, Sun Valley and Burbank Communities. However, with adherence to the Authority's CMP and other noted IAMFs, and identified mitigation measures, these effects would be temporary and would not cause substantial changes to land use patterns.

5.11.2 Operation

Implementation of the Palmdale to Burbank Project Section would result in the permanent conversion of land from a non-transportation use to a transportation use. The Selected Alternative (as well as the other five Build Alternatives) would indirectly affect existing and planned land use patterns causing increases in wind, noise, and visual changes within sensitive land uses. Implementation of mitigation measures would minimize the potential for construction of the Selected Alternative and the five other Build Alternatives to cause a substantial change in land use patterns. The Selected Alternative would change land uses of between 1,246 to 1,328 acres. The other Build Alternatives' impacts range between 984 and 1,597 acres. Most of these lands are vacant.

5.12 Parks, Recreation, and Open Space

5.12.1 Construction

Although the total number of resources potentially affected (within 1,000 feet of proposed HSR infrastructure) would differ among the Build Alternatives, the most impacts (i.e., direct acquisition of parkland and/or realignments of trails) would occur as a result of the E2A Build Alternative.

While not impacting certain surface recreational resources (proposed Vasquez Loop Trail extension, proposed Little Rock trail extension, Darrel Readmond Trail, and the Pacific Crest Trail) where in tunnel, the Selected Alternative would affect three park, recreational, and open space resources. However, the Selected Alternative's effects on these resources are often lesser than the effects of the other Build Alternatives on these same three resources:

- **Palmdale Hills Trail (proposed extension):** All Build Alternatives would temporarily restrict access to a segment of the trail during construction, and operation would involve an at-grade railway alignment that would conflict with the trail extension and require realignment of portions of the trail extension.
- **Littlerock Trail (proposed extension):** The Selected Alternative (as well as the E1A and E2A Build Alternatives) would be built as bored tunnels and so there would be no direct impact to the trail extension. The Refined SR14 Build Alternative would require construction of a new traction power facility and overhead utility power lines that would cross over a short segment of the proposed Littlerock Trail Extension in the area of the SR 14/Sierra Highway interchange.
- **Vasquez Loop Trail (proposed extension):** The Refined SR14 Build Alternative would require the permanent acquisition of approximately 160 feet of the 3-mile proposed Vasquez Loop Trail extension and an additional 170 feet of the trail to allow for access and maintenance of the electrical lines. The E1 and E2 Build Alternatives would require the

permanent acquisition of an approximately 720-foot segment of the proposed Vasquez Loop Trail (proposed extension) and would require the closure and relocation of a segment of the proposed Vasquez Loop Trail extension.

In addition to that impact common to all six Build Alternatives, the Selected Alternative (and the Refined SR14 Build Alternative), would have a direct impact on the following resources:

- **Santa Clara River Trail (proposed extension):** If this trail is operational during construction, the Selected Alternative and the Refined SR14 Build Alternative would require partial closure of the trail for installation of overhead utility lines and the elevated railway alignment over the Santa Clara River. Users could see and hear the train, but it would not change the character of this trail because of its setting next to the Metrolink Rail Corridor and the Vulcan Mine.
- **Rim of the Valley Trail (proposed extension):** If this trail is operational during construction, the Selected Alternative and the Refined SR14 Build Alternative would use an approximately 330-foot segment of the proposed trail for construction staging. Mitigation measures would require rerouting during construction.
- **Lang Station Open Space at Bee Canyon:** The Selected Alternative and the Refined SR14 Build Alternative would require the permanent acquisition of a portion of the property. With acquisition of the property for the project, the remaining 152 acres of the park would remain available as open space. Mitigation Measures would ensure access to park facilities, replacement trails or trailheads or park space, or alternative access to ensure the recreation resources remain accessible.

Other Alternatives would affect the following additional park and recreational resources during construction, operation, or both:

- Tejon Equestrian Park (Selected Alternative, E1A, and E2A Build Alternatives)
- Darrell Readmond Trail (proposed extension) (Refined SR14 Build Alternative)
- PCT (Refined SR14)
- Angeles National Forest including SGMNM (Selected Alternative, Refined SR14, E1, E1A, E2, E2A Alternatives)
- Playgrounds at Hillery T. Broadus Elementary School (Selected Alternative, Refined SR14, E1, E1A Build Alternatives)
- HHH Memorial Recreation Center and Pool (Selected Alternative, Refined SR14, E1, and E1A Build Alternatives)
- Stonehurst Park and Recreation Center (E2 and E2A Build Alternatives)

The Selected Alternative (in addition to the Refined SR14 Build Alternative) would avoid the Acton Community Trail (proposed extension) that would occur under the E1, E1A, E2, and E2A Build Alternatives. The Selected Alternative (in addition to the E1, E1A, and Refined SR14 Build Alternatives) would avoid the E2 and E2A Build Alternatives' direct impacts on the Hansen Dam Open Space. The physical and nonphysical impacts on the Hansen Dam Open Space under the E2 and E2A Build Alternatives would represent one of the largest physical and nonphysical impacts of the Build Alternatives. The construction of an elevated railway within this open space area would only take place under the E2 and E2A Build Alternatives, which makes the Selected Alternative (as well as the Refined SR14, E1, and E1A Build Alternatives) less impactful with regards to parks, recreation, and open space resources.

5.12.2 Operation

Operation impacts beyond construction of the Selected Alternative would remain minimal. The Selected Alternative would not affect the PCT, avoiding that permanent impact of the Refined SR14 Build Alternative.

5.13 Aesthetics and Visual Quality

5.13.1 Construction

In general, the Selected Alternative (as well as the E1, and E1A Build Alternatives) would result in a lesser variety of visual impacts during construction than the other three Build Alternatives because they would have the longest tunnels and would thus result in the least visual impact on its surroundings. With fewer above-grade segments, the Selected Alternative (as well as the E1, and E1A Build Alternatives) would cross fewer waterways and other scenic natural resources above grade, thereby causing fewer changes in visual quality.

For example, although the Refined SR14 Build Alternative would generally be either near existing transportation infrastructure or below ground between Palmdale and Burbank, large-scale overcrossing structures would block views in some relatively rural areas, such as on Red Rover Mine Road (Key Viewpoint [KVP] 1.8) and the PCT (KVP 1.14). Although the project components for the E2 and E2A Build Alternatives would mostly be not visible below ground in tunnels between Palmdale and Burbank, project features near the tunnel portals would contrast with the natural harmony of some views, such as near Lake View Terrace (KVP 1.22) and Big Tujunga Wash (KVP 1.23). The Selected Alternative would not have these components near Lake View Terrace (KVP 1.22) and Big Tujunga Wash (KVP 1.23). Refer to Section 3.16, Aesthetics and Visual Quality for figures depicting the locations of KVPs associated with the Build Alternatives.

The Selected Alternative has equivalent visual effects as all other Build Alternatives on Landscape Unit 1, which would be constructed as a series of tunnels (twin-bored), viaducts (elevated tracks), and at-grade sections. Construction activities would result in substantial visual disturbance in all three Landscape Units (1a, 1b, 1d). Construction light and glare would be an annoyance to viewers in Landscape Unit 1 and Landscape Unit 2, reducing the visual quality rating by one or more levels, depending on the setting. These impacts would not be substantially different between the Selected Alternative and the five other Build Alternatives.

5.14 Cultural Resources

5.14.1 Construction

Architectural historic built resources can be affected if character-defining features are altered. Unlike the E1, E1A, E2 and E2A Build Alternatives, construction of the Selected Alternative (and the Refined SR14 Build Alternative) would not result in adverse effects on historic built resources located within the historic built APE. Surveys identified 12 historic built resources listed, previously determined eligible, and newly determined eligible-for-listing properties within the APE.

Construction and operation of the Selected Alternative (as well as the Refined SR14, E1, and E1A Build Alternatives) would result in no adverse effects on the East Branch of the California Aqueduct, the Palmdale Ditch, or the Pink Motel and Café. In contrast, the Refined SR14 Build Alternative would entail excavation around and under the East Branch of the California Aqueduct to shore it up during and after construction of the tunneling beneath the property. No temporary or permanent physical damage is anticipated, and the EBA would retain its primary function—the conveyance of water.

Construction of the Selected Alternative would avoid effects on the Eagle and Last Chance Mine Road, in contrast to other Build Alternatives which would require mitigation. Due to the depth of bored tunnels, the six Build Alternatives would also result in no effect determinations for the following resources: Big Creek Hydroelectric System Historic District—Vincent Transmission Line Los Pinetos Nike Missile Site, 10004 Clybourn Avenue, LADWP Boulder Transmission Line 3, 1890s Acton Ford Road, and the Monte Cristo Wagon Road System, and most other surface resources.

The Selected Alternative (as well as the five other Build Alternatives) may result in construction-related impacts on known archaeological sites caused by ground-disturbing construction activities, if the sites are found to be eligible. Unevaluated archaeological resources would undergo a program of phased identification and evaluation per the programmatic agreement (PA),

and effects would be assessed on archaeological historic properties. At the depths anticipated for the tunnels in the ANF, it is assumed the six Build Alternatives would avoid archaeological sites, which are typically found closer to the ground surface.

5.14.2 Operation

The Selected Alternative and the Revised SR14 Build Alternative (unlike the E1, E1A, E2, and E2A Build Alternatives) would avoid adverse effects on Blum Ranch and Blum Ranch Farmhouse. For the E1, E1A, E2, or E2A Build Alternatives, mitigation measures would be required to minimize adverse effects to Blum Ranch and the Blum Ranch Farmhouse and the visual integrity of the Blum Ranch viewshed.

5.15 Cumulative Impacts

For all resource areas, cumulative construction and operation impacts for the Selected Alternative would be similar to the other five Build Alternatives.

5.15.1 Construction

Although IAMFs and mitigation measures will avoid or minimize most impacts associated with construction and operation of the Selected Alternative, when combined with other past, present, and reasonably foreseeable projects, construction of the Selected Alternative will result in cumulative impacts on transportation, air quality, noise, paleontological resources, socioeconomics and communities, aesthetics and visual quality.

Earthwork and tunneling activities during the construction of the Selected Alternative (and the five other Build Alternatives) would generate substantial spoils material, which would be trucked to disposal sites in the project region. Spoils hauling and potential recycled water trucking would increase truck traffic at roadway segments and intersections that, when added to existing traffic conditions within the RSA, would create significant impacts on the circulation network.

On noise, multiple projects in urban areas near the Build Alternatives—such as projects implemented pursuant to local general and specific plans as well as transportation projects (e.g., the High Desert Corridor Project and the SR 138 Widening Project)—would be under construction at the same time as the Build Alternatives. Constructing of these projects could result in exceedance of significance thresholds for noise at sensitive receivers.

The implementation of standard construction practices to identify, protect, and recover paleontological resources during surface-disturbing projects has resulted in the salvage and permanent preservation of scientifically significant paleontological resources. However, typical paleontological resource protection techniques (such as visual surveying and monitoring) may not be feasible with tunnel boring machines. Combined with other projects, nonrenewable paleontological resources may decrease.

On socioeconomics and communities, the Selected Alternative (and all other Build Alternatives), along with other planned projects, could permanently displace residences and businesses. The Authority will facilitate the transition of displaced residents into nearby replacement housing, and reach out to homeowners, residents, landowners, business owners, community organizations, and local officials in affected neighborhoods to gather and utilize input to maintain community cohesion and avoid physical deterioration.

Construction of reasonably foreseeable future projects could degrade visual and aesthetic resources, which represents a significant cumulative impact.

5.15.2 Operation

Train operational noise would cause cumulative noise impacts. In particular, operation of the High Desert Corridor Project would increase the existing noise environment, and other nearby roadway and highway widening projects would additionally contribute to the future noise environment.

5.16 Environmental Justice

Absent impact avoidance and minimization measures or appropriate mitigation, there is a potential for disproportionately high and adverse effects on EJ populations related to transportation, air quality, noise and vibration, socioeconomics and communities, aesthetics and visual quality. Potentially affected EJ communities are located within Sylmar, Pacoima, Sun Valley, Lake View Terrace, and Palmdale, and specifically within the census block groups listed underneath Tables 5-5 and 5-24 and depicted in Figure 5-1 through Figure 5-18 in Chapter 5, Environmental Justice, of the Final EIS. However, with the Authority's commitment to measures tailored to potential effects in environmental justice communities and developed after consultation of EJ communities, the Selected Alternative would not result in any disproportionately high and adverse effects on environmental justice communities.

5.16.1 Construction and Operations

5.16.1.1 Transportation

The Selected Alternative (in addition to the Refined SR14 Build Alternative) would adversely affect roadways and intersections from spoils hauling in EJ communities within Sylmar, Pacoima, and Sun Valley, after the implementation of non-EJ-specific IAMFs and mitigation measures. Construction-period earthwork and tunneling activities associated with the Selected Alternative (as well as the five other Build Alternatives) would generate substantial spoils material (rock and dirt), which would require truck trips to remove the spoils to appropriate disposal sites. These truck trips will increase traffic on local roadways in affected communities. These potential effects on EJ communities would be avoided through the implementation of EJ-IAMF#1, which would require creating an EJ ombudsman position to ensure that the Authority's contractor mitigates construction-phase transportation effects of adversely affected EJ communities. The Authority's EJ ombudsman's responsibilities shall include obtaining community-specific feedback on proposed spoils and materials hauling routes and plans not typically reviewed by the general public, including the Transportation CMP (TR-IAMF#12) and CMP (SOCIO-IAMF#1), in order to minimize adverse effects on EJ populations including adverse effects from spoils hauling.

5.16.1.2 Air Quality

The Selected Alternative (in addition to the Refined SR14, E1, and E1A Build Alternatives) would result in localized air quality exceedances during construction for NO_2 and PM_{10} in Sun Valley, however the Selected Alternative would have localized air quality exceedances in fewer communities than the E2 and E2A Build Alternatives. These potential effects on EJ communities would be minimized and/or avoided through the implementation of EJ-IAMF#6 and EJ-MM#2, which would require the Authority to propose stationary outdoor air quality sensors and applicable monitoring locations within EJ communities to provide affected EJ communities with greater access to publicly accessible, local air quality data, as well as require the Authority to conduct a pre-construction EJ air quality emissions analysis and solicit mandatory community input on potential emissions reductions and reduction exposure measures, in order to minimize adverse air quality effects on EJ communities from construction. OMM#4 also requires that the tunnel south of Broadus Elementary School would be excavated from south to north to allow for conveyor belt transportation of appropriate spoils directly to Boulevard Mine. By using a conveyer belt, and by requiring the spoils hauling to use routes that avoid drop-off and pick-up times, this offsetting mitigation measure would reduce the construction traffic and construction air quality impacts at nearby schools.

5.16.1.3 Noise and Vibration

The Selected Alternative will affect the same EJ communities with construction noise as the Refined SR14, E1A, and E1 Build Alternatives, as identified in Chapter 5. These potential effects on EJ communities would be minimized and/or avoided by creating an EJ ombudsman position to ensure that construction-phase noise mitigation measures are developed with the input of affected communities and to ensure that noise mitigation measures are effective in not exceeding applicable noise impact thresholds. EJ-MM#1 requires community review and input on proposed

construction noise mitigations and monitoring measures, before the Authority may start construction. These measures would avoid construction noise impacts.

Even with mitigation, the Selected Alternative would result in operational train noise effects on communities such as Sun Valley, while other Build Alternatives (Refined SR14, E1A, and E1 Build Alternatives) would result in operational train noise effects on more communities than the Selected Alternative. The E2 and E2A Build Alternatives would result in operational train noise effects on EJ communities in Lake View Terrace and south of Palmdale. EJ-IAMF #1, EJ-IAMF#5, and EJ-MM#1, as described above, would be implemented to minimize and/or avoid these effects. However, even with these measures, residual operational train noise effects to a defined number of sensitive receptors in Sun Valley will remain, as identified in Chapter 5 of the Final EIR/EIS.

Due to concerns over permanent operational train noise, affected communities requested additional job opportunities and priorities from construction, and additional improvements to their communities to offset these potential effects. As detailed in Chapter 5 and related appendices, the Authority has committed to a number of measures (OMMs) to improve the community and help offset these residual effects, including access to pre-apprenticeship classes and hands-on construction training, community connectivity enhancements, pedestrian improvements and other neighborhood livability improvements. With the proposed measures, the Selected Alternative would not result in disproportionately high and adverse effects related to this effect.

5.16.1.4 Socioeconomics and Communities

Business Displacement

The Selected Alternative will have similar business displacement effects on environmental justice communities as the Refined SR14, E1, and E1A Build Alternatives. In consideration of these effects, the Authority has developed several measures to avoid or reduce effects. EJ-IAMF#2 Business Spotlighting would require the Authority's EJ Ombudsman and Contractor's EJ Liaison to provide assistance nearby and adjacent businesses to maintain neighborhood commercial fabric, despite displacements, and business visibility during construction, such as providing signage and targeted advertising and marketing campaigns, incentives for construction worker patronage (as applicable), and/or Authority- sponsored community events. EJ-IAMF#4 EJ Business Relocation/Displacement Assistance will require the Authority to develop a relocation mitigation plan with a subsection dedicated to addressing adverse effects to businesses in the EJ communities. The Authority's EJ Ombudsman and Contractor's EJ Liaison will hold roundtables to consider the affected EJ communities' input on this plan, as well. These efforts and other measures will decrease the potential for disproportionately high and adverse effects from business displacements on EJ communities.

The Authority recognizes that the displacement of certain businesses, even with the measures, will result in adverse effects, and has committed to additional improvements in affected communities to offset these impacts, as detailed in Chapter 5 and related appendices of the Final EIR/EIS. Although these OMMs would not directly mitigate effects of the business displacements in low-income communities, they would benefit the members of those communities and contribute to community connectivity.

Residential Displacement

For the Selected Alternative (and the other five Build Alternatives), although most residential displacements would take place in EJ communities, sufficient replacement housing would be available for the units displaced. The Final EIR/EIS found that the impacts would not be adverse, given the availability of sufficient replacement housing and the Authority's relocation assistance and other IAMF measures.

The Selected Alternative is similar in effect to the E1A and E2A Build Alternatives in residential displacements south of Palmdale. For the Boulders at the Lake Mobile Home Park south of Avenue S and east of Sierra Highway and a community in Agua Dulce near Big Springs Road, construction in this area would require the displacement of 23 residential properties (of

approximately 200 total residential units). Because at-grade facilities would be built only in the western portion, the project would not present a new physical and visual barrier in the existing community.

Construction of the E2 Build Alternative would divide an EJ community in Lake View Terrace (60371032001). The permanent loss of cohesion in this community would represent an adverse effect. Therefore, community cohesion effects would potentially be disproportionately high and adverse on low-income communities for the E2 Build Alternative, as the share of low-income communities experiencing post-mitigation effects is greater than their reference community share.

Aesthetics and Visual Quality

Neither of the two adversely affected key viewpoint areas in the Selected Alternative would predominately affect minority or low-income communities. As such, this effect would not be disproportionately high and adverse for the Selected Alternative. The Selected Alternative would result in permanent visual effects on Sierra Highway, near the California Aqueduct crossing, which area currently has moderate visual views, given existing infrastructure like the aqueduct. The adverse effect on KVP 1.3 would not disproportionately affect EJ populations as this KVP straddles both EJ and non-EJ communities.

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6 MITIGATION COMMITMENTS AND MONITORING

The Authority will supervise construction and require implementation of mitigation measures for the Selected Alternative. The Authority is responsible for ensuring that these commitments are implemented, and the Authority has a full oversight role for this project. It is also expected that other federal and state resource agencies will make frequent compliance reviews to ensure that all conditions of their respective permits are satisfied. The Authority will monitor the environmental commitments in the MMEP consistent with the NEPA Assignment MOU and applicable NEPA regulations and guidance.

The MMEP describes mitigation measures that will avoid, minimize, or compensate for reasonably foreseeable environmental impacts that result from constructing and operating the Palmdale to Burbank Project Section of the California HSR System. These measures were developed by the Authority, pursuant to its responsibilities under NEPA Assignment, in consultation with appropriate agencies, as well as with input received from the public.

The Selected Alternative also incorporates the applicable IAMFs identified in Volume 2, Appendix 2-E, Project Impact Avoidance and Minimization Features, of the Final EIS. As part of the EIS, the Authority identified these IAMFs to avoid and minimize potential project impacts. The Authority will apply these IAMFs (including BMPs) to avoid impacts in many resource areas. Regulatory requirements (such as hazardous material disposal and various mandatory safety strategies) provide additional assurance that impacts on the environment would not occur or would be minimized to the fullest extent practicable. The applicable regulatory requirements and the IAMFs and mitigation measures that are part of the Selected Alternative are described in more detail in the MMEP. The IAMFs are a condition of project approval and must be implemented by the Authority during design, construction, and operation of the Selected Alternative approved by this ROD.

As discussed in prior sections of this document, the Burbank Subsection was analyzed in the Burbank to Los Angeles Project Section Final EIR/EIS. The Burbank to Los Angeles Project Section Final EIR/EIS identified Impact Avoidance and Minimization Features (IAMFs) and mitigation measures for the entirety of the Burbank to Los Angeles Project Section. The Palmdale to Burbank Final EIS includes updates to some IAMFs and mitigation measures that would apply to the Burbank Subsection. Updates are not intended to lessen the Authority's commitments in measures, and the Authority will not construe any of this document's updates to the Burbank Subsection IAMFs and MM's as lessening the Authority's commitments. For the avoidance of doubt, differences will not be interpreted by the Authority as lessening commitments. Table 2-1 and Table 2-2 of the CEQA Findings of Fact and Statement of Overriding Considerations summarize how key IAMFs and mitigation measures from the Burbank to Los Angeles Project Section Final EIR/EIS that are relevant to the Burbank Subsection have been updated in the Palmdale to Burbank Project Section Final EIR/EIS.

Consistent with the USDOT Order on Environmental Justice 5601.2, such updates include a range of specific impact avoidance measures, mitigation measures, and offsetting community improvements for environmental justice (EJ) communities identified in the Final EIR/EIS with the potential of disproportionate adverse effects, absent the measures. These measures were developed in response to input received from communities and through ongoing engagement with affected communities and their representatives. EJ-specific measures reduce, avoid, or offset disproportionate effects on environmental justice communities by consulting with communities early, by providing mechanisms for EJ communities ongoing review of the adequacy of impact avoidance or mitigation measures and their effective implementation, and/or by adopting measures or offsets requested by affected communities.

Consistent with 40 C.F.R. Section 1505.2(c), all practicable means to avoid or minimize environmental harm from the Selected Alternative have been identified and incorporated as IAMFs. Further means to reduce and/or avoid compensate for environmental impacts have been identified and included as mitigation measures included in the MMEP. The Authority reached this conclusion after reviewing public and agency comments and suggestions on the Draft EIS, and after consulting experts to identify additional means to avoid or to minimize environmental harms.

All IAMFs and mitigation measures are included within the MMEP. The Authority is required to comply with all mitigation measures adopted with this ROD. The MMEP, as incorporated into this ROD, is a formal commitment by the Authority to carry out all of the measures identified therein as a condition of project approval. Therefore, in designing, constructing, and operating the Selected Alternative, the Authority is required to adhere to and provide appropriate funding for all IAMFs and mitigation measures in the MMEP.

The Authority will implement an Environmental Management System consisting of strategic planning, policies, and procedures; organizational structure; staffing and responsibilities; milestones; schedule; and resources devoted to achieving the Authority's environmental commitments. The Environmental Management System will also track the implementation of environmental requirements and compliance reports. This system will rely on data from the Authority's contractors, regional consultants, permitting activities, monitoring, inspections, and other compliance activities. This database will be managed by the Authority. Agency partners, including FRA, will receive regular updates from meetings and reports that will demonstrate compliance and progress relevant to their regulatory requirements.

7 SUMMARY OF COMMENTS ON THE FINAL EIS AND RESPONSES

Following the finalization of the Final EIS for publication, and during the 30-day availability period following publication of the Final EIS and prior to the June 26-27, 2024, Board Meeting, the Authority received written comment submittals. The range and types of comments received by the Authority during the availability period included concerns and questions on the following topics:

- General opposition
- General support to the project
- Suggested project alternatives
- Project impacts regarding train speeds, noise, and vibration
- Project construction impacts of the Adit SR14-A-1 on the Migratory Bird Flyway through Bear Divide
- Requests for Authority to work with the Mountains Recreation and Conservation Authority with respect to Bee Canyon and Lang Station Open Space

Summaries of and responses to all correspondence received are included in Appendix H, Comments Received Between the Publication of the Final EIS and the June 26-27, 2024, Board Meeting. The Authority determined that these comments did not raise significant new information or circumstances that would require preparation of a supplemental EIS.

During the Board Meeting on June 26, 2024, the public had an opportunity to comment on the Final EIS. Twenty-seven people provided public testimony and spoke on a range of topics including general opposition and support for the project, construction period truck traffic effects, effects on federally listed endangered species, and residential and business displacement effects. Following the meeting on June 26, Authority staff reviewed the testimony and determined that all of the issues raised had been raised previously addressed in the Final EIR/EIS. On June 27, 2024, Authority staff provided the Board a presentation on topics and concerns Board Members raised. Topics discussed included:

- Tunneling and Seismic Concerns, Project Costs
- Truck Trips and Hazardous Materials Spoils
- Business and Residential Displacements
- Environmental Justice
- Biology, Aquatics and Wildlife Connectivity
- Effects on Acton-Agua Dulce Unified Schools
- Proposed Soledad Canyon Mining Project

In issuing this ROD, the Authority has considered all responsible and substantive comments received to date on the Final EIS, as well as the comments previously received on the Draft EIS.

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8 REVISIONS TO THE FINAL EIS

As a part of the Authority's review of the Final EIS, several minor corrections, clarifications, and updates were identified, which are included in the Errata to the Final EIS in Appendix I of this ROD. The corrections, clarifications, and updates are not considered significant new information and do not change the analysis or conclusions of the Final EIS. These corrections, clarifications, and updates address items already covered in the Final EIS and do not trigger the need to prepare a supplemental EIS, per the CEQ NEPA regulations (40 C.F.R. § 1502.9(c)(1)). The Final EIS is herewith revised as described in the Errata to the Final EIS in Appendix I.

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9 DECISION

The Authority selects the SR14A Build Alternative, as described in Chapter 2, Alternatives, in the Final EIS and as described in this decision document as the Preferred Alternative, as the Selected Alternative for the Palmdale to Burbank Project Section including the Central Subsection and the Burbank Subsection, from Spruce Court in the city of Palmdale through, including, and reaffirming the approved Burbank Airport Station ending with its southern terminus, just north of Winona Avenue and north of the Burbank Airport east/west runway in the City of Burbank. In making this selection, the Authority concludes that, among the alternatives considered, the Selected Alternative best fulfills the purpose and need and objectives for the project while balancing impacts on the natural and human environment.

In reaching this decision, the Authority considered the physical and operational characteristics and potential environmental consequences associated with all considered Palmdale to Burbank Project Section alternatives. The Authority, as lead agency, consulted with the cooperating agencies and considered the Draft EIS, and Final EIS, including the analysis of the No Action Alternative, all six Build alternatives, and all public and agency comments received during the review periods in reaching this decision.

The federal cooperating agencies may issue their own decision documents, as appropriate, consistent with their statutory and regulatory responsibilities.

9.1 Section 106

Section 106 of the NHPA (54 U.S.C. § 306108) requires that any federal agency having direct or indirect jurisdiction over a proposed federal or federally assisted undertaking take into account the effect of the undertaking on any district, site, building, structure, or other object that is listed or eligible for listing on the National Register of Historic Places. The California State Historic Preservation Officer (SHPO), the Authority, and the Advisory Council on Historic Preservation are signatories to the *Programmatic Agreement among the Federal Railroad Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California High-Speed Rail Authority Regarding Compliance with Section 106 of the National Historic Preservation Act, As It Pertains to the California High-Speed Train Project* (Section 106 PA) effective 2011 and extended by a First Amendment in July 21, 2021 (FRA et al. 2021). The FRA and STB are invited signatories to the Section 106 PA. In accordance with the Section 106 PA, a MOA for the treatment of adverse effects on historic properties in the Palmdale to Burbank Project Section was executed by the SHPO and the Authority on December 14, 2023. The MOA summarizes the results of the Section 106 process and the treatment measures for both aboveground and below-ground cultural resources (see Appendix D). The following entities were invited to sign the MOA as concurring parties:

- Yuhaaviatam of San Manuel Nation
- Fernandeño Tataviam Band of Mission Indians
- Gabrieleño Band of Mission Indians – Kizh Nation
- Gabrielino/Tongva Nation
- Bureau of Land Management
- USFS Angeles National Forest
- Los Angeles County Department of Parks and Recreation

In accordance with Stipulation V.A of the Section 106 PA, outreach and consultation was conducted with potentially interested parties, including the general public; historic preservation interest groups or individuals; and other federal, state, regional, or local agencies regarding effects on historic properties entirely in Los Angeles County. Eight responses from interested parties were received, including the California SHPO, which designated the FRA as lead federal agency for Section 106 on September 2, 2015, and which designation was then assigned by the FRA to the Authority, pursuant to the NEPA Assignment MOU.

Notwithstanding the assignment, FRA retained responsibility for conducting government-to-government consultation with federally recognized Native American tribes. FRA initiated project-

level government-to-government outreach in 2009 and 2010 for the Palmdale to Los Angeles Project Section. Numerous tribes have since been provided information and updates about the project section and consulted to seek their input regarding concerns about effects on important tribal cultural resources. The Authority and FRA are engaged in ongoing meetings with the tribal consulting parties. As consulting parties, the tribes are afforded a chance to review and contribute to cultural resources technical reports; participate in tribal monitoring opportunities (including monitoring required during pedestrian archaeological field surveys and ground disturbing construction activities in culturally sensitive areas); and contribute to the development of treatment and mitigation for impacts on significant resources.

The assessment of adverse effects required under Section 106 of the NHPA was documented in the Palmdale to Burbank Project Section 106 FOE Report (Authority 2021) that was approved by the SHPO on September 3, 2021, in a Concurrence Letter (see Appendix D).

9.2 Section 4(f)/6(f)

Projects that are undertaken by an operating administration of the U.S. Department of Transportation (USDOT) or that may receive federal funding or discretionary approvals from such an operating administration must demonstrate compliance with Section 4(f) of the USDOT Act of 1966 (49 U.S.C. § 303). Section 4(f) protects publicly owned parks, recreational areas, and wildlife and waterfowl refuges of national, state, or local significance. Section 4(f) also protects historic sites (including archaeological resources) of national, state, or local significance that are on public or private land.

Under the NEPA Assignment MOU, the Authority has been delegated the power to make determinations under Section 4(f). The NEPA Assignment MOU stipulates that the Authority must consult with the FRA prior to making any constructive use determination but otherwise delegates all responsibilities under Section 4(f) to the Authority. As further detailed below, there is no constructive use determination associated with the Palmdale to Burbank Project Section.

As described in the EIS (and Alternatives Analyses and Supplemental reports issued in the decade before the 2022 Palmdale to Burbank Draft EIR/EIS), all six of the Build Alternatives were continuously refined over years with due consideration to minimizing harm to or avoiding Section 4(f) resources (Authority 2011, 2014, 2015, 2016).

Although all Build Alternatives were refined to minimize or avoid harm to these resources, the Selected Alternative avoids direct or significant adverse effects on more parks, recreational areas, and historic resources than the other Build Alternatives. Impacts avoided by the Selected Alternative include: the Pacific Crest Trail (Refined SR14), the Blum Ranch Historic District (significant visual, E1/E1A, E2/E2A), the Hansen Dam Open Space (E2/E2A), the Acton Community Trail (E1/E1A, E2/E2A), the San Gabriel National Monument (E1A, E1, E2, E2A), the Eagle and Last Chance Mine Road historic resource (E1A, E1, E2, E2A), and the Angeles National Forest (E2/E2A).

Chapter 4 of the Final EIS contains the Authority's evaluations of whether and the extent to which the Selected Alternatives or the other Build Alternatives avoid or would result in any of the following "uses" of properties projected under Section 4(f):

- Permanent use
- Temporary occupancy
- Constructive use

Selected Alternative

There are more than 40 different Section 4(f) resources in the Selected Alternative's RSA for recreational and cultural resources. Of these evaluated resources, the Authority determined that the Selected Alternative would result in a temporary occupancy for one recreational resource, a permanent use of four recreational resources and two cultural resources (all but one were found to be de *minimis*), and in a constructive use of zero resources. These resources and relevant

concurrences on use determinations are detailed in the subsequent section on 4(f) determinations.

As detailed in the FEIS, both the Selected Alternative and the Refined SR14 Alternative would result in a permanent use (or effect) for one resource (Lang Station Open Space) that would not be de minimis. That resource was created and dedicated in 2022. The Authority received notice of the new resource in November 2022, after it issued the Draft EIS in September 2022. Although the resource was subsequently determined by the Authority to not qualify as a Section 4(f) resource, the Authority nevertheless undertook an individual Section 4(f) assessment for the resource, in consideration of the resource owner's (City of Santa Clarita) request to the Authority to include all possible planning and mitigation measures to address project effects on the resource. The Authority's Section 4(f) assessment was provided to the City of Santa Clarita in May 2024, in advance of the Authority's publication of the assessment in its Final EIR/EIS on May 24, 2024. The Authority has sought comments from the City on its proposed measures as detailed in the assessment, met with City representatives in early June 2024, and has invited the City to submit additional comments. The City provided additional comments prior to the June 26, 2024 Board Presentation and requested that the Authority evaluate an elevated viaduct alternative through Bee Canyon. The Authority has determined that an elevated viaduct through Bee Canyon would not be feasible from an engineering perspective. This is because it is not feasible to raise the profile in Bee Canyon while avoiding surface impacts within ANF without substantially increasing the height of the proposed Santa Clara River or Agua Dulce viaducts and without lengthening the proposed construction schedule due to the additional length and complexity of the Santa Clara River viaduct, should an elevated viaduct be located within Bee Canyon. For additional discussion regarding the comments provided by the City prior to the June 26, 2024 Board Presentation, refer to Appendix H. Concurrence on the de minimis determinations from the official with jurisdiction were received on June 21, 2024 (United States Department of Interior) and are attached (see Appendix G). The Final Individual Section 4(f) Evaluation for Lang Station Open Space is attached (see Appendix J).

9.2.1 Measures to Minimize Harm/Mitigation

The Authority undertook all possible planning, including measures to minimize harm and incorporation of all feasible avoidance refinement alternatives, for resources affected by a permanent use such as the Lang Station Open Space as described in Table 4-9 in the Final EIS. The measures identified in these tables are now incorporated into the Selected Alternative.

These measures include PR-MM#5, PR-MM#7, PR-MM#8, and PR-MM#9. These measures require the Authority to continuously consult with the officials with jurisdiction affected by the project, during advanced and final design and before project construction, on the specific conditions of acquisition, use of, and compensation for, or replacement or enhancement of affected trails. These measures further require that the Authority ensure that connections to the unaffected portions of the resource are maintained and that the Authority provide alternative access if temporary closure restricts connectivity or accessibility to recreational or park resources affected by a permanent use.

The Authority is continuing and will continue ongoing coordination, as appropriate, with the officials with jurisdiction over resources such as the Lang Station Open Space. During the Authority's consideration of its decision and during advanced and final design of the project section, the Authority, in consultation with the officials of jurisdiction, may identify and implement additional measures to further reduce potential impacts on resources identified here as having a permanent use from the project.

9.2.2 Section 4(f) Determination

Section 4(f) requires the selection of an alternative that avoids the use of a Section 4(f) property if that alternative is deemed feasible and prudent and the use does not qualify for a finding of *de minimis* impact. If there is no prudent and feasible avoidance alternative and there is more than one alternative that results in the use of a Section 4(f) property that is not a de minimis impact,

the Authority must select the alternative that has the potential to cause the least overall harm in light of the preservationist purpose of the statute.

Temporary Occupancy

For recreational resources, the Authority determined that the Selected Alternative will result in a temporary occupancy for Rim of the Valley Trail (Proposed Extension) but that the conditions of that occupancy do not result in a use. Concurrence from the relevant U.S. Department of the Interior on the temporary occupancy/no use determination was received on January 22, 2024.

Permanent Use

For cultural resources, the Authority determined that the Selected Alternative will result in a permanent use with *de minimis* impacts on the East Branch of the California Aqueduct and the Palmdale Ditch. Concurrence from the State Historic Preservation Officer was received on September 3, 2021, for relevant findings as well as a duly executed MOA on December 14, 2023, from the SHPO to address treatment of all of these properties are attached (Appendix D).

For recreational resources, the Authority determined that the Selected Alternative will result in four permanent use determinations, of which three resources will have *de minimis* impacts: the Palmdale Hills Trail (Proposed Extension will intersect with the alignment at-grade and a portion will need to be replaced), the Littlerock Trail (Proposed Extension will be over the tunnel alignment), and the Vasquez Loop Trail (Proposed Extension will be over the tunnel alignment)), as identified in Table 4-6 of the Final EIS. Concurrences on the de minimis determinations from the official with jurisdiction were received on December 18, 2023 (Los Angeles County Department of Parks and Recreation) and are attached (see Appendix G).

For the permanent use determination of the Lang Station Open Space, the Authority provided its Individual Section 4(f) assessment to the public owner and invited comment. The Authority's determination is that both its Selected Alternative and the Refined SR14 Alternative will result in a permanent use of land at the Lang Station Open Space, as these alternatives will require the acquisition of resource land for the project that would constitute a permanent use because the features and attributes that qualify the resource for protection under Section 4(f) may be diminished with that acquisition.

In its assessment of and determination for this resource, the Authority identified and considered multiple design avoidance alternatives, including a refined design to both SR14A and the Refined SR14 alternatives that would have tunneled fully or partially under the Lang Station Open Space. Those options conflict with engineering design requirements such that they are not feasible. Beyond design avoidance alternatives, the Authority also assessed the feasibility of additional design refinements to minimize the project footprint in the Open Space. While some refinements were found to be infeasible, the Authority identified some refinements as feasible and incorporated these refinements into the Selected Alternative. The incorporated refinements (grading redesign, access road design changes, power supply realignment) would eliminate approximately 12 acres of temporary footprint impact and also reduce permanent footprint impacts by approximately 28 acres for the SR14A Build Alternative. As a result of this analysis, the Authority found that some refinements were infeasible but also found that other refinements were feasible and incorporated those refinements into the project design.

Least Overall Harm

Among all of the Palmdale to Burbank Section Build Alternatives, the Selected Alternative will result in the least overall harm to resources protected by Section 4(f) because the Selected Alternative will have an impact on the fewest Section 4(f) resources of all of the project alternatives analyzed in the Draft EIS and Final EIS. Although both the Selected Alternative and the Refined SR14 Alternative result in a permanent use of one resource (the Lang Station Open Space), the Authority determined that no alternative would avoid all Section 4(f) resources within the RSA for the Palmdale to Burbank Project Section, and the Selected Alternative fully avoids impacts to more resources than the other Build Alternatives, such as fully avoided impacts to the

Pacific Crest Trail, the Hansen Dam Open Space and the adjacent Big Tujunga Wash Mitigation Area, and the Blum Ranch Historic District.

In making this determination, the Authority undertook all possible planning to minimize harm to resources with a permanent use by assessing fully underground and partially underground avoidance alternatives but determining that these options were not prudent and feasible, as well as by assessing other design refinement options and measures to minimize harm and incorporating those determined to be prudent and feasible, as detailed in the previous section.

Additionally, the Selected Alternative would result in de minimis impacts to the fewest park, recreation, and open-space resources, compared to approximately eight under the Refined SR14 Build Alternative; approximately ten under the E1 Build Alternative; approximately ten under the E1A Build Alternative; approximately twelve under the E2 Build Alternative; and approximately twelve under the E2A Build Alternative.

Accordingly, although the Selected Alternative would result in a permanent use of one resource, the Authority concluded that there are no prudent and feasible avoidance alternatives to the Section 4(f) permanent use, that it conducted all possible planning to minimize harm to the affected resource with a use, and that the Selected Alternative would cause the least overall harm among all the Build Alternatives in light of the preservationist purpose of the statute.

9.2.3 Section 6(f) Properties

No Land and Water Conservation Fund monies were used to acquire or develop recreational resources in the RSA. Therefore, there are no Section 6(f) resources in the Section 4(f) RSA.

9.3 General Conformity Determination

As part of the environmental review of the Palmdale to Burbank Project Section, the Authority conducted and FRA approved and published a general conformity determination pursuant to 40 C.F.R. Part 93, Subpart B, for the Selected Alternative on June 10, 2024. The Authority conducted the general conformity evaluation following all regulatory criteria and procedures and in coordination with USEPA, SCAQMD, and the California Air Resources Board.

The FRA determined that the Selected Alternative would not exceed any General Conformity *de minimis* levels or CEQA thresholds in the Antelope Valley Air Quality Management District/ Mojave Desert Air Basin or San Joaquin Valley Air Pollution Control District/Joaquin Valley Air Basin. The FRA determined that during the construction phase, the Project will result in exceedances of the *de minimis* levels for CO and NO_x emissions in the South Coast Air Basin. There, the project will conform to the applicable requirements for CO in the approved state implementation plan (SIP), based on localized CO modeling that shows in the two years that construction emissions will exceed the CO *de minimis* level, the exceedances will not cause or contribute to a violation of the National Ambient Air Quality Standards for CO within the South Coast Air Basin. In addition, the FRA determined that the project will conform to the applicable requirements in the SIP for NO_x based on commitments between the Authority and SCAQMD to ensure that construction-phase NO_x emissions will be offset to levels that are below the General Conformity *de minimis* level. As a result of this review, the FRA concluded, because project-generated emissions will either be fully offset (for construction phase) or less than zero (for operational phase), that the Project's emissions can be accommodated in and would confirm to the approved SIP.

The FRA's determination is based in part on the following Authority commitments with SCAQMD:

- A commitment between the Authority and SCAQMD to develop and execute an agreement after receipt of construction funding, but prior to the start of construction that includes:
    - A review of emission estimates, coordination with appropriate agencies, revisions (if warranted) of emission estimates before construction start, and a final estimate for review and use by SCAQMD;

- If emissions exceed General Conformity *de minimis* thresholds, all remaining emissions after implementation of the IAMFs and onsite mitigation measures will be completely mitigated to zero through the District's emission reduction programs. Applicable emission reduction programs may include state or federal incentive programs that achieve emissions reductions by providing incentive funds for the incremental cost of cleaner-than-required engines and equipment. The Authority agrees to provide funding at the cost-effectiveness level or amount established by the program(s) mutually selected by the District and the Authority; and
- A commitment that the Authority will not start construction until necessary agreements are executed.

Therefore, the FRA concluded that the Selected Alternative, as designed, conforms to the purpose of the approved SIP and is consistent with all applicable requirements. The FRA's Final General Conformity Determination is included with this ROD as Appendix A.

9.4 Section 7 Endangered Species Finding

The proposed action (construction and operation of the Selected Alternative) is in compliance with Section 7 of the FESA. Because the proposed action is likely to affect threatened or endangered species subject to USFWS jurisdiction, the Authority prepared a BA for the Project and consulted with USFWS, as required under Section 7 of the FESA. After evaluating the potential effects of the proposed action, and after additional informal consultation with the USFWS, the Authority determined that the Palmdale to Burbank Project Section may affect, and is likely to adversely affect, the following species and/or designated critical habitat:

- Slender-horned spineflower (*Dodecahema leptoceras*) – Federally endangered
- Arroyo toad (*Anaxyrus californicus*) – Federally endangered
- Arroyo toad (*Anaxyrus californicus*) critical habitat
- Coastal California gnatcatcher (*Polioptila californica*) – Federally threatened
- Southwestern willow flycatcher (*Empidona traillii extimus*) – Federally endangered
- Least Bell's vireo (*Vireo bellii pusillus*) – Federally threatened

The Authority developed and submitted the BA, which evaluated direct, indirect, and cumulative effects of the Project on federally listed species and their designated critical habitat, to USFWS in May 2023 and requested the initiation of formal Section 7 consultation. The Authority held numerous meetings with USFWS following submittal of the BA, and the BA was subsequently revised and resubmitted in November 2023 to address USFWS comments.

Following submittal of the revised BA, the Authority continued to consult with USFWS regarding effects on listed species (whether or not take was reasonably certain to occur and extent of take), conservation measures, and overall findings in USFWS's BO through June 2024. As a part of that process, the USFWS coordinated with the U.S. Army Corps of Engineers, U.S. Forest Service, Bureau of Land Management, and Surface Transportation Board, seeking their review of the Service's draft BO. After consideration of comments received from that coordination, USFWS issued a Biological Opinion for the Palmdale to Burbank Project Section on June 25, 2024 (provided as Appendix B to this ROD).

In the BO, USFWS determined that the Selected Alternative for the Palmdale to Burbank Project Section, as proposed, is not likely to jeopardize the continued existence of the five listed wildlife and plant species and is not likely to adversely modify or destroy designated critical habitat for arroyo toad that occur in the action area. The BO stipulates four reasonable and prudent measures for the Authority to implement to monitor and report to the Carlsbad Fish and Wildlife Office any project-related incidental take of the four animal species (vireo, gnatcatcher, flycatcher, toad). The Authority will implement the measures identified in the USFWS BO.

The Authority also prepared a BA for the endangered Southern California distinct population segment of steelhead (*Oncorhynchus mykiss*) and its designated critical habitat. After evaluating the potential effects of the proposed action, the Authority determined that the Palmdale to

Burbank Project Section is not likely to adversely affect Southern California steelhead or its designated critical habitat, in part because the species is not likely to be present in the action area and the action area does not include any of its designated critical habitat. The Authority submitted the BA to the NMFS on April 2, 2022, and informal consultation was initiated shortly after the BA submittal. Following the informal consultation, NMFS issued its concurrence with the Authority's not likely to adversely affect determination for Southern California steelhead and its critical habitat for the Palmdale to Burbank Project Section on May 25, 2022 (provided as Appendix E to this ROD).

9.5 Wetlands Finding

In addition to NEPA and other environmental laws, the federal lead agency is also required to make findings pursuant to USEO 11990, Protection of Wetlands (May 24, 1977), and the USDOT Wetlands Order, USDOT Order 5660.1A, Preservation of the Nation's Wetlands (August 24, 1978). Aquatic resources in the Palmdale to Burbank Project Section resource study area include several types of wetlands as well as other waters (i.e., streams, lakes, and constructed water features) as verified by the USACE under a preliminary jurisdictional determination issued on March 1, 2022. In particular, a USACE-approved jurisdictional determination that includes Una Lake as a waters of the United States was made in June 2013 (USACE 2013).

Construction of the Selected Alternative will have direct and indirect impacts on aquatic resources, although the Authority has taken all feasible and practicable steps to avoid and minimize impacts to such resources, including Una Lake. Portions of the project footprint that cross or abut aquatic resources will result in placement of fill (e.g., for construction of bridge supports), installation of culverts, and associated in-channel work. Construction of track and systems could also alter surface and subsurface hydrology that supplies or drains aquatic features. Additional effects on aquatic resources may result from groundwater reduction during tunnel construction and the associated disruption of hydrologic cycles of surface water resources. Construction of the Selected Alternative will require a permit from the USACE pursuant to Section 404 of the CWA.

In January 2024, the USACE and USEPA concurred that the Authority's Selected Alternative is the preliminary least environmentally damaging practicable alternative (LEDPA). The requirements identified in the MMEP, incorporated as part of this document (Appendix C), will ensure that the destruction, loss, or degradation of wetlands and other waters are avoided and minimized and that the natural and beneficial values of wetlands are preserved and enhanced. However, if determined to be necessary by USACE or the State Water Resources Control Board, these measures may be increased through their respective permitting processes, or additional measures may be recommended and reflected in other project permits and authorizations.

Based upon USACE findings and the Authority's evaluation, the Authority determines that the Project is consistent with USEO 11990 and USDOT Order 5660.1A.

9.6 Floodplains Finding

The USDOT Order 5650.2 implements USEO 11988, Floodplain Management (April 23, 1979). These orders state that the federal lead agency may not approve an alternative involving a significant encroachment ("action within the limits of the base floodplain," USDOT Order 5620.2(4)) unless the agency can make a finding that the proposed encroachment is the only practicable alternative. The major purposes of USEO 11988 are to avoid federal support for floodplain development; to prevent uneconomic, hazardous, or incompatible use of floodplains; to restore and preserve the natural and beneficial floodplain values; and to be consistent with the standards and criteria of the National Floodplain Insurance Program.

As indicated in Section 3.8, Hydrology and Water Resources, of the Final EIS, the Authority, as the federal lead agency under the NEPA Assignment MOU, concludes that the Selected Alternative would not result in any substantial adverse impacts on natural and beneficial values of the floodplains and would not result in a substantial change in flood risks or damage.

Construction of the Selected Alternative will place new structures and/or modify existing structures within 100-year floodplains regulated by the FEMA, which will result in changes to channel geometry and flood flow characteristics and have the potential to result in permanent impacts on floodplain hydraulics. To avoid impacts related to flooding, FEMA and the local agencies require that an encroachment into a floodplain not increase the water surface elevation of a 100-year flood by more than 1 foot in FEMA mapped floodplains. However, if there is a FEMA-designated "regulatory floodway," no increase in water surface elevation is permitted.

With implementation of IAMFs, which will require flood protection measures that minimize effects on 100-year floodplain water surface elevations and avoid effects on floodways, no permanent effects on designated floodplains from construction will occur. If the Authority later determines that a FEMA regulatory floodway may be affected by the Project, the Authority has committed to conducting additional hydraulic modeling to confirm that there would be no (0.00 foot) increase in the base flood elevation, as indicated in HYD-IAMF#2 in the attached MMEP, which requires compliance with local agency requirements for development within the floodplain. If the Authority is unable to meet these requirements, and the base flood elevation exceeds the NFIP regulations, the Authority would seek approval of the LAFCD to apply to FEMA for a Conditional Letter of Map Revision (CLOMR), as further indicated in HYD-IAMF#2.

Design of the Selected Alternative includes such effective measures to avoid or minimize the potential for exposure of HSR passengers and employees to flooding; new or additional exposure to flooding risks and hazards from the failure of a levee or dam would not occur. Based upon these findings, the Authority determines that the Selected Alternative is consistent with the requirements of USEO 11988 and USDOT Order 5650.2.

9.7 Environmental Justice Finding

Under USEO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 16, 1994), and USDOT Order 5610.2C, USDOT Actions to Address Environmental Justice in Minority Populations and Low-income Populations (May 14, 2021) (USDOT 2021), require that each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionate high and adverse human health or environmental effects of its programs, policies, and activities on minority communities and/or low-income communities ("EJ communities").[6]

The Palmdale to Burbank Project Section project alternatives, including the Selected Alternative, will result in adverse effects on all populations, including low-income populations or minority populations, in the Central Subsection and the Burbank Subsection. As identified in Chapter 5, the Authority has held a substantial number of meetings, briefings, and outreach in potentially affected EJ communities with community stakeholders, businesses, local agencies, and elected officials in EJ communities during the development of the EIS to gather, confirm, and understand key community concerns on potential project impacts as well as to identify all practicable mitigation measures to address potential impacts of the Selected Alternative or other Build Alternatives. In Volume 2, Appendix 5-B, of the Final EIS represents a summary of relevant input from communities and local agencies, including comments and measures requested by communities, and how the Authority considered those measures.

Before application of potential IAMFs and mitigation measures (including EJ-specific), the Selected Alternative will result in potential disproportionately high and adverse effects for traffic effects from spoils hauling in Sylmar, Pacoima, and Sun Valley, localized air quality exceedances during construction for NO_2 and PM_{10} in Sun Valley, construction noise in Pacoima, Sun Valley, Sylmar, and Palmdale, operational train noise in Sun Valley, and business displacements in

[6] USEO 14096—Revitalizing Our Nation's Commitment to Environmental Justice for All was enacted on April 21, 2023. USEO 14096 on EJ does not rescind USEO 12898, which has been in effect since February 11, 1994, and is currently implemented through USDOT Order 5610.2C. This implementation will continue until further USDOT guidance is provided regarding the implementation of the new USEO 14096 on EJ.

Pacoima and Sun Valley. The specific census block groups within these communities with these potential effects are identified in Table 5-25 of Chapter 5 of the Final EIS.

The Authority identified specific measures to address or offset impacts in environmental justice communities, including measures identified by EJ community stakeholders as potential ways to attenuate, avoid, or mitigate potential project effects. After application of these measures, the Authority identified communities who may continue to experience residual effects for operational train noise in Sun Valley and business displacements in Pacoima and Sun Valley and developed potential offsetting mitigation measures for these communities.

Offsetting mitigation measures will further benefit the EJ communities by providing benefits and improvements requested by affected communities: training and employment opportunities, permanent neighborhood facility improvements such as streetscape connectivity, beautification and safety – pedestrian crossings, sidewalk improvements, street lighting, street trees, and other landscaping elements. Additionally, while these communities will experience construction-phase effects, these same communities may also benefit from the additional jobs generated during the construction phase. Other permanent long-term potential benefits from the project include increased transit connectivity and air quality improvements.

After the Authority's review of impacts and integration of key measures requested by representatives of affected communities, the Authority concluded that the project would not result in disproportionately high and adverse effects, after application of these measures designed to specifically address and continuously monitor the Authority's performance in addressing concerns of potentially impacted environmental justice communities.

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10 CONCLUSION

The Authority, as the federal lead agency, and as authorized by the NEPA Assignment MOU, has reached a decision that most closely aligns with the Authority's statutory mission and the responsibilities assigned to it by the FRA pursuant to NEPA Assignment, considering economic, environmental, technical, and other factors and based on the information contained within the Final EIS and the project record.

For the Palmdale to Burbank Project Section, which includes the Central Subsection and the Burbank Subsection as well as its previously approved Burbank Airport Station (beginning from Spruce Court in the City of Palmdale in the north and continuing south to terminate just north of Winona Avenue and north of the Burbank Airport east/west runway in the City of Burbank), the Authority approves the SR14A Build Alternative as the Selected Alternative. The Authority has selected this alternative because: (1) it best satisfies the Purpose and Need and objectives for the proposed action; and (2) it minimizes impacts on the natural and human environment by utilizing an existing transportation corridor where practicable and incorporating mitigation measures.

Brian P. Kelly
Chief Executive Officer
California High-Speed Rail Authority

8/30/24
Date

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APPENDIX A: FINAL GENERAL CONFORMITY DETERMINATION, JUNE 10, 2024

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California High-Speed Rail Authority

Palmdale to Burbank Project Section

Final General Conformity Report

May 2024

CALIFORNIA High-Speed Rail Authority

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being or have been carried out by the State of California pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated July 23, 2019, and executed by the Federal Railroad Administration and the State of California.

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Appendices

Appendix A: General Conformity Determination Letter between Authority and South Coast Air Quality Management District

ACRONYMS AND ABBREVIATIONS

µg/m^3	micrograms per cubic meter
AQMP	air quality management plan
Authority	California High-Speed Rail Authority
AVAQMD	Antelope Valley Air Quality Management District
C.F.R.	Code of Federal Regulations
CAA	Clean Air Act
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CO	carbon monoxide
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMFAC2017	Emission Factors 2017
FRA	Federal Railroad Administration
HSR	high-speed rail
IAMF	impact avoidance and minimization feature
MM	mitigation measure
N/A	not available
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NM	not monitored
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NZE	near zero emission
O_3	ozone
PM	particulate matter
PM_{10}	particulate matter 10 microns in diameter or less
$PM_{2.5}$	particulate matter 2.5 microns in diameter or less
ppm	parts per million
ROG	reactive organic gas
RSA	resource study area
SCAQMD	South Coast Air Quality Management District
SIP	state implementation plan
SO_2	sulfur dioxide
SO_X	sulfur oxides

tpy	tons per year
U.S.C.	United States Code
USEPA	U.S. Environmental Protection Agency
ZE	zero emission
ZEV	zero emission vehicles

EXECUTIVE SUMMARY

The California High-Speed Rail (HSR) System, proposed by the California High-Speed Rail Authority (Authority), will provide intercity, high-speed service on more than 800 miles of guideway throughout California, connecting the major population centers of Sacramento, the San Francisco Bay Area, the Central Valley, Los Angeles, the Inland Empire, Orange County, and San Diego. The Palmdale to Burbank HSR Section ("Project"), which is the focus of this General Conformity Determination, is a critical link in Phase 1 of the California HSR System connecting the San Francisco Bay Area to the Los Angeles Basin.[1]

The General Conformity Rule, as codified in Title 40 Code of Federal Regulations Part 93, Subpart B, establishes the process by which federal agencies determine conformance of proposed projects that are federally funded or require federal approval with applicable air quality standards. This determination must demonstrate that a project would not cause or contribute to new violations of air quality standards, exacerbate existing violations, or interfere with timely attainment or required interim emissions reductions towards attainment.

The Federal Railroad Administration (FRA) prepared a Draft General Conformity Determination, pursuant to 40 C.F.R. part 93, subpart B, which establishes the process for complying with the General Conformity requirements of the Clean Air Act. FRA published a notice in the Federal Register on April 2, 2024, advising the public of the availability of the Draft Conformity Determination for a 30-day review and comment period. The Draft Conformity Determination was published at http://www.regulations.gov, Docket No. FRA-2024-0045. The comment period of the Draft Conformity Determination closed on May 2, 2024. FRA received one non-substantive comment unrelated to the Draft General Conformity Determination. Therefore, there were no public comments to address within this Final General Conformity Determination.

This Final General Conformity Determination documents the Federal Railroad Administration's finding that the Project complies with the General Conformity Rule, that it conforms to the purposes of the area's approved State Implementation Plan, and that it is consistent with all applicable requirements. The Final General Conformity Determination is available at http://www.regulations.gov, Docket No. FRA-2024-0045, and on FRA's website at https://railroads.dot.gov/environment/environmental-reviews/clean-air-act-california-general-conformity-determinations.This Final General Conformity Determination is being released based on the adopted impact avoidance and minimization features (IAMFs) and mitigation measures described in Section 3.3.4.2 and Section 3.3.7, respectively, of the *Palmdale to Burbank Section Final Environmental Impact Report/Environmental Impact Statement* (Authority 2024). This compliance is demonstrated herein as follows:

- The operation of the Project would result in a reduction of regional emissions of all applicable air pollutants and would not cause a localized exceedance of an air quality standard; and
- Whereas emissions generated during the construction of the Project would exceed the *de minimis* levels for nitrogen oxides (NO_x) and carbon monoxide (CO) in the South Coast Air Basin, these exceedances would be offset through an agreement between the Authority and South Coast Air Quality Management District (SCAQMD). Prior to issuance of a Final General Conformity Determination, the Authority and SCAQMD will agree to develop and execute an agreement to offset, as necessary, any criteria air pollutant emissions exceedances resulting from the Project as described in Section 12.2, Compliance with Conformity Requirements, which will be executed prior to the start of construction.

[1] As part of its first phase, the California HSR System is currently planned as eight distinct sections from San Francisco in the north to Los Angeles and Anaheim in the south.

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1 INTRODUCTION

This document is the Final General Conformity Determination for the Palmdale to Burbank Section of the California High-Speed Rail (HSR) system ("Project") and is required by the implementing regulations of Section 176 of the Clean Air Act (CAA). Section 176(c)(1) of the CAA prohibits federal agencies from engaging in, supporting, or providing financial assistance for licensing, permitting, or approving any activities that do not conform to an approved CAA implementation plan. That approved plan may be a federal, state, or tribal implementation plan.

The CAA defines nonattainment areas as geographic regions that have been designated as failing to meet one or more of the National Ambient Air Quality Standards (NAAQS). The CAA requires that each state prepare a state implementation plan (SIP) for each nonattainment area, and that a maintenance plan be prepared for each former nonattainment area that has subsequently demonstrated compliance with the standards. The SIP is a state's plan for how it will meet the NAAQS by the deadlines established by the CAA.

The General Conformity Rule is codified in Title 40 Code of Federal Regulations (C.F.R.) Part 93, Subpart B, "Determining Conformity of General Federal Actions to State or Federal Implementation Plans." Conformity is defined as "upholding an implementation plan's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards." The General Conformity Rule also establishes the process by which federal agencies determine conformity of proposed projects that are federally funded or require federal approval. This determination must demonstrate that the Project would not cause or contribute to new violations of air quality standards, exacerbate existing violations, or interfere with timely attainment or required interim emissions reductions towards attainment. Because the Project is receiving federal funds through grants with the Federal Railroad Administration (FRA) and may also receive safety approvals from FRA, it is an action that may be subject to the General Conformity Rule.

This Final General Conformity Determination was issued following the *Palmdale to Burbank Project Section Environmental Impact Report/Environmental Impact Statement* (EIR/EIS), which complies with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). Because the analysis used for the EIR/EIS also generated the information necessary for the General Conformity Determination, specific analysis may be incorporated herein by reference.

1.1 Regulatory Status of Study Area

On November 24, 1993, the U.S. Environmental Protection Agency (USEPA) promulgated final conformity regulations to address transportation plans, programs, and projects developed, funded, or approved under title 23 U.S. Code or the Federal Transit Act, 49 U.S. Code 1601 et seq. (40 C.F.R. Part 93 Subpart A). These regulations have been revised several times since they were first issued. Although the Transportation Conformity regulations do not apply to this Project (see Section 1.2), many of the transportation planning documents developed under those regulations explain the regional air quality and planning status of the resource study area (RSA).

The RSA for the Project is the South Coast Air Basin. While the Project would occur within the South Coast Air Basin, San Joaquin Valley Air Basin, and the Mojave Desert Air Basin, the RSA includes only the South Coast Air Basin because construction-phase emissions (without mitigation) for the Preferred Alternative will only exceed the *de minimis* levels for applicable criteria pollutants within the South Coast Air Basin. As described, in Table 3.3-16 and Table 3.3-18 of the *Palmdale to Burbank Project Section EIR/EIS*, the emissions-intensive construction activities for the Project will primarily occur within the South Coast Air Basin. As described in Table 3.3-19 and Table 3.3-20, the construction-phase emissions (without mitigation) for the Preferred Alternative will not exceed *de minimis* levels in either the Mojave Desert Air Basin or San Joaquin Valley Air Basin. Thus, as construction activities from the Project (the Preferred Alternative) will not result in an exceedance of the *de minimis* levels for any applicable criteria pollutant in either the Mojave Desert Air Basin or San Joaquin Valley Air Basin, a General

Conformity Determination is not required for those basins. Therefore, the Project's RSA for the General Conformity Report is limited to the South Coast Air Basin.

Planning documents for pollutants for which the RSA is classified as federal nonattainment or maintenance are developed by the SCAQMD and the California Air Resources Board (CARB) and are approved by the USEPA. Table 1-1 lists the planning documents relevant to the Project's RSA.

Table 1-1 Planning Documents Relevant to the Resource Study Area

Type of Plan	Status
SCAQMD 2022 Air Quality Management Plan	On October 1, 2015, USEPA strengthened the NAAQS for ground-level ozone, lowering the primary and secondary ozone standard levels to 70 parts per billion. The South Coast Air Basin is classified as an "extreme" nonattainment area, and the Coachella Valley is classified as a "severe-15" nonattainment area for the 2015 Ozone NAAQS. The 2022 AQMP was developed to address the requirements for meeting this standard and was adopted December 2, 2022, by the SCAQMD Governing Board.
SCAQMD 2016 Air Quality Management Plan	Approved by the SCAQMD Governing Board in March 2017, the 2016 AQMP demonstrates attainment for the 8-hour ozone NAAQS established in 2008, the annual $PM_{2.5}$ NAAQS established in 2012, and the 24-hour $PM_{2.5}$ NAAQS established in 2006. In addition, the 2016 AQMP includes revisions to the attainment demonstrations for the 1997 8-hour ozone NAAQS and the 1979 1-hour ozone NAAQS. The 2016 AQMP was submitted to USEPA on April 27, 2017, but no clean air determination has been made to date.
SCAQMD 2012 Air Quality Management Plan	Approved by the SCAQMD Governing Board in February 2013, the 2012 AQMP was submitted to demonstrate attainment for the 24-hour $PM_{2.5}$ NAAQS established in 2006. On September 30, 2015, USEPA proposed to approve elements of the South Coast 2012 $PM_{2.5}$ Plan and 2015 Supplement, which addressed Clean Air Act requirements for the 2006 $PM_{2.5}$ NAAQS and proposed to reclassify the area as a 'Serious' nonattainment area for the 2006 $PM_{2.5}$ standard. USEPA provided a 30-day public comment period from the date of publication in the Federal Register. On March 15, 2016, USEPA approved in part and disapproved in part those portions of the SCAQMD's 2012 Air Quality Management Plan (2012 $PM_{2.5}$ Plan) that address attainment of the 2006 24-hour $PM_{2.5}$ standards and the 2015 Supplement to the 2012 $PM_{2.5}$ Plan. To correct these deficiencies, the state was required to submit to USEPA a demonstration that the NO_x Regional Clean Air Incentive Market program, either as adopted in 2010 or as subsequently amended, ensures emissions reductions equivalent, in the aggregate, to the reductions anticipated from the direct application of reasonably available control technology on covered sources.

Type of Plan	Status
2010 South Coast Air Basin Request for PM_{10} Redesignation Request and Maintenance Plan	On April 28, 2010, CARB submitted Request for PM_{10} Redesignation and Maintenance Plan to USEPA. On June 12, 2013, the USEPA's regional administrator signed a final rule to approve the South Coast PM_{10} Redesignation Request and Maintenance Plan. The plan was developed and adopted by SCAQMD, and showed how the area would maintain the PM_{10} standard for at least the next 10 years.
2005 South Coast Air Basin Request for CO Maintenance Plan and Redesignation Request	On February 24, 2006, CARB transmitted the Redesignation Request and Maintenance Plan (including the CO budgets) to USEPA for approval. In addition, on August 11, 2006, CARB provided information to USEPA that demonstrates the Smog Check program satisfies federal inspection & maintenance requirements for CO and provides emission reductions necessary for continued improvement in CO air quality. On April 24, 2007, USEPA's regional administrator signed a final rule to approve the South Coast Maintenance Plan and Redesignation Request for Carbon Monoxide.

Sources: South Coast Air Quality Management District, 2005, 2009, 2013, 2017
AQMP = air quality management plan
CARB = California Air Resources Board
CO = carbon monoxide
NAAQS = National Ambient Air Quality Standards
NOx = nitrogen oxides
PM_{10} = particulate matter smaller than or equal to 10 microns in diameter
$PM_{2.5}$ = particulate matter smaller than or equal to 2.5 microns in diameter
SCAQMD = South Coast Air Quality Management District
SIP = State Implementation Plan
USEPA = U.S. Environmental Protection Agency

1.2 General Conformity Requirements

On November 30, 1993, USEPA promulgated final General Conformity regulations at 40 C.F.R. Part 93 Subpart B for all federal activities except highways and transit programs covered by Transportation Conformity. The regulations in Subpart B were subsequently amended in March of 2010. Because the Project will not be funded or require approval(s) under Title 23 U.S. Code or the Federal Transit Act, 49 U.S. Code 1601 et seq., the General Conformity requirements are applicable rather than Transportation Conformity. In general terms, unless a project is exempt under 40 C.F.R. § 93.153(c) or is not on the agency's presumed-to-conform list pursuant to 40 C.F.R. § 93.153(f), a General Conformity Determination is required where a federal action in a nonattainment or maintenance area causes an increase in the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutants that are equal to or exceed certain *de minimis* rates.

During the applicability analysis, the federal agency determines:

- Whether the action will occur in a nonattainment or maintenance area;
- Whether one or more of the specific exemptions apply to the action;
- Whether the federal agency has included the action on its list of presumed-to-conform actions;
- Whether the total direct and indirect emissions are below or above the *de minimis* levels; and/or
- Where a facility has an emissions budget approved by the State or Tribe as part of the SIP or transportation improvement plan, the federal agency determines that the emissions from the Project are within the budget (USEPA 2022a).

The USEPA Guidance (USEPA 1994) states that the applicability analysis can be (but is not required to be) completed concurrently with any analysis required under NEPA. The applicability analysis for this Project is described in Section 8. If, after the applicability analysis, the federal agency concludes it should conduct a conformity determination, it may demonstrate conformity by one or more of several prescribed methods. These methods include:

- Demonstrating that the direct and indirect emissions are specifically identified in the relevant implementation plan;

- Obtaining a written statement from the entity responsible for the implementation plan that the total indirect and direct emissions from the action, along with other emissions in the area, will not exceed the total implementation plan emission budget; or
- Fully offsetting the total direct and indirect emissions by reducing emissions of the same pollutant in the same nonattainment or maintenance area.

2 DESCRIPTION OF THE FEDERAL ACTION REQUIRING CONFORMITY EVALUATION

In accordance with applicable General Conformity regulations and guidance, when a General Conformity Determination is necessary, FRA conducts a General Conformity evaluation for the specific federal action associated with the preferred alternative for a project or program (USEPA 1994), and FRA must issue a positive conformity determination before the federal action is approved. Each federal agency is responsible for determining conformity of those proposed actions over which it has jurisdiction. This Final General Conformity Determination is related only to those activities included in the FRA's federal action pertaining to the Proposed Action, which is the Proposed Action's potential approval through a NEPA Record of Decision. The Proposed Action is described further in Section 3.

General Conformity requirements only apply to federal actions proposed in nonattainment areas (i.e., areas where one or more NAAQS are not being achieved at the time of the Proposed Action and requiring SIP provisions to demonstrate how attainment would be achieved) and in maintenance areas (i.e., areas recently reclassified from nonattainment to attainment and requiring SIP provisions to demonstrate how attainment would be maintained).

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3 CALIFORNIA HIGH-SPEED RAIL PROJECT

3.1 California High-Speed Rail System

The Authority, a state governing board formed in 1996, is responsible for planning, designing, constructing, and operating the HSR system. Its mandate is to develop a high-speed rail system connecting the state's major population centers and coordinating with the state's existing transportation network, which includes intercity rail and bus lines, regional commuter rail lines, urban rail and bus transit lines, highways, and airports.

The HSR system will provide intercity, high-speed service on more than 800 miles of railroad throughout California, connecting the major population centers of Sacramento, the San Francisco Bay Area (Bay Area), the Central Valley, Los Angeles, the Inland Empire, Orange County, and San Diego. It will use state-of-the-art, electrically powered, high-speed, steel-wheel-on-steel-rail technology, including contemporary safety, signaling, and automated train-control systems, with trains capable of operating up to 220 miles per hour over a grade-separated, dedicated guideway alignment.

The FRA is responsible for oversight and regulation of railroad safety and is also charged with the implementation of the High-Speed Intercity Passenger Rail financial assistance program. As part of the High-Speed Intercity Passenger Rail Program, FRA is providing partial funding for the environmental analysis and documentation required under NEPA, CEQA, and other related environmental laws. Pursuant to U.S. Code Title 23 Section 327, under the NEPA Assignment Memorandum of Understanding between FRA and the State of California, effective July 23, 2019, the Authority is the federal lead agency for environmental reviews for all Authority Phase 1 and Phase 2 California HSR System projects. The FRA performs Clean Air Act Conformity determinations and other federal approvals retained by the FRA under the NEPA Assignment Memorandum of Understanding.

3.2 California High-Speed Rail System – Palmdale to Burbank Section

The Palmdale to Burbank Project Section of the California HSR System includes up to approximately 38 miles of alignment (depending on Build Alternative) between the cities of Palmdale and Burbank, in addition to the Burbank Airport Station. The alignment would include six different track profiles: at-grade, at-grade covered, cut-and-cover, retained cut/trench profile, tunnel, and elevated/aerial structure in a variety of land uses and ecoregions, including urban, rural, and mountainous terrain in Southern California. From the north, the project section would begin at Spruce Court in Palmdale, continue south and turn west to cross under the community of Acton, continue southwest and turn south to travel beneath the Angeles National Forest, including the San Gabriel Mountains National Monument, and then enter the San Fernando Valley where it would connect to the Burbank Airport Station.

The permanent environmental footprint areas of the Palmdale to Burbank Project Section would include elevated track, at-grade track, tunnels, access roads, traction power distribution infrastructure, radio communication sites, and the Burbank Airport Station. In addition, public roadway improvements, grade separations, and railroad improvements would be built in support of the project section. The Palmdale to Burbank Project Section would also require the construction of one adit and one intermediate window facility to improve tunnel access and ventilation, as most of the track alignment in the project section would utilize below-grade tunnels. For reference, adits are intermediate tunnel access shafts intended to facilitate construction of bored tunnels, and intermediate windows are vertical shafts connecting to an underground construction area that comprise an elevator and gantry cranes to provide access to water, power, ventilation, and other support during construction.

The Palmdale to Burbank Project Section alignment would begin at grade in the vicinity of Spruce Court, crossing the current alignment of Sierra Highway just north of the East Avenue S, continuing south and curving eastward to travel approximately 300 feet east of Una Lake. South of Una Lake, the Palmdale to Burbank Project Section alignment would curve westward, cross over the Metrolink Antelope Valley Line, Sierra Highway, and the Soledad Siphon, and continue

southwest and enter a tunnel portal approximately 0.5 mile northeast of the Sierra Highway/Pearblossom Highway intersection. The Palmdale to Burbank Project Section alignment would then continue westward in an approximately 13-mile-long tunnel before surfacing approximately 0.75 mile east of Agua Dulce Canyon Road. The alignment would transition between at-grade and elevated profiles before entering an approximately 1-mile-long tunnel. Transitioning from tunnel to at grade, the Palmdale to Burbank Project Section alignment would converge at the Soledad Canyon Mining Operations (Vulcan Mine) site, California Mine Identification Number 91-19-0038, which is almost entirely within the boundaries of the ANF, including the SGMNM. From this point, the Palmdale to Burbank Project Section alignment would enter twin-bored tunnels for approximately 13 miles, which would be constructed underneath portions of the ANF, including the SGMNM, the city of Santa Clarita, and the Pacoima neighborhood of Los Angeles. These tunnels would have a maximum depth of 2,080 feet. The twin tunnels would pass through the San Gabriel Fault Zone and the Sierra Madre Fault Zone. Upon completion of the tunnels, the Vulcan Mine site would be regraded to better reflect surrounding topography.

The Palmdale to Burbank Project Section alignment would emerge east of the existing Antelope Valley Metrolink Corridor near Montague Street in the Pacoima neighborhood of Los Angeles. From Montague Street, Palmdale to Burbank Project Section alignment would continue south for approximately 0.4 mile in a retained cut/trench, transitioning up to ground level, and passing over the existing Hansen Spreading Grounds on embankment before crossing over the Los Angeles County Flood Control Channel on a bridge and entering the existing Metrolink corridor near Sheldon Street. Continuing along the east side of the Metrolink Corridor, the Palmdale to Burbank Project Section alignment would continue southerly at grade for approximately 1.0 mile where it would cross over Tuxford Street and under the I-5 freeway. Continuing southeast from the I-5 undercrossing, the Palmdale to Burbank Project Section alignment would transition below-grade in an open trench to just north of Olinda Street. From just north of Olinda Street to just south of Sunland Boulevard, the Palmdale to Burbank Project Section alignment would be below-ground in a cut- and-cover box structure. Metrolink would remain on the surface, and the Sun Valley Metrolink station would be reconstructed south of Olinda Street on the surface. South of Sunland Boulevard the Palmdale to Burbank Project Section alignment would continue in a mined or bored tunnel until reaching Lockheed Drive, the southern limit of this subsection. The Palmdale to Burbank Project Section alignment would continue in the cut-and-cover tunnel through the southern limit of the Burbank subsection near Winona Drive.

Although the Project is defined as the section connecting Palmdale to Burbank, the Palmdale Station, including the track alignment north of Spruce Court in Palmdale, was fully evaluated as part of the *Bakersfield to Palmdale Project Section EIR/EIS* and corresponding technical reports, which was approved by the Authority Board in August 2021 (Authority 2021), and evaluated in the Bakersfield to Palmdale Final General Conformity Determination, issued on July 16, 2021. While the track alignment north of Spruce Court has been incorporated into the *Palmdale to Burbank Project Section EIR/EIS* to support station-to-station analysis with logical termini for the Palmdale to Burbank Project Section, emissions and concentration results for the Palmdale Station and the track alignment north of Spruce Court are not included in this Final General Conformity Determination. Similarly, the Burbank Airport Station was fully evaluated as part of the *Burbank to Los Angeles Final EIR/EIS*, which was approved by the Authority Board in March 2022 (Authority 2022) and evaluated in the Burbank to Los Angeles Final General Conformity Determination, issued on December 9, 2021. However, the Burbank Airport Station is included in the *Palmdale to Burbank EIR/EIS* for context and information. As such, the Burbank Airport Station is similarly included in this Final General Conformity Determination for context and information.

4 AIR QUALITY CONDITIONS IN THE RESOURCE STUDY AREA

4.1 Meteorology and Climate

Air quality is affected by both the rate and location of pollutant emissions, and by meteorological conditions that influence movement and dispersal of pollutants in the atmosphere. Atmospheric conditions, such as wind speed, wind direction, and air temperature gradients, along with local topography, provide the link between air pollutant emissions and local air quality levels.

The South Coast Air Basin covers an area of 6,745 square miles and includes all of Orange County, Los Angeles County except for the Antelope Valley, the non-desert portion of western San Bernardino County, and the western and Coachella Valley portions of Riverside County.

Low average wind speeds, together with a persistent temperature inversion, limit the vertical dispersion of air pollutants throughout the South Coast Air Basin. However, strong, dry, north or northeasterly winds, known as Santa Ana winds, occur during the fall and winter months, dispersing air contaminants. The Santa Ana conditions tend to last for several days at a time.

The combination of stagnant wind conditions and low inversions tend to produce the highest ground-level pollutant concentrations. On days without a temperature inversion or high wind speeds, ambient air pollutant concentrations are typically the lowest. During periods of low-level inversions and low wind speeds, air pollutants generated in urbanized areas are transported into Riverside and San Bernardino Counties. In the winter, the greatest pollution problems are carbon monoxide (CO) and nitrogen oxides (NO_X) because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and NO_X to form photochemical smog.

The annual average temperature varies little throughout the South Coast Air Basin, ranging from average highs of 80s and lows of 50s degrees Fahrenheit. With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. Much of the annual rainfall in the South Coast Air Basin occurs between November and April. Summer rainfall is minimal and is generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern portion of the South Coast Air Basin and along the coastal side of the mountains. Average monthly rainfall during that period varies from 3.80 inches in February to 0.01 inch or less between June and July, with an annual total of 16.35 inches. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

The South Coast Air Basin intermittently experiences a temperature inversion (increasing temperature with increasing altitude) because of the Pacific High. This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (upper) layer until the inversion layer finally breaks, allowing vertical mixing with the lower layer. This phenomenon is observed in mid-afternoon to late afternoon on hot summer days when the smog appears to clear up suddenly. Winter inversions frequently break by midmorning.

4.2 Ambient Air Quality in the Resource Study Area

CARB maintains ambient air monitoring stations for criteria pollutants throughout California. Two stations nearest to the RSA—near the central and southern Project limits—were selected to represent conditions along the Palmdale to Burbank corridor: Santa Clarita and Reseda, respectively. Locations for the monitoring stations are shown on Figure 4-1.

Table 4-1 summarizes the results of ambient monitoring at the two stations, where available, for the most recent 3 years of available data (CARB 2022b; USEPA 2022b). This 3-year period is calendar years 2019 through 2021 for the Reseda and Santa Clarita monitoring stations. A summary of the monitoring data includes the following:

- Monitored data from 2019 through 2021 do not exceed either the state or federal standards for CO.
- Ozone (O_3) values for the region exceed both the state and national 8-hour O_3 standards at all stations for all 3 years. O_3 values for the region also exceed the state 1-hour O_3 standard at both stations for every year from 2019 through 2021.
- The available particulate matter 10 microns in diameter or less (PM_{10}) values for the region did not exceed the national 24-hour PM_{10} standard. The state 24-hour PM_{10} standard was exceeded at the Santa Clarita station for 2019 and 2020. PM_{10} concentrations were not measured at the Reseda station from 2019 through 2021.
- The particulate matter 2.5 microns in diameter or less ($PM_{2.5}$) values for the region exceed the national 24-hour $PM_{2.5}$ standard for the Reseda station for the years 2020 and 2021. The Santa Clarita station exceeded the national 24-hour $PM_{2.5}$ standard in 2020.
- Sulfur dioxide (SO_2) values were not measured at either of the two stations from 2019 through 2021.
- The national 1-hour nitrogen dioxide (NO_2) standard was not exceeded at either of the two stations between 2019 and 2021.

4.3 Resource Study Area Emissions

CARB maintains an annual emission inventory for select counties and air basins in the state. The inventory for the South Coast Air Basin consists of data submitted to CARB by the SCAQMD plus estimates for certain source categories, which are provided by CARB staff. Table 4-2 summarizes the 2022 inventory data for the South Coast Air Basin. Note that Table 4-2 shows tons per day, whereas the emissions estimates for the Project are shown in tons per year.

In the South Coast Air Basin, mobile-source emissions account for more than 90 and 75 percent of the South Coast Air Basin's CO and NO_X emissions, respectively. Mobile-source emissions also account for more than 40 percent of the South Coast Air Basin's reactive organic gas (ROG) emissions. Area-source emissions account for approximately 80 percent of the South Coast Air Basin's particulate matter (PM), and stationary sources account for more than 70 and 60 percent, respectively, of the South Coast Air Basin's total organic gases (TOG) and sulfur oxides (SO_X) emissions.

4.4 Resource Study Area Designations

Under the federal criteria, the South Coast Air Basin is currently designated as nonattainment for the federal 8-hour O_3, $PM_{2.5}$, and lead standards; unclassified for the federal NO_2 and SO_2 standards; attainment/maintenance for the federal PM_{10} and CO standards; and attainment/unclassified for all other standards. The South Coast Air Basin is considered nonattainment for the state 1-hour O_3, 8-hour O_3, $PM_{2.5}$, and PM_{10} standards; small portions of the South Coast Air Basin are classified as nonattainment for the state NO_2 standard; the South Coast Air Basin is in attainment for the state CO, SO_2, and lead standards; and the South Coast Air Basin is in attainment/unclassified for all other state standards.

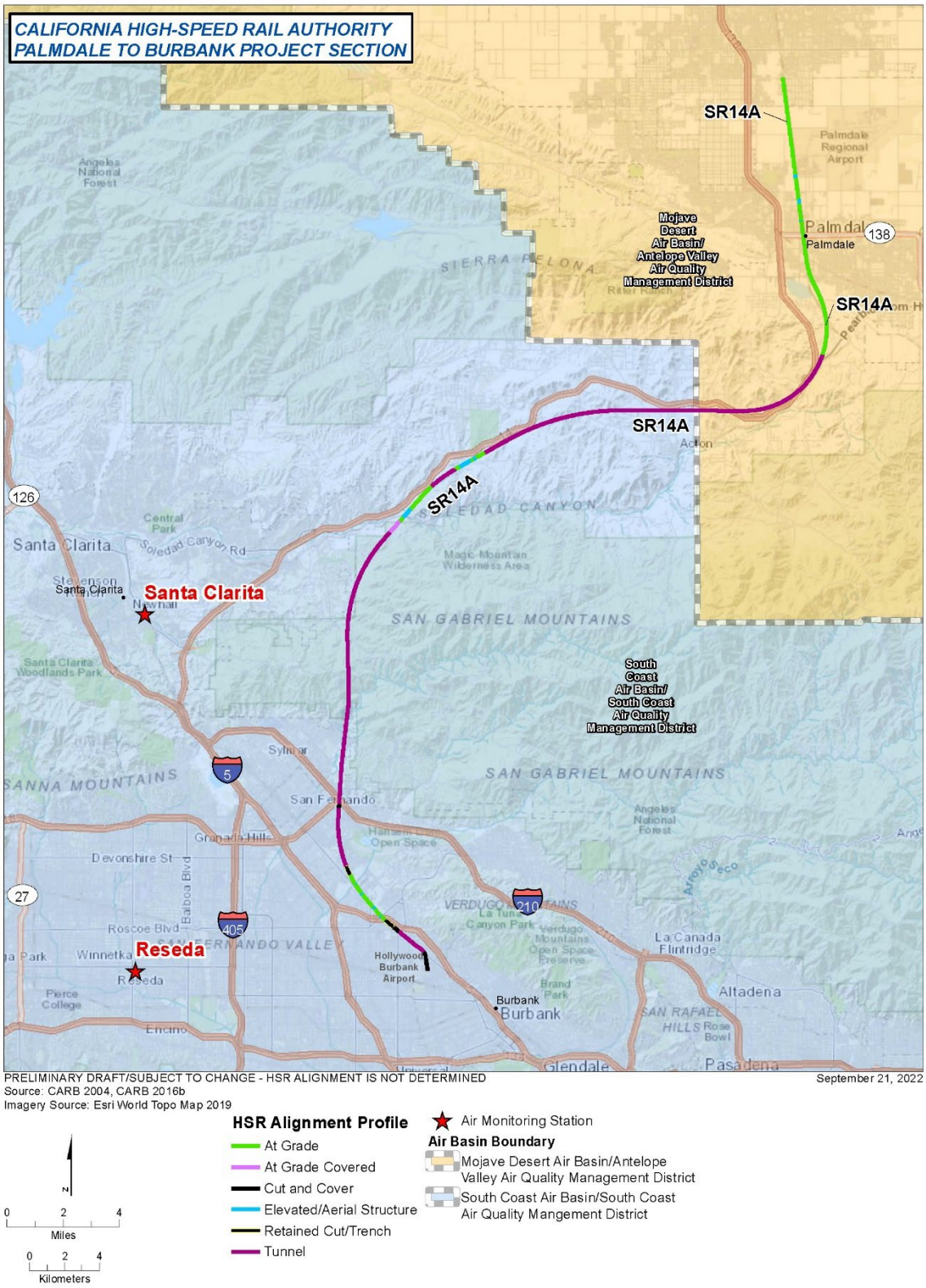

Figure 4-1 Air Quality Monitoring Stations Closest to the Proposed Action

Table 4-1 Ambient Criteria Pollutant Concentrations at Air Quality Monitoring Stations along the Palmdale to Burbank Project Section

Air Pollutant	Standard/Exceedance	Reseda			Santa Clarita		
		2019	2020	2021	2019	2020	2021
Carbon Monoxide (CO)	Year Coverage	NM	NM	NM	NM	NM	NM
	Max. 1-hour Concentration (ppm)	2.6	2	2.6	1.2	1.2	1.0
	Max. 8-hour Concentration (ppm)	1.8	1.7	1.9	1.0	0.8	0.7
	Number of Days>Federal 1-hour Standard of >35 ppm	0	0	0	0	0	0
	Number of Days>Federal 8-hour Standard of >9 ppm	0	0	0	0	0	0
	Number of Days>California 8-hour Standard of >9. ppm	0	0	0	0	0	0
Ozone (O_3)	Year Coverage[1]	94%	92%	97%	93%	92%	99%
	Max. 1-hour Concentration (ppm)	0.122	0.142	0.110	0.128	0.148	0.125
	Max. 8-hour Concentration (ppm)	0.094	0.115	0.083	0.106	0.122	0.103
	Number of Days>Federal 8-hour Standard of >0.075 ppm	20	45	16	42	57	47
	Number of Days>California 1-hour Standard of >0.09 ppm	14	33	4	34	44	30
	Number of Days>California 8-hour Standard of >0.07 ppm	37	65	33	57	75	63
Nitrogen Dioxide (NO_2)	Year Coverage	98%	97%	99%	93%	97%	98%
	Max. 1-hour Concentration (ppm)	64.4	49.9	54.2	46.3	46.3	56.9
	Annual Average (ppm)	10	10	10	9	9	9
	Number of Days>Federal 1-hour Standard of >100 ppm	0	0	0	0	0	0
Sulfur Dioxide (SO_2)	Year Coverage	NM	NM	NM	NM	NM	NM
	Max. 24-hour Concentration (ppm)	NM	NM	NM	NM	NM	NM
	Annual Average (ppm)	NM	NM	NM	NM	NM	NM
	Number of Days>California 24-hour Standard of >0.04 ppm	NM	NM	NM	NM	NM	NM

Air Pollutant	Standard/Exceedance	Reseda			Santa Clarita		
		2019	2020	2021	2019	2020	2021
Respirable Particulate Matter (PM_{10})	Year Coverage	NM	NM	NM	98	57	97
	Max. 24-hour Concentration ($\mu g/m^3$)[2]	NM	NM	NM	62.9	67.8	47.1
	Number of Days>Federal 24-hour Standard of >150 $\mu g/m^3$	NM	NM	NM	0	0	0
	Number of Days>California 24-hour Standard of >50 $\mu g/m^3$	NM	NM	NM	1	1	0
	Annual Average[2] ($\mu g/m^3$)	NM	NM	NM	18.9	21.5	20.3
Fine Particulate Matter ($PM_{2.5}$)	Year Coverage	99	98	99	NM	NM	NM
	Max. 24-hour Concentration ($\mu g/m^3$)	30.0	73.8	55.5	29.0	43.3	30.1
	State Annual Average ($\mu g/m^3$)	11.9	11.0	11.6	NM	NM	NM
	Number of Days>Federal 24-hour Standard of >35 $\mu g/m^3$	0	3	3	NM	NM	NM
	Annual Average[2] ($\mu g/m^3$)	9.1	11.0	10.0	NM	NM	NM

Sources: CARB 2022a, 2022b, USEPA 2022b
[1] Coverage is for the 8-hour standard.
[2] Coverage is for the national standard> = greater than
$\mu g/m^3$ = micrograms per cubic meter
CARB = California Air Resources Board
Max. = maximum
NM = not monitored
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter
PM_{10} = particulate matter 10 microns or less in diameter
ppm = parts per million

Table 4-2 Estimated 2022 Annual Average Emissions for the South Coast Air Basin (tons/day)

Source Category	TOG	ROG	CO	NO_X	SO_X	PM	PM_{10}	$PM_{2.5}$
Stationary Sources								
Fuel Combustion	20.48	5.36	78.61	33.22	6.17	5.31	5.36	5.27
Waste Disposal	715.06	15.16	0.673	1.74	0.47	0.37	0.26	0.24
Cleaning and Surface Coatings	94.99	37.10	0.046	0.05	0.07	1.64	1.58	1.52
Petroleum Production and Marketing	66.65	19.22	3.07	0.862	1.80	1.91	1.28	0.91
Total Industrial Processes	11.64	10.69	0.72	0.82	0.63	17.53	10.05	5.08
Total Stationary Sources	**908.82**	**87.52**	**83.12**	**36.69**	**9.14**	**26.75**	**18.53**	**13.02**
Stationary Sources Percentage of Total	***71.7%***	***23.5%***	***5.1%***	***13.6%***	***64.4%***	***9.5%***	***11.2%***	***22.0%***
Area-wide Sources								
Solvent Evaporation	152.70	123.49	–	–	–	0.03	0.02	0.02
Miscellaneous Processes	36.69	11.80	55.24	21.10	0.38	226.31	119.43	32.29
Total Area-wide Sources	**189.37**	**135.29**	**55.24**	**21.10**	**0.38**	**226.33**	**119.45**	**32.32**
Area-wide Sources Percentage of Total	***14.9%***	***36.3%***	***3.4%***	***7.8%***	***2.7%***	***80.4%***	***72.1%***	***54.5%***
Mobile Sources								
On-Road Motor Vehicles	69.88	59.33	534.30	110.68	1.53	23.30	22.85	9.85
Other Mobile Sources	99.51	91.04	942.23	101.78	3.14	5.08	4.85	4.12
Total Mobile Sources	**169.39**	**150.37**	**1,476.53**	**212.46**	**4.67**	**28.38**	**27.70**	**13.98**
Mobile Sources Percentage of Total	***13.4%***	***40.3%***	***91.4%***	***78.6%***	***32.9%***	***10.1%***	***16.7%***	***23.6%***
Grand Total	**1,267.60**	**373.17**	**1,614.88**	**270.25**	**14.19**	**281.46**	**165.67**	**59.31**

Source: California Air Resources Board, 2019
Rounded to the nearest percentage; category percentages do not sum to 100 percent due to rounding.
- = not applicable or data not available
CO = carbon monoxide
NO_X = nitrogen oxides
PM = particulate matter
PM_{10} = particulate matter smaller than or equal to 10 microns in diameter
$PM_{2.5}$ = particulate matter smaller than or equal to 2.5 microns in diameter
ROG = reactive organic gas
SCAQMD = South Coast Air Quality Management District
SO_X = sulfur oxides
TOG = total organic gas

5 RELATIONSHIP TO NEPA

The *Palmdale to Burbank Project Section EIR/EIS* identifies potential environmental impacts of the Project, both adverse and beneficial, identifies appropriate measures to mitigate adverse impacts, and identifies the agencies' preferred alternative. The EIR/EIS was prepared to comply with both NEPA and CEQA.

The General Conformity regulations establish certain procedural requirements that must be followed when preparing a General Conformity evaluation and are similar but not identical to those for conducting an air quality impact analysis under NEPA regulations. NEPA requires that the air quality impacts of the Project's implementation be analyzed and disclosed. For purposes of NEPA, the air quality impacts of the Project were determined by identifying the Project's associated incremental emissions and air pollutant concentrations and comparing them, respectively, to emissions thresholds and state and national ambient air quality standards. The air quality impacts of the Project under future Build conditions were also compared in the EIR/EIS to the future No Build conditions for NEPA purposes (they were also compared to existing conditions). The General Conformity Determination process and general findings are discussed in Sections 3.3.2.1, Federal Laws, Regulations, and Orders, 3.3.4.3, Methods for NEPA and CEQA Impact Analysis, 3.3.6.3, Build Alternatives, 3.3.7, Mitigation Measures, and 3.3.8, NEPA Impacts Summary, of the EIR/EIS.

To appropriately identify and offset, where necessary, the emissions resulting from the Project, FRA is issuing this Final General Conformity Determination. On May 3, 2024, the Authority has entered into an agreement with the SCAQMD to offset, as necessary, any criteria air pollutant emissions[2] exceedances resulting from the Project as described in Section 12.2, Compliance with Conformity Requirements, which will be executed prior to the start of construction.

[2] As shown in Table 10-1, the Project will result in two exceedances of the *de minimis* levels for CO within the South Coast Air Basin, which has been redesignated as attainment for CO. However, based on localized CO hot-spot analysis, described in this Final General Conformity Determination, the Project will not result in CO emissions that would cause a violation of the NAAQS for CO, and therefore, the Project conforms to the SIP.

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6 AVOIDANCE AND MITIGATION MEASURES TO REDUCE EMISSIONS TO BE INCORPORATED IN THE PROJECT

To reduce impacts on the environment and as required by NEPA and CEQA, the construction of the Project will include IAMFs and mitigation measures that will be implemented as part of the Project to minimize, avoid, and mitigate air quality impacts. These IAMFs and mitigation measures will be required components of the Project. They will be included in the Mitigation Monitoring and Enforcement Program, which will be issued concurrently with the Authority's Record of Decision and will be enforceable commitments undertaken by the Authority. Construction of the Project is anticipated to take place through a design/build contract. The Authority will include all the IAMFs and required mitigation measures into the construction contract, which will create binding and enforceable commitments to implement these design features and MMs.

The Authority will be responsible for implementing and overseeing a mitigation monitoring program to ensure that the contractor meets all air quality design features and mitigation measures.

- **AQ-IAMF#1: Fugitive Dust Emissions –** During construction, the contractor shall employ the following measures to minimize and control fugitive dust emissions. The contractor shall prepare a fugitive dust control plan for each distinct construction segment. At a minimum, the plan shall describe how each measure would be employed and identify an individual responsible for ensuring implementation. At a minimum, the plan shall address the following components unless alternative measures are approved by the applicable air quality management district. Before finalizing the plan, the Contractor shall provide a draft of the plan to Los Angeles Unified School District, Acton-Agua Dulce Unified School District, and any other potentially affected public school districts upon their request, for their review and comment.
  - Cover all vehicle loads transported on public roads to limit visible dust emissions and maintain at least 6 inches of freeboard space from the top of the container or truck bed.
  - Clean all trucks and equipment before exiting the construction site using an appropriate cleaning station that does not allow runoff to leave the site or mud to be carried on tires off the site.
  - Water exposed surfaces and unpaved roads at a minimum three times daily with adequate volume to result in wetting of the top 1 inch of soil but avoiding overland flow. Rain events may result in adequate wetting of top 1 inch of soil thereby alleviating the need to manually apply water.
  - Limit vehicle travel speed on unpaved roads to 15 miles per hour.
  - Suspend any dust-generating activities when instantaneous wind speed exceeds 25 miles per hour.
  - Stabilize all disturbed areas, including storage piles that are not being used on a daily basis for construction purposes, by using water, a chemical stabilizer/suppressant, hydro mulch or by covering with a tarp or other suitable cover or vegetative ground cover to control fugitive dust emissions effectively. In areas adjacent to organic farms, the Authority will use non-chemical means of dust suppression.
  - Stabilize all on-site unpaved roads and off-site unpaved access roads, using water or a chemical stabilizer/suppressant, to effectively control fugitive dust emissions. In areas adjacent to organic farms, the Authority will use non-chemical means of dust suppression.
  - Carry out watering or presoaking for all land clearing, grubbing, scraping, excavation, land leveling, grading, cut-and-fill, and demolition activities.

  - For buildings up to 6 stories in height, wet all exterior surfaces of buildings during demolition.
  - Limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at a minimum of once daily, using a vacuum-type sweeper.
  - After the addition of materials to or the removal of materials from surface or outdoor storage piles, apply sufficient water or a chemical stabilizer/suppressant.
  - Before finalizing the plan, the Contractor shall provide a draft of the plan to Los Angeles Unified School District, Acton-Agua Dulce Unified School District, and any other potentially affected public school districts on their request, for their review and comment.

- **AQ-IAMF#2: Selection of Coatings –** During construction, the contractor shall use:
  - Low-volatile organic compound (VOC) paint that contains less than 10 percent of VOC contents (VOC, 10%).
  - Super-compliant or Clean Air paint that has a lower VOC content than that required by SCAQMD Rule 1113 and Antelope Valley Air Quality Management District (AVAQMD) Rule 1113 when available. If not available, the contractor shall document the lack of availability, recommend alternative measure(s) to comply with SCAQMD Rule 1113 and AVAQMD Rule 1113, or disclose absence of measure(s) for full compliance and obtain concurrence from the Authority.
- **AQ-IAMF#3: Renewable Diesel –** During construction, the contractor will use renewable diesel fuel to minimize and control exhaust emissions from all heavy-duty diesel-fueled construction diesel equipment and on-road diesel trucks. Renewable diesel must meet the most recent American Society for Testing and Materials D975 specification for Ultra Low Sulfur Diesel and have a carbon intensity no greater than 50 percent of diesel with the lowest carbon intensity among petroleum fuels sold in California. The contractor will provide the Authority with monthly and annual reports, through the Environmental Mitigation Management and Assessment system, of renewable diesel purchase records and equipment and vehicle fuel consumption. Exemptions to use traditional diesel can be made where renewable diesel is not available from suppliers within 200 miles of the Project site. The construction contract must identify the quantity of traditional diesel purchased and fully document the availability and price of renewable diesel to meet Project demand.
- **AQ-IAMF#4: Reduce Criteria Exhaust Emissions from Construction Equipment –** Prior to issuance of construction contracts, the Authority will incorporate the following construction equipment exhaust emissions requirements into the contract specifications:
  - All heavy-duty off-road construction diesel equipment used during the construction phase will meet Tier 4 Final engine requirements.
  - Small diesel generators (less than 30 horsepower) should be avoided whenever feasible.
  - A copy of each unit's certified tier specification and any required CARB or air pollution control district operating permit will be made available to the Authority at the time of mobilization of each piece of equipment.
  - The contractor will keep a written record (supported by equipment-hour meters where available) of equipment usage during Project construction for each piece of equipment.
  - The contractor will provide the Authority with monthly reports of equipment operating hours (through the Environmental Mitigation Management and Application system) and annual reports documenting compliance.
- **AQ-IAMF#5: Reduce Criteria Exhaust Emissions from On-Road Construction Equipment –** Prior to issuance of construction contracts, the Authority will incorporate the following material-hauling truck fleet mix requirements into the contract specifications:

  - All on-road trucks used to haul construction materials, including fill, ballast, rail ties, and steel, will consist of an average fleet mix of equipment model year 2020 or newer, but no less than the average fleet mix for the current calendar year as set forth in the CARB's EMFAC 2017 database.[3]
  - The contractor will provide documentation to the Authority of efforts to secure such a fleet mix.
  - The contractor will keep a written record of equipment usage during Project construction for each piece of equipment and provide the Authority with monthly reports of vehicle miles traveled (through Environmental Mitigation Management and Application) and annual reports documenting compliance.

- **AQ-IAMF#6: Reduce the Potential Impact of Concrete Batch Plants –** Prior to construction of any concrete batch plant, the contractor will provide the Authority with a technical memorandum documenting consistency with the Authority's concrete batch plant siting criteria and utilization of typical control measures. Concrete batch plants will be sited at least 1,000 feet from sensitive receptors, including places such as daycare centers, hospitals, senior care facilities, residences, parks, and other areas where people may congregate. The concrete batch plant will implement typical control measures to reduce fugitive dust such as water sprays, enclosures, hoods, curtains, shrouds, movable and telescoping chutes, central dust collection systems, and other suitable technology, to reduce emissions to be equivalent to the USEPA AP-42 (USEPA 2006) controlled emission factors for concrete batch plants. The contractor will provide to the Authority documentation that each batch plant meets this standard during operation.

AQ-MM#1: Offset Project Construction Emissions through SCAQMD Emission Offset Programs

The Project's construction emissions that cannot be reduced by IAMFs and any other mitigation measures will, to the extent feasible be offset through a SCAQMD rule or contractual agreement by funding equivalent emissions reductions that achieve reductions in the same years as construction emissions occur, thus offsetting Project-related air quality impacts in real time. The Project will implement measures and best practices to minimize emissions from Project construction. After implementation of these measures, emission levels that still exceed thresholds will be offset to the extent necessary to satisfy General Conformity *de minimis* levels, and to meet CEQA thresholds to the extent feasible. The Authority's Sustainability Policy has a goal to achieve net zero emissions from construction. As the Project advances towards construction, the Authority will work with SCAQMD to assess the estimated emissions, availability of offsets, and cost for achieving the Authority's Sustainability Policy goal to the extent possible.

As part of these offset programs, a copy of each unit's certified tier or model year specification shall be available upon request at the time of mobilization of each applicable equipment unit. Furthermore, the Authority will require periodic reporting and provision of written construction documents by construction contractor(s) to ensure compliance and conduct regular inspections to the maximum extent feasible to ensure compliance with applicable Authority IAMFs and mitigation measures.

AQ-MM#3: Construction Emissions Reduction – Requirements for use of Zero Emission (ZE) and/or Near Zero Emission (NZE) Vehicles and Off-Road Equipment

This mitigation measure would reduce the impact of construction emissions from Project-related on-road vehicles and off-road equipment. All remaining emissions after implementation of this

[3] For the purposes of the Palmdale to Burbank EIR/EIS and this General Conformity Determination, the Authority has revised AQ-IAMF#5 to commit to a fleet mix of equipment model year 2020 or newer. This commitment is quantified in the emissions calculations for the construction-phase hauling needs (specifically spoils hauling from tunneling activities). To maintain a conservative estimate of impacts, the emissions calculations for other project construction-phase hauling needs have not taken systematically taken credit for application of this measure.

measure will be offset, to the extent feasible, with emission credits required under AQ-MM#1 and AQ-MM#2.

The Authority and all Project construction contractors will require that a minimum of 25 percent, with a goal of 100 percent, of all light-duty on-road vehicles (e.g., passenger cars, light-duty trucks) associated with the Project (e.g., on-site vehicles, contractor vehicles) use ZE or NZE technology.

The Authority and all Project construction contractors shall have the goal that a minimum of 25 percent of all heavy-duty on-road vehicles (e.g., for hauling, material delivery and soil import/export) associated with the Project use ZE or NZE technology.

The Authority and all Project construction contractors will have the goal that a minimum of 10 percent of off-road construction equipment use ZE or NZE technology.

If local or state regulations mandate a faster transition to using ZE and/or NZE vehicles at the time of construction, the more stringent regulations will be applied. For example, Executive Order N-79-20, issued by California Governor Newsom on September 23, 2020, currently states the following:

- Light-duty and passenger car sales will be 100 percent zero emission vehicles (ZEV) by 2035
- Full transition to ZEV short-haul/drayage trucks by 2035
- Full transition to ZEV heavy-duty long-haul trucks, where feasible, by 2045
- Full transition to ZE off-road equipment by 2035, where feasible.

The Project will have a goal of surpassing the requirements of these or other future regulations as a mitigation measure.

7 REGULATORY PROCEDURES

The General Conformity regulations establish certain procedural requirements that must be followed when preparing a General Conformity evaluation. This section addresses the major applicable procedural issues and specifies how these requirements are met for the evaluation of the Project. The procedures required for the General Conformity evaluation are similar but not identical to those for conducting an air quality impact analysis pursuant to NEPA regulations. The Draft General Conformity Determination was released on April 2, 2024 for a 30-day public and agency review pursuant to 40 C.F.R. Section 93.156, and this Final General Conformity Determination is being released in advance of the record of decision for the Project.

The Authority identified the appropriate emission estimation techniques and planning assumptions in close consultation with the state entities charged with regulating air pollution in the South Coast Air Basin.

7.1 Use of Latest Planning Assumptions

The General Conformity regulations require the use of the latest planning assumptions for the area encompassing the Project, derived from the estimates of population, employment, travel, and congestion most recently approved by the area's metropolitan planning organization (40 C.F.R. §93.159(a)).

The traffic data used in the air quality analysis (see EIR/EIS, Section 3.2) are consistent with the most recent estimates made by the metropolitan planning organizations for traffic volume growth rates, including forecast changes in vehicle miles traveled and vehicle hours traveled. The Authority developed these estimates based on the metropolitan planning organizations' traffic assignment models using the baseline and future population, employment, and travel and congestion information available at the time the analysis was prepared. These assumptions are consistent with those in the current conformity determinations for the region's Transportation Plan and Transportation Improvement Plan.

7.2 Use of Latest Emission Estimation Techniques

The General Conformity regulations require the use of the latest and most accurate emission estimation techniques available unless such techniques are inappropriate (40 C.F.R. § 93.159(b)). Operational phase vehicular emission factors were estimated by using the CARB emission factor program, EMission FACtors 2017 (EMFAC2017), the latest approved version of the model at the time of analysis. The USEPA established a 2-year grace period before EMFAC2021 is required for all new regional emissions analyses. The grace period for regional emissions analyses began on November 15, 2022, and ends on November 15, 2024. Parameters were set in EMFAC2017 for each individual county to reflect conditions within each county, and statewide parameters were used to reflect statewide conditions. The EMFAC2017 vehicle emission factors also incorporated adjustment factors, as per CARB guidance, to account for impacts from the National Highway Traffic Safety Administration and USEPA's Safer Affordable Fuel-Efficient Vehicles Rule. Operational phase aircraft emissions were estimated using the Federal Aviation Administration's Aviation Environmental Design Tool. In addition, electrical demands caused by propulsion of the trains, and of the trains at terminal stations and in storage depots and maintenance facilities, were estimated using average emission factors for each kilowatt-hour required from CARB statewide emission inventories of electrical and cogeneration facilities data along with USEPA eGRID2018 (released January 28, 2020) electrical generation data. The energy estimates used for the propulsion of the HSR system include the use of regenerative braking power.

Emissions from regional building demolition and construction of the HSR tunnels, Burbank Airport Station, roadway and rail bridges, and elevated, retained fill, and at-grade rail segments were calculated using emission factors from the California Emissions Estimator Model (CalEEMod), version 2016.3.2, the latest approved version of the model at the time of analysis. CalEEMod uses emission factors from OFFROAD2011 (CAPCOA 2017) For emission rates not available in OFFROAD2011, rates from OFFROAD2007 were conservatively applied. The use of emission

rates from the OFFROAD models reflects the recommendation of CARB to capture the latest off-road construction assumptions. OFFROAD2011 default load factors (the ratio of average equipment horsepower used to maximum equipment horsepower) and useful life parameters were used for emission estimates. Mobile-source emission burdens from worker vehicle trips and truck trips were calculated using vehicle miles traveled estimates and appropriate emission factors from EMFAC2017. Fugitive dust emissions from dirt and aggregate handling were calculated in CalEEMod, which uses emission factors derived from equations from the USEPA's AP-42 (USEPA 2006).

Construction exhaust emissions from equipment, fugitive dust emissions from earthmoving activities, and emissions from worker vehicle trips, deliveries, and materials hauling were calculated and compiled in a spreadsheet tool specific to the HSR Preferred Alternative for each year of construction. Project-specific data, including construction equipment lists and the construction schedule, were used for construction associated with the HSR Build Alternative. Construction exhaust emissions were modeled using Tier 4 Final emission rates (AQ-IAMF#4) from CalEEMod. Fugitive dust reductions from earthmoving best management practices were applied in CalEEMod (AQ-IAMF#1).[4] PM exhaust and greenhouse gas emission reductions (30 percent and 99.1 percent, respectively) would occur from use of renewable diesel (AQ-IAMF#3) in all off-road diesel-powered engines (not applied in CalEEMod, instead applied by manual calculations in the Tables) (Authority 2018).

Mobile-source emission burdens from worker trips and truck trips were calculated using vehicle miles traveled estimates and appropriate emission factors from EMFAC2017. Model year 2020 or newer on-road engines in heavy-duty, diesel-powered truck emissions (AQ-IAMF#5) were modeled using emission rates derived from CalEEMod.

7.3 Major Construction-Phase Activities

Project-specific data, including construction equipment lists and the construction schedule, were used for construction associated with the alignment/guideway. Calculations were performed for each year of construction.

Major activities were grouped into the following categories (described in more detail in Section 9 of this report):

- Mobilization
- Site Preparation/Access Roads
- Demolition
- Earthmoving
- Tunneling
- Roadway Segment Construction
- Grade Separation Construction
- Cut-and-Cover
- Train Station Construction
- Retaining Wall Construction
- Viaduct Construction
- Preferred Alternative Alignment Construction
- Burbank Airport Station Construction
- Demobilization

These major construction activities are used in the construction emission estimates. Construction exhaust emissions were modeled using Tier 4 Final construction equipment emission rates (AQ-IAMF#4) from CalEEMod. Fugitive dust reductions from earthmoving best management practices were applied in CalEEMod (AQ-IAMF#1). PM exhaust and greenhouse gas emission reductions (30 percent and 99.1 percent, respectively) would occur from use of renewable diesel (AQ-

[4] The IAMF requires watering on all unpaved surfaces, which would achieve additional reductions (up to 61 percent).

IAMF#3) in all off-road diesel-powered engines (not applied in CalEEMod, instead applied by manual calculations in the Tables). Mobile-source emission burdens from worker trips and truck trips were calculated using vehicle miles traveled estimates and appropriate emission factors from EMFAC2017. Model year 2020 or newer on-road engines in heavy-duty, diesel-powered truck emissions (AQ-IAMF#5) were modeled using emission rates derived from the CalEEMod. Section 10 provides details of the construction emission calculations.

7.4 Emission Scenarios

The General Conformity regulations require that the evaluation reflect certain emission scenarios (40 C.F.R. §93.159(d)). Specifically, these scenarios generally include the evaluation of the direct and indirect emissions from a Project for the following years: (1) for nonattainment areas, the attainment year specified in the SIP or, if the SIP does not specify an attainment year, the latest attainment year possible under the CAA, and for maintenance areas, the farthest year for which emissions are Projected in the approved maintenance plan; (2) the year during which the total of direct and indirect emissions for the federal action are Projected to be the greatest on an annual basis; and (3) any year for which the applicable SIP specifies an emissions budget. Both the operational and construction phases of the action must be analyzed, and the following applies to the Project.

- Emissions generated during the operational phase of the HSR would meet the emission requirements for the years associated with Items 1 and 3, because the emissions generated during the operational phase of the Project would be less than those emitted in the No Build scenario. In addition, microscale analyses conducted for the EIR/EIS demonstrate that the operational phase of the HSR would not cause or exacerbate a violation of the NAAQS for all applicable pollutants.
- Emissions generated during HSR's construction phase, which would include the year with the greatest amount of total direct and indirect emissions, may be subject to General Conformity regulations because regional emissions would increase and, as such, have the potential to cause or exacerbate an exceedance of a NAAQS. Therefore, analyses were conducted to estimate the amounts of emissions that would be generated during the construction phase (for comparison with the General Conformity applicability rates) and the potential impacts of these emissions on local air quality levels. Emissions generated at the construction sites (e.g., tailpipe emissions from the on-site heavy-duty diesel equipment and fugitive dust emissions generated by vehicles traveling within the construction sites) and on the area's roadways by vehicles traveling to and from these sites (by vehicles transporting materials and the workers traveling to and from work) were considered.
- Air quality dispersion modeling would be required for this conformity analysis to estimate the Project's localized impacts on $PM_{2.5}$ and CO concentrations if the annual emissions of the pollutants generated during construction were to exceed the General Conformity *de minimis* levels.

Annual emissions were estimated for each year of the Project's construction period. These emissions, which are the maximum values for the Project, are described in more detail in Section 10 of this report.

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8 APPLICABILITY ANALYSIS

The first step in a General Conformity evaluation is an analysis of whether the requirements apply to a proposed federal action in a nonattainment or a maintenance area. Unless exempted by the regulations or otherwise presumed to conform, a federal (non-Transportation) action requires a General Conformity Determination for each pollutant where the total of direct and indirect emissions caused by the federal action would equal or exceed an annual *de minimis* emission rate.

8.1 Attainment Status of Project Area

The USEPA and the CARB designate each county (or portions of counties) within California as attainment, maintenance, or nonattainment based on the area's ability to meet ambient air quality standards. Regions are designated as attainment for a criteria pollutant when the concentration of that pollutant is below the ambient air standard. If a criteria pollutant concentration is above the ambient air standard, the area is in nonattainment for that pollutant. Areas previously designated as nonattainment that subsequently demonstrated compliance with the ambient air quality standards are designated as maintenance areas. While the Project would occur within the South Coast Air Basin, San Joaquin Valley Air Basin, and the Mojave Desert Air Basin, the RSA for the General Conformity Report includes only the South Coast Air Basin as construction-phase emissions (without mitigation) will only exceed the *de minimis* levels for applicable criteria pollutants within the South Coast Air Basin for the HSR Preferred Alternative, the proposed Project. Table 8-1 summarizes the federal (under NAAQS) and state (under California Ambient Air Quality Standards) attainment status for the South Coast Air Basin.

Table 8--1 Federal and State Attainment Status of the South Coast Air Basin

Pollutant	Federal Classification	State Classification
O_3 1-hour	N/A	Nonattainment
O_3 8-hour (ROG and NOx)	Extreme Nonattainment	Nonattainment
$PM_{2.5}$	Serious Nonattainment	Nonattainment
PM_{10}	Attainment/Maintenance	Nonattainment
CO	Attainment/Maintenance	Attainment
NO_2	Attainment/Maintenance	Attainment/Portion Nonattainment
SO_2	Attainment/Unclassified	Attainment/Unclassified
Lead	Nonattainment	Attainment
All Others	Attainment/Unclassified	Attainment/Unclassified

Source: California Air Resources Board, 2023
CO = carbon monoxide
N/A = not available
NO_2 = nitrogen dioxide
NO_X = nitrogen oxides
ROG = Reactive Organic Compounds
O_3 = ozone
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter
PM_{10} = particulate matter 10 microns or less in diameter
SO_2 = sulfur dioxide

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9 CONSTRUCTION ACTIVITIES CONSIDERED

As shown in Section 3.3.6.3 of the EIR/EIS, the results of the regional analyses conducted for the Project demonstrate that emissions generated during the operational phase would be less than those emitted in the No Build and existing conditions scenarios, and the microscale analyses demonstrate that the Project would not cause, contribute to, or exacerbate a violation of the NAAQS for any of the applicable criteria pollutants. As such, no further analysis of the operational period emissions is necessary for this General Conformity Determination. Section 10 focuses on the emissions generated from the construction period emissions for the Project.

The analysis conducted for the *Palmdale to Burbank Project Section EIR/EIS* to estimate potential air quality impacts caused by on-site (e.g., demolition activities, construction equipment operations, and truck movements) and off-site (e.g., motor vehicle traffic effects due to truck trips and worker commuting) construction-phase activities included:

- Estimation of emissions generated by the construction activities (e.g., demolition, tunneling, concrete and steel construction), including fugitive dust emissions and emissions released from diesel-powered equipment and trucks based on the hours of operation of each piece of equipment;
- Identification of heavily traveled truck routes to estimate the cumulative effects of on-site construction activity emissions and off-site traffic emissions;
- An on-site dispersion modeling analysis of the major construction areas;
- An off-site dispersion modeling analysis of the roadway intersections/interchanges adjacent to the construction areas using traffic data that include construction-related vehicles and background traffic; and
- A comparison of the on-site and off-site modeling results to the applicable NAAQS for the applicable pollutants

Emission rates for these activities were estimated based on the following:

- The number of hours per day and duration of each construction activity;
- The number and type of construction equipment to be used;
- Horsepower, load factors, and utilization rates (hours per day) for each piece of equipment;
- The quantities of construction/demolition material produced and removed from each site; and
- The number of truck trips needed to remove construction/demolition material, and to bring the supply materials and construction-phase water needs to each site.

The following discusses of the major activities considered, the timing of these activities, and the procedures used to estimate emission rates.

A full description of construction analysis methodology for the Project can be found in Section 6.11 of the *Palmdale to Burbank Project Section: Air Quality and Global Climate Change Technical Report* (Authority 2019). In addition, the equipment counts, horsepower, hours of operation, and load factors used the analysis are included in Appendix D of the *Palmdale to Burbank Project Section: Air Quality and Global Climate Change Technical Report* (Authority 2019).

Construction activities associated with the Project would result in criteria pollutant emissions, and are quantified and analyzed in Section 3.3.6.3 of the *Palmdale to Burbank Project Section EIR/EIS*. The analysis assumed that Project construction would take place from 2020 to 2028; however, the tunneling phase of construction was anticipated to start in April 2020 and last approximately 10 years. Although the construction schedule has been updated, the analysis is still valid as the equipment quantities and annual emission rates would remain unchanged.

9.1 Mobilization

For the purposes of this air quality analysis, mobilization of construction equipment and materials using on-road deliveries were estimated to start in January 2020 and last 1 year. Emissions

generated during the mobilization phase include exhaust and fugitive dust emissions from on-road deliveries. Emissions were calculated using CalEEMod and EMFAC2017 emission factors using the Project-specific equipment list.

9.2 Site Preparation/Access Roads

Site preparation and access road activities would include land clearing and grubbing along the haul routes and other access roads. For the purposes of this analysis, such activities were estimated to start in April 2020 and last 5 years. Site preparation emissions were calculated using CalEEMod and EMFAC2017 emission factors using the Project-specific equipment list. Exhaust emissions and fugitive dust emissions were estimated for off-road construction equipment, as well as on-road worker trips, deliveries, hauling for construction-phase water needs, construction-phase hauling needs, and grading activities.

9.3 Demolition

Demolition of existing structures and track infrastructure along the HSR alignment and HSR stations was estimated to start in January 2021 and last 3 years for the purposes of this air quality analysis. Demolition emissions were calculated using CalEEMod and EMFAC2017 emission factors using the Project-specific equipment list. In addition to the fugitive dust emissions resulting from the destruction of existing buildings, fugitive dust and exhaust emissions were estimated for worker trips, construction equipment operation, and truck-hauling trips.

9.4 Earthmoving

Earthmoving activities include grading, trenching, spoils hauling, and cut/fill activities for the alignment construction. For purposes of this air quality analysis, earthmoving would take place from August 2020 and last 6 years. The emissions associated with the earthmoving activities were estimated using CalEEMod and EMFAC2017 emission factors using the Project-specific equipment list. Exhaust emissions and fugitive dust emissions were estimated for off-road construction equipment, as well as on-road worker trips, hauling for construction- phase water needs[5], construction-phase hauling needs, and grading activities.

9.5 Tunneling

Tunneling activities include excavation, cut/fill activities, and concrete installation for the below-grade tunneled portions of the HSR alignment. Tunnel boring equipment would be used to cut through the ground, progressively installing concrete linings to support the tunnel. The excavated material would be transported through the machine to the surface for removal by trucks. For the purposes of this air quality analysis, the tunneling activities would start in April 2020 and last approximately 10 years. Exhaust emissions and fugitive dust emissions were estimated for off-road construction equipment, as well as on-road worker trips, hauling for construction-phase water needs[6], construction-phase hauling needs[7], and grading activities. Emissions were calculated for tunneling activities using CalEEMod and EMFAC2017 emission factors using the Project-specific equipment list.

[5] Construction-phase water needs include water anticipated to be needed for tunnel construction methods. Additionally, in this document, construction phase water needs include contingency mitigation needs described in footnote 7.

[6] The emissions calculation includes supplemental hauling for construction-phase water needs in the event that mitigation is needed for disruption of surface water resources in the Angeles National Forest. The EIR/EIS anticipates that it is unlikely that this mitigation will be needed.

[7] Spoils hauling trip estimates assume that most trips will be to standard waste facilities. Allowances for specialized, longer truck trips to distant hazardous waste disposal facilities are included as the project section will be tunneling through multiple listed sites including one federally-designated Superfund site. Exact quantities of hazardous soils cannot be determined at this time as some sites are classified and other sites are in active remediation. Given ongoing remediation, data indicates a progressive diminution of hazardous soils at all such sites.

9.6 Roadway Segment Construction

The Project would include the relocation and the expansion of local roads and roadway undercrossings and overcrossings, and reconstruction of several intersections to provide grade separations between roads and the HSR alignment. Roadway demolition emissions were quantified using CalEEMod and EMFAC2017 emission factors and the Project-specific equipment list. Roadway Project construction would begin in May 2020 and last 7 years. Exhaust emissions and fugitive dust emissions were estimated for off-road construction equipment, as well as on-road worker trips, construction-phase hauling needs, paving, and grading activities.

9.7 Grade Separation Construction

Grade separation construction would be required to isolate the HSR alignment from roadways and other uses. For the purposes of this air quality analysis, grade separation construction activities were estimated to begin in July 2021 and last 6 years. Emissions were quantified using CalEEMod and EMFAC2017 emission factors and the Project-specific equipment list. Exhaust emissions and fugitive dust emissions were estimated for off-road construction equipment, as well as on-road worker trips, construction-phase hauling needs, paving, and grading activities.

9.8 Cut-and-Cover

The trenching and tunneling activities include excavation, cut/fill activities, and concrete installation for the below-grade portion of the HSR alignment. Cut-and-cover equipment would be used to cut through the ground, progressively installing concrete linings to support the excavated trench. The excavated material would be transported through the machine to the surface for removal by trucks. For purposes of this air quality analysis, the sequential excavation method and cut-and-cover activities would begin in April 2021 and last 4 years. The emissions associated with the cut-and-cover activities were estimated using CalEEMod and EMFAC2017 emission factors using the Project-specific equipment list. Fugitive dust includes that from worker trips, construction equipment exhaust, and truck-hauling exhaust.

9.9 Train Station Construction

Emissions from Burbank Airport Station construction would result from mass site grading and excavation, underground and aboveground facility construction (i.e., train boarding platforms, the station building, pickup/drop-off facilities for private automobiles, and the transit center for buses and shuttles), asphalt paving activates for surface roadways and parking areas, and architectural coatings. Where applicable, emissions resulting from worker trips, vendor trips, hazardous waste disposal trips, and construction equipment exhaust were quantified using CalEEMod and EMFAC2017 emission factors using the Project-specific equipment list. For the purposes of this air quality analysis, train station construction was estimated to start in March 2023 and last 5 years.

9.10 Retaining Wall Construction

Retaining wall construction would generate emissions from the operation of off-road construction equipment, as well as on-road worker trips, deliveries, construction-phase hauling needs, and grading activities. Emissions were quantified using CalEEMod and EMFAC2017 emission factors using the Project-specific equipment list. For the purposes of this air quality analysis, retaining wall construction was estimated to begin in August 2020 and last 5 years.

9.11 Viaduct Construction

Viaduct construction would generate emissions from the operation of off-road construction equipment, as well as on-road worker trips, deliveries, construction-phase hauling needs, and grading activities. Emissions were quantified using CalEEMod and EMFAC2017 emission factors using the Project-specific equipment list. For the purposes of this air quality analysis, viaduct construction was estimated to begin in April 2020 and last 5 years.

9.12 HSR Preferred Alternative Rail-Portion of Construction

For purposes of this air quality analysis, the HSR alignment construction is expected to begin in November 2026 and last 2 years. Construction of the HSR alignment would involve laying rail along the HSR alignment, including the at-grade, elevated, retained fill, tunnel, and cut-and-cover segments in the Palmdale to Burbank Project Section. Emissions from construction of the track were calculated using CalEEMod emission factors. Emissions from the exhaust of trucks used to haul material (including concrete slabs and ballast materials) to the construction site were calculated using heavy-duty truck emission factors from EMFAC2017 and anticipated travel distances of haul trucks within the South Coast Air Basin.

9.13 Demobilization

For the purposes of this air quality analysis, demobilization of construction equipment and materials using on-road deliveries was estimated to start in April 2026 and last 3 years. Emissions generated during the demobilization phase include exhaust and fugitive dust emissions from on-road deliveries. Emissions were calculated using CalEEMod and EMFAC2017 emission factors associated with the Project-specific equipment list.

10 ESTIMATED EMISSIONS RATES AND COMPARISON TO *DE MINIMIS* LEVELS – PALMDALE-BURBANK

Total annual estimated emissions generated within the South Coast Air Basin during the Project's construction period, as presented in the *Palmdale to Burbank Project Section Final EIR/EIS*, are provided in Table 10-1. As shown in the table, direct emissions from the construction phase of the Project would exceed the General Conformity applicability (i.e., *de minimis*) level for NO_x and CO in certain calendar years in which construction would take place.

Following the release of the Draft General Conformity Determination, the Authority refined its analysis of truck trips/spoils hauling needed for potentially hazardous waste excavated during tunneling to the appropriate disposal facilities. However, as IAMF#5 includes the requirement that on-road trucks used for hauling during construction will be of model year 2020 or newer, the emissions listed in Table 10-1 vary only slightly from those that were included in the Draft General Conformity Determination published for public review. As the revisions did not result in any new exceedances of the *de minimis* levels, there are no changes to the findings and conclusions included in this Final General Conformity Determination. The following shows the maximum estimated annual values of each pollutant, by nonattainment or maintenance area, and the percentage of the 2022 estimated emission rates in the South Coast Air Basin (see Table 4-2) for Palmdale to Burbank Project Section construction. Note that Table 4-2 shows tons per day, whereas the emissions estimates for the Project Table 10-1 are shown in tons per year (tpy).

- VOC: 4.9 tpy (<0.01 percent)
- CO: 112.7 tpy (0.02 percent)
- NO_x/NO_2: 54.6 tpy (0.06 percent)
- SO_2: 0.5 tpy (0.01 percent)
- PM_{10}: 14.9 tpy (0.02 percent)
- $PM_{2.5}$: 4.1 tpy (0.02 percent)

Table 10-1 Estimated Annual Average Emissions in the South Coast Air Basin

Pollutants	Emissions (Tons/ Construction Year)[3,4,5]									Conformity Applicability Level (tons/year)[2]
	1	2	3	4	5	6	7	8	9	
VOC	1.2	3.0	4.3	4.9	2.4	1.4	0.6	0.3	<0.1	10
CO	38.5	71.6	**100.6**	**112.7**	69.6	43.9	19.3	8.5	<0.1	100
NO_x	**13.3**	**33.9**	**48.3**	**54.6**	**31.1**	**19.0**	**11.3**	3.8	0.1	10
NO_2[6]	13.3	33.9	48.3	54.6	31.1	19.0	11.3	3.8	0.1	100
SO_2[7]	0.1	0.5	0.5	0.5	0.3	0.2	0.1	0.0	<0.1	100
PM_{10}[1]	4.7	14.9	13.1	14.0	7.7	4.7	2.8	0.9	<0.1	100
$PM_{2.5}$[1]	1.3	4.1	3.5	3.9	2.3	1.4	0.8	0.2	<0.1	70

Source: California High-Speed Rail Authority, 2024
Note: **Bold** values exceed the *de minimis* levels.
[1] The PM_{10} and $PM_{2.5}$ emissions consist of exhaust and fugitive dust emissions.
[2] Pursuant to NEPA, effects on air quality would be considered an impact if the HSR Build Alternative criteria pollutant emissions would be equal to or exceed the General Conformity *de minimis* levels in a nonattainment or maintenance area. General conformity would apply only to construction of the HSR Preferred Alternative, as operation of the HSR Preferred Alternative is expected to decrease regional emissions of criteria pollutants.
[3] For the purposes of the EIR/EIS and this General Conformity Determination, the Authority has revised AQ-IAMF#5 to commit to a fleet mix of equipment model year 2020 or newer. This commitment is quantified in the emissions calculations for the construction-phase hauling needs (specifically spoils hauling from tunneling activities). The emissions calculations for all project construction-phase hauling needs and all Alternatives have not been updated, as the application of this commitment would further reduce emissions.
[4] The emissions presented in this table reflect the impact of the Safer Affordable Fuel-Efficient Vehicles Rule, per the California Air Resources Board's "EMFAC Off-Model Adjustment Factors to Account for the Safer Affordable Fuel-Efficient Vehicles Rule Part One" issued on November 20, 2019 available at: EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One (ca.gov) (ca.gov). This rule has since been revoked. As such, these emission estimates are conservative.
[5] The air analysis was conducted with the assumption that Project construction would take place from 2020 to 2028; however, the tunneling phase of construction was anticipated to start in April 2020 and last approximately 10 years. Although the construction schedule has been updated, the analysis is still valid as the equipment quantities and annual emission rates would remain unchanged.
[6] For the purposes of this analysis, the NO_2 emissions are assumed to be equal to the NOx emissions.
[7] The Draft GCD inadvertently stated a Conformity Applicability Level for SO_x of N/A, and this Final GCD is correcting to provide the conformity level for SO_2 (a subset of SO_x), as a precursor of $PM_{2.5}$ which is in nonattainment in the South Coast Air Basin. This minor clarification does not change the draft GCD conclusions.

CO = carbon monoxide
HSR = high-speed rail
N/A = not applicable
NEPA = National Environmental Policy Act
NO_x = nitrogen oxides
NO_2 = nitrogen dioxide
SO_2 = sulfur dioxide
PM_{10} = particulate matter 10 microns or less in diameter
SCAQMD = South Coast Air Quality Management District
SO_X = sulfur oxides
tons/year = tons per year
VOC = volatile organic compound
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

11 REGIONAL EFFECTS

As shown in Section 3.3.6.3 of the *Palmdale to Burbank Project Section Final EIR/EIS*, the total regional emissions for all the applicable pollutants are lower during the operations phase of the Project than under No Build conditions (and will therefore not exceed the *de minimis* emission level). As such, only emissions generated during the construction phase were compared to the conformity levels to determine conformity compliance. As shown in Table 10-1, construction-phase emissions, compared to the General Conformity applicability rates, are discussed below:

- Annual estimated VOC emissions in the South Coast Air Basin are less than the applicability rate of 10 tons per year for construction years one through nine for the HSR Preferred Alternative.
- Annual estimated CO emissions in the South Coast Air Basin are greater than the applicability rate of 100 tons per year for construction years three and four for the HSR Preferred Alternative.
- Annual estimated NO_x emissions are greater than the applicability rate of 10 tons per year in construction years one through seven for the HSR Preferred Alternative.
- Annual estimated NO_2 emissions in the South Coast Air Basin are less than the applicability rate of 100 tons per year for construction years one through nine for the HSR Preferred Alternative.
- Annual estimated PM_{10} emissions are less than the applicability rate of 100 tons per year for construction in years one through nine for the HSR Preferred Alternative.
- Annual estimated $PM_{2.5}$ emissions are less than the applicability rate of 70 tons per year for construction in years one through nine for the HSR Preferred Alternative.
- There are no applicable thresholds for SO_2 annual emissions, as the region is in attainment.

As such, a General Conformity Determination is required for this Project for NO_x and CO for the years during construction where the emissions would exceed the *de minimis* levels and do not meet any of the exceptions in 40 C.F.R. § 93.154(c). This Final Conformity Determination identifies the Authority's commitment to the purchase of additional offsets to net all NO_x emissions to levels that are below the applicable *de minimis* emissions levels for each calendar year that exceedances occur, explained in Section 14. In addition, this Final Conformity Determination discusses the localized CO modeling included in the *Palmdale to Burbank Project Section Final EIR/EIS*, which demonstrates that the Project would satisfy the applicable General Conformity level for CO (also explained in Section 14).

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12 GENERAL CONFORMITY EVALUATION

For federal actions subject to a General Conformity evaluation, the regulations delineate several ways an agency can demonstrate conformity (40 C.F.R. § 93.158). This section summarizes the findings used to make the determination for the Project.

12.1 Conformity Requirements of Project

Based on the analysis shown in Table 10-1, conformity determinations are required for construction-phase emissions for NO_x and CO because annual estimated emissions are greater than the applicability rates of 10 tpy and 100 tpy for NO_x and CO, respectively, in the South Coast Air Basin.

12.2 Compliance with Conformity Requirements

CO emissions caused by the construction of the Project that would exceed the General Conformity *de minimis* levels are also considered to have the potential to cause air quality impacts. However, Section 93.158(a)(4) of the General Conformity Rule stipulates that emission offsets cannot be used to mitigate CO impacts. Instead, the SCAQMD must determine whether the construction-period CO emissions for the Project would result in a level of CO emissions which, together with all other emissions in the nonattainment (or maintenance) area, would exceed the regional emissions budget specified in the applicable SIP. Pursuant to the General Conformity Rule, the SCAQMD may determine that additional air quality modeling is required to demonstrate that the allocation of the construction-period emissions for the Project is within the regional emissions budget. As such, the Authority has confirmed with the SCAQMD that the air quality modeling conducted as part of the localized construction effects analysis for the Project will demonstrates conformity for CO if the modeling shows that there are no exceedances of the applicable NAAQS for CO.

As shown in Impact AQ#5 of the *Palmdale to Burbank Project Section Final EIR/EIS*, localized CO modeling and additional microscale modeling for the Project show that localized CO concentrations generated during construction at the six discrete worst-case locations would not result in exceedances of the NAAQS. Therefore, FRA concludes the Project will conform to the applicable requirements for CO in the SIP.

In addition, NO_x emissions caused by the construction of the Project that would exceed the General Conformity *de minimis* levels are considered to have the potential to cause air quality impacts. The Authority has entered into a letter agreement with SCAQMD for a process framework by which the Authority has committed to purchasing offsets, to reduce or offset all criteria pollutant emissions to levels that are below the General Conformity *de minimis* level for each calendar year that exceedances occur. Based on this commitment, the Project will not exceed the applicable *de minimis* levels for NOx, or any exceedances will be offset by future offset agreements contemplated by the May 3, 2024 letter agreement between the Authority and SCAQMD, and therefore, FRA concludes the Project will conform to the applicable requirements for ozone in the SIP.

The requirements for offsets would be implemented as part of the Project, as described in the mitigation measures from the Final EIR/EIS:

AQ-MM#1: Offset Project Construction Emissions through SCAQMD Emission Offset Programs

The Project's construction emissions that cannot be reduced by IAMFs and any other mitigation measures will be offset through a SCAQMD rule or contractual agreement by funding equivalent emissions reductions (to the extent that offsets are available) that achieve reductions in the same years as construction emissions occur, thus offsetting Project-related air quality impacts in real time. The Project will implement measures and best practices to minimize emissions from Project construction. After implementation of these measures, emission levels that still exceed thresholds will be offset to the extent necessary to satisfy General Conformity, and to meet CEQA thresholds to the extent feasible. The Authority's Sustainability Policy has a goal to achieve net zero

emissions from construction. As the Palmdale to Burbank Project Section advances towards construction, the Authority will work with SCAQMD to assess the estimated emissions, availability of offsets, and cost for achieving the Authority's Sustainability Policy goal to the extent possible.

As part of these offset programs, a copy of each unit's certified tier or model year specification shall be available upon request at the time of mobilization of each applicable equipment unit. Furthermore, the Authority will require periodic reporting and provision of written construction documents by construction contractor(s) to ensure compliance and conduct regular inspections to the maximum extent feasible to ensure compliance with applicable Authority IAMFs and mitigation measures.

AQ-MM#3: Construction Emissions Reduction – Requirements for use of Zero Emission and/or Near Zero Emission Vehicles and Off-Road Equipment

This mitigation measure would reduce the impact of construction emissions from Project-related on-road vehicles and off-road equipment. All remaining emissions after implementation of this measure would be offset with emission credits required under AQ-MM#1 and AQ-MM#2.

The Authority and all Project construction contractors will require that a minimum of 25 percent, with a goal of 100 percent, of all light-duty on-road vehicles (e.g., passenger cars, light-duty trucks) associated with the Project (e.g., on-site vehicles, contractor vehicles) use ZE or NZE technology.

The Authority and all Project construction contractors will have the goal that a minimum of 25 percent of all heavy-duty on-road vehicles (e.g., for hauling, material delivery, and soil import/export) associated with the Project use ZE or NZE technology.

The Authority and all Project construction contractors will have the goal that a minimum of 10 percent of off-road construction equipment use ZE or NZE vehicles.

If local or state regulations mandate a faster transition to using ZE and/or NZE vehicles at the time of construction, the more stringent regulations will be applied. For example, Executive Order N-79-20, issued by California Governor Newsom on September 23, 2020, currently states the following:

- Light-duty and passenger car sales be 100 percent ZEV by 2035;
- Full transition to ZEV short-haul/drayage trucks by 2035;
- Full transition to ZEV heavy-duty long-haul trucks, where feasible, by 2045; and
- Full transition to ZE off-road equipment by 2035, where feasible.

The Project will have a goal of surpassing the requirements of these or other future regulations as a mitigation measure for NO_x emissions.

12.3 Consistency with Requirements and Milestones in Applicable SIP

The General Conformity regulations state that notwithstanding the other requirements of the rule, a federal action may not be determined to conform unless the total of direct and indirect emissions from the federal action is in compliance or consistent with all relevant requirements and milestones in the applicable SIP (40 C.F.R. § 93.158(c)). This includes but is not limited to such issues as reasonable further progress schedules, assumptions specified in the attainment or maintenance demonstration, prohibitions, numerical emission limits, and work practice standards. This section briefly addresses how the construction emissions for the Project were assessed for SIP consistency for this evaluation.

12.3.1 Applicable Requirements from the USEPA

USEPA has already promulgated, and will continue to promulgate, numerous requirements to support the goals of the CAA with respect to the NAAQS. Typically, these requirements take the form of rules regulating emissions from significant new sources, including emission standards for major stationary point sources and classes of mobile sources, as well as permitting requirements for new major stationary point sources. Because states have the primary responsibility for

implementation and enforcement of requirements under the CAA and can impose stricter limitations than USEPA, the USEPA requirements often serve as guidance to the states in formulating their air quality management strategies.

12.3.2 Applicable Requirements from the CARB

In California, to support the attainment and maintenance of the NAAQS, CARB is primarily responsible for regulating emissions from mobile sources. In fact, USEPA has delegated authority to CARB to establish emission standards for on-road and some non-road vehicles separate from the USEPA vehicle emission standards, although CARB is preempted by the CAA from regulating emissions from many non-road mobile sources, including marine craft. Only USEPA can set emission standards for preempted equipment.

12.3.3 Applicable Requirements from SCAQMD

To support the attainment and maintenance of the NAAQS in the South Coast Air Basin, SCAQMD is primarily responsible for regulating emissions from stationary sources. SCAQMD develops and updates its Air Quality Management Plan regularly to support the California SIP. While the Air Quality Management Plan contains rules and regulations geared to attain and maintain the NAAQS, these rules and regulations also have the much more difficult goal of attaining and maintaining the California ambient air quality standards.

12.3.4 Consistency with Applicable Requirements for the Authority

The Authority already complies with, and will continue to comply with, a number of rules and regulations implemented and enforced by federal, state, regional, and local agencies to protect and enhance ambient air quality in the South Coast Air Basin.

The Authority will continue to comply with all existing applicable air quality regulatory requirements for activities over which it has direct control and will meet in a timely manner all regulatory requirements that become applicable in the future.

These are appropriate USEPA, CARB, and SCAQMD rules that are standard practice and best management practices for construction in the SCAQMD and include control of emissions and exhaust:

- SCAQMD Rule 402, Nuisance: This rule restricts the discharge of any contaminant in quantities that cause, or have a natural ability to cause, injury, damage, nuisance, or annoyance to businesses, property, or the public. The proposed Project does not plan to discharge any contaminants in quantities that would cause injury to the public or property.
- SCAQMD Rule 403, Fugitive Dust: This rule requires the prevention, reduction, or mitigation of fugitive dust emissions from a Project site. Rule 403 restricts visible fugitive dust to a Project property line, restricts the net PM_{10} emissions to less than 50 micrograms per cubic meter, and restricts the tracking out of bulk materials onto public roads. Additionally, Rule 403 requires an applicant to use one or more of the best available control measures (identified in the tables within the rule). Mitigation measures may include adding freeboard to haul vehicles, covering loose material on haul vehicles, using dust suppressants such as watering or chemical soil stabilizers, and/or ceasing all activities.
- SCAQMD Rule 1113, Architectural Coatings: This rule limits the amount of VOCs from architectural coatings and solvents, which lowers the emissions of odorous compounds.

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13 REPORTING AND PUBLIC COMMENTS

The FRA issued a Draft General Conformity Determination for public and agency review for a 30-day period as required by 40 C.F.R §§ 93.155 and 93.156. In developing the analysis underlying this General Conformity Determination, the Authority has consulted with SCAQMD on a variety of technical and modeling issues. The Authority has also consulted with USEPA on the overall approach to General Conformity. The Authority has also included CARB in its consultation outreach.

The FRA published a notice in the Federal Register on April 2, 2024, announcing the availability of the draft general conformity determination and requesting written public comments during a 30-day period. This draft conformity determination was be made available on FRA's docket at https://www.regulations.gov/, Docket FRA-2024-0045. The comment period of the Draft Conformity Determination closed on May 2, 2022.

During the public comment period, FRA received one non-substantive comment unrelated to the Draft General Conformity Determination. The commenter expressed a concern regarding the overall cost of a statewide rail system. The commenter did not comment on the draft notice's emissions analysis or conclusions. Therefore, there were no public comments to address within this Final General Conformity Determination.

13.1 Final General Conformity Determination

The Final General Conformity Determination is available at http://www.regulations.gov, Docket No. FRA-2024-0045, and on FRA's website at https://railroads.dot.gov/environment/environmental-reviews/clean-air-act-california-general-conformity-determinations.

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14 FINDINGS AND CONCLUSIONS

FRA conducted a General Conformity evaluation pursuant to 40 C.F.R. Part 93 Subpart B, and based on the Authority's coordination with USEPA, SCAQMD, and CARB. The General Conformity regulations apply at this time to this Project because the Project is in an area that is currently designated as nonattainment for the federal 8-hour O_3, $PM_{2.5}$, and lead standards; unclassified for the federal NO_2 and SO_2 standards; redesignated attainment (i.e., maintenance) for the federal PM_{10} and CO standards; and attainment/unclassified for all other standards. FRA has determined that during the construction phase, the Project will result in exceedances of the *de minimis* levels for CO and NOx emissions. However, FRA concludes the Project will conform to the applicable requirements for CO in the approved SIP, based on localized CO modeling that shows in the two years that construction emissions will exceed the CO *de minimis* level, the exceedances will not cause or contribute to a violation of the NAAQS for CO within the South Coast Air Basin. In addition, the Project will conform to the applicable requirements in the SIP for NOx based on commitments between the Authority and SCAQMD to ensure that construction-phase NO_x emissions will be offset to levels that are below the General Conformity *de minimis* level.

As a result of FRA's review, FRA concludes, because Project-generated emissions in exceedance of the General Conformity *de minimis* thresholds would either be offset (for construction) or less than zero (for operations), that the Project's emissions can be accommodated in the SIP. The FRA's determination that the Project as designed would conform to the approved SIP is based in part on the following Authority commitments with SCAQMD:

- Coordinated with SCAQMD and committed to ensuring the lowest levels of construction emissions are generated through the use of IAMFs and mitigation measures, outlined in this report, and rolling review of best available technologies to the extent feasible, with priority given first to the use of ZE technology such as electric construction equipment and then to NZE technology; and
- Executed a letter with SCAQMD (see Appendix A) that describes a commitment between the Authority and SCAQMD to develop and execute an agreement after receipt of construction funding, but prior to the start of construction that includes:
    - A review of emission estimates, coordination with appropriate agencies, revisions (if warranted) of emission estimates before construction start, and a final estimate for review and use by SCAQMD;
    - If emissions exceed General Conformity *de minimis* thresholds, all remaining emissions after implementation of the IAMFs and onsite mitigation measures will be completely mitigated to zero through the District's emission reduction programs Applicable emission reduction programs may include state or federal incentive programs that achieve emissions reductions by providing incentive funds for the incremental cost of cleaner-than-required engines and equipment. The Authority agrees to provide funding at the cost-effectiveness level or amount established by the program(s) mutually selected by the District and the Authority; and
    - A commitment that the Authority will not start construction until any necessary agreements are executed.

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15 REFERENCES

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16 PREPARER QUALIFICATIONS

Keith Lay, Managing Director Air Quality and Climate Change. Mr. Lay has a B.S. in Civil Engineering from the University of Manitoba, Canada. With over 20 years of experience, Mr. Lay serves as a senior air quality and greenhouse gas emissions specialist qualified to conduct analyses for a variety of infrastructure and transportation projects. Mr. Lay is the technical lead on air quality and climate change impact analyses documents and oversees the research and preparation of technical reports. He is skilled in air quality assessment models, including CalEEMod, Emission Factor models (EMFAC/OFFROAD), Road Construction Estimator Model (RoadMod), and Line Dispersion Models (CALINE).

Mary Kaplan, Air Quality and Health Risk Assessment Specialist. Ms. Kaplan has a B.S. in Meteorology from Saint Louis University and a M.S. in Environmental Science (Atmospheric Concentration) from the University of Massachusetts-Lowell. With over 20 years of experience at AECOM, Ms. Kaplan serves as a senior air quality and health risk assessment specialist qualified to conduct analyses for a variety of permitting, infrastructure, and transportation projects. Ms. Kaplan is the technical lead on air quality and health risk assessment impact analyses documents and oversees the research and preparation of technical reports. She is skilled in air quality assessment models, including AERMOD, CALPUFF, HEM4 and HARP2.

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Appendix A: General Conformity Determination Letter Between Authority and South Coast Air Quality Management District

ATTACHMENT

GENERAL CONFORMITY DETERMINATION LETTER, APRIL 2024

CALIFORNIA
High-Speed Rail Authority

April 25, 2024

Ms. Vanessa Delgado, Chair
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Re: General Conformity for the Palmdale to Burbank Project Section of the California High-Speed Rail System

Dear Ms. Delgado:

Thank you for your active participation with the California High-Speed Rail Authority (Authority) to address the General Conformity requirements of the Palmdale to Burbank Project Section of the California High-Speed Rail (HSR) System, which is located partially within the jurisdiction of the South Coast Air Quality Management District (SCAQMD or District). The HSR System will provide intercity, high-speed train service on more than 800 miles of guideway throughout California, connecting the major population centers of Sacramento, the San Francisco Bay Area, the Central Valley, Los Angeles, the Inland Empire, Orange County and San Diego. The approximately 31- to 38-mile-long Palmdale to Burbank Project Section would connect the Palmdale Transit Center and the Burbank Airport HSR Station (both stations were previously approved by the Authority as part of the Bakersfield to Palmdale Project Section and Burbank to Los Angeles Project Section, respectively).

Air Quality and Public Health Benefits of the High-Speed Rail System

The HSR System will use 100 percent renewable electrically-powered, zero-emission high-speed trains and is identified in the California Air Resources Board's 2017 Scoping Plan as part of a sustainable statewide transportation system necessary to achieve the state's climate goals. With the HSR System, total statewide greenhouse gas (GHG) emissions in 2040 would be less than 2015 GHG levels, with HSR predicted to help achieve that goal by reducing 2040 GHG emissions by approximately 1.1 to 1.7 million metric tons. The HSR System would result in a net reduction of criteria pollutant emissions. Phase 1 of the HSR System, which consists of distinct sections from San Francisco in the north to Los Angeles and Anaheim in the south, is expected to result in reductions to nitrogen oxides (NO_x) emissions of approximately 1,140–1,150 tons per year,

particulate matter (PM) emissions of approximately 500–700 tons per year, and reactive organic gases (ROG) emissions of 130–150 tons per year compared to the No HSR System Project Alternative in 2040.

The Palmdale to Burbank Project Section (also referred to as the Project) is a critical link in Phase 1 of the HSR System, bringing the HSR System to Southern California. Operation of the Project and the HSR System within the South Coast region would result in a net decrease in regional emissions of criteria pollutants and associated public health impacts, and emission levels during Project operations would be less than the general conformity *de minimis* levels. This overall net decrease in emissions during Project operations would help the South Coast Air Basin (Basin) meet its attainment goals of federal ambient air quality standards for ozone (O_3) by reducing precursor emissions of NO_x, ROG, and PM and will result in long-term air quality and public health benefits. However, the Authority currently estimates that the construction of the Project is expected to result in a temporary net increase in criteria pollutant emissions of NO_x and CO in the South Coast Air Basin in excess of general conformity *de minimis* thresholds during some of the construction years. As such, the Authority and the SCAQMD have agreed to the commitments in this letter to track and mitigate construction emissions from the Project to meet General Conformity requirements.

General Conformity Rule

The General Conformity Rule, as codified in Title 40 Code of Federal Regulations Part 93, Subpart B, establishes the process by which federal agencies determine conformance of proposed projects that are federally funded or require federal approval with applicable air quality standards. This determination must demonstrate that a proposed project would not cause or contribute to new violations of air quality standards, exacerbate existing violations, or interfere with timely attainment or required interim emissions reductions towards attainment. The Authority, as the Project proponent, is receiving federal grant funds through the Federal Railroad Administration's (FRA) High-Speed Intercity Passenger Rail program. The Project may also receive FRA safety approvals. Because of the federal funding and potential safety approvals, the Project is subject to the General Conformity Rule; and because construction-phase emissions (without mitigation) would exceed General Conformity *de minimis* thresholds, the Project is not exempt and must demonstrate conformity.

Emissions for the Palmdale to Burbank Project Section

The Authority has not yet secured construction funding for the Palmdale to Burbank Project Section of the HSR System and has not yet set a final construction schedule for this section. The Authority explains that the emission numbers provided in the EIR/EISs are reasonable estimates based on the available information to date. The methodology used in creating these estimates is similar to what was used for estimating the emissions for the EIR/EISs for the Merced to Fresno, Fresno to Bakersfield, and Burbank to Los Angeles project sections of the HSR System. After eight years of construction of the HSR System in the Central Valley, it has become clear that the estimates in the EIR/EISs for the HSR System are conservative and actual emissions from construction are currently lower than estimates in the EIR/EISs for the Merced to Fresno and Fresno to Bakersfield project sections by 50–70%.

ATTACHMENT

GENERAL CONFORMITY DETERMINATION LETTER, APRIL 2024

The Authority has not yet secured funding for final design or construction of the Project, and the Authority cannot reasonably anticipate when Project construction may actually occur. It is therefore difficult for the Authority to completely engage with SCAQMD on implementing available or future mechanisms for the reduction of construction emissions. While the construction schedule has not been firmly established for this section, the Authority agrees with SCAQMD's encouragement to reduce emissions locally by avoiding and minimizing emissions from Project construction prior to funding incentive programs or offsets to fully mitigate remaining construction emissions.

The Authority has a long history of being proactive towards reducing construction emissions. As shown in Figure 1, the Authority has continually updated its policies and procedures to ensure that the HSR System embraces and pushes the boundaries towards reducing emissions.

2008	• Board adopts 100-percent renewable energy for operations
2011	• Incorporated in California Air Resources Board (ARB) Scoping Plan for AB32
2012	• Net-Zero direct greenhouse gas emissions (GHG) for construction • Net-Zero air quality emission for construction • Proactive construction requirement, including Tier 4 vehicles and 100-percent recycling requirements
2013	• CEO signs Sustainability Policy • Incorporated in California ARB Scoping Plan Update
2014	• First infrastructure project to require disclosure on major materials, informed AB262 Buy Clean California Act • EMMA developed to track and monitor program and contractor progress
2016	• Board adopts Sustainability Policy
2017	• Incorporated in California ARB Scoping Plan Update
2019	• Required performance targets for embodied energy (concrete and steel) • Zero emissions fleet vehicles (25-percent of on-road fleet) for contractors • Required use of renewable diesel • Direct GHG emissions target set for construction tied to bonus/penalty

2020	• Board adopts Sustainability Policy Updates • Achieving net-zero tailpipe GHG emissions in construction through carbon sequestration projects
2021	• Required future construction contracts to use only zero-emission vehicles for on-road project fleets (100% by 2035)

Figure 1 – History of Environmental Commitments Designed to Reduce Emissions

Impact Avoidance and Minimization Features

Avoiding and minimizing emissions is a strategy that is consistent with the net-zero GHG objectives ofthe Authority's Sustainability Policy. As such, the Authority has incorporated the following Impact Avoidance and Minimization Features (IAMFs) into the Palmdale to Burbank Project Section (full text of these IAMFs is in Appendix 2-E of the Palmdale to Burbank Project Section EIR/EIS):

- AQ-IAMF#l: Fugitive Dust Emissions: The contractor will employ several control measures to minimize and control fugitive dust emissions and prepare a fugitive dust control plan for each distinct construction project section. At a minimum, the plan shall describe how each measure would be employed and identify an individual responsible for ensuring implementation.
- AQ-IAMF#2: Selection of Coatings: The contractor will use lower VOC content paint than that required by SCAQMD Rule 1113.
- AQ-IAMF#3: Renewable Diesel: The contractor will use renewable diesel fuel to minimize and control exhaust emissions from all heavy-duty diesel-fueled construction diesel equipment and on-road diesel trucks.
- AQ-IAMF#4: Reduce Criteria Exhaust Emissions from Construction Equipment: All heavy-duty off-road construction diesel equipment used during the construction phase will meet Tier 4 Final engine requirements and small diesel generators (less than 30 horsepower) will be avoided whenever feasible.
- AQ-IAMF#5: Reduce Criteria Exhaust Emissions from On-Road Construction Equipment: All on-road trucks will consist of model year 2020 or newer, but no less than the average fleet mix for the current calendar year as set forth in the CARB's EMFAC 2017 database.
- AQ-IAMF#6: Reduce the Potential Impact of Concrete Batch Plants: The contractor will prepare a technical memorandum documenting the concrete batch plant siting criteria, including locating the plant at least 1,000 feet from sensitive receptors, and utilization of typical control measures.

These IAMFs have helped to reduce the construction emissions generated by the HSR project sections currently under construction, which are located outside the SCAQMD's jurisdiction. For example, Figure 2 highlights the significant criteria pollutant emission reductions demonstrated by the Central Valley portions of the HSR System currently under construction due to IAMF#4.

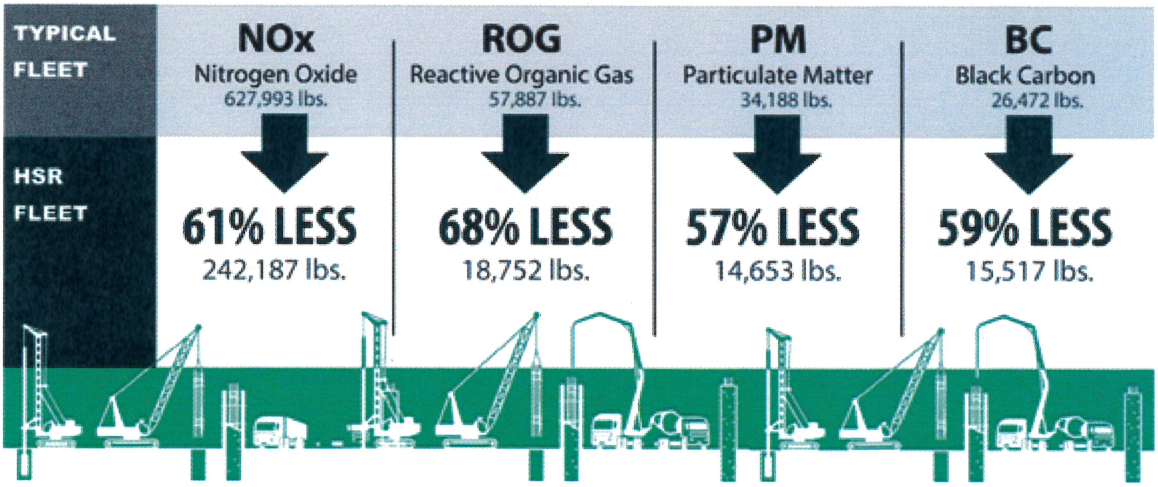


Figure 2 - 2022 Criteria Air Pollutants Emitted and Avoided (Typical California Fleet Comparison)

Mitigation Measures

The Authority is continually incorporating mitigation measures that would reduce the generation of construction emissions in construction contracts and practices. For example, the Authority incorporated the following mitigation measure into the environmental documentation and is already incorporating portions ofthis measure into existing contracts.

AQ-MM#3: Construction Emissions Reductions – Requirements for use of Zero Emission (ZE) and/or Near Zero Emission (NZE) Vehicles and Off-Road Equipment

This mitigation measure as included in the EIR/EISs would reduce the impact ofconstruction emissions from the use ofon-road vehicles and off-road equipment for the Palmdale to Burbank Section of the HSR System. All remaining emissions after implementation ofthis measure would be mitigated with emission reduction programs required under Mitigation Measure AQ- MM#1 (Offset Project Construction Emissions through SCAQMD Emission Offset Programs) of the EIR/EISs.

The Authority and all project construction contractors shall require that by the start of construction a minimum of 25 percent, with a goal of 100 percent, of all light-duty on- road vehicles (e.g., passenger cars, light-duty trucks) associated with the construction activities for the Palmdale to Burbank Section ofthe HSR System (e.g., on-site vehicles, contractor vehicles) use zero emission (ZE) or near-zero emission (NZE) technology.

The Authority and all project construction contractors shall have the goal that by the start of construction a minimum of 25 percent of all heavy-duty on-road vehicles (e.g., for hauling, material delivery and soil import/export) associated with the construction activities for the Palmdale to Burbank Section of the HSR System use ZE or NZE technology.

The Authority and all project construction contractors shall have the goal that by the start of construction a minimum of 10 percent of off-road construction equipment be ZE or NZE technology.

If local or state regulations mandate a faster transition to ZE and/or NZE vehicles and off-road equipment at the time of construction for the Palmdale to Burbank Section of the HSR System, the more stringent regulations will be required and applied. For example, Executive Order (EO) N-79-20 currently states the following:

- New light duty and passenger car sales will be 100 percent zero emission vehicles (ZEV) by 2035
- Full transition to ZEV short haul/drayage trucks by 2035
- Full transition to ZEV heavy-duty long-haul trucks, where feasible, by 2045
- Full transition to ZE off-road equipment by 2035, where feasible.

The Authority has a goal of surpassing the requirements of these or other future regulations as a mitigation measure.

In addition to the above AQ-MM#3, the Authority already mandates that all such equipment meet the highest emission standard codified by the U.S. Environmental Protection Agency (EPA)-Tier 4 Final. This has had a significant positive impact on emission reductions, as 455,431 pounds of criteria air pollutants in 2022 would have otherwise been released based on Table 2 shown above. This implementation strategy will go further, mandating that by 2030, 10 percent of off-road equipment be ZEV, not just Tier 4 Final, at start of construction, and sets the goal of 100 percent ZEV for such equipment by 2035.

This is the most recent step the Authority is taking to ensure the California HSR System is the greenest infrastructure project in both operation and construction. The Authority has captured or avoided more than 180,000 tons of GHG emissions through planting more than 6,000 trees and other forest projects. The HSR System has also prevented more than 180,000 tons of construction materials from being sent to landfills with its 97 percent construction waste recycling rate.

The Authority will continue to work with contractors to encourage and mandate the use of ZE vehicles and off-road equipment. In addition, the Authority will encourage contractors to utilize available tools that will aid decision makers in their purchases of new equipment and include the use of ZE technologies in applicable bid documents, purchase orders, and contracts with contractors. For example, a current tool that the Authority has presented to contractors is Argonne National Laboratory's Alternative Fuel Life-Cycle Enviromnental and Economic Transportation (AFLEET) Tool (https://greet.es.anl.gov/afleet). This tool examines both the environmental and economic costs and benefits of alternative fuel and advanced vehicles and provides output to the

user quantifying specific case scenarios based on user input (Figure 3).

Payback Output Sheet – Annual Energy Use and Emissions Summary Table

	Gasoline	Diesel	Gasoline HEV	Gasoline PHEV	Gasoline EREV	EV	G.H2 FCV	Diesel HEV	Diesel HHV	B20	B100	E85	LPG	CNG	LNG / Diesel LNG Pilot Ignition
Annual Life-Cycle Petroleum Use (barrels)															
LD Petroleum Use	449.4		321.0		93.6	6.1	2.9				17.1		150.5	2.4	
HD Petroleum Use		16,928.0				266.7			13,119.2		742.1			97.5	
Annual Life-Cycle Greenhouse Gas Emissions (short tons)															
LD GHG Emissions	253.3		181.0		144.5	145.0	170.2				56.2		222.9	225.4	
HD GHG Emissions		9,278.7				6,303.0			7,191.0		2,442.0			9,128.4	
Vehicle Operation Air Pollutant Emissions (lb)															
LD Passenger Car Fleet															
CO	2,424.6		1,816.3		518.0	0.0	0.0				3,248.1		2,532.4	1,754.8	
NOx	101.0		65.0		18.5	0.0	0.0				200.3		104.6	84.4	
PM10	33.3		33.3		28.3	26.2	26.2				30.5		33.3	33.3	
PM2.5	12.1		12.1		8.4	6.9	6.9				11.3		12.1	12.1	
VOC	129.8		99.4		28.3	0.0	0.0				62.3		145.0	73.0	
HD Refuse Truck Fleet															
CO		1,640.9				0.0			1,640.9		1,640.9			21,331.7	
NOx		4,232.0				0.0			4,232.0		4,232.0			2,962.4	
PM10		394.4				309.5			394.4		394.4			394.4	
PM2.5		161.1				80.0			161.1		161.1			161.1	
VOC		259.2				0.0			259.2		259.2			880.9	

Figure 3 - AFLEET Sample Output

Future Steps

The Authority will continue to pursue construction methods, materials, and equipment that will reduce the generation of air pollutants. Even with these measures, however, some pollution will be emitted during the construction phase. To ensure that the Palmdale to Burbank Project Section of the HSR System meets all the General Conformity requirements, the following steps will be taken once construction funding is established.

- A construction schedule will be developed. The analysis in the EIR/EIS for the Project assumed that Project construction would take place from 2020 to 2028; however, the tunneling phase of construction was anticipated to start in April 2020 and last approximately 10 years. Based on the new schedule, a construction plan will be developed and analyzed to determine the emission burdens generated by construction.
- At the time of the analysis, the IAMFs and mitigation measures will be revisited and updated as discussed above, and in consultation with the SCAQMD, to include technologies and methodologies that were not considered in the earlier analysis. This review and implementation of updated measures will aid the Palmdale to Burbank Project Section of the HSR System in reducing the generation of emissions due to construction.
- Once emission estimates are calculated using the revised IAMFs and mitigation measures, it will be determined if the estimates are above the applicable General Conformity *de minimis* thresholds.
- SCAQMD will be notified via email or letter of the emission levels and consulted to determine if emission reduction programs could be applied as needed prior to the start of construction activities for the Palmdale to Burbank Project Section of the HSR System.

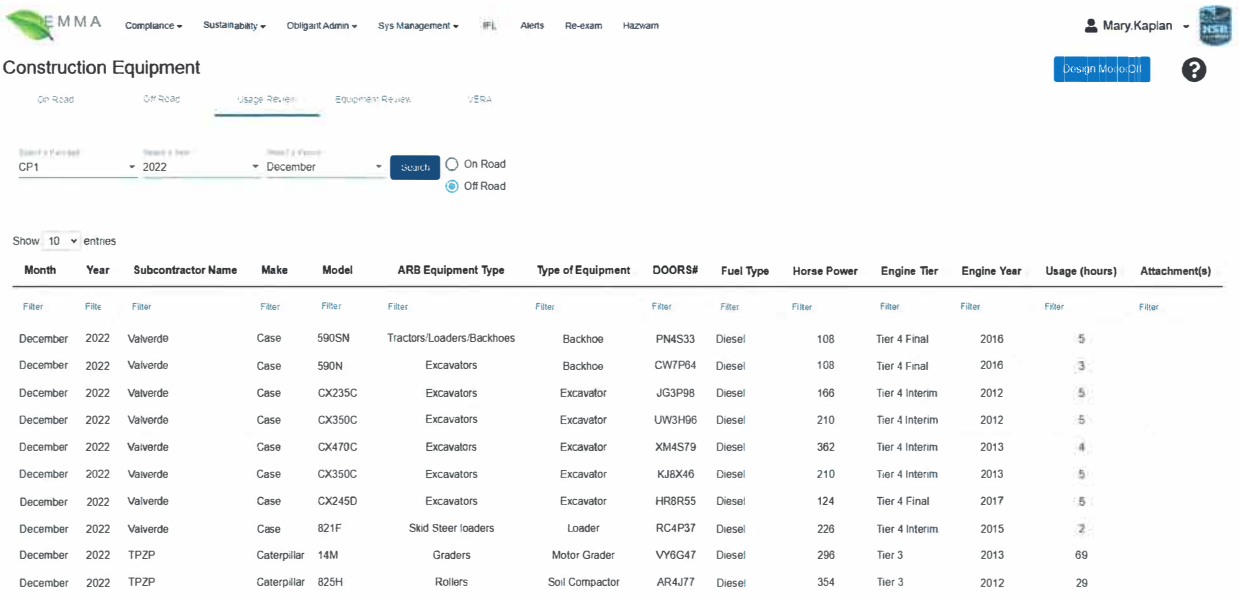
If emission reduction programs are required, the Authority will present a detailed plan, developed with the SCAQMD, to ensure that the program has in place a procedure to adequately account for and reduce emissions generated by the Palmdale to Burbank Project Section of the HSR System. The emission accounting program that the Authority currently uses to track emissions for the Project Sections of the HSR System currently being constructed will be presented as a possible mechanism to quantify the construction emissions generated by the Palmdale to Burbank Projects Section of the HSR System.

Emissions Tracking and Mitigation

In addition to AQ-MM#3, the Palmdale to Burbank Project Section EIR/EIS identifies the following mitigation measure to mitigate construction emissions in the South Coast Air Basin:

AQ-MM#1: Offset Project Construction Emissions through SCAQMD Emission Offset Programs – The Palmdale to Burbank Project Section's construction emissions that cannot be reduced by IAMFs and any other mitigation measures will be offset through a SCAQMD rule or contractual agreement by funding equivalent emissions reductions that achieve reductions in the same years as construction emissions occur, thus offsetting project-related air quality impacts in real time. The Project will implement measures and best practices to minimize emissions from Project construction. After implementation of these measures, emission levels that still exceed General Conformity *de minimis* levels will be offset to the extent necessary to satisfy General Conformity to the extent feasible. The Authority's Sustainability Policy has a goal to achieve net zero emissions from construction. As the Palmdale to Burbank Project Section advances towards construction, the Authority will work with SCAQMD to assess the estimated emissions, availability of offsets, and cost for achieving the Authority's Sustainability Policy goal to the extent possible.

The Authority currently mitigates emissions in the San Joaquin Valley through a Voluntary Emission Reduction Agreement (VERA) with the San Joaquin Valley Air Pollution Control District (SJVAPCD). Through the use of the Environmental Mitigation Management Application (EMMA) tool, developed by the Authority, construction activity is input by the contractor and applicable emission rates are applied to calculate the emission burdens generated by off-road and on-road construction equipment and activity. Figure 4 highlights some of the data input and calculations in EMMA. As previously noted, actual emission burdens have been significantly lower than the burdens estimated in the corresponding EIR/EIS.



Month	Year	Subcontractor Name	Make	Model	ARB Equipment Type	Type of Equipment	DOORS#	Fuel Type	Horse Power	Engine Tier	Engine Year	Usage (hours)	Attachment(s)
December	2022	Valverde	Case	590SN	Tractors/Loaders/Backhoes	Backhoe	PN4S33	Diesel	108	Tier 4 Final	2016	5	
December	2022	Valverde	Case	590N	Excavators	Backhoe	CW7P64	Diesel	108	Tier 4 Final	2016	3	
December	2022	Valverde	Case	CX235C	Excavators	Excavator	JG3P98	Diesel	166	Tier 4 Interim	2012	5	
December	2022	Valverde	Case	CX350C	Excavators	Excavator	UW3H96	Diesel	210	Tier 4 Interim	2012	5	
December	2022	Valverde	Case	CX470C	Excavators	Excavator	XM4S79	Diesel	362	Tier 4 Interim	2013	4	
December	2022	Valverde	Case	CX350C	Excavators	Excavator	KJ8X46	Diesel	210	Tier 4 Interim	2013	5	
December	2022	Valverde	Case	CX245D	Excavators	Excavator	HR8R55	Diesel	124	Tier 4 Final	2017	5	
December	2022	Valverde	Case	821F	Skid Steer loaders	Loader	RC4P37	Diesel	226	Tier 4 Interim	2015	2	
December	2022	TPZP	Caterpillar	14M	Graders	Motor Grader	VY6G47	Diesel	296	Tier 3	2013	69	
December	2022	TPZP	Caterpillar	825H	Rollers	Soil Compactor	AR4J77	Diesel	354	Tier 3	2012	29	

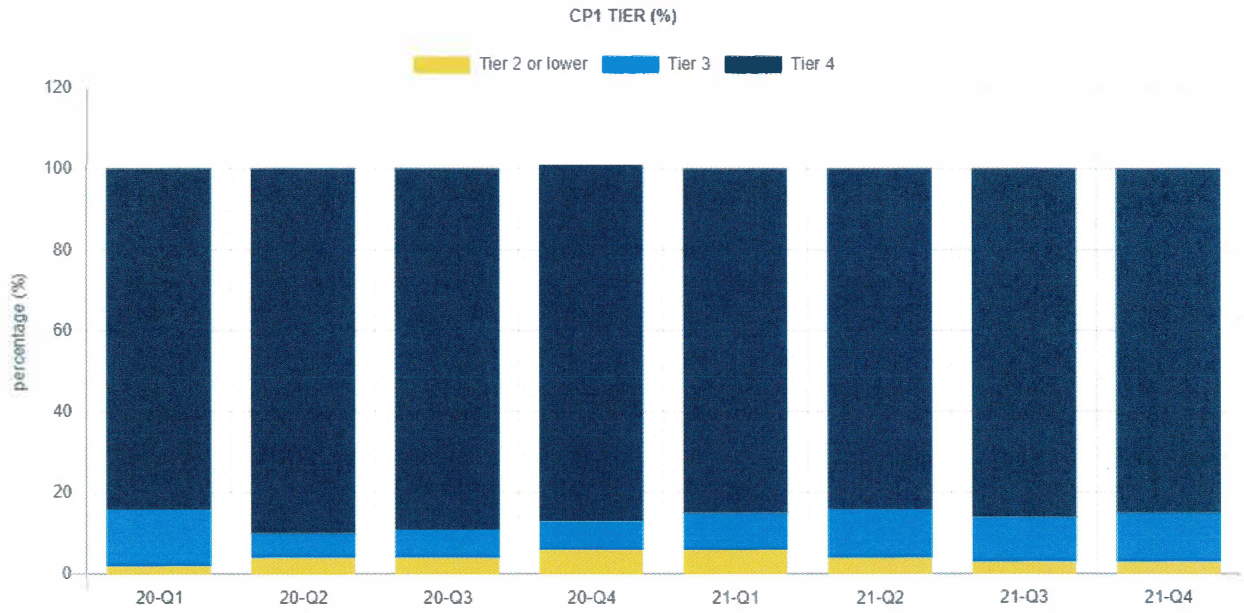


Figure 4 - EMMA tracking tool - Sample data and Infographics

Conclusion

The Authority is committed to serving as a model of sustainable development. The HSR System was recently recognized with a Platinum Envision level award, from the Institute for Sustainable Infrastructure. The Platinum Envision award achieved by the Authority and its program partners demonstrates that sustainability is achievable across large-scale and complex transportation systems.

ATTACHMENT

GENERAL CONFORMITY DETERMINATION LETTER, APRIL 2024

Given the documented history of the HSR System's successful implementation of emission reduction strategies that the Authority has demonstrated for sections outside the SCAQMD's jurisdiction, the robust emission tracking and mitigation program, along with the Authority's vision for the California HSR System being the greenest infrastructure project in the country, it is the Authority's firm commitment to partner with the District to ensure that all General Conformity requirements are met.

By signing this letter, the SCAQMD agrees to work with the Authority, using available mechanisms as appropriate, to reduce construction emissions and satisfy General Conformity for the Palmdale to Burbank Project Section of the HSR System.

- The Authority will work with the SCAQMD to ensure that the lowest levels of construction emissions are generated through the use of IAMFs and mitigation measures outlined in its Final EIR/EIS (reproduced in this document for reference) and rolling review of best available technologies to the extent feasible, with priority given first to the use of zero emission (ZE) technology such as electric construction equipment and then to near-zero emission (NZE) technology.

- After receipt of construction funding but prior to construction start, the Authority will review emission estimates, revise if warranted, and present a final estimate for review and use by the District for proposes purposes of emission reduction contributions and monitoring for the Palmdale to Burbank Project Section.

- If emissions exceed General Conformity *de minimis* thresholds, all remaining emissions after implementation of the IAMFs and onsite mitigation measures will be completely mitigated to zero through the District's emission reduction programs Applicable emission reduction programs may include state or federal incentive programs that achieve emissions reductions by providing incentive funds for the incremental cost of cleaner-than-required engines and equipment. The Authority agrees to provide funding at the cost-effectiveness level or amount established by the program(s) mutually selected by the District and the Authority.

- After receipt of construction funding but prior to construction start, the Authority and the District will enter into a contractual agreement to fully mitigate NOx construction emissions exceedances of General Conformity *de minimis* thresholds to zero for the Palmdale to Burbank Project Section, as required by General Conformity regulations, by providing funds for the mutually-selected emission reduction program(s) to fund grants for projects that achieve the necessary emission reductions.

- The Authority and the District will work together to identify opportunities and mechanisms to prioritize use of Authority funds for emission reductions locally at construction activities sites where the Palmdale to Burbank Project Section takes place; and, to the extent local emission reductions are unavailable, the parties will work together to develop other strategies.

- The Authority will contribute to the District's actual costs of administration for implementation of the necessary emissions reductions for the Palmdale to Burbank Project Section, and the District will seek and implement the necessary emission-

reduction measures, using Authority funds.

- The District will serve in the role of administrator of the emission reduction projects and verifier of the successful mitigation effort; respective Authority and District responsibilities in that effort, and related emission quantification/verification needs, will be defined in a contractual agreement.
- The commitments in this letter are independent of any requirements related to any future District facility-based mobile source measure regulating freight rail yards or other, similar non-zero emission rail operations.
- The contractual agreement developed pursuant to this letter will be limited to the HSR System's Palmdale to Burbank Project Section General Conformity Determination.

Thank you for your continuing partnership with the Authority to advance the California HSR System.

Governing Board Chair
[Name], [Title]
South Coast Air Quality Management District

Date: 5/3/2024

Brian P. Kelly, CEO
[Name], [Title]
California High-Speed Rail Authority

Date: 5/1/2024

APPENDIX B: U.S. FISH AND WILDLIFE SERVICE BIOLOGICAL OPINION, JUNE 25, 2024

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United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
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In Reply Refer to:
2023-0014690-S7-F-LA

June 25, 2024
Sent Electronically

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Subject: Biological Opinion for the California High Speed Rail Palmdale to Burbank Section, Los Angeles County, California

Dear Stefan Galvez-Abadia, Dr. Aaron Allen, Roman Torres, Paul Rodriquez, and Diana Wood:

This document was prepared in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*) in response to correspondence from the California High Speed Rail Authority (Authority or CHSRA) dated November 17, 2023,

requesting consultation for the California High Speed Rail Palmdale to Burbank Section and its potential effects on the federally threatened coastal California gnatcatcher (*Polioptila californica californica*; gnatcatcher), the federally endangered least Bell's vireo (*Vireo bellii pusillus*; vireo), southwestern willow flycatcher (*Empidonax traillii extimus*; flycatcher), slender-horned spineflower (*Dodecahema leptoceras*), and arroyo toad {a. southwestern t. [*Anaxyrus californicus* (*Bufo microscaphus c.*)]; arroyo toad} and its designated critical habitat. The project is receiving Federal funding through the Federal Railroad Administration (FRA). The Authority has assumed the Federal Railroad Administration's (FRA) responsibilities under the Act for this consultation in accordance with Section 1313, Surface Transportation Project Delivery Program, of the Moving Ahead for Progress in the 21st Century Act (MAP-21) of 2012, as described in the National Environmental Policy Act (NEPA) assignment Memorandum of Understanding between FRA and the State of California (effective July 23, 2019) and codified in 23 U.S.C. 327. This biological opinion is also provided to the U.S. Army Corps of Engineers (Corps) to address their proposed issuance of a permission decision under section 404 of the Clean Water Act (CWA) and section 408 of the Rivers and Harbors Act of 1899, the Angeles National Forest of the U.S. Forest Service (USFS or Forest) and the Bureau of Land Management (BLM) because the project crosses Forest and BLM lands, and the Surface Transportation Board (STB) because they will be overseeing the project once it has been constructed. The Authority is the designated lead Federal agency for consultation under section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq*.). We initiated consultation on November 17, 2023, the day we received the Authority's request for consultation. Additional information was provided by the Authority on December 14, 2023.

Based on conservation measures committed to by the Authority, we concur with your determination that the proposed project is not likely to adversely affect the federally endangered Braunton's milk-vetch (*Astragalus brauntonii*), Nevin's barberry (*Berberis nevinii*), spreading navarretia (*Navarretia fossalis*), California Orcutt grass (*Orcuttia californica*), unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), mountain yellow-legged frog (*Rana muscosa*), California condor (*Gymnogyps californianus*), and the federally threatened vernal pool fairy shrimp (*Branchinecta lynchi*), California red-legged frog (*Rana draytonii*), desert tortoise (*Gopherus agassizii*), and yellow-billed cuckoo (*Coccyzus americanus*), and the proposed endangered Coastal-Southern California distinct population segment of the California spotted owl (*Strix occidentalis occidentalis*) (Appendix A). Therefore, these species are not addressed by this biological opinion.

This biological opinion is based on information provided in: (1) *California High-Speed Rail Authority Palmdale to Burbank Project Section Biological Assessment* (BA; CHSRA 2023); (2) your November 17, 2023, correspondence requesting initiation of consultation; and (3) other sources of information including survey reports and email correspondence. A complete project file of this consultation is maintained at the Carlsbad Fish and Wildlife Office (CFWO).

CONSULTATION HISTORY

Early coordination between the Authority and the Service occurred on the project. The following chronology reflects a summary of significant events:

2015–2023	A series of monthly coordination meetings was held between the Authority, the Service, and other regulatory agencies. A broad range of topics was discussed, including the project's purpose and need, selection criteria, range of alternatives, habitat modeling, project operation and maintenance, groundwater impacts from tunneling, avoidance of Una Lake, and wildlife corridors.
2015–2016	A working group was established to discuss species habitat models and a series of meetings was held between the Authority, the Service, the USFS, and the California Department of Fish and Wildlife (CDFW).
January 25, 2017	A field meeting was held between the Authority, the Service, the CDFW, and the Corps at the location where the project will cross the Santa Clara River.
September 24, 2018	The Authority presented an overview of the State's preferred alternative (Refined SR14 Build Alternative) to the Service and other regulatory agencies.
January 19, 2021	The Authority provided the Service with an administrative Draft Environmental Impact Report / Environmental Impact Statement (DEIR/EIS) for the project for review and comment.
February 26, 2021	The Service provided comments on the administrative DEIR/EIS.
June 30, 2021	The Authority provided the Service with a draft Biological Assessment for the project for review and comment.
September 17, 2021	The Service provided comments on the draft Biological Assessment.
September 2, 2022	The Authority circulated the DEIR/EIS for the project for public comments.
December 1, 2022	The Department of the Interior, including the Service, sent comments on the DEIR/EIS for the project.
February 16, 2023	The Authority obtained a list of federally threatened and endangered species and their critical habitats expected to be present in or near the proposed action area from the Service's Information, Planning, and Conservation System (IPaC).

June 1, 2023	The Authority sent a revised Biological Assessment and request to initiate formal consultation under section 7 of the Act to the Service.
June 30, 2023	The Service sent a response letter declining the request to initiate section 7 consultation due to insufficient information, including a lack of information about anticipated impacts to slender-horned spineflower, discrepancies in effects determinations for federally listed species, and lack of clarity about proposed conservation measures.
August 1, 2023	The Authority and the Service met to discuss the concerns raised in the Services response letter.
August 9, 2023	The Authority and the Service met to discuss slender-horned spineflower.
August 22, 2023	The Authority and the Service met to discuss coastal California gnatcatcher.
September 1, 2023	The Authority and the Service met to discuss coastal California gnatcatcher mitigation opportunities.
September 22, 2023	The Authority sent a revised Biological Assessment and request to initiate formal consultation under section 7 of the Act to the Service.
September 29, 2023	The Authority withdrew the request to initiate formal consultation under section 7 of the Act to make further revisions to the Biological Assessment.
November 17, 2023	The Authority sent a revised Biological Assessment and request to initiate formal consultation under section 7 of the Act to the Service.
May 29, 2024	The Service provided a draft biological opinion to the Authority, Corps, BLM, USFS, and STB for review.
May 31–June 6, 2024	The Authority, Corps, BLM, and STB provided minor comments on the draft biological opinion, which are addressed in this biological opinion.
June 17, 2024	The USFS responded to the draft biological opinion, noting that the USFS anticipates working with the Authority and Service consistent with conservation measure "CM-GEN-25: Implement the Water Resources Adaptive Management and Monitoring Plan" to develop an adaptive management and monitoring plan prior to project implementation. This plan will be implemented to validate the determinations in this biological opinion regarding potential effects to listed species and their critical habitats.
June 18, 2024	The Service provided a second draft biological opinion to the Authority.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The project includes construction, operation, and maintenance of the approximately 38-mile Palmdale to Burbank section of the proposed 800-mile California high speed rail (HSR) system, with electric propulsion and steel-wheel-on-steel-rail trains capable of operating speeds up to 220 miles per hour on a dedicated system of fully grade-separated, access-controlled steel tracks.

While the Final Environmental Impact Statement for the project included several alternatives, section 7 consultation has been requested for the construction, operation, and maintenance of the SR14A Build Alternative with Adit 3 and Intermediate Window 1 (Figure 1), which includes the following design features and elements (Figures 2-6):

1. Six profile types: at-grade, at-grade covered, cut and cover, retained cut/trench, tunnel, and elevated/aerial structure.

2. Grade-separated crossings with roads, railroads, and other transportation facilities.

3. Equipment storage areas, temporary and permanent access roads, train signaling and communication facilities, intrusion protection barriers (to prevent derailed trains or errant vehicles from adjacent transportation facilities from entering the HSR corridor), and wildlife crossing structures.

4. Utility relocations, roadway relocations, electrical power connections, and construction staging areas.

5. An adit (intermediate tunnel access shaft intended to facilitate construction of bored tunnels) and an intermediate window (vertical shaft connecting to an underground construction area that would include an elevator and gantry cranes to provide access to water, power, ventilation, and other support during construction).

6. A station site in Burbank, including passenger boarding/alighting platforms; station head house with ticketing, waiting areas, passenger amenities, vertical circulation (e.g., ramps, stairs, escalators), administration and employee areas, and baggage and freight-handling service; vehicle parking (short-term and long-term); pick-up and drop-off areas; motorcycle/scooter parking; bicycle parking; waiting areas and queuing space for taxis and shuttle buses; and pedestrian walkway connections.

7. Traction power substations (to transform high-voltage electricity supplied by public utilities to the voltage necessary for operating the train) generally 220 by 160 feet in size, approximately every 30 miles, with two along the Palmdale to Burbank project section.

8. Switching stations (to connect and balance the electrical load between tracks and switch power on or off tracks in the event of a power outage or emergency) generally

120 feet by 80 feet in size, located in between traction power substations, with one proposed along the Palmdale to Burbank project section.

9. Paralleling stations (to provide voltage stabilization and equalize electric current flow) generally 120 feet by 80 feet in size, located every 5 miles, with nine proposed along the Palmdale to Burbank project section.

10. An overhead contact system for distributing power to trains that will consist of a series of mast poles every 70 to 200 feet, approximately 23.5 feet higher than the top of the rail.

11. Communication towers and ancillary facilities for positive train control (a safety system designed to automatically implement safety protocols and provide communication with other trains to reduce the risk of a potential collision) generally 20 by 15 feet in size at traction power substations, or 25 by 40 feet standing alone, located every 2 to 3 miles.

The Authority was unable to obtain permission to enter all properties within the action area and, therefore, could not conduct habitat assessments and biological surveys along much of the proposed alignment. Instead, species habitat suitability modeling was conducted, and modeled habitat for listed species was used to quantify the impacts of the project and identify potential mitigation opportunities in the region. Impacts of the Palmdale to Burbank Section of the California High Speed Rail Project to modeled habitat for listed species, and mitigation to offset these impacts, are quantified below in Table 1. Project impacts to designated critical habitat for the arroyo toad are quantified below in Table 2. Impacts to modeled habitat for the gnatcatcher, vireo, flycatcher, slender-horned spineflower, and arroyo toad are shown in Figures 7-11. Impacts to arroyo toad critical habitat are shown in Figure 12.

Conservation Measures

The Authority has agreed to implement avoidance and minimization measures in association with the project (Appendix C). We consider the measures in this Appendix to be part of the action, and our analysis assumes they will be implemented.

Action Area

Regulations implementing the Act (50 CFR § 402.02) describe the action area as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. Subsequent analyses of the environmental baseline, effects of the action, and levels of incidental take are based upon the action area. For this project, we have defined the action area to be the project footprint and surrounding habitat that may be exposed to project-related effects such as increased noise, light, dust levels and human activity during project construction, including a 100-foot buffer for plant species, a 250-foot buffer for vernal pool species, and a 1,000-foot buffer for wildlife species (Figure 13).

Table 1. Impacts to Modeled Habitat and Mitigation.[1]

Modeled Habitat	Permanent Impacts (acres)	Mitigation for Permanent Impacts (acres)	Temporary Impacts (acres)	Mitigation for Temporary Impacts (acres)[2]	Total Impacts (acres)	Total Mitigation (acres)
Coastal California Gnatcatcher Primary Habitat	222.1	444.2	16.4	32.8	238.5	477
Coastal California Gnatcatcher Secondary Habitat	200	200	0	0	200	200
Coastal California Gnatcatcher Total	**422.1**	**644.2**	**16.4**	**32.8**	**438.4**	**677[3]**
Least Bell's Vireo Core Breeding Habitat and Breeding Habitat	0	0	3	3	3	3
Least Bell's Vireo Recolonization Breeding Habitat	6.0	18	0	0		18
Least Bell's Vireo Total	**6**	**18**	**3**	**3**	**9**	**21**
Southwestern Willow Flycatcher Potentially Suitable Habitat / Total	**6**	**12**	**3**	**3**	**9**	**15**
Arroyo Toad Breeding Habitat	5.0	10	0	0	5	10
Arroyo Toad Upland / Aestivation Habitat	40.0	80	22.0	22.0	62	102

Modeled Habitat	Permanent Impacts (acres)	Mitigation for Permanent Impacts (acres)	Temporary Impacts (acres)	Mitigation for Temporary Impacts (acres)[2]	Total Impacts (acres)	Total Mitigation (acres)
Arroyo Toad Permeable Movement Area	16.5	0	12.5	12.5	29	12.5
Arroyo Toad Total	**61.5**	**90**	**34.5**	**34.5**	**96**	**124.5**
Slender-Horned Spineflower Core Suitable Habitat	31.5	63	13.7	27.4	45.2	90.4
Slender-Horned Spineflower Potentially Suitable Habitat	104	104	1.3	1.3	105.3	105.3
Slender-Horned Spineflower Total	**135.5**	**167**	**15**	**28.7**	**150.5**	**195.7[4]**

[1] Definitions of modeled habitat categories are included in Appendix B of this biological opinion.
[2] Mitigation for temporary impacts will include on-site restoration.
[3] 677 acres of gnatcatcher mitigation is proposed. Of this total, 503.3 acres will be conserved in advance of project impacts in accordance with CM-CAGN-03, and the remainder will be conserved prior to the completion of construction.
[4] 195.7 acres of slender-horned spineflower mitigation is proposed. Of this total, 143 acres will be conserved in advance of project impacts in accordance with CM-PLT-03, and the remainder will be conserved prior to the completion of construction.

Table 2. Impacts to Arroyo Toad Critical Habitat

	Permanent (acres)	Temporary (acres)	Mitigation (acres)[2]
With PBFs[1]	2.4	0	4.8
Lacking PBFs	0	0	0
Total	**2.4**	**0**	**4.8**

[1] The designation of critical habitat (CH) for the arroyo toad uses the term "primary constituent element" (PCE) to refer to the physical and biological features within critical habitat that are essential to the conservation of the species. The new critical habitat regulations (81 FR 7214) replace this term with physical or biological features (PBFs). The shift in terminology does not change the approach used in conducting this effects analysis, which is the same regardless of whether the original designation identified PCE, PBF, or essential features. In this consultation, we use the term PBF to mean PCE.
[2] Of the 124.5 acres of mitigation proposed for arroyo toad in Table 1, 4.8 acres will be located within critical habitat.

In addition, the action proposes offsite mitigation. While this consultation includes an analysis of impacts resulting from restoration of temporary impact areas and incorporates measures to avoid and minimize impacts to listed species from restoration work, and we do not have site-specific information for offsite mitigation at this time. A mitigation plan will be prepared and provided to the CFWO for review and approval prior to initiation of vegetation removal for the project. This plan will include site-specific information on listed species and critical habitats and will incorporate the avoidance and minimization measures used for restoration of temporary impact areas for the project as appropriate. However, if offsite mitigation will result in impacts to listed species and/or critical habitats that are not adequately addressed by incorporation of these project measures, the Authority will reinitiate section 7 consultation to address unanticipated impacts to listed species and critical habitats.

ANALYTICAL FRAMEWORK FOR THE SECTION 7(A)(2) DETERMINATIONS

Jeopardy Determination

Section 7(a)(2) of the Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which describes the range-wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the Effects of the Action, which are all consequences to listed species caused by the proposed action that are reasonably certain to occur; and (4) the Cumulative Effects, which evaluate the effects of future, non-Federal activities in the action area on the species.

For the section 7(a)(2) determination regarding jeopardizing the continued existence of the species, the Service begins by evaluating the effects of the proposed Federal action and the cumulative effects. The Service then examines those effects against the current status of the species to determine if implementation of the proposed action is likely to reduce appreciably the likelihood of both the survival and recovery of the species in the wild.

STATUS OF THE SPECIES / CRITICAL HABITAT

Coastal California Gnatcatcher

The gnatcatcher occurs in coastal sage scrub and associated habitats from southern Ventura County to Baja California, Mexico. In 1993, the Service estimated that about 2,562 gnatcatcher pairs remained in the United States, with the highest densities occurring in Orange and San Diego counties (Service 1993). In a recent study using more rigorous sampling techniques, Winchell

and Doherty (2008) estimated there were 1,324 (95 percent confidence interval: 976–1,673) gnatcatcher pairs over a 111,006-acre area on public and quasi-public lands in Orange and San Diego counties. Their sampling frame covered only a portion of the U.S. range, focusing on the coast, and was limited to 1 year. Although it is not valid to extrapolate beyond the sampling frame, especially in light of known differences in population densities across the range of the gnatcatcher (Atwood 1992), it is likely there are more gnatcatchers in the U.S. portion of the range than was suggested by earlier estimates; Winchell and Doherty (2008) estimated nearly as many gnatcatchers in the portion of the U.S. range sampled in their study as was originally estimated for the entire U.S. range. We are not aware of any recent estimates of gnatcatcher populations in Baja California.

Although declines in numbers and distribution of the gnatcatcher have resulted from numerous factors, the current significant threats to the gnatcatcher include habitat fragmentation and degradation, which can lead to type conversion (Service 2020). Several stressors, including livestock grazing, anthropogenic atmospheric pollutants, and wildland fire, can lead to type conversion of gnatcatcher habitat. As regional Habitat Conservation Plans (HCPs) permitted under section 10(a)(1)(B) of the Act and under the State of California's Natural Community Conservation Planning (NCCP) Act are implemented over time, an increasing amount of habitat will receive beneficial management that will address these threats. Although implementation of NCCP/HCPs is in the process of reducing the threats identified above, habitat type conversion continues to be a threat. Therefore, the gnatcatcher continues to meet the definition of threatened, and no change in listing status was made following our 5-year review (Service 2020).

For more detailed information on gnatcatcher biology, ecology, rangewide status, threats, and conservation needs, please refer to the 5 year review for the species (Service 2020).

Least Bell's Vireo

Vireos breed and forage in low-elevation riparian woodland and shrub habitat dominated by willows (Service 2006) and tend to return to the same breeding territories annually (Rourke and Kus 2007). Most of the vireo breeding sites are in southern California between the Tehachapi Mountains in Kern and Ventura counties south to northwestern Baja California, Mexico (Service 2006). A review of the status of the vireo in 2006 determined that management actions implemented since the original listing have led to a 10-fold increase in the vireo population since its listing in 1986, from 291 to 2,968 known territories (Service 2006). Based on its improved status, the Service recommended that the vireo be downlisted from endangered to threatened status (Service 2006). More recent surveys conducted in 2016 came up with a similar estimate of 2,884 vireo territories (Kus *et al*. 2017).

In addition to the threats identified at the time of listing, a disease complex involving two species of ambrosia beetles, the polyphagous shot hole borer (*Euwallacea* sp. 1) and Kurushio shot hole borer (*Euwallacea* sp. 5), a mix of associated fungi (Lynch *et al*. 2016), and other pathogens is causing damage to trees in riparian ecosystems throughout southern California (Eskalen *et al*. 2013). Significant mortality of mature trees related to this threat may alter vireo prey availability, increase exposure to predation (especially for vireo nests), and affect hydrogeomorphic processes

(e.g., flooding, alluvial deposition) important for maintaining healthy riparian woodlands that vireos use for feeding, sheltering, and breeding. It is not clear whether the effects of shot hole borer infestations will result in long-term impacts to least Bell's vireo habitat. For example, there has been riparian vegetation regrowth in the affected portions of the Tijuana River, and while the regrown trees have not been reinfested by shot hole borers, there is concern that they may in the future (Boland and Uyeda 2020).

Within the 14 Population/Metapopulation Units designated in the draft recovery plan, the following areas have the greatest number of vireos in order of number: Camp Pendleton/Santa Margarita River (827 territories), Santa Ana River (813 territories), and the San Luis Rey River (233 territories) (Service 2006). The primary goals of the draft recovery plan are to: (1) maintain stable or increasing vireo metapopulations, each consisting of several hundred or more breeding pairs; (2) protect and manage riparian and adjacent upland habitats within the historic range of the vireo; (3) control non-native plant species; (4) control brown-headed cowbird (*Molothrus ater*; cowbird) parasitism; and (5) conduct habitat restoration.

For more detailed information on vireo biology, ecology, rangewide status, threats, and conservation needs, please refer to the draft recovery plan for the vireo (Service 1998) and the 5-year review for the species (Service 2006).

Southwestern Willow Flycatcher

The breeding range of the flycatcher includes most of the southwestern United States (Unitt 1987; Browning 1993) with data from 1993 to 2005 indicating that flycatcher breeding territories ranged from Arizona (40.8 percent) to New Mexico (32.4 percent), California (15.7 percent), Nevada (5.6 percent), Colorado (5.2 percent), and Utah (0.3 percent) (Durst *et al*. 2006). Past records of breeding in Mexico are few and confined to extreme northern Baja California and Sonora (Howell and Webb 1995). Flycatchers winter in Mexico, Central America, and northern South America (Howell and Webb 1995).

Although the breeding range extends through six states, Kus and Sogge (2003) noted that southwestern willow flycatchers have declined to the point of near extinction as urbanization and burgeoning human populations have resulted in widespread loss and degradation of riparian habitat. Flycatchers have been dramatically reduced in number along the lower Colorado River, which historically probably supported one of the largest flycatcher populations in the Southwest (Unitt 1987). Durst *et al*. (2006) reported 1,214 territories located among 275 sites rangewide within the United States using data from 1993 to 2005.

Over the range of the species, most (83 percent) of the breeding sites are small, both in terms of population size (five or fewer territories) and habitat patch size (Durst *et al*. 2006). Only 17 percent of the sites rangewide have more than five territories. Seven of these sites (populations) consist of 20 or more territories, and only two sites have 50 or more territories. The primary flycatcher drainages in California are the San Luis Rey River (58 territories), the Santa Ana River (34 territories), the Owen's River (28 territories), the Santa Margarita River (21 territories), and the Kern River (20 territories) (Durst *et al*. 2006).

The rangewide population of flycatcher has not experienced the significant increase in numbers since its listing that the vireo population has experienced. This may be a byproduct of the flycatchers need for mature vegetation (greater than 8 years old), their need for nearby open water, the reduced benefit that cowbird trapping provides the flycatcher, and/or an unknown stressor in the flycatcher's overwintering habitat.

For more detailed information on flycatcher biology, ecology, rangewide status, threats, and conservation needs, please refer to the recovery plan for the flycatcher (Service 2002) and the 5-year review for the species (Service 2017a).

Arroyo Toad and Its Designated Critical Habitat

An estimated 23 populations of arroyo toad are known in the United States, from Monterey County south to Baja California, Mexico (Service 2009a). These populations persist primarily as small, isolated populations in the headwaters of streams. The current distribution of the arroyo toad in the United States is from the Salinas River Basin in Monterey County, south to the Tijuana River and Cottonwood Creek Basin along the Mexican Border. Arroyo toads are also known from a seemingly disjunct population in the Arroyo San Simeon River System, about 10 miles (mi) southeast of San Quintín, Baja California, Mexico (Gergus *et al*. 1997). Although the arroyo toad occurs principally along coastal drainages, it also has been recorded at several locations on the desert slopes of the Transverse range (Patten and Myers 1992; Jennings and Hayes 1994).

Arroyo toads typically breed from February to July on streams with persistent water (Griffin *et al*. 1999). Eggs hatch in 4 to 5 days, and the larvae are essentially immobile for an additional 5 to 6 days. Larvae then begin to disperse from the pool margin into the surrounding shallow water, where they spend an average of 10 weeks. After metamorphosis (June–July), the juvenile toads remain on the bordering gravel bars until the pool no longer persists (usually from 8 to 12 weeks depending on site and yearly conditions; Sweet 1992).

During the non-breeding season, arroyo toads seek shelter during the day, and other periods of inactivity, by burrowing into the sandy areas of upland terraces. They also use the marginal zones between stream channels and upland terraces for burrowing, especially during late fall and winter (Sweet 1992). Upland habitats frequently used include, but are not limited to, chaparral, native and non-native grasslands, and oak woodlands (Service 1999). Disturbed areas with friable (loose) soils may also be used for aestivation/foraging. At night, arroyo toads forage in the habitat surrounding a watercourse for native ants and beetles (Service 1999). Juveniles and adult toads may range up to 1.2 miles from the watercourse into the surrounding uplands (Service 1999). In addition, arroyo toads have been observed to move 0.7–0.8 mile in a stream course within a season (Service 2005a).

Threats to arroyo toad populations at the time of listing included stream alteration, urban and rural development, mining, recreation, grazing, drought, wildfire, large flood events, and presence of exotic animal and plant species (Service 1994). Threats to the arroyo toad identified after the listing are the amphibian chytrid fungus (*Batrachochytrium dendrobatidis*) and wildfire

suppression activities (Service 2009a). Conservation needs, as described in the arroyo toad recovery plan, include protecting and managing breeding and non-breeding habitat throughout the range of the species, monitoring existing populations to ensure recovery actions such as removal of exotic species are successful, identifying additional arroyo toad habitat and populations, obtaining research data to guide management efforts, and conducting outreach and public education regarding the arroyo toad.

For more detailed information on arroyo toad biology, ecology, rangewide status, threats, and conservation needs, please refer to the species' recovery plan (Service 1999) at and the most recent 5-year review for this species (Service 2023).

Final critical habitat for the arroyo toad was designated on February 9, 2011 (Service 2011). The critical habitat encompasses approximately 98,366 acres of lands located in Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, Orange, and San Diego counties, California (Service 2011). Twenty-one critical habitat units have been designated for the arroyo toad. The project is located within designated arroyo toad critical habitat Unit 6, and Subunit 6c. This unit is in Los Angeles County and includes 2,802 acres including 443 acres of Federal land and 2,359 acres of private land. Subunit 6c encompasses approximately 11 miles of the upper Santa Clara River from Arrastre Canyon downstream to the confluence with Bee Canyon Creek. This subunit is important for maintaining the arroyo toad metapopulation in the upper Santa Clara River Basin. The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from urban development, agriculture, recreation, mining, and nonnative predators (Service 2011).

Physical and biological features (PBFs) of arroyo toad critical habitat include rivers or streams with hydrologic regimes that supply water to provide space, food, and cover needed to sustain eggs, tadpoles, metamorphosing juveniles, and adult breeding arroyo toads; riparian habitats for breeding and rearing of tadpoles and juveniles and adjacent uplands including areas of loose soil where arroyo toads can burrow underground that provide foraging and living areas for juvenile and adult arroyo toads; a natural flooding regime; and stream channels and adjacent upland habitats that allow for movement to breeding pools, foraging areas, overwintering sites, upstream and downstream dispersal, and connectivity to areas that contain suitable habitat (Service 2011).

Slender-horned Spineflower

Slender-horned spineflower is an annual plant in the buckwheat family (*Polygonaceae*). This species is small, cryptic, and low spreading, with a basal rosette of leaves 1 to 4 inches in diameter (Hickman 1993). Flowers are white with a pinkish-red midvein and are produced in clusters within an involucre (whorl of bracts). The involucres of slender-horned spineflower have six ascending and six descending awns; a characteristic that separates them from closely related taxa (Reveal and Hardham 1989).

Slender-horned spineflower is generally associated with alluvial benches and floodplain terraces in washes and lower slopes of mountains below 2,300 feet in elevation, in chaparral and alluvial scrub vegetation. Alluvial scrub is characterized by an open vegetation community of drought-

deciduous and evergreen shrubs on porous, infertile soils subject to periodic intense flooding and erosion. The species inhabits openings in intermediate and mature Riversidean alluvial fan sage scrub, where disturbance from flooding is less frequent. The species relies upon adequate alluvial scrub habitat and active fluvial processes. Prigge *et al*. (1993) found that the ideal habitat appears to be a terrace or bench that receives overbank deposits every 50 to 100 years.

At most sites, slender-horned spineflower is found in sandy soil in association with mature alluvial scrub (Reveal and Hardham 1989a; Rey-Vizgirdas 1994). Cryptogamic crusts are frequently present in areas occupied by slender-horned spineflower (Boyd and Banks 1995). These crusts on the soil surface are composed of associations of bryophytes (mosses), algae, lichens, and some xerophytic liverworts (Harper and Marble 1988). Cryptogamic crusts enable soils to retain moisture and may help suppress invasion by non-native plant species (Boyd and Banks 1995).

Perennial vegetative cover is low (less than 50 percent) in areas supporting slender-horned spineflower (Service 1987), although vegetative cover of annuals and cryptogamic crusts can be 100 percent (Ferguson 1999). The species occurs in open areas within a plant community characterized by old California juniper (*Juniperus californicus*), Yerba Santa (*Eriodictyon californicum*), mountain mahogany (*Cercocarpus betuloides*), yucca (*Yucca Brevifolia*), and other low-statured annuals such as sun-cups (*Camissonia* sp.), goldfields (*Lasthenia* sp.), branched woolly sunflower (*Eriophyllum multicaule*), and plantains (*Plantago* sp.) (Service 1987; Ferguson 1999).

Slender-horned spineflower is a spring annual that typically germinates in late February or early March in response to winter rains (Ferguson 1999). Plants begin flowering in late spring and continue into early summer until heat and drought induce senescence. The number of plants germinating and surviving to reproduction varies considerably from year to year depending on the amount and timing of rainfall.

This species is endemic to southwestern cismontane California, ranging from central Los Angeles County east to San Bernardino County, and south to southwestern Riverside County in the foothills of the Transverse and Peninsular Ranges, at approximately 650 to 2,300 feet in elevation (Hickman 1993). Historically, slender-horned spineflower was reported to occur in many of the alluvial systems on the coastal side of the transverse range in Los Angeles and San Bernardino counties, and at the base of the interior slopes of the Agua Tibia mountains in Riverside County (Service 1987). Many of these alluvial fans coalesced into extensive bajada to form a nearly continuous skirt along these mountains.

There are 28 extant or presumed extant slender-horned spineflower populations, including three in Los Angeles County, 15 in Riverside County, and 10 in San Bernardino County (Service 2022). Of these, only 15 populations have been observed in the past 10 years, including 1 population in Los Angeles County [Bee Canyon, CNDDB Element Occurrence (EO) 27], 8 populations in Riverside County (EOs 1, 16, 21, 23, 24, 44, 45, and 46), and 6 populations in San Bernardino County (EOs 2, 22, 30, 32, 39, and a population with no CNDDB record at Greenspot Road).

Threats to slender-horned spineflower include development, sand and gravel mining, altered hydrology, off-highway vehicle activity, nonnative invasive plants, trash dumping, camping and associated activities, small population size, and climate change (Service 2022). The primary conservation needs for the species include the preservation of alluvial scrub habitats and the associated watershed and floodplain areas needed to maintain active fluvial processes, with active management to prevent trampling and degradation of cryptogamic crusts and invasion by nonnative grasses.

For more detailed information on slender-horned spineflower biology, ecology, rangewide status, threats, and conservation needs, please refer to the 5-year review for the species (Service 2022).

ENVIRONMENTAL BASELINE

The regulations implementing the Act (50 CFR § 402.02) define the environmental baseline as the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR § 402.02).

Site Characteristics and Surrounding Land Uses

At the north end, the project alignment begins in Antelope Valley, on the western edge of the Mojave Desert, near the southern city limits of the city of Palmdale. The alignment passes east of Una Lake and south across the San Andreas Fault and Governor Edmund G. Brown East Branch California Aqueduct. Then it continues southwest into the San Gabriel Mountains. The alignment crosses the Santa Clara River, tunnels under the Angeles National Forest, and follows Pacoima Wash south. The alignment crosses Tujunga Wash in the vicinity of the Hansen Spreading Grounds and ends at the Hollywood Burbank Airport (Figure 1).

The action area passes through diverse terrain, including relatively flat high desert habitats in the north, mountainous areas in the center of the project alignment, and flat urban landscapes in the south. Habitat types in the vicinity of the project include desert scrub, Joshua tree (*Yucca brevifolia*), and juniper (*Juniperus californica*) woodland at the northern base of the San Gabriel Mountains, chamise-redshank chaparral (*Adenostoma fasciculatum* and *Adenostoma sparsifolium*, respectively), mixed chaparral, juniper (*Juniperus californica*), sage scrub, riparian and coast live oak (*Quercus agrifolia*) woodlands, as well as disturbed and urban areas.

Status of Listed Species and Critical Habitat Within the Action Area

Coastal California gnatcatcher

Gnatcatcher surveys were not conducted for the project, but there are records for gnatcatchers within the action area from 2008 and 2012. Gnatcatchers were observed in coastal sage scrub and alluvial scrub habitats in the vicinity of Bee Canyon north of the Santa Clara River. In 2008, a pair with a juvenile were observed on the slopes east of Bee Canyon approximately 0.6 mile north of the Santa Clara River (Environmental Intelligence, LLC 2008). In 2012, two gnatcatcher pairs and an unpaired female were observed. Both pairs were located on the slopes east of Bee Canyon, approximately 0.5 mile and 0.75 mile north of the Santa Clara River, and the northern pair was observed with 4 fledglings. The unpaired female was observed on the slopes west of Bee Canyon approximately 0.9 mile north of the Santa Clara River (Compliance Biology 2008). Assuming the unpaired female represents a potential pair/territory, up to three gnatcatcher pairs may occur in the action area.

Least Bell's vireo

Vireo surveys were not conducted for the project, but vireos have been detected in and adjacent to the action area in the vicinity of Una Lake, Pacoima Wash, and the Santa Clara River. The California Natural Diversity Database (CNDDB) includes a record from 2005 at Una Lake, just west of the project alignment. There are 16 records for vireos (with up to 4 territories in a breeding season) between 2004 and 2016 in Pacoima Wash in the vicinity of the Lopez Reservoir and Dam, east of a tunneled portion of the project alignment and about 2,500 feet southwest of a project staging area (PCR Services Corporation 2004; BonTerra Consulting 2005, 2009, 2010, 2011, 2013; BonTerra Psomas 2015, 2016). Finally, a vireo was heard singing in 2023 just east of the project alignment where it crosses the Santa Clara River (Dellith 2023, pers. comm.).

Southwestern willow flycatcher

Flycatcher surveys were not conducted for the project, but the CNDDB includes a flycatcher record from 1997 in the Santa Clara River approximately 2.9 miles east of the project alignment. There is also a record from 2009 at Hansen Flood Control Basin, approximately 1.25 miles northeast of the project alignment (BonTerra Consulting 2009).

Arroyo toad and its designated critical habitat

Arroyo toad surveys were not conducted for the project, but the CNDDB includes an arroyo toad record from 2001 in the Santa Clara River approximately 0.75 mile east of the project alignment. Approximately 2.4 acres of critical habitat for the arroyo toad occurs within the permanent impact area for the project.

Slender-horned spineflower

A single day survey was conducted for the project in alluvial scrub habitat in the lower part of Bee Canyon in 2023 with negative results (Rincon Consultants, Inc. 2023). Detectability of this

annual species varies considerably from year to year as the number of individuals that germinate depends on the amount and timing of rainfall. The surveyors did not detect the species at their reference population despite a thorough search, and the survey report states that abnormal rainfall patterns and extreme temperature fluctuations may have affected the blooming period, making observation challenging (Rincon Consultants, Inc. 2023). There is a CNDDB record for slender-horned spineflower within 20 feet of the project footprint in Bee Canyon from 2017. Suitable alluvial scrub habitat also occurs within the project footprint in Pacoima Wash where there is a CNDDB record from 1925, approximately 2 miles to the south, and no recent surveys have been conducted.

EFFECTS OF THE ACTION

Regulations implementing the Act (50 CFR § 402.02) define the effects of the action as all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR § 402.17).

The regulations for section 7(a)(2) note that "a conclusion of reasonably certain to occur must be based on clear and substantial information, using the best scientific and commercial data available" [50 CFR § 402.17(a)]. When considering whether activities caused by the proposed action (but not part of the proposed action) or activities reviewed under cumulative effects are reasonably certain to occur, we consider factors such as (1) past experiences with activities that have resulted from actions that are similar in scope, nature, and magnitude to the proposed action; (2) existing plans for the activity; and (3) any remaining economic, administrative, and legal requirements necessary for the activity to go forward.

Invasive Species

The project could result in an increase in the introduction of invasive plant species into native habitats adjacent to the facility. Invasive species are now recognized as a threat to biodiversity in native plant communities, second only to direct habitat loss and fragmentation (Pimm and Gilpin 1989; Scott and Wilcove 1998). Non-native, weedy species often out-compete and exclude native species, potentially altering the structure of the vegetation, degrading or eliminating habitat utilized by listed species, and providing food and cover for undesirable non-native animals (Bossard *et al*. 2000). The project has incorporated measures to prevent the spread of invasive species. These include CM-GEN-03: Prepare and Implement a Weed Control Plan, and CM-GEN-14: Clean Construction Equipment. This is anticipated to minimize the impact of invasive species introduction resulting from the project on listed species habitat to the point where such effects are insignificant.[1]

[1] For the purposes of a section 7 consultation, an insignificant effect is one that is sufficiently small that a person would not be able to meaningfully measure, detect, or evaluate it.

Disruption of Ecosystem Processes Due to Habitat Fragmentation

The project has the potential to substantively increase habitat fragmentation, which can lead to a variety of direct and indirect effects to native species in the vicinity of the proposed project (e.g., Crooks and Soule 1999). The facility will create an east-west barrier to dispersal between the San Gabriel Mountains and portions of the transverse ranges farther west. The project has incorporated measures to address habitat fragmentation. A Wildlife Corridor Assessment Technical Report (Authority 2019) has been prepared to ensure wildlife connectivity is maintained throughout the project area, which will help to maintain ecosystem processes (e.g., by maintaining dispersal opportunities for top predators) for the benefit of listed species. This report includes recommended wildlife crossing spacing intervals of 1.0 mile for large crossings and 0.3 mile for small crossings. In coordination with the Service during section 7 consultation, wildlife crossings were incorporated into the project design in the vicinity of Una Lake, and project elements (e.g., detention basins) were redesigned to minimize impacts to wildlife movement corridors in northern reaches of Bee Canyon. In addition, measures will be implemented to ensure that the project does not result in substantial habitat fragmentation. These include CM-GEN-11: Delineate Equipment Staging Areas and Traffic Routes, CM-GEN-17: Minimize Effects to Wildlife Movement Corridors during Construction, and CM-GEN-18: Establish Wildlife Crossings. Implementation of the Wildlife Corridor Assessment Technical Report and these measures are anticipated to minimize the impact of habitat fragmentation on ecosystem processes affecting listed species to the point where such effects are insignificant. The effects of habitat fragmentation on individual listed species and their habitat are addressed in the species-specific analyses below.

Sedimentation, Dust, Pollution from Project Construction

Project construction may increase fugitive dust, pollution, and siltation in the adjacent habitat as a result of grading, sediment moving, and operation of heavy equipment in proximity to the Santa Clara River, Una Lake, Pacoima Wash, and other drainages. Increased dust, sedimentation, and pollution may temporarily degrade habitats occupied by listed species. The project has incorporated measures to minimize these impacts to listed species habitat. A SWPPP (CM-GEN-05) will be developed to identify best management practices that will be implemented during construction to minimize erosion and dust, prevent sediment and debris from entering drainages, and maintain water quality. To avoid increases in pollution, a spill prevention plan (CM-GEN-06) will be prepared and implemented, and Worker Environmental Awareness Program (WEAP) training will be conducted (CM-GEN-07, CM-GEN-08). With implementation of these measures, we anticipate the effects of construction dust, pollution, and sedimentation on listed species will be minimized to the point where such effects are insignificant.

Increased Access, Human Encroachment

The project may result in increased access during construction and project operations. While the facility will be access controlled, during project construction there will be an influx of human activity in the project area, and project operations will require maintenance, and increased human activity is expected along the proposed maintenance access roads. This increased access could

result in human encroachment into adjacent habitat areas, resulting in trampling and increased wildfire risk. Measures have been incorporated into the project to minimize the impacts of increased access on listed species. These include CM-GEN-07: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training, and CM-GEN-15: Establish Environmentally Sensitive Areas and Non-Disturbance Zones. In addition, much of the project site is adjacent to areas of existing development, such as SR-14 and the Cities of Palmdale and Burbank. With the proposed measures, any increase in habitat degradation associated with these factors is expected to be insignificant.

Light Spill from Construction and Operational Lighting

Some project work will be conducted at night with construction lighting that will affect the adjacent habitat. Light that alters natural light patterns in ecosystems can lead to increased predation, disorientation, and disruption of inter-specific interactions (Longcore and Rich 2004). Light can affect a broad range of plant physiological responses as well, including seed germination, seedling development, induction of flowering, and rapid, membrane-based activities (Hopkins 1995). The project has incorporated measures to minimize the effects of lighting on listed species. These include CM-GEN-21: Implement Avoidance of Nighttime Light Disturbance, CM-GEN-23: Design the Project to be Bird Safe, and CM-Light-01: Minimize Light Disturbance During Operations. With implementation of these measures, we anticipate the effects of project lighting on listed species will be minimized to the point where such effects are insignificant.

Noise and Vibrations from Project Construction and Operation

Noise and vibrations associated with the use of heavy equipment during project construction, and from trains during project operations, have the potential to disrupt avifaunal behaviors in adjacent habitats by masking intraspecific communication and startling birds (e.g., see Dooling and Popper 2007 for a discussion of observed effects of highway noise on birds). A 3 dBA (hourly average) increase in noise has been shown to correspond to a 50 percent reduction in listening area for birds due to masking (Barber *et al*. 2009). In addition, the project will result in periodic high pulses of noise and vibrations from passing trains, which may result in a flushing effect on individual birds. The project has incorporated measures to minimize the effects of noise and vibrations on listed species. These include CM-GEN-26: Minimize Permanent, Intermittent Noise Impacts on Special-Status Bird Habitat, and CM-CAGN-02: Implement Avoidance Measures for Coastal California Gnatcatcher. CM-GEN-26 requires the construction of 14-foot-tall noise barriers in areas with modeled listed species habitat to reduce noise effects from project operations (Figure 13). While these measures are designed to minimize noise impacts to listed species, project operations will result in permanent impacts within a noise effect zone, and those permanent impacts are addressed in the species-specific analyses below.

Wildlife Strikes from High-Speed Rail Operation

Once the high-speed rail is in operation, there is the potential for the train to strike and kill wildlife, including gnatcatcher, vireo, flycatcher, and arroyo toad. However, the project will

include 14-foot-high noise barriers wherever above-ground portions of the track are in proximity to habitat for federally listed bird species. In addition, exclusion fencing will be constructed on either side of at-grade portions of the track to prevent terrestrial wildlife, including arroyo toad, from entering the tracks. With these barriers, the potential for federally listed wildlife to be struck and killed during project operations will be discountable (highly unlikely to occur).

Coastal California Gnatcatcher

The project will permanently affect 222.1 and 200 acres of modeled primary and secondary gnatcatcher habitat, respectively (a total of 422.1 acres, including 16.5 acres of permanent noise impacts). Temporary impacts will occur to 16.4 acres of modeled primary gnatcatcher habitat (Table 1). These impacts are located as shown in Figure 7, with much of the gnatcatcher impact area in the vicinity of Bee Canyon. Surveys have documented up to three gnatcatcher pairs/territories within the action area in the vicinity of Bee Canyon (Compliance Biology 2008). These gnatcatchers will be subjected to the loss of a substantial portion of their use areas.

The project has incorporated conservation measures to avoid and minimize impacts to gnatcatchers. In areas occupied by gnatcatchers, active nests will be avoided with a 500-foot no-work buffer (CM-CAGN-01, CM-CAGN-02). Vegetation removal for the project will be conducted under the supervision of the Designated Biologist between September 1 and February 14, which is outside of the gnatcatcher breeding season, to ensure that gnatcatchers are not directly killed or injured (CM-GEN-01, CM-GEN-02, CM-CAGN-01, CM-CAGN-02). In addition, areas occupied by gnatcatchers outside and adjacent to the construction limits will be designated as Environmentally Sensitive Areas (ESAs) on project maps. ESAs will be marked during construction in a manner that is clearly visible to personnel on foot or operating heavy equipment (CM-GEN-15).

Although habitat removal will be conducted outside the gnatcatcher breeding season, gnatcatchers are non-migratory territorial birds, and removal of a substantial portion of a gnatcatcher pair's breeding territory will force the pair to expand their existing territory or establish a new territory (Preston *et al*. 1998). Because gnatcatchers are distributed throughout much of the suitable habitat in the vicinity of Bee Canyon, it is likely that the gnatcatchers affected by habitat loss within their primary use areas will be forced to compete with resident gnatcatchers when attempting to expand an existing territory or establish a new territory. Because these displaced birds likely will be less able to find suitable habitat to forage and shelter in, we anticipate they will be more vulnerable to predation and otherwise may die or be injured.

Gnatcatchers that successfully establish territories in adjacent habitat are expected to experience reduced productivity (e.g., delayed initiation or prevention of nest building, fewer nesting attempts per season, and/or overall reduction in reproductive output) due to reduced availability of foraging and breeding habitat and increased territorial interactions. In addition, we anticipate that the gnatcatchers will be subject to disturbance from construction activities.

Within the 16.5-acre area of permanent noise impacts, operational noise could result in displacement and reproductive loss for the gnatcatcher pairs. Displaced gnatcatchers may also be subjected to increased predation, death, or injury and may not be able to find sufficient nearby

habitat or may be forced to compete with other gnatcatchers when attempting to expand an existing territory or establish a new territory. Occupancy and reproductive productivity are anticipated to decline within the noise effect zone.

The project will provide 677 acres of mitigation for gnatcatchers. Of this, 503.3 acres will be conserved in advance of project impacts, and at least 50 percent of the advanced mitigation will be occupied. This mitigation will be located primarily in the geographic area of the species' northeastern range. If the required amount of suitable mitigation habitat is not available in the northeastern extent of the species range, additional mitigation lands may be conserved along the Santa Clara River west of I-5 (CM-CAGN-03). A mitigation plan will be prepared and provided to the CFWO for review and approval prior to initiation of vegetation removal for the project (CM-Mit-01). Due to the limited gnatcatcher numbers in the northeastern extent of the species range, once the plan has been approved by the CFWO, a minimum of 503.3 acres of the proposed conservation will be secured, and any off-site restoration work on those lands will commence in advance of project impacts to minimize the temporal loss of gnatcatcher habitat. Because the acreage of conservation relative to restoration of gnatcatcher habitat is not known, it is difficult to anticipate the net effect of the project on the gnatcatcher population rangewide. However, even if the offsite mitigation is limited to conservation and long-term management, the enhancement of existing habitat (e.g., through removal of non-native species) is likely to increase the value of the conserved habitat such that the net effect of the project on the gnatcatcher population rangewide is likely to be neutral. If the offsite mitigation includes significant habitat restoration in addition to conservation and long-term management, the project is likely to have a net positive effect on the gnatcatcher population rangewide.

The project will impact gnatcatchers and their habitat in the vicinity of Santa Clarita. This area represents the northeastern extent of the gnatcatcher's range. The gnatcatcher population in the vicinity of Santa Clarita is patchily distributed relative to other portions of its range, so anticipated impacts to up to three gnatcatcher pairs represents a more biologically meaningful impact than it would in other portions of its range. However, large areas of modeled habitat will remain in the vicinity of Santa Clarita, and the conservation or restoration and management of 677 acres of gnatcatcher habitat, which will be located primarily in the northeastern extent of its range and at least 251.7 acres of which will be occupied by gnatcatchers, will substantially limit future threats to the conserved habitat and/or expand the amount of habitat and number of gnatcatchers that can be supported within this portion of its range. In addition, the impacts will occur along the edge of modeled habitat within the vicinity of Santa Clarita (Figure 7), so it is not anticipated to bisect a large area of suitable habitat. Finally, since the track will be tunneled as it runs the through the Angeles National Forest, impacts to gnatcatcher through the forest (assuming such dispersal occurs) will not be substantially impacted, and dispersal through modeled habitat west of the forest will not be impacted.

In summary, implementation of the proposed project will result in permanent impacts to 438.6 acres of modeled gnatcatcher habitat and is likely to result in a short-term reduction in the number of gnatcatchers supported in the action area (up to three gnatcatcher pairs) due to the direct loss of a portion of their habitat. If they survive the initial habitat loss, they may be subject to breeding season disturbance that could lead to displacement, reproductive loss, increased

predation, death, or injury. The gnatcatcher pairs to be impacted represent less than 0.2 percent of the rangewide estimate of gnatcatcher pairs (roughly 2,562 pairs). With implementation of offsetting mitigation in advance of project impacts and within the northeastern extent of the species range, the project is not anticipated to reduce the number of gnatcatchers that can be supported in the general project area or increase the local risk of gnatcatcher extirpation. Thus, the project is not expected to result in an appreciable reduction in the numbers, reproduction, or distribution of the species rangewide.

Habitat Restoration

The mitigation plan for the project will include restoration of temporary impacts to 16.4 acres of sage scrub habitats suitable for gnatcatcher breeding. It may be 4 to 5 years until restored sage scrub is suitable for occupation by gnatcatchers (O'Connell and Erickson 1998; Miner *et al*. 1998). However, because offsite mitigation located in the vicinity of the project will be implemented in advance of project impacts, we anticipate that gnatcatcher pairs will remain in the surrounding area. Thus, we expect the temporarily impacted habitat will be re-occupied as soon as it is mature enough to support gnatcatcher breeding.

Habitat restoration planting and maintenance is expected to benefit gnatcatchers, but it may also result in disturbance of gnatcatchers that are adjacent to the restoration site, or that move into the site as restoration progresses. However, the project includes conservation measures to minimize disturbance of gnatcatchers during restoration work and to ensure that no nests are destroyed as a result of maintenance activities (CM-Rest-01).

Effect on Recovery

There is no recovery plan for the gnatcatcher, but the project is consistent with the general recovery goals of maintaining core populations of gnatcatchers and maintaining connectivity between these populations. As described above, the permanent loss of 422.1 acres of gnatcatcher habitat and loss of 3 gnatcatcher pairs, though not insignificant, is a relatively small impact in consideration of the thousands of acres of coastal sage and gnatcatcher territories (roughly 2,562 pairs) rangewide. Furthermore, implementation of the mitigation plan in advance of project impacts will ensure that substantial areas of occupied habitat are maintained adjacent to the impact area, and the restoration of temporary impact areas immediately following construction will help maintain and support local gnatcatcher populations in the project area.

The project will result in permanent impacts up to 422.1 acres and temporary impacts up to 16.4 acres of gnatcatcher habitat and result in noise disturbance, displacement, and reproductive loss of up to 3 gnatcatcher pairs; however, conservation measures have been incorporated into the project to minimize these impacts. In addition, the project will provide 677 acres of gnatcatcher mitigation in the vicinity of the project, with a minimum of 503.3 acres of offsite mitigation secured in advance of project impacts. This advanced mitigation will be focused in the northeastern portion of the gnatcatcher's range, and at least half of the offsite mitigation will conserve or restore occupied gnatcatcher habitat. With the proposed conservation, restoration, and management, we anticipate that the project will have a net neutral or positive effect on the

gnatcatcher population rangewide and will substantially address threats to recovery in this portion of its range, and for this reason the project is not expected to negatively affect gnatcatcher recovery.

Least Bell's Vireo

The project will permanently affect 6 acres of modeled vireo recolonization breeding habitat (this includes 2.7 acres of permanent noise impacts). Temporary impacts will occur to 3.0 acres of modeled vireo breeding habitat (Table 1). Vireo modeled habitat is distributed throughout the project area as shown in Figure 8. Surveys have documented a vireo (representing a vireo territory) at Una Lake, a singing male (representing a vireo territory) in the Santa Clara River, and up to 4 vireo territories in Pacoima Wash. In addition, unsurveyed modeled habitat is mapped in the vicinity of Agua Dulce, about 2.5 miles north of the Santa Clara River. While much of the habitat at Una Lake and the Santa Clara River will be avoided by the project, vireos at these locations may be subject to increased disturbance from construction and operational noise and lighting. The vireos at Pacoima Wash are located east of a tunneled section of the project alignment and about 2,500 feet southwest of a project staging area; project staging is located within the wash, but with the proposed conservation measures, we do not anticipate negative impacts to vireo habitat from increased sediment and pollution. We anticipate that vegetation removal for the project will result in direct impacts to one known vireo territory at Una Lake, and one known vireo territory at the Santa Clara River will be permanently affected by operational noise from the project. Additional vireo territories may occur within unsurveyed modeled habitat.

The project has incorporated conservation measures to avoid and minimize impacts to vireos. In areas occupied by vireos, active nests will be avoided with a 500-foot no-work buffer (CM-Avian-01, CM-Avian-02). Vegetation removal for the project within occupied vireo habitat will be conducted under the supervision of the Designated Biologist either between September 1 and March 14, when vireos have migrated to their winter range and will not be present in the project area, or after vireos have left the area (CM-GEN-01, CM-GEN-02, CM-Avian-01, CM-Avian-02). In addition, all native or sensitive habitats outside and adjacent to the construction limits will be designated as ESAs on project maps. ESAs will be temporarily fenced during construction with orange plastic snow fence, orange silt fencing, or in areas of flowing water, with stakes and flagging (CM-GEN-15). Therefore, we do not expect that vireo adults, eggs, or nestlings will be directly killed or injured. However, vireo pairs usually return to the same breeding territory each year (Rourke and Kus 2007), and the removal of a substantial portion of a vireo pair's territory will force the pair to expand their existing territory or establish a new territory. Displaced vireos may be forced to compete with resident vireos when attempting to expand an existing territory or establish a new territory.

If displaced birds cannot find suitable habitat to forage and shelter in, we anticipate they will be more vulnerable to predation and otherwise may die or be injured. Vireos that successfully establish territories in adjacent habitat are expected to experience reduced productivity (e.g., delayed initiation or prevention of nest building, fewer nesting attempts per season, and/or overall reduction in reproductive output) due to reduced availability of foraging and breeding

habitat and increased territorial interactions. For example, surveys conducted during the 2004 and 2005 breeding seasons on San Diego Creek in Orange County found that when vireo breeding habitat was removed, vireos returning to the affected area had lower productivity than vireos occupying a portion of the creek where the vegetation was unaltered. Four territories where habitat was removed produced a total of five young (1.25 young/pair). Two other territories, which did not have habitat removed, produced a total of eight young (4 young/pair; Chambers Group, Inc. 2005).

Upon returning from their winter range, if the vireo pairs can successfully establish new territories, they could experience increased territorial interactions and be harmed by the overall reduced availability of foraging habitat in the project area. In addition, we anticipate that the vireos will be subject to disturbance from construction activities.

Within the 2.7-acre area of permanent noise impacts, operational noise could result in displacement and reproductive loss for the vireo pairs. Displaced vireos may also be subjected to increased predation, death, or injury and may not be able to find sufficient nearby habitat or may be forced to compete with other vireos when attempting to expand an existing territory or establish a new territory. Occupancy and reproductive productivity are anticipated to decline within the noise effect zone.

The project will provide a minimum of 21 acres of mitigation for vireos, consisting of conservation and/or restoration of vireo habitat. A mitigation plan will be prepared and provided to the CFWO for review and approval prior to initiation of vegetation removal for the project (CM-Mit-01). Once the plan has been approved by the CFWO, any proposed conservation will be secured, and any off-site restoration work will commence in advance of project impacts. Because the acreage of conservation relative to restoration of vireo habitat is not known, it is difficult to anticipate the net effect of the project on the vireo population rangewide. However, even if the offsite mitigation is limited to conservation and long-term management, the enhancement of existing habitat (e.g., through removal of non-native species) is likely to increase the value of the conserved habitat such that the net effect of the project on the vireo population rangewide is likely to be neutral. If the offsite mitigation includes significant habitat restoration in addition to conservation and long-term management, the project is likely to have a net positive effect on the vireo population rangewide.

At each location where impacts to vireo habitat will occur, the project will impact a fraction of the available habitat, and much larger areas of intact habitat will remain outside the project footprint. Therefore, vireo are anticipated to remain in the vicinity of both Una Lake and along the Santa Clara River, and if vireos do occur in Agua Dulce, they are anticipated to remain in that drainage as well. In addition to directly impacting habitat, the project will increase habitat fragmentation at each of the three locations with modeled habitat. However, dispersing vireo will still be able to move across over the rail lines or under the bridges along the Santa Clara River and Agua Dulce, so habitat fragmentation is not anticipated to limit vireos' ability to access suitable habitat at any of the impacted locations.

In summary, implementation of the proposed project will result in permanent impacts to 6 acres of modeled vireo habitat and is likely to result in a short-term reduction in the number of vireos supported in the action area (including 2 known pairs) due to the direct loss of a portion of their habitat. If they survive the initial habitat loss, they may be subject to breeding season disturbance that could lead to displacement, reproductive loss, increased predation, death, or injury. The vireo pairs to be impacted represent less than 0.1 percent of the rangewide estimate of vireo pairs (approximately 2,884 pairs). During construction, we expect vireos will continue to occupy habitat adjacent to the project area, and construction disturbance in the project area will be temporary. With implementation of offsetting mitigation, the project is not anticipated to reduce the number of vireos that can be supported in the general project area or increase the local risk of vireo extirpation. Thus, the project is not expected to result in an appreciable reduction in the numbers, reproduction, or distribution of the species rangewide.

Habitat Restoration

The mitigation plan for the project will include restoration of temporary impacts to 3.0 acres of riparian habitat suitable for vireo breeding. It may be 2 to 7 years until restored riparian habitats are again suitable for vireo nesting. Because occupied vireo habitat is present adjacent to the action area, we anticipate that vireo pairs will remain in the surrounding area. Thus, we expect the temporarily impacted habitat will be re-occupied as soon as it is mature enough to support vireo breeding.

Habitat restoration planting and maintenance is expected to benefit vireos, but it may also result in disturbance of vireos that are adjacent to the restoration site, or that move into the site as restoration progresses. However, the project includes conservation measures to minimize disturbance of vireos during restoration work and to ensure that no nests are destroyed as a result of maintenance activities (CM-Rest-01).

Effect on Recovery

The project is consistent with the recovery goals identified in the draft recovery plan for vireo (Service 1998). The restoration work will help accomplish recovery task 1, which is to protect and manage riparian and adjacent upland habitat within the vireo's historic range; and recovery task 3, which is to develop and evaluate vireo habitat restoration projects and techniques.

The project will result in permanent impacts up to 6 acres and temporary impacts up to 3.0 acres of vireo breeding and foraging habitat and result in noise disturbance, displacement, and reproductive loss of 2 known vireo pairs; however, conservation measures have been incorporated into the project to minimize these impacts. In addition, the project will provide 21 acres of vireo mitigation in the vicinity of the project, with offsite mitigation secured in advance of project impacts. Thus, we anticipate that the project will have a net neutral or positive effect on the number of vireo supported rangewide, and for this reason the project is not expected to negatively affect vireo recovery.

Southwestern Willow Flycatcher

Southwestern willow flycatchers are not known to occur in the action area. However, flycatcher surveys were not conducted for the project because the Authority was unable to obtain permission to enter all properties within the action area and, therefore, could not conduct habitat assessments and biological surveys within much of the action area. There is a record for a flycatcher in the Santa Clara River 2.9 miles east of the project alignment, and suitable habitat is modeled adjacent to the project alignment in this area. There is also a record for flycatchers at Hansen Flood Control Basin; However, it is approximately 1.25 miles away from the project alignment, and there is no suitable habitat within this portion of the project area. In addition, unsurveyed modeled habitat is mapped in the vicinity of Una Lake, Agua Dulce, and Pacoima Wash.

The project will permanently affect 6 acres of modeled flycatcher breeding habitat (this includes 2.7 acres of permanent noise impacts). Temporary impacts will occur to 3.0 acres of modeled flycatcher breeding habitat (Table 1). Flycatcher modeled habitat is distributed throughout the project area as shown in Figure 9. This modeled habitat is classified in the "Other" category, as suitable riparian habitat not mapped in the top three classes (Very high, high, and moderate) of the Hatten model developed by USGS (Hatten 2016). The number of flycatcher territories impacted by the project is likely to be low considering that there are no records for flycatchers from within the action area; modeled habitat is within the "other" category; and project impacts to a total of 11.7 acres of modeled habitat will occur in small patches along the 38-mile length of the project. Thus, based on our best professional judgement, up to 1 flycatcher territory may be affected.

The project has incorporated conservation measures to avoid and minimize impacts to flycatchers. In areas occupied by flycatchers, active nests will be avoided with a 500-foot no-work buffer (CM-Avian-01, CM-Avian-02). Vegetation removal for the project within occupied flycatcher habitat will be conducted under the supervision of the Designated Biologist between September 15 and April 30, when flycatchers have migrated to their winter range and will not be present in the project area, or after flycatchers have left the area (CM-GEN-01, CM-GEN-02, CM-Avian-01, CM-Avian-02). In addition, all native or sensitive habitats outside and adjacent to the construction limits will be designated as ESAs on project maps. ESAs will be temporarily fenced during construction with orange plastic snow fence, orange silt fencing, or in areas of flowing water, with stakes and flagging (CM-GEN-15). Therefore, we do not expect that flycatcher adults, eggs, or nestlings will be directly killed or injured.

Upon returning from their winter range, flycatchers could experience increased territorial interactions and be harmed by the overall reduced availability of foraging habitat in the project area. In addition, we anticipate that the flycatchers will be subject to disturbance from construction activities.

Within the 2.7-acre area of permanent noise impacts, operational noise could result in displacement and reproductive loss for flycatchers. Displaced flycatchers may also be subjected to increased predation, death, or injury and may not be able to find sufficient nearby habitat or

may be forced to compete with other flycatchers when attempting to expand an existing territory or establish a new territory.

The project will provide a minimum of 15 acres of mitigation for flycatchers, consisting of conservation and/or restoration of flycatcher habitat. A mitigation plan will be prepared and provided to the CFWO for review and approval prior to initiation of vegetation removal for the project (CM-Mit-01). Once the plan has been approved by the CFWO, any proposed conservation will be secured, and any off-site restoration work will commence, in advance of project impacts. Because the acreage of conservation relative to restoration of flycatcher habitat is not known, it is difficult to anticipate the net effect of the project on the flycatcher population rangewide. However, even if the offsite mitigation is limited to conservation and long-term management, the enhancement of existing habitat (e.g., through removal of non-native species) is likely to increase the value of the conserved habitat such that the net effect of the project on the flycatcher population rangewide is likely to be neutral.

At each location where impacts to flycatcher habitat will occur, the project will impact a fraction of the available habitat, and much larger areas of intact habitat will remain outside the project footprint. Therefore, flycatchers are anticipated to remain in suitable habitat in the vicinity of any location where they are displaced. In addition to directly impacting habitat, the project will increase habitat fragmentation at each of the locations with modeled habitat. However, dispersing flycatchers will still be able to move across over the rail lines or under the bridges along the Santa Clara River and Agua Dulce, so habitat fragmentation is not anticipated to limit flycatchers' ability to access suitable habitat at any of the impacted locations.

In summary, implementation of the proposed project will result in permanent impacts to 6 acres of modeled flycatcher habitat and may result in a short-term reduction in the number of flycatchers supported in the action area due to the direct loss of a portion of their habitat (up to 1 pair). If they survive the initial habitat loss, they may be subject to breeding season disturbance that could lead to displacement, reproductive loss, increased predation, death, or injury. However, with implementation of project measures, impacts to flycatcher will occur over a small portion of the suitable habitat available in the project area, and direct mortality will be avoided. During construction, we expect flycatchers will continue to occupy habitat adjacent to the project area, and construction disturbance in the project area will be temporary. With implementation of offsetting mitigation, the project is not anticipated to reduce the number of flycatchers that can be supported in the general project area or increase the local risk of flycatcher extirpation. Thus, the project is not expected to result in an appreciable reduction in the numbers, reproduction, or distribution of the species rangewide.

Habitat Restoration

The mitigation plan for the project will include restoration of temporary impacts to 3.0 acres of riparian habitat suitable for flycatcher breeding. It may be 5 years until restored riparian habitats are again suitable for flycatcher nesting (Service 2013).

Habitat restoration planting and maintenance is expected to benefit flycatchers, but it may also result in disturbance of flycatchers that are adjacent to the restoration site, or that move into the site as restoration progresses. However, the project includes conservation measures to minimize disturbance of flycatchers during restoration work and to ensure that no nests are destroyed as a result of maintenance activities (CM-Rest-01).

Effect on Recovery

According to the recovery plan for the southwestern willow flycatcher, the Santa Clara River is part of the Santa Clara Management Unit, which is in the Coastal California Recovery Unit (Service 2002). Within this Management Unit, the recovery plan defines a series of reaches where recovery actions should be focused, and these reaches are outside of the action area. One reach is within the Santa Clara River west of the action area, from Bouquet Canyon Road to the Pacific Ocean, and another reach is east of the action area in Soledad Canyon, from Soledad Campground to Agua Dulce.

Mitigation for project impacts will help accomplish recovery task 1, which is to increase and improve currently suitable and potentially suitable habitat. The project will result in permanent impacts up to 6 acres and temporary impacts up to 3.0 acres of flycatcher breeding and foraging habitat and may result in noise disturbance, displacement, and reproductive loss of flycatcher pairs; however, conservation measures have been incorporated into the project to minimize these impacts. In addition, the project will provide 15 acres of flycatcher mitigation in the vicinity of the action area, with offsite mitigation secured in advance of project impacts. Thus, we anticipate that the project will have a net neutral or positive effect on the number of flycatcher territories supported rangewide, and for this reason the project is not expected to negatively affect flycatcher recovery.

Arroyo Toad and Its Designated Critical Habitat

Though project surveys for arroyo toad have not been conducted, the action area is adjacent and connected to upstream habitat where arroyo toads have been documented. Arroyo toads may occur within the project footprint in the vicinity of the Santa Clara River, especially in wet years when arroyo toads are more likely to disperse further from occupied breeding habitat. The project will permanently impact 40 acres of modeled arroyo toad upland / aestivation habitat and 5 acres of modeled arroyo toad wetland / breeding habitat and will temporarily impact 22 acres of modeled arroyo toad upland / aestivation habitat. The project will also permanently and temporarily impact 16.5 and 12.5 acres of modeled arroyo toad permeable movement area, respectively.

Quantifying the number of arroyo toads within the project footprint is difficult. The exact distribution and population size fluctuate due to the dynamic conditions associated with arroyo toad habitat. Suitable habitat may change from year to year depending on climatic conditions, flooding, or other natural or human-related events (Service 1999), which in turn influence reproductive success and juvenile survival. Therefore, it is anticipated that the arroyo toad population subject to impacts from the project will experience population fluctuations, making

it difficult to determine the precise number of arroyo toads that could be adversely affected at any given time.

In addition, except during the early juvenile stage (first 4–5 weeks), arroyo toads forage at night and burrow during the day. Nocturnal activity is usually associated with rainfall and moderate temperatures and some nights of very high relative humidity (Service 1999). Juveniles and adult toads may range up to 1.2 miles from the watercourse into the surrounding uplands (Service 1999). Therefore, detection of arroyo toads outside of the breeding season is very difficult, with limited ability for anticipating when the species may be active. Lastly, no reliable survey method exists for determining the locations or densities of arroyo toads that may be burrowed within upland habitat.

Due to these constraints, the precise number of arroyo toads that may be located within the project area is not known. As discussed in the *Environmental Baseline* section, protocol arroyo toad surveys have not been conducted within the project area, but arroyo toads have been detected upstream of the action area in adjacent and connected habitat within the Santa Clara River. Therefore, it is possible that the project footprint may support aestivating, dispersing, and/or foraging juvenile and adult arroyo toads.

There is a single record from CNDDB for arroyo toads from 2001 reporting 2 larvae and 1 metamorph approximately 0.75 mile upstream from the project footprint in the Santa Clara River. The project will impact a total of 96 acres of modeled habitat for the arroyo toad. In addition, the project has incorporated measures to avoid working in the wetted areas of the Santa Clara River (CM-UTS-02, CM-UTS-03). Because of the low numbers of arroyo toads reported in the vicinity of the action area and the measures that will be implemented to avoid impacts to the wetted areas of the Santa Clara River, we estimate that up to 10 arroyo toads could be present within the work area (about 1 toad per 10 acres of modeled habitat). This estimate of arroyo toad density is much lower than is typical for projects in the immediate vicinity of an active breeding site and assumes that only dispersing arroyo toads from the nearest documented breeding site (0.75 mile from the project footprint) are likely to occur in the project footprint.

The project has incorporated measures to avoid and minimize impacts to arroyo toads. These include preconstruction surveys (CM-ARTO-01), monitoring and translocation, including installation of exclusionary fencing, surveys, and translocation of arroyo toads out of the impact area (CM-ARTO-02), and avoidance measures for arroyo toad, including daily clearance surveys, limiting work during rainfall events, and implementing limitations on hazardous materials, herbicides, and pesticides (CM-ARTO-03) (see Appendix C for detailed measures).

Up to seven individual arroyo toads may be captured and relocated out of the project footprint. We estimate that up to three individuals (about a quarter of those present in the project footprint) will go undetected and will be killed or injured (i.e., crushed) during earth-disturbing activities and grading. However, because arroyo toads in the project footprint are likely to be burrowed underground, it will make it difficult to observe and document death or injury from construction activities. Therefore, we anticipate that no more than one individual will be observed killed or injured as a result of construction-related activity.

There is also the potential for arroyo toads to be killed, injured, or stressed during capture and relocation efforts. However, trapping and relocation efforts will be conducted by individuals familiar with arroyo toad biology and ecology, who will follow the Declining Amphibian Population Task Force's Fieldwork Code of Practice (DAPTF 1998) to avoid transferring disease or pathogens between aquatic habitats during surveys and handling of arroyo toads (CM-ARTO-02). Therefore, we anticipate that very few arroyo toads (no more than one) will be killed or injured during capture and relocation efforts. Because a large amount of suitable arroyo toad aestivation, dispersal, and foraging habitat will remain near the action area after project construction, the translocation of arroyo toads within the impact area to adjacent suitable habitat is not anticipated to result in adverse impacts associated with intraspecific competition.

The project will provide a minimum of 124.5 acres of mitigation for arroyo toads, consisting of conservation and/or restoration of arroyo toad habitat. A mitigation plan will be prepared and provided to the CFWO for review and approval prior to initiation of vegetation removal for the project (CM-Mit-01). Once the plan has been approved by the CFWO, any proposed conservation will be secured, and any off-site restoration work will commence, in advance of project impacts. Because the acreage of conservation relative to restoration of arroyo toad habitat is not known, it is difficult to anticipate the net effect of the project on the arroyo toad population rangewide. However, even if the offsite mitigation is limited to conservation and long-term management, the enhancement of existing habitat (e.g., through removal of non-native plant species) is likely to increase the value of the conserved habitat such that the net effect of the project on the arroyo toad population rangewide is likely to be neutral.

The project will impact a fraction of the available habitat along the Santa Clara River, and much larger areas of intact habitat will remain outside the project footprint. Therefore, arroyo toads are anticipated to remain in suitable habitat in the vicinity of any location where they are displaced. In addition to directly impacting habitat, the project will increase habitat fragmentation along the Santa Clara River. In particular, arroyo toads will not be able to disperse over the above-ground portions of the track on either side of the Santa Clara River. However, the river widens considerably where the bridge is proposed, and the bridge will span the entire width of the river, so arroyo toads will still be able to disperse under the bridge to access habitat upstream and downstream of the track. In addition, the long span will minimize potential effects to the hydrological processes necessary for maintaining arroyo toad habitat such that arroyo toad habitat is anticipated to remain upstream and downstream of the proposed project.

Based on the limited extent of the project footprint and the implementation of conservation measures, the number of individuals impacted by the project will be low and is not likely to result in an appreciable reduction in the reproduction, numbers, or distribution of the arroyo toad population in the project vicinity or the species as a whole. In addition, temporarily impacted habitat will be restored upon project completion, and because arroyo toads are not dependent on mature vegetation, we expect temporarily impacted areas to be re-occupied shortly following project completion.

Critical Habitat

The project will permanently impact 2.4 acres of designated critical habitat for the arroyo toad, all of which contain PBFs for the species. The area of critical habitat that will be impacted is located within Subunit 6c, which includes 1,279 acres of designated critical habitat. The permanent impacts of the project on Subunit 6c of designated critical habitat for the arroyo toad represent less than 0.2 percent of the designated critical habitat within the subunit, and an even smaller percentage of the critical habitat designated for this species.

According to the final rule designating critical habitat (Service 2011), This subunit is important for maintaining the arroyo toad metapopulation in the upper Santa Clara River Basin. Additionally, the upper portion of the Santa Clara River in this subunit supports a breeding population of arroyo toads that has the potential to greatly increase in size. Subunit 6c contains the physical and biological features that are essential to the conservation of the species, including breeding pools in low gradient stream segments with sandy substrates, seasonal flood flows and riparian habitat and upland benches for foraging and dispersal. The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from urban development, agriculture, recreation, mining, and nonnative predators.

As described above, although the project will increase habitat fragmentation along the Santa Clara River, the track would cross near the western edge of Subunit 6c, limiting the amount of fragmentation. In addition, arroyo toads will still be able to disperse under the bridge spanning the river, and the length of the bridge will minimize the effects to hydrological processes such that PBFs are anticipated to be maintained within Subunit 6c upstream and downstream of the proposed project.

The project will result in the permanent loss of 2.4 acres of arroyo toad critical habitat. The project will provide a minimum of 124.5 acres of mitigation for arroyo toads that includes conservation and/or management of arroyo toad habitat, and this mitigation will include a minimum of 4.8 acres of arroyo toad critical habitat. This will help maintain the long-term function of arroyo toad critical habitat in the project area and the ability of this critical habitat subunit to maintain the arroyo toad metapopulation in the upper Santa Clara River Basin.

Habitat Restoration

The project will restore 22.0 acres of native upland habitats suitable for aestivation, dispersal, and foraging, and 12.5 acres of permeable movement area for arroyo toad on the project site. There is the possibility that arroyo toads could be killed or injured during restoration activities, such as planting container plants and weeding. The project has incorporated measures to minimize impacts to arroyo toads from restoration activities (CM-Rest-01). If maintenance of restoration areas is necessary within or directly adjacent to suitable arroyo toad breeding habitat during the March 1 to August 15 arroyo toad active season while water is flowing or has ponded in the area, the Project Biologist will monitor potential arroyo toad breeding habitat to determine whether egg clutches, larvae, or juveniles are present. If eggs, larvae, or juvenile arroyo toads are

found, restoration maintenance work will not occur in the area until signs of breeding are no longer evident. Restoration maintenance work will be avoided during rain events to limit sedimentation into breeding habitat. Restoration activities will be conducted on foot, or with lightweight all-terrain vehicles and/or small gators with trailers, with soft tires with minimal tread and a wide wheel base and low vehicle speeds, to better distribute weight and reduce soil disturbance. In addition, either arroyo toad exclusion fencing will be maintained around restoration areas for the duration of restoration maintenance work or earth disturbing activities conducted for restoration work (e.g., irrigation repairs, replanting) where there is potential for presence of aestivating arroyo toads (i.e., sandy, friable soils) will be monitored by the Project Biologist to ensure that impacts to arroyo toads are avoided to the greatest extent feasible.

As described above, it is difficult to predict the number of arroyo toads that may occur within the temporary impact areas. Based on the estimated density of arroyo toads in the vicinity of the proposed project, we anticipate that no more than three juvenile or adult arroyo toads (i.e., greater than 1 inch snout-vent-length) will be killed or injured by restoration activities, and no more than one juvenile or adult arroyo toad will be observed dead or injured as a result of the habitat restoration. The long-term benefit of the habitat restoration activities will substantially outweigh the potential death or injury of a small number of arroyo toads from these activities.

Effect on Recovery

The project is consistent with the recovery goals identified in the recovery plan for the arroyo toad (Service 1999). Mitigation for project impacts will help accomplish recovery task 1, which is to secure existing populations by protecting, maintaining, restoring, and enhancing breeding and upland habitats.

The project will result in permanent impacts up to 61.5 acres and temporary impacts up to 34.5 acres of arroyo toad breeding, aestivation, and dispersal habitat, and may result in the loss of a small number of arroyo toads; however, conservation measures have been incorporated into the project to minimize these impacts. Arroyo toads will be translocated out of the project footprint to minimize direct impacts, and temporary impacts to arroyo toad habitat will be restored following construction. In addition, the project will provide 124.5 acres of arroyo toad mitigation in the vicinity of the action area, with offsite mitigation secured in advance of project impacts. Thus, we anticipate that the project-related impacts will be fully mitigated, and the project is not expected to negatively affect arroyo toad recovery.

Slender-Horned Spineflower

There is a population of slender-horned spineflower within 20 feet of the project footprint in Bee Canyon, and unsurveyed modeled habitat for the species is present in Pacoima Wash. Because the slender-horned spineflower occurrence at Bee Canyon is one of three extant or presumed extant occurrences in Los Angeles County and is the only one that has been surveyed and documented within the past 15 years, maintenance of this population is important for maintaining the species' distribution. The project will permanently affect 29.6 acres of modeled core suitable habitat and 312.6 acres of modeled potentially suitable habitat for the species. In addition, the

project will temporarily affect 21.7 acres of modeled core suitable habitat and 4.8 acres of modeled potentially suitable habitat. Slender-horned spineflower modeled habitat is distributed throughout the project area as shown in Figure 10.

The project has incorporated measures to avoid and minimize impacts to slender-horned spineflower individuals. Surveys will be conducted prior to any vegetation removal or ground disturbing activities for the project (CM-PLT-01). If slender-horned spineflower are present in the project footprint and can't be avoided, the Authority will reinitiate section 7 consultation to address unanticipated impacts to the species.

The project will result in impacts to overland flows in occupied spineflower habitat in Bee Canyon Wash. Project construction will result in a broad hill cut to the east of the wash, and the placement of permanent "stormwater conveyance culverts" under the alignment that will convey water from the tributaries east of the alignment under the alignment to Bee Canyon Wash. During section 7 consultation, the project was redesigned to relocate a detention basin at the northern portion of Bee Canyon Wash to within the permanent footprint to minimize direct impacts and impacts from overland flows to occupied slender-horned spineflower habitat. The detention basin is designed to contain construction water pumped out of the tunnel during construction and would be a permanent feature that would be used to contain water pumped out of the tunnel following storm events.

The proposed project is anticipated to adversely affect some portion of the extant population through changes to hydrology and sedimentation. Any modification of hydrology and sediment flow in the tributaries that feed into Bee Canyon is likely to alter the frequency or intensity of overland flows that maintains the current distribution of habitat and, therefore, to adversely affect some individuals in the population. Because project design is in early stages, insufficient information is available to quantify the impact to overland flows in Bee Canyon. Therefore, measures have been incorporated into the project to ensure that periodic large-scale flooding that allows alluvial fan sage scrub habitat to remain in a successional state will be maintained such that the habitat in Bee Canyon remains suitable for the species. These include CM-PLT-02: Maintenance of Existing Hydrologic Conditions to Maintain Slender-horned Spineflower Habitat Below the Preferred Alternative Alignment in Bee Canyon, HYD-IAMF#1 Storm Water Management, HYD-IAMF#2 Flood Protection, and HYD-IAMF#3 Prepare and Implement a Construction Stormwater Pollution Prevention Plan. These measures are intended to minimize alterations to watercourses and maintain existing stormwater patterns within spineflower habitat. The Authority will provide the SWPPP and Stormwater Management and Treatment Plan for review by the Service at the 60 percent design stage to ensure that the hydrological processes necessary for slender-horned spineflower are maintained.

In Pacoima Wash, large-scale flooding has already been affected by Pacoima Reservoir upstream, and residential construction to the east and west (Figure 10). In addition, project impacts to the habitat within Pacoima Wash are largely temporary and will be restored once project construction has been completed. Measures have been incorporated into the project to minimize alterations to watercourses and maintain existing stormwater patterns within spineflower habitat (CM-PLT-02, HYD-IAMF#1, HYD-IAMF#2, HYD-IAMF#3). The project

has also been redesigned during section 7 consultation to minimize impacts to Limekiln Canyon Creek, which feeds into Pacoima Wash near the project footprint. Thus, we do not anticipate significant long-term impacts to flood flows within Pacoima Wash from the project.

In addition, the project will provide a minimum of 168 acres of mitigation for spineflower. A mitigation plan will be prepared and provided to the CFWO for review and approval prior to initiation of vegetation removal for the project (CM-Mit-01). Once the plan has been approved by the CFWO, any proposed conservation will be secured, and any off-site restoration work will commence, in advance of project impacts.

Surveys will be conducted prior to any vegetation removal or ground disturbing activities for the project to ensure that slender-horned spineflower are not directly impacted by construction activity. In addition, measures have been incorporated into the project to ensure that periodic large-scale flooding that allows alluvial fan sage scrub habitat to remain in a successional state will be maintained such that the habitat in the project area remains suitable for the species. With implementation of offsetting mitigation, the project is not anticipated to result in an appreciable reduction in the numbers, reproduction, or distribution of the species rangewide.

Habitat Restoration

The mitigation plan for the project will include restoration of temporary impacts to 26.5 acres of alluvial fan habitat suitable for slender-horned spineflower. This annual species inhabits openings in intermediate and mature alluvial fan sage scrub, where disturbance from flooding is less frequent (i.e., every 50 to 100 years). Where occupied slender-horned spineflower habitat is present adjacent to the action area and periodic large-scale flooding persists, we anticipate that spineflower will be able to colonize temporarily impacted habitats when flood conditions allow for seed dispersal.

Habitat restoration planting and maintenance is expected to benefit to the spineflower, but it may result in disturbance of spineflowers that are present within the seed bank or colonize the site as restoration progresses. However, the project includes conservation measures to minimize impacts to spineflowers from restoration work and to ensure that no spineflowers are harmed as a result of maintenance activities (CM-Rest-01).

Effect on Recovery

There is no recovery plan for slender-horned spineflower, but the project is consistent with the general recovery goals of maintaining core populations of spineflowers and the hydrologic processes upon which they depend. As described above, the project will result in impacts to slender-horned spineflower and its habitat, but the Authority will provide the SWPP and Stormwater Management and Treatment Plan for review by the Service at the 60 percent design stage to ensure that the hydrological processes necessary to support slender-horned spineflower habitat are maintained. Further, if slender-horned spineflower are found within the project footprint, the Authority will reinitiate section 7 consultation to address unanticipated impacts to the species. Finally, because substantial areas of occupied habitat will remain adjacent to the

impact area, and habitat restoration will be initiated following construction, little risk exists that the project will extirpate any slender-horned spineflower populations in the project area.

The Authority will offset the permanent loss of modeled spineflower habitat through the conservation of 168 acres of spineflower habitat in the vicinity of the action area, with offsite mitigation secured in advance of project impacts, which will contribute to the conservation and recovery of the species.

CUMULATIVE EFFECTS

Cumulative effects are effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR § 402.02). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. We are unaware of any future non-Federal actions that are reasonably certain to occur within the action area and may affect the gnatcatcher, vireo, flycatcher, arroyo toad, and slender-horned spineflower.

CONCLUSION

After reviewing the current status of the gnatcatcher, vireo, flycatcher, arroyo toad, and slender-horned spineflower, the environmental baseline for the action area, effects of the proposed action, and the cumulative effects, we have determined that the activities considered in this biological opinion are not likely to jeopardize the continued existence of the gnatcatcher, vireo, flycatcher, arroyo toad, and slender-horned spineflower, or adversely modify designated critical habitat for the arroyo toad. We have reached this conclusion for the following reasons:

1. Adverse effects to all federally listed species and designated critical habitat will be reduced by implementation of the avoidance and minimization measures identified in the “Project Description” (see Appendix C) of this biological opinion.

2. The restoration of temporary impact areas with native species will help minimize and offset project impacts by restoring habitat for listed species to breed, forage, shelter, and disperse.

3. Wildlife connectivity measures proposed in association with the project will ensure that ecosystem functions are maintained for the benefit of listed species.

4. With the proposed conservation measures, project-related impacts to federally listed species will be fully offset, and we consider the project and associated conservation and restoration to be consistent with the recovery goals of the species.

Coastal California Gnatcatcher

1. The proposed project will result in a short-term reduction (up to 2 pairs and one unpaired female) in the number of gnatcatchers supported in the action area due to the

direct loss of a portion of their habitat and/or construction and noise disturbance, which represents less than 0.2 percent of the roughly 2,562 pairs rangewide.

2. The project will permanently impact 438.6 acres of modeled gnatcatcher habitat out of thousands of acres of gnatcatcher habitat rangewide.

3. The project will temporarily affect 16.4 acres of modeled gnatcatcher habitat; this habitat will be restored and will again be suitable habitat for gnatcatcher breeding and foraging within 4 to 5 years.

4. Impacts to modeled gnatcatcher habitat will be offset in advance of project impacts and within the northeastern extent of the species range, as detailed in the Conservation Measures.

Least Bell's vireo

1. The proposed project will result in a short-term reduction (up to 2 pairs) in the number of vireos supported in the action area due to the direct loss of a portion of their habitat and/or construction and noise disturbance, which represents less than 0.1 percent of the roughly 2,968 pairs rangewide.

2. The project will permanently impact 8.7 acres of modeled vireo habitat out of thousands of acres of vireo habitat rangewide.

3. The project will temporarily affect 3.0 acres of vireo occupied habitat; this habitat will be restored and will again be suitable habitat for vireo breeding and foraging within 2 to 7 years.

4. Impacts to modeled vireo habitat will be offset as detailed in Table 1 and the Conservation Measures.

Southwestern Willow Flycatcher

1. The proposed project will result in a short-term reduction (up to 1 pair) in the number of flycatchers supported in the action area due to the direct loss of a portion of their habitat and/or construction and noise disturbance, which represents less than 0.1 percent of the roughly 1,299 pairs rangewide.

2. The project will permanently impact 8.7 acres of modeled flycatcher habitat out of thousands of acres of flycatcher habitat rangewide.

3. The project will temporarily affect 3.0 acres of modeled flycatcher habitat; this habitat will be restored and will again be suitable habitat for flycatcher breeding and foraging within 5 years.

4. Impacts to modeled flycatcher habitat will be offset as detailed in Table 1 and the Conservation Measures.

Arroyo Toad and Its Designated Critical Habitat

1. Injury and death of aestivating arroyo toads will be minimized by installing exclusionary fencing around areas of suitable arroyo toad habitat within the project impact area, surveying for arroyo toads within fenced areas, and relocating any arroyo toads found within the fenced areas to suitable habitat outside of the project impact area.

2. The project will permanently impact up to 40 acres of modeled arroyo toad upland/aestivation habitat, 5 acres of modeled arroyo toad wetland/ breeding habitat, and 16.5 acres of modeled arroyo toad permeable movement area out of thousands of acres of arroyo toad habitat rangewide.

3. The project will temporarily affect 22 acres of modeled arroyo toad upland/ aestivation habitat and 12.5 acres of modeled arroyo toad permeable movement area; this habitat will be restored and because arroyo toads are not dependent on mature vegetation, we expect temporarily impacted areas to be re-occupied shortly following project completion.

4. The project will permanently impact 2.4 acres of arroyo toad designated critical habitat out of the 1,279 acres of designated critical habitat within Subunit 6c of designated critical habitat, which represents less than 0.2 percent of the Subunit and an even smaller percentage of designated arroyo toad critical habitat.

5. Impacts to modeled arroyo toad habitat will be offset as detailed in Table 1 and the Conservation Measures.

6. The capture and translocation, death, or injury of the arroyo toads in the project footprint and the impacts to 96 acres of arroyo toad habitat within the project area are not expected to appreciably reduce the numbers, reproduction, or distribution of the arroyo toad in the action area or throughout the species' range.

Slender-horned Spineflower

1. Destruction of slender-horned spineflower individuals will be minimized by surveys, and the Authority will reinitiate section 7 consultation if slender-horned spineflowers are found within the project footprint and can't be avoided.

2. The project will permanently impact 342.2 acres of modeled slender-horned spineflower habitat out of thousands of acres of spineflower habitat rangewide.

3. The project will temporarily affect 26.5 acres of modeled slender-horned spineflower habitat; this habitat will be restored, and we anticipate that spineflower will be able to colonize these restored areas when flood conditions allow for seed dispersal.

4. Impacts to modeled spineflower habitat will be offset as detailed in Table 1 and the Conservation Measures.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. The Service further defines "harm" to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not the purpose of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the proposed protective measures and the terms and conditions of an incidental take statement and occurs as a result of the action as proposed.

The measures described below are non-discretionary and must be undertaken by the Authority for the exemption in section 7(o)(2) to apply. The Authority has the continuing duty to regulate the activity that is covered by this incidental take statement. If the Authority fails to assume and implement the terms and conditions, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Authority must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR § 402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE

Coastal California Gnatcatcher

We anticipate that up to 3 pairs of gnatcatchers will be taken as a result of construction of the proposed project.

Incidental take is expected to be in the form of harm as defined in 50 CFR § 17.3, due to the direct loss of a portion of their foraging and breeding habitat and increased displacement by project work that could result in death or injury and reproductive loss.

The take exemption will be exceeded if more than:

IT 1. Three pairs of gnatcatchers are documented within the action area; or

IT 2. More than 422.1 acres of modeled gnatcatcher habitat is permanently altered, or 16.4 acres of modeled gnatcatcher habitat is temporarily disturbed as a result of project implementation.

Least Bell's Vireo

We anticipate that up to 2 pairs of vireos will be taken as a result of construction of the proposed project.

Incidental take is expected to be in the form of harm as defined in 50 CFR § 17.3, due to the direct loss of a portion of their foraging and breeding habitat and increased displacement by project work that could result in death or injury and reproductive loss.

The take exemption will be exceeded if more than:

IT 3. Two pairs of vireos are documented within the action area; or

IT 4. More than 6 acres of modeled vireo habitat is permanently altered or 3.0 acres of modeled vireo habitat is temporarily disturbed as a result of project implementation.

Southwestern Willow Flycatcher

We anticipate that up to 1 pair of flycatchers will be taken as a result of construction of the proposed project.

Incidental take is expected to be in the form of harm as defined in 50 CFR § 17.3, due to the direct loss of a portion of their foraging and breeding habitat and increased displacement by project work that could result in death or injury and reproductive loss.

The take exemption will be exceeded if more than:

IT 5. One pair of flycatchers are documented within the action area; or

IT 6. More than 6 acres of modeled flycatcher habitat is permanently altered or 3.0 acres of modeled flycatcher habitat is temporarily disturbed as a result of project implementation.

Arroyo Toad

The exact distribution and population size of arroyo toads is difficult to determine due to the dynamic conditions associated with their habitat and biology and because detection of arroyo toads outside of the breeding season is difficult. In addition, finding dead or injured arroyo toads within the construction area is unlikely as the individuals may be underground during construction activities, and the species is cryptic making them difficult to recognize or detect.

Because we do not have site specific data regarding the density of arroyo toads at this location, it is difficult to accurately quantify the amount of take that will occur. Nevertheless, based on the best available scientific information, we have established the following take thresholds for arroyo toad:

The take exemption will be exceeded if:

IT 7. Death or injury of up to 3 juvenile or adult arroyo toads from the removal of 96 acres of modeled arroyo toad habitat. Because it is likely that few of these arroyo toads will be observed, the amount or extent of incidental take will be exceeded if more than the specified amount of habitat is cleared/graded or if more than one juvenile or adult arroyo toad is found dead or injured as a result of construction-related project activities.

IT 8. Capture and relocation of up to 7 juvenile or adult arroyo toads within the construction footprint. The amount or extent of incidental take will be exceeded if more than 7 juvenile or adult arroyo toads are captured and relocated or if more than one juvenile or adult arroyo toad is accidentally killed or injured as a direct result of capture and relocation efforts.

IT 9. Death or injury of up to 3 juvenile or adult arroyo toads associated with restoration of temporary impact areas. Because it is likely that few of these arroyo toads will be observed, the amount or extent of incidental take will be exceeded if more than one arroyo toad is observed dead or injured in association with restoration activities.

REASONABLE AND PRUDENT MEASURES

The Authority is implementing significant conservation measures as part of the proposed action to minimize the incidental take of gnatcatchers, vireos, flycatchers, and arroyo toads. In addition, the following reasonable and prudent measures (RPM) are necessary to monitor and report the take of gnatcatchers, vireos, flycatchers, and arroyo toads:

RPM 1. The Authority will monitor and report any project-related incidental take of gnatcatchers to the CFWO.

RPM 2. The Authority will monitor and report any project-related incidental take of vireos to the CFWO.

RPM 3. The Authority will monitor and report any project-related incidental take of flycatchers to the CFWO.

RPM 4. The Authority will monitor and report any project-related incidental take of arroyo toads to the CFWO.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Authority must comply with the following terms and conditions (TC), which implement the reasonable and prudent measure

described above and outline monitoring and reporting requirements. These terms and conditions are non-discretionary:

Coastal California Gnatcatcher

TC 1.1 Prior to initiating project work, three preconstruction surveys will be conducted within all modeled gnatcatcher habitat in or within 500 feet of the California High Speed Rail, Palmdale to Burbank Project footprint, within 30 days prior to initiation of vegetation removal activities, to verify that no more than 3 gnatcatcher pairs will be harmed as a result of the project. If it is the wrong time of year for effective surveys, at the discretion of the Project Biologist, a copy of project surveys conducted within the previous year may be submitted.

TC 1.2 Prior to initiating work, the Authority will provide to the CFWO a map showing the distribution of gnatcatchers relative to the project footprint and an estimate of the number of gnatcatchers that will be impacted by the project or confirm in writing that the number of gnatcatchers that will be impacted by the project remains correct.

TC 1.3 The Authority will notify the CFWO of the area of gnatcatcher habitat cleared within 30 days of completing removal of gnatcatcher habitat. The purpose of this notification is to ensure that impacts to gnatcatcher habitat from the proposed project do not exceed the take thresholds.

Least Bell's Vireo

TC 2.1 Prior to initiating project work, three preconstruction surveys will be conducted within all modeled vireo habitat in or within 500 feet of the California High Speed Rail, Palmdale to Burbank Project footprint, within 30 days prior to initiation of vegetation removal activities, to verify that no more than 2 vireo pairs will be harmed as a result of the project. If it is the wrong time of year for effective surveys, at the discretion of the Project Biologist, a copy of project surveys conducted within the previous year may be submitted.

TC 2.2 Prior to initiating work, the Authority will provide to the CFWO a map showing the distribution of vireos relative to the project footprint and an estimate of the number of vireos that will be impacted by the project or confirm in writing that the number of vireos that will be impacted by the project remains correct.

TC 2.3 The Authority will notify the CFWO of the area of vireo habitat cleared within 30 days of completing removal of vireo habitat. The purpose of this notification is to ensure that impacts to vireo habitat from the proposed project do not exceed the take thresholds.

Southwestern Willow Flycatcher

TC 3.1 Prior to initiating project work, three preconstruction surveys will be conducted within all modeled flycatcher habitat in or within 500 feet of the California High Speed Rail, Palmdale to Burbank Project footprint, within 30 days prior to initiation of vegetation removal activities, to verify that no more than 1 flycatcher pairs will be harmed as a result of the project. If it is the wrong time of year for effective surveys, at the discretion of the Project Biologist, a copy of project surveys conducted within the previous year may be submitted.

TC 3.2 Prior to initiating work, the Authority will provide to the CFWO a map showing the distribution of flycatchers relative to the project footprint and an estimate of the number of flycatchers that will be impacted by the project or confirm in writing that the number of flycatchers that will be impacted by the project remains correct.

TC 3.3 The Authority will notify the CFWO of the area of flycatcher habitat cleared within 30 days of completing removal of flycatcher habitat. The purpose of this notification is to ensure that impacts to flycatcher habitat from the proposed project do not exceed the take thresholds.

Arroyo Toad

TC 4.1 Within 30 calendar days of the completion of project activities within arroyo toad habitat, the Authority will provide the CFWO with a report documenting the area of arroyo toad habitat impacted, the number of dead or injured arroyo toads observed in the action area, and the number of arroyo toads captured and released. The report will include information on the gender, life history stage, and general condition of all arroyo toads that were killed, injured, and captured/released. It will also include an assessment of how or why arroyo toads may have been injured or killed and information on where toads were captured and released and observed physiological responses of relocated arroyo toads.

TC 4.2 The Authority will include any observations of arroyo toads and potential effects to arroyo toads in annual reports describing the progress of the temporary impact area restoration.

TC 4.3 The Authority will report incidences of take (observed death or injury or capture and relocation of arroyo toads) to the CFWO within 3 days. All field notes and other documentation generated by the biological monitor will be made available to the CFWO upon request.

TC 4.4 If the level of take exempted in this biological opinion is exceeded at any time, the Authority will immediately contact the CFWO.

DISPOSITION OF SICK, INJURED, OR DEAD SPECIMENS

Upon locating dead, injured, or sick individuals of threatened or endangered species, initial notification must be made to the CFWO within 24 hours by email.[2] Email notification must be made within 5 calendar days and include the collection date and time, the location of the animal, and any other pertinent information. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state. The remains of specimens shall be offered to educational or research institutions holding the appropriate State and Federal permits (e.g., San Diego Natural History Museum, San Diego). Arrangements regarding proper disposition of potential museum specimens shall be made with the institution by the authorized biologist prior to implementation of the action.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans or to develop information. We have not identified any additional conservation recommendations that will further benefit the gnatcatcher, vireo, flycatcher, arroyo toad, and slender-horned spineflower within the action area.

REINITIATION NOTICE

This concludes formal consultation regarding California High Speed Rail Palmdale to Burbank Section as outlined in materials submitted to us. Reinitiation of consultation is required and will be requested by the Authority or by the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law and:

1. If the amount or extent of taking specified in the incidental take statement is exceeded;

2. If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;

3. If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this biological opinion; or

4. If a new species is listed or critical habitat designated that may be affected by the identified action.

[2] Jonathan_D_Snyder@fws.gov

If you have any questions regarding this biological opinion, please contact Jonathan Snyder[3] of this office at 760-431-9440, extension 208.

Sincerely,

JONATHAN SNYDER
Digitally signed by JONATHAN SNYDER
Date: 2024.06.25 16:14:03 -07'00'

for Scott A. Sobiech
Field Supervisor

Appendices

[3] Jonathan_D_Snyder@fws.gov.

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[4] The measures included in Appendix C of this biological opinion are a subset of all the measures that the Authority will implement. To avoid discrepancies in text, citations included in this appendix appear exactly as they do in the Authority's measures. For example, this article is cited as USFWS 2009c even though there is not a USFWS 2009b.

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[Service] U.S. Fish and Wildlife Service. 2017. Preparing for any action that may occur within the range of the Mojave Desert tortoise (*Gopherus agassizii*). Utah Ecological Services Field Office. August 31, 2017.[5]

[Service] U.S. Fish and Wildlife Service. 2018. Shade Structures for Desert Tortoise Exclusion Fence: DRAFT Design Guidance. U.S. Fish and Wildlife Service, Palm Springs, California.

[Service] U.S. Fish and Wildlife Service. 2019. Coastal California Gnatcatcher *(Polioptila californica californica*) Presence/Absence Survey Protocol. Originally published July 28, 1997. Revised June 26, 2019. U.S. Fish and Wildlife Service, Carlsbad, California.

[Service] U.S. Fish and Wildlife Service. 2020. 5-Year Review Coastal California gnatcatcher (*Polioptila californica californica*. Prepared by the Carlsbad Fish and Wildlife Office, Carlsbad, California. 4 pp.

[Service] U.S. Fish and Wildlife Service. 2021. Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning. March 2021. U. S. Fish and Wildlife Service, Migratory Bird Program, Falls Church, Virginia.

[Service] U.S. Fish and Wildlife Service. 2022. *Dodecahema leptoceras* (Slender-horned spineflower) 5-year review: Summary and evaluation. Prepared by the Carlsbad Fish and Wildlife Office, Carlsbad, California. 36 pp.

[Service] U.S. Fish and Wildlife Service. 2023. Arroyo toad 5-year review: Summary and Evaluation. U.S. Fish and Wildlife Service, Region 8. Ventura, California. 38 pp.

Unitt, P. 1987. *Empidonax traillii extimus*: an endangered subspecies. Western Birds 18:137-162.

Winchell, C.S. and P.F. Doherty. 2008. Using California gnatcatcher to test underlying models of habitat conservation plans. Journal of Wildlife Management 72:1322–1327.

PERSONAL COMMUNICATIONS

Dellith, C. 2023. Biologist, U.S. Fish and Wildlife Service. Email correspondence to Sally Brown, Biologist, U.S. Fish and Wildlife Service. Dated September 13, 2023. Subject: RE: vireos at Santa Clara River.

[5] The measures included in Appendix C of this biological opinion are a subset of all the measures that the Authority will implement. To avoid discrepancies in text, citations included in this appendix appear exactly as they do in the Authority's measures. For example, this article is cited as USFWS 2017 even though it is the second article cited by the U.S. Fish and Wildlife Service from 2017.

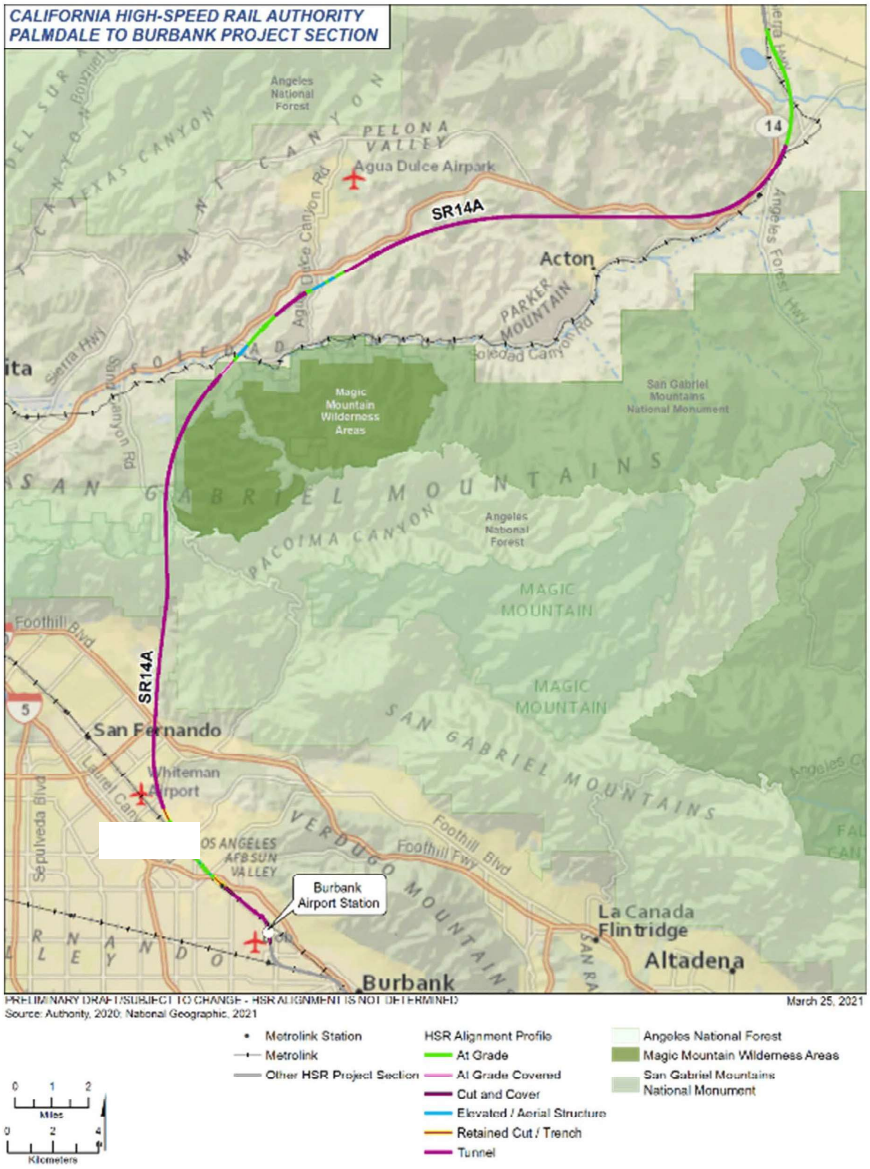

Figure 2-2 SR14A Overview Map

Figure 1. SR-14A Build Alternative (Source: Authority 2023).

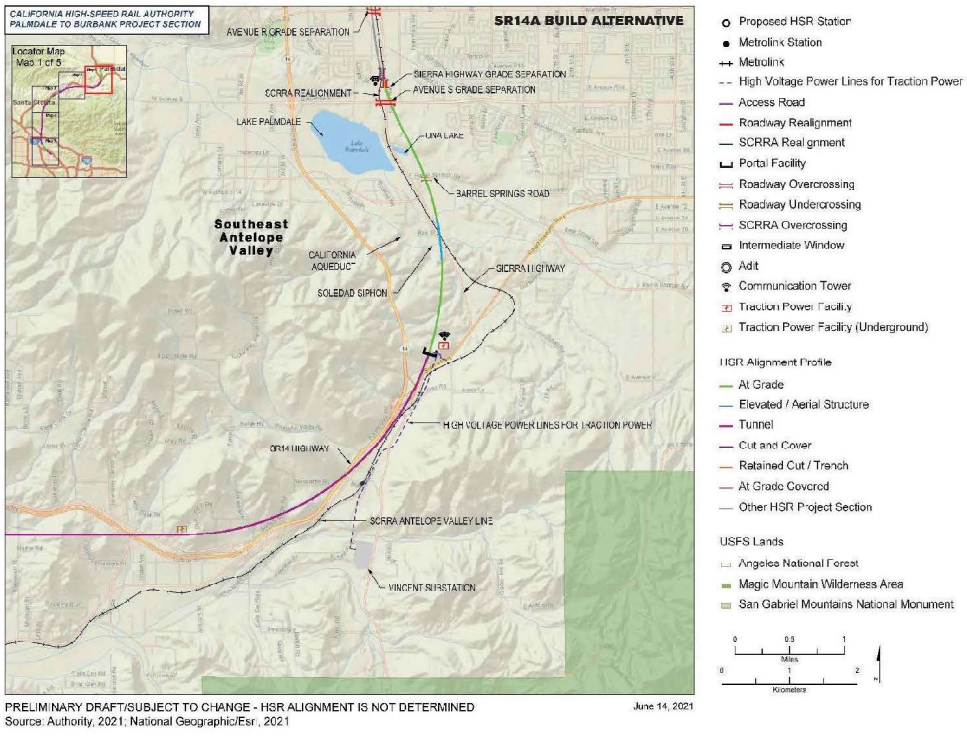

Figure 2-3 SR14A Build Alternative (Map 1 of 5)

Figure 2. SR-14A Build Alternative Detail Map 1 of 5 (Source: Authority 2023).

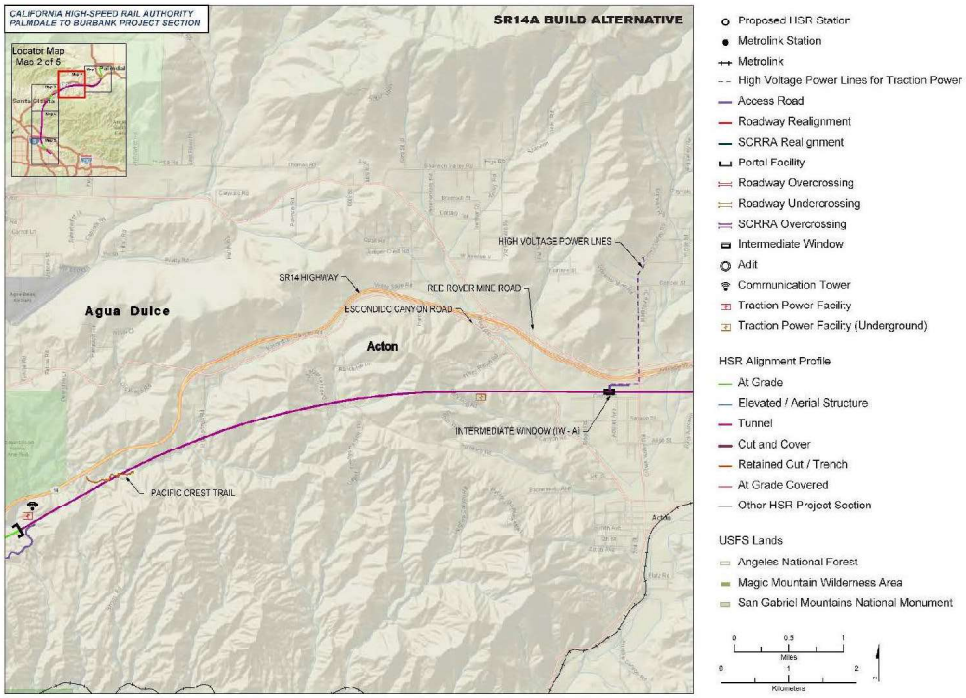

Figure 2-4 SR14A Build Alternative (Map 2 of 5)

Figure 3. SR-14A Build Alternative Detail Map 2 of 5 (Source: Authority 2023).

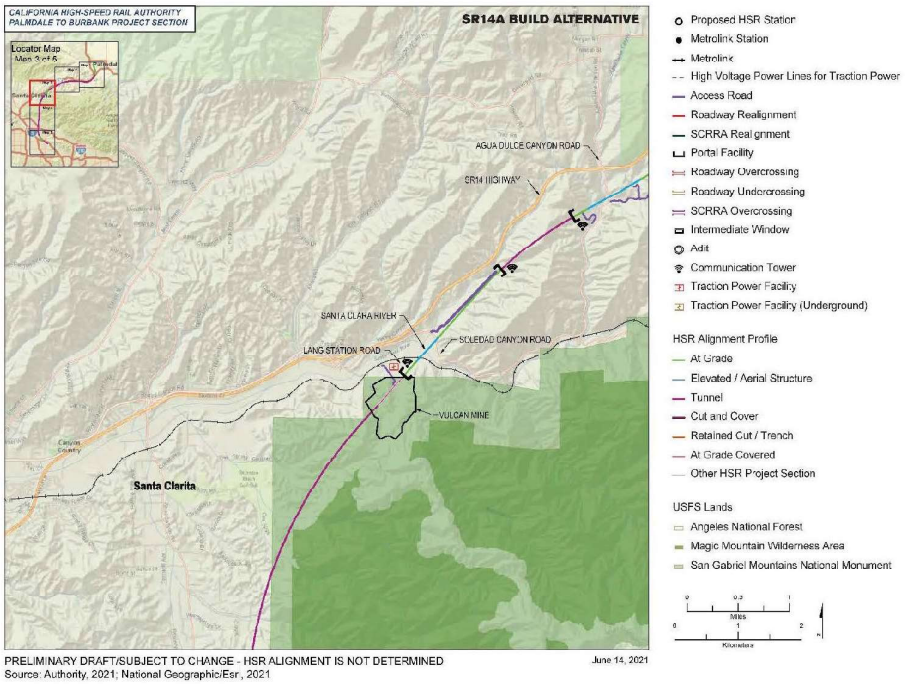

Figure 2-5 SR14A Build Alternative (Map 3 of 5)

Figure 4. SR-14A Build Alternative Detail Map 3 of 5 (Source: Authority 2023).

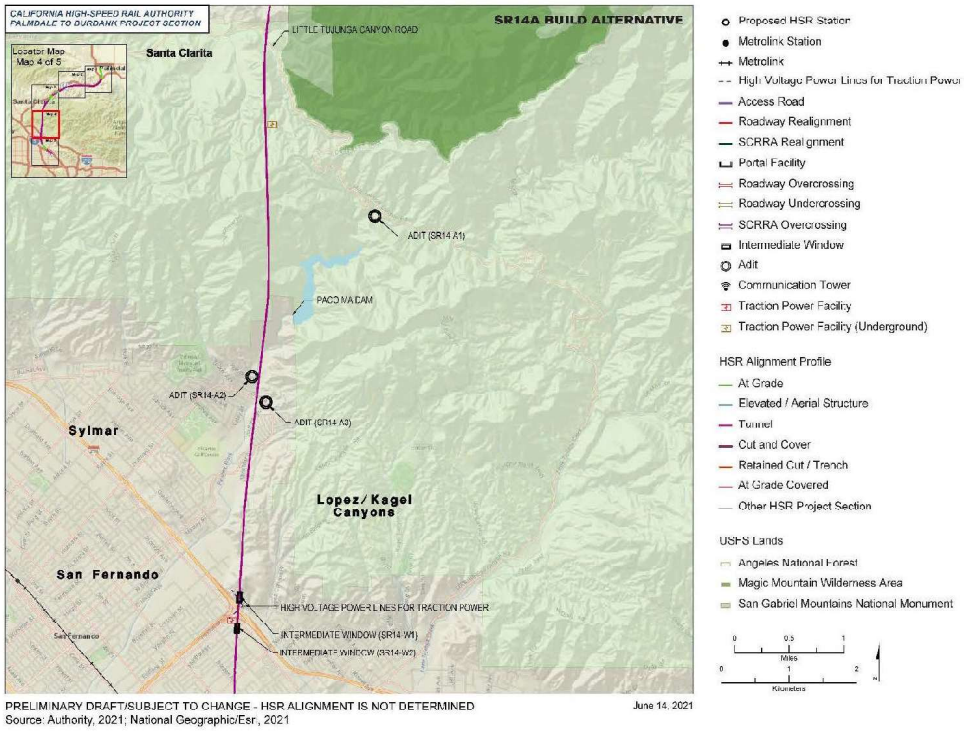

Figure 2-6 SR14A Build Alternative (Map 4 of 5)

Figure 5. SR-14A Build Alternative Detail Map 4 of 5 (Source: Authority 2023).

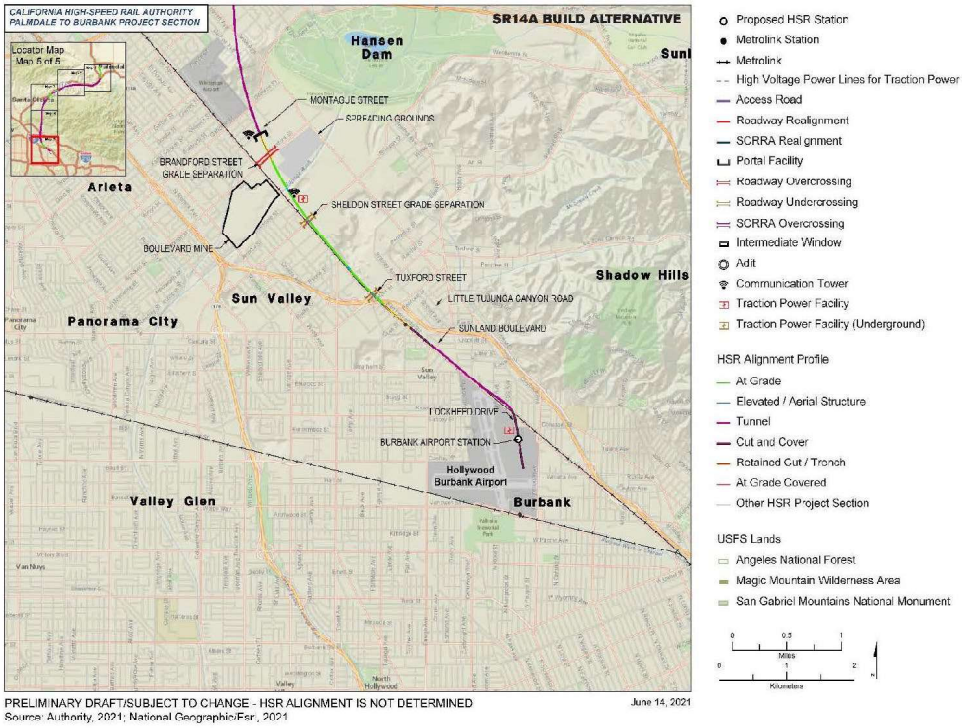

Figure 2-7 SR14A Build Alternative (Map 5 of 5)

Figure 6. SR-14A Build Alternative Detail Map 5 of 5 (Source: Authority 2023).

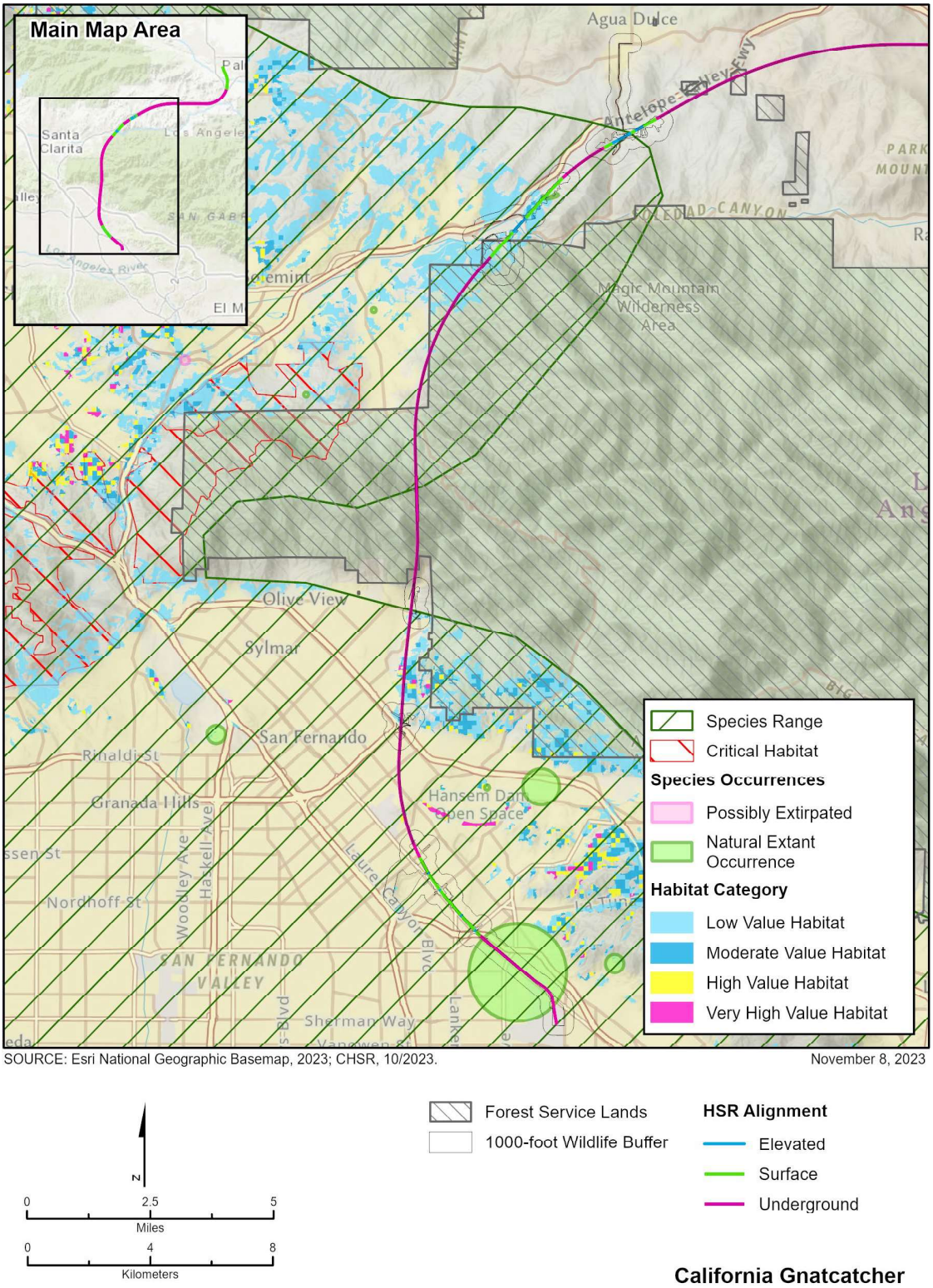

Figure 7. Coastal California Gnatcatcher Modeled Habitat (Source: Authority 2023).

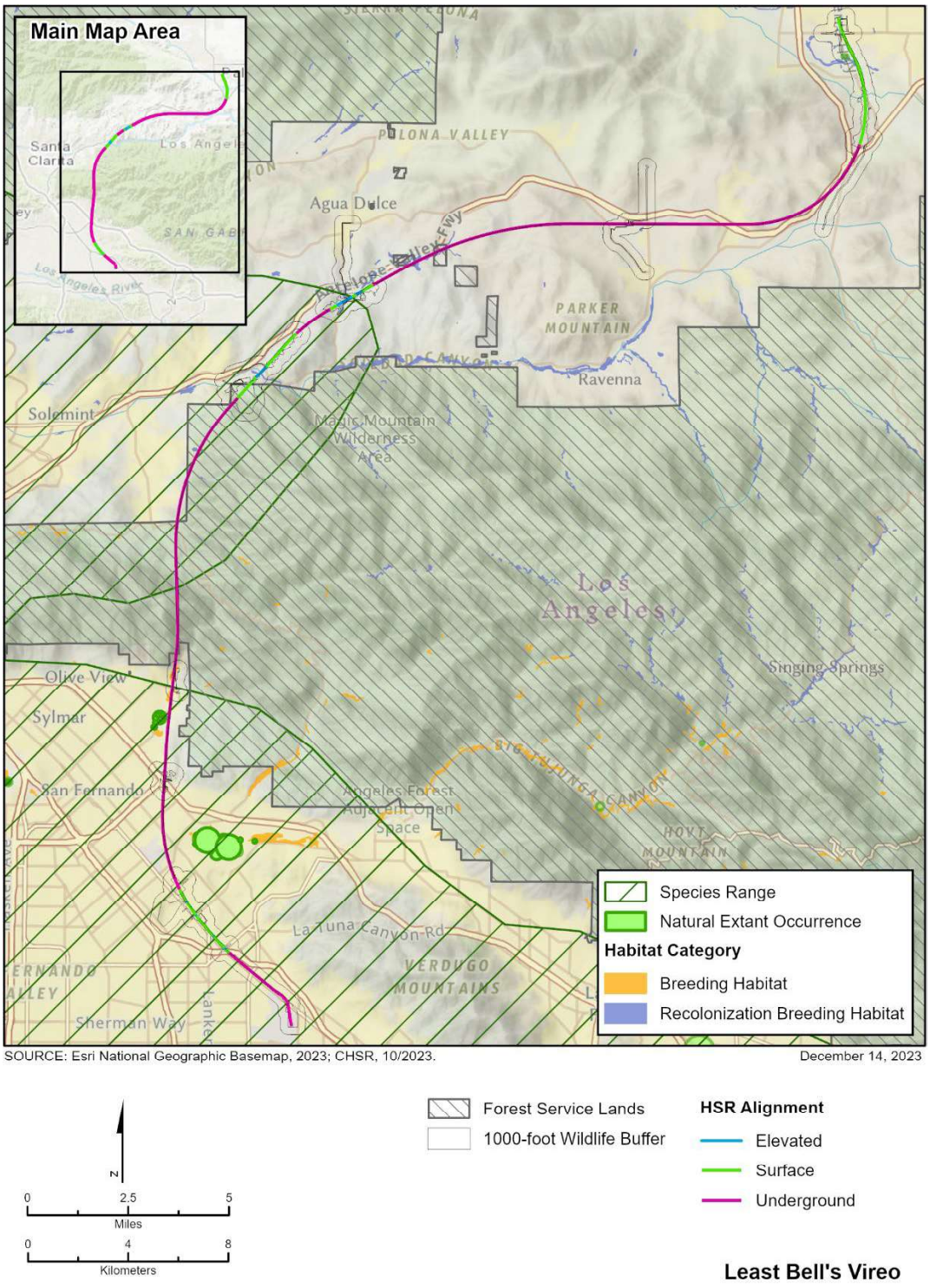

Figure 8. Least Bell's Vireo Modeled Habitat (Source: Authority 2023).

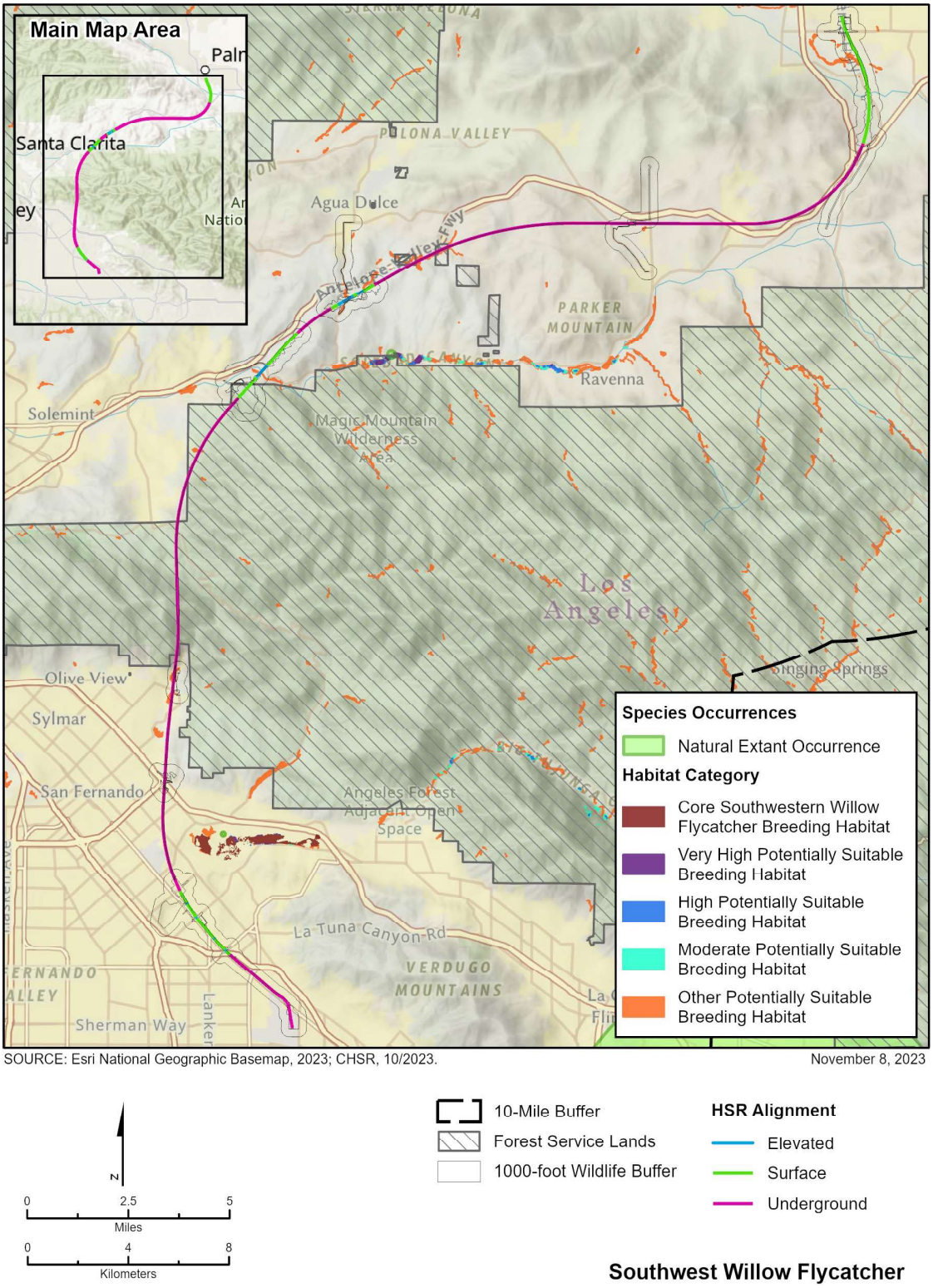

Figure 9. Southwestern Willow Flycatcher Modeled Habitat (Source: Authority 2023).

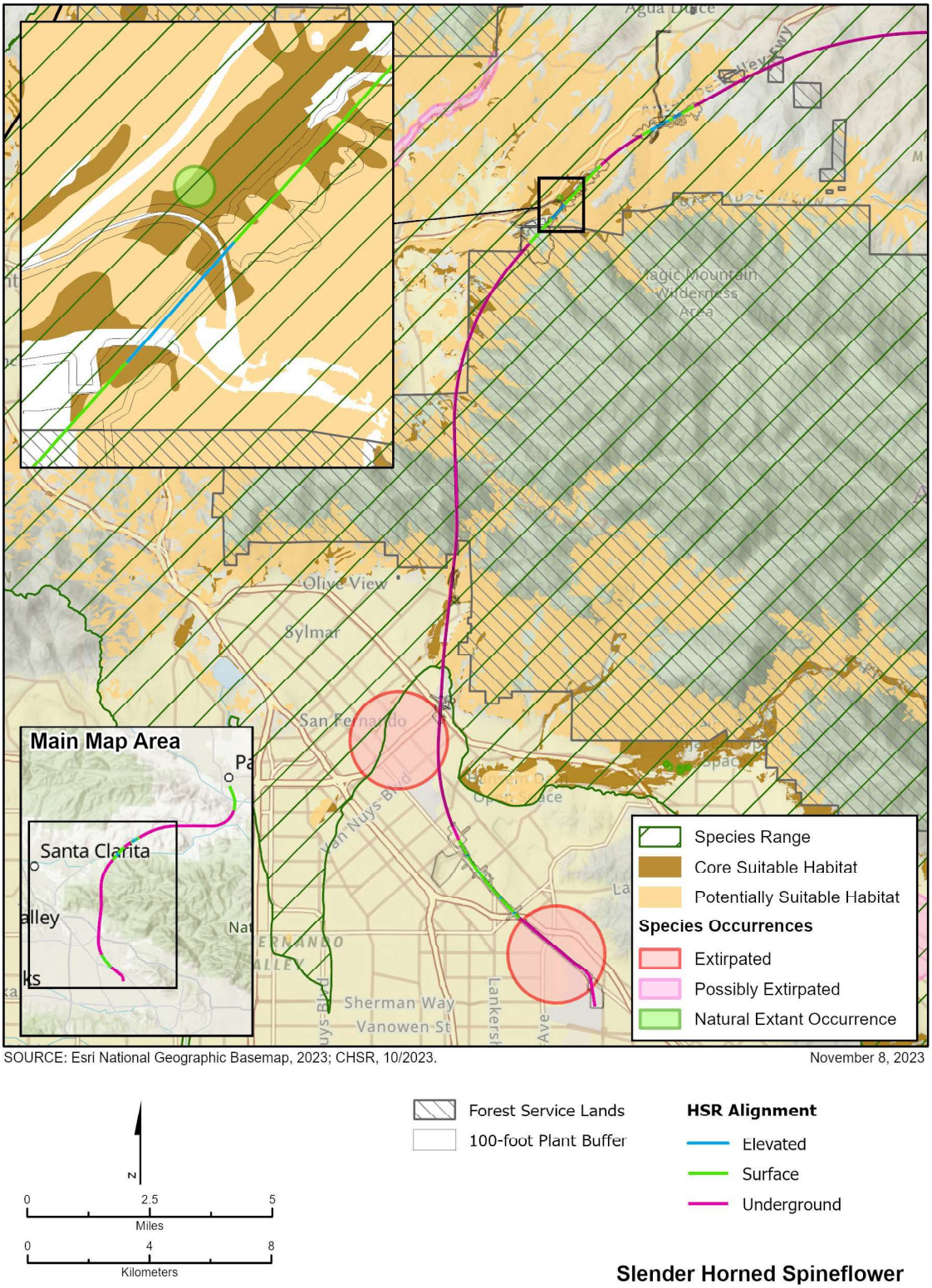

Figure 10. Slender-Horned Spineflower Modeled Habitat (Source: Authority 2023).

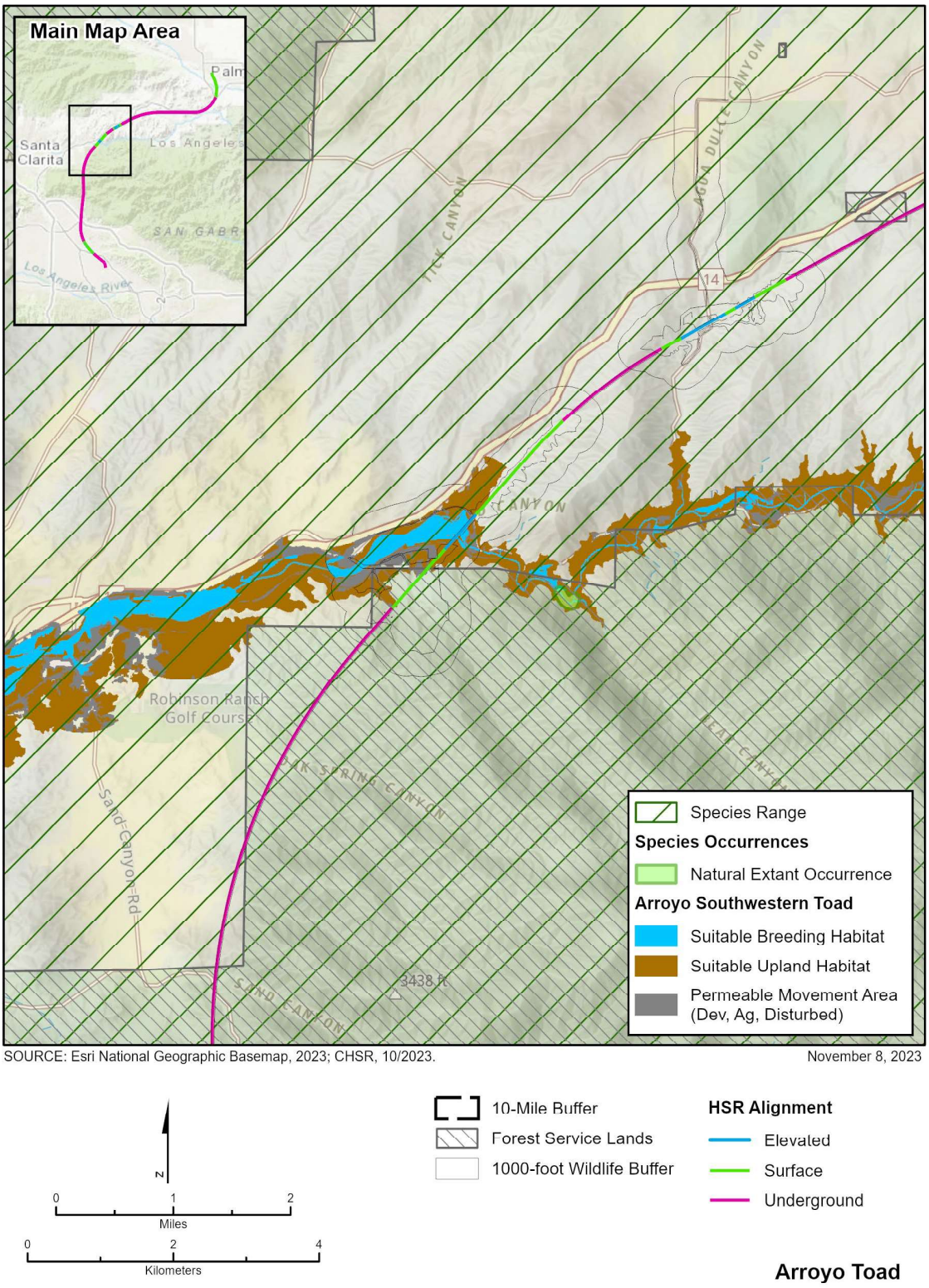

Figure 11. Arroyo Toad Modeled Habitat (Source: Authority 2023).

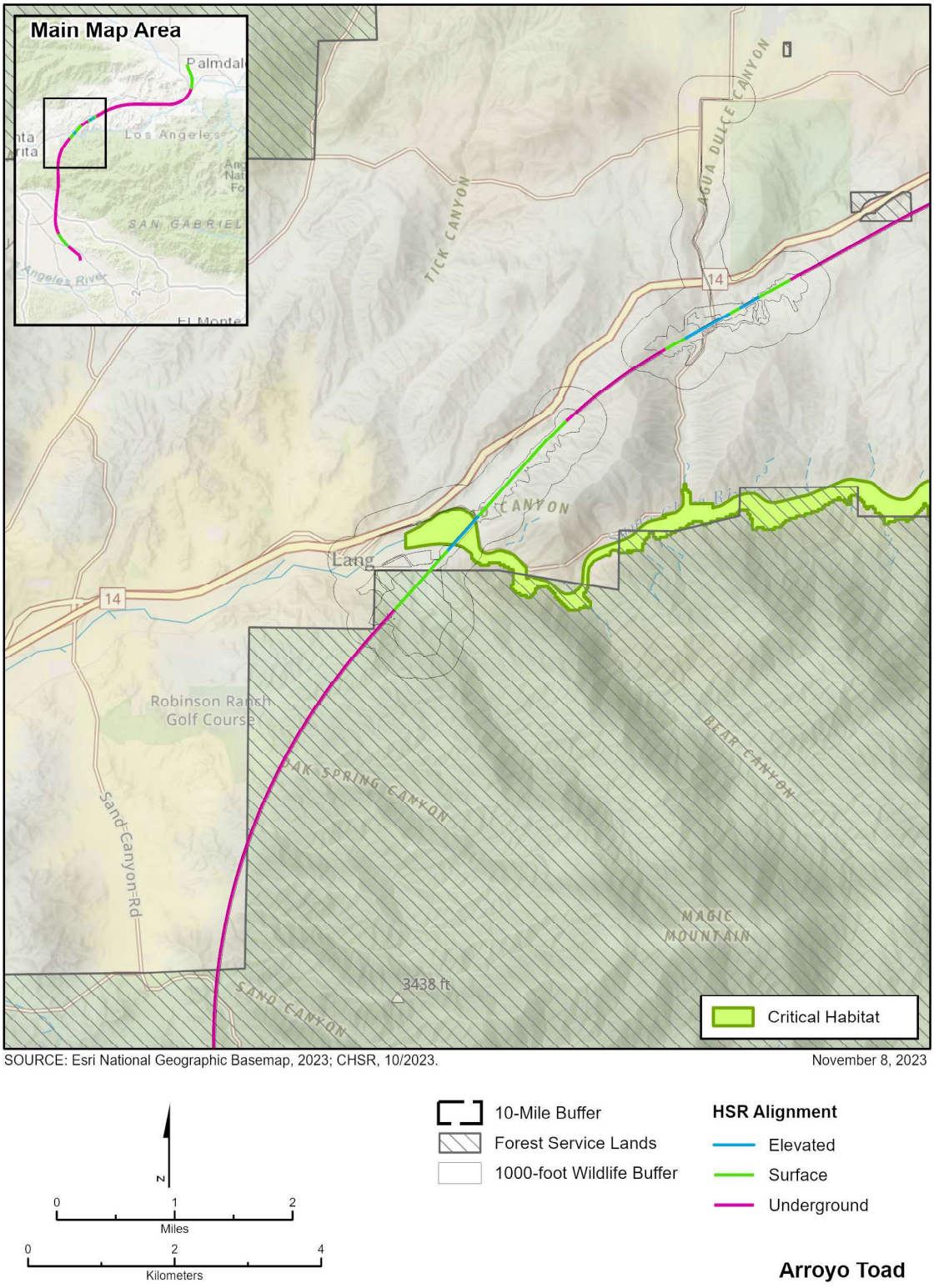

Figure 12. Arroyo Toad Critical Habitat (Source: Authority 2023).

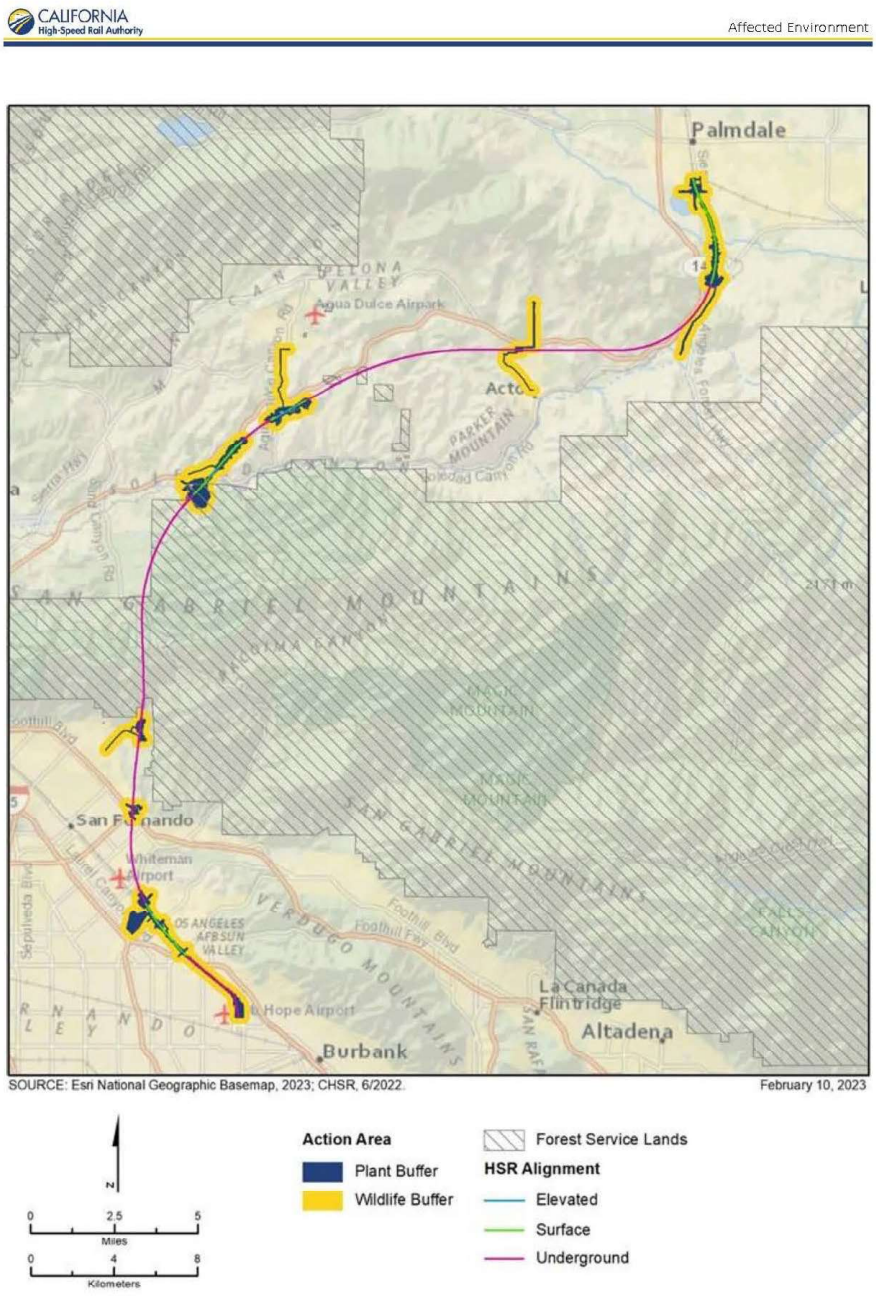

Figure 13. SR-14A Build Alternative Action Area (Source: Authority 2023).

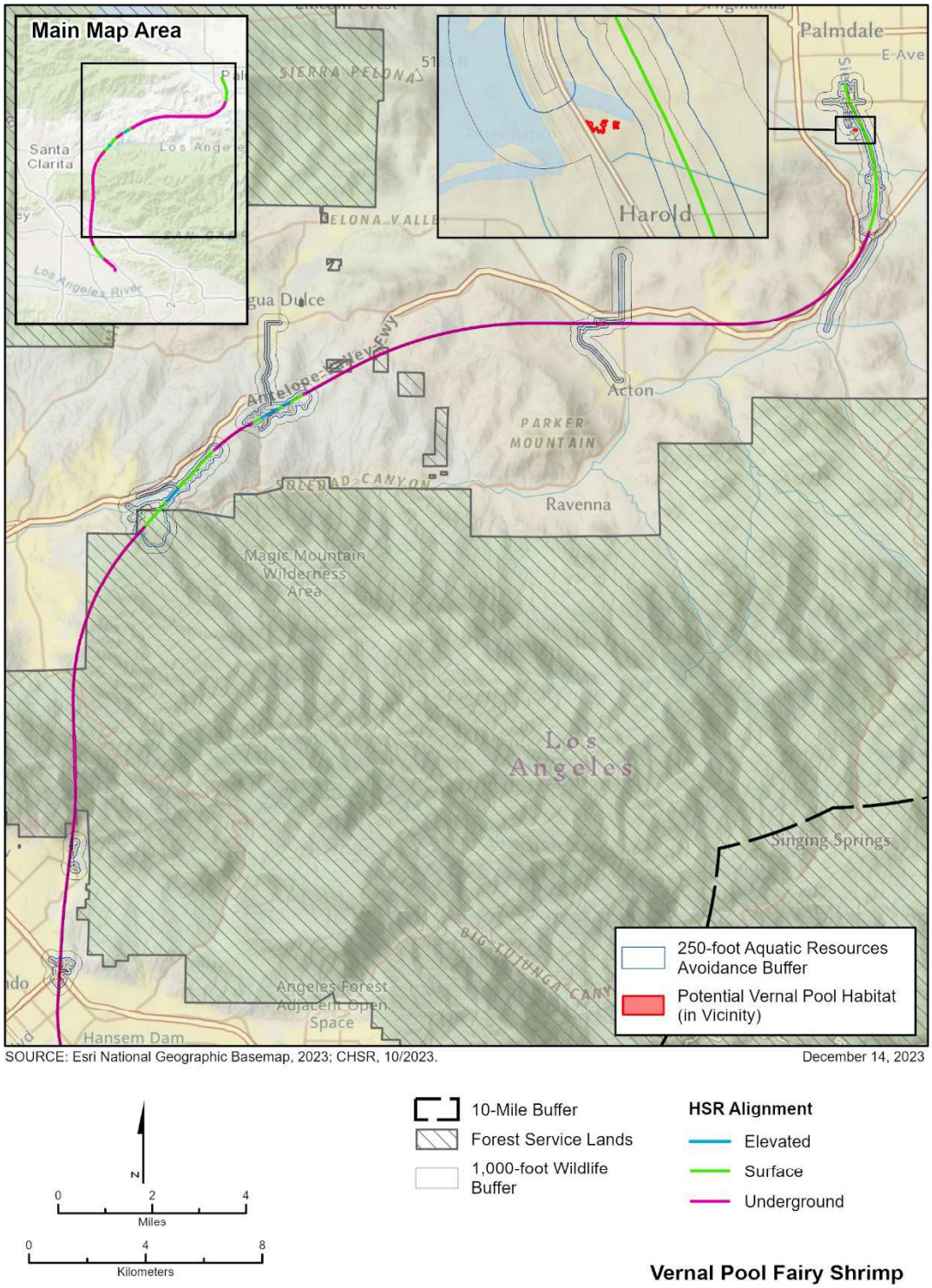

Figure 14. Vernal Pool Fairy Shrimp Habitat (Source: Authority 2023).

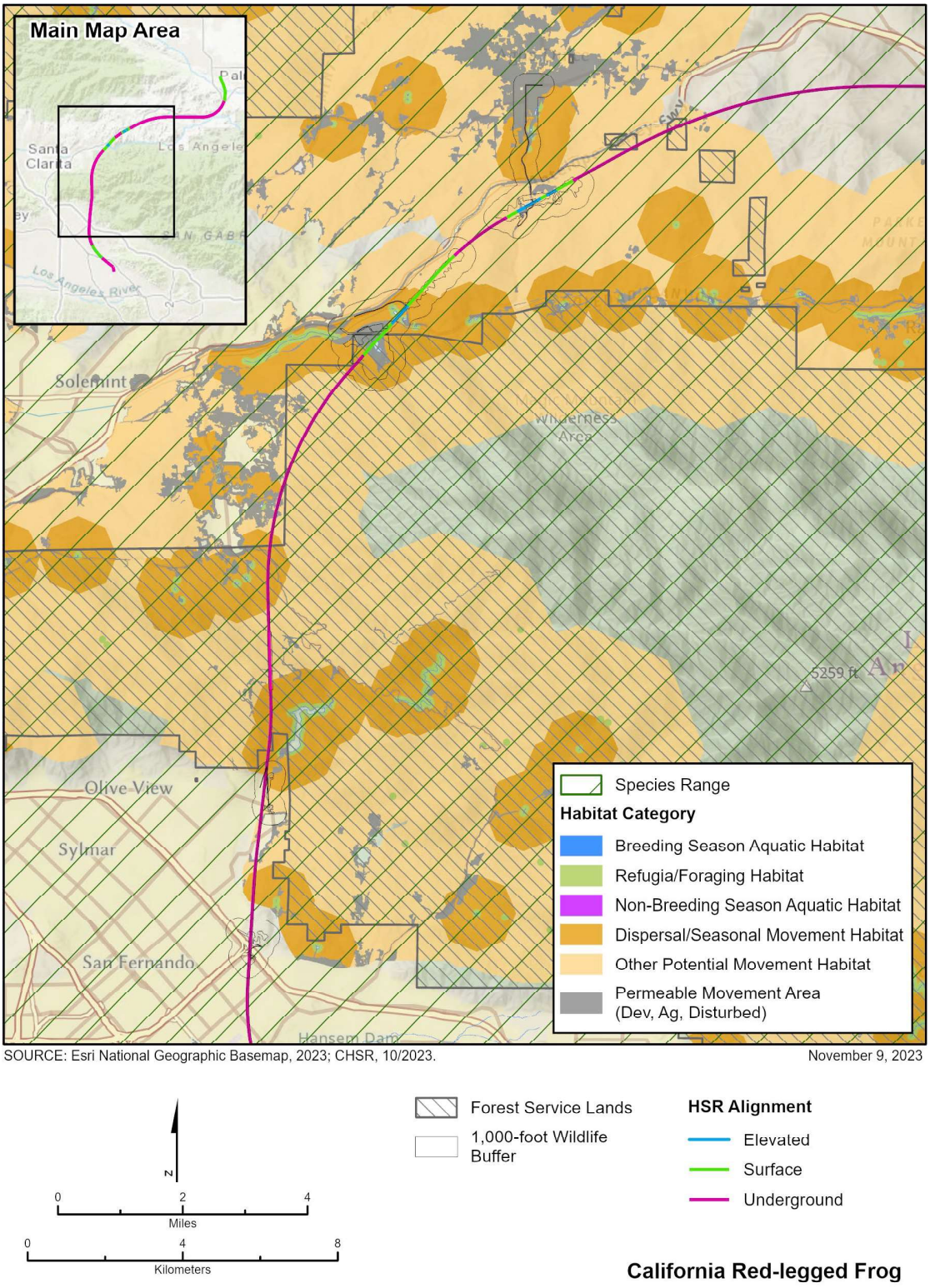

Figure 15. California Red-Legged Frog Modeled Habitat (Source: Authority 2023).

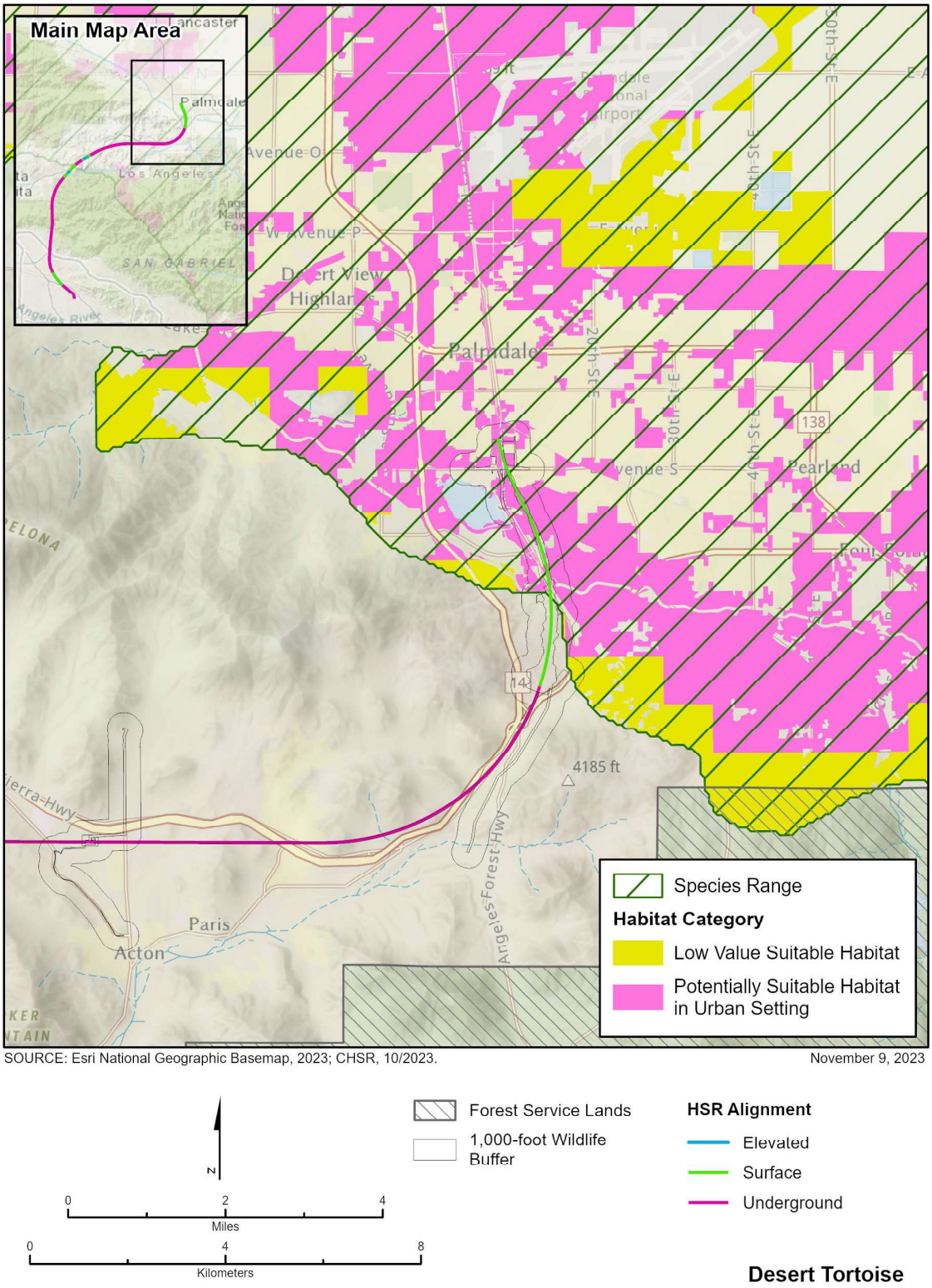

Figure 16. Desert Tortoise Modeled Habitat (Source: Authority 2023).

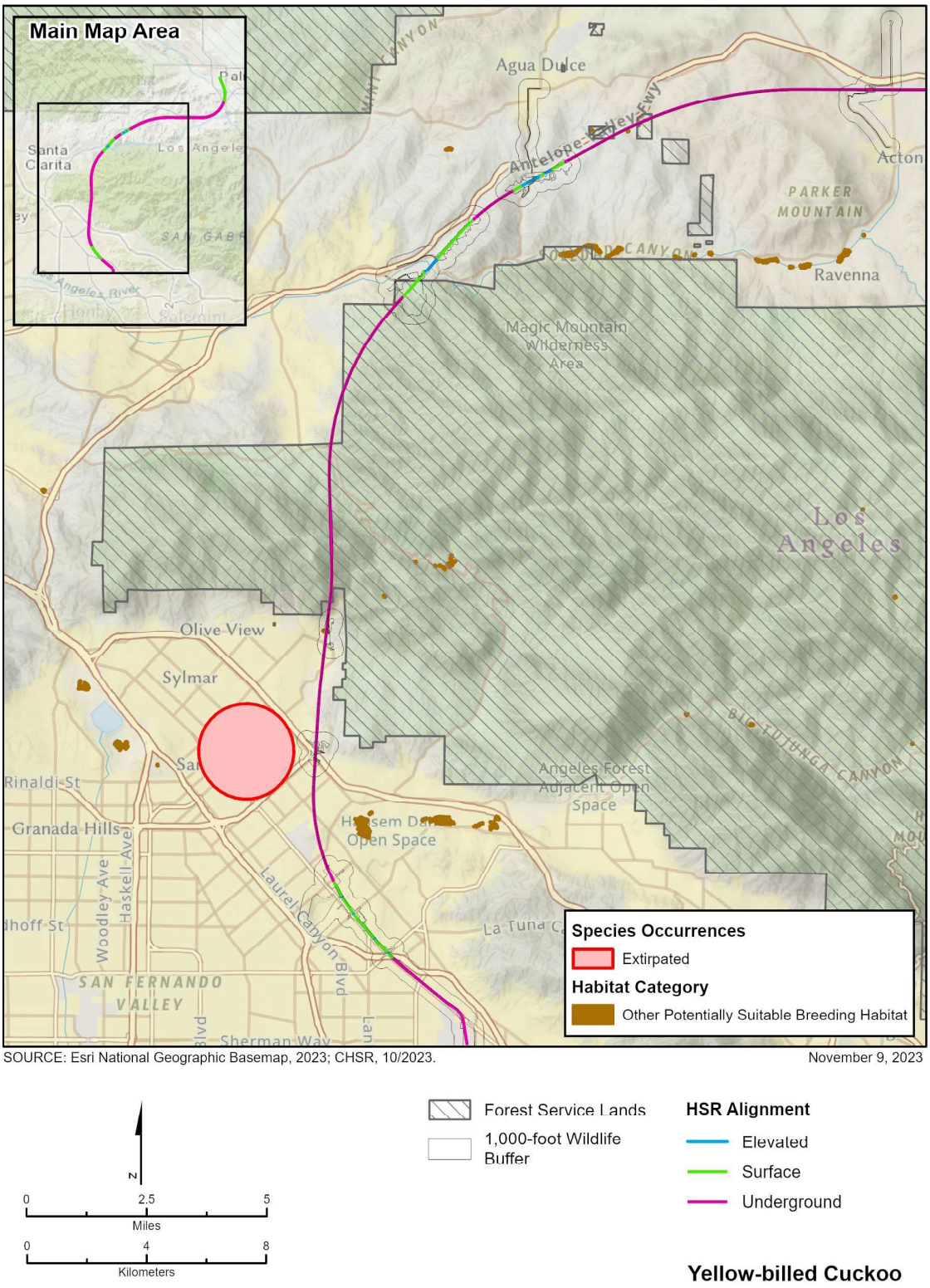

Figure 17. Yellow-Billed Cuckoo Modeled Habitat (Source: Authority 2023).

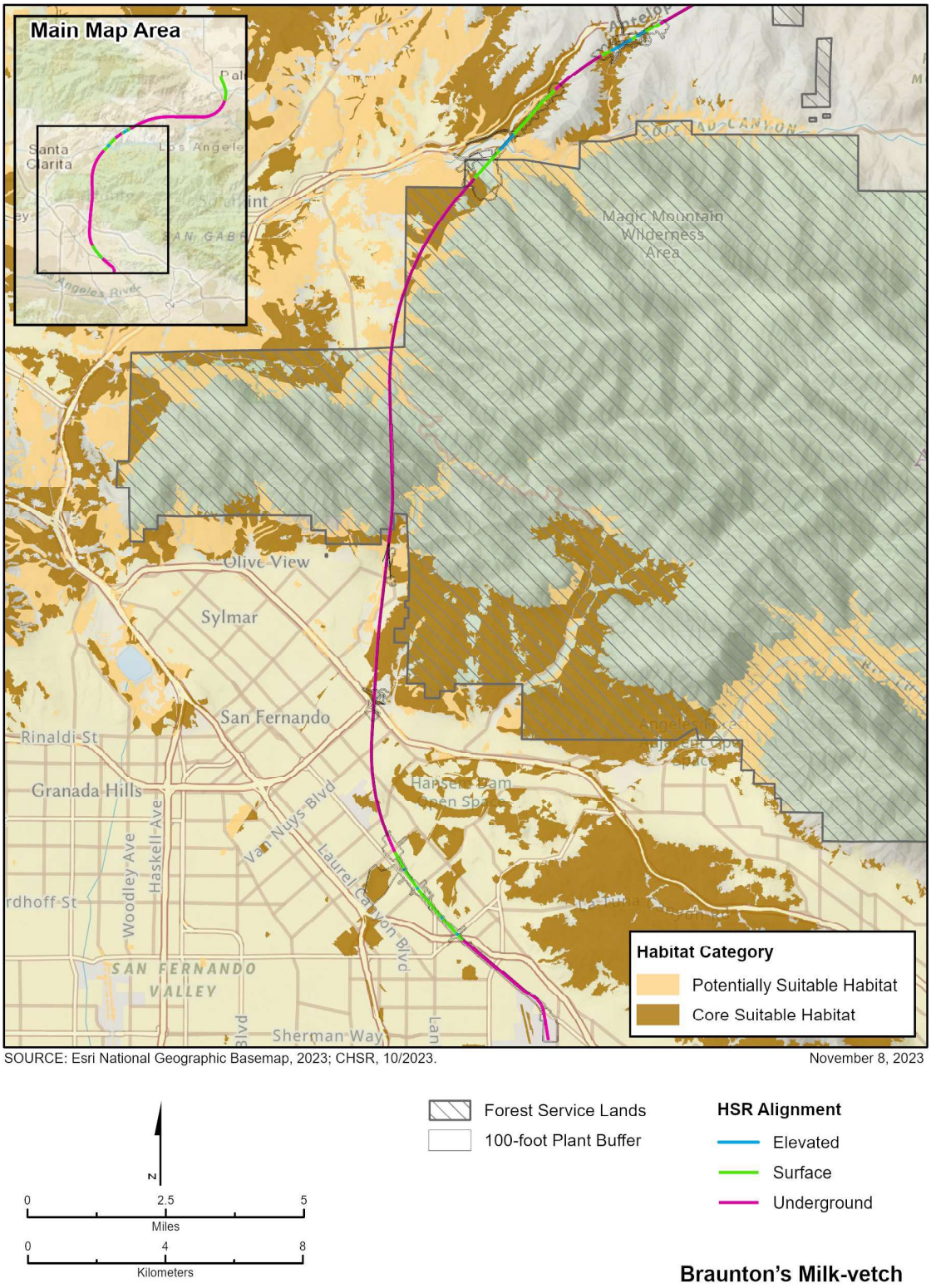

Figure 18. Braunton's Milk-Vetch Modeled Habitat (Source: Authority 2023).

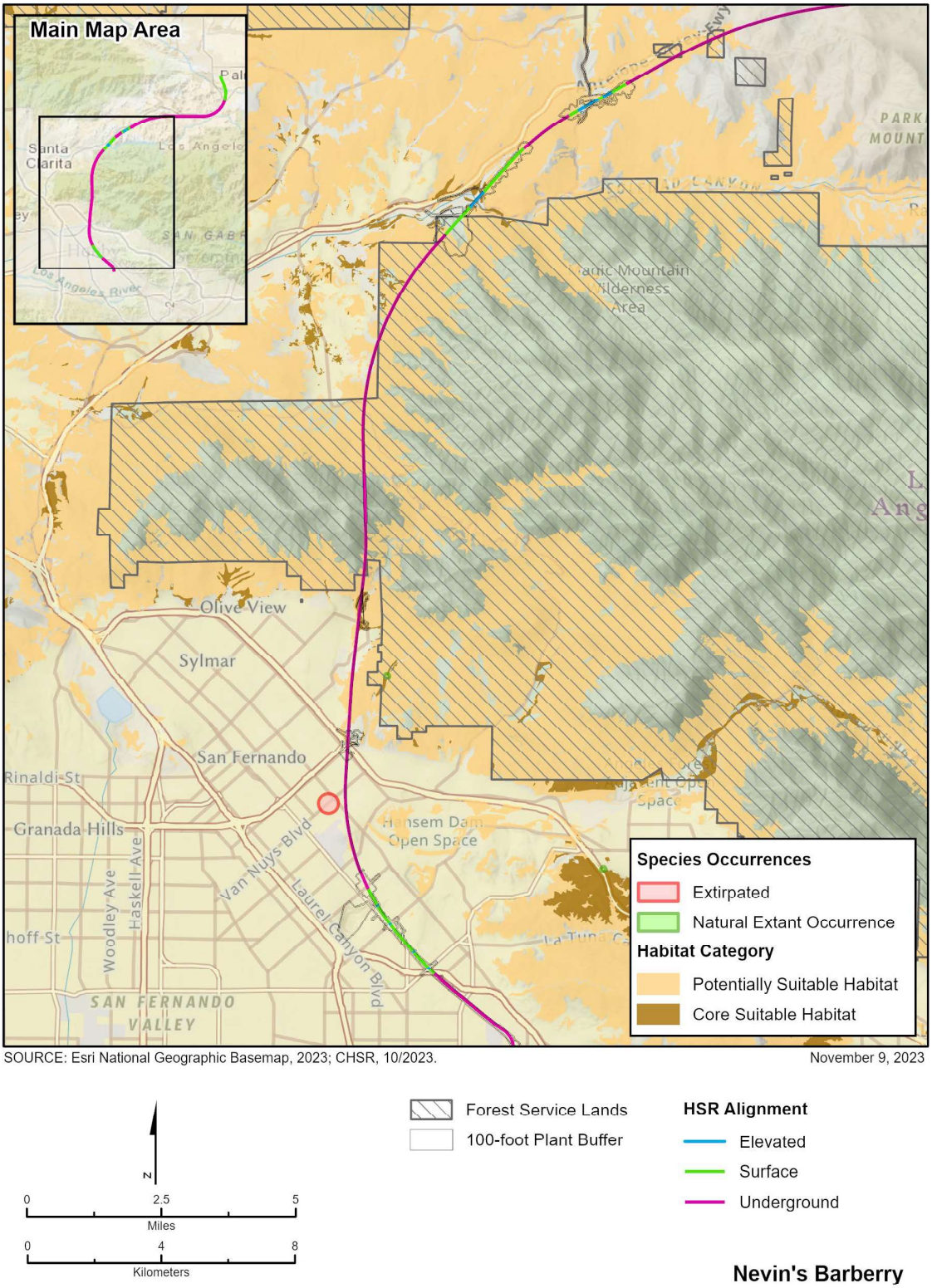

Figure 19. Nevin's Barberry Modeled Habitat (Source: Authority 2023).

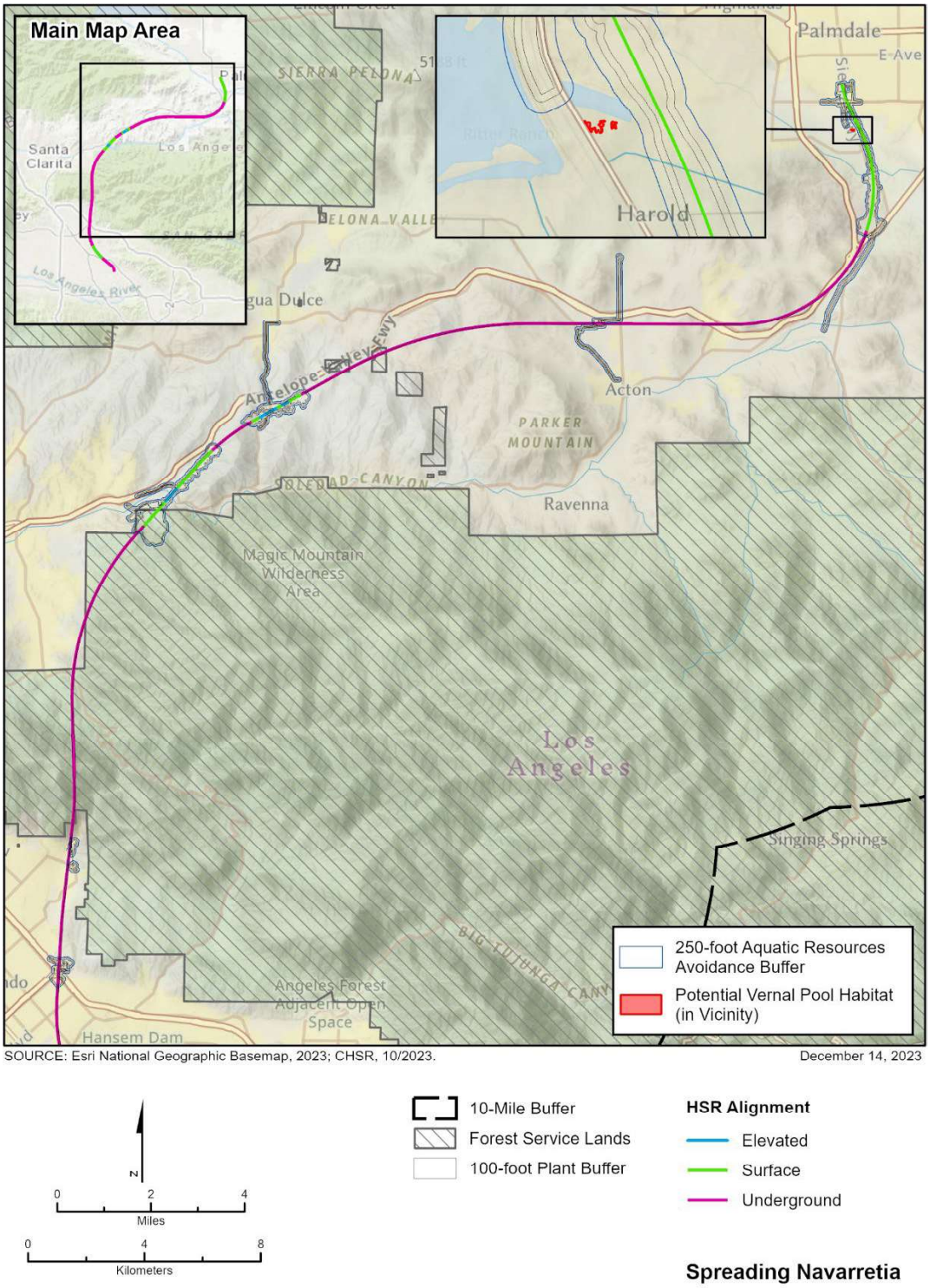

Figure 20. Spreading Navarretia Habitat (Source: Authority 2023).

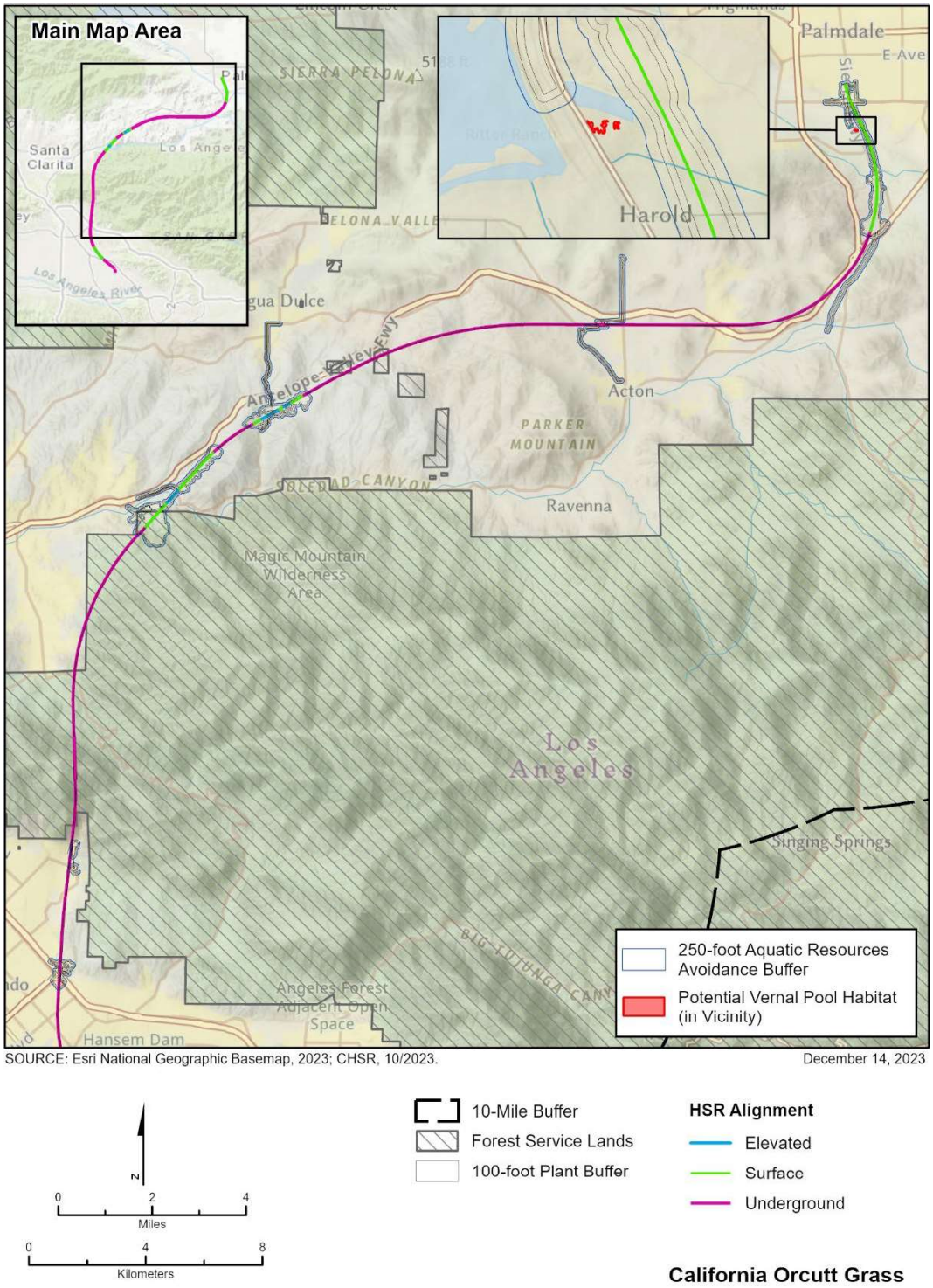

Figure 21. California Orcutt Grass Habitat (Source: Authority 2023).

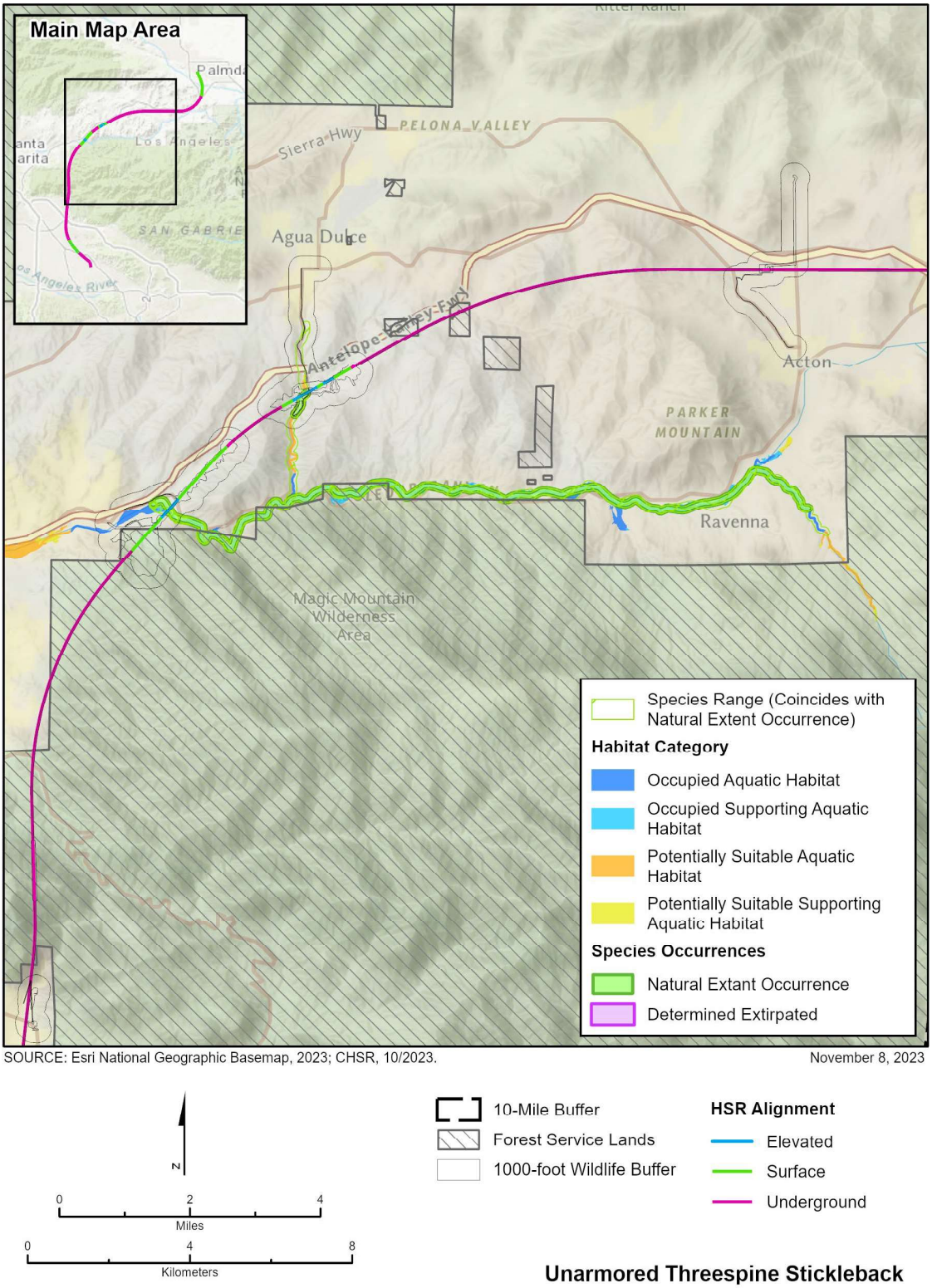

Figure 22. Unarmored Threespine Stickleback Modeled Habitat (Source: Authority 2023).

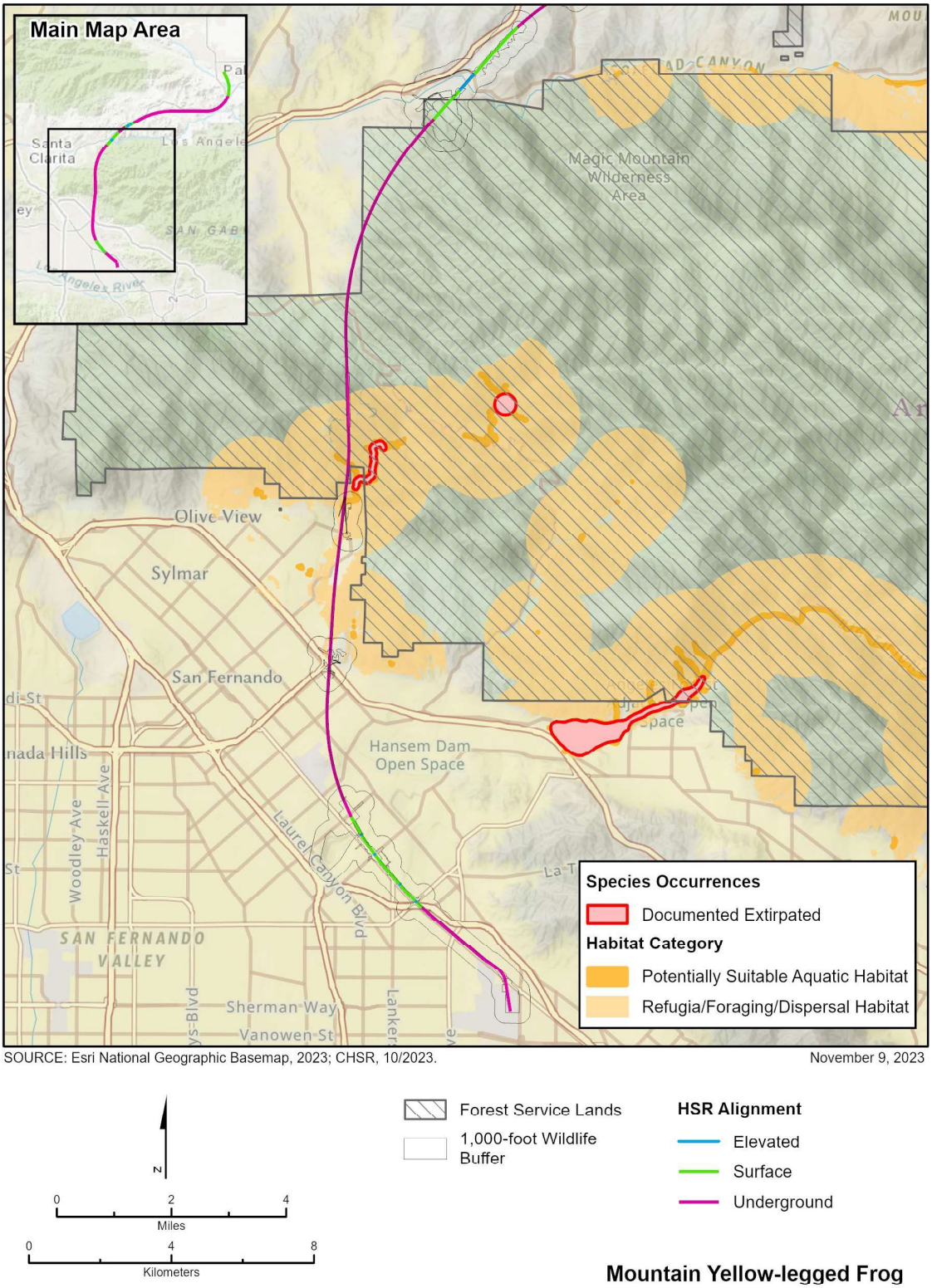

Figure 23. Mountain Yellow-Legged Frog Modeled Habitat (Source: Authority 2023).

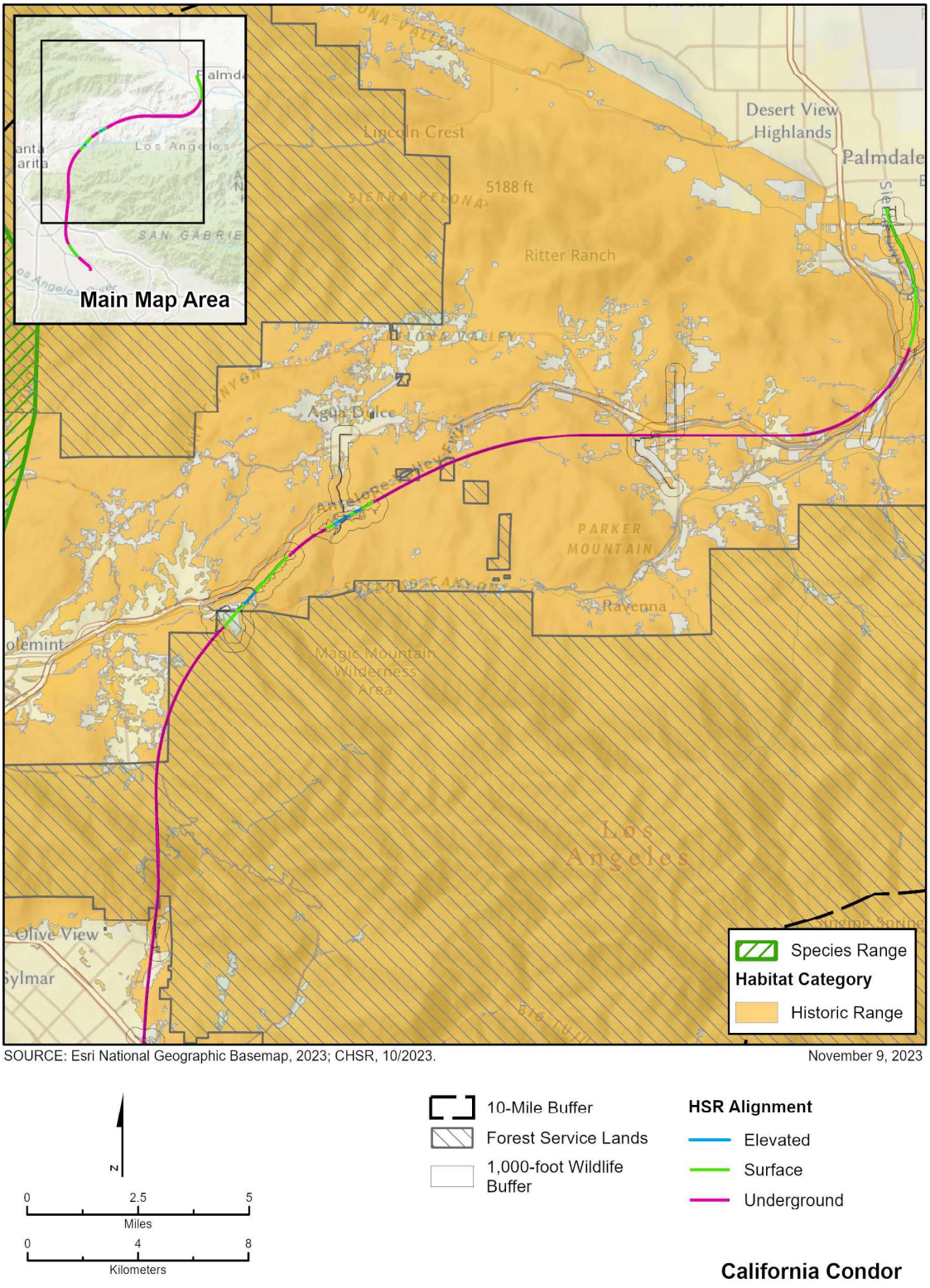

Figure 24. California Condor Modeled Habitat (Source: Authority 2023).

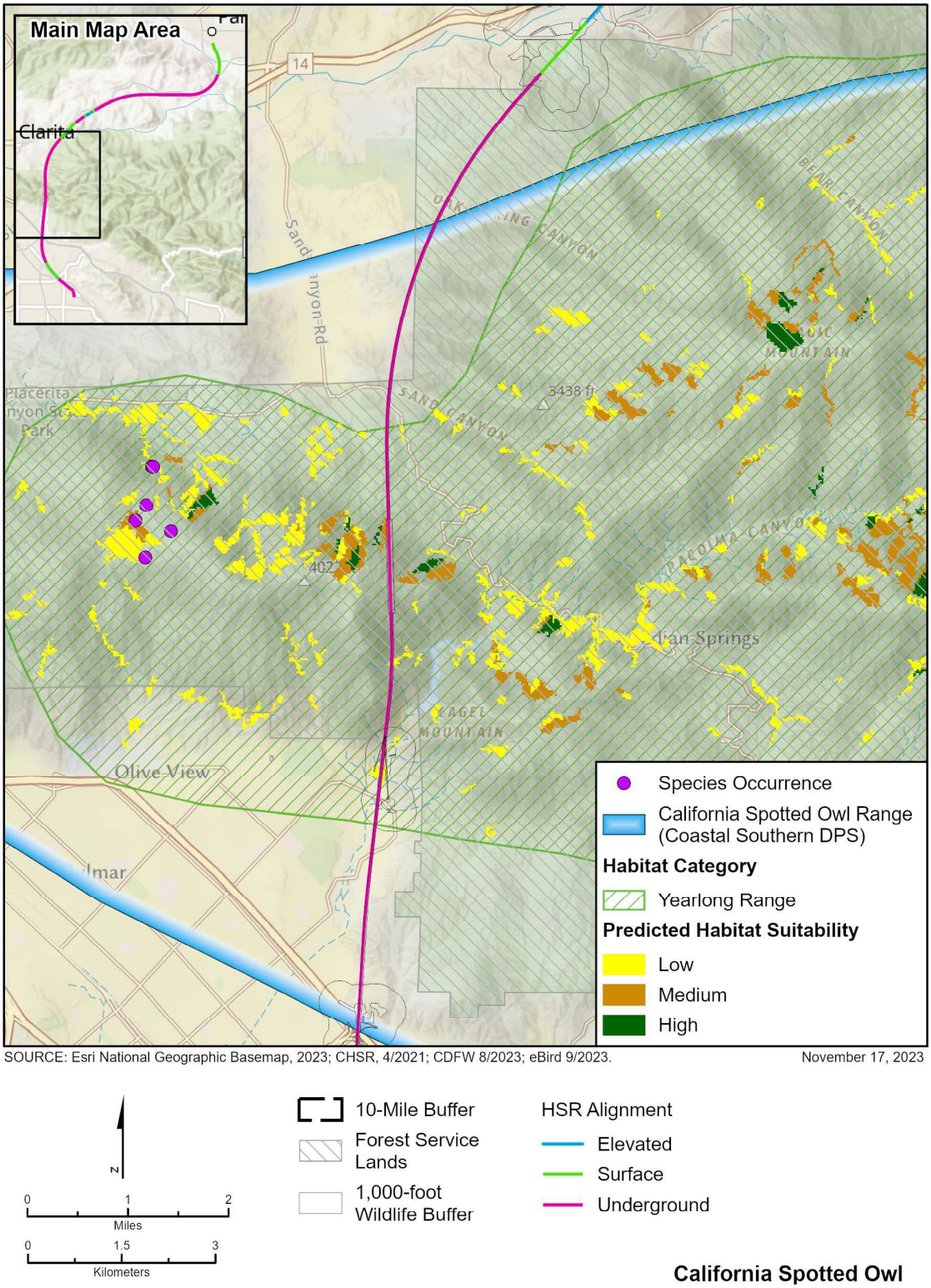

Figure 25. California Spotted Owl Habitat (Source: Authority 2023).

APPENDIX A

Section 7 Consultation and Conference California High Speed Rail Palmdale to Burbank Section Los Angeles County, California

NOT LIKELY TO ADVERSELY AFFECT DETERMINATIONS

The following information supports the Service's concurrence with the Authority's not likely to adversely affect determination for the federally threatened vernal pool fairy shrimp, California red-legged frog, desert tortoise, and Yellow-billed cuckoo, and the federally endangered Braunton's milk-vetch, Nevin's barberry, spreading navarretia, California Orcutt grass, unarmored threespine stickleback, mountain yellow-legged frog, and California condor, and the proposed endangered California spotted owl, in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq*.), for the California High Speed Rail Palmdale to Burbank Section, Los Angeles County, California.

Vernal Pool Fairy Shrimp

Vernal pool fairy shrimp surveys were not conducted for the project, but vernal pool assessment was conducted for the project in the winter of 2017. In addition, the CNDDB has records for the species west of the action area in the vicinity of Santa Clarita. Potential habitat for vernal pool fairy shrimp is distributed throughout the project area as shown in Figure 14.

To ensure that impacts to vernal pool fairy shrimp are reduced to the level of insignificance, surveys will be conducted prior to any vegetation removal or ground disturbing activities for the project (CM-VRN-01). If vernal pool fairy shrimp are observed, ESA fencing will be installed to avoid impacts to the pool (CM-VRN-03). In addition, ground disturbing activities will not occur within 250 feet of vernal pools or seasonal wetlands during the rainy season (CM-VRN-02). If vernal pool fairy shrimp individuals cannot be avoided, the Authority will reinitiate section 7 consultation to address unanticipated impacts to the species.

Without appropriate conservation measures, impacts could occur to vernal pool fairy shrimp outside of the project impact footprint but within 250 feet of project construction as a result of introduction of invasive species, habitat fragmentation, sedimentation, dust, pollution, increased access, human encroachment, and light spill associated with project construction, operation, and maintenance. However, the project has incorporated measures to avoid and minimize impacts to vernal pool fairy shrimp (Table A1). These measures are anticipated to minimize these potential impacts on vernal pool fairy shrimp in adjacent habitat to the point where such effects are insignificant.

Table A1. Measures to Avoid or Minimize Adverse Effects to Vernal Pool Fairy Shrimp.

Effects of the Action	Conservation Measures
Introduction of invasive species, resulting in increased competition Habitat fragmentation resulting in loss of connectivity between populations Sedimentation, dust, pollution resulting in habitat degradation Increased access and human encroachment resulting in trampling, increased risk of wildfire Light spill resulting in physiological effects	CM-GEN-01: Establish Qualified Biologists and Biological Monitors CM-GEN-02: Conduct Monitoring of Construction Activities CM-GEN-03: Prepare and Implement a Weed Control Plan CM-GEN-05: Prepare and Implement a Construction Stormwater Pollution Prevention Plan CM-GEN-06: Prepare and Implement a Spill Prevention Plan CM-GEN-07: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training CM-GEN-08: Conduct Operation and Maintenance Period WEAP CM-GEN-11: Delineate Equipment Staging Areas and Traffic Routes CM-GEN-12: Stockpile and Redistribute Excavated Soil CM-GEN-13: Dispose of Construction Spoils and Waste CM-GEN-14: Clean Construction Equipment CM-GEN-15: Establish Environmentally Sensitive Areas and Non-Disturbance Zones CM-GEN-18: Establish Wildlife Crossings CM-GEN-19: Work Stoppage CM-GEN-21: Implement Avoidance of Nighttime Light Disturbance CM-GEN-22: Implement Water or Dust Palliative Measures CM-VRN-01: Conduct Pre-construction Surveys for Vernal Pool Wildlife Species CM-VRN-02: Implement Seasonal Vernal Pool Work Restriction CM-VRN-03: Implement and Monitor Vernal Pool Avoidance and Minimization Measures within Temporary Impact Areas

California Red-legged Frog

California Red-legged frog surveys were conducted for the project in portions of the action area, including Una Lake and the Santa Clara River, in 2017 (Authority 2017). In addition, the CNDDB has records for the species west of the action area in the vicinity of San Francisquito Creek and Amargosa Creek, and east of the action area in the vicinity of Aliso Canyon Creek. Modeled habitat for California red-legged frog is distributed throughout the project area as shown in Figure 15.

To ensure that impacts to California red-legged frog are reduced to the level of insignificance, surveys will be conducted prior to any vegetation removal or ground disturbing activities for the

project (CM-CRLF/MYLF-01). If California red-legged frog individuals cannot be avoided, the Authority will reinitiate section 7 consultation to address unanticipated impacts to the species.

Without appropriate conservation measures, impacts could occur to California red-legged frogs outside of the project impact footprint but within 1,000 feet of project construction as a result of introduction of invasive species, habitat fragmentation, sedimentation, dust, pollution, water diversions, increased access, human encroachment, light spill, and noise and vibrations associated with project construction, operation, and maintenance. However, the project has incorporated measures to avoid and minimize impacts to California red-legged frogs (Table A2). These measures are anticipated to minimize these potential impacts on California red-legged frogs in adjacent habitat to the point where such effects are insignificant.

Table A2. Measures to Avoid or Minimize Adverse Effects to California Red-legged Frog.

Effects of the Action	Conservation Measures
Introduction of invasive species, resulting in increased competition Habitat fragmentation resulting in loss of connectivity between populations Sedimentation, dust, pollution and water diversions resulting in habitat degradation Increased access and human encroachment resulting in trampling, increased risk of wildfire, construction disturbance, entrapment Light spill resulting in physiological effects Noise and vibrations resulting in masking intraspecific communication, startling, behavioral effects	CM-GEN-01: Establish Qualified Biologists and Biological Monitors CM-GEN-02: Conduct Monitoring of Construction Activities CM-GEN-03: Prepare and Implement a Weed Control Plan CM-GEN-04: Prepare Plan for Dewatering and Water Diversions CM-GEN-05: Prepare and Implement a Construction Stormwater Pollution Prevention Plan CM-GEN-06: Prepare and Implement a Spill Prevention Plan CM-GEN-07: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training CM-GEN-08: Conduct Operation and Maintenance Period WEAP CM-GEN-09: Establish Monofilament Restrictions CM-GEN-10: Avoid Animal Entrapment CM-GEN-11: Delineate Equipment Staging Areas and Traffic Routes CM-GEN-12: Stockpile and Redistribute Excavated Soil CM-GEN-13: Dispose of Construction Spoils and Waste CM-GEN-14: Clean Construction Equipment CM-GEN-15: Establish Environmentally Sensitive Areas and Non-Disturbance Zones CM-GEN-16: Install Aprons or Barriers within Security Fencing CM-GEN-17: Minimize Effects to Wildlife Movement Corridors during Construction CM-GEN-18: Establish Wildlife Crossings CM-GEN-19: Work Stoppage

Effects of the Action	Conservation Measures
	CM-GEN-20: Enforce Construction Speed Limit CM-GEN-21: Implement Avoidance of Nighttime Light Disturbance CM-GEN-22: Implement Water or Dust Palliative Measures CM-GEN-24: Tunnel Construction Methods and Approaches within the Angeles National Forest Involving Tunnel Boring Machines, Tunnel Lining Systems, and Tunnel Grouting to Avoid and Minimize Changes in Groundwater Levels as a Result of Tunnel Construction CM-GEN-25: Implement the Water Resources Adaptive Management and Monitoring Plan CM-CRLF/MYLF-01: Conduct Pre-construction Surveys for Special-Status Amphibian Species

Desert Tortoise

Desert tortoise surveys were not conducted for the project. There are no records for desert tortoises within 10 miles of the action area, but the northern portion of the action area is within the historic range of the species. The CNDDB has records for the species in Antelope Valley to the northeast and northwest of the action area in areas where the habitat has not been altered to agriculture and other development. Modeled habitat for desert tortoise is distributed throughout the project area as shown in Figure 16.

To ensure that impacts to desert tortoise are reduced to the level of insignificance, surveys will be conducted prior to any vegetation removal or ground disturbing activities for the project (CM-DT-01). If desert tortoises are observed, the biological monitor will implement measures to avoid impacts to the species (CM-DT-02, CM-DT-03, CM-DT-04, CM-DT-05, CM-DT-06, CM-DT-07). If desert tortoise individuals cannot be avoided, the Authority will reinitiate section 7 consultation to address unanticipated impacts to the species.

Without appropriate conservation measures, impacts could occur to desert tortoise outside of the project impact footprint but within 1,000 feet of project construction as a result of introduction of invasive species, habitat fragmentation, sedimentation, dust, pollution, increased access, human encroachment, light spill, and noise and vibrations associated with project construction, operation, and maintenance. However, the project has incorporated measures to avoid and minimize impacts to desert tortoise (Table A3). These measures are anticipated to minimize these potential impacts on desert tortoise in adjacent habitat to the point where such effects are insignificant.

Table A3. Measures to Avoid or Minimize Adverse Effects to Desert Tortoise.

Effects of the Action	Conservation Measures
Introduction of invasive species, resulting in increased competition Habitat fragmentation resulting in loss of connectivity between populations Sedimentation, dust, and pollution resulting in habitat degradation Increased access and human encroachment resulting in increased risk of wildfire, construction disturbance, entrapment Light spill resulting in physiological effects Noise and vibrations resulting in behavioral effects	CM-GEN-01: Establish Qualified Biologists and Biological Monitors CM-GEN-02: Conduct Monitoring of Construction Activities CM-GEN-03: Prepare and Implement a Weed Control Plan CM-GEN-05: Prepare and Implement a Construction Stormwater Pollution Prevention Plan CM-GEN-06: Prepare and Implement a Spill Prevention Plan CM-GEN-07: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training CM-GEN-08: Conduct Operation and Maintenance Period WEAP CM-GEN-09: Establish Monofilament Restrictions CM-GEN-10: Avoid Animal Entrapment CM-GEN-11: Delineate Equipment Staging Areas and Traffic Routes CM-GEN-12: Stockpile and Redistribute Excavated Soil CM-GEN-13: Dispose of Construction Spoils and Waste CM-GEN-14: Clean Construction Equipment CM-GEN-15: Establish Environmentally Sensitive Areas and Non-Disturbance Zones CM-GEN-16: Install Aprons or Barriers within Security Fencing CM-GEN-17: Minimize Effects to Wildlife Movement Corridors during Construction CM-GEN-18: Establish Wildlife Crossings CM-GEN-19: Work Stoppage CM-GEN-20: Enforce Construction Speed Limit CM-GEN-21: Implement Avoidance of Nighttime Light Disturbance CM-GEN-22: Implement Water or Dust Palliative Measures CM-DT-01: Conduct Pre-construction Surveys for Desert Tortoise CM-DT-02: Implement Avoidance Measures for Desert Tortoise CM-DT-03: Implement Avoidance Measures for Desert Tortoise Burrows CM-DT-04: Inspect Structures that Provide Potential Shelter for Desert Tortoise CM-DT-05: Inspect under Vehicles in Desert Tortoise Habitat CM-DT-06: Installation of Desert Tortoise Guards CM-DT-07: Implement Common Raven Avoidance Measures in Desert Tortoise Habitat

Yellow-billed Cuckoo

Yellow-billed cuckoo surveys were not conducted for the project. CNDDB includes a historic record for the species in the vicinity of San Fernando near the southern end of the action area. A 2018 record is reported by eBird from the Santa Clara River in Santa Clarita approximately 8 miles west of the action area (Authority 2023). Modeled habitat for yellow-billed cuckoo is distributed throughout the project area as shown in Figure 17.

To ensure that impacts to yellow-billed cuckoo are reduced to the level of insignificance, surveys will be conducted prior to any vegetation removal or ground disturbing activities for the project (CM-YBCU-01). If yellow-billed cuckoo individuals cannot be avoided, the Authority will reinitiate section 7 consultation to address unanticipated impacts to the species.

Without appropriate conservation measures, impacts could occur to yellow-billed cuckoos outside of the project impact footprint but within 1,000 feet of project construction as a result of introduction of invasive species, habitat fragmentation, sedimentation, dust, pollution, water diversions, increased access, human encroachment, light spill, and noise and vibrations associated with project construction, operation, and maintenance. However, the project has incorporated measures to avoid and minimize impacts to yellow-billed cuckoo (Table A4). These measures are anticipated to minimize these potential impacts on yellow-billed cuckoo in adjacent habitat to the point where such effects are insignificant.

Table A4. Measures to Avoid or Minimize Adverse Effects to Yellow-billed Cuckoo.

Effects of the Action	Conservation Measures
Introduction of invasive species, resulting in increased competition Habitat fragmentation resulting in loss of connectivity between populations Sedimentation, dust, pollution and water diversions resulting in habitat degradation Increased access and human encroachment resulting in increased risk of wildfire, construction disturbance Light spill resulting in physiological effects Noise and vibrations resulting in masking intraspecific communication, startling, behavioral effects	CM-GEN-01: Establish Qualified Biologists and Biological Monitors CM-GEN-02: Conduct Monitoring of Construction Activities CM-GEN-03: Prepare and Implement a Weed Control Plan CM-GEN-04: Prepare Plan for Dewatering and Water Diversions CM-GEN-05: Prepare and Implement a Construction Stormwater Pollution Prevention Plan CM-GEN-06: Prepare and Implement a Spill Prevention Plan CM-GEN-07: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training CM-GEN-08: Conduct Operation and Maintenance Period WEAP CM-GEN-09: Establish Monofilament Restrictions CM-GEN-10: Avoid Animal Entrapment CM-GEN-11: Delineate Equipment Staging Areas and Traffic Routes CM-GEN-12: Stockpile and Redistribute Excavated Soil CM-GEN-13: Dispose of Construction Spoils and Waste

Effects of the Action	Conservation Measures
	CM-GEN-14: Clean Construction Equipment CM-GEN-15: Establish Environmentally Sensitive Areas and Non-Disturbance Zones CM-GEN-16: Install Aprons or Barriers within Security Fencing CM-GEN-17: Minimize Effects to Wildlife Movement Corridors during Construction CM-GEN-18: Establish Wildlife Crossings CM-GEN-19: Work Stoppage CM-GEN-20: Enforce Construction Speed Limit CM-GEN-21: Implement Avoidance of Nighttime Light Disturbance CM-GEN-22: Implement Water or Dust Palliative Measures CM-GEN-24: Tunnel Construction Methods and Approaches within the Angeles National Forest Involving Tunnel Boring Machines, Tunnel Lining Systems, and Tunnel Grouting to Avoid and Minimize Changes in Groundwater Levels as a Result of Tunnel Construction CM-GEN-25: Implement the Water Resources Adaptive Management and Monitoring Plan CM-YBCU-01: Conduct Pre-construction Surveys and Implement Impact Avoidance for Yellow-billed Cuckoo

Braunton's Milk-vetch

Braunton's milk-vetch surveys were not conducted for the project, but the CNDDB has records for the species to the South, Southwest, and East of the action area in the Santa Monica Mountains, Simi Hills, and San Gabriel Mountains. The Forest also has records for the species in the Angeles National Forest that are not in the CNDDB, but these occurrences are outside of the action area (Authority 2023). Braunton's milk-vetch modeled habitat is distributed throughout the project area as shown in Figure 18.

To ensure that impacts to Braunton's milk-vetch are reduced to the level of insignificance, surveys will be conducted prior to any vegetation removal or ground disturbing activities for the project (CM-PLT-01). If Braunton's milk-vetch individuals cannot be avoided, the Authority will reinitiate section 7 consultation to address unanticipated impacts to the species.

Without appropriate conservation measures, impacts could occur to Braunton's milk-vetch outside of the project impact footprint but within 100 feet of project construction as a result of introduction of invasive species, habitat fragmentation, sedimentation, dust, pollution, increased access, human encroachment, and light spill associated with project construction, operation, and maintenance. However, the project has incorporated measures to avoid and minimize impacts to

Braunton's milk-vetch (Table A5). These measures are anticipated to minimize these potential impacts on Braunton's milk-vetch in adjacent habitat to the point where such effects are insignificant.

Table A5. Measures to Avoid or Minimize Adverse Effects to Braunton's Milk-vetch

Effects of the Action	Conservation Measures
Introduction of invasive species, resulting in increased competition Habitat fragmentation resulting in loss of connectivity between populations Sedimentation, dust, pollution resulting in habitat degradation Increased access and human encroachment resulting in trampling, increased risk of wildfire Light spill resulting in physiological effects	CM-GEN-01: Establish Qualified Biologists and Biological Monitors CM-GEN-02: Conduct Monitoring of Construction Activities CM-GEN-03: Prepare and Implement a Weed Control Plan CM-GEN-05: Prepare and Implement a Construction Stormwater Pollution Prevention Plan CM-GEN-06: Prepare and Implement a Spill Prevention Plan CM-GEN-07: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training CM-GEN-08: Conduct Operation and Maintenance Period WEAP CM-GEN-11: Delineate Equipment Staging Areas and Traffic Routes CM-GEN-12: Stockpile and Redistribute Excavated Soil CM-GEN-13: Dispose of Construction Spoils and Waste CM-GEN-14: Clean Construction Equipment CM-GEN-15: Establish Environmentally Sensitive Areas and Non-Disturbance Zones CM-GEN-18: Establish Wildlife Crossings CM-GEN-19: Work Stoppage CM-GEN-21: Implement Avoidance of Nighttime Light Disturbance CM-GEN-22: Implement Water or Dust Palliative Measures CM-PLT-01: Conduct Presence/ Absence Pre-construction Surveys for Listed Plants

Nevin's Barberry

Limited Nevin's barberry surveys were conducted for the project in a 4-acre area around a known individual in Lopez Canyon in 2017. The known individual was the only Nevin's barberry plant observed (Circlepoint 2017). In addition, the CNDDB has records for the species to the South, West, and East of the action area in Griffith Park, Pasadena, San Francisquito Canyon, and the San Gabriel Mountains. Nevin's barberry modeled habitat is distributed throughout the project area as shown in Figure 19.

To ensure that impacts to Nevin's barberry are reduced to the level of insignificance, surveys will be conducted prior to any vegetation removal or ground disturbing activities for the project

(CM-PLT-01). If Nevin's barberry individuals cannot be avoided, the Authority will reinitiate section 7 consultation to address unanticipated impacts to the species.

Without appropriate conservation measures, impacts could occur to Nevin's barberry outside of the project impact footprint but within 100 feet of project construction as a result of introduction of invasive species, habitat fragmentation, sedimentation, dust, pollution, increased access, human encroachment, and light spill associated with project construction, operation, and maintenance. However, the project has incorporated measures to avoid and minimize impacts to Nevin's barberry (Table A6). These measures are anticipated to minimize these potential impacts on Nevin's barberry in adjacent habitat to the point where such effects are insignificant.

Table A6. Measures to avoid or minimize adverse effects to Nevin's Barberry.

Effects of the Action	Conservation Measures
Introduction of invasive species, resulting in increased competition Habitat fragmentation resulting in loss of connectivity between populations Sedimentation, dust, pollution resulting in habitat degradation Increased access and human encroachment resulting in trampling, increased risk of wildfire Light spill resulting in physiological effects	CM-GEN-01: Establish Qualified Biologists and Biological Monitors CM-GEN-02: Conduct Monitoring of Construction Activities CM-GEN-03: Prepare and Implement a Weed Control Plan CM-GEN-05: Prepare and Implement a Construction Stormwater Pollution Prevention Plan CM-GEN-06: Prepare and Implement a Spill Prevention Plan CM-GEN-07: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training CM-GEN-08: Conduct Operation and Maintenance Period WEAP CM-GEN-11: Delineate Equipment Staging Areas and Traffic Routes CM-GEN-12: Stockpile and Redistribute Excavated Soil CM-GEN-13: Dispose of Construction Spoils and Waste CM-GEN-14: Clean Construction Equipment CM-GEN-15: Establish Environmentally Sensitive Areas and Non-Disturbance Zones CM-GEN-18: Establish Wildlife Crossings CM-GEN-19: Work Stoppage CM-GEN-21: Implement Avoidance of Nighttime Light Disturbance CM-GEN-22: Implement Water or Dust Palliative Measures CM-PLT-01: Conduct Presence/ Absence Pre-construction Surveys for Listed Plants

Spreading Navarretia

Spreading navarretia surveys were not conducted for the project, but a vernal pool assessment was conducted for the project in the winter of 2017. In addition, the CNDDB has records for the

species west of the action area in the vicinity of Santa Clarita. Potential habitat for spreading navarretia is distributed throughout the project area as shown in Figure 20.

To ensure that impacts to spreading navarretia are reduced to the level of insignificance, surveys will be conducted prior to any vegetation removal or ground disturbing activities for the project (CM-PLT-01). In addition, ground disturbing activities will not occur within 250 feet of vernal pools or seasonal wetlands during the rainy season (CM-VRN-02). If spreading navarretia individuals cannot be avoided, the Authority will reinitiate section 7 consultation to address unanticipated impacts to the species.

Without appropriate conservation measures, potential impacts could occur to spreading navarretia outside of the project impact footprint but within 100 feet of project construction as a result of introduction of invasive species, habitat fragmentation, sedimentation, dust, pollution, increased access, human encroachment, and light spill associated with project construction, operation, and maintenance. However, the project has incorporated measures to avoid and minimize impacts to spreading navarretia (Table A7). These measures are anticipated to minimize these potential impacts on spreading navarretia in adjacent habitat to the point where such effects are insignificant.

Table A7. Measures to Avoid or Minimize Adverse Effects to Spreading Navarretia.

Effects of the Action	Conservation Measures
Introduction of invasive species, resulting in increased competition Habitat fragmentation resulting in loss of connectivity between populations Sedimentation, dust, pollution resulting in habitat degradation Increased access and human encroachment resulting in trampling, increased risk of wildfire Light spill resulting in physiological effects	CM-GEN-01: Establish Qualified Biologists and Biological Monitors CM-GEN-02: Conduct Monitoring of Construction Activities CM-GEN-03: Prepare and Implement a Weed Control Plan CM-GEN-05: Prepare and Implement a Construction Stormwater Pollution Prevention Plan CM-GEN-06: Prepare and Implement a Spill Prevention Plan CM-GEN-07: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training CM-GEN-08: Conduct Operation and Maintenance Period WEAP CM-GEN-11: Delineate Equipment Staging Areas and Traffic Routes CM-GEN-12: Stockpile and Redistribute Excavated Soil CM-GEN-13: Dispose of Construction Spoils and Waste CM-GEN-14: Clean Construction Equipment CM-GEN-15: Establish Environmentally Sensitive Areas and Non-Disturbance Zones CM-GEN-18: Establish Wildlife Crossings CM-GEN-19: Work Stoppage CM-GEN-21: Implement Avoidance of Nighttime Light Disturbance

Effects of the Action	Conservation Measures
	CM-GEN-22: Implement Water or Dust Palliative Measures CM-PLT-01: Conduct Presence/ Absence Pre-construction Surveys for Listed Plants CM-VRN-02: Implement Seasonal Vernal Pool Work Restriction

California Orcutt Grass

California Orcutt grass surveys were not conducted for the project, but a vernal pool assessment was conducted for the project in the winter of 2017. In addition, the CNDDB has records for the species west of the action area in the vicinity of Santa Clarita. Potential habitat for California Orcutt grass is distributed throughout the project area as shown in Figure 21.

To ensure that impacts to California Orcutt grass are reduced to the level of insignificance, surveys will be conducted prior to any vegetation removal or ground disturbing activities for the project (CM-PLT-01). In addition, ground disturbing activities will not occur within 250 feet of vernal pools or seasonal wetlands during the rainy season (CM-VRN-02). If California Orcutt grass individuals cannot be avoided, the Authority will reinitiate section 7 consultation to address unanticipated impacts to the species.

Without appropriate conservation measures, impacts could occur to California Orcutt grass outside of the project impact footprint but within 100 feet of project construction as a result of introduction of invasive species, habitat fragmentation, sedimentation, dust, pollution, increased access, human encroachment, and light spill associated with project construction, operation, and maintenance. However, the project has incorporated measures to avoid and minimize impacts to California Orcutt grass (Table A8). These measures are anticipated to minimize these potential impacts on California Orcutt grass in adjacent habitat to the point where such effects are insignificant.

Table A8. Measures to Avoid or Minimize Adverse Effects to California Orcutt Grass.

Effects of the Action	Conservation Measures
Introduction of invasive species, resulting in increased competition Habitat fragmentation resulting in loss of connectivity between populations Sedimentation, dust, pollution resulting in habitat degradation Increased access and human encroachment resulting in trampling, increased risk of wildfire Light spill resulting in physiological effects	CM-GEN-01: Establish Qualified Biologists and Biological Monitors CM-GEN-02: Conduct Monitoring of Construction Activities CM-GEN-03: Prepare and Implement a Weed Control Plan CM-GEN-05: Prepare and Implement a Construction Stormwater Pollution Prevention Plan CM-GEN-06: Prepare and Implement a Spill Prevention Plan CM-GEN-07: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training CM-GEN-08: Conduct Operation and Maintenance Period WEAP

Effects of the Action	Conservation Measures
	CM-GEN-11: Delineate Equipment Staging Areas and Traffic Routes
	CM-GEN-12: Stockpile and Redistribute Excavated Soil
	CM-GEN-13: Dispose of Construction Spoils and Waste
	CM-GEN-14: Clean Construction Equipment
	CM-GEN-15: Establish Environmentally Sensitive Areas and Non-Disturbance Zones
	CM-GEN-18: Establish Wildlife Crossings
	CM-GEN-19: Work Stoppage
	CM-GEN-21: Implement Avoidance of Nighttime Light Disturbance
	CM-GEN-22: Implement Water or Dust Palliative Measures
	CM-PLT-01: Conduct Presence/ Absence Pre-construction Surveys for Listed Plants
	CM-VRN-02: Implement Seasonal Vernal Pool Work Restriction

Unarmored Threespine Stickleback

A habitat assessment was conducted for unarmored threespine stickleback for the project in 2016 (Authority 2016). Unarmored threespine stickleback surveys were not conducted for the project. The CNDDB has a historic record for the species in the action area at Agua Dulce; however, the species was last seen at this location in 1996, and the habitat has changed from perennial stream to desert wash and is no longer considered to be suitable for the species. The CNDDB also has a current record for the species in the action area at the Santa Clara River. Modeled habitat for unarmored threespine stickleback is distributed throughout the project area as shown in Figure 22. Construction of the viaduct structure over the occupied habitat in the Santa Clara River is anticipated to last three and a half years.

To ensure that impacts to unarmored threespine stickleback are reduced to the level of insignificance, measures will be implemented to avoid impacts to the species (CM-UTS-01, CM-UTS-02, CM-UTS-03, CM-UTS-04, CM-UTS-05, CM-UTS-06, CM-UTS-07, CM-UTS-08, CM-UTS-09). The project will limit the construction, operations, and maintenance footprint in the low-flow channel and when water is present. Permanent support structures (bridge piers) will be installed outside of the 25-year flood limit using a no water contact approach to avoid impacts to the species, and work within the active channel will take place when the riverbed is dry. Temporary support structures may be installed inside the 25-year flood limit during the dry season but will be removed at the end of the dry season. The viaduct has been designed to limit shading, with a near perpendicular profile for the alignment crossing, a height of 100 feet above the channel, and a split rail deck design. Bridge pilings will be designed to limit scour depressions to avoid stranding unarmored threespine stickleback. Measures have been incorporated into the project to address pumping and discharge of groundwater during project construction to avoid impacts to unarmored threespine stickleback from dewatering and

wastewater discharge. A tarp or similar catchment will be deployed beneath the bridge deck during construction to prevent construction materials from dropping into the river channel during construction. In addition, tunnels for the facility will be designed and constructed in a manner that minimizes impacts to groundwater, seeps, and springs.

Operations and maintenance activities may involve the use of pesticides, herbicides, or soil binders that have the potential to affect water quality. Measures have been incorporated into the project to ensure that maintenance workers are properly trained to avoid discharge of contaminants into aquatic habitats occupied by unarmored threespine stickleback.

Without appropriate conservation measures, impacts could occur to unarmored threespine stickleback outside of the project impact footprint but within 1,000 feet of project construction as a result of introduction of invasive species, habitat fragmentation, sedimentation, dust, pollution, water diversions, increased access, and human encroachment associated with project construction, operation, and maintenance. However, the project has incorporated measures to avoid and minimize these impacts to unarmored threespine stickleback (Table A9). These measures are anticipated to minimize these potential impacts on unarmored threespine stickleback in adjacent habitat to the point where such effects are insignificant.

Table A9. Measures to Avoid or Minimize Adverse Effects to Unarmored Threespine Stickleback.

Effects of the Action	Conservation Measures
Introduction of invasive species, resulting in increased competition Habitat fragmentation resulting in loss of connectivity between populations Sedimentation, dust, pollution and water diversions resulting in habitat degradation Increased access and human encroachment resulting in trampling, increased risk of wildfire Installation of structures resulting in direct impacts to the species habitat Shading from the viaduct resulting in habitat degradation Scour around bridge pilings resulting in scour depressions and entrapment Disposal of groundwater during construction resulting in groundwater effects, temporary non-seasonal flows	CM-GEN-01: Establish Qualified Biologists and Biological Monitors CM-GEN-02: Conduct Monitoring of Construction Activities CM-GEN-03: Prepare and Implement a Weed Control Plan CM-GEN-04: Prepare Plan for Dewatering and Water Diversions CM-GEN-05: Prepare and Implement a Construction Stormwater Pollution Prevention Plan CM-GEN-06: Prepare and Implement a Spill Prevention Plan CM-GEN-07: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training CM-GEN-08: Conduct Operation and Maintenance Period WEAP CM-GEN-11: Delineate Equipment Staging Areas and Traffic Routes CM-GEN-12: Stockpile and Redistribute Excavated Soil CM-GEN-13: Dispose of Construction Spoils and Waste CM-GEN-14: Clean Construction Equipment CM-GEN-15: Establish Environmentally Sensitive Areas and Non-Disturbance Zones

Effects of the Action	Conservation Measures
Tunnel construction resulting in groundwater impacts Maintenance activities resulting in pollution, sedimentation, and human encroachment	CM-GEN-17: Minimize Effects to Wildlife Movement Corridors during Construction CM-GEN-18: Establish Wildlife Crossings CM-GEN-19: Work Stoppage CM-GEN-20: Enforce Construction Speed Limit CM-GEN-22: Implement Water or Dust Palliative Measures CM-GEN-24: Tunnel Construction Methods and Approaches within the Angeles National Forest Involving Tunnel Boring Machines, Tunnel Lining Systems, and Tunnel Grouting to Avoid and Minimize Changes in Groundwater Levels as a Result of Tunnel Construction CM-GEN-25: Implement the Water Resources Adaptive Management and Monitoring Plan CM-UTS-01: Implement Worker Environmental Awareness Program for Unarmored Threespine Stickleback CM-UTS-02: Establish Construction Zones and Environmentally Sensitive Areas CM-UTS-03: Santa Clara River Construction and Maintenance Activity Weather Related and Seasonal Work Restrictions CM-UTS-04: Prepare and Implement Spill Prevention and Containment Measures CM-UTS-05: Implement Construction or Maintenance Activity Debris Prevention Measures CM-UTS-06: Implement Construction Measures for Unarmored Threespine Stickleback Avoidance CM-UTS-07: Prepare a Construction Groundwater Dewatering Plan CM-UTS-08: Implement Scour Avoidance Features Around Bridge Piers CM-UTS-09: Implement Avoidance Measures During Operations and Maintenance for the Santa Clara River

Mountain Yellow-legged Frog

Mountain yellow-legged frog surveys were not conducted for the project. The CNDDB has historic records for the species near the action area at Pacoima wash and Tujunga wash, and current records for the species about 15 miles east of the action area in the vicinity of Little Rock Creek. Modeled habitat for Mountain yellow-legged frog is distributed throughout the project area as shown in Figure 23.

To ensure that impacts to Mountain yellow-legged frog are reduced to the level of insignificance, surveys will be conducted prior to any vegetation removal or ground disturbing activities for the

project (CM-CRLF/MYLF-01). If Mountain yellow-legged frog individuals cannot be avoided, the Authority will reinitiate section 7 consultation to address unanticipated impacts to the species.

Without appropriate conservation measures, impacts may occur to Mountain yellow-legged frogs outside of the project impact footprint but within 1,000 feet of project construction as a result of introduction of invasive species, habitat fragmentation, sedimentation, dust, pollution, water diversions, increased access, human encroachment, light spill, and noise and vibrations associated with project construction, operation, and maintenance. However, the project has incorporated measures to avoid and minimize impacts to Mountain yellow-legged frogs (Table A10). These measures are anticipated to minimize these potential impacts on Mountain yellow-legged frogs in adjacent habitat to the point where such effects are insignificant.

Table A10. Measures to Avoid or Minimize Adverse Effects to Mountain Yellow-legged Frog.

Effects of the Action	Conservation Measures
Introduction of invasive species, resulting in increased competition Habitat fragmentation resulting in loss of connectivity between populations Sedimentation, dust, pollution and water diversions resulting in habitat degradation Increased access and human encroachment resulting in trampling, increased risk of wildfire, construction disturbance, entrapment Light spill resulting in physiological effects Noise and vibrations resulting in masking intraspecific communication, startling, behavioral effects	CM-GEN-01: Establish Qualified Biologists and Biological Monitors CM-GEN-02: Conduct Monitoring of Construction Activities CM-GEN-03: Prepare and Implement a Weed Control Plan CM-GEN-04: Prepare Plan for Dewatering and Water Diversions CM-GEN-05: Prepare and Implement a Construction Stormwater Pollution Prevention Plan CM-GEN-06: Prepare and Implement a Spill Prevention Plan CM-GEN-07: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training CM-GEN-08: Conduct Operation and Maintenance Period WEAP CM-GEN-09: Establish Monofilament Restrictions CM-GEN-10: Avoid Animal Entrapment CM-GEN-11: Delineate Equipment Staging Areas and Traffic Routes CM-GEN-12: Stockpile and Redistribute Excavated Soil CM-GEN-13: Dispose of Construction Spoils and Waste CM-GEN-14: Clean Construction Equipment CM-GEN-15: Establish Environmentally Sensitive Areas and Non-Disturbance Zones CM-GEN-16: Install Aprons or Barriers within Security Fencing CM-GEN-17: Minimize Effects to Wildlife Movement Corridors during Construction CM-GEN-18: Establish Wildlife Crossings CM-GEN-19: Work Stoppage

Effects of the Action	Conservation Measures
	CM-GEN-20: Enforce Construction Speed Limit CM-GEN-21: Implement Avoidance of Nighttime Light Disturbance CM-GEN-22: Implement Water or Dust Palliative Measures CM-GEN-24: Tunnel Construction Methods and Approaches within the Angeles National Forest Involving Tunnel Boring Machines, Tunnel Lining Systems, and Tunnel Grouting to Avoid and Minimize Changes in Groundwater Levels as a Result of Tunnel Construction CM-GEN-25: Implement the Water Resources Adaptive Management and Monitoring Plan CM-CRLF/MYLF-01: Conduct Pre-construction Surveys for Special-Status Amphibian Species

California Condor

California condor surveys were not conducted for the project; however, the species is known to engage in periodic flights and roosting throughout the Angeles National Forest. California Condors have been observed periodically roosting on communication towers at Kagel Mountain, and at Contract Point, Loop Canyon, and nearby areas along Forest Road 3N17.8 between the Forest Service Bear Divide Station and County Camp 9 in proximity to the action area. Modeled habitat for California condor is distributed throughout the project area as shown in Figure 24.

To ensure that impacts to California condor are reduced to the level of insignificance, the Biological Monitor will coordinate with the Service to review California condor tracking locations at least seven days prior to any vegetation removal or ground disturbing activities for the project (CM-CACO-01). The Biological Monitor will be present during construction within two miles of where California condors have been observed, based on the most recent tracking data and locations obtained from coordination with the Service (CM-CACO-02). If California condors are observed within half a mile of project work, the biological monitor will implement measures, such as establishing work timing restrictions, proper storage of hazardous construction materials, helicopter avoidance, and work stoppages to avoid impacts to the species (CM-CACO-03, CM-CACO-04, CM-CACO-05, CM-CACO-06). If California condor individuals cannot be avoided, the Authority will reinitiate section 7 consultation to address unanticipated impacts to the species.

High Speed Rail operations and maintenance has the potential to affect California condors by causing wildlife mortality that attracts condors into the project area where they may be struck by trains. Measures have been incorporated into the project to ensure that these impacts are avoided. Dead and injured wildlife found in the right-of-way and tracks will be removed when the train is not in operation. Automated security monitoring and track inspections will be used to detect fence failures and/or the presence of carrion in the right-of way (CM-CACO-07).

Without appropriate conservation measures, impacts could occur to California condor outside of the project impact footprint but within 1,000 feet of project construction as a result of introduction of invasive species, habitat fragmentation, sedimentation, dust, pollution, increased access, human encroachment, light spill, and noise and vibrations associated with project construction, operation, and maintenance. However, the project has incorporated measures to avoid and minimize impacts to California condor (Table A11). These measures are anticipated to minimize these potential impacts on California condor in adjacent habitat to the point where such effects are insignificant.

Table A11. Measures to Avoid or Minimize Adverse Effects to California Condor

Effects of the Action	Conservation Measures
Introduction of invasive species, resulting in increased competition Habitat fragmentation resulting in loss of connectivity between populations Sedimentation, dust, and pollution resulting in habitat degradation Increased access and human encroachment resulting in increased risk of wildfire, construction disturbance Light spill resulting in physiological effects Noise and vibrations resulting in masking intraspecific communication, startling, behavioral effects	CM-GEN-01: Establish Qualified Biologists and Biological Monitors CM-GEN-02: Conduct Monitoring of Construction Activities CM-GEN-03: Prepare and Implement a Weed Control Plan CM-GEN-05: Prepare and Implement a Construction Stormwater Pollution Prevention Plan CM-GEN-06: Prepare and Implement a Spill Prevention Plan CM-GEN-07: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training CM-GEN-08: Conduct Operation and Maintenance Period WEAP CM-GEN-09: Establish Monofilament Restrictions CM-GEN-10: Avoid Animal Entrapment CM-GEN-11: Delineate Equipment Staging Areas and Traffic Routes CM-GEN-12: Stockpile and Redistribute Excavated Soil CM-GEN-13: Dispose of Construction Spoils and Waste CM-GEN-14: Clean Construction Equipment CM-GEN-15: Establish Environmentally Sensitive Areas and Non-Disturbance Zones CM-GEN-16: Install Aprons or Barriers within Security Fencing CM-GEN-17: Minimize Effects to Wildlife Movement Corridors during Construction CM-GEN-18: Establish Wildlife Crossings CM-GEN-19: Work Stoppage CM-GEN-20: Enforce Construction Speed Limit CM-GEN-21: Implement Avoidance of Nighttime Light Disturbance CM-GEN-22: Implement Water or Dust Palliative Measures

Effects of the Action	Conservation Measures
	CM-CACO-01: Coordinate with USFWS[6] on California Condor Locations CM-CACO-02: Monitor for California Condor CM-CACO-03: Work Timing Restrictions Near California Condor Roosting Locations CM-CACO-04: Implement Avoidance Measures for California Condor CM-CACO-05: Implement Helicopter Avoidance Measures for California Condor CM-CACO-06: Stop Work and Implement Hazing Methods for California Condor CM-CACO-07: Implement Removal of Carrion that may Attract California Condor

California Spotted Owl

California spotted owl surveys were not conducted for the project. CNDDB includes numerous records for the species in the Angeles National Forest, including 7 records in the vicinity of Los Pinetos Canyon, about 3 miles northwest of the Pacoima Adit, and 4 records in the vicinity of upper Pacoima Canyon, about 6 miles east of the Santa Clara viaduct. Modeled habitat for California spotted owl is distributed throughout the project area as shown in Figure 25.

To ensure that impacts to California spotted owl are reduced to the level of insignificance, surveys will be conducted prior to any vegetation removal or ground disturbing activities for the project (CM-OWL-01). If California spotted owls are observed, the biological monitor will implement measures, such as establishing work timing restrictions to avoid impacts to the species (CM-Owl-02). If California spotted owl individuals cannot be avoided, the Authority will reinitiate section 7 consultation to address unanticipated impacts to the species.

Without appropriate conservation measures, impacts could occur to California spotted owl outside of the project impact footprint but within 1,000 feet of project construction as a result of introduction of invasive species, habitat fragmentation, sedimentation, dust, pollution, increased access, human encroachment, light spill, and noise and vibrations associated with project construction, operation, and maintenance. However, the project has incorporated measures to avoid and minimize impacts to California spotted owl (Table A12). These measures are anticipated to minimize these potential impacts on California spotted owl in adjacent habitat to the point where such effects are insignificant.

[6] U.S. Fish and Wildlife Service is abbreviated as USFWS in the conservation measures.

Table A12. Measures to Avoid or Minimize Adverse Effects to California Spotted Owl.

Effects of the Action	Conservation Measures
Introduction of invasive species, resulting in increased competition Habitat fragmentation resulting in loss of connectivity between populations Sedimentation, dust, and pollution resulting in habitat degradation Increased access and human encroachment resulting in increased risk of wildfire, construction disturbance Light spill resulting in physiological effects Noise and vibrations resulting in masking intraspecific communication, startling, behavioral effects	CM-GEN-01: Establish Qualified Biologists and Biological Monitors CM-GEN-02: Conduct Monitoring of Construction Activities CM-GEN-03: Prepare and Implement a Weed Control Plan CM-GEN-05: Prepare and Implement a Construction Stormwater Pollution Prevention Plan CM-GEN-06: Prepare and Implement a Spill Prevention Plan CM-GEN-07: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training CM-GEN-08: Conduct Operation and Maintenance Period WEAP CM-GEN-09: Establish Monofilament Restrictions CM-GEN-10: Avoid Animal Entrapment CM-GEN-11: Delineate Equipment Staging Areas and Traffic Routes CM-GEN-12: Stockpile and Redistribute Excavated Soil CM-GEN-13: Dispose of Construction Spoils and Waste CM-GEN-14: Clean Construction Equipment CM-GEN-15: Establish Environmentally Sensitive Areas and Non-Disturbance Zones CM-GEN-16: Install Aprons or Barriers within Security Fencing CM-GEN-17: Minimize Effects to Wildlife Movement Corridors during Construction CM-GEN-18: Establish Wildlife Crossings CM-GEN-19: Work Stoppage CM-GEN-20: Enforce Construction Speed Limit CM-GEN-21: Implement Avoidance of Nighttime Light Disturbance CM-GEN-22: Implement Water or Dust Palliative Measures CM-OWL-01: Conduct Pre-construction Surveys for California Spotted Owl CM-OWL-02: Work Timing Restrictions Near California Spotted Owl Occupied Site

CONCLUSION

As analyzed above, with incorporation of conservation measures (Appendix C), potential impacts to vernal pool fairy shrimp, California red-legged frog, desert tortoise, and yellow-billed cuckoo, Braunton's milk-vetch, Nevin's barberry, spreading navarretia, California Orcutt grass,

unarmored threespine stickleback, mountain yellow-legged frog, California condor, and California spotted owl, will be minimized to the point where such effects are insignificant. Based on the site and species information and the Authority's commitment to implement avoidance and minimization measures during the project, we concur with the Authority's determination that the project is not likely to adversely affect these listed species.

APPENDIX B

Table B1. Modeled Habitat Categories and Descriptions for Species Addressed in this Biological Opinion

Species and Modeled Habitat Categories	Description of Modeled Suitable Habitat Categories
Slender-Horned Spineflower (*Dodecahema leptoceras*) Potentially Suitable Habitat	Potentially suitable habitat includes all natural extant occurrences and the other areas where the species may occur. The model results for potentially suitable habitat are based on the species habitat associations with suitable categories of vegetation, known elevation range, and documented species range within the study area. *Vegetation*: Suitable vegetation types are scrub types, including the following WHR types: Barren, Chamise-Redshank Chaparral, Mixed Chaparral, Coastal Scrub, Desert Riparian, Desert Scrub, Desert Wash, Desert Succulent Shrub, Juniper, Mixed Chaparral, Montane Chaparral, Pinyon-Juniper, Sagebrush, and Valley Foothill Riparian. *Elevation Range*: 650 to 2,500 feet. *Species Range*: Range delineated using watersheds generally within the following ecological subsections – Fontana Plain - Calimesa Terraces, Los Angeles Plain, San Gabriel Mountains, Santa Ynez - Sulphur Mountains, Sierra Pelona - Mint Canyon, Perris Valley and Hills, San Gabriel Mountains, San Jacinto Foothills – Cahuilla Mountains, and Santa Ana Mountains.
Slender-Horned Spineflower (*Dodecahema leptoceras*) Core Suitable Habitat	Core suitable habitat are areas within the potentially suitable habitat where the following landforms and the preferred soil textures are known to occur. *Landforms*: alluvial fans, alluvial flats, fan aprons, fan piedmonts, fan remnants, fan skirts, fans, fluvial terraces, inset fans, alluvial plain remnants, alluvial plains, and fan piedmonts. Landform polygons are selected for inclusion in the model results when they were composed of at least 25% of the above components. *Soil Texture*: Coarse sand, Fine sand, Loamy coarse sand, Loamy fine sand, Loamy sand, Loamy very fine sand, Sand, Very fine sand. Soil polygons are selected for inclusion in the model results when they were composed of at least 10 percent of the above components.

Species and Modeled Habitat Categories	Description of Modeled Suitable Habitat Categories
Arroyo Toad {a. southwestern t. [*Anaxyrus californicus* (*Bufo microscaphus c.*)]} Suitable Breeding Habitat	The most favorable breeding habitat for arroyo toads consists of slow-moving streams with shallow pools, nearby sandbars, and adjacent stream terraces. Often the width of the breeding habitat is dependent on channel geomorphology and floodplain with. Suitable breeding habitat is identified by: 1. Within the overall project study areas, limited to stream systems known to be occupied by arroyo toad, or containing its designated critical habitat. 2. An average width of 20 feet around streams mapped as breeding areas. Within the HSR project impact footprints, a more detailed review of aerial imagery and/or field reconnaissance has been performed to map the extent of breeding habitat. 3. Aquatic features have been selected based on specific landcover types and specific National Wetlands Inventory (Cowardin classification) features, as follows: a. CWHR vegetation cover types: Valley Foothill Riparian; Valley Foothill Riparian, Desert Riparian; Desert Riparian; Desert Riparian, Desert Wash; Desert Wash; Valley Foothill Riparian, Montane Riparian; Montane Riparian; Freshwater Emergent Wetland; Lacustrine, Riverine; Riverine; Riverine, Barren; Riverine, Lacustrine; Saline Emergent Wetland. b. National Wetlands Inventory selections: palustrine freshwater emergent wetland; riverine intermittent with streambed or unconsolidated shore; riverine lower perennial with aquatic bed, emergent, rock bottom, rocky shore, unconsolidated bottom, or unconsolidated shore; riverine upper perennial with aquatic bed, emergent, rock bottom, rocky shore, unconsolidated bottom, or unconsolidated shore; palustrine freshwater forested/shrub wetland; or other palustrine with unconsolidated bottom or unconsolidated shore.
Arroyo Toad {a. southwestern t. [*Anaxyrus californicus* (*Bufo microscaphus c.*)]} Non-breeding Upland Habitat / Permeable Movement Area	Upland habitat is used for movement and dispersal as well as for aestivation by burrowing in soil during the dry periods. Suitable upland habitat consists of non-breeding upland habitat, which defined by natural land cover types, and permeable movement area, which is defined by developed and agricultural land cover types. Suitable upland habitat is identified by: 1. A slope limitation such that suitable upland habitat is all at elevations of no more than 80 feet higher than adjacent modeled breeding habitat. 2. Expansion from the modeled breeding habitat based upon a cost distance function with the cost based on the land-use type. In practice this limits potential upland habitat to an area within a maximum of 1/2 mile from modeled aquatic habitat. The cost distance function varies from minimum values (a 1/2-mile range) for vacant land and other very low-density land uses, up to maximum values (approximately a 90-foot range) for highly developed land uses.

Species and Modeled Habitat Categories	Description of Modeled Suitable Habitat Categories
Southwestern Willow Flycatcher (*Empidonax traillii extimus*) Potentially Suitable Habitat	Suitable habitat typically consists of dense tree or shrub cover (≥ 3 m) with dense twig structure and foliage, and may include interspersed patches of open habitat. Vegetative composition can range from all native species to a mix of native and nonnative species or monotypic stands of nonnative species, but almost always includes willow (*Salix* spp.) and/or tamarisk (*Tamarix* spp.). Breeding southwestern willow flycatchers are riparian obligates. Nests are located near surface water or saturated soils; water availability at a site may range from inundated to dry from year to year or during the breeding season. Riparian habitats lacking suitable conditions and adjacent to territories may function as secondary habitat used for foraging. This model combines an existing regional model developed by USGS researchers (Hatten model) that identifies and ranks core habitat and adds other areas of potentially suitable habitat based on wildlife habitat relationships. The Hatten Southwestern Willow Flycatcher Model is a very complex model that integrates GIS, Landsat TM data, and logistic regression. Input variables include floodplain size, vegetation density, and variation in vegetation density and amount of dense vegetation. Output of the Hatten Model is categorized and ranked into classes of habitat value. Generally, the top 3 classes are distributed in GIS format and represents the areas of highest suitability for southwestern willow flycatcher. We refer the reader to the full model description contained in Hatten 2016 for further information, as the details are too complex to describe here. *Potentially Suitable Habitat*: Suitable vegetation types includes riparian habitat, which includes the following WHR types: Desert Riparian, Fresh Emergent Wetland, Montane Riparian, Riverine, and Valley Foothill Riparian. The Hatten Model output is displayed within the riparian habitat as defined above. Then the Hatten Model output was classified into the following habitat suitability categories: 1. *Very High Potentially Suitable Breeding Habitat*: Hatten Model probability score of 5. 2. *High Potentially Suitable Breeding Habitat*: Hatten Model probability score of 4. 3. *Moderate Potentially Suitable Breeding Habitat*: Hatten Model probability score of 3. 4. *Other Potentially Suitable Breeding Habitat*: Suitable riparian habitat not mapped in the top 3 classes of the Hatten Model. 5. *Southwestern Willow Flycatcher Core Breeding Habitat*: Potentially suitable habitat within southwestern willow flycatcher Critical Habitat

Species and Modeled Habitat Categories	Description of Modeled Suitable Habitat Categories
Coastal California Gnatcatcher (*Polioptila californica californica*) San Diego Management and Monitoring Program (SDMMP) Model – Gnatcatcher Primary Habitat	As part of a program to conduct long-term coordinated monitoring of CAGN across the species' range, the SDMMP model was developed on the basis of a statistical modeling approach (partitioned Mahalanobis D2 approach). CAGN location records were compiled for 2000 to 2013 from a variety of sources and a set of environmental variables (elevation, topographical heterogeneity, slope in degrees, northness, eastness, precipitation, temperature, vegetation, normalized difference vegetation index (NDVI), modeled sagebrush) were used to develop the SDMMP model. Mahalanobis D2 represents a standardized distance between the multivariate mean for environmental variables at locations where a species occurs and values calculated for the same set of environmental variables at each grid point in the landscape being modeled. The more similar environmental characteristics are at a point in the landscape to the species' multivariate mean, the more suitable the habitat is for the species. Habitat suitability for each grid cell in the study area is indicated by a Habitat Similarity Index (HSI) value that ranges from 0 (least similar to occupied habitat and considered least suitable) to 1 (most similar to occupied habitat and most suitable). The HSI value scores were grouped in the broader categories of habitat value based on the following: 1. *Very High Value Habitat* = 0.75-1.00 2. *High Value Habitat* = 0.50 – 0.74 3. *Moderate Value Habitat* = 0.25-0.49 4. *Low Value Habitat* = 0-0.24
Coastal California Gnatcatcher (*Polioptila californica californica*) Gnatcatcher Secondary Habitat	"Secondary" habitat is anywhere within the species range that meets all model criteria but is outside the "preferred" vegetation community association, namely coastal sage scrub. Otherwise, the quality valuation are the same as "Primary Gnatcatcher Habitat."
Least Bell's Vireo (*Vireo bellii pusillus*) Core Breeding Habitat	Suitable riparian habitat within Critical Habitat areas. Select suitable California Wildlife Habitat Relations (CWHR) vegetation types, including Desert Riparian, Fresh Emergent Wetland, Montane Riparian, Riverine, and Valley Foothill Riparian, that occur within Critical Habitat.
Least Bell's Vireo (*Vireo bellii pusillus*) Breeding Habitat	Suitable riparian habitat outside of Critical Habitat. Same selected riparian habitats, but within current range.
Least Bell's Vireo (*Vireo bellii pusillus*) Recolonization Breeding Habitat	Suitable riparian habitat within historical range where the expanding species population is beginning to recolonize. Same selected riparian habitats, but within historic range.

APPENDIX C[7]

Section 7 Consultation and Conference California High Speed Rail
Palmdale to Burbank Section
Los Angeles County, California

CONSERVATION MEASURES

The Authority has agreed to implement the U.S. Fish and Wildlife Service's (USFWS) below avoidance and minimization measures in association with the project. We consider these measures to be part of the action, and our analysis assumes they will be implemented.

CM-GEN-01: Establish Qualified Biologist and Biological Monitor

At least 15 days prior to the onset of activities, the Authority will submit, for review and approval by the USFWS, the name(s), contact information, and relevant qualifications and experience of biologists who will conduct activities specified in the following measures. The roles of biologists will be as follows:

1. **Project Biologists.** For each section or construction package, Authority will identify a Project Biologist(s). For their section or construction package, the Project Biologist(s) will be responsible for implementation of the conservation measures, oversee the scheduling and work of Designated Biologists and General Biological Monitors, and develop compliance reporting.

2. **Designated Biologists.** Designated Biologists will be responsible for directly overseeing and reporting the implementation of general and species-specific conservation measures. Designated Biologists may be USFWS-approved on a species-specific basis, in which case Designated Biologists will only be authorized to conduct surveys and implement other measures for the covered species for which they have been approved. The Designated Biologists will have support from Biological Monitors. Designated Biologists will submit memoranda and reports to document compliance with conservation measures.

3. **Biological Monitors.** Biological Monitors will report directly to a Designated Biologist for implementation of species measures or directly to the Project Biologist for implementation of general measures. Biological Monitors will be responsible for conducting Worker Environmental Awareness Program (WEAP) training, implementing general conservation measures, conducting compliance monitoring, and reporting their compliance monitoring activities. Biological Monitors also may assist Designated Biologists in implementing species-specific conservation measures under

[7] The measures included in this biological opinion are a subset of all the measures that the Authority will implement. To avoid discrepancies in text, citations included in this appendix appear exactly as they do in the Authority's measures. For example, Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities is cited as "CDFW 2018b" even though there is not a "CDFW 2018a" in this appendix.

the direct, on-site, supervision of the Designated Biologist. Resumes of Biological Monitors with specific and documented species experience may be submitted on a case-by-case basis to the USFWS for review and approval.

No ground-disturbing project activities (e.g., geotechnical investigations, utility realignments, creation of staging areas, or initial vegetation clearing and grubbing) will begin until written authorization is received from the USFWS. The USFWS will review and provide authorization within 15 calendar days of submittal of resumes and request for authorization.

CM-GEN-02: Conduct Monitoring of Construction Activities

During any initial ground or vegetation-disturbing activity, the Designated Biologist will be present in the work area to verify compliance with avoidance and minimization measures, to establish ESAs, and install wildlife exclusion fencing (WEF) and construction exclusion fencing (exclusion fencing).

The Designated Biologist will monitor construction activities that occur in or adjacent to aquatic resources, including activities associated with the installation of protective barriers (e.g., silt fencing, sandbags, fencing), install and/or removal of creek material to accommodate crossings, construction of access roads, and removal of vegetation. As part of this effort, the Designated Biologist will document compliance with applicable avoidance and minimization measures including measures set forth in regulatory authorizations issued by USFWS.

CM-GEN-03: Prepare and Implement a Weed Control Plan

Prior to any ground-disturbing activity during the construction phase, the Project Biologist will develop a WCP, subject to review and approval by the Authority and USFWS. USFWS-recommended measures will be incorporated, as applicable.

The purpose of the WCP is to establish approaches to minimize and avoid the spread of invasive weeds during ground-disturbing activities during construction and operations and maintenance. The WCP will include, at a minimum, the following:

1. A requirement to delineate ESAs in the field prior to weed control activities.

2. A schedule for weed surveys to be conducted in coordination with the BRMP.

3. Success criteria for invasive weed control will be linked to the BRMP standards for on-site work during ground-disturbing activities. In particular, the criteria will establish limits on the introduction and spread of invasive species, as defined by the California Invasive Plant Council, to less than or equal to the pre-disturbance conditions in the area temporarily affected by ground-disturbing activities. If invasive species cover is found to exceed pre-disturbance conditions by greater than 10 percent or is 10 percent greater than levels at a similar, nearby reference site, a control effort will be implemented. If the target, or other success criteria identified in the WCP, has not been met by the end of the WCP monitoring and implementation period, the Authority will

continue the monitoring and control efforts, and remedial actions will be identified and implemented until the success criteria are met.

4. Provisions to ensure consistency between the WCP and the RRP, including verification that the RRP includes measures to minimize the risk of the spread and/or establishment of invasive species and reflects the same revegetation performance standards as the WCP.

5. Identification of weed control treatments, including permitted herbicides and manual and mechanical removal methods.

6. Timeframes for weed control treatment for each plant species.

CM-GEN-04: Prepare Plan for Dewatering and Water Diversions

Prior to initiating any construction activity that occurs within open or flowing water, the Authority will prepare a dewatering plan, which will be subject to the review and approval by USFWS. The plan will incorporate measures to minimize turbidity and siltation. The Designated Biologist will monitor the dewatering and/or water diversion sites, including collection of water quality data, as applicable. Prior to the dewatering or diverting of water from a site, the Designated Biologist will conduct pre-activity surveys to determine the presence or absence of federally listed species in the affected waterbody. If federally listed species cannot be avoided, the Authority will reinitiate Section 7 consultation with the USFWS.

CM-GEN-05: Prepare and Implement a Construction Stormwater Pollution Prevention Plan

Prior to any ground-disturbing activities, the Authority will comply with the State Water Resources Control Board Construction General Permit requiring preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP). The Construction SWPPP will propose best management practices (BMP) to minimize potential short-term increases in sediment transport caused by construction, including erosion control requirements, stormwater management, and channel dewatering for affected stream crossings. These BMPs will include measures to incorporate permeable surfaces into facility design plans where feasible, and how treated stormwater would be retained or detained onsite. Other BMPs shall include strategies to manage the amount and quality of overall stormwater runoff. The Construction SWPPP will include measures to address, but are not limited to, the following:

1. Managing hydromodification to verify maintenance of pre-project hydrology by emphasizing on site retention of stormwater runoff using measures such as flow dispersion, infiltration, and evaporation (supplemented by detention where required). Additional flow control measures would be implemented where local regulations or drainage requirements dictate.

2. Implementing practices to minimize the contact of construction materials, equipment, and maintenance supplies with stormwater.

3. Limiting fueling and other activities using hazardous materials to areas distant from surface water, providing drip pans under equipment, and daily checks for vehicle condition.

4. Implementing practices to reduce erosion of exposed soil, including soil stabilization, regular watering for dust control, perimeter siltation fences, and sediment catchment basins.

5. Implementing practices to maintain current water quality, including siltation fencing, wattle barriers, stabilized construction entrances, grass buffer strips, ponding areas, organic mulch layers, inlet protection, storage tanks and sediment traps to arrest and settle sediment.

6. Where feasible, avoiding areas that may have substantial erosion risk, including areas with erosive soils and steep slopes.

7. Using diversion ditches to intercept surface runoff from off site.

8. Where feasible, limiting construction to dry periods when flows in water bodies are low or absent.

9. Implementing practices to capture and provide proper off-site disposal of concrete wash water, including isolation of runoff from fresh concrete during curing to prevent it from reaching the local drainage system, and possible treatments (e.g., dry ice).

10. Developing and implementing a spill prevention and emergency response plan to handle potential fuel and/or hazardous material spills.

Implementation of a SWPPP will be performed by the Construction Contractor as directed by the Contractor's Qualified SWPPP Practitioner or designee. As part of that responsibility, the effectiveness of construction BMPs must be monitored before, during, and after storm events. Records of these inspections and monitoring results will be submitted to the local regional water quality control board as part of the annual report required by the Statewide Construction General Permit. The reports are available to the public online. The state and regional water quality control boards will have the opportunity to review these documents.

CM-GEN-06: Prepare and Implement a Spill Prevention Plan

Prior to any ground-disturbing activities, the Authority will prepare a Construction Management Plan addressing spill prevention. A Spill Prevention, Control, and Countermeasure Plan (or Soil Prevention and Response Plan if the total aboveground oil storage capacity is less than 1,320 gallons in storage containers greater than or equal to 55-gallons) will prescribe BMPs to follow to prevent hazardous material releases and clean-up of any hazardous material releases that may occur. The Plan will be submitted to the Authority for review and approval.

CM-GEN-07: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training

Prior to any ground-disturbing activity, the Project Biologist will prepare a WEAP to train construction crews to recognize and identify sensitive biological resources that may be encountered in the vicinity of the project footprint. The WEAP training materials will be submitted to the Authority for review and approval. A video of the WEAP training prepared and presented by the Project Biologist and approved by the Authority may be used if the Designated Biologist or Biological Monitor is not available to present the training in person.

At a minimum, WEAP training materials will include the following information: key provisions of the Act, the California Endangered Species Act, the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, California Fish and Game Code 1600, Porter-Cologne Water Quality Control Act, and the Clean Water Act; the consequences and penalties for violation or noncompliance with these laws and regulations and project authorizations; identification and characteristics of special-status plants, special-status wildlife, jurisdictional waters, and special-status plant communities and explanations about their ecological value; hazardous substance spill prevention and containment measures; the contact person and procedures in the event of the discovery of a dead or injured wildlife species; and review of avoidance, minimization, and mitigation measures.

The Designated Biologist or Biological Monitor will present WEAP training to all construction personnel prior to working in the project footprint. As part of the WEAP training, construction timing in relation to species' habitat and life-stage requirements will be detailed and discussed on project maps, which will show areas of planned minimization and avoidance measures. Crews will be informed during the WEAP training that, except when necessary, as determined in consultation with the Designated Biologist or Biological Monitor, travel in the project footprint is restricted to established roadbeds, which include all pre-existing and project-constructed unimproved and improved roads. Training materials will include a fact-sheet handout or wallet-sized card conveying this information to be distributed to all participants in WEAP training sessions and will be provided in other languages as necessary to accommodate non-English speaking workers. All construction staff will attend the WEAP training prior to beginning work on-site and will attend WEAP training on an annual basis, thereafter.

Upon completion of the WEAP training, each construction crew training attendee will sign a form stating that they attended the training, understood the information presented, and agreed to comply with the requirements set out in the WEAP training. The Project Biologist will submit the signed WEAP training forms to the Authority monthly, and annually, the Authority will certify that WEAP training had been provided to all construction personnel. Each month, the Project Biologist will provide updates relevant to the training to construction personnel during the daily safety (tailgate) meeting.

CM-GEN-08: Conduct Operation and Maintenance Period WEAP

Prior to initiating O&M activities, O&M personnel will attend a WEAP training session arranged by the Authority. At a minimum, O&M WEAP training materials will include the following information: key provisions of the Act, the California Endangered Species Act, the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, Porter-Cologne Water Quality Control Act, and the Clean Water Act; the consequences and penalties for violation or noncompliance with these laws and regulations and project authorizations; identification and characteristics of special-status plants, special-status wildlife, jurisdictional waters, and special-status plant communities and explanations about their ecological value; hazardous substance spill prevention and containment measures; and the contact person in the event of the discovery of a dead or injured wildlife species. The training will include an overview of provisions of the BRMP, annual vegetation and management plan, WCP, and security fencing, ESAs, and WEF maintenance plans pertinent to O&M activities. A fact sheet prepared by the Authority environmental compliance staff will be prepared for distribution to the O&M employees. The training will be provided by the Authority's environmental compliance staff. The training sessions will be provided to employees prior to their involvement in any O&M activity and will be repeated for all O&M employees on an annual basis. Upon completion of the WEAP training, O&M employees will, in writing, verify their attendance at the training sessions and confirm their willingness to comply with the requirements set out in those sessions.

CM-GEN-09: Establish Monofilament Restrictions

Prior to any ground-disturbing activity, the Biological Monitor will verify that plastic monofilament netting (erosion control matting) or similar material is not being used as part of erosion control materials. Non-monofilament substitutes including coconut coir matting, tackified hydroseeding compounds, rice straw wattles, and reusable erosion, sediment, and wildlife control systems that have been approved by the regulatory agencies (e.g., ERTEC Environmental Systems products) may be used.

CM-GEN-10: Avoid Animal Entrapment

At the beginning and end of each workday all excavated, steep-walled holes or trenches that are more than eight inches deep with sidewalls steeper than a 1:1 (45 degree) slope will be inspected for trapped animals and, at the close of each day, will be covered with plywood or similar materials or provided a minimum of one escape ramp constructed of fill earth per 10 feet of trenching. Before such holes or trenches are filled, they will be thoroughly inspected for trapped wildlife by the Biological Monitor(s).

All construction pipe, culverts, or similar structures with a diameter of three inches or greater that are stored overnight in the project footprint will be covered and elevated at least 1 foot above ground. Pipes or similar structures, regardless of diameter, will be stored such that avian entrapment is avoided. All pipes, culverts, and similar structures will be inspected for wildlife before such material is moved, buried, or capped.

CM-GEN-11: Delineate Equipment Staging Areas and Traffic Routes

Prior to any ground-disturbing activity, the Designated Biologist and Biological Monitor(s) will establish staging areas for construction equipment in areas that minimize effects to sensitive biological resources, including habitat for special-status species, seasonal wetlands, and wildlife movement corridors. Staging areas (including any temporary material storage areas) will be in areas that will be occupied by permanent facilities, where practicable. Equipment staging areas will be identified on final project construction plans. The Designated Biologist and Biological Monitor(s) will flag and mark access routes to ensure that vehicle traffic in the project footprint is restricted to established roads, construction areas and other designated areas.

CM-GEN-12: Stockpile and Redistribute Excavated Soil

Excavated materials will be stockpiled and redistributed as follows:

1. **Stockpiling of Excavated Materials.** Contractors will temporarily store excavated materials produced by ground-disturbing activities in designated stockpile areas at or near the excavation site, and in the project footprint or another authorized location.

2. **Handling of Topsoil.** The collection, stockpiling, and redistribution of topsoil will be conducted as described in the RRP.

CM-GEN-13: Dispose of Construction Spoils and Waste

The contractor will dispose of waste materials associated with construction, including soil materials unsuitable for reuse, in local landfills permitted to take these types of materials, and in conformance with State and federal laws.

CM-GEN-14: Clean Construction Equipment

Prior to any ground or vegetation-disturbing activity, the Authority will ensure that all equipment entering the work area is free of mud and plant materials. The Authority will establish vehicle cleaning locations designed to isolate and contain organic materials and minimize opportunities for weeds and invasive species to move in and out of the project footprint. Cleaning may be done by washing with water, blowing with compressed air, brushing, or other hand cleaning. The cleaning areas will be located so as to avoid impacts to surface waters, and appropriate SWPPP and BMPs will be implemented to further control any potential for the spread of weeds or other invasive species. Cleaning stations will be inspected regularly (at least monthly).

CM-GEN-15: Establish Environmentally Sensitive Areas and Non-Disturbance Zones

Prior to any ground-disturbing activity in a work area, the Project Biologist will use flagging to mark ESAs that support special-status species or aquatic resources and are subject to seasonal restrictions or other avoidance and minimization measures. The Project Biologist will also direct the installation of WEF to prevent special-status wildlife species from entering work areas. The WEF will have exit doors to allow animals that may be inside an enclosed area to leave the area.

The Project Biologist will also direct the installation of construction exclusionary fencing (exclusionary fencing) at the boundary of the work area, as appropriate, to avoid and minimize impacts to special-status species or aquatic resources outside of the work area during the construction period. The ESAs, WEF, and exclusionary fencing will be fine mesh material (e.g., Animex Fencing or similar) and delineated by the Designated Biologist based on the results of habitat mapping or modeling and any pre-construction surveys, and in coordination with the Authority. The ESA, WEF, and exclusionary fencing locations will be identified and depicted on an exclusion fencing exhibit. The purpose of the ESAs and WEF will be explained at WEAP training and the locations of the ESA and WEF areas will be noted during worker tailgate sessions.

Fencing installation will be monitored by a Designated Biologist or Biological Monitor to ensure that federally listed species are not injured or killed during installation. Temporary fencing will be installed in areas of construction that are beyond the perimeter of the right-of-way or in areas where construction staging will occur. After installation of the temporary fencing, the work area will be surveyed by a Designated Biologist(s) to confirm the absence of federally listed wildlife. The ESA, WEF, and exclusionary fencing will be regularly inspected and maintained by the Designated Biologist or Biological Monitors to ensure its integrity and that wildlife are not trapped.

CM-GEN-16: Install Aprons or Barriers within Security Fencing

Prior to final construction design the Project Biologist will review the fencing plans along any portion of the permanent right-of-way adjacent to natural habitats and confirm that the permanent security fencing will be enhanced with a barrier (e.g., fine mesh fencing) that extends at least 12 inches below ground and 12 inches above ground to prevent special-status reptiles, amphibians, and mammals from moving through or underneath the fencing and gaining access to areas in the right-of-way. At the 12-inch depth of the below grade portion of the apron, it will extend or be bent at an approximately 90-degree angle and oriented outward from the right-of-way a minimum of 12 inches, to prevent fossorial wildlife from digging or tunneling below the security fence. A climber barrier (e.g., rigid curved or bent overhang) will be installed at the top of the apron to prevent wildlife from climbing over the apron. The Project Biologist may coordinate with the USFWS prior to completion of the fencing design.

The Project Biologist will ensure that the selected apron material and climber barrier will not have the potential cause harm, injury, entanglement, or entrapment to wildlife species. The Authority will provide for yearly inspection and repair of the fencing.

Prior to construction and operation, the Project Biologist will field inspect the fencing along any portion of the permanent right-of-way that is adjacent to natural habitats and confirm that the fencing has been appropriately installed. Both the fencing plan review and field inspection will be documented in memorandums from the Project Biologist and provided to the Authority.

CM-GEN-17: Minimize Effects to Wildlife Movement Corridors during Construction

The Authority will avoid placing fencing, either temporarily or permanently, within known wildlife movement corridors in those portions of the alignment where the tracks are elevated

(e.g., viaducts or bridges), when possible. The Authority will avoid conducting ground-disturbing activities in wildlife movement corridors during nighttime hours, when possible, and will shield nighttime lighting to avoid illuminating wildlife movement corridors in circumstances where avoidance of such activities is not possible.

CM-GEN-18: Establish Wildlife Crossings

The Authority will create two dedicated wildlife crossings across the alignment to accommodate wildlife movement under permanently fenced infrastructure at the following locations.

1. Near East Barrel Springs Road (east of Una Lake).

2. South of the Soledad Siphon (south of the California Aqueduct).

Prior to final construction design, the Project Biologist shall confirm appropriate placement and dimensions of wildlife crossings.

For terrestrial wildlife, crossings will conform to the minimum spacing and dimensions discussed in the Palmdale to Burbank Project Section: Wildlife Corridor Assessment Report (Authority 2019c) unless different dimensions are specified in authorizations issued under the Act or CESA. All wildlife crossings would include the following features: native earthen bottom, unobstructed entrances, and openness factor of at least 0.41 and line of sight. To the extent feasible, all wildlife crossings created specifically for terrestrial species will include the following features and design considerations:

1. Ledges or tunnels incorporated into the design to facilitate safe passage of small mammals.

2. Year-round absence of water for a portion of the width of the crossing (i.e., no flowing water).

3. Slight grade at approaches to prevent flooding.

4. Limited open space between crossing and cover/habitat.

5. Separation from human use areas (e.g., trails, multi-use undercrossings).

6. Avoidance of artificial light at approaches to wildlife crossings.

7. Undercrossings intended to be used by large mammals (i.e., mule deer) within the mule deer species range will have a 10-foot-tall concrete arch to accommodate the mammals' larger stature.

8. Any culvert intended to function as an undercrossing for carnivores and small animals will be no smaller than a 6-foot-wide arch culvert for lengths up to 200 feet, or an 8-foot-wide arch culvert for lengths up to 300 feet. The substrate will be natural soil of

> the surrounding area, and the grade would not exceed 2 percent. Culverts longer than 200 feet will not be considered wildlife crossing structures. If any portion of the bottom of the wildlife undercrossing is likely to be inundated longer than 24 hours at least once per year, the structure would have a dry ledge. Ledges or tunnels and cover features to prevent predation will also be incorporated into the design to facilitate safe passage of small wildlife. The structure will be straight enough that a mammal entering the culvert can see the other end of the culvert.

Slope within the crossing structure will be consistent with the natural (preconstruction) grade (optimally less than 2 percent). Slopes that follow natural grades greater than 2 percent are acceptable in bridged undercrossings (viaducts).

CM-GEN-19: Work Stoppage

During construction activities, the Designated Biologists and general Biological Monitors will have stop work authority to protect any federally listed wildlife species in the project footprint. This work stoppage will be coordinated with the Authority or its designee. The Contractor will suspend ground-disturbing activities in the work area(s) where the potential construction activity could result in "take" of listed species; work may continue in other areas. The Contractor will continue the suspension until the individual leaves voluntarily or is moved to an approved release area using USFWS-approved handling techniques and methods, or as required by the USFWS.

CM-GEN-20: Enforce Construction Speed Limit

A speed limit of 15 miles per hour will be enforced during project construction for all vehicles operating on unimproved access roads and in temporary and permanent construction areas in the limit of direct effect.

CM-GEN-21: Implement Avoidance of Nighttime Light Disturbance

Prior to construction (any ground-disturbing activity requiring nighttime construction), the Contractor shall prepare a technical memorandum verifying how the Contractor will shield nighttime construction lighting and direct it downward in such a manner to minimize the light that falls outside the construction site boundaries. The technical memorandum will be submitted to the Authority for review and approval.

CM-GEN-22: Implement Water or Dust Palliative Measures

Water or dust palliatives will be applied to the construction right-of-way, dirt roads, trenches, spoil piles, and other areas where ground disturbance takes place to minimize dust emissions and topsoil erosion. Dust palliatives will be nontoxic to wildlife and plants. For construction in suitable habitat for listed species, the Biological Monitor will patrol areas of disturbance to ensure that water does not puddle for long periods and attract listed species (e.g., desert tortoise), common ravens (*Corvus corax*), or other wildlife to the project site. Operational ponding will be avoided through careful grading and hydrologic design. Water tanks will be covered with secure

lids. Leaking hoses, tanks, or other sources of inadvertent pooling will be repaired immediately or moved offsite.

CM-GEN-23: Design the Project to be Bird Safe

Prior to final construction design, the Authority, in consultation with the Project Biologist, will ensure that the catenary system, masts, and other structures such as fencing, electric lines, communication towers and facilities are designed to be bird and raptor-safe in accordance with the applicable recommendations presented in *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* (Avian Power Line Interaction Committee 2006) and *Reducing Avian Collisions with Power Lines: State of the Art in 2012* (Avian Power Line Interaction Committee 2012). Avian Power Line Interaction Committee recommendations include, but are not limited to:

1. Ensuring sufficient spacing or covering of phase conductors to prevent bird electrocution.

2. Configuring lines to reduce vertical spread of lines and/or decreasing the span length if such options are feasible.

3. Marking lines and fences (e.g., Bird Flight Diverter for fencing and lines) to increase the visibility of lines and reduce the potential for collision, and where fencing is necessary, using bird compatible design standards to increase visibility of fences to prevent collision and entanglement.

4. Installing perch guards to discourage avian presence on and near project facilities.

5. Eliminating use of guy wires on communication towers or similar structures.

6. Using monopole design for communication towers or similar structures to minimize perching and nesting opportunities; communication towers conform to *Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning* (Service 2021).

7. Reusing or co-locating new transmission facilities and other ancillary facilities with existing facilities and disturbed areas to minimize habitat impacts and avoid collision risks.

8. Using facility lighting that does not attract birds or their prey to project sites, including using non-steady burning lights (red, dual red and white strobe, strobe-like flashing lights) to meet Federal Aviation Administration requirements, using motion or heat sensors and switches to reduce the time when lights are illuminated, using appropriate shielding to reduce horizontal or skyward illumination, and not using high-intensity lights (e.g., sodium vapor, quartz, and halogen); not installing lighting under viaduct and bridge structures in riparian habitat areas.

9. Avoiding the siting of transmission lines across canyons or on ridgelines to prevent bird and raptor collisions when possible.

10. Installing bird flight diverters on all facilities spanning or within 1,000 feet of stream and wash channels, canals, ponds, and any other natural or artificial body of water.

11. Installing fencing or other type of flight diverter on all viaduct structures to encourage birds and raptors to fly over the HSR and avoid flying directly in the path of on-coming trains.

12. Ensuring poles do not have openings that could entrap birds, including sealing or capping all openings in poles or providing for escape routes (e.g., openings accommodating escape for various species).

13. Designing aerial structures (e.g., viaducts and bridges) and tunnel portals to discourage birds and bats from roosting in expansion joints or other crevices.

14. Insulated wire or tree wire will be used for all electrical conduits to increase visibility of wires.

CM-GEN-24: Tunnel Construction Methods and Approaches within the Angeles National Forest Involving Tunnel Boring Machines, Tunnel Lining Systems, and Tunnel Grouting to Avoid and Minimize Changes in Groundwater Levels as a Result of Tunnel Construction

Tunnel Boring Machines

Tunnel Boring Machines (TBMs) would be designed to operate in either an open hard rock tunneling mode (open-mode) or a pressurized tunneling mode (closed-mode). TBMs capable of operating in either of these modes are referred to as "hybrid" TBMs. Closed-mode operations would effectively prevent seepage from occurring at the cutterhead, even under difficult ground conditions.[8] Open-mode operation, however, would not be as effective at reducing potential changes in groundwater levels as closed-mode operation. The mode of operation that would be employed would be determined by the specific conditions encountered along the tunnel alignment. In circumstances where groundwater pressures are below 17 bar and the tunnel alignment passed under groundwater, the TBM would operate in closed mode. Closed-mode operation would also be used under higher pressures should future technologies allow for such

[8] Difficult ground conditions are considered to be soil, rock or water conditions that add difficulty to the mining of tunnels. These conditions may include: very weak rock, very strong rock, rock bursting where the exposed rock releases in-situ stress as an explosive failure, sheared rock, granular soil that can run into a tunnel (Running Ground), saturated soil that can flow into a tunnel (flowing ground), unstable rock that needs special support (e.g., rock bolts, spiling, permeation grouting, and shotcrete application) to prevent the tunnel from collapsing, swelling/squeezing ground where the ground pressures exceed the rock strength and the tunnel wall deforms resulting in the tunnel walls converging toward one another, high groundwater pressures, and high groundwater flow volumes.

operation. The pressurization of the face[9] would be achieved with either of the two main tunneling machines that would be used for the project: Slurry[10] or Earth Pressure Balance (EPB) machines. The type of TBM that would be used for the Build Alternatives cannot be identified at this time, since the selection of a TBM type would depend on a detailed knowledge of the geotechnical and hydrogeological ground conditions that exist along the alignments. Nevertheless, Slurry TBMs are generally more compatible with the high-water pressure conditions that would be encountered under the Build Alternatives.

The TBM would be designed with ports for drilling horizontal probe holes through the TBM cutterhead, and angled probe holes through the TBM shields. These holes would allow for water pressures and flow rates to be measured ahead of the TBM. The probe holes, equipped with blow out preventers, would allow for pre-excavation grouting ahead of the TBM to cut-off groundwater inflows into the tunnel. The design and configuration of probe/grout holes would allow for concurrent drilling and grouting of multiple holes ahead of the TBM, and around the entire tunnel perimeter. Such probing and grouting operations are most applicable to a TBM operating in an open mode and would be mandatory in that instance. (see HYD-IAMF#7).

Two other features of the TBMs would be required for the construction of tunnels. The first feature provides for the injection of pressurized bentonite to fill the void space between the TBM shield and the rock/soil outside the shield when working in a closed mode. The second feature would be the use of an automatic tail void grouting system in which grout is injected simultaneously with the TBM advance while operating in open-face mode (see "Grouting" section below).

Tunnel Lining Systems

In circumstances where groundwater pressures are at 25 bar or less, a one-pass lining system would be installed in the tunnels that were constructed using a TBM. The lining system, which would consist of segmental, precast, concrete lining with bolted and gasketed joints, would create a watertight tunnel lining capable of resisting the groundwater pressure with minimal, if any, leakage. A one-pass lining system could potentially be used in higher pressure locations if technological advancements were sufficient to ensure watertight seals under those pressures.

In circumstances in which groundwater pressures exceed 25 bar, a two-pass lining system would be installed for TBM constructed tunnels. A two-pass lining system would also be used in all instances for conventionally mined tunnels. The two-pass lining system involves two stages of construction; a lining is installed against the rock/soil followed by a second interior lining with a waterproof membrane separating the two. The inner lining in the two-pass system would be

[9] Pressure acting on the tunnel face results from pressure of groundwater and the pressure of the rock or soil pushing into the tunnel opening. To resist these in-situ pressures so that a TBM can be advanced against such pressure, the space between the tunnel boring machine and the rock face being excavated is pressurized (often with a bentonite-water slurry).

[10]The Slurry TBM uses a liquid slurry (often bentonite and water) to remove and transport rock and soil cuttings from the tunnel face to a disposal system.

designed to withstand the maximum groundwater pressures anticipated in the tunnels and the waterproof membrane would create a watertight seal, capable of resisting groundwater pressures.

Tunnel Grouting

A multi-phase grouting program would be implemented during the construction of the tunnels. A primary objective of the grouting program would be to reduce or prevent potential groundwater flows into the tunnels. The grouting program would be implemented for both TBM constructed and conventionally mined tunnels, although in the case of conventionally mined tunnels only pre-excavation grouting and check grouting would be used.

To the extent applicable and feasible, the following grouting methods would be used during the construction of the tunnels to avoid and minimize groundwater flows into the tunnels:

1. **Pre-excavation grouting.** During TBM tunnel construction using the open-mode approach, pre-excavation grouting would be implemented to reduce groundwater flow from the rock/soil mass prior to excavation, and to improve rock/soils conditions for tunneling. Systematic pre-excavation grouting ahead of the TBM would be performed to allow the TBM to advance, and the tunnel lining system to be installed, with minimum impacts to groundwater resources. Grout would be injected through the TBM shield and cutterhead holes. In circumstances where conventional mining methods are used, grout would be injected through drill holes advanced through the tunnel face and around the tunnel perimeter. Criteria for length and direction of drill holes, number of holes, grout composition, and injection pressures would be determined based on the conditions encountered in the field. The pre-grouting would create a zone of treated rock/soil around the tunnel that would be sealed to minimize groundwater inflows. Additional grouting would be implemented radially outward from the tunnel interior to broaden the diameter of the grouted zone surrounding the tunnel, as necessary, to further reduce groundwater flows into the tunnel.

2. **Steering (overcut) gap around the body of the shield.** During construction, pressurized bentonite would be injected to fill the void space between the TBM shield and the rock/soil outside the shield. The void space would be filled to seal off any potential water leakage from the cutterhead of the TBM back towards the rear of the shield. The capacity to inject pressurized bentonite is a built-in characteristic of a Slurry TBM, but this feature would need to be added to an EPB TBM if that type of TBM were to be selected. After advancing the machine, the void would be filled with the backfill grout placed around the tunnel lining (see below).

3. **Backfill grouting with two-component grout.** During construction, backfill grouting would occur simultaneously with the advancement of the TBM. Grout would be injected from the tail of the shield to fill the annular gap between the TBM excavation limits and the segmental lining. The annular gap from the tail of the shield would be filled with a quick-setting grout to prevent water from traveling along the interface between the lining and the rock/soil. The accelerated two-component grout is superior

to conventional cement grouts because it provides for complete and reliable backfilling of the annular gap. Moreover, this material hardens very quickly and provides resistance to water flow upon hardening.

4. **Check grouting.** After the tunnel lining has been installed and backfilled, check grouting would be injected through grout ports in the tunnel lining where the back filling volume is less than the theoretical volume or there is evidence of groundwater inflow. The ports would be opened to check for voids and groundwater inflows. If any voids were detected, grout would be injected into the annular space under pressure (typically 0.7 to 1.0 bar higher than the static groundwater pressure) between the lining and rock/soil wall to control groundwater flows. The check grouting would be used for both single pass and double pass linings and would further reduce the potential for water to leak through the lining and into the tunnel.

CM-GEN-25: Implement the Water Resources Adaptive Management and Monitoring Plan

To avoid and minimize potential impacts on seeps, springs, streams, riparian vegetation, and groundwater-dependent listed plant and wildlife species, the Authority will implement an AMMP prior to, during, and after tunnel construction to implement the requirements described under CM-GEN-24 and as described below concerning biological resources.

The purpose of the AMMP relative to biological resources is to monitor groundwater-dependent biological resources within the Tunnel Construction RSA to detect and remediate adverse effects on habitat function in a timely manner. Implementation of the AMMP will provide information and data to identify hydrological and biological effects that may arise during tunnel construction, if any, and trigger actions to offset any such impacts. The AMMP will include the following components, at a minimum, to avoid or minimize and address impacts on habitat for listed species, and aquatic resources:

1. **Baseline inventory.** The Authority will establish baseline hydrologic conditions within the Tunnel Construction RSA and within paired reference sites for comparison. Baseline surveys will characterize potential aquatic resources, including but not limited to mapping of wetland and riparian vegetation; hydroperiod (the duration of inundation); flow rates; area of feature; and the potential for special-status plant and fish and wildlife species to occur.

2. **Pre-tunneling supplemental water infrastructure provision.** To maintain baseline water supply, the Authority will install water storage tanks or water lines in advance of tunneling on or near properties with seeps, springs, and streams.

3. **Construction monitoring.** The Authority will designate monitoring locations and methodologies for monitoring water levels, vegetation cover, and special-status species habitat most likely to be affected by tunnel construction. The Authority will monitor representative locations during periods when effects are most likely to occur. Monitoring will involve installation of flow gauges and water level sensors at springs and seeps to continuously monitor flow rates and water levels during tunnel

construction. Monitoring will take advantage of remote sensing technology and telemetry to monitor water flow and water quality data in real-time, which allows for more immediate responses to any adverse changes. Additionally, water quality parameters (pH, temperature, turbidity, dissolved oxygen, and contaminants) will be regularly sampled and analyzed to detect any changes caused by tunneling activities. The Project Biologist will monitor the health and diversity of the vegetation around springs and seeps to document any changes in the surrounding environment that may indicate changes in groundwater levels. The Project Biologist will conduct surveys to monitor the presence and health of wildlife that depends on springs and seeps and will compare results to baseline pre-construction surveys to establish any potential effects from tunneling activities. If effects (e.g., lowering water levels resulting in reduced habitat) are observed, the Authority will implement contingency plans that expand monitoring beyond the representative locations and increase monitoring frequency to capture the extent of potential effects on groundwater-dependent biological resources.

4. **Response Actions - Supplemental water.** The Authority would prepare contingency plans to provide supplemental water as necessary to support riparian/aquatic vegetation, wildlife breeding cycles, aquatic wildlife or protected tree health within the area of predicted effects determined through modeling or monitoring to be potentially affected by groundwater lowering. Seasonal variation as documented during the preconstruction baseline monitoring would be considered in establishing the amount of supplemental water. For all features, supplemental water would provide minimum flows and periods of inundation to match baseline conditions. The periods of supplemental water, in general, would likely be in periods of baseflow, which occurs in late spring, summer, and early fall outside of rain periods. For breeding habitats, the Authority would, at a minimum, supplement breeding habitat where necessary to maintain adequate depths for completion of the reproduction cycle (defined as the time by which juveniles are viable and mobile such that they can feasibly leave the breeding location). However, where breeding habitat is perennial or long seasonal, then supplemental water would be provided as necessary to maintain the entire wetted period as determined through baseline monitoring. For nonbreeding movement and foraging habitat in creeks and streams, water would be provided to maintain seasonal flow similar to baseline conditions. Water would be provided as needed to sustain habitat conditions up to the point of baseline conditions until the qualified biologist determines it is appropriate to cease its provision. If supplemental water is provided from wells, the effects on water supply and habitat features would be managed to avoid and minimize potential disruption by the selection of well location, depth, flow rate, and the use of alternative supplies.

5. **Contingency plan for supplemental water in areas outside of predicted area of effect.** The Authority would establish contingency procedures to provide supplemental water to springs, seeps, and streams to support riparian / aquatic vegetation, wildlife breeding cycles, and aquatic wildlife outside the area of predicted effects, if warranted by monitoring.

6. **Post-construction monitoring**. After construction, the Authority would monitor water levels and aquatic resource conditions of affected features twice annually (spring and summer) for at least five years or as determined through consultation with USFWS. As long as groundwater levels are demonstrated to be recovering, monitoring would continue until baseline conditions return or ten years, whichever is longer. In the event that supplementary water is not successful at restoring aquatic resources to baseline conditions in the post-construction period and off-site compensation is triggered, then monitoring may be waived for certain features if it is determined that there is no further utility for monitoring the specific feature. If impacts to listed species habitat are documented, the Authority will reinitiate section 7 consultation with the Service.

CM-GEN-26: Minimize Permanent, Intermittent Noise Impacts on Special-Status Bird Habitat

To address the permanent, intermittent impact of noise on suitable special-status bird habitat, the Authority will build sound barriers to minimize or avoid such impacts in locations where suitable special-status bird habitat would be exposed to 65 A-weighted decibels of permanent intermittent noise impact outside the fenced right-of-way. Sound barriers will be designed with the goal of minimizing exposure to noise produced by HSR trains by providing a 10 A-weighted decibel attenuation of sound generated by HSR operations, as measured 50 feet from the noise barrier. Typically, this level of sound attenuation may require a 14- to 17-foot-tall sound barrier. The sound barriers will be constructed in conjunction with the installation of track and OCS and will be completed before HSR train operations begin. The location, length and height of the barriers will be determined based on detailed noise modeling for areas of suitable special-status bird habitat, and measurement of existing conditions so that the noise-attenuating effects of topography and other existing features can be accounted for during the final design phase. At a minimum, 14-foot-tall noise barriers will be installed along both sides of the SR14A alignment where the alignment is at-grade and on viaduct and where modeled suitable habitat for federally listed bird species occurs within 1,000 feet of the project footprint.

HYD-IAMF#1 Storm Water Management

Prior to Construction, the Contractor shall prepare a storm water management and treatment plan for review and approval by the Authority. During the detailed design phase, each receiving stormwater system's capacity to accommodate project runoff will be evaluated. As necessary, on-site stormwater management measures, such as detention or selected upgrades to the receiving system, will be designed to provide adequate capacity and to comply with the design standards in the latest version of Authority Technical Memorandum *2.6.5 Hydraulics and Hydrology Guidelines*. On-site stormwater management facilities will be designed and constructed to capture runoff and provide treatment prior to discharge of pollutant-generating surfaces, including station parking areas, access roads, new road over- and underpasses, reconstructed interchanges, and new or relocated roads and highways. Low-impact development techniques will be used to detain runoff on site and to reduce off site runoff such as constructed wetland systems, biofiltration and bioretention systems, wet ponds, organic mulch layers,

planting soil beds, and vegetated systems (biofilters), such as vegetated swales and grass filter strips, will be used where appropriate.

HYD-IAMF#2 Flood Protection

Prior to Construction, the Contractor shall prepare a flood protection plan for Authority review and approval. The project will be designed both to remain operational during flood events and to minimize increases in 100-year or 200-year flood elevations, as applicable to locale. Design standards will include the following:

1. Establish track elevation to prevent saturation and infiltration of stormwater into the subballast.

2. Minimize development within the floodplain, to such an extent that water surface elevation in the floodplain will not increase by more than 1 foot, or as required by state or local agencies, during the 100-year or 200-year flood flow [as applicable to locale]. Avoid placement of facilities in the floodplain or raise the ground with fill above the base-flood elevation.

3. Design the floodplain crossings to maintain a 100-year floodwater surface elevation of no greater than 1 foot above current levels, or as required by state or local agencies, and project features within the floodway itself will not increase existing 100-year floodwater surface elevations in Federal Emergency Management Agency-designated floodways, or as otherwise agreed upon with the county floodplains manager.

The following design standards will minimize the effects of pier placement on floodplains and floodways:

4. Design site crossings to be as nearly perpendicular to the channel as feasible to minimize bridge length.

5. Orient piers to be parallel to the expected high-water flow direction to minimize flow disturbance.

6. Elevate bridge crossings at least 3 feet above the high-water surface elevation to provide adequate clearance for floating debris, or as required by local agencies.

7. Conduct engineering analyses of channel scour depths at each crossing to evaluate the depth for burying the bridge piers and abutments. Implement scour-control measures to reduce erosion potential.

8. Use quarry stone, cobblestone, or their equivalent for erosion control along rivers and streams, complimented with native riparian plantings or other natural stabilization alternatives that will restore and maintain a natural riparian corridor.

9. Place bedding materials under the stone protection at locations where the underlying soils require stabilization as a result of stream-flow velocity.

HYD-IAMF#3 Prepare and Implement a Construction Stormwater Pollution Prevention Plan

Prior to Construction (any ground disturbing activities), the Contractor shall comply with the SWRCB Construction General Permit requiring preparation and implementation of a SWPPP. The Construction SWPPP will propose BMPs to minimize potential short-term increases in sediment transport caused by construction, including erosion control requirements, stormwater management, and channel dewatering for affected stream crossings. These BMPs will include measures to incorporate permeable surfaces into facility design plans where feasible, and how treated stormwater will be retained or detained on site. Other BMPs shall include strategies to manage the amount and quality of overall stormwater runoff. The Construction SWPPP will include measures to address, but are not limited to, the following:

1. Hydromodification management to verify maintenance of pre-project hydrology by emphasizing on site retention of stormwater runoff using measures such as flow dispersion, infiltration, and evaporation (supplemented by detention where required). Additional flow control measures will be implemented where local regulations or drainage requirements dictate.

2. Implementing practices to minimize the contact of construction materials, equipment, and maintenance supplies with stormwater.

3. Limiting fueling and other activities using hazardous materials to areas distant from surface water, providing drip pans under equipment, and daily checks for vehicle condition.

4. Implementing practices to reduce erosion of exposed soil, including soil stabilization, regular watering for dust control, perimeter siltation fences, and sediment catchment basins.

5. Implementing practices to maintain current water quality, including siltation fencing, wattle barriers, stabilized construction entrances, grass buffer strips, ponding areas, organic mulch layers, inlet protection, storage tanks, and sediment traps to arrest and settle sediment.

6. Where feasible, avoiding areas that may have substantial erosion risk, including areas with erosive soils and steep slopes.

7. Using diversion ditches to intercept surface runoff from off site.

8. Where feasible, limiting construction to dry periods when flows in water bodies are low or absent.

9. Implementing practices to capture and provide proper off-site disposal of concrete wash water, including isolation of runoff from fresh concrete during curing to prevent it from reaching the local drainage system, and possible treatments (e.g., dry ice).

10. Developing and implementing a spill prevention and emergency response plan to handle potential fuel and/or hazardous material spills.

Implementation of a SWPPP will be performed by the construction contractors as directed by the contractor's Qualified SWPPP Practitioner or designee. As part of that responsibility, the effectiveness of construction BMPs must be monitored before, during and after storm events. Records of these inspections and monitoring results are submitted to the local regional water quality control board (RWQCB) as part of the annual report required by the Statewide Construction General Permit. The reports are available to the public online. The SWRCB and RWQCB will have the opportunity to review these documents.

CM-PLT-01: Conduct Presence/ Absence Pre-construction Surveys for Listed Plants

To detect the presence of federally listed plant species, the Designated Biologist(s) will conduct protocol-level surveys in all suitable habitat for federally listed plant species within the project impact footprint and 100-foot plant buffer prior to any ground- or vegetation-disturbing activities. Initially, habitat suitability assessment surveys will be performed to "ground-truth" the habitat suitability models developed in 2015. Areas that are determined to not be suitable habitat for federally listed species will not be further surveyed to protocol level, following coordination with and approval from USFWS. Where further protocol surveys are indicated based on the habitat suitability assessment, the surveys shall be consistent with *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018b) and *Guidelines for Conducting and Report Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (Service 2000). Prior to surveys, and if a reference population exists, reference populations for target survey species will be visited, to confirm blooming conditions and ensure target species have flowers or other discernible features necessary to identify plants.

The Designated Biologist will flag and record in GIS the locations of any observed federally listed plant species. If federally listed plants are detected, the Authority will reinitiate Section 7 consultation with the USFWS.

CM-PLT-02: Maintenance of Existing Hydrologic Conditions to Maintain Slender-horned Spineflower Habitat Below the Preferred Alternative Alignment in Bee Canyon

To maintain habitat for slender-horned spineflower, and other federally listed plant species, hydraulic capacity in Bee Canyon and Pacoima Wash will be maintained at preconstruction conditions through the implementation of on-site stormwater management BMPs to provide runoff dispersion, infiltration, detention, and evaporation. Hydraulic capacity in Bee Canyon and Pacoima Wash will be maintained by minimizing alterations to watercourses, implementing erosion control BMPs, and maintaining existing stormwater patterns through implementation of conservation measures (CM-GEN-04 and CM-GEN-05) and HYD-IAMF#1 through HYD-

IMAF#3 (Appendix K) into project design. A construction-period SWPPP (CM-GEN-05 and HYD-IAMF#3) will incorporate BMPs to reduce short-term increases in construction-site runoff, and a Stormwater Management and Treatment Plan (Appendix K, HYD-IAMF#1) will address stormwater runoff and system capacity. Water crossings will be implemented to maintain preconstruction hydraulic capacity (Appendix K, HYD-IAMF#2) and maintenance of existing drainage patterns within channels and washes (Appendix K, HYD-IAMF#1 and HYD-IAMF#3) will minimize impacts to hydraulic condition. The Authority will provide the Stormwater Management and Treatment Plan for review by USFWS at the 60 percent design stage and will provide the SWPP prior to the start of construction. If an analysis of the Stormwater Management and Treatment Plan and/or SWPPP suggests that the project will result in substantial impacts to the slender-horned spineflower and its habitat (i.e., is likely to result in a reduction in spatial distribution or density of the affected population), the Authority will coordinate with USFWS to modify project design to maintain hydrologic conditions appropriate for the slender-horned spineflower or will reinitiate consultation to address unanticipated effects.

CM-PLT-03: Compensate for Impacts on Slender-horned Spineflower

The Authority will provide compensatory mitigation for direct impacts on unoccupied slender-horned spineflower habitat and indirect impacts on occupied and unoccupied slender-horned spineflower habitat through the protection and long-term management of 195.7 acres of equal or higher quality suitable habitat. At a minimum, 143 acres of slender-horned spineflower suitable habitat will be placed in conservation prior to the start of construction. The balance of mitigation for slender-horned spineflower will be established prior to the completion of construction.

CM-PLT-04: Provide for Long-Term Monitoring and Perpetual Management of Slender-Horned Spineflower Population at Bee Canyon

The Authority will coordinate with the Service and the landowner to prepare a long-term monitoring and management plan to provide for the perpetual management of the spineflower population in Bee Canyon. The monitoring and management plan will be prepared and funded consistent with CM-Mit-01.

CM-VRN-01: Conduct Pre-construction Surveys for Vernal Pool Wildlife Species

Prior to any ground disturbing activities, the Project Biologist will conduct an aquatic habitat assessment and survey for vernal pool wildlife species in seasonal wetlands and vernal pools that occur within both the work area and the area extending 250 feet from the outer boundary of the work area where access is available, consistent with USFWS vernal pool survey protocols. The Project Biologist will visit these areas after the first rain event of the season to determine whether seasonal wetlands and vernal pools have been inundated. A seasonal wetland/vernal pool will be considered to be inundated when it holds greater than 3 centimeters of standing water 24 hours after a rain event. Approximately two weeks after the pools have been determined to be inundated, the Project Biologist will conduct surveys in appropriate seasonal wetland and vernal pool habitats. The Project Biologist will submit a report to the Authority within 30 days of completing

the work. If federally listed fairy shrimp are detected, the Authority will reinitiate Section 7 consultation with the USFWS.

CM-VRN-02: Implement Seasonal Vernal Pool Work Restriction

Ground disturbing activities will not occur within 250 feet of vernal pools or seasonal wetlands that are occupied by listed species during the rainy season (October 15 to April 15).

CM-VRN-03: Implement and Monitor Vernal Pool Avoidance and Minimization Measures within Temporary Impact Areas

Impacts on vernal pools occupied by listed species in work areas outside of the permanent right-of-way will be avoided. The Project Biologist will install and maintain exclusionary fencing to prevent impacts on vernal pools from construction activities.

CM-UTS-01: Implement Worker Environmental Awareness Program for Unarmored Threespine Stickleback

Prior to initiation of construction activities, implement CM-GEN-10 Prepare Worker Environmental Awareness Program (WEAP) Training Materials and Conduct Construction Period WEAP Training; prior to Operation and Maintenance activities, implement CM-GEN-11 Conduct Operation and Maintenance Period WEAP.

The WEAP will include site-specific information developed for the restriction of access to the wetted channel of the Santa Clara River, including restrictions on the introduction and handling of concrete or other contaminants, and debris and vegetation disposal.

Training will include the repercussions to unarmored threespine stickleback resulting from contaminants and debris, and access to the wetted channel.

CM-UTS-02: Establish Construction Zones and Environmentally Sensitive Areas

During temporary and permanent bridge construction, the Authority will implement CM-GEN-14 Delineate Equipment Staging Areas and Traffic Routes and CM-GEN-18 Establish Environmentally Sensitive Areas and Non-Disturbance Zones to ensure no work takes place where unarmored threespine stickleback may be affected. Additional measures include:

Prior to the commencement of construction activities, a Designated Biologist will survey the proposed work locations to confirm that the construction zone is outside the wetted channel of the river, that the proposed permanent pile installation locations are located outside of the 25-year flood zone and away from the wetted channel.

A Biological Monitor will be present during all construction and maintenance activities upstream or downstream of the bridge crossing to prevent activities, personnel, and debris from making contact with or disturbing the wetted channel of the Santa Clara River.

Prior to ground-disturbing activities, and to the extent feasible, a K-rail construction barrier and ESA fencing (CM-GEN-18) will be installed between the bridge construction work zone and the ESA area of the wetted channel of the Santa Clara River to prevent access to the wetted channel. The ESA will be installed a minimum of 10 feet away from the wetted channel and the K-rail will be installed approximately 10 feet from the ESA to the extent practicable.

No construction activities or personnel will occur within 10 feet of the wetted channel. Permanent structures associated with bridge construction will remain outside of the 25-year flood zone and all other construction activities associated with bridge construction, such as the installation of K-rail barriers and ESA fencing, will be remain a minimum of 10 feet away from the wetted channel.

CM-UTS-03: Santa Clara River Construction and Maintenance Activity Weather Related and Seasonal Work Restrictions

Prior to and during any storm event, a Biological Monitor will inspect work sites to ensure sites are secure so that flooding does not cause damage to tarps or plug diversion drains or allow construction materials, such as uncured concrete, and debris to flow into the river.

Seasonal Work Restrictions. All permanent bridge pier and structure construction in the Santa Clara riverbed will be completed during the dry season, defined as June 1 through November 1, and all work will completely avoid the wetted channel during construction and maintenance.

All measures implemented during bridge construction will be implemented to avoid accidental contact, spills, or falling debris into the wetted channel. During operation and maintenance (O&M), if the wetted portion of the Santa Clara River shifts in location (for example, in response to a flood event that alters the wetted channel alignment), all maintenance and repair activities will continue to occur where those activities are outside of the wetted channel.

CM-UTS-04: Prepare and Implement Spill Prevention and Containment Measures

All fuels and components with hazardous materials or waste will be handled in accordance with applicable regulations, the Stormwater Pollution Prevention Plan (SWPPP) prepared for CM-GEN-07, and the Construction Management Plan prepared for CM-GEN-08. These materials will be kept in segregated, secured, and/or secondary containment facilities, as necessary.

During concrete pours of the permanent bridge piles and bridge decks or other structures, spill containment will be installed and maintained to prevent uncured concrete releases to the wetted channel of the Santa Clara River. Spill containment may include installation of K-rail barriers at the perimeter of work areas, between work areas and the wetted channel and/or underslung tarps to intercept all potential uncured concrete flows to the Santa Clara River.

During bridge construction, no continuous dewatering or drawdown within the shafts will occur. Casing water, if any, will be extracted and disposed of at a legal disposal site in an upland

location. No other construction dewatering associated with installation of the Santa Clara River crossing bridges will occur within the work areas.

To ensure that water quality is not being affected by bridge and bank stabilization-related concrete pouring activities, the Authority will monitor the water quality at points upstream, downstream, and immediately adjacent to the construction work zone daily during concrete pouring operations. Key parameters to be monitored are pH and turbidity.

CM-UTS-05: Implement Construction or Maintenance Activity Debris Prevention Measures

Prior to initiation of construction or O&M activities, an underslung tarp, debris platform or equivalent barrier extending at least 10 feet away from the wetted channel will be deployed beneath the bridge deck to prevent the inadvertent discharge of equipment, chemicals, or debris into the Santa Clara River.

The Authority will inspect and maintain tarps, debris platforms, or equivalent barriers to ensure catchments are functioning appropriately.

CM-UTS-06: Implement Construction Measures for Unarmored Threespine Stickleback Avoidance

During the installation of piles and piers for the bridge, vibratory, oscillating, or other approved pile driving methods will be used in the Santa Clara riverbed, outside of the wetted channel 25-year flood zone, in order to avoid effects to unarmored threespine stickleback. Piles and footings associated with temporary structures required to construct the bridge will be installed and removed only by vibratory methods. Temporary piles and footings will be installed and removed at least 10 feet away from the wetted channel at the time of installation or removal.

Construction activities in areas susceptible to winter flood flows will be conducted from June 1 through September 30, when winter flood flows do not occur in the Santa Clara River. Other construction activities in areas not at risk of flood flows may be constructed year-round.

Vegetation management will be limited to trimming existing riparian vegetation outside the wetted channel. No vegetation management or personnel will occur within 10 feet of the wetted channel. Woody debris generated by vegetation management activities will be prevented from contacting the wetted channel, either by hand or by deploying physical restraints or tarps. A Designated Biologist will review, delineate, and monitor the vegetation management plan locations.

CM-UTS-07: Prepare a Construction Groundwater Dewatering Plan

The Authority will prepare for USFWS approval a Construction Groundwater Dewatering Plan for the Santa Clara River for areas close to stream flow to ensure that any dewatering is conducted in a manner that does not affect river flow or introduce pollutants. Dewatering will be implemented in a manner that (1) does not create temporary wetted channel habitat suitable for unarmored threespine stickleback; (2) does not diminish existing river flow, and therefore does

not result in stranding of unarmored threespine stickleback or other fish; (3) does not extend the reach farther downstream such that fish may become stranded when discharge flows subside; and (4) does not introduce pollutants to surface waters.

The plan will include, but not be limited to:

1. No direct removal of surface water from or to the Santa Clara River or activities that may result in stranding of unarmored threespine stickleback.

2. Groundwater discharges will be directed to appropriate legal disposal sites in an upland area that cannot flow into the Santa Clara River or otherwise change the river's flow and water quality.

3. The Authority will monitor daily surface water elevations upstream, adjacent to, and downstream of the extraction points, to assess any critical flow regimes susceptible to excessive draw down before, during, and after groundwater dewatering activities.

4. The Biological Monitor will have the authority to halt dewatering activities if water levels decrease in the wetted portion of the Santa Clara River where unarmored threespine stickleback are present.

CM-UTS-08: Implement Scour Avoidance Features Around Bridge Piers

Scour and cavity (i.e., depression) formation around the base of bridge piers will be avoided through implementation of design features that prevent erosion by dissipating the energy of the water flowing around the base of piers. The following structural designs will be considered and implemented according to the best design considerations, constructability, and environmental protections at the time of construction of the project:

1. Vegetated rip-rap: Biotechnical methods can be used alongside rock or other inert materials to resist hydraulic forces, stabilize the stream system and prevent scour. Such methods can include the use of brush layering and poles, grass and ground cover, willow bundles, or other vegetated features that can resist hydraulic forces, increase geotechnical stability, and prevent soil loss behind the structures. Vegetation can thrive where riprap is constructed to encourage ongoing vegetative growth, and can also function to enhance riparian habitat while also protecting stream banks and bridge piers.

2. Collars: Collars are metal or concrete structures that are placed around the base of the bridge pier to prevent the erosion of the soil around it. The collars can be designed to create turbulence in the flowing water, which helps to prevent scour.

3. Varying the bridge pier shape: Design the piers with a cross section hydraulically favorable to the water flow to reduce the generation of the turbulent regime and consequently of the vortices that originate the scour.

4. Orientation of the bridge piers in a manner that follows the water flow lines, to minimize the bridge's obstruction to flow. This method typically involves minimizing the angle between approach flow and major horizontal axes of pier faces.

5. Scour prevention features will be designed in such a way that no gaps, cracks, crevices, or spaces exist in the feature that might experience micro-scour of otherwise retain water that could strand unarmored three-spine stickleback as flows recede. Scour prevention features will be solid in structure and will be developed within the existing design footprint of the bridge structures. No additional permanent impact footprint would be required for the scour prevention features.

CM-UTS-09: Implement Avoidance Measures During Operations and Maintenance for the Santa Clara River

All maintenance of project facilities on the Santa Clara River will adhere to timing and work area restrictions, specifically:

1. Maintenance activities will not take place in the wetted channel of the Santa Clara River.

2. Maintenance activities and personnel will remain at least 10 feet from the wetted channel.

3. Repair or replacement of bridge structures requiring access to the 25-year flood zone of the riverbed will be restricted to the period from June 1 to September 30, except in the case of an emergency.

Any dewatering necessary during O&M activities will not create a risk of fish stranding, either through draw down (zone of influence) or by flow discharge creating temporary habitat suitable for federally listed fish, nor will it involve direct removal of surface water from, or discharge to, the wetted channel of the Santa Clara River.

Maintenance activities will implement additional conservation measures, CM-UTS-01 through CM-UTS-07, as applicable to the activity.

CM-CRLF/MYLF-01: Conduct Pre-construction Surveys for Special-Status Amphibian Species

Prior to any ground disturbing activities, the Project Biologist will conduct pre-construction surveys in suitable habitat to determine the presence or absence of special-status amphibian species within the work area. These surveys will be conducted in accordance with any required agency protocols. Surveys will be conducted before the start of ground-disturbing activities in a work area providing ample time to complete a given species' protocol survey methodology. Protocol surveys for the detection of special-status amphibians will be according to CDFW Survey and Monitoring Protocols and Guidelines (https://wildlife.ca.gov/Conservation/Survey-Protocols#377281282-amphibians) and the USFWS Survey Protocols and Guidelines (https://www.fws.gov/library/collections/survey-protocols-and-guidelines-recovery-permits-pacific-southwest-region). The results of the protocol survey will be used to guide the placement

of ESA for avoidance of impacts to the species. If California red-legged frogs or mountain yellow-legged frogs cannot be avoided, the Authority will reinitiate Section 7 consultation with the USFWS.

CM-ARTO-01: Conduct Pre-construction Surveys for Arroyo Toad

No more than 12 months before the start of any ground or vegetation disturbing activity, a Designated Biologist will conduct a habitat assessment where modeled habitat for arroyo toad occurs in the work area, plus a 500-foot buffer where PTE has been obtained, to determine if suitable aquatic and upland habitat exists.

Where suitable habitat is present, the Designated Biologist will conduct protocol surveys for arroyo toad within 12 months prior to ground-disturbing activities, adhering to guidance in *Survey Protocol for the Arroyo Toad* (USFWS 1999b) or current guidelines at time of surveys.

1. Negative survey results for arroyo toad will be considered valid for 1 year.

2. Surveys will be repeated every one or two years as appropriate until construction is completed in the work area containing suitable habitat.

3. Survey reports will be transmitted to the USFWS prior to the initiation of ground-disturbing activities at the survey sites.

CM-ARTO-02: Prepare and Implement Project Guidelines for Monitoring and Translocation of Arroyo Toad during Construction

Prior to construction activities, the Authority will implement the following measures for the monitoring and translocation of arroyo toads.

1. Prior to vegetation clearing, grading, and other construction activities, the Designated Biologist will monitor arroyo toad activity in project areas containing or adjacent to breeding habitat. When sign of breeding is no longer evident (i.e., egg clutches and larvae), an exclusionary fence will be installed and clearance surveys initiated. Breeding activity generally ends late May at lower elevation and June at higher elevation.

    a. After exclusionary fencing has been installed, a Designated Biologist will perform a minimum of three nighttime surveys inside the exclusionary fence and remove all arroyo toads found within its perimeter. The Designated Biologist will continue clearance surveys until there have been two consecutive nights with no arroyo toads found inside the fencing. Any breach in the exclusionary fence during times when arroyo toads are active above ground will require repeating the 3-day minimum clearance surveys for that particular work area.

    b. If suitable conditions that elicit an arroyo toad emergence and movement event do not occur, the Designated Biologist will attempt to elicit a response from the arroyo toads during nights during the breeding season, when temperatures are

above 50°F, by spraying the suitable habitat areas inside the exclusionary fence with water to a depth of approximately one to two inches to simulate a rain event.

c. After the clearance surveys have been completed, daily clearance surveys will be conducted each morning prior to the continuation of construction activity. Any toads found will be translocated to areas, beyond the construction sites, identified prior to the initiation of construction activities in coordination with the Service.

2. Designated Biologist will move arroyo toad out of harm's way to an undisturbed suitable habitat area beyond the construction site. The Designated Biologist will determine the best release location that includes similar habitat features to the capture site, to the greatest extent feasible. The Designated Biologist will not release toads if predators that may cause immediate harm to toads are observed.

3. Capture methods will follow commonly accepted techniques for amphibian field sampling, including capture by hand (with wet hands), dip net, and pitfall trapping. All pitfall traps will be covered or removed when clearance surveys are not occurring.

4. Amplexing pairs will not be captured, handled, or disturbed until amplexus is complete.

5. To avoid transferring disease and pathogens between aquatic habitats, the Designated Biologist, Biological Monitors, and construction personnel will follow *The Declining Amphibian Task Force Fieldwork Code of Practice* (Declining Amphibian Task Force 1998) and *Recommended Equipment Decontamination Procedures* (Service 2005b), or as recommended by the USFWS at the time of project construction.

6. The Designated Biologist will maintain a complete record of all arroyo toads encountered and moved out of harm's way during translocation. Records will include the date and time of capture, sex, physical dimensions, and coordinates/specific capture location will be recorded and provided to the USFWS within 30 days of the completion of translocation. Monthly reports (including photographs of impact areas) will be submitted to the USFWS during construction activities within areas demarcated by arroyo toad exclusion fencing. The reports will include the duration of arroyo toad monitoring, the location of construction activities, the type of construction that occurred, and equipment used. These reports will specify numbers, locations, sex, observed behavior, and conservation measures employed to avoid, minimize, and mitigate impacts to arroyo toads. All field notes and other documentation generated by the Designated Biologist will be available upon request to the USFWS.

CM-ARTO-03: Implement Avoidance Measures for Arroyo Toad

The Authority will implement avoidance and minimization measures if arroyo toad are detected in upland or aquatic habitat within 500 feet of construction or maintenance activities, including:

1. To the extent practicable, removal of arroyo toad riparian habitat will occur from October through December to minimize potential impacts to breeding adults and dispersing juveniles.

2. Prior to vegetation removal and grading activities or other ground-disturbing activities, ESA fencing will be installed along the perimeter of the project footprint within or immediately adjacent to arroyo toad breeding and aestivation habitat. WEF will be installed under the supervision of the Designated Biologist or Biological Monitor and in accordance with CM-GEN-15 at least 14 days prior to construction or ground-disturbing activities.

3. Where arroyo toads are present, exclusionary fencing will be installed at the boundary of the work area and will be at least 24 inches in height. No-work buffers will extend 50 feet beyond the WEF to the extent feasible to avoid and minimize impacts to arroyo toad outside of the work area during the construction period. The size of the no-work buffer may be adjusted by the Designated Biologist in coordination with the Authority and USFWS.

    a. If construction activities in the non-disturbance exclusion zone cannot be avoided, the Designated Biologist will conduct a minimum of three nocturnal surveys to translocate arroyo toad to a suitable release site in accordance with CM-ARTO-02. If an individual(s) is observed on the final survey, the Designated Biologist will conduct additional nocturnal surveys until no arroyo toad are detected.

    b. If arroyo toads are found in a work area where fencing was deemed unnecessary, work will cease until the Designated Biologist moves the individual(s) in accordance with CM-ARTO-02 and determines whether additional surveys or fencing are needed.

4. The Designated Biologist or Biological Monitor will conduct daily clearance surveys in suitable habitat to ensure arroyo toad are absent from the work area. If arroyo toads are observed during the daily survey, CM-ARTO-02 will be implemented. Work activities that could cause disturbance, injury, or mortality, will cease immediately.

5. During project implementation, all workers will immediately inform the Biological Monitor if an amphibian is observed in or near project work areas. All work in the vicinity of the animal which could cause disturbance, injury, or mortality will cease immediately and will not resume until the animal moves out of harm's way on its own or is moved in accordance with CM-ARTO-02.

6. Construction and O&M activities will be scheduled to avoid rainfall events in areas in or near suitable habitat and when conditions conducive to amphibian movement persist (such as during or immediately after rain events). If work is to occur during these conditions, a Designated Biologist or Biological Monitor will survey the work areas prior to the start of work each day. To avoid and minimize impacts to arroyo toads, access road construction and use, with the exception of emergency situations, will occur during daylight hours (from two hours after sunrise to two hours before sunset) when amphibian movement is less frequent.

7. Ground-disturbing activities within 500 feet of areas where arroyo toads may congregate (e.g., breeding pools) will be conducted outside the breeding season to the maximum extent practicable. These areas will be identified by the Designated Biologist prior to imitation of ground-disturbing activities.

8. Prior to vehicle access, metal plates, bridges, or other structures will be placed over creeks and other wet areas if arroyo toad are documented within 500 feet of the work area.

9. All fuels and components with hazardous materials or wastes will be handled in accordance with applicable regulations, the SWPPP prepared for CM-GEN-05, and the Construction Management Plan prepared for CM-GEN-06. These materials will be kept in segregated, secured and/or secondary containment facilities, as necessary. Any spills of liquid substances that could harm federally listed amphibians or their habitat will be immediately addressed in accordance with the Construction Management Plan prepared per CM-GEN-06.

10. Herbicides and pesticides will be used minimally, applied in accordance with label instructions, and when wind velocities are nine miles per hour or less. Herbicide application on USFS lands will follow all current USFS guidelines and restrictions. Herbicide application will not occur during the breeding season. Soil binders proposed for use will be approved by USFWS for use in occupied areas prior to application.

CM-DT-01: Conduct Pre-construction Surveys for Desert Tortoise

Prior to the start of ground- or vegetation-disturbing activities, a Designated Biologist familiar with desert tortoise and their sign will conduct pre-construction surveys in modeled habitat for desert tortoise. The survey(s) shall be conducted in general accordance with the USFWS protocol *Preparing for Any Action That May Occur within the Range of the Mojave Desert Tortoise (Gopherus agassizii*; Service 2017) or current pre-project survey protocol. The survey(s) will occur no more than 48 hours before the start of ground- or vegetation-disturbing activity in modeled habitat for desert tortoise and may be conducted any time of year, but preferably during the desert tortoise active period (i.e., April through May and September through October when air temperatures are below 95°F). The survey will consist of transect surveys spaced no greater than 15 feet apart and will include a 50-foot buffer around the work area, where access is permitted. Results of the survey effort will be transmitted to the USFWS prior to the initiation

of ground- or vegetation-disturbing activities at the survey site. If desert tortoises are detected, the Authority will reinitiate section 7 consultation with the USFWS.

CM-DT-02: Implement Avoidance Measures for Desert Tortoise

Following the pre-construction desert tortoise survey(s):

1. Where construction activities will be of short duration (i.e., less than 1 month) in suitable tortoise habitat, full-time monitoring by a Biological Monitor with experience with desert tortoise may be used in lieu of fencing. In these situations, a daily pre-activity clearance sweep will be conducted by the Biological Monitor prior to start of daily construction activities.

2. Where construction activities will occur for more than one consecutive month in suitable tortoise habitat:

    a. A Biological Monitor with desert tortoise experience will be present during all construction activities.

    b. Desert tortoise exclusionary fencing, barriers, and guards will be installed and maintained to avoid take of desert tortoise, including destruction of nests, or their potential habitat in the project footprint. ESA fencing and WEF in desert tortoise habitat will be constructed to standards outlined in *Desert Tortoise Field Manual* (Service 2009c) and will be used to delineate the area. The WEF will be maintained and monitored daily during the desert tortoise activity period (i.e., April through May and September through October when air temperatures are below 95°F) to ensure it is maintained in good condition, and to determine if tortoises are "trapped" along the fence searching for a way to access the other side. Outside of the desert tortoise active period, fence inspections will occur at least once weekly.

    c. ESA fence and WEF design will incorporate shade protection structures consistent with guidance in *Shade Structures for Desert Tortoise Exclusion Fence: DRAFT Design Guidance. U.S. Fish and Wildlife Service, Palm Springs, California* (Service 2018).

3. If any project vehicle must drive off established routes in suitable tortoise habitat, a Biological Monitor will walk immediately in front of the vehicle to search for desert tortoise. The Biological Monitor shall visually account for 100 percent of the footprint of the route or work location plus a 15-foot buffer on each side.

4. During project implementation, all workers will immediately inform the Biological Monitor if a desert tortoise is observed in or near project work areas. All work in the vicinity of the animal which could cause disturbance, injury, or mortality, will cease immediately.

CM-DT-03: Implement Avoidance Measures for Desert Tortoise Burrows

If active burrows are identified in the project footprint, if practical, and if PTE is granted, a 50-foot non-disturbance buffer will be established, maintained, and monitored. The buffer will be established by routing the ESA fence and WEF around the active burrows in a manner that allows for desert tortoise to leave the project footprint. Following the procedures and precautions outlined in the *Desert Tortoise Field Manual* (Service 2009c), all desert tortoise pallets and burrows that are not practical to avoid will be examined and excavated by hand during the clearance survey by the Designated Biologist and collapsed to prevent re-entry.

CM-DT-04: Inspect Structures that Provide Potential Shelter for Desert Tortoise

Any construction pipe, culvert, or similar structure with a diameter greater than three inches that is stored less than eight inches aboveground, outside a fenced area of desert tortoise habitat, and left unattended for any time during period when the desert tortoise are active (i.e., early March through early June and September through early November) will be inspected for desert tortoise before the material is moved, buried, or capped. As an alternative, all such structures will be capped or placed on pipe racks.

CM-DT-05: Inspect under Vehicles in Desert Tortoise Habitat

Any time a vehicle or construction equipment is parked for more than 10 minutes outside of the fenced area, the ground under the vehicle will be inspected for the presence of desert tortoise before the vehicle/equipment is moved. If a desert tortoise is present, the vehicle/equipment will not be moved until the desert tortoise moves on its own away from the vehicle/equipment.

CM-DT-06: Installation of Desert Tortoise Guards

In occupied desert tortoise habitat and in areas of high vehicular construction traffic, desert tortoise guards that resemble cattle guards will be installed and connected to the exclusionary fencing at construction area entry points and permanent rail alignment maintenance access points to prohibit desert tortoise from crossing into the construction area right-of-way and alignment but still allowing the passage of construction vehicles. The desert tortoise guard will have a clear escape route away from construction activity for any desert tortoise that should fall into the guard. The guard will be inspected daily for desert tortoise and to ensure the escape route is free of obstruction. The guard will also be cleared of debris that may allow desert tortoise passage across the guard and out of construction area. The desert tortoise guard will be maintained throughout its use during the construction process by the Designated Biologist or Biological Monitor.

CM-DT-07: Implement Common Raven Avoidance Measures in Desert Tortoise Habitat

In desert tortoise habitat, measures will be implemented to ensure construction and O&M activities do not attract common ravens or other predators (e.g., coyotes) to the right-of-way by creating food or water subsidies, perch sites, roost sites, or nest sites. All activity work areas will be kept free of trash (including food waste) and debris. All trash will be covered, kept in

self-closing sealable containers with lids that latch to prevent entry by wind, common ravens, and mammals, and removed from the project site at regular intervals and prior to periods when workers are not present at the site. Dead and injured wildlife found in the project footprint will be removed to reduce attraction of opportunistic predators. Dead and injured wildlife will be handled and removed in accordance with any applicable project permits and plans.

A Designated Biologist with knowledge of common raven identification (including nests) and desert tortoise remains (e.g., carcass, shell and bone fragments) will be approved by the USFWS. The Designated Biologist will survey for presence of common raven nests within 100 feet of the project facilities in occupied desert tortoise habitat. Inactive common raven nests will be removed if accessible and active nests will be reported to the USFWS for potential egg-oiling or other control measures. Nest locations will be recorded using a GPS unit and mapped for future surveys to search for tortoise remains in proximity to the nests.

CM-Avian-01: Conduct Pre-construction Survey for Federally Listed Riparian Nesting Birds

Within 1 year prior to any ground- or vegetation-disturbing activity, the Designated Biologist will make an initial site visit to determine if suitable habitat for these species exists in the work area, plus a 500-foot buffer.

Where suitable habitat is present, the Designated Biologist will conduct protocol surveys for federally listed birds prior to ground- or vegetation-disturbing activities, adhering to guidance in:

1. *Least Bell's Vireo Survey Guidelines* (Service 2001).

2. *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher* (Sogge *et al*. 2010).

Following the surveys, the Designated Biologist(s) will conduct bi-monthly surveys (every 2 weeks) during construction activities that occur within 500 feet of suitable habitat during the nesting season for riparian nesting bird species or as required by the survey guidelines. If construction activities are subsequently halted or delayed by more than two weeks (14 days), during the nesting season for riparian nesting bird species, the Designated Biologist(s) will repeat surveys 5 days prior to the re-initiation of construction activities. Upon re-initiation of construction activities, the Designated Biologist will conduct the bi-monthly surveys. A survey report will be transmitted to the Authority prior to the initiation of ground- or vegetation-disturbing activities at the survey site.

CM-Avian-02: Implement Avoidance Measures for Federally Listed Riparian Nesting Birds

If a federally listed nesting bird or nest is detected within 500 feet of construction or maintenance activities, the Designated Biologist will establish a 500-foot no-work buffer around the individual or nest to the extent practicable. The Designated Biologist or Biological Monitor will have the authority to halt work if federally listed nesting birds exhibit distress and/or abnormal nesting behavior.

The no-work buffer will remain in place until the Designated Biologist has determined that the individual(s) has left the area, or the nest has failed, or the young have fledged and are no longer reliant upon the nest site. The Designated Biologist will adjust the no-work buffer size and/or location to ensure that adults and young are not adversely by construction.

For construction activities involving the use of a helicopter, the nest buffer for federally listed nesting birds will be 500 feet horizontally and 500 feet vertically. Buffers will be measured from the location of the nest, regardless of where the nest is located.

CM-CAGN-01: Conduct Preconstruction Surveys for Coastal California Gnatcatcher

Prior to initiating any construction activities in suitable habitat of the work area plus 500 feet around the area, the Designated Biologist will conduct protocol surveys for gnatcatchers. Surveys will be completed prior to the start of project activities. If gnatcatchers are present, the Designated Biologist will implement the following surveys during the breeding season and nonbreeding seasons.

1. Prior to ground or vegetation disturbing activities during the breeding season (February 15 to August 30), the Designated Biologist will conduct nesting bird surveys for coastal California gnatcatcher in suitable coastal sage scrub habitat in accordance with the *Coastal California Gnatcatcher* (*Polioptila californica californica*) *Presence/Absence Survey Protocol* (Service 2019).

    a. Surveys will be conducted no more than 10 days prior to the initiation of ground or vegetation disturbing activities or other construction activities within the suitable habitat of the work area and 500 feet surrounding the work area.

    b. If an active nest is located, a 500-foot no-work buffer will be established around each nest site. The Designated Biologist may reduce the no-work buffer if it is determined that site specific project activities will not harm nesting gnatcatchers. The Designated Biologist will notify and confirm the proposed reduced no-work buffer with the USFWS. A Biological Monitor will monitor active nests during construction activities to ensure the nest and nesting activities are not disturbed. The Biological Monitor will have the authority to halt/suspend all activities until appropriate corrective measures have been completed.

2. Prior to ground- or vegetation-disturbing activity during the non-breeding season (September 1 through February 14) in suitable habitat for coastal California gnatcatcher, the Designated Biologist will conduct a single-pass survey of each work area to determine if suitable habitat is occupied by the species.

    a. If the habitat is occupied by gnatcatchers, the Designated Biologist will walk ahead of ground- or vegetation-removal equipment and ensure that gnatcatchers are not killed or injured as a direct result of the activities. The Designated Biologist will have the authority to halt/suspend all activities that could result in direct mortality or injury to gnatcatchers.

CM-CAGN-02: Implement Avoidance Measures for Coastal California Gnatcatcher

To the extent practicable, all ground or vegetation disturbing activities within occupied habitat of gnatcatcher will occur outside of the breeding season (September 1 to February 14). Occupied habitat is defined as the area within 500 feet of any gnatcatcher sighting.

During breeding and non-breeding seasons, a Designated Biologist will survey for gnatcatchers within 10 days prior to initiating any construction activities including vegetation or ground-disturbing activities. Results of the survey will be submitted to the USFWS for review prior to initiating any construction activities. The Biological Monitor will walk ahead of vegetation removal equipment and ensure that gnatcatchers are not killed or injured as a direct result of vegetation removal activities. The Biological Monitor will have the authority to halt/suspend all activities until appropriate corrective measures have been completed.

During the breeding season, no construction will take place within the 500-foot-no-work buffer zone around a nest site until the nest is no longer active, to the extent practicable. However, if construction must take place within the 500-foot buffer, the Designated Biologist will monitor nesting activities to determine if the gnatcatchers are being disturbed. If the Designated Biologist determines that gnatcatchers are being disturbed (nesting habits or behavior change such as nest avoidance or change in feeding frequency), the Designated Biologist will have the authority to halt construction and will coordinate with the USFWS on measures to reduce disturbance to gnatcatchers, as needed. Measures may include methods such as, but not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nesting gnatcatchers and the activities, and working in other areas until the young have fledged.

CM-CAGN-03: Implement Mitigation for Impacts to Coastal California Gnatcatcher Suitable Habitat Prior to the Start of Construction

Impacts to coastal California gnatcatcher suitable habitat will be mitigated through a combination of on-site restoration, off-site acquisition, and off-site restoration and enhancement of suitable coastal California gnatcatcher habitat on existing protected lands (See Section 5.8 for mitigation details). The total acreage of gnatcatcher habitat conserved and/or restored will be 677 acres. Prior to the start of groundbreaking activities impacting coastal California gnatcatcher suitable habitat, the Authority will accomplish mitigation of 503.3 acres of suitable coastal California gnatcatcher habitat, of which 50 percent will be occupied. The remainder of the mitigation will be completed prior to completion of construction activities. Mitigation will be located primarily in the geographic area of the species' northeastern range. If the required amount of suitable mitigation habitat is not available in the northeastern extent of the species range, additional mitigation lands may be sought in the species range along the Santa Clara River west of I-5.

CM-CACO-01: Coordinate with USFWS on California Condor Locations

The Project Biologist will coordinate with USFWS at least seven days prior to initiation of construction activities (including vegetation removal) to review California condor tracking locations so that appropriate monitoring and avoidance measures can be determined. The

Designated Biologist or Biological Monitor will continue to review California condor tracking locations daily, using available data or website managed by the USFWS for the purpose of implementing monitoring and avoidance measures.

CM-CACO-02: Monitor for California Condor

A Biological Monitor with avian experience will be present during construction activities occurring within two miles of where California condor have been observed, based on the most recent tracking and location information obtained from the USFWS prior to construction activities. The Biological Monitor shall have the ability to halt construction activities if a California condor enters the work area and may be affected by project activities (CM-CACO-05). Monitoring of the condor will continue until the condor has left the 2-mile buffer area.

CM-CACO-03: Work Timing Restrictions Near California Condor Roosting Locations

If California condor are observed roosting within 0.5 mile of the construction area, no construction activity will occur between one hour before sunset and one hour after sunrise or until the Designated Biologist or Biological Monitor has determined that the bird(s) has left the area. The Designated Biologist will review construction activities seven days prior to initiation of construction activities.

CM-CACO-04: Implement Avoidance Measures for California Condor Work Timing Restrictions Near California Condor Roosting Locations

During any ground-disturbing activities in the range of California condor, the Project Biologist will implement the following avoidance measures:

1. Construction materials located in work areas, including items that could pose a risk of entanglement, such as ropes and cables, will be properly stored and secured when not in use.

2. Litter, small artificial items (screws, washers, nuts, bolts, etc.), and all food waste will be stored in self-closing, sealable containers with lids that latch to prevent entry by wind, common ravens, and mammals. All trash receptacles will be regularly inspected and collected regularly; the contents disposed of from work areas on a daily basis to prevent spillage and maintain sanitary conditions. The receptacles will be removed from the project area when construction or O&M activities are complete.

3. All fuels, fluids, and components with hazardous materials or wastes will be handled in accordance with applicable regulations. These materials will be kept in segregated, secured, and/or secondary containment facilities, as necessary. Any spills of liquid substances that could harm wildlife will be immediately addressed.

4. Polychemical lines will not be used or stored on site to preclude wildlife, especially California condor, from obtaining and ingesting pieces of polychemical lines.

CM-CACO-05: Implement Helicopter Avoidance Measures for California Condor

The Project Biologist will coordinate with the USFWS, as appropriate, prior to helicopter use that could affect condor, to establish that no known individuals are in the project region. If condors are present, helicopter use shall be avoided until the birds have left the area. If condors are observed in helicopter construction areas, further helicopter use shall be avoided until the Designated Biologist or Biological Monitor has determined that the condors have left the area. The Designated Biologist and Biological Monitors will have radio contact with the project foreman, who will be in radio contact with the helicopter pilot. The biologist will provide real-time information updates to avoid conflicts with condors.

CM-CACO-06: Stop Work and Implement Hazing Methods for California Condor

If a California condor(s) lands or is observed in or near a work area, the Designated Biologist or Biological Monitor will assess the construction activities occurring and determine whether there is a potential hazard to the condor. Activities determined to be a potential hazard will be stopped until the condor has abandoned the area. After five minutes, if a condor has not left of its own volition, the Designated Biologist or Biological Monitor, or other USFWS-approved personnel, will implement USFWS-approved hazing methods in accordance with the USFWS Recovery Program's Guidance on Hazing California Condors (Service 2014c).

If the California condor does not leave the area within 30 minutes of the initiation of hazing, the Designated Biologist or Biological Monitor will notify the Project Biologist. The Project Biologist will coordinate with the Authority and USFWS to determine the appropriate actions.

CM-CACO-07: Implement Removal of Carrion that may Attract California Condor

Dead and injured wildlife found in the right-of-way and tracks will be removed during construction and O&M when the train is not in operation. During O&M within California condor range, automated security monitoring and track inspections will be used to detect fence failures and/or the presence of carrion in the right-of-way.

CM-OWL-01: Conduct Pre-construction Surveys for California Spotted Owl

Prior to any ground disturbing activity, the Project Biologist will conduct protocol-level surveys for California spotted owls within suitable habitat located in the work area and extending 500 feet from the boundary of the work area, where access is available. Surveys will be conducted in accordance with guidelines in the *Protocol for Surveying Proposed Management Activities that May Impact Northern Spotted Owls* (Service 2012), hence adapted for the California spotted owl.

CM-OWL-02: Work Timing Restrictions Near California Spotted Owl Occupied Site

If California spotted owls are within 0.5 mile of the construction area, no construction activity will occur between one hour before sunset and one hour after sunrise. The Designated Biologist will review construction activities seven days prior to initiation of construction activities.

CM-YBCU-01: Conduct Pre-construction Surveys and Implement Impact Avoidance for Yellow-billed Cuckoo

To ensure that yellow-billed cuckoo are not present at the time of construction, all suitable yellow-billed cuckoo modeled habitat within the project footprint will be surveyed prior to ground- or vegetation-disturbing activities during the months of June to September (Halterman *et al*. 2015). The survey(s) will be conducted by a Designated Biologist familiar with the distinguishing characteristics of the species and adhering to guidance in *A Natural History Summary and Survey Protocol for the Western Distinct Population Segment of Yellow-billed Cuckoo* (Halterman *et al*. 2015).

If yellow-billed cuckoos are observed, the Authority will reinitiate Section 7 consultation to coordinate with USFWS regarding avoidance measures.

CM-Light-01: Minimize Light Disturbance During Operations

Permanent project lighting will be of the lowest illumination necessary for safety and will be directed toward the facility and away from sensitive habitats. Light glare shields will be used to reduce the extent of illumination into sensitive habitats. The Authority will review the permanent lighting plans for the project and then submit them to the CFWO.

CM-Rest-01: Minimize Impacts to Listed Species During Maintenance of Restoration Areas

To minimize impacts to gnatcatchers during maintenance of restoration areas, the following measure will be implemented:

1. If maintenance of a coastal sage scrub restoration area is necessary between February 15 and August 31, a qualified biologist with knowledge of the biology and ecology of gnatcatchers will survey for gnatcatchers within the restoration area, access paths to it, and other areas susceptible to disturbances by site maintenance. Surveys will consist of three visits separated by 2 weeks starting March 1 of each maintenance/monitoring year. Work will be allowed to continue on the site during the survey period. However, if gnatcatchers are found during any of the visits, the Authority will notify and coordinate with the Service to identify measures to avoid and/or minimize effects to the gnatcatcher (e.g., nests and an appropriate buffer will be flagged by the biologist and avoided by the maintenance work).

To minimize impacts to vireos during maintenance of restoration areas, the following measure will be implemented:

2. If maintenance of a riparian restoration area is necessary between March 15 and August 31, a qualified biologist with knowledge of the biology and ecology of vireos will survey for vireos within the restoration area, access paths to it, and other areas susceptible to disturbances by restoration site maintenance. Surveys will consist of three visits separated by 2 weeks starting April 10th of each maintenance/monitoring year. Restoration work will be allowed to continue on the site during the survey period. However, if vireos are

found during any of the visits, the Designated Biologist will notify and coordinate with the Service to identify measures to avoid and/or minimize effects to the vireo (e.g., nests and an appropriate buffer will be flagged by the biologist and avoided by the maintenance work).

To minimize impacts to flycatchers during maintenance of restoration areas, the following measure will be implemented:

3. If maintenance of a riparian restoration area is necessary between May 1 and September 15, a qualified biologist with knowledge of the biology and ecology of flycatchers will survey for flycatchers within the restoration area, access paths to it, and other areas susceptible to disturbances by restoration site maintenance. Surveys will consist of three visits separated by 2 weeks starting May 15th of each maintenance/monitoring year. Restoration work will be allowed to continue on the site during the survey period. However, if flycatchers are found during any of the visits, the Designated Biologist will notify and coordinate with the Service to identify measures to avoid and/or minimize effects to the flycatcher (e.g., nests and an appropriate buffer will be flagged by the biologist and avoided by the maintenance work).

To minimize impacts to arroyo toads during maintenance of restoration areas, the following measures will be implemented:

4. If restoration maintenance work is necessary within or directly adjacent to suitable arroyo toad breeding habitat during the active season for the arroyo toad (March 1 to August 15), while water is flowing or has ponded in the area, the Designated Biologist will monitor potential arroyo toad breeding habitat to determine whether egg clutches, larvae, or juveniles are present. If eggs, larvae, or juvenile arroyo toads are found, restoration maintenance work will not occur in the area until signs of breeding are no longer evident.

5. Restoration maintenance work during rain events will be avoided to the greatest extend feasible as arroyo toads may become active during rain events and work may result in sedimentation into breeding habitat. To ensure that restoration work is completed in a timely fashion, work may continue during a light or intermittent rain, if the Designated Biologist, using their best judgment, determines that increased impacts to arroyo toads are unlikely.

6. All earth disturbing activities conducted for restoration work (e.g., irrigation repairs, replanting) where there is potential for the presence of aestivating arroyo toads (i.e., sandy, friable soils) will be monitored by the Designated Biologist who will ensure that impacts to arroyo toads are avoided to the greatest extent feasible by either: (1) Overseeing earth disturbing activities (e.g., excavation of planting basins, irrigation repairs) in potential aestivation areas and ensuring that hand tools are used to a depth of 1 foot such that arroyo toads are detected and salvaged if present; or (2) Conducting

preconstruction translocation surveys and directing work away from observed arroyo toads, or relocating arroyo toads to suitable habitat away from the immediate work area.

7. Transportation of materials for restoration maintenance work within suitable habitat will be conducted on foot, or with lightweight all-terrain vehicles and/or small gators with trailers. If possible, equipment used will have soft tires with minimal tread and a wide wheelbase to better distribute weight and reduce soil disturbance. Vehicle speed will not exceed 15 miles per hour.

To minimize impacts to spineflower during maintenance of restoration areas, the following measures will be implemented:

8. If maintenance of alluvial fan sage scrub habitat is necessary within or directly adjacent to suitable slender-horned spineflower habitat, a qualified biologist with knowledge of the biology and ecology of slender-horned spineflower will survey for spineflower within the restoration area, access paths to it, and other areas susceptible to disturbances by restoration site maintenance. Surveys will consist of three visits separated by 2 weeks starting April 15th of each maintenance/monitoring year. Restoration work will be allowed to continue on the site during the survey period. However, if spineflowers are found during any of the visits, the Designated Biologist will notify and coordinate with the Service to identify measures to avoid and/or minimize effects to the spineflower (e.g., an appropriate buffer will be flagged by the biologist and within this area weeding will be conducted by hand, and no herbicides will be used.)

CM-Mit-01: Mitigation Implementation

The Authority will offset project impacts with mitigation as quantified in Table 1. Prior to all vegetation removal and ground disturbing activities for the project, the Authority will provide a mitigation plan to the Service for review and approval. After the plan has been approved, and prior to all vegetation removal and ground disturbing activities for the project, the Authority will provide the following documentation to the Service:

1. Documentation that the habitat has been conserved (e.g., documentation of purchase of bank credits or conservation easement). A perpetual biological conservation easement or other legal conservation mechanism acceptable to the Service will be recorded over the conservation areas restored and conserved by the project. The conservation mechanism will specify that no easements or activities (e.g., fuel modification zones, public trails, drainage facilities, walls, maintenance access roads, utility easements) that will result in soil disturbance and/or native vegetation removal will be allowed within the biological conservation easement areas. A draft conservation mechanism will be provided to the Service for review and approval. The Authority will also submit the final conservation mechanism to the Service.

2. Documentation that funds for management of the conserved lands have been secured (e.g., documentation of purchase of bank credits or establishment of a non-wasting endowment). The Authority will prepare and implement a perpetual management,

maintenance, and monitoring plan for the conservation areas restored and conserved by the project. The Authority will also establish non-wasting endowments for amounts approved by the Service based on Property Analysis Records (PAR; Center for Natural Lands Management ©1998) or similar cost estimation methods, to secure the ongoing funding for the perpetual management, maintenance and monitoring of the property. The Authority will submit a draft long-term management plan for the property to the Service for review and approval. The long-term management plan will include, but not be limited to, the following: (a) the PAR or other cost estimation results for the non-wasting endowment; (b) the proposed land manager's name, qualifications, business address, and contact information; (c) the method of protecting the resources in perpetuity (e.g., conservation easement), (d) monitoring schedule, (e) measures to prevent human and exotic species encroachment, (f) funding mechanism, and (g) contingency measures should problems occur. The Authority will submit the final long-term management plan to the Service.

3. Habitat restoration plans for all restoration, including both offsite and onsite/ temporary impact areas, will be submitted for review and approval at least 30 days prior to initiating project impacts. The plans will include:

   a. All habitat restoration sites will be prepared for planting in a way that mimics natural habitat to the maximum extent practicable. All plantings will be installed in a way that mimics natural plant distribution and not in rows.

   b. Planting palettes (plant species, size, and number/acre) and seed mixes (plant species and pounds/acre) will be limited to locally native species (e.g., species found in or near the biological study area for the project). The source location of all plant material and seed will be provided to the Service prior to use in restoration activities.

   c. Container plant survival will be 80 percent of the initial plantings for the first 5 years. At the first and second anniversary of plant installation, all dead plants will be replaced unless their function has been replaced by plants from seed or natural recruitment.

   d. A final implementation schedule will indicate when all impacts, as well as restoration planting and irrigation will begin and end.

   e. The final restoration plan will include 5 years of success criteria for restoration areas including: percent cover, evidence of natural recruitment of multiple species for all habitat types, 0 percent coverage for all woody California Invasive Plant Council's (Cal-IPC's) "Invasive Plant Inventory" species (e.g., trees and shrubs), and no more than 10 percent coverage for other exotic/weed species.

   f. A minimum 5 years of maintenance and monitoring of restoration areas, unless success criteria are met earlier and all artificial water supplies have been off for at least 2 years.

g. A qualitative and quantitative vegetation monitoring plan with a map of proposed sampling locations. Photo points will be used for qualitative monitoring and stratified-random sampling will be used for all quantitative monitoring.

h. Contingency measures in the event of restoration failure

i. Annual mitigation maintenance and monitoring reports will be submitted to the Service no later than December 1 of each year.

APPENDIX C: MITIGATION MONITORING AND ENFORCEMENT PLAN

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California High-Speed Rail Authority

Palmdale to Burbank Project Section

Mitigation Monitoring and Enforcement Plan

August 2024

CALIFORNIA High-Speed Rail Authority

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being or have been carried out by the State of California pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated July 23, 2019 (renewed July 22, 2024), and executed by the Federal Railroad Administration and the State of California.

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1 INTRODUCTION

In June 2024, the California High-Speed Rail Authority (Authority), as the state lead agency and as the federal lead agency pursuant to the National Environmental Policy Act (NEPA) Assignment Memorandum of Understanding (MOU) effective July 23, 2019 (renewed July 22, 2024), issued a Final Environmental Impact Report (EIR)/Environmental Impact Statement (EIS)for the Palmdale to Burbank Project Section (Project Section, or project) of the California High-Speed Rail (HSR) System (Authority 2024). The Final EIR/EIS satisfies the requirements of the California Environmental Quality Act (CEQA) and NEPA and is the basis for the Authority's decision. In the Board of Directors' Resolution and Record of Decision, the Authority selected the Preferred Alternative (SR14A Build Alternative).[1]

This Mitigation Monitoring and Enforcement Plan (MMEP)[2] has been prepared for the Preferred Alternative, SR14A Build Alternative.

Table 3-1 describes mitigation measures from the Burbank to Palmdale Project Section Final EIR/EIS that will mitigate the adverse impacts of the Preferred Alternative. These mitigation measures were developed by the Authority in consultation with appropriate agencies, as well as with input from the public, to meet the requirements of CEQA and NEPA. The mitigation measures in Table 3-1 are conditions of approval that the Authority is required to comply with as it implements the Preferred Alternative.

The Preferred Alternative incorporates Impact Avoidance and Minimization Features (IAMFs), including best management practices (BMPs), which are described in detail in the Final EIR/EIS Volume 2, Technical Appendices, Appendix 2-E, Impact Avoidance and Minimization Features, and in the technical reports that support the Final EIR/EIS. As a result of applying these IAMFs, the Preferred Alternative will avoid or minimize potential adverse environmental impacts in several resource areas including transportation; air quality and global climate change; noise and vibration; public utilities and energy; biological and aquatic resources; hazardous materials and wastes; hydrology and water resources; geology, soils, seismicity, and paleontological resources; safety and security; socioeconomics and communities; station planning, land use and development; agricultural farmland and forest land; parks, recreation, and open space; cultural resources; and aesthetics and visual quality. Cooperating agencies that are part of the NEPA review process include: the U.S. Army Corps of Engineers (USACE), Federal Aviation Administration (FAA), Bureau of Land Management, United States Forest Service (USFS), and Surface Transportation Board. As part of the CEQA process, the responsible California agencies include the following:

- California Department of Fish and Wildlife (CDFW)
- California Department of Transportation (Caltrans)
- California Public Utilities Commission, Los Angeles Office
- California Department of Water Resources
- California State Lands Commission
- State Water Resources Control Board
- Antelope Valley Air Quality Management District
- South Coast Air Quality Management District

[1] Although the Record of Decision references the "Selected Alternative," this document references it as the "Preferred Alternative" consistent with CEQA.

[2] The MMEP is consistent with CEQA requirements for mitigation monitoring as set forth in Section 15097 and Section 15091, subdivision (d) of the CEQA Guidelines (14 California Code of Regulations, Division 6, Chapter 3). Where mitigation is for NEPA purposes only or CEQA purposes only, it is identified accordingly.

Like the mitigation measures listed in Table 3-1, the project IAMFs and compliance with regulatory requirements are conditions of project approval and must be implemented by the Authority during design, construction, and operation of the project. The IAMFs that are part of the Preferred Alternative are described in Volume 2, Appendix 2-E of the Final EIR/EIS and listed in Table 3-2 of this document.

In a category distinct from mitigation measures and IAMFs, Offsetting Mitigation Measures (OMMs) consist of measures that could offset potential disproportionately high and adverse impacts on environmental justice communities. The OMMs that are part of the Preferred Alternative are described in Chapter 5, Environmental Justice, and are listed in Table 3-1.

Key legal requirements that the Preferred Alternative are subject to are detailed for each of the following resource areas in the corresponding sections of Chapter 3, Affected Environmental Consequences, and Mitigation Measures, of Volume 1, EIR/EIS, of the Final EIR/EIS:

- Transportation—Section 3.2.6 and 3.2.7
- Air Quality and Global Climate Change—Section 3.3.6 and 3.3.7
- Noise and Vibration—Section 3.4.6 and 3.4.7
- Electromagnetic Interference and Electromagnetic Fields—Section 3.5.6 and 3.5.7
- Public Utilities and Energy—Section 3.6.6 and 3.6.7
- Biological and Aquatic Resources—Section 3.7.6 and 3.7.7
- Hydrology and Water Resources—Section 3.8.6 and 3.8.7
- Geology, Soils, Seismicity, and Paleontological Resources—Section 3.9.6 and 3.9.7
- Hazardous Materials and Wastes—Section 3.10.6 and 3.10.7
- Safety and Security—Section 3.11.6 and 3.11.7
- Socioeconomics and Communities—Section 3.12.6 and 3.12.7
- Station Planning, Land Use, and Development—Section 3.13.6 and 3.13.7
- Agricultural Farmland and Forest Land—Section 3.14.6 and 3.14.7
- Parks, Recreation, and Open Space—Section 3.15.6 and 3.15.7
- Aesthetics and Visual Quality—Section 3.16.6 and 3.16.7
- Cultural Resources—Section 3.17.6 and 3.17.7
- Regional Growth—Section 3.18.6 and 3.18.7
- Cumulative Impacts—Section 3.19.6 and 3.19.7
- Environmental Justice—Section 5.8 and 5.9
- Section 4(f)—Section 4.6 and 4.8

The MMEP adheres to the Council on Environmental Quality's (CEQ) regulations (40 Code of Federal Regulations [C.F.R.] Part 1505)[3] and Federal Railroad Administration's *Procedures for Considering Environmental Impacts* (64 *Federal Register* [Fed. Reg.] 28545, May 26, 1999) and was prepared based on the CEQ finalized guidance entitled *Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact* (CEQ January 14, 2011). The CEQ guidance assists NEPA lead agencies to develop mitigation programs that provide effective documentation, implementation, and monitoring of mitigation commitments.

3
On April 20, 2022, CEQ issued Phase 1 Final Rule restoring regulatory provisions that were in effect before the 2020 rule modified them for the first time. On July 28, 2023, CEQ announced a Phase 2 Notice of Proposed Rulemaking—the "Bipartisan Permitting Reform Implementation Rule"—to revise its regulations for implementing the procedural provisions of NEPA, including to implement the amendments to NEPA by the Fiscal Responsibility Act of 2023. CEQ issued the Phase 2 Final Rule on May 1, 2024, and the text of the regulation indicates the regulations apply to any NEPA process begun after July 1, 2024 (40 CFR 1506.12). The NEPA process for the project was initiated before the effective date of the 2020, 2022, and 2024 CEQ regulations and is not subject to the current regulations, relying on the 1978 regulations [amended in 1986, 51 Federal Register 15618 (April 25,1986) as they existed prior to September 14, 2020. All subsequent citations to CEQ regulations in this environmental document refer to the 1978 regulations, pursuant to 40 C.F.R. 1506.13 (2020) and 40 C.F.R. 1506.12 (2024).

NEPA ROD Clarification

The Burbank to Los Angeles Project Section Final EIR/EIS identified IAMFs and mitigation measures for the entirety of the Burbank to Los Angeles Project Section. The Palmdale to Burbank Final EIS includes updates to some IAMFs and mitigation measures that would apply to the Burbank Subsection. Updates are not intended to lessen the Authority's commitments in measures, and the Authority will not construe any of this document's updates to the Burbank Subsection IAMFs and mitigation measures as lessening the Authority's commitments. For the avoidance of doubt, differences will not be interpreted by the Authority as lessening commitments. Table 2-1 and Table 2-2 of the CEQA Findings of Fact and Statement of Overriding Considerations summarize how key IAMFs and mitigation measures from the Burbank to Los Angeles Project Section Final EIR/EIS that are relevant to the Burbank Subsection have been updated in in the Palmdale to Burbank Project Section Final EIR/EIS.

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2 MITIGATION MONITORING AND ENFORCEMENT PLAN

The environmental effects of the Preferred Alternative would result in impacts considered significant under CEQA and in effects considered adverse under NEPA. Mitigation measures that will reduce or eliminate potential adverse environmental impacts are described in Chapter 3 of the Final EIR/EIS. The specific provisions contained in this MMEP are presented as Tables 3-1 and 3-2 and include mitigation measures identified in the Final EIR/EIS, organized by environmental issue and topical areas addressed in the Final EIR/EIS. This MMEP describes implementation and monitoring procedural guidance, responsibilities, and timing for each mitigation measure identified in the Final EIR/EIS. Components include:

- **Mitigation Measure/Title/Text:** These separate columns each provide the number, title, and text of the mitigation measures as identified in the Final EIR/EIS.
- **Phase:** Provides the phase during which the mitigation measure will be implemented (pre-construction, during construction, post-construction, or during operation).
- **Implementation Action/Text/Mechanism:** Each column identifies the actions required to implement the measures, including any required agreements and conditions.
- **Reporting Schedule:** Identifies the stage of the project and/or the frequency that reporting is to occur, if reporting is required.
- **Implementing Party/Reporting Party:** Except as noted, each column identifies the entity that will be responsible for directly implementing the mitigation measures, monitoring, and reporting. Implementation can be the responsibility of the Authority or its construction contractor or operating contractor. Monitoring will generally be the responsibility of the contractor, with oversight provided by the Authority during construction. Long-term mitigation monitoring responsibilities will be the responsibility of the Authority. If an operating contractor is retained, long-term mitigation and monitoring responsibilities transfer to the operating contractor, with oversight responsibility by the Authority.
- **Impact Number and Impact Text:** Provides the impact number and description of the impact requiring mitigation as identified in the Final EIR/EIS.

Roles and Responsibilities

As the lead agency and proponent of this project, the Authority will implement the mitigation measures through its own actions, those of its contractor, and actions taken in cooperation with other agencies and entities. The Authority is ultimately accountable for the overall administration of the MMEP and for assisting relevant individuals and parties in their oversight and reporting responsibilities. The responsibilities of mitigation implementation, monitoring, and reporting extend to several entities as discussed above; however, the Authority will bear the primary responsibility for verifying that the mitigation measures are implemented. The Authority defines the mitigation measures required for the project. When project work is undertaken by the Authority's contractor, the contractor will implement the mitigation measures that are pertinent to its scope of work. The contractor will monitor construction activities to ensure that the mitigation measures are being properly implemented and accurately report their activity and results to the Authority. The Authority will periodically check the contractor's activity, reports, and effectiveness of mitigation activities.

- **Authority:** Although the Authority retains responsibility for the implementation of and reporting on mitigation measures and IAMFs as specified in this MMEP, activities may be carried out by an Authority representative or an Authority-approved contractor. Authority responsibilities may also include certain measures outside of the scope of the contractor such as future studies or operations-phase implementation. In addition, oversight of implementation and reporting may be provided by the Authority's contractor or

representatives as lead agency representatives to facilitate regulatory oversight agency coordination and compliance during implementation and reporting.

- **Contractor:** The contractor(s) (or the environmental team provided by the contractor) will be responsible for implementing or monitoring mitigation measures and IAMFs as specified in this MMEP. These responsibilities would be applicable to the construction contractor, design/build contractor, and the operating contractor.
- **Contractor Liaison(s)**: The contractor liaison(s) (or the environmental team provided by the Authority) will be responsible for facilitating the communication and collaboration of the contractor(s) with the environmental justice ombudsman.
- **Mitigation Manager:** The contractor's representative responsible for overseeing its environmental team's implementation and reporting of environmental commitments will be responsible for reporting the status of each mitigation measure to the Authority in accordance with this MMEP.
- **Project Biologist(s)**: The project biologist will be approved and appointed by the Authority. The project biologist will oversee the implementation of the MMEP and compliance assurance.
- **Biological Monitor(s):** The contractor-provided biological monitor(s) will be approved by and report directly to the contractor's biologist. The biological monitor(s) will be present on site within a reasonable monitoring distance during all ground-disturbing activities that have the potential to affect biological resources as directed by the project biologist and will be the principal agent(s) in the direct implementation of the MMEP and compliance assurance.
- **Cultural Resources Compliance Manager/Principal Investigator:** This position must be an archaeologist who meets relevant Secretary of the Interior's qualifications for an archaeologist. The cultural resources compliance manager/principal investigator is responsible for implementing mitigation measures in compliance with the terms and conditions outlined in the MMEP and treatment plans and coordinating the status of archaeological mitigation with the Authority in accordance with this MMEP, the Authority's Section 106 Programmatic Agreement, and the Palmdale to Burbank Project Section Memorandum of Agreement.
- **Cultural Resources Monitor(s):** The contractor-provided cultural resources monitor(s) will be approved by and report directly to the cultural resources compliance manager/principal investigator. This/these monitor(s) will be present on-site within a reasonable monitoring distance during ground-disturbing activities in areas indicated as culturally sensitive and will be the principal agent(s) in the direct implementation of the MMEP and compliance assurance as directed by the cultural resources compliance manager/principal investigator.
- **Paleontological Resources Specialist:** The contractor-provided paleontological resources specialist is responsible for implementing mitigation measures in compliance with the terms and conditions outlined in the MMEP, including preparation of the paleontological resources management plan and approval and direction of the paleontological resource monitor(s).
- **Paleontological Resources Monitor(s)**: The contractor-provided paleontological resources monitor(s) will be approved by and report directly to the paleontological resources specialist. The paleontological resources monitor(s) will be present on-site within a reasonable monitoring distance during ground-disturbing activities in areas indicated as resource sensitive and will be the principal agent(s) in the direct implementation of the MMEP and compliance assurance as directed by the paleontological resources specialist.

- **Environmental Justice (EJ) Ombudsman**: The Authority-provided EJ ombudsman position will address the needs of EJ communities. The EJ ombudsman will provide a point of contact for EJ communities to provide feedback on project impacts. The EJ ombudsman will have the authority to stop work if necessary. The EJ ombudsman responsibilities will also include obtaining community-specific feedback on plans not typically reviewed by the general public to minimize adverse effects on EJ populations.

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3 ENVIRONMENTAL MITIGATION MANAGEMENT AND ASSESSMENT SYSTEM

The Authority will implement an Environmental Mitigation Management and Assessment (EMMA) system consisting of strategic planning, policies, and procedures, organizational structure, staffing and responsibilities, milestones, schedule, and resources devoted to achieving the Authority's environmental commitments. The EMMA will also include a component that tracks the implementation of mitigation measures (as well as environmental commitments, BMPs, IAMFs, and OMMs) and can produce reports on compliance. The Authority staff will receive periodic reports on compliance and may request additional reports as necessary to ensure that the MMEP is fully implemented. This system will rely on data provided by the contractor, its consultants, and others to produce status reports regarding construction status, permitting activities, monitoring, inspections, and other compliance activities.

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Table 3-1 Palmdale to Burbank Project Section: Mitigation Monitoring and Enforcement Plan

Mitigation	Title	Mitigation Text	Phase	Implementation	Reporting	Implementing	Reporting Party	Implementation	Implementation	Impact # and Impact Text
Transportation[1]										
TR-MM#1	Add Lanes to the Segment	Add travel lanes to the roadway segment to increase capacity and improve roadway operations.	Pre-construction/ Construction	Design/Facility operation	Prior to operations	Authority/ Contractor	Authority/ Contractor	Expand travel lanes to roadway segments	Condition of construction contract	Impact TRA#8: Project Construction Effects on Roadway Segments. Impact TRA#13: Project Operation Effects on Roadway Segments. Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from Construction of the Build Alternatives.
TR-MM#2	Modify Signal Timing	Modify signal timing (to optimize cycle length and splits) at specific intersections to improve LOS and intersection operations.	Pre-construction	Design/Facility operation	Prior to final design	Authority/ Contractor	Authority/ Contractor	Modify traffic signal timing	Condition of construction contract	Impact TRA#9: Project Construction Effects on Intersections. Impact TRA#14: Project Operation Effects on Intersections. Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from Construction of the Build Alternatives.
TR-MM#3	Modify Signal Phasing	Modify traffic signal phasing sequence to improve LOS and intersection operations.	Pre-construction	Design/Facility operation	Prior to final design	Authority/ Contractor	Authority/ Contractor	Modify traffic signal phasing	Condition of construction contract	Impact TRA#9: Project Construction Effects on Intersections. Impact TRA#14: Project Operation Effects on Intersections. Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from Construction of the Build Alternatives.
TR-MM#4	Provide a Traffic Signal	Add traffic signals to affected unsignalized intersections to improve LOS and intersection operation. Intersections proposed for signalization must meet traffic signal warrants to be considered as affected.	Pre-construction/ Construction	Design/Facility operation	Prior to operations	Authority/ Contractor	Authority/ Contractor	Add traffic signals to unsignalized intersections	Condition of construction contract	Impact TRA#9: Project Construction Effects on Intersections. Impact TRA#14: Project Operation Effects on Intersections. Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from Construction of the Build Alternatives.
TR-MM#5	Restripe Intersection	Restripe intersection approaches to improve LOS and intersection operations.	Pre-construction	Design/facility operation	Prior to final design	Authority/ Contractor	Authority/ Contractor	Restripe intersections	Condition of construction contract	Impact TRA#9: Project Construction Effects on Intersections. Impact TRA#14: Project Operation Effects on Intersections. Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from Construction of the Build Alternatives.
TR-MM#6	Widen Intersection	Widen intersection approaches by adding a through lane to improve LOS and intersection operations.	Pre-construction	Design/Facility operation	Prior to final design	Authority/ Contractor	Authority/ Contractor	Adding a through lanes to widen intersection approaches	Condition of construction contract	Impact TRA#9: Project Construction Effects on Intersections. Impact TRA#14: Project Operation Effects on Intersections. Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from Construction of the Build Alternatives.
TR-MM#7	Add Exclusive Turn Lanes	Add exclusive turn lanes to improve LOS and intersection operations.	Pre-construction	Design/Facility operation	Prior to final design	Authority/ Contractor	Authority/ Contractor	Adding exclusive turn lanes	Condition of construction contract	Impact TRA#14: Project Operation Effects on Intersections. Impact LU#3: Permanent Alterations to

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										Existing and Planned Land Uses from Construction of the Build Alternatives.
TR-MM#8	Reconfigure Intersection	Reconfigure intersection geometry to improve LOS and intersection operations.	Pre-construction	Design/Facility operation	Prior to final design	Authority/ Contractor	Authority/ Contractor	Reconfigure intersection geometry	Condition of construction contract	Impact TRA#9: Project Construction Effects on Intersections. Impact TR#14: Project Operation Effects on Intersections. Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from Construction of the Build Alternatives.
TR-MM#9	Transit Coordination Plan	Prepare a coordination plan with affected transit providers to ensure revisions needed to routes, stops, and schedules are carried out in order to address modifications to the local roadway network and changes in circulation. The coordination plan would be implemented to offset any reduction in service created by project construction. In particular, this plan will address how bus routes and schedules would need to be evaluated and revised to account for changes to the local roadway network and to access the HSR station transit facilities, modifications to transit services to meet the scheduled HSR trains, and potential increases in service to accommodate HSR riders.	Pre-construction	Coordination	Prior to construction	Authority	Authority/Affected Transit Providers.	Coordination plan to address modifications to routes	Condition of construction contract	Impact TRA#11: Project Construction Effects on Rail and Transit Services.
TR-MM#10	Provide Pedestrian and Bicycle Facilities	Provide pedestrian and bicycle facilities to compensate for loss of existing facilities and to restore crossings/connections affected by modifications to the local roadway network. Coordinate with affected transit providers to ensure appropriate revisions to routes, stops, and schedules are carried out to address modifications to the local roadway network and changes in circulation. Ensure that the site plans for the HSR stations and station areas include adequate pedestrian facilities and amenities (such as sidewalks, crosswalks, and ADA-compliant designs), adequate bicycle facilities and amenities (such as safe and secure bicycle parking and connections to local/regional bicycle routes), wayfinding, and other similar elements.	Pre-construction	Compensation/ Coordination	Prior to final design	Authority	Authority	Provide pedestrian and bicycle facilities to compensate for the loss of facilities	Condition of construction contract	Impact TRA#12: Project Construction Effects on Non-Motorized Modes Near the Burbank Airport Station.
TR-MM#11	In-Lieu Traffic Improvements	The Authority will enter cooperative agreements with HSR station host cities and partner transportation providers to implement transportation improvements in-lieu of general roadway traffic improvements to address identified traffic impacts. This approach supports the Authority's guidelines and policies to encourage HSR access via non-auto	Pre-construction	Design	Prior to commencement of operations	Authority/ Contractor	Authority/ Participating jurisdictions	Develop and implement cooperative agreement	Meetings/ Coordination with departments/ Agencies	Impact TRA#11: Project Construction Effects on Rail and Transit Services. Impact TRA#12: Project Construction Effects on Non-Motorized Modes Near the Burbank Airport Station.

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		modes, helping reduce traffic congestion and associated air quality impacts at and around HSR stations. In-lieu improvements will be negotiated with host cities and partner transportation providers and may include, but not be limited to, the following types of improvements: • Pedestrian facilities, including, but not limited to, sidewalks, curb-cuts, pathways, multi-use trails, and signage and wayfinding within 0.5 mile of HSR stations • Bicycle facilities, including, but not limited to, on-street bicycle lanes and cycle tracks, off-street bicycle or multi-use trails, signalization, bicycle parking, and bicycle rental, sharing or repair facilities, and signage and wayfinding within 3 miles of HSR stations • On- and off-street bus transit facilities, including, but not limited to, transit centers, stations, stops, shelters, lighting, terminal layover facilities, operator restrooms, fare vending equipment, information and wayfinding, bus pads, electric charging stations, transit lanes, and traffic signal priority equipment and software within 3 miles or HSR stations • Public transit bus rolling stock • On- or off-street vehicle pickup/drop-off and queuing space within 0.25 mile of HSR stations • Ongoing bus, streetcar, or urban rail service operations and maintenance funding to support expanded connecting transit service at HSR stations								
TR-MM#12	Prepare a Transportation Construction Management Plan	Prior to construction, the Authority will require the construction Contractor to develop a plan to manage circulation and connections for modes of travel during the construction duration. Coordinate with local agencies, emergency services, and public transit providers to ensure appropriate revisions to routes, stops, schedules, and signage are carried out to address modifications to the local roadway network and changes in circulation. Implementation of the transportation Construction Management Plan (CMP) will maintain the flow of traffic, bicyclists, pedestrians, and buses in and around the construction zones. Typical measures associated with a CMP include the following: • Schedule a majority of construction-	Pre-construction	Prepare plan/Coordination	Prior to construction	Authority/ Contractor	Contractor	Prepare Construction Management Plan (CMP)	Condition of construction contract	Impact TRA#1: Spoils Hauling Effects on Roadway Segments. Impact TRA#2: Spoils Hauling Effects on Intersections. Impact TRA#4: Spoils Hauling Effects on Freeway Segments. Impact TRA#5: Spoils Hauling Effects on Transit Services.

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		related travel during off-peak hours. • Relocate spoils collection areas and access to minimize delays during peak hours. • Develop detour routes to facilitate traffic movements through construction zones without substantially increasing cut-through traffic in adjacent residential neighborhoods. • Where feasible, temporarily restripe roadways to maximize vehicular capacity at locations affected by construction closures. • Where feasible, temporarily remove on-street parking to maximize vehicular capacity, transit capacity, and bicycle circulation at locations affected by construction closures. • Where feasible, station traffic control officers at major intersections to minimize delays during peak hours. • Develop alternative routes to reduce the number of trucks on sensitive facilities without substantially increasing cut-through traffic in adjacent residential neighborhoods. • Develop and implement an outreach program to inform the public about the construction process and any planned roadway closures. • Develop and implement a program with business owners to minimize impacts on businesses during construction activity.								
Air Quality and Global Climate Change										
AQ-MM#1	Offset Project Construction Emissions through SCAQMD Emissions Offsets Programs	The Palmdale to Burbank Project Section's construction emissions that cannot be reduced by IAMFs and any other mitigation measures will, to the extent feasible, be offset through a South Coast Air Quality Management District (SCAQMD) rule or contractual agreement by funding equivalent emissions reductions that achieve reductions in the same years as construction emissions occur, thus offsetting project-related air quality impacts in real time. The project will implement measures and best practices to minimize emissions from project construction. After implementation of these measures, emission levels that still exceed thresholds will be offset to the extent necessary to satisfy General Conformity *de minimis* levels and to meet CEQA thresholds to the extent feasible. The Authority's	Pre-construction	Reporting/Funding	Prior to construction	Authority/ Contractor	Authority/ Contractor	Offset project construction criteria air pollutant emission exceedances through funding	Authority to coordinate purchase of offsets with SCAQMD per Contractor reports	Impact AQ#2: Regional Air Quality Impacts during Construction. Impact AQ#3: Compliance with Air Quality Plans during Construction.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		Sustainability Policy has a goal to achieve net zero emissions from construction. As the Palmdale to Burbank Project Section advances towards construction, the Authority will work with SCAQMD to assess the estimated emissions, availability of offsets, and cost for achieving the Authority's Sustainability Policy goal to the extent possible.								
AQ-MM #3	Construction Emissions Reductions – Requirements for use of Zero Emission (ZE) and/or Near Zero Emission (NZE) Vehicles and off-road equipment	This mitigation measure would reduce the impact of construction emissions from project-related on-road vehicles and off-road equipment. All remaining emissions after implementation of this measure will be offset, to the extent feasible, with emission offset credits required under AQ-MM#1 and AQ-MM#2. The Authority and all project construction Contractors shall require that a minimum of 25 percent, with a goal of 100 percent, of all light-duty on-road vehicles (e.g., passenger cars, light-duty trucks) associated with the project (e.g., on-site vehicles, Contractor vehicles) use ZE or NZE technology. The Authority and all project construction Contractors shall have the goal that a minimum of 25 percent of all heavy-duty on-road vehicles (e.g., for hauling, material delivery, and soil import/export) associated with the project use ZE or NZE technology. The Authority and all project construction contractors shall have the goal that a minimum of 10 percent of off-road construction equipment use ZE or NZE vehicles. If local or state regulations mandate a faster transition to using ZE and/or NZE vehicles at the time of construction, the more stringent regulations will be applied. For example, EO N-79-20, issued by California Governor Newsom September 23, 2020, currently states the following: • Light-duty and passenger car sales be 100 percent ZEV by 2035 • Full transition to ZEV short haul/drayage trucks by 2035 • Full transition to ZEV heavy-duty long-haul trucks, where feasible, by 2045 • Full transition to ZE off-road equipment by 2035, where feasible The project will have a goal of surpassing	Pre-construction	Contract requirements; compliance reporting	Monthly and annually	Authority/ Contractor	Authority/ Contractor	Daily record keeping and monthly/annual reporting	A copy of each unit's certified tier specification and any required CARB or air pollution control district operating permit will be made available by the Authority at the time of mobilization of each piece of equipment	Impact AQ#2: Regional Air Quality Impacts during Construction. Impact AQ#3: Compliance with Air Quality Plans during Construction. Impact AQ#5: Localized Construction Effects

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		the requirements of these or other future regulations as a mitigation measure.								
Noise and Vibration										
N&V-MM#1	Construction Noise Mitigation Measures	Prior to construction (any ground-disturbing activities), the contractor will prepare a noise-monitoring program for Authority approval. The noise-monitoring program will describe how, during construction, the contractor will monitor construction noise to verify compliance with the noise limits (8-hour Leq dBA noise limits are 80 dBA during the day and 70 dBA at night for residential land use; 85 dBA both day and night for commercial land use; and 90 dBA both day and night for industrial land use) where a noise-sensitive receptor is present. The contractor would be given the flexibility to meet FRA construction noise limits in the most efficient and cost-effective manner. This can be done by either prohibiting certain noise-generating activities during nighttime hours or providing additional noise control measures to meet the noise limits. In addition, the noise-monitoring program will describe the actions required of the contractor to meet required noise limits. These actions will include the following nighttime and daytime noise control mitigation measures, as necessary: • Install a temporary construction-site noise barrier near a noise source. • Avoid nighttime construction in residential neighborhoods. • Locate stationary construction equipment as far as possible from noise-sensitive sites. • Re-route construction truck traffic along roadways that will cause the least disturbance to residents. • During nighttime work, use smart back-up alarms, which automatically adjust the alarm levels based on background noise levels, or switch off back-up alarms and replace with spotters. • Use low-noise emission equipment. • Implement noise-deadening measures for truck loading and operations. • Monitor and maintain equipment to meet noise limits. • Line or cover storage bins, conveyors, and chutes with sound-deadening material. • Use acoustic enclosures, shields, or shrouds for equipment and facilities.	Pre-construction/ Construction	Design/ Reporting	Prior to construction/ Weekly monitoring	Authority/ Contractor	Authority/ Contractor	Placement of temporary noise barriers and construction equipment to mitigate construction noise; weekly monitoring construction noise	Contract requirements and specifications	Impact N&V#1: Construction Noise Impacts on Sensitive Receivers. Impact N&V#2: Spoils Haul Route Noise Impacts on Sensitive Receivers

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		• Use high-grade engine exhaust silencers and engine-casing sound insulation. • Prohibit aboveground jackhammering and impact pile driving during nighttime hours. • Minimize the use of generators to power equipment. • Limit use of public address systems. • Grade surface irregularities on construction sites. • Use movable noise barriers at the source of the construction activity. • Limit or avoid certain noisy activities during nighttime hours. • To mitigate noise related to pile driving, use an auger rather than a pile driver. If pile driving is necessary, limit the time of day that the activity can occur. The Authority will establish and maintain (until construction is completed) a toll-free hotline for construction-related activities. The Authority will arrange for all incoming hotline messages to be logged (with summaries of the contents of each message) and for a designated representative of the Authority to respond to hotline messages within 24 hours (excluding weekends and holidays). The Authority will make a reasonable good-faith effort to address all concerns and answer all questions and shall include on the log its responses to all callers. The Authority shall make a log of the incoming messages including the Authority's responsive actions publicly available on its website. The contractor will provide the Authority with an annual report by January 31 of the following year documenting how it implemented the noise-monitoring program.								
N&V-MM#2	Construction Vibration Mitigation Measures	Prior to construction involving impact pile driving within 50 feet of any building, the contractor shall provide the Authority with a vibration technical memorandum documenting how project pile driving criteria will be met. Upon approval of the technical memorandum by the Authority, and, where a noise-sensitive receptor is present, the contractor shall comply with the vibration reduction methods described in that memorandum. Potential construction vibration building damage is only anticipated from impact pile driving at very close distances to buildings. If pile driving occurs more than 25 to 50 feet from	Pre-construction/ Construction/post-construction	Reporting (technical memorandum)	Pre-construction surveys to establish baseline/Weekly monitoring during construction/Post-construction repairs, as needed	Authority/ Contractor	Authority/ Contractor	Pre-construction surveys to establish baseline/Weekly monitoring during construction/Post-construction repairs, as needed	Contract requirements and specifications	Impact N&V#3: Construction Vibration Impacts on Sensitive Receivers.

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		buildings, or if alternative methods such as push piling or auger piling are used, damage from construction vibration is not expected to occur. When a construction scenario has been established, pre-construction surveys will be conducted by the contractor at locations within 50 feet of pile driving to document the existing condition of buildings in case damage is reported during or after construction. The contractor will arrange for the repair of damaged buildings or will pay compensation to the property owner.								
N&V-MM#3	Implement California HSR Project Noise Mitigation Guidelines	Various options exist to address the severe noise effects from California HSR System operations. The Authority has developed Noise Mitigation Guidelines (Appendix 3.4-C) for the statewide California HSR System that set forth three categories of mitigation measures to reduce or offset severe noise impacts from HSR operations: noise barriers, sound insulation, and noise easements. The guidelines also set forth an implementation approach that considers multiple factors for determining the reasonableness of noise barriers as mitigation for severe noise impacts, including structural and seismic safety, cost, number of affected receptors, and effectiveness. Noise barrier mitigation would be designed to reduce the exterior noise levels from HSR operations from severe to moderate, according to the provisions of the FRA guidance (FRA 2018) and Figure 3.4-12, Noise Impact Criteria for High-Speed Rail Projects. **Noise Barriers** Prior to operation of the California HSR System, the Authority shall prepare an HSR operation noise impact report. Based on the recommendations in the approved noise impact report, the Authority will install noise barriers where they can achieve between 5 and 15 dB of exterior noise reduction, depending on their height and location relative to the tracks. The primary requirements for an effective noise barrier are that the barrier must (1) be high enough and long enough to break the line-of-sight between the sound source and the receiver, (2) be of an impervious material with a minimum surface density of 4 pounds per square foot, and (3) not have any gaps or holes between the panels or at the bottom.	Pre-construction/ Construction/Post-construction	Design	Prior to final design/Prior to operation/Monthly reporting during operation	Authority/ Contractor	Authority/ Contractor	Implement sound barriers as needed or acquire easements on properties severely affected by noise	Contract requirements and specifications/ California High-Speed Rail Project Noise Mitigation Guidelines	Impact N&V #4: Operational Traffic Noise Impacts on Sensitive Receivers. Impact N&V#6: Operational Train Noise Impacts Impact N&V #9: Noise and Vibration from High-Speed Rail Stationary Facilities Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from Construction of the Build Alternatives.

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		Because many materials meet these requirements, aesthetics, durability, cost, and maintenance considerations usually determine the selection of materials for noise barriers. Depending on the situation, noise barriers can become visually intrusive. Typically, the noise barrier style is selected with input from the local jurisdiction to reduce the visual effects of barriers on adjacent lands uses (refer to Aesthetic Options for Non-Station Structures, 2017). For example, noise barriers could be solid or transparent, and made of various colors, materials, and surface treatments. Pursuant to the Noise Mitigation Guidelines, recommended noise barriers must meet the following criteria to be considered a reasonable and feasible mitigation measure: • Achieve a minimum of 5 dB of noise reduction, which is then defined as a benefited receptor. • The minimum number of affected sites should be at least 10. • The length should be at least 800 feet. • Must be cost-effective. • The community should approve of implementation of the recommended noise barriers (75 percent of all affected parties). The maximum noise barrier height would be 14 feet for at-grade sections. Berm and berm/wall combinations are the preferred types of noise barriers where space and other environmental constraints permit. On aerial structures, the maximum noise barrier height would also be 14 feet, but barrier material would be limited by engineering weight restrictions for barriers on the structure. All noise barriers would be designed to be as low as possible to achieve a substantial noise reduction. Several sound barriers were determined to be feasible and effective using the criteria described above. The noise barriers will have a setback of approximately 12 feet from the proposed track centerline, and thus would not expand the project boundary. The noise barriers will provide between 5 dB and 15 dB of exterior noise reduction to a minimum of 10 affected sites with a minimum barrier length of 800 feet. The								

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		noise barriers would also need to be considered financially reasonable. A financially reasonable noise barrier is defined as a noise barrier determined not to exceed a construction cost of $95,000 per benefited receiver. Each potentially feasible noise barrier is described and evaluated for reasonableness in Table 3.4-48. Noise barriers identified as feasible and reasonable were modeled to demonstrate quantified reduction of associated noise impacts to a less than significant level. As shown in Table 3.4-48, the Refined SR14 Build Alternative includes two proposed noise barriers, one of which eliminates all severe noise impacts while the other does not (two residual severe noise impacts would remain). For the SR14A Build Alternative in the Central Subsection one noise barrier is proposed which would eliminate all severe noise impacts at that location. Figure 3.4-36 through Figure 3.43-9 depict the location of the noise barriers evaluated. There are no operations mitigation measures required for the Burbank Subsection, which does not contain noise-sensitive or vibration-sensitive receivers. Thus, no noise barriers are needed in the Burbank Subsection. **Install Building Sound Insulation** If noise barriers are not proposed for receptors with severe impacts, receptors do not approve of proposed noise barriers, or if proposed noise barriers do not reduce exterior sound levels to below a severe impact level, the Authority will consider building sound insulation as a potential additional mitigation measure on a case-by-case basis. Sound insulation of residences and institutional buildings to improve outdoor-to-indoor noise reduction is a mitigation measure that can be considered when the use of noise barriers is not feasible in providing a reasonable level (5 to 7 dBA) of noise reduction. Although this approach has no effect on noise in exterior areas, it may be the best choice for sites where noise barriers are not feasible or desirable and for buildings where indoor sensitivity is of most								

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		concern. Substantial improvements in building sound insulation (on the order of 5 to 10 dBA) can often be achieved by adding an extra layer of glazing to windows, by sealing holes in exterior surfaces that act as sound leaks, and by providing forced ventilation and air conditioning so that windows do not need to be opened. **Noise Easements** If a substantial noise reduction cannot be completed through installation of noise barriers or building sound insulation, the Authority will consider acquiring a noise easement on properties with a severe impact on a case-by-case basis. An agreement between the Authority and the property owner can be established wherein the property owner releases the right to petition the Authority regarding the noise level and subsequent disruptions. This would take the form of a permanent easement that would encompass the property boundaries to the right-of-way of the rail line. The Authority would consider this mitigation measure only in isolated cases where other mitigation is ineffective or infeasible.							
N&V-MM#4	Vehicle Noise Specification	During HSR vehicle technology procurement, the Authority will require bidders to meet the federal regulations (40 C.F.R. § 201.12/13) at the time of procurement for locomotives (currently a 90-dB-level standard) operating at speeds faster than 45 mph.	Post-construction	HSR vehicle purchasing	HSR operation	Authority	Authority	HSR vehicle noise specification	Contract requirements and specifications	Impact N&V#6: Intermittent Operational Train Noise Impacts
N&V-MM#5	Special Track Work at Crossovers and Turnouts	Prior to construction, the contractor will provide the Authority with an HSR operation noise technical report for review and approval. The report will address the minimization/elimination of rail gaps at turnouts. Because the impacts of HSR wheels over rail gaps at turnouts increases HSR noise by approximately 6 dB over typical operations, turnouts can be a major source of noise impact. If the turnouts cannot be moved from sensitive areas, the noise technical report will recommend the use of special types of track work that would eliminate the gap. The Authority will require the project design to follow the recommendations in the approved noise impact report.	Pre-construction	Design	Prior to construction	Authority/ Contractor	Authority/ Contractor	Provide operation noise technical report to determine If special trackwork is required	Submit assessment and if required, supplemental environmental documentation	Impact N&V#6: Operational Train Noise Impacts
NV-MM#6	Additional Noise	Prior to construction, the contractor will	Pre-construction	Design	Prior to	Authority/ Vehicle	Authority/ Vehicle	Reassessment of	Submit assessment	Impact N&V#6: Operational Train Noise

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	Analysis during Final Design	provide the Authority with an HSR operation noise technical report for review and approval. If final design or final vehicle specifications result in changes to the assumptions underlying the noise technical report, the Authority will prepare necessary environmental documentation, as required by CEQA and NEPA, to reassess noise impacts and mitigation.			Construction/Final vehicle specification	Contractor	Contractor	noise and vibration impacts and recommended mitigation following final design	and if required, supplemental environmental documentation	Impacts Impact N&V#9: Noise and Vibration from High-Speed Rail Stationary Facilities. Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from Construction of the Build Alternatives.
N&V-MM#7	Implement Operation Vibration Mitigation Measures	Vibration mitigation would be evaluated during project design. Mitigation for operational vibration impacts can occur at the source, at the sensitive receiver, or along the propagation path from the source to the receiver. Potential measures from the mitigation guidelines include the following: • **Vehicle Suspension (Source)—**Rail vehicles should have low steady weight, soft primary suspension, minimum metal-on-metal contact between moving parts of the truck, and smooth wheels that are perfectly round. • **Special Track Support Systems (Source)—**Floating slabs, resiliently supported ties, high-resilience fasteners, and ballast mats all help reduce vibration from the track support system. • **Building Modifications (Receiver)—** For existing buildings, if vibration-sensitive equipment is affected by train vibration, the floor upon which the vibration-sensitive equipment is located may be stiffened and isolated from the remainder of the building. For new buildings, the building foundation should be supported by elastomer pads similar to bridge bearing pads. • **Buffer Zones (Receiver)**—A vibration easement may be negotiated from the affected property owners or the rail right-of-way may be expanded. Operational vibration impacts were only identified for the Central Subsection of the Refined SR14, SR14A, E1, and E1A Build Alternatives. Therefore, vibration mitigation measures only apply to the Refined SR14, SR14A, E1, and E1A Build Alternatives. Two locations in particular would require vibration mitigation: • **Osborne Street to Montague Street—** Vibration mitigation of 1,600 feet is proposed in this location. To avoid impact, it is estimated that mitigation will need to be designed to reduce ground-	Pre-construction/ Construction/Post-construction	Design	Prior to commencement of construction/prior to operations/during operations	Authority	Authority	Assess potential measures that may mitigate ground-borne vibrations during project operations	Contract requirements and specifications	Impact N&V#8: Operational Train Vibration Impacts.

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		borne vibration levels by at least 2 dB and reduce ground-borne noise levels by at least 4 dB. The type of mitigation will be determined in final design. • **Wheatland Avenue to Lockheed Drive—**Vibration mitigation of 900 feet is proposed at this location. To avoid impact, it is estimated that mitigation will need to be designed to reduce ground-borne noise levels by at least 3 dB. The type of mitigation will be determined in final design.								
Electromagnetic Fields and Electromagnetic Interference										
EMI/EMF-MM#1	Protect Sensitive Equipment	The Authority will contact entities where sensitive equipment is located and evaluate impacts of HSR-related EMFs, RF, and low-frequency EMI on medical equipment before completion of final design. Where necessary to avoid interference, the final design would include suitable design provisions, which may include establishing magnetic field shielding walls around sensitive equipment or installing RF filters into sensitive equipment. HSR-related EMI may affect highly susceptible, unshielded sensitive RF equipment, such as older MRI systems and other measuring devices common to medical and research laboratories. Most of the devices manufactured today have adequate shielding from all potential EMI sources; however, the potential exists for older devices to be affected and require shielding. A shielded enclosure is very effective at preventing external EMI. Metallic materials are used for shielding (specifically high-conductivity metals for high-frequency interference, such as from HSR operation), and high-permeability metals are used for low-frequency interference. Often, either the housing of the affected device is coated with a conductive layer or the housing itself is made conductive. In some situations, it may be necessary to significantly reduce EMI for a suite of devices by creating a shielded room or rooms. Attenuation (i.e., the effectiveness of EMI shielding) is the difference between an electromagnetic signal's intensity before and after shielding. Attenuation is the ratio between field strength with and without the presence of a protective medium, measured in decibels (dB). This dB range changes on	Pre-construction	Design	Prior to completion of final design	Authority/ Contractor	Authority/ Contractor	Protect nearby equipment sensitive to EMI/EMF	Contract requirements and specifications	Impact EMI/EMF#1: Temporary Impacts from Use of Heavy Construction Equipment. Impact EMI/EMF#3: Temporary Impacts from Operation of Electrical Equipment. Impact EMI/EMF#7: EMI with Sensitive Equipment.

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		a logarithmic scale, so an attenuation rating of 50 dB indicates a shielding strength 10 times that of 40 dB. In general, a shielding range between 60 and 90 dB may be considered a high level of protection, while 90 to 120 dB is exceptional.								
Public Utilities and Energy										
PUE-MM#1	Water Supply Analysis for Construction	In recognition of the uncertainties with planning for water procurement years in advance and the various restrictions, limitations, and unknowns associated with water supplies in the project area, The Authority will prepare an updated water supply analysis for the selected Build Alternative that details and describes the minimum adequate water supply for the study area during normal, dry, and multiple dry years based on a more-detailed project design, and when more-detailed information about available water supply is known with greater certainty, and what will need to be done to facilitate use of available water in the project area The Authority will identify the sources of water that will meet water supply needs, if needed. In the event that additional water supply is needed from the State Water Project, the Authority shall pay the water agencies its fair share of the State Water Project fees (per acre-foot of their allocations), which are used for constructing and operating the State Water Project conveyance facilities. Actual water available is dependent on allocations from the California Department of Water Resources, which are difficult to predict and can fluctuate year-to-year. AVEK uses a variety of SWP water types. AVEK's imported water supply is also composed of SWP turnback pool water, other SWP water, and other non-SWP water. Water purchased by others from the SWP would also be subject to Department of Water Resources allocations. AVEK's Water Shortage Contingency Plan ordinance would affect distribution of water during water shortages. The ordinance outlines the allocation of SWP water in the event of a water shortage. AVEK's Water Shortage Contingency Plan also notes that the SWP's physical conveyance infrastructure enables AVEK to convey any of its supplemental SWP purchases to augment drought year supplies. Water would be allocated based on historical	Pre-construction	Design	Prior to final Design	Authority	Authority	Authority to conduct water supply analysis and pay the water agencies its fair share of the State Water Project, as needed	Plan preparation/payment fair share costs and fees.	Impact PUE#3: Effects from Water Demand during Construction.

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		taxes paid to AVEK by entities in each county and the amount of SWP water received relative to the amount of SWP water received by other AVEK customers. The HSR project would comply with this ordinance. However, temporary construction water uses would likely be the first kind of use to be curtailed in terms of addressing a water shortage. In addition, the Authority will be required to use non-potable water during construction, to the extent feasible. In addition, water used for tunnel construction and water coming out of tunnel construction areas could be recycled/reused for construction purposes. Water coming from the tunnels would be treated to reduce turbidity, and then recycled. This water would be used several times during construction for lubrication and cooling purposes, reducing demand from municipal water sources.								
PUE-MM#2	Reconfiguration of the Acton Water Treatment Plant	Prior to the start of construction, the Authority will coordinate with AVEK to facilitate the reconfiguration of the Acton Water Treatment Plant. The Authority will ensure that all replacement/relocated facilities are required to be in place, tested, and operational before any part of the existing Acton Water Treatment Plant is taken offline so that the Acton Water Treatment Plant would remain operable in conjunction with implementation of the Build Alternatives. The Authority will pay its fair share of the impact fee for reconfiguration of the Acton Water Treatment Plant.	Pre-construction	Design	Prior to final design	Authority	Authority	Reconfigure the Acton Water Treatment Plant	Plan preparation/payment of fair share costs and fees	Impact PUE#1: Planned Temporary Interruption of Utility Services.
Biological and Aquatic Resources										
BIO-MM#1	Conduct Presence/Absence Preconstruction Surveys for Special-Status Plant Species and Special-Status Plant Communities	Prior to any ground-disturbing activity, the Project Biologist shall conduct presence/absence botanical field surveys for special-status plant species and sensitive natural communities (including oak woodlands) in all potentially suitable habitats within a work area. The surveys shall be consistent with Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018) and Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants (USFWS 2000). The Project Biologist shall flag, map, and record the locations of any observed special-status plant species and sensitive natural communities (including oak woodlands) and provide appropriate buffers for avoidance.	Pre-construction	Surveying/Monitoring/Reporting	Report findings at least 30 days prior to ground disturbance	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Conduct protocol-level surveys for special-status plant species and communities/Report findings at least 30 days prior to ground disturbance	Condition of construction contract following requirements established by regulatory compliance permits	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		This mitigation measure is anticipated to be effective because it identifies, documents, and protects special-status plant species within 100 feet of the project footprint, reducing the potential for disturbance during construction. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the Build Alternatives.								
BIO-MM#2	Prepare and Implement Plan for Salvage and Relocation of Special-Status Plant Species	Prior to any ground-disturbing activity, the Project Biologist shall collect seeds and plant materials and stockpile and segregate the top 4 inches of topsoil from locations within the work area where species listed as threatened or endangered under FESA; threatened, endangered, or candidate for listing under CESA; state-designated “Rare” species; and California Rare Plant Rank 1B and 2 species were observed during surveys, for use on off-site locations. Suitable sites to receive salvaged material include Authority mitigation sites, refuges, reserves, federal or state lands, and public/private mitigation banks. If relocation or propagation is required by authorizations issued under FESA and/or CESA, the Project Biologist shall prepare a Special-Status Plant Species Salvage and Relocation Plan (Plan) to address monitoring, salvage, relocation, and/or seed banking of federal or state-listed plant species. The Plan will include provisions that address the techniques, locations, and procedures required for the collection, storage, and relocation of seed or plant material, and collection, stockpiling, and redistribution of topsoil and associated seed. The Plan will include relocation sites where no impact on in situ populations of rare, endangered, or threatened plants will occur, provide detail on the number of years of monitoring, and a supplemental watering plan. This Plan will also include weed management; maintenance; requirements related to outcomes such as self-sustainability and percent absolute cover of highly invasive species, as defined by the California Invasive Plant Council (less than documented baseline conditions); and annual reporting, and reflect conditions required under regulatory authorizations issued for federal or state-listed species. The Authority shall coordinate with relevant regulatory agencies (USFWS, CDFW) as appropriate and in accordance with the authorizations under FESA and CESA. This mitigation measure is anticipated to be	Pre-construction/ Construction/Post-construction	Surveying/ Monitoring/Reporting	In accordance with agency permit requirements	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Prepare and implement monitoring, salvage, relocation, and propagation of special-status plant species/report findings	Condition of design- build contract/	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		effective because it salvages special-status species within the project footprint, relocates salvaged plants to suitable habitat acquired in the region, and monitors relocated plants per the Special Plant Species Management Plan to provide for suitable survival of special-status plant species, reducing the potential for impacts during construction. BIO-MM#2 would have a temporary impact on special-status plants through direct disturbance as part of salvage and relocation efforts, but ultimately would be beneficial because the Plan would salvage, relocate, and protect special-status plants. Implementation of this mitigation measure may also require the acquisition of suitable additional lands outside of the project footprint for the purposes of relocating special-status plants. This land may be converted from other current uses, such as agriculture, which in turn could have potential secondary environmental impacts on agricultural resources (through farmland conversion), other biological resources (through direct and indirect impacts on species habitat), and cultural resources (through disturbance of archaeological resources and impacts on historic properties). Such secondary impacts from off-site mitigation activities are addressed under BIO-MM#50. Impacts on additional environmental resources are not anticipated.								
BIO-MM#3	Conduct Preconstruction Surveys for Vernal Pool Wildlife Species	Prior to any ground-disturbing activities, the Project Biologist shall conduct an aquatic habitat assessment and survey for vernal pool wildlife species in seasonal wetlands and vernal pools that occur within both the work area and the area extending 250 feet from the outer boundary of the work area where access is available, consistent with USFWS vernal pool survey protocols. The Project Biologist will visit these areas after the first rain event of the season to determine whether seasonal wetlands and vernal pools have been inundated. A seasonal wetland/vernal pool will be considered to be inundated when it holds greater than 3 centimeters of standing water 24 hours after a rain event. Approximately 2 weeks after the pools have been determined to be inundated, the Project Biologist shall conduct surveys in appropriate seasonal wetland and vernal pool habitats. The Project Biologist will submit a report to the Authority within 30 days of completing the work.	Pre-construction	Surveying/Monitoring/Reporting	Prior to ground-disturbing activities or as established by regulatory compliance agencies	Project Biologist	Project Biologist	The Project Biologist shall conduct an aquatic habitat assessment and survey for vernal pool wildlife species	Condition of construction contract/condition of regulatory permits	Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat.
BIO-MM#4	Implement Seasonal Vernal Pool Work Restriction	To the extent feasible, ground-disturbing activities will not occur within 250 feet of vernal pools or seasonal wetlands during the rainy season (October 15 to April 15). In	Construction	Exclusion fencing/Compliance reporting	Follow reporting requirements as established by	Authority/ Contractor	Authority/ Contractor	Follow reporting requirements as established by	Condition of construction contract/Condition	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		the event ground-disturbing activities are to occur within the buffer area during the rainy season, such activities should, to the extent feasible, be undertaken when the aquatic features are not inundated.			regulatory compliance permits			regulatory compliance permits	of regulatory permits	Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources.
BIO-MM#5	Implement and Monitor Vernal Pool Avoidance and Minimization Measures within Temporary Impact Areas	To the extent feasible, impacts on vernal pools in work areas outside of the permanent right-of-way will be avoided. The Project Biologist will install and maintain exclusionary fencing to prevent impacts on vernal pools from construction activities. When avoidance of impacts on vernal pools is not feasible, the construction activity will be scheduled to occur in the dry season where feasible. Prior to the initiation of a ground-disturbing activity occurring during the dry season, the Project Biologist shall collect a representative sampling of soils from the affected vernal pools to obtain viable plant seeds and vernal pool branchiopod cysts. After collecting soil, the Project Biologist may also put rinsed gravel in the vernal pools and cover with geotextile fabric to minimize damage to the soils and protect the pools' contours, as provided by regulatory authorizations issued under FESA. The soils containing seeds and cysts may later be returned to the affected pool after work has been completed or incorporated into other vernal pools, as provided by regulatory authorizations issued under FESA.	Pre-construction/ Construction	Exclusion fencing; collection of soil material; off-site compensatory mitigation; compliance reporting	Monthly or reporting requirements as established by regulatory compliance permits	Project Biologist	Project Biologist	Implement barriers and practices to avoid impacts to vernal pools during construction	Contract requirements and specifications	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources.
BIO-MM#6	Prepare and Implement a Restoration and Revegetation Plan	Prior to any ground-disturbing activity, the Project Biologist will prepare a Restoration and Revegetation Plan (RRP) to address temporary impacts resulting from ground-disturbing activities within areas that potentially support special-status species, wetlands and any other aquatic resources. Restoration activities may include, but not be limited to, grading landform contours to approximate pre-disturbance conditions, revegetating disturbed areas with native plant species, and using certified weed-free straw and mulch. The Authority will implement the RRP in all temporarily disturbed areas outside of the permanent right-of-way that potentially support special-status species, wetlands and/or other aquatic resources. Consistent with section 1415 of the Fixing America's Surface Transportation Act (FAST Act), restoration activities will provide habitat for native pollinators through plantings of native forbs and grasses. The Project Biologist will obtain a locally sourced native seed mix, including native seed collected from local populations, through propagation of seeds collected	Pre-construction/ Construction/Post-construction	Design/Surveying/ Monitoring/ Reporting	Prior to construction/ Monthly reporting	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Prepare and implement RRP/Report findings	Condition of construction contract/Condition of regulatory permits	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat. Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources. Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		locally, and from nursery stock. The sources of the seeds are not currently known but the Authority intends to develop the seed sourcing details as part of the restoration and revegetation plan. The Authority also intends to use seed stock from the same Hydrologic Unit Code as the revegetation or restoration area. The restoration success criteria will include limits on invasive species, as defined by the California Invasive Plant Council, to an increase no greater than 10 percent compared to the pre-disturbance condition, or to a level determined through a comparison with an appropriate reference site consisting of similar natural communities and management regimes. The RRP will outline, at a minimum: • Procedures for documenting preconstruction conditions for restoration purposes. • Sources of plant materials and methods of propagation, including native plant material containing host plants for native special-status invertebrates, as needed to offset the loss of host plants. • Specification of parameters for maintenance and monitoring of re-established habitats, including weed control measures, frequency of field checks, and monitoring reports for temporary disturbance areas. • Specification of success criteria for re-established vegetation communities, including demonstration of an increase in density of host plants or overall acreage of vegetation communities compared to baseline conditions. • Specification of the remedial measures to be taken if success criteria are not met. • Methods and requirements for monitoring restoration/replacement efforts, which may involve a combination of qualitative and/or quantitative data-gathering. • Maintenance, monitoring, and reporting schedules, including an annual report due to the Authority by January 31 of the following year. The RRP will be submitted to the Authority and regulatory agencies, as defined in the conditions of regulatory authorizations, for review and approval.							Impact BIO#10: Project Construction Effects on Federally Designated Critical Habitat. Impact BIO#11: Project Construction Effects on Significant Ecological Areas. Impact BIO#12: Project Construction Effects on Protected Impact BIO#13: Project Effects on Wildlife Movement Corridors.
BIO-MM#7	Conduct Preconstruction	Prior to any ground-disturbing activities, the Project Biologist shall conduct	Pre-construction/	Surveying/	Prior to ground-disturbing activities	Authority/ Contractor/ Project	Authority/ Contractor/ Project	Presence-absence surveys of special-	Condition of construction	Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
	Surveys for Special-Status Reptile and Amphibian Species	preconstruction surveys in suitable habitat to determine the presence or absence of special-status reptiles and amphibian species within the work area. These surveys will be conducted in accordance with any required agency protocols. Surveys will be conducted no more than 30 days before the start of ground-disturbing activities in a work area providing enough time to complete a given species' protocol survey methodology. Protocol surveys for the detection of special-status reptiles and amphibians will be according to CDFW Survey and Monitoring Protocols and Guidelines (https://wildlife.ca.gov/Conservation/Survey-Protocols) and the USFWS Survey Protocols and Guidelines (https://www.fws.gov/library/collections/survey-protocols-and-guidelines-recovery-permits-pacific-southwest-region). Specific to western pond turtle, surveys will also follow the Draft USGS Western Pond Turtle Visual Survey Protocol for the Southcoast Ecoregion (USGS 2006a) and Draft USGS Western Pond Turtle Trapping Protocol for the Southcoast Ecoregion (USGS 2006b), available at: https://wildlife.ca.gov/Conservation/Survey-Protocols#377281282-amphibians. The results of the preconstruction survey will be used to guide the placement of ESAs and protective fencing, and species relocation if needed. For federal or state-listed species, relocations will be undertaken in accordance with regulatory authorizations issued under the FESA and/or CESA and/or CFGC §§ 1002, 1002.5, 1003 and/or Cal. Code Regs., tit. 14, § 650. The qualified Project Biologist shall prepare a Reptile and Amphibian Relocation and Avoidance Plan that includes species-specific avoidance buffers of at least 50 feet. If needed, relocation shall occur only during the period outside the breeding season with individuals moved to suitable sites outside the project footprint. The qualified Project Biologist shall submit a copy of the Reptile and Amphibian Relocation and Avoidance Plan to the CDFW and USFWS for approval prior to any clearing, grading, or excavation work on the project site. This mitigation measure is anticipated to be effective because it identifies and documents special-status reptile and amphibian species and their habitat within the project footprint, informing methods for the species' avoidance, protective fencing placement, and relocation activities.	Construction/	Monitoring/ Reporting		Biologist/	Biologist	status reptiles and amphibian species in accordance with CDFW Survey and Monitoring Protocols and Guidelines within the construction footprint conducted 30 days prior to ground disturbance/report findings	contract/Condition of regulatory permits	Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		Implementation of this measure would have temporary impacts on special-status reptiles and amphibians resulting from take (harassment) of a few individuals, if identified during surveys. The sampling is an assessment that would be useful in understanding the species present and would help guide the implementation of the performance standards to be consistent with other mitigation requirements. In general, the surveys are minimally invasive and would not result in physical disturbance outside the project footprint. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the six Build Alternatives.								
BIO-MM#8	Implement Avoidance and Minimization Measures for Special-Status Reptile and Amphibian Species	The Project Biologist will monitor all initial ground-disturbing activities that occur within suitable habitat for special-status reptiles and amphibians and will conduct clearance surveys of suitable habitat in the work area on a daily basis. If a special-status reptile or amphibian is observed, the Project Biologist will identify actions, sufficient to avoid impacts on the species and to allow it to leave the area of its own volition. Such actions may include establishing a 50-foot temporary environmentally sensitive area (ESA) exclusion buffer in the area where a special-status reptile or amphibian has been observed. If needed, the Project Biologist will relocate any of the species observed from the work area to avoid imminent harm. For federal or state-listed species, relocations will be undertaken in accordance with regulatory authorizations issued under FESA and/or CESA and/or CFGC §§ 1002, 1002.5, 1003 and/or Cal. Code Regs., tit. 14, § 650. The ESA material shall not be made of solid material such that the species becomes entrapped within the buffer area. Additionally, the ESA exclusion buffer shall include an area of suitable habitat around the species observation such that the species has suitable area to perform normal life history functions and is able to move away from the project site of its own volition. At no point shall the ESA be isolated within the construction site from adjacent suitable habitat for the species.	Construction	Surveying/ Monitoring/ Reporting	Daily	Contractor/ Project Biologist/	Project Biologist	Monitor initial ground-disturbing activities that occur within suitable habitat for special-status reptiles and amphibians, identify sufficient actions if special-status reptiles and amphibians are observed	Condition of construction contract/Condition of regulatory permits	Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat.
BIO-MM#14	Conduct Preconstruction	Prior to any ground-disturbing activity, including vegetation removal, scheduled to	Pre-construction	Surveying/ Reporting	Weekly or as established by	Project Biologist	Project Biologist	Project Biologist shall conduct visual	Condition of construction	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
	Surveys and Delineate Active Nest Buffers Exclusion Areas for Breeding Birds	occur during the bird breeding season (February 1 to September 1), the Project Biologist shall conduct visual preconstruction surveys within the work area for nesting birds and active nests (nests with eggs or young) of non-raptor species listed under the MBTA and/or the CFGC. These surveys will be conducted in accordance with required protocols. In the event that active bird nests are observed during the preconstruction survey, the Project Biologist will delineate no-work buffers. No-work buffers will be set at a standard distance of 75 feet unless a larger buffer is required pursuant to regulatory authorizations. Consistent with standard practice, no-work buffers will be set from the base of the nesting site. No-work buffers will be maintained until nestlings have fledged and are no longer reliant on the nest or parental care for survival, or the Project Biologist determines that the nest has been abandoned. In circumstances where it is not feasible to maintain the standard no-work buffer, the no-work buffer may be reduced, as long as the Project Biologist monitors the active nest during the construction activity and ensures that the nesting birds do not become agitated. Additional measures that may be used when no-work buffers are reduced include visual screens and noise barriers. This mitigation measure is anticipated to be effective because, in conjunction with, but not limited to, BIO-MM#15, these measures would require identification and documentation of active nests within 500 feet of the proposed construction area, establishment of protective buffers from construction around active nests, and monitoring of the nests until they are inactive. The buffers and subsequent nest monitoring prevent construction activities from disturbing nests while active, allowing young to develop and fledge.			regulatory compliance agencies			preconstruction surveys for nesting birds and active nests (nests with eggs or young) of non-raptor species listed under the MBTA and will delineate no-work buffers until	contract/condition of regulatory permits	
BIO-MM#15	Conduct Preconstruction Surveys and Monitoring for Raptors	If construction or other vegetation removal activities are scheduled to occur during the breeding season for raptors (special-status or non special-status) (January 1 to September 1), no more than 14 days before the start of the activities, the Project Biologist shall conduct preconstruction surveys for nesting raptors in areas where	Pre-construction/ Construction	Surveying/ monitoring/ reporting	January 1 to September 1	Project Biologist	Project Biologist	Pre-construction surveys of the habitat areas of non-special-status raptors within the construction footprint if construction or other	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		suitable habitat is present. Specifically, such surveys will be conducted in habitat areas within the construction footprint and, where access is available, within 500 feet of the boundary of the construction footprint. If breeding raptors with active nests are found, the Project Biologist will delineate a 500-foot buffer around the nest, to be maintained until the young have fledged from the nest and are no longer reliant on the nest or parental care for survival or until such time as the Project Biologist determines that the nest has been abandoned. A vertical buffer of no less than 500 feet shall also be maintained for any aerial (helicopter or drone) activities to be undertaken. Nest buffers may be adjusted if the Project Biologist determines that smaller buffers would be sufficient to avoid impacts on nesting raptors.						vegetation removal activities are scheduled to occur during the breeding season.		
BIO-MM#16	Implement Avoidance Measures for California Condor	During any construction activities within the range of the California condor, as delineated in the USFWS database, the Authority will implement the following avoidance measures: • The Project Biologist will be present for construction activities occurring within 2 miles of known California condor roosting sites. • If USFWS informs the Authority or if the Authority is otherwise made aware that California condors are roosting within 0.5 mile of a work area, no construction activity will occur during the period between1 hour before sunset and 1 hour after sunrise. • All construction materials located within work areas, including items that could pose a risk of entanglement, such as ropes and cables, will be properly stored and secured when not in use. • Littering of trash and food waste is prohibited. All litter, small artificial items (screws, washers, nuts, bolts, etc.), and food waste will be collected and disposed of from work areas on at least a daily basis. • All fuels and components with hazardous materials or wastes will be handled in accordance with applicable regulations. These materials will be kept in segregated, secured, and/or secondary containment facilities, as necessary. Any spills of liquid substances that could	Pre-construction/ Construction/ Post-construction	Surveying/ Monitoring/ Reporting	Prior to operation	Authority/ Contractor	Authority	Implement avoidance measures within the range of the California condor.	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		harm condors will be immediately addressed. • The use of ethylene glycol-based anti-freeze or other ethylene glycol-based liquid substances will be avoided. All parked vehicles/equipment will be kept free of leaks, particularly anti-freeze. • Polychemical lines will not be used or stored on-site, to prevent condors from obtaining and ingesting pieces of polychemical lines. • If California condors land in any work area, the Project Biologist will assess construction activities occurring at the time and determine whether those activities present a potential hazard to the individual California condor. Activities determined by the Project Biologist to present a potential hazard to the California condor will be stopped until the bird has abandoned the area. Methods approved by USFWS for hazing California condors to encourage abandonment of the construction site, Guidance on Hazing California Condors (Southwest Condor Working Group 2014), may be used, as necessary. • The Project Biologist will coordinate with USFWS prior to construction-related uses of helicopters to establish that no California condors are present in the area. If California condors are observed in the area in which helicopters will operate, including the helicopter's flight pattern from its origination, during construction use, and the return flight, helicopter use will not be permitted until the Project Biologist has determined that the California condors have left the area. • CDFW shall be notified if the Authority is informed of or finds roosting California condors. CDFW shall also be notified prior to any construction-related helicopter use. • The operation of any unoccupied aircraft system will be performed only by FAA-licensed personnel and all UAS operations will be compliant with California and federal aviation laws. Operation of UAS will observe all wildlife buffers and UAS operation will not occur over any condor roosting or nesting locations or other raptor nesting locations. All UAS operations would require the same buffer as other aerial								

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		equipment helicopters. This mitigation measure is anticipated to be effective because it would restrict construction activities in areas within 0.5 mile of roosting California condors and provides specific measures for keeping the work area free of materials that would attract or potentially harm California condors. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the Palmdale to Burbank Build Alternatives.								
BIO-MM#17	Conduct Surveys for Swainson's Hawk Nests	Surveys must be performed no more than1 year prior to the commencement of construction activities. The Project Biologist shall conduct surveys for Swainson's hawk during the nesting season (March through August) within both the work area and a 0.5-mile buffer surrounding the work area, provided access to such areas is available. No sooner than 30 days prior to any ground-disturbing activity, the Project Biologist shall conduct preconstruction surveys of nests identified during the earlier surveys to determine whether any are occupied. The initial nesting season surveys and subsequent preconstruction nest surveys will follow the protocols set out in the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee [SHTAC] 2000) and Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California (California Energy Commission and CDFG 2010). This mitigation measure is anticipated to be effective because it would require identification and documentation of active Swainson's hawk nests within 0.5 mile of the proposed construction area, and establishes protective buffers from construction around active nests. The buffers and subsequent nest monitoring prevent construction activities from disturbing raptor nests while active, allowing young to develop and fledge. Implementation of the mitigation measure	Pre- construction	Surveying/ Monitoring/ Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Conduct surveys for Swainson's hawk nests	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		would have temporary impacts on Swainson's hawks from the disruption or disturbance required to survey for them. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the Build Alternatives.								
BIO-MM#18	Implement Avoidance and Minimization Measures for Swainson's Hawk Nests	Any active Swainson's hawk nests (defined as a nest used 1 or more times in the past 5 years) found within 0.5-mile of the boundary of the work area during the nesting season (February 1 to September 1) will be monitored daily by the Project Biologist to assess whether the nest is occupied. If the nest is occupied, the Project Biologist will establish no-work buffers following CDFW's Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California (CDFW 1994), and the status of the nest will be monitored until the young fledge or for the length of construction activities, whichever occurs first. A vertical buffer of no less than 0.5 mile shall also be maintained for any aerial (helicopter or drone) activities to be undertaken. Adjustments to the buffer(s) may be made in consultation with CDFW. Swainson's hawk nest trees will be avoided unless determined to be infeasible. Removal of such trees should occur only during the timeframe of October 1 and the last day in February. If an unoccupied Swainson's hawk nest tree is to be removed, a 2081 incidental take permit under CESA will be obtained, and impacts will be minimized and fully mitigated. The mitigation may include replacement habitat management lands within the Antelope Valley Swainson's hawk breeding range.	Construction	Surveying/ Monitoring/ Reporting	Daily if a nest is found or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Monitor active Swainson's hawk nests/establish nest avoidance buffer zones/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.
BIO-MM#20	Conduct Protocol Surveys for Burrowing Owls	Prior to any ground-disturbing activity, the Project Biologist shall conduct protocol-level surveys for burrowing owls within suitable habitat located in the work area and extending 500 feet from the boundary of the work area, where access is available. Surveys will be conducted in accordance with guidelines in the CDFW Staff Report on Burrowing Owl Mitigation (CDFW 2012). BIO-MM#20 would have temporary impacts on burrowing owls from disruption of their normal behavior resulting from conducting	Pre-construction	Surveying/ Monitoring/ Reporting	Monthly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Protocol-level surveys for burrowing owls/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		surveys. Overall, the measure would be beneficial because it would allow the Build Alternatives to avoid affecting burrowing owls. Implementation of this measure would not result in additional physical disturbance outside the project footprint. Therefore, there is no potential for additional impacts on biological or other resources. This mitigation measure is anticipated to be effective because it would require identification and documentation of active burrowing owl burrows and foraging habitat within 500 feet of the proposed construction area to avoid impacts from construction activities and guides future protective buffer placement and mitigation. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the Build Alternatives.							
BIO-MM#21	Implement Avoidance and Minimization Measures for Burrowing Owls	During nesting bird preconstruction surveys, if burrowing owls are observed within or adjacent to the project footprint, the Project Biologist shall establish a minimum 600-foot no-work buffer around occupied burrowing owl burrows during the nesting season (February 1 through September 1) to protect burrowing owls from project disturbance. Depending on the level of disturbance, the Project Biologist may increase the size of avoidance buffers. These avoidance buffers shall remain in place throughout nesting season and until the Project Biologist has determined that the juvenile owls are foraging independently and are capable of independent survival. Outside the nesting season, suitable burrows that may be at risk from disturbance shall be subject to burrow exclusions and closure (i.e., passive relocation methods), but burrows shall not be disturbed until the Project Biologist has verified that the burrows are unoccupied (based on monitoring). In the event that occupied burrows will be directly affected by ground-disturbing activities, the Authority shall rely on CDFW's Staff Report on Burrowing Owl Mitigation (CDFW 2012) when considering additional actions and/or alternatives to active relocation of burrowing owl. BIO-MM#21 is anticipated to be effective	Pre-construction/Construction	Surveying/ Monitoring/ Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Establish no-work buffers around occupied burrowing owl burrows/relocation as needed/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		because it would require identification and documentation of active burrowing owl burrows, foraging habitat, and nest burrows; establishes avoidance buffers around active nest burrows; and monitors nest burrows to determine when they are no longer active, therefore allowing young to develop and fledge. This measure also includes passive relocation (outside of breeding season only) in the project footprint to avoid direct owl mortality from construction activities. Passive relocation could have indirect impacts on non-nesting burrowing owls because it would allow for the removal of unoccupied burrows (outside the nesting season), and therefore, result in loss of suitable habitat. Compensatory mitigation to offset loss of burrowing owl habitat shall be provided using 1 or more of the methods described in the Compensatory Mitigation Plan, BIO-MM#53.								
BIO-MM#25	Conduct Surveys for Bat Species	No more than 1 year (but with at least 1 maternity season remaining) prior to the replacement or modification of any bridges or removal of other structures (typically abandoned), and trees with large cavities or dense foliage identified as suitable bat habitat and where access is available, the Project Biologist shall conduct a survey of the bridges and other suitable bat habitat looking for evidence of roosting bats within the expected project footprint and a 500-foot buffer. If bats or bat signs are detected, biologists shall conduct an evening visual and acoustic emergence survey (with monitoring using full spectrum bat detectors) of the bridges, structures, and/or trees with large cavities or dense foliage from a half hour before sunset to 1–2 hours after sunset for a minimum of 2 nights. To the extent possible, all surveys and follow-up monitoring shall be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). The purpose of these emergence surveys is to confirm presence/absence at each location, determine the species of bats, including whether the bats are non-special-status species (not protected by any regulation) or special-status species (protected pursuant to the CFGC), and estimate population size. The biologists will analyze the bat call data using appropriate software and will prepare	Pre-construction	Surveying/ Monitoring/ Reporting	Monthly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Conduct visual and acoustic surveys for evidence of bat species presence/report findings.	Condition of construction contract/condition of regulatory permits	Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		a report that will be submitted to the Authority, including an assessment of the significance of the roost relative to local bat populations, particularly if the bats present are special-status-species, and therefore, protected pursuant to the CFGC. Because bats are highly cryptic, the visual and acoustic emergence surveys shall be conducted during the appropriate time of year when bats are actively emerging from and returning to their roosts, generally March 1 – October 15, but may be extended outside this timeframe depending on temperature and other weather-related factors. Emergence surveys shall not be conducted when bats are in torpor (i.e., hibernacula; semi-hibernating during months with colder temperatures) when detection is unlikely. If it is determined that bats are within the expected project disturbance footprint or 500-foot buffer, avoidance shall be the first option considered. If avoidance is not possible, bats shall be passively evicted using exclusion and deterrence methods, only when outside hibernation (i.e., torpor) and maternity roosting periods as described in BIO-MM#27. Should hibernacula or maternity roosts be detected within the expected project disturbance footprint or 500-foot buffer, and avoidance will not be possible, the Authority shall coordinate with CDFW regarding available options, as described in BIO-MM#26, with removal/relocation as a last and least preferred option. This mitigation measure is anticipated to be effective because it would require identification and documentation of bat roosts (when bats are actively emerging/returning to the roost) within 500 feet of proposed construction work areas, determine if the bats are special-status or non-special-status species, determine population size, and guide additional protective actions, such as avoidance, passive eviction (using exclusion deterrence methods; refer to BIO-MM#27), or active relocation methods (refer to BIO-MM#26). This measure would have no impacts on roosting bats because non-invasive survey techniques would be used, and bats would not be disturbed during hibernating or maternity roosting periods before it can be determined if the bats are								

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		special-status species. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the six Build Alternatives.								
BIO-MM#26	Bat Preconstruction, Avoidance, and Removal/ Relocation Methods	As part of project preconstruction survey efforts (generally within 30 days prior to any ground-disturbing activity), the Project Biologist shall assess the project footprint for the effectiveness of previous passive eviction measures implemented per BIO-MM#27 as well as assess the project footprint and 500-foot buffer for any potential new bat roosts, focusing on potentially suitable habitat in the form of bridges, structures (usually abandoned), and trees with large cavities or dense foliage. This additional preconstruction effort shall be conducted with the understanding that if bats are not active, they may be difficult to detect and/or determine if special-status, and should, therefore, be conducted outside the winter months to the extent possible. If active hibernacula or maternity roosts are detected in the project footprint or 500-foot buffer extending from the project footprint, they will be avoided to the extent feasible. Any buffer required by permitting and regulatory authorizations will be instituted. If avoidance is not possible and bats are actively emerging/returning from the roost (not hibernating and/or the young have actively begun flying), eviction methods shall be implemented. If avoidance is not possible and bats are not actively emerging, the Project Biologist shall coordinate with CDFW to prepare and implement a bat removal/relocation plan. This plan would only be considered if feasible and anticipated to provide equivalent or superior protection for bats. The removal/relocation plan for removal and relocation of hibernacula and maternity roosts shall include, but are not limited to, the following: • Identification of alternative bat roost location(s) at least 500 feet outside the work area and/or construction of artificial bat roosts (if needed, e.g., bat houses) • Methods for removal/relocation, understanding that special-status bat	Pre-construction/ Construction	Surveying/ Monitoring/ Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Establish no-work buffers around occupied burrowing owl burrows/relocation as needed/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		species may be addressed differently than non-special-status species • Timing for removal/relocation • Responsibilities and oversight for implementing removal/relocation • Success criteria and follow-up monitoring of the alternative bat roosts to ensure effectiveness • Adaptive management and contingency measures should alternative methods be necessary to ensure effectiveness relevant to avoidance/minimization of impacts to bats • Methods to be implemented relative to bat protection during future project operations and maintenance • Coordination with CDFW to ensure acceptable methods are implemented • If the bats species being addressed are special-status, eviction methods will also be included in a removal/relocation plan Any new roost sites (whether natural or artificially created) shall provide a stable microclimate and be in place and functional prior to the commencement of construction activities to allow sufficient time for bats to become established at the new roost site. Implementation of this measure could trigger secondary environmental impacts to bats. However, to minimize impacts to bats subject to removal/relocation, particularly the protected special-status species, all eviction and/or removal/relocation methods will be guided and implemented in coordination with CDFW to ensure methods are acceptable and effective.								
BIO-MM#27	Implement Bat Exclusion and Deterrence Methods	During the survey efforts (whether it is the initial survey conducted well in advance of construction per BIO-MM#25 or the preconstruction survey per BIO-MM#26), if nonbreeding or non-hibernating (i.e., non-torpor) individuals or groups of bats are found roosting within the project disturbance footprint or 500-foot buffer, the Project Biologist shall facilitate the passive eviction (i.e., exclusion and deterrence) of the bats by either opening the roosting area to change the lighting and airflow conditions, installing one-way doors, or implementing other appropriate passive eviction methods used for evicting bats according to guidelines provided by the CDFW. Typical ideal periods for successful eviction are March 1 – April 15 and	Pre-construction/ Construction	Surveying/ Monitoring/ Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Safely evict bats from roosts except for established maternity roosts and occupied hibernation roosts/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		September 1 – October 15, when outside the hibernation period and when young bats are volant (capable of flying). Implementation of passive eviction may be extended outside these timeframes depending on temperature and other weather-related factors. To the extent feasible, the Authority shall leave the evicted roost area undisturbed by project activities for a minimum of1 week after implementing passive eviction methods, and through follow-up monitoring, shall ensure that all bats have left the roost area. Exclusion and deterrence features shall be left in place before and through construction to prevent bats from returning and re-occupying the previously evicted roost. Should hibernacula or maternity roosts be detected, if feasible and anticipated to provide equivalent or better protection, maternity roosts and hibernacula may be actively removed/relocated subject to the criteria outlined in a removal/relocation plan prepared and implemented in coordination with CDFW (refer to BIO-MM#26). For bat species that are special-status, the removal/relocation plan shall also cover passive eviction activities and require the identification of alternative suitable natural roosting habitat or construction of artificial roosting habitat. If bats are non-special-status, passive eviction activities do not require plan preparation. This mitigation measure is anticipated to be effective because implementation involves passive eviction of bats from within the project footprint and 500-foot buffer where bats could potentially be harmed by construction activities. Passive eviction would occur outside the hibernation period and after young are volant (capable of flying) to avoid bat mortality. This measure is also intended to deter bats from returning to the roost area after being passively evicted. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the six Build Alternatives.							
BIO-MM#28	Conduct Preconstruction	Prior to any ground-disturbing activity, the Project Biologist shall conduct	Pre-construction/ Cconstruction	Surveying/ Monitoring/	Weekly or as established by	Authority/ Contractor/ Project	Authority/ Contractor/ Project	Conduct surveys for ringtail and ringtail	Condition of construction	Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
	Surveys for Ringtail and Ringtail Den Sites and Implement Avoidance Measures	preconstruction surveys for ringtail and ringtail den sites within suitable habitat located within the work area and any areas extending 100 feet from the boundary of the work area, where access is available. These surveys will be conducted no more than 30 days before the start of ground-disturbing activities in a work area. The Project Biologist will establish 100-foot no-work buffers around occupied maternity dens throughout the pup-rearing season (May 1 through June 15) and a 50-foot no-work buffer around occupied dens during other times of the year.		Reporting	regulatory compliance agencies	Biologist	Biologist	den sites/report findings/establish no-work buffers	contract/condition of regulatory permits	
BIO-MM#29	Conduct Preconstruction Surveys for American Badger Den Sites and Implement Minimization Measures	Prior to any ground-disturbing activity, the Project Biologist shall conduct preconstruction surveys for American Badger den sites within suitable habitat located within the work area and any areas extending 100 feet from the boundary of the work area, where access is available. These surveys will be conducted no less than 14 days and no more than 30 days prior to the start of ground-disturbing activities in a work area. The Project Biologist will establish a 100-foot no-work buffer around occupied maternity dens throughout the pup-rearing season (February 15 through July 1) and a 50-foot no-work buffer around occupied dens during other times of the year. If non-maternity dens are found and cannot be avoided during construction activities, they will be monitored for badger activity. If the Project Biologist determines that dens may be occupied, passive den exclusion measures will be implemented for 3 to 5 days to discourage the use of these dens prior to project disturbance activities.	Pre-construction/ Construction	Surveying/Monitoring/Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Conduct surveys for the American Badger	Condition of construction contract/condition of regulatory permits	Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat.
BIO-MM#32	Restore Temporary Riparian Habitat Impacts	Within 90 days of completing construction in a work area, the project biologist will direct the revegetation of any riparian areas temporarily disturbed as a result of the construction activities, using appropriate native plants and seed mixes (including host and nectar plants for butterflies). Native plants and seed mixes will be obtained from stock originating from areas within the local watershed, to the extent feasible. The project biologist will monitor restoration activities consistent with provisions in the RRP (BIO-MM#6).	Construction/Post-construction	Restoration/Monitoring/Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Revegetate disturbed riparian areas/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources. Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
BIO-MM#33	Restore Aquatic Resources Subject to Temporary Impacts	Within 90 days of the completion of construction activities in a work area, the Authority will begin to restore aquatic resources that were temporarily affected by the construction. Aquatic resources are those resources considered WOTUS under the CWA or waters of the state under the Porter-Cologne Act and/or regulated under CFGC section 1600 et seq. As set out in the RRP, such areas will, to the extent feasible, be restored to their natural topography. In areas where gravel or geotextile fabrics have been installed to protect substrate and to otherwise minimize impacts, the material will be removed, and the affected features will be restored. The Authority will revegetate affected aquatic resources using appropriate native plants and seed mixes (from local vendors where available). The Authority will conduct maintenance monitoring consistent with the provisions of the RRP.	Construction/Post-construction	Restoration/monitoring/reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor /Project Biologist	Authority/ Contractor /Project Biologist	Restore disturbed aquatic resources/conduct revegetation/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources. Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq.
BIO-MM#34	Monitor Construction Activities within Jurisdictional Waters	The Project Biologist will monitor construction activities that occur within or adjacent to aquatic resources, including activities associated with the installation of protective barriers (e.g., silt fencing, sandbags, fencing), installation and/or removal of creek material to accommodate crossings, construction of access roads, and removal of vegetation. As part of this effort, the Project Biologist will document compliance with applicable avoidance and minimization measures including measures set forth in regulatory authorizations issued under CWA, Porter-Cologne Act and/or CFGC section 1600 et seq.	Construction/Post-construction	Surveying/Monitoring/Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Monitor construction activities within or adjacent to aquatic resources/document compliance	Condition of construction contract/condition of regulatory permits	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources. Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq.
BIO-MM#35	Implement Transplantation and Compensatory Mitigation Measures for Protected Trees	Prior to ground-disturbing activities, the Project Biologist shall conduct surveys in the work area to identify protected trees. The Project Biologist will establish ESAs around protected trees that have the potential to be affected by construction activities but do not require removal. The ESAs will extend outward 5 feet from the drip lines of such protected trees. The implementation of the compensatory mitigation measures will be conducted by a certified arborist, with oversight from Authority staff member(s). The Authority will prepare and implement a Compensatory Mitigation Plan for impacts on protected trees, including impacts associated with removing or trimming a	Pre-construction/ Construction/Post-construction	Surveying/Monitoring/Reporting	Monthly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Conduct protected trees surveys/compensate for impacts and effects to protected tree resources/prepare and implement a monitoring and maintenance program to monitor transplanted trees/report findings	Condition of construction contract	Impact BIO#12: Project Construction Effects on Protected Impact BIO#19: Project Operation Effects on Protected Trees.

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		protected tree. Compensation will be based on requirements set out in applicable local government ordinances, policies, and regulations. Compensatory mitigation may include, but is not limited to, the following: • Transplantation of protected trees to areas outside of the work area. • Replacement of protected trees at an off-site location, based on the number of protected trees impacted, at a ratio not to exceed 3:1 for native trees or 1:1 for ornamental trees, unless higher ratios are required by local government ordinances or regulations. • Removal or transplantation of Joshua trees shall require approval from CDFW, as no take of the species is authorized except under State law (CFGC §§ 86, 2062, 2067, 2068, 2080, 2085; Cal. Code Regs., tit. 14, § 786.9). For Joshua trees that occur outside areas with protected tree ordinances, Joshua trees will be replaced as set forth in the take authorization. • Contribution to a tree-planting fund. The Authority will use a certified arborist with knowledge of tree conservation to support the implementation of the protected tree measures.								
BIO-MM#36	Install Aprons or Barriers within Security Fencing	Prior to final construction design the Project Biologist will review the fencing plans along any portion of the permanent right-of-way that is adjacent to natural habitats and confirm that the permanent security fencing will be enhanced with a barrier (e.g., fine mesh fencing) that extends at least 12 inches below-ground and 12 inches aboveground to prevent special-status reptiles, amphibians, and mammals from moving through or underneath the fencing and gaining access to areas within the ROW. At the 12-inch depth of the below-grade portion of the apron, the barrier will extend or be bent at an approximately 90-degree angle and oriented outward from the ROW a minimum of 12 inches to prevent fossorial mammals, reptiles, and amphibians from digging or tunneling below the security fence and gaining access to the right-of-way. A climber barrier (e.g., rigid curved or bent overhang) will be installed at the top of the apron to prevent reptiles, amphibians, and mammals from climbing	Design/Pre-construction/ Construction	Design and installation of apron or fencing	As established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Design of wildlife movement plans	Condition of construction contract/condition of regulatory permits	Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat. Impact BIO-#13: Project Effects on Wildlife Movement Corridors. Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities.

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		over the apron. The Project Biologist will ensure that the selected apron material and climber barrier do not cause harm, injury, or entanglement to, or entrapment of, wildlife species. The Authority will provide for quarterly inspection and repair of the fencing. The specific design and method for installation of an apron or barrier may vary as required by regulatory authorizations issued under FESA and/or CESA. Prior to operation the Project Biologist will field inspect the fencing along any portion of the permanent right-of-way that is adjacent to natural habitats and confirm that the fencing has been appropriately installed. Fencing plan review and field inspection will be documented in a memorandum from the Project Biologist and provided to the Authority.								
BIO-MM#37	Minimize Effects on Wildlife Movement Corridors During Construction	To the extent feasible, the Authority will avoid placing fencing, either temporarily or permanently, within known wildlife movement corridors in those portions of the alignment where the tracks are elevated (e.g., viaducts or bridges). During ground-disturbing activities, the Authority will keep wildlife crossing structures, land above tunnels, and other potential wildlife movement areas as free as practicable of equipment, storage materials, construction materials, and other potential impediments. Before ground-disturbing activities, the contractor will submit a construction avoidance and minimization plan for potential wildlife movement areas to the Project Biologist for concurrence. For the purposes of this section, “potential wildlife movement areas” include ruderal and vegetated wildlands dominated by non-natives that would provide movement opportunities across the HSR alignment. The Authority will avoid conducting ground-disturbing activities in wildlife movement corridors during nighttime hours, to the extent feasible, and will shield nighttime lighting to avoid illuminating wildlife movement corridors in circumstances where avoidance of such activities is not feasible.	Construction/post-construction	Design and installation of fencing	As established by regulatory compliance agencies	Yearly or at other appropriate intervals	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Avoid placement of fencing adjacent to wildlife movement corridors/report findings	Impact BIO#13: Project Effects on Wildlife Movement Corridors.
BIO-MM#38	Compensate for Impacts on Listed Plant Species	The Authority will provide compensatory mitigation for direct impacts on federally and state-listed plant species based on the number of acres of plant habitat directly	Pre-construction/Construction/Post-	Design/final design/mitigation	Monthly or as established by regulatory compliance	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Compensate impacts on special-status plants at a 1:1 ratio based on	Condition of construction contract/condition of regulatory	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities.

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		affected. Such mitigation will include the following measures: • Compensatory mitigation will be provided at a 1:1 ratio to offset direct impacts on federally listed plant species habitat, unless a higher ratio is required pursuant to regulatory authorizations issued under FESA. • Compensatory mitigation will be provided at a 1:1 ratio to offset direct impacts on state-listed plant species habitat, unless a higher ratio is required pursuant to regulatory authorizations issued under CESA. • Compensatory mitigation will be provided using1 or more of the methods described in BIO-MM#8. This mitigation measure is anticipated to be effective because it provides a minimum compensatory mitigation standard for special-status plants. Potential secondary impacts on biological and other resources from this measure would be the same as those described under BIO-MM#50. No other secondary impacts are anticipated.	construction		agencies			actual acres of direct effects/report findings	permits	
BIO-MM#39	Provide Compensatory Mitigation for Impacts on Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat	The Authority will provide compensatory mitigation for direct and indirect impacts, including both temporary and permanent impacts, on vernal pool branchiopod habitat at a 1:1 ratio unless a higher ratio is required by the FESA. Compensatory mitigation will be provided using1 or more of the methods described in the Compensatory Mitigation Plan, BIO-MM#53.	Post-construction	Design/final design/ surveying/ compensatory mitigation/ reporting	Monthly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Compensate impacts Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat at a 1:1 ratio	Condition of construction contract	Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources.
BIO-MM#43	Provide Compensatory Mitigation for Loss of Swainson's Hawk Nesting Trees and Habitat	To compensate for permanent impacts to active Swainson's hawk nest trees (i.e., trees in which Swainson's hawks were observed building nests during protocol-level surveys or nest sites that were used1 or more times in the last 5 years per the California Energy Commission and CDFG 2010 guidelines) and foraging habitat, the Authority shall provide project-specific compensatory mitigation that replaces affected nest trees and provides foraging habitat. Lands proposed as compensatory mitigation for Swainson's hawk would meet the following minimum criteria: Support at least three mature native riparian trees suitable for Swainson's hawk nesting (i.e., valley oak, Fremont cottonwood, or willow) for each	Pre-construction/ Construction/Post-construction	Design/final design/ surveying/ compensatory mitigation/ reporting	Monthly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Compensatory mitigation that replaces Swainson's hawk nesting trees and provides natural lands for foraging/report findings	Condition of construction contract	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.

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		Swainson's hawk nest tree removed by construction of the Palmdale to Burbank Project Section. • Support at least1 Swainson's hawk nesting territory during the past 5 years. • Contribute to the Palmdale to Burbank Project Section's mitigation commitment for Swainson's hawk foraging habitat, which will be calculated based on the following ratios: ○ 1:1 for impacts on active primary foraging habitat (primary foraging habitat is the area of suitable foraging habitat within 1 mile of a known nest) ○ 0.75:1 for impacts on active secondary foraging habitat (secondary foraging habitat is the area of suitable foraging habitat between 1 and 5 miles of a known nest) ○ 0.5:1 for impacts on active tertiary foraging habitat (tertiary foraging habitat is the area of suitable foraging habitat between 5 and 10 miles of a known nest) • Final mitigation strategy and details will be included as part of the Compensatory Mitigation Plan prepared pursuant to BIO-MM#53. Compensatory mitigation planning for Swainson's hawk will address the following details: ○ Specific data and analyses used to determine whether replacement habitat would provide functional foraging habitat and the quality of potential replacement habitat ○ Refined definitions of "primary", "secondary", and "tertiary" foraging habitat based on size of foraging habitat patches and given distances from known Swainson's hawk nests (active or inactive) ○ The mitigation ratios required pursuant to CESA ○ Compensatory mitigation for Swainson's hawk will be finalized in coordination with CDFW.							
BIO-MM#44	Provide Compensatory Mitigation for Loss of	To compensate for permanent impacts on nesting, occupied, and satellite burrows for burrowing owls and/or their habitat, the Authority will provide compensatory	Pre-construction/ Construction/Post-construction	Design/final design/ surveying/ compensatory	Monthly or as established by regulatory	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Compensate impacts Active Burrowing Owl	Condition of construction contract/condition	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
	Active Burrowing Owl Burrows and Habitat	mitigation at a ratio of 2:1 using1 or more of the methods described in the Compensatory Mitigation Plan, BIO-MM#53. This mitigation measure is anticipated to be effective because it provides minimum compensatory mitigation standards for burrowing owls. Implementation of this mitigation measure may also require the acquisition of suitable additional lands outside the project footprint for the purposes of providing habitat for burrowing owls. This land may be converted from other current uses, such as agriculture, which in turn could have potential secondary environmental impacts on agricultural resources (through farmland conversion). Such secondary impacts from off-site mitigation activities are addressed under BIO-MM#50.		mitigation/ reporting	compliance agencies			Burrows and Habitat at a 2:1 ratio	of regulatory permits	
BIO-MM#46	Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat	The Authority will compensate for permanent impacts on riparian habitats at a ratio of 2:1, unless a higher ratio is required by agencies with regulatory jurisdiction over the resource. Compensatory mitigation may occur through habitat restoration, the acquisition of credits from an approved mitigation bank, or participation in an in-lieu fee program.	Pre-construction/ construction/post-construction	Design/final design/ surveying/ compensatory mitigation/reporting	Yearly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Mitigate permanent riparian habitat impacts through compensation/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources. Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq. Impact BIO#10: Project Construction Effects on Federally Designated Critical Habitat. Impact BIO#11: Project Construction Effects on Significant Ecological Areas.
BIO-MM#47	Prepare and Implement a CMP for Impacts on Aquatic Resources	The Authority will prepare and implement a CMP that identifies mitigation to address temporary and permanent loss, including functions and services, of aquatic resources as defined as WOTUS under the CWA and/or waters of the state under the Porter-Cologne Act and/or	Pre-construction/ Construction/Post-construction	Design/final design/surveying/ compensatory mitigation/reporting	Yearly or as established by regulatory compliance agencies	Authority/ Contractor/Project Biologist	Authority/ Contractor/Project Biologist	Prepare and implement CMP for temporary and permanent impact on aquatic resources/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat. Impact BIO#6: Project Construction Effects

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		regulated under CFGC section 1600 et seq. The compensatory mitigation will meet state and federal policies on no net loss of functions and services of wetlands. To the extent feasible, compensatory mitigation will be provided within CDFW Region 5 and within Los Angeles County. Compensatory mitigation may involve the restoration, establishment, enhancement, and/or preservation of aquatic resources through1 or more of the following methods: • Purchase of credits from an agency-approved mitigation bank • Preservation of aquatic resources through acquisition of property • Establishment, restoration, or enhancement of aquatic resources • In-lieu fee contribution determined through consultation with the applicable regulatory agencies The following ratios will be used for compensatory mitigation for aquatic resources unless a higher ratio is required pursuant to regulatory authorizations issued under Section 404 of the CWA and/or the Porter-Cologne Act and/or CFGC section 1600 et seq: • Vernal pools: 2:1 • Seasonal wetlands: between 1.1:1 and 1.5:1 based on impact type, function and services lost • 1:1 off-site for permanent impacts • 1:1 on site and 0.1:1 to 0.5:1 off-site for temporary impacts For mitigation involving establishment, restoration, enhancement, or preservation of aquatic resources by the Authority, the CMP will contain the following information: • Objectives—A description of the resource types and amounts that will be provided, the type of compensation (i.e., restoration, establishment, enhancement, and/or preservation), and the manner in which the resource functions of the compensatory mitigation project will address the needs of the watershed or ecoregion. • Site selection—A description of the factors considered during the long-term								on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources. Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq. Impact BIO#10: Project Construction Effects on Federally Designated Critical Habitat. Impact BIO#11: Project Construction Effects on Significant Ecological Areas.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		sustainability of the resource. • Adaptive management plan—A management strategy to address changes in site conditions or other components of the compensatory mitigation project. • Financial assurances—A description of financial assurances that will be provided to ensure that the compensatory mitigation will be successful. In circumstances where the Authority intends to fulfill compensatory mitigation obligations by securing credits from approved conservation and mitigation banks or in-lieu fee programs, the CMP need only include the name of the specific conservation and mitigation bank or in-lieu fee program to be used and the method for calculating credits.							
BIO-MM#50	Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites	Prior to ground-disturbing activities associated with habitat restoration, enhancement, and/or creation actions at a mitigation site, the Authority will conduct a site assessment of the work area to identify biological and aquatic resources, including vegetation communities, landcover types, and the distribution of special-status plants and wildlife. Based on the results of the site assessment, the Authority will obtain any necessary regulatory authorizations prior to conducting habitat restoration, enhancement, and/or creation activities, including authorization under FESA or CESA, CFGC Section 1600 et seq., the CWA, and the Porter-Cologne Act. The Authority will implement the following measures to avoid or minimize impacts on species habitat and aquatic biological resources during habitat restoration, enhancement, or creation activities: • BIO-IAMF#3: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training • BIO-IAMF#6: Establish Monofilament Restrictions • BIO-IAMF#7: Prevent Entrapment in Construction Materials and Excavations • BIO-IAMF#8: Delineate Equipment Staging Areas and Traffic Routes	Pre-construction/ Construction/Post-Construction	Design/final design/surveying/compensatory mitigation/reporting	Yearly or as established by regulatory compliance agencies	Authority/ Contractor/Project Biologist	Authority/ Contractor/Project Biologist	Implement measure to avoid and minimize impacts during off-site habitat restoration, enhancement, and creation/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat. Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources. Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq. Impact BIO#10: Project Construction Effects on Federally Designated Critical Habitat. Impact BIO#11: Project Construction Effects on Significant Ecological Areas. Impact BIO#12: Project Construction Effects on Protected

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		• BIO-IAMF#9: Dispose of Construction Spoils and Waste • BIO-IAMF#10: Clean Construction Equipment • BIO-IAMF#11: Maintain Construction Sites • BIO-MM#14: Conduct Preconstruction Surveys and Delineate Active Nest Buffers Exclusion Areas for Breeding Birds • BIO-MM#15: Conduct Preconstruction Surveys and Monitoring for Non-Special-Status Raptors • BIO-MM#32: Restore Temporary Riparian Habitat Impacts • BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts • BIO-MM#55: Prepare and Implement a Weed Control Plan • BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones • BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds • BIO-MM#63: Work Stoppage								
BIO-MM#52	Conduct California Glossy Snake, California Legless Lizard, Coast Patch-Nosed Snake, Coastal Rosy Boa, Coastal Whiptail, Blainville's Horned Lizard, San Bernardino Ringneck, San Bernardino Mountain Kingsnake, South Coast Garter Snake, Two-Striped Garter Snake, and Western Pond Turtle Monitoring, and Implement Avoidance and Minimization Measures	Prior to ground-disturbing activities, the Project Biologist shall conduct a clearance survey in suitable habitat within the work area for California glossy snake, California legless lizard, coast patch-nosed snake, coastal rosy boa, coastal whiptail, Blainville's horned lizard, San Bernardino ringneck, San Bernardino mountain kingsnake, south coast garter snake, two-striped garter snake, and western pond turtle. The Project Biologist may establish wildlife exclusion fencing to keep the species from entering the work area. If California glossy snake, California legless lizard, coast patch-nosed snake, coastal rosy boa, coastal whiptail, Blainville's horned lizard, San Bernardino ringneck, San Bernardino mountain kingsnake, south coast garter snake, two-striped garter snake, and western pond turtle is observed during construction, measures will be taken to avoid the	Pre-construction/ Construction	Surveying/Monitoring/Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/Project Biologist	Authority/ Contractor/Project Biologist	Pre-construction surveys for nesting Swainson's hawks, California Glossy Snake, California Legless Lizard, Coast Patch-Nosed Snake, Coastal Rosy Boa, Coastal Whiptail, Blainville's Horned Lizard, San Bernardino Ringneck, San Bernardino Mountain Kingsnake, South Coast Garter Snake, Two-Striped Garter Snake, and Western Pond Turtle /monitor active nests/report	Condition of construction contract/condition of regulatory permits	Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		individual(s), and the species will be allowed to leave of its own volition or be relocated outside of the work area by the Project Biologist. Clearance surveys will be conducted daily unless the Project Biologist determines that the surveys are no longer necessary.						findings		
BIO-MM#53	Prepare and Implement a CMP for Species and Species Habitat	The Authority will prepare and implement a CMP that sets out the compensatory mitigation that will be provided to offset permanent and temporary impacts on federal and state-listed species and their habitat, fish and wildlife resources regulated under the CFGC, and certain other special-status species. The compensatory mitigation outlined in the CMP will be proportional to associated impacts. The CMP will include the following: • A description of the species and habitat types for which compensatory mitigation is being provided • A description of the methods used to identify and evaluate mitigation options. Where compensatory mitigation is identified as the preferred approach, mitigation ratios for federal and state-listed species and their habitat will ultimately be determined pursuant to regulatory authorizations issued under FESA and CESA. Mitigation options will include1 or more of the following: ○ Purchase of mitigation credits from an agency-approved mitigation bank. ○ Protection of habitat through acquisition of fee-title or conservation easement and funding for long-term management of the habitat. To the extent feasible, compensatory mitigation will be provided within CDFW Region 5 and within Los Angeles County. ○ Title to lands acquired in fee-title will be transferred to CDFW, and conservation easements will be held by an entity approved in writing by the applicable regulatory agency. In circumstances where the Authority protects habitat through a conservation easement, the terms of the conservation easement will be subject to	Pre-construction/ Construction/Post-construction	Surveying/Monitoring/Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/Project Biologist	Authority/ Contractor/Project Biologist	Prepare CMP for temporary and permanent impacts on special-status species and their habitat	Condition of construction contract/condition of regulatory permits	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat. Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat. Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq. Impact BIO#10: Project Construction Effects on Federally Designated Critical Habitat. Impact BIO#11: Project Construction Effects on Significant Ecological Areas. Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		approval of the applicable regulatory agencies, and the conservation easement will identify applicable regulatory agencies as third-party beneficiaries with a right of access to the easement areas. ○ Payment to an existing in-lieu fee program. A summary of the estimated direct permanent and temporary impacts on species and species habitat. A description of the process that will be used to confirm impacts. Actual impacts on species and habitat could differ from estimates. Should this occur, adjustments will be made to the compensatory mitigation that will be provided to ensure that mitigation remains commensurate with impacts. Adjustments to impact estimates and compensatory mitigation will occur in any of the following circumstances: Impacts on species (typically measured as habitat loss) are reduced or increased as a result of changes in project design Preconstruction site assessments indicate that habitat features are absent (e.g., because of errors in land cover mapping or land cover conversion) The habitat is determined to be unoccupied based on negative species surveys. Impacts initially categorized as permanent qualify as temporary impacts • An overview of the strategy for mitigating effects on species. The overview will include the ratios to be applied to determine mitigation levels and the resulting mitigation totals • A description of habitat restoration or enhancement projects, if any, that will contribute to compensatory mitigation commitments • A description of the success criteria that will be used to evaluate the performance of habitat restoration or enhancement projects, and a description of the types of monitoring that will be used to verify that such criteria have been met • A description of the management actions that will be used to maintain the habitat on the mitigation sites, and								

	Title	Mitigation Text	Phase	Implementation	Reporting	Implementing		Implementation	Implementation	
		the funding mechanisms for long-term management • A description of adaptive management approaches, if applicable, that will be used in the management of species habitat • A description of financial assurances that will be provided to demonstrate that the funding to implement mitigation is assured.								
BIO-MM#54	Prepare and Implement an Annual Vegetation Control Plan	Prior to the operation and maintenance of the HSR, the Authority, with approval by USFS for activities on USFS land, will prepare an annual vegetation control plan to address vegetation removal for the purpose of maintaining clear areas around facilities, reducing the risk of fire, and controlling invasive weeds during the operational phase. The Authority will generally follow the procedures established in Chapter C2 of the Caltrans Maintenance Manual to manage vegetation on Authority property (California Department of Transportation [Caltrans] 2010). Vegetation will be controlled by chemical, thermal, biological, cultural, mechanical, structural, and manual methods. The vegetation control plan will be updated each winter and completed in time to be implemented no later than April 1 of each year. The annual update to the vegetation control plan will include a section addressing issues encountered during the prior year and changes to be incorporated into the vegetation control plan. The plan will describe site-specific vegetation control methods, as outlined below: ▪ Mowing program consistent with section 1415 of the FAST Act. ▪ Other non-chemical vegetation control. ▪ Other chemical pest control methods (e.g., insects, snail, rodent). ▪ Special consideration shall be given to the possible chemical contamination of surface and groundwater. ▪ Buffer zones of up to 20 feet or greater shall be maintained from surface water (oceans, bays, lakes, rivers, streams, creeks, and canals) or drainage ditches (when water is flowing) when applying any pre-emergent herbicide. ▪ Buffers of 5 feet or greater shall be maintained from surface water when	Pre-construction/ Construction/Post-construction	Design/final design/compensatory mitigation/reporting	Yearly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Prepare and implement vegetation control plan to address for vegetation removal for the purpose of maintaining clear areas/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		applying post-emergent herbicides. ▪ Special consideration shall be given to areas determined under BIO-MM#94 to be occupied monarch butterfly overwintering groves (generally mid-September to mid-March) and occupied host plants (e.g., milkweed)/breeding areas (mid-March to mid-September). If pesticides are used, applications shall be done mid-March to mid-September, when possible. Use of pesticides within 1 mile of occupied overwintering areas shall be avoided or minimized, with the distance of pesticide use from these occupied areas to be reduced as determined by a qualified Project Biologist, as appropriate, based on weather conditions, topography, and potential for off-site drift. ▪ Relative to the monarch butterfly, whenever possible, the following shall be applicable: targeted application herbicide methods shall be used; large-scale broadcast applications shall be avoided; precautions shall be taken to limit off-site movement of herbicides (e.g., drift from wind and discharge from surface water flows); neonicotinoids or other systemic insecticides, including coated seeds, shall not be used any time of the year in monarch butterfly habitat due to their ecosystem persistence, systemic nature, and toxicity; and soil fumigants shall not be used. Only Caltrans-approved herbicides may be used in the vegetation control program. Pesticide application will be conducted in accordance with all requirements of the California Department of Pesticide Regulation and County Agricultural Commissioners by certified pesticide applicators. Noxious/invasive weeds will be treated where requested by County Agricultural Commissioners. The appropriate chemical formulations will be used for vegetation management. Glyphosate Roundup will only be used in the uplands and outside of watercourses and riparian areas. Glyphosate Rodeo will be used for aquatic weed control. The Authority will cooperate in area-wide efforts to control of noxious/invasive weeds if such programs have been established by local agencies.							

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BIO-MM#55	Prepare and Implement a Weed Control Plan	Prior to any ground-disturbing activity during the construction phase, the project biologist will develop a WCP, subject to review and approval by the Authority. The purpose of the WCP is to establish approaches to minimize and avoid the spread of invasive weeds during ground-disturbing activities during construction and operation and maintenance (O&M). The WCP will include, at a minimum, the following: • A requirement to delineate ESAs in the field prior to weed control activities. • A schedule for weed surveys to be conducted in coordination with the BRMP • Success criteria for invasive weed control. The success criteria will be linked to the BRMP standards for on-site work during ground-disturbing activities. In particular, the criteria will establish limits on the introduction and spread of invasive species, as defined by the California Invasive Plant Council, to less than or equal to the pre-disturbance conditions in the area temporarily affected by ground-disturbing activities. If invasive species cover is found to exceed pre-disturbance conditions by greater than 10 percent or is 10 percent greater than levels at a similar, nearby reference site, a control effort will be implemented. If the target, or other success criteria identified in the WCP, has not been met by the end of the WCP monitoring and implementation period, the Authority will continue the monitoring and control efforts, and remedial actions will be identified and implemented until the success criteria are met. • Provisions to ensure consistency between the WCP and the RRP, including verification that the RRP includes measures to minimize the risk of the spread and/or establishment of invasive species and reflects the same revegetation performance standards as the WCP. • Identification of weed control treatments, including permitted herbicides and manual and mechanical removal methods. • Time frames for weed control treatment for each plant species. • Identification of fire prevention	Pre-construction/ Construction/Post-construction	Prepare plan/reporting	Yearly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Prepare and implement WCP minimize and avoid the spread of invasive weeds/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat. Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources. Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq. Impact BIO#12: Project Construction Effects on Protected Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		measures. • Require use of the appropriate chemical formulations for vegetation management. Glyphosate Roundup will only be used in the uplands and outside of watercourses and riparian areas. Glyphosate Rodeo will be used for aquatic weed control. Use of herbicides shall consider occupied monarch butterfly habitat, with special consideration of occupied host plants (e.g., milkweed) consistent with provisions set forth in the Annual Vegetation Control Plan and RRP.								
BIO-MM#56	Conduct Monitoring of Construction Activities	During any initial ground-disturbing activity, the Project Biologist will be present in the work area to verify compliance with avoidance and minimization measures, to establish ESAs, and install wildlife exclusion fencing and construction exclusionary fencing. Following completion of initial ground-disturbing activities, the Project Biologist will visit the project construction site(s) once per week or once every 2 weeks, depending on the Project Biologist's assessment of the level of disturbance, to verify compliance with mitigation measures.	Construction	Monitoring/ Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Project biologist will be present in work area to verify compliance with avoidance and minimization measures	Condition of construction contract/condition of regulatory permits	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat. Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources. Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq. Impact BIO#12: Project Construction Effects on Protected Trees.
BIO-MM#58	Establish Environmentally Sensitive Areas and Nondisturbance Zones	Prior to any ground-disturbing activity in a work area, the Project Biologist will use flagging to mark ESAs that support special-status species or aquatic resources and are subject to seasonal restrictions or other avoidance and minimization measures. The Project Biologist will also direct the installation of wildlife exclusion fencing to prevent special-status wildlife species from entering work areas. The wildlife exclusion fencing will have exit doors to allow animals that may be inside an enclosed area to leave the area. The Project Biologist will also direct the installation of construction	Pre-construction/ Construction	Identify and establish ESAs, WEF, and construction exclusionary fencing/	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Demarcate ESAs and no-work areas	Condition of construction contract/condition of regulatory permits	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat. Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		exclusionary fencing at the boundary of the work area, as appropriate, to avoid and minimize impacts on special-status species or aquatic resources outside of the work area during the construction period. The ESAs, wildlife exclusion fencing, and construction exclusionary fencing will be delineated by the Project Biologist based on the results of habitat mapping or modeling and any preconstruction surveys, and in coordination with the Authority. The ESA, wildlife exclusion fencing, and construction exclusionary fencing will be regularly inspected and maintained by the Project Biologist. The ESA, wildlife exclusion fencing, and construction exclusionary fencing locations will be identified and depicted on an exclusion fencing exhibit. The purpose of the ESAs and wildlife exclusion fencing will be explained at WEAP training and the locations of the ESA and wildlife exclusion fencing areas will be noted during worker tailgate sessions.								Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources. Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq. Impact BIO#12: Project Construction Effects on Protected Impact BIO#13: Project Effects on Wildlife Movement Corridors.
BIO-MM#60	Limit Vehicle Traffic and Construction Site Speeds	Prior to any ground-disturbing activities, the Project Biologist will ensure that appropriate measures have been instituted to restrict project vehicle traffic within the construction footprint to established roads, construction areas, and other permissible areas. The Project Biologist will establish vehicle speed limits of no more than 15 miles per hour for unimproved access roads and for temporary and permanent construction areas within the construction footprint. The Project Biologist will also direct that access routes be flagged and marked and that measures be adopted to prevent off-road vehicle traffic.	Pre-construction/ Construction	Monitoring/ Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Establish and demarcate vehicle access routes and speed limits/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat. Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat. Impact BIO#13: Project Effects on Wildlife Movement Corridors.
BIO-MM#61	Establish and Implement a Compliance Reporting Program	The Project Biologist will prepare monthly and annual reports documenting compliance with all IAMFs, mitigation measures, and requirements set forth in regulatory agency authorizations. The Authority will review and approve all compliance reports prior to submittal to the regulatory agencies. Reports will be prepared in compliance with the content requirements outlined in the regulatory agency authorizations. Pre-activity survey reports will be submitted within 15 days of completing the surveys and will include: • Location(s) of where pre-activity	Pre-construction/ Construction	Monitoring/ Reporting	Monthly and annually	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Establish and implement compliance reporting program/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat. Impact BIO#6: Project Construction

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		surveys were completed, including latitude and longitude, Assessor Parcel Number, and HSR parcel number • Written description of the surveyed area. A figure of each surveyed location will be provided that depicts the surveyed area and survey buffers over an aerial image • Date, time, and weather conditions observed at each location • Personnel who conducted the pre-activity surveys • Verification of the accuracy of the Authority's habitat mapping at each location, provided in writing and on a figure • Observations made during the survey, including the type and locations (written and GIS) of any sensitive resources detected • Identification of relevant measures from the BRMP to be implemented as a result of the survey observations Daily Compliance Reports will be submitted to the Authority via Environmental Mitigation Management and Assessment or similar submittal method within 24 hours of each monitoring day. Noncompliance events will be reported to the Authority the day of the occurrence. Daily Compliance Reports will include: • Date, time, and weather conditions observed at each location where monitoring occurred • Personnel who conducted compliance monitoring • Project activities monitored, including construction equipment in use • Compliance conditions implemented successfully • Noncompliance events observed Daily compliance reports will also be included in the Monthly Compliance Reports, which will be submitted to the Authority by the tenth of each month and will include: • Summary of construction activities and locations during the reporting month, including any noncompliance events and their resolution, work stoppages, and take of threatened or endangered								Effects on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat.

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		species.
		• Summary of anticipated project activities and work areas for the upcoming month.
		• Tracking of impacts on suitable habitats for each threatened and endangered species identified in USFWS and CDFW authorizations, including:
		  ○ An accounting of the number of acres of habitats for which the Authority provides compensatory mitigation that has been disturbed during the reporting month.
		  ○ An accounting of the cumulative total number of acres of threatened and endangered species habitat that has been disturbed during the project period.
		• Up-to-date GIS layers, associated metadata, and photo documentation used to track acreages disturbed.
		• Copies of all pre-activity survey reports, daily compliance reports, and noncompliance/work stoppage reports for the reporting month.
		Annual Reports will be submitted to the Authority by the January 20 and will include:
		• Summary of all Monthly Compliance Reports for the reporting year.
		• A general description of the status of the Palmdale to Burbank Project Section, including projected completion dates.
		• All available information about project-related incidental take of threatened and endangered species.
		• Information about other project impacts on the threatened and endangered species.
		• A summary of findings from preconstruction surveys (e.g., number of times a threatened or endangered species or a den, burrow, or nest was encountered; location; whether avoidance was achieved; if not, what other measures were implemented).
		• Written description of disturbances to threatened and endangered species habitat within work areas, both for the preceding 12 months and in total since issuance of regulatory authorizations by USFWS and CDFW, and updated maps of all land disturbances and updated maps of identified habitat features suitable for threatened and endangered species within								

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		the RSA. In addition to the compliance reporting requirements outlined above, the following items will be provided for compliance documentation purposes: • If agency personnel visit the construction footprint in accordance with BIO-IAMF#2, the Project Biologist will prepare a memorandum within1 day of the visit that memorializes the issues raised during the field meeting. This memorandum will be submitted to the Authority via Environmental Mitigation Management and Assessment. Any issues regarding regulatory compliance raised by agency personnel will be reported to the Authority and the contractor. • Compliance reporting will be submitted to the Authority via Environmental Mitigation Management and Assessment in accordance with the report schedule. The Project Biologist will prepare and submit compliance reports that document the following: ○ Implementation and performance of the RRP described in BIO-MM#6 ○ Summary of progress made regarding the implementation of the WCP described in BIO-MM#55 ○ Compliance with work window restrictions described in BIO-IAMF#10 ○ Compliance with BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones and Install Wildlife Exclusion Fencing ○ Compliance with BIO-IAMF#6: Establish Monofilament Restrictions ○ Compliance with BIO-IAMF#7: Prevent Entrapment in Construction Materials and Excavations ○ Compliance with BIO-IAMF#8: Delineate Equipment Staging Areas ○ Compliance with BIO-IAMF#10: Clean Construction Equipment ○ Compliance with BIO-MM#60: Limit Vehicle Traffic and Construction Site Speed ○ Compliance with BIO-IAMF#12: Design the Project to be Bird Safe ○ Compliance with BIO-IAMF#9:							

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		Dispose of Construction Spoils and Waste ○ BMP field manual implementation and any recommended changes to construction site housekeeping practices outlined in BIO-IAMF#11: Maintain Construction Sites • Work stoppages and measures taken under BIO-MM#63: Work Stoppage will be documented in a memorandum prepared by the Project Biologist and submitted to the Authority within 2 business days of the work stoppage.								
BIO-MM#62	Prepare Plan for Dewatering and Water Diversions	Prior to initiating any construction activity that occurs within open or flowing water, the Authority will prepare a dewatering plan, which will be subject to review and approval by the applicable regulatory agencies. The plan will incorporate measures to minimize turbidity and siltation. The Project Biologist will monitor the dewatering and/or water diversion sites, including collection of water quality data, as applicable. Prior to the dewatering or diverting of water from a site, the Project Biologist shall conduct pre-activity surveys to determine the presence or absence of special-status species within the affected waterbody. In the event that special-status species are detected during pre-activity surveys, the Project Biologist will relocate the species (unless the species is fully protected under state law), consistent with any regulatory authorizations applicable to the species. A Fish Salvage and Relocation Plan shall be prepared as part of the project dewatering plan and will be submitted to CDFW and USFWS for review and approval. Fish species will be excluded from dewatering areas using 1/8-inch block nets, or other physical barriers. Any fish found within the project work area after block nets have been installed will be salvaged and relocated to an area outside the work area and out of harm's way, such as upstream to reduce the chance of re-netting or to another water body, depending on species and location, consistent with regulatory requirements. Salvage and relocation methods will be outlined in the Fish Salvage and Relocation Plan and will be performed using commonly approved and safe methods, such as daily net monitoring with all trapped fish relocated	Pre-construction/ Construction	Design/Final design/Monitoring/ Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Prepare and implement dewatering and waste diversion plan/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources. Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		upstream or to other water bodies to reduce re-trapping. If relocation is required, fish will be relocated using transport tanks with oxygen delivery designed to reduce stress. The Authority shall continue to consult with resource agencies during final design and construction of the project to ensure an approved approach to fish salvage and relocation.								
BIO-MM#63	Work Stoppage	In the event that any special-status wildlife species is found in a work area, the Project Biologist will have the authority to halt work to prevent death or injury of the species. Any such work stoppage will be limited to the area necessary to protect the species. Work may be resumed once the Project Biologist determines that the individuals of the species have moved out of harm's way, or the Project Biologist has relocated them out of the work area (relocation not applicable to fully protected species). Any such work stoppages and the measures taken to facilitate the removal of the species, if any, will be documented in a memorandum prepared by the Project Biologist and submitted to the Authority within 2 business days of the work stoppage.	Construction	Monitoring/ Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Halt work to relocate special- status wildlife species (if possible)/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat. Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat.
BIO-MM#64	Establish Wildlife Crossings	The Authority will create two dedicated wildlife crossings across the alignment to accommodate wildlife movement under permanently fenced infrastructure at the following locations. One dedicated wildlife crossing will be constructed south of the California Aqueduct and the other will be constructed east of Una Lake. Approximate locations are noted below in this measure. Prior to final construction design, the Project Biologist shall confirm appropriate placement and dimensions of wildlife crossings. • SR14A Build Alternative • Near East Barrel Springs Road (east of Una Lake) • South of the Soledad Siphon (south of the California Aqueduct) • E1A Build Alternative • Near East Barrel Springs Road (east of Una Lake) • E1 Build Alternative • At milepost 5.5, south of the California Aqueduct	Pre-construction/ Construction	Design/final design/monitoring/reporting	Prior to construction	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Establish wildlife crossings/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#13: Project Effects on Wildlife Movement Corridors.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		• E2A Build Alternative • Near East Barrel Springs Road (east of Una Lake) • South of the Soledad Siphon (south of the California Aqueduct) • E2 Build Alternative • At milepost 5.5, south of the California Aqueduct For terrestrial wildlife, crossings will conform to the minimum spacing and dimensions discussed in the Palmdale to Burbank Project Section: Wildlife Corridor Assessment Report (Authority 2019c) unless different dimensions are specified in authorizations issued under FESA or CESA. All wildlife crossings would include the following features: native earthen bottom, unobstructed entrances, and openness factor of at least 0.41 and line-of-sight. To the extent feasible, all wildlife crossings created specifically for terrestrial species will include the following features and design considerations: • Ledges or tunnels incorporated into the design to facilitate safe passage of small mammals. • Year-round absence of water for a portion of the width of the crossing (i.e., no flowing water). • Slight grade at approaches to prevent flooding. • Limited open space between crossing and cover/habitat. • Separation from human use areas (e.g., trails, multi-use undercrossings). • Avoidance of artificial light at approaches to wildlife crossings. • Undercrossings intended to be used by large mammals (i.e., mule deer) within the mule deer species range will have a 10-foot-tall concrete arch to accommodate the mammals' larger stature. • Any culvert intended to function as an undercrossing for carnivores and small animals will be no smaller than a 6-foot-wide arch culvert for lengths up to 200 feet, or an 8-foot-wide arch culvert for lengths up to 300 feet. The substrate will be natural soil of the								

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		surrounding area, and the grade would not exceed 2 percent. Culverts longer than 200 feet will not be considered wildlife crossing structures. If any portion of the bottom of the wildlife undercrossing is likely to be inundated longer than 24 hours at least once per year, the structure would have a dry ledge. Ledges or tunnels and cover features to prevent predation will also be incorporated into the design to facilitate safe passage of small wildlife. The structure will be straight enough that a mammal entering the culvert can see the other end of the culvert. • Slope within the crossing structure will be consistent with the natural (preconstruction) grade (optimally less than 2 percent). Slopes that follow natural grades greater than 2 percent are acceptable in bridged undercrossings (viaducts). In addition, the Authority will incorporate features to accommodate wildlife movement into the design of bridges and culverts that are replaced or modified as part of project construction, wherever feasible. The Project Biologist review of final construction design for consistency with placement and dimensions of wildlife crossings will be verified in a memorandum provided to the Authority. Such features will include the Authority's commitment to build noise barriers to enhance the effectiveness of wildlife crossings and minimize the risk of mammals' exposure to HSR train noise. Structures will also be designed to be integrated into the visual environment. The structures will be constructed to be completed before HSR train operations begin. [If accurate noise measurements cannot be obtained before train operations, construction of the structures will be commenced no later than 3 years after the start of HSR train operations, after consideration of analysis from adaptive monitoring and management.] The noise/visual barriers will be sited to minimize the risk of deterrence on dedicated wildlife crossings important to wildlife. The extent that noise barriers will extend beyond the wildlife crossing junction shall								

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		be determined by noise measurement analysis undertaken during the design phase of the wildlife crossings or during the adaptive monitoring and management phase. Barriers shall extend to a distance such that train noise measurements at the wildlife crossings do not exceed 90 dBA. If, at the time of noise measurement, existing or adjacent noise unrelated to HSR trains already exceed 90 dBA, then the Authority may consider these factors in determining the effectiveness of constructing barriers. Length-of-barrier specifications are intended to ensure that the barrier creates a zone of minimized noise, extending several hundred feet from the alignment, that will serve as an attraction cue for animals using sound to locate the crossing locations. (Refer to 2021 Supplemental Noise Analysis on Terrestrial Wildlife Species for the San Jose to Merced Project Section, citing Manci, K. M., D. N. Gladwin, R. Villella, and M. G. Cavendish. 1988. Effects of Aircraft Noise and Sonic Booms on Domestic Animals and Wildlife: A Literature Synthesis. U.S. Fish and Wildlife Service National Ecology Research Center, Fort Collins, CO.). The Authority will consult with CDFW, USFWS, the owner(s) of private properties where noise/visual barriers will be placed, and appropriate local wildlife movement stakeholders as part of final design of noise barriers. Finally, to ensure the effectiveness of the wildlife crossing structures and complementary noise attenuation features, the Authority will monitor and adaptively manage the dedicated wildlife crossings. Monitoring will entail using camera stations or other remote-sensing equipment to document use and passage rates. Monitoring will start no less than 2 years following construction (to allow time for habituation), and total monitoring will not exceed 5 years following construction. Adaptive management may include modifications to design features, such as installation of sound barriers and changes to cover and substrate; use of new technologies to attract animals to the crossing, or other measures that may be determined to be feasible in the future.							
BIO-MM#65	Conduct Preconstruction Surveys and	At least1 year prior to the start of any ground-disturbing activities and construction, the Project Biologist shall	Pre-construction/ Construction	Surveying/monitoring/reporting	Prior to ground-disturbing activities or as established	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Pre-construction nesting surveys for eagles/report	Condition of construction contract/condition	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
	Monitoring for Bald and Golden Eagles	conduct nesting season surveys for eagles. Surveys for bald and golden eagle nests will be conducted within 4 miles of any construction areas supporting suitable nesting habitat and important eagle roost sites and foraging areas. Surveys will be conducted in accordance with the USFWS Interim Golden Eagle Inventory and Monitoring Protocols (USFWS 2010), and CDFW's Bald Eagle Breeding Survey Instructions (CDFW 2017b), or current guidance. A nesting territory or inventoried habitat will be considered unoccupied by golden eagles only after completing at least two full surveys in a single breeding season. Prior to initial construction activities, the Project Biologist shall conduct a preconstruction sweep of the Palmdale to Burbank Project Section site for golden eagle use.			by regulatory compliance agencies			findings	of regulatory permits	
BIO-MM#66	Implement Avoidance Measures for Active Eagle Nests	Prior to the start of any ground-disturbing activity, if an occupied nest is detected within 4 miles of the work areas, the Authority shall implement a 1-mile line-of-sight and 0.5-mile no-line-of-sight exclusion zone (i.e., no-work buffer) and a vertical exclusion zone of no less than 0.5 mile during the breeding season (January 1 through August 31) to ensure that construction activities do not result in injury or disturbance to eagles. Construction activities will not be permitted within the no-work buffer. The no-work buffer will be maintained and nests will be monitored throughout the breeding season or until the young have fledged and are no longer dependent on the nest or parental care that includes nest use for survival. Factors to be considered for determining buffer size will include: the presence of natural buffers provided by vegetation or topography, nest height, locations of foraging territory, and baseline levels of noise and human activity. Eagle nest no-work buffers may be reduced or removed if monitoring reveals the nest to be inactive as determined by the Project Biologist. An inactive eagle nest is1 that is "no longer being used by eagles, as determined by the continuing absence of any adult, egg, or dependent young at the nest for at least 10 consecutive days prior to, and including, the present" (USFWS 2016). Monitoring to demonstrate inactivity	Pre-construction/ Construction	Surveying/ Monitoring/ Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Implement and maintain no line of-sight no-work buffer during the breeding season/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		of eagle nests will follow observational procedures described by Pagel et al. (2010). In bald and golden eagle nesting territories, the Project Biologist will examine debris piles and determine whether there is a potential to attract prey species. If the Project Biologist determines that debris piles may attract prey species and pose a danger to eagles, the debris piles will be removed. This mitigation measure is anticipated to be effective because it would restrict construction activities in areas within 0.5 mile of active golden eagle nests and provides specific measures for keeping the work area free of materials that would attract or harm the golden eagle. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those described in the Final EIR/EIS.								
BIO-MM#67	Provide Compensatory Mitigation for Loss of Eagle Nests	If preconstruction surveys identify active eagle nests in the permanent impact area, the Authority, in consultation with USFWS and CDFW, shall develop a plan to minimize nest impacts, or for relocation or replacement plan for the affected nest(s), as permitted. The plan will describe if there is no practicable alternative to avoid impacts to nests, how impacts will be minimized, and/or why nest removal will be required in order to enable project construction. Any impact minimization measures, or relocation or replacement of eagle nests will be in accordance with the Bald and Golden Eagle Protection Act (BGEPA) and CFGC, and will be subject to the following minimum requirements: • Impacts to active golden eagle nests will be avoided. • Active bald eagle nests and/or inactive golden eagle nests will be relocated, or a suitable nest will be provided, within the same territory as a viable nesting option for the affected eagle pair. • Post-construction monitoring to confirm continued nesting within the affected nesting territory will occur for a minimum of 3 years. • In the event relocated eagles fail to resume nesting or establish a new nest away from the impact area, adaptive compensatory mitigation mechanisms	Pre-construction/ Construction/Post-construction	Design/final design/surveying/monitoring/compensatory mitigation/reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Compensatory mitigation that replaces eagle nests/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		outlined in the permit obtained from USFWS for nest relocation will be implemented. Adaptive compensatory mitigation mechanisms may include conservation banking, in-lieu fees, and other third-party mitigation projects or arrangements in the event of unsuccessful nest relocation.								
BIO-MM#68	Avoid Impacts on White-tailed Kite	If construction activities are scheduled to occur between February 1 and August 31, the Project Biologist shall conduct surveys for white-tailed kite. Surveys will cover a minimum of a 0.5-mile radius around the construction area. If nesting white-tailed kites are detected, the Project Biologist will establish a 0.25-mile no-work buffer unless the Project Biologist determines that smaller buffers would be sufficient to avoid impacts. Buffers will be maintained until the Project Biologist has determined that the young have fledged and are no longer reliant on the nest or parental care that includes nest use for survival. Should a no-work buffer reduction be needed, it will be implemented only when in coordination with CDFW.	Pre-construction/ Construction	Surveying/ Monitoring	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Pre-construction surveys for white-tailed kite/establish no-disturbance buffer/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.
BIO-MM#69	Conduct Surveys and Implement Avoidance Measures for Active Tricolored Blackbird Nest Colonies	Prior to initiation of construction at any location within 300 feet of suitable nesting habitat, the Project Biologist with experience surveying for and observing tricolored blackbird will conduct preconstruction surveys to establish use of nesting habitat by tricolored blackbird colonies, where access allows, during the nesting season (March 15 through July 31). If construction is initiated near suitable habitat during the nesting season, three surveys will be conducted within 15 days prior to construction, with1 of the surveys within 5 days prior to the start of construction. If active tricolored blackbird nesting colonies are identified, construction activities will be avoided within 300 feet of the nesting colonies during the breeding season (March 15 through July 31) to the extent practicable and consistent with the CDFW's Staff Guidance Regarding Avoidance of Impacts on Tricolored Blackbird Breeding Colonies on Agricultural Fields (2015). The 300-foot minimum no-work buffer shall remain in place until the breeding season has ended or until a qualified biologist has determined that nesting has ceased, the birds have fledged, and are no longer	Pre-construction/ Construction	Surveying/ Monitoring/	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Pre-construction surveys for white-tailed kite/establish no-disturbance buffer/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		reliant on the colony or parental care for survival. The Project Biologist shall reassess the nesting colony on a reoccurring basis to determine the extent of the breeding colony within 10 days of project initiation. The Project Biologist shall immediately modify the 300-foot no-work buffer to capture the entire colony if the extent increases. In the event that a tricolored blackbird or nesting colony is detected during surveys, the Authority shall consult with CDFW to discuss how to implement the project and avoid take, or if avoidance is not feasible, to acquire an ITP, pursuant to CFGC section 2081(b), prior to any ground-disturbing activities.								
BIO-MM#70	Provide Compensatory Mitigation for Impacts on Tricolored Blackbird Habitat	The Authority will provide compensatory mitigation to offset impacts on tricolored blackbird habitat. Compensatory mitigation will replace permanent loss of habitat with habitat that is commensurate with the type (nesting, roosting, and foraging) and amount of habitat lost. Suitable tricolored blackbird nesting habitat will be permanently protected or restored and managed at a ratio of 3:1 (protected or restored: affected) at a location subject to CDFW approval, and in close proximity to the nearest breeding colony observed within the past 15 years, if possible. Suitable breeding season foraging habitat will be protected and managed at a ratio of 1:1 (protected: affected) at a location subject to CDFW approval. Suitable roosting habitat will be protected or restored at a ratio of 1:1 (protected: affected) if not occupied, and a ratio of 2:1 (protected: affected) if occupied by tricolored blackbirds. Compensatory mitigation will be provided using1 or more of the methods described in the CMP.	Pre-construction/ Construction/Post-construction	Design/ Compensatory mitigation/Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Mitigate permanent tricolored blackbird habitat impacts through compensatory mitigation/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.
BIO-MM#71	Implement California Condor Avoidance Measures During Helicopter Use	Prior to construction-related uses of helicopters, the Project Biologist will coordinate with USFWS and/or CDFW to establish that no California condors are present in the area. If California condors are observed in the area where helicopters will operate, including the helicopter's flight pattern from its origination, during construction use, and the return flight, helicopter use will not be permitted until the Project Biologist has determined that the California condors have left the area. This mitigation measure is anticipated to be	Pre-construction/ Construction	Monitoring/ Reporting	Prior to construction-related uses of helicopters	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Coordinate with USFWS prior to construction-related uses of helicopters/ensure no California condor in helicopter use area/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		effective because it would restrict construction-related helicopter use wherever California condors are present; condor presence is easily detected by observation and routine electronic tracking. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described in the Final EIR/EIS.								
BIO-MM#72	Implement Avoidance of Nighttime Light Disturbance for California Condor	Nighttime light disturbance will be minimized in and adjacent to suitable habitat where California condor may be present. In the event that nighttime lighting is required, it will be focused, shielded, and directed away from adjacent suitable habitat including nighttime roost areas. During nighttime construction, the Project Biologist will be on site to determine whether the lighting poses a risk or otherwise disturbs or harms condors. In the event the Project Biologist observes disturbance to condor during nighttime work, the lighting shall be reduced, or additional shielding shall be provided until no further disturbance to condor is observed. If reduced lighting or additional shielding does not alleviate disturbance to condor, lighting shall be shut off and nighttime work shall be discontinued until condor are no longer present. This mitigation measure is anticipated to be effective because it would require focused, shielded, and directed nighttime light to avoid disturbances to roosting California condors and requires a Project Biologist be on site during nighttime construction. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described in the Final EIR/EIS.	Construction	Monitoring/ Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Nighttime lighting shall be focused, shielded, and directed away from adjacent suitable California condor habitat/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.
BIO-MM#73	Implement Removal of Carrion that may Attract Condors and Eagles	During operation and within California condor foraging areas, automated security monitoring and track inspections will be used to detect fence failures and any presence of carrion within the right-of-way that could be an attractant to condors and eagles. Dead and injured wildlife found in the right-of-way will be removed during construction and during operations when the train is not in operation. The automated security monitoring will occur on a continuous basis and the manual track	Operation	Monitoring/ Reporting	As needed or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Automated security monitoring/remove carrion from right-of-way/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		inspections and carrion removal will occur monthly or more frequently based on automated security alerts and observation reports from HSR operations and maintenance workers (BIO-IAMF#4).								
BIO-MM#74	Implement Bird Nest and Avian Special-Status Species Avoidance Measures for Helicopter-Based Construction Activities	For construction activities involving the use of a helicopter, the buffer for nesting birds will be 200 feet horizontal and 150 feet vertical. Buffers will be measured from the location of the nest. If a nest is located on a tower or a tree, the vertical buffer begins from the nest location. For raptors that are not state or federal special-status raptors the default buffer is 300 feet.	Pre-construction/ Construction	Monitoring/ Reporting	Prior to completion of construction activities	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Maintain helicopter buffer for nesting birds/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.
BIO-MM#76	Implement Wildlife Rescue Measures	During construction, maintenance, and operation if an injured or trapped wildlife species, including but not limited to birds and raptors, is observed, the Project Biologist shall be notified immediately to determine whether it is appropriate to release or take the wildlife species to the nearest CDFW permitted rehabilitation center. The Project Biologist will follow all relevant guidelines for federal and state-listed species. If an injured or trapped bird is incidentally observed during maintenance or construction, personnel will notify the Project Biologist immediately to determine whether it is appropriate to release or take the bird to the nearest CDFW permitted rehabilitation center.	Construction/Post-construction /Operation	Monitoring/ Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Notify CDFW of injured or trapped wildlife species/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat. Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities.
BIO-MM#77	Implement Wildlife Height Requirements for Enhanced Security Fencing	Prior to final construction design the Project Biologist shall review the fencing plans to confirm that security fencing design will prevent access into the right-of-way and tracks by mountain lion. Security fencing height will be increased to a minimum of 10 feet in mountain lion-suitable habitat as identified in the Palmdale to Burbank Project Section: Wildlife Corridor Assessment Report (Authority 2019c) and determined by the Project Biologist. If the fence is placed on a slope, the fence height will be adjusted (increased) to ensure that mountain lion and mule deer cannot jump from an upslope position over the fence; fence height on slopes will be determined by Project Biologist. During the fencing plan review the Project Biologist will evaluate the fence design for the purpose of avoiding harm, injury, entanglement, or entrapment of wildlife species. Prior to operation, the Project Biologist will field inspect the fencing along any portion where increased height was determined to be necessary	Pre-construction/ Construction	Design/Final reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Review and implement fencing plans to prevent access into right-of way and tracks by mountain lion/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#13: Project Effects on Wildlife Movement Corridors.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		during the plan review. Fencing plan review and field inspection shall be documented in a memorandum from the Project Biologist and provided to the Authority.								
BIO-MM#78	Install Wildlife Jump-outs	Prior to final construction design the Project Biologist shall review the fencing plans for placement of wildlife jump-outs. In areas with documented ungulate or other large mammal movement, where terrain or project design (e.g., at-grade crossings) could allow these large animals to enter the ROW, features to reduce access (e.g., taller fencing or wildlife barriers at crossings) or features to allow large animals to escape from the fenced right-of-way (e.g., wildlife jump-outs or escape ramps) will be incorporated into the Palmdale to Burbank Project Section at these locations. Specific locations of these features will be based on the behavior of target species (e.g., mule deer, mountain lion, black bear), adjacent habitat and terrain, and other design constraints as determined by the Project Biologist and Project Engineer. Prior to operation, the Project Biologist will field inspect the fencing for appropriate placement of jump-outs as determined to be necessary during the plan review. Fencing plan review and field inspection shall be documented in a memorandum from the Project Biologist and provided to the Authority.	Pre-construction/ Construction	Design/Final design/Monitoring/ Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Review the fencing plans for placement of wildlife jump-outs/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#13: Project Effects on Wildlife Movement Corridors.
BIO-MM#79	Conduct Surveys for Coastal California Gnatcatcher	To the extent feasible, construction activities that include vegetation removal, earthmoving, or use of heavy construction equipment and that are within 300 feet of suitable coastal California gnatcatcher habitat shall take place between September 1 and February 14, outside of the nesting season. Where construction activities will occur within 300 feet of coastal California gnatcatcher habitat during the nesting season (February 15–August 31), the Project Biologist will conduct protocol surveys to determine whether there are any active coastal California gnatcatcher nests within 300 feet of the Palmdale to Burbank Project Section. The surveys shall be conducted in accordance with the daily timing and weather requirements of the USFWS Coastal California Gnatcatcher (*Polioptila californica californica*) Presence/Absence Survey Guideline (February 1997). From March 15 through June 30, a minimum of six surveys shall be	Pre-construction/ Construction	Monitoring/ Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Pre-construction surveys for Coastal California Gnatcatcher	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		conducted at least1 week apart. From July 1 through March 14, a minimum of nine surveys shall be conducted at least 2 weeks apart. The biologist will then conduct bi-monthly surveys (every 2 weeks) while construction activities occur within 300 feet of suitable nesting habitat during the nesting season. If a coastal California gnatcatcher nest is discovered within 300 feet of construction activities, construction activities within 300 feet of the nest will be suspended until the Project Biologist determines that the nest is no longer active. If establishment of a 300-foot buffer is not feasible, a reduced buffer could be implemented following coordination with USFWS should existing conditions warrant a reduced buffer.								
BIO-MM#80	Conduct Surveys for Least Bell's Vireo	To the extent feasible, construction activities that include vegetation removal, earthmoving, or use of heavy construction equipment that occur within 300 feet of suitable least Bell's vireo habitat shall occur between September 16 and March 14, outside of the nesting season. Where construction activities will occur within 300 feet of least Bell's vireo habitat during the nesting season (March 15–September 15), the Project Biologist shall conduct protocol surveys to determine whether there are any active least Bell's vireo nests within 300 feet of the Palmdale to Burbank Project Section. The surveys shall be conducted in accordance with the daily timing and weather requirements of the USFWS Least Bell's Vireo Survey Guidelines, January 2001 (USFWS 2001). From April 10 through July 31, a minimum of eight surveys shall be conducted. The biologist will then conduct bi-monthly surveys (every 2 weeks) while construction activities occur within 300 feet of suitable nesting habitat during the nesting season. If a least Bell's vireo nest is discovered within 300 feet of construction activities, suspension of construction activities within 300 feet of the nest will occur until the Project Biologist determines that the nest is no longer active. If establishment of a 300-foot buffer is not feasible, a reduced buffer could be implemented following consultation with USFWS, should existing conditions warrant a reduced buffer.	Pre-construction	Monitoring/ Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Protocol surveys of Least Bell's Vireo habitat/establish, and maintain no-work buffer/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.
BIO-MM#81	Conduct Surveys for Southwestern Willow	To the extent feasible, construction activities that include vegetation removal,	Pre-construction/ Construction	Monitoring/ Reporting	Weekly or as established by	Authority/ Contractor/ Project	Authority/ Contractor/ Project	Protocol surveys of Southwestern	Condition of construction	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
	Flycatcher	earthmoving, or use of heavy construction equipment that occur within 300 feet of suitable southwestern willow flycatcher habitat shall occur between September 16 and March 14, outside of the nesting season. Where construction activities will occur within 300 feet of southwestern willow flycatcher habitat, during the nesting season (March 15–September 15), the Project Biologist shall conduct protocol surveys to determine whether there are any active southwestern willow flycatcher nests within 300 feet of the Palmdale to Burbank Project Section. The surveys will be conducted in accordance with the daily timing and weather requirements of U.S. Geological Survey's A Natural History Summary and Survey Protocol for the southwestern Willow Flycatcher, 2010: a minimum of1 survey between May 15 and May 31, a minimum of1 survey between June 1 and June 24, a minimum of1 survey between June 24 and July 17, and additional follow-up surveys at sites where territorial southwestern willow flycatchers are verified or suspected. The biologist will then conduct bi-monthly surveys (every 2 weeks) while construction activities occur within 300 feet of suitable nesting habitat during the nesting season. If a southwestern willow flycatcher nest is discovered within 300 feet of construction activities, suspension of construction activities within 300 feet of the nest will occur until the Project Biologist determines that the nest is no longer active. If establishment of a 300-foot buffer is not feasible, a reduced buffer could be implemented following consultation with USFWS, should existing conditions warrant a reduced buffer.			regulatory compliance agencies	Biologist	Biologist	Willow Flycatcher habitat/establish, and maintain no-work buffer/report findings	contract/condition of regulatory permits	
BIO-MM#82	Conduct Surveys for Western Yellow-billed Cuckoo	To the extent feasible, construction activities that include vegetation removal, earthmoving, or use of heavy construction equipment that occur within 300 feet of suitable western yellow-billed cuckoo habitat shall occur between September 16 and May 14, outside of the nesting season. Where construction activities will occur within 300 feet of western yellow-billed cuckoo habitat, during the nesting season (May 15–September 15), the Project Biologist shall conduct protocol surveys to determine whether there are any active western yellow-billed cuckoo nests within	Pre-construction/ Construction	Monitoring/ Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Protocol surveys of Western Yellow-billed Cuckoo habitat/establish, and maintain no-work buffer/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		300 feet of the Palmdale to Burbank Project Section. The surveys would be conducted in accordance with the daily timing and weather requirements of A Natural History Summary and Survey Protocol for the Western Distinct Population Segment of the Yellow-billed Cuckoo (USFWS 2016): a minimum of1 survey from June 15 to July 1 and from July 1 to July 31, and a minimum of two surveys from July 31 to August 15. A minimum of 12 days and a maximum of 15 days between surveys are required. The biologist would then conduct bi-monthly surveys (every 2 weeks) while construction activities occur within 300 feet of suitable nesting habitat during the nesting season. If a western yellow-billed cuckoo nest is discovered within 300 feet of construction activities, suspension of construction activities within 300 feet of the nest would occur until the Project Biologist determines that the nest is no longer active. A reduced buffer could be implemented following consultation with USFWS and CDFW, should existing conditions warrant a reduced buffer.								
BIO-MM#83	Measures Intended to Reduce, Avoid, and Minimize Effects on Animal Movement	The Authority recognizes the following measures to minimize rail-kill and facilitate animal movement across rail lines: • Fencing and berms will be used to direct animals toward crossing structures and should avoid blocking entrances to crossing structures. Fencing under viaducts or above tunnel areas should be avoided. Additional evaluation will be required if fencing is required that would restrict wildlife movement under viaducts, above tunnels, or at wildlife crossings to determine appropriate mitigation measures. • Fencing alongside at-grade sections will be designed to exclude wildlife from accessing the rail line, including species that could jump over a fence, such as mountain lion, or species like desert tortoise that could burrow under a fence. • Disturbed areas outside of the fence, including fill slopes along at-grade sections, and the ground below viaducts, will be revegetated with native plants. • Vegetative cover appropriate to the local area will be planted near	Construction/Post-construction	Design/Final design	As established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Measures will be implemented to minimize rail-kill and facilitate animal movement across rail lines	Contract requirements and specifications	Impact BIO#13: Project Effects on Wildlife Movement Corridors.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		entrances to identified wildlife crossing structures to give animals protective cover. Per FRA regulations, vegetation will not be planted inside the HSR fence. • Crossing structures and fences will be regularly inspected and maintained to keep the openings of wildlife crossing structures free of debris or sediment. Any damaged "funnel fencing" will be repaired, and any "hanging lip" created by scouring water flows will be remedied in time to prevent degradation of the structure's functionality.								
BIO-MM#84	Implement Worker Environmental Awareness Program for Unarmored Three-spine Stickleback	Prior to initiation of construction activities in locations where unarmored three-spine stickleback may be present, implement BIO-IAMF#3: Prepare Training Materials and Conduct Construction Period WEAP Training; prior to Operation and Maintenance activities implement BIO-IAMF#4: Operation and Maintenance Period Worker Environmental Awareness Program Training. WEAP training will include site-specific information developed for the restriction of access to the wetted channel of the Santa Clara River, including restrictions on the introduction and handling of concrete or other contaminants, and debris and vegetation disposal. Training will include the repercussions to unarmored three-spine stickleback resulting from contaminants and debris, and access to wetted channel.	Pre-construction	Training program/Reporting	Annual (training)/Monthly (reporting)	Authority/ Contractor	Authority/ Contractor	Prepare a WEAP and implement training for the Unarmored Three-spine Stickleback	WEAP	Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities.
BIO-MM#85	Establish Construction Zones and Environmentally Sensitive Areas for Unarmored Three-spine Stickleback and its Habitat	During temporary and permanent bridge construction, the Authority will implement BIO-IAMF#8: Delineate Equipment Staging Areas and Traffic Routes and BIO-MM#58, Establish Environmentally Sensitive Areas and Nondisturbance Zones, to ensure no work takes place where unarmored three-spine stickleback may be affected. Additional measures include: • Prior to the commencement of construction activities, a qualified biologist will survey the proposed work locations to confirm that the construction zone is outside the wetted channel of the river, that the proposed vibratory pile installation locations are located outside of the 25-year flood zone to the extent feasible, and away	Construction	Establish construction zones	Ongoing during construction	Authority/ Contactor	Authority/ Contactor	Establish Environmentally Sensitive Areas and Nondisturbance Zones to protect unarmored three-spine stickleback	Contract requirements and specifications	Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		from the wetted channel, and that no work takes place where unarmored three-spine stickleback may be affected. • The Project Biologist will be present during all construction and maintenance activities upstream or downstream of the bridge crossing to prevent activities, personnel, and debris from contacting or disturbing the wetted channel of the Santa Clara River. • No construction activities or personnel will occur within 10 feet of or near the edge of the wetted channel that would have potential to destabilize the low flow channel bank. Permanent structures associated with bridge construction will remain outside of the 25-year flood zone and all construction activities associated with bridge construction will be remain a minimum of 10 feet away from wetted channel. • Prior to ground-disturbing activities, a public barrier fence, in the form of low-impact material (e.g., high visibility flagging, chain-link fencing, or similar low-impact material), to the extent feasible and ESA fencing (BIO-MM#58) will be installed between the bridge construction work zone and the ESA area of the wetted channel of the Santa Clara River to prevent access to the wetted channel. The ESA will be installed a minimum of 10 feet from the wetted channel and the public barrier fence approximately 10 feet from the ESA to the extent practicable.							
BIO-MM#86	Santa Clara River Construction and Maintenance Activity Weather-Related and Seasonal Work Restrictions	**Weather-Related Work Restrictions** Prior to scheduling any bridge or bank stabilization concrete pours for construction or maintenance, a clear weather window, defined for this project as a less than 40 percent chance or less of 0.10 inch or greater of precipitation in the next 48 hours as forecasted by National Oceanic and Atmospheric Administration, will be required. If a bridge or bank stabilization-related concrete pour is in progress and an un-forecasted rain event occurs, bridge or bank stabilization-related concrete pours will be suspended. Prior to and during any storm event, a monitor will inspect work sites to ensure sites are secure so that flooding does not	Pre-construction/ Construction	Establish work-zone restrictions	Ongoing during construction	Authority/ Contractor	Authority/ Contractor	Establish requirements and restrictions to protect the Santa Clara River from impacts related-construction activities	Contract requirements and specifications	Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		cause damage to tarps or plug diversion drains or allow construction materials, such as uncured concrete, and debris to flow into the river. **Seasonal Work Restrictions** All permanent bridge pier and structure construction in the Santa Clara River riverbed will be completed during the dry season, defined as June 1 through November 1, and all work will completely avoid the wetted channel during construction and maintenance. All measures implemented during bridge construction will be implemented to avoid accidental contact, spills, or falling debris into the wetted channel. During operations, if the wetted portion of the Santa Clara River shifts in location (for example, in response to a flood event that alters the wetted channel alignment), all maintenance and repair activities will continue to occur outside of the wetted channel.							
BIO-MM#87	Prepare and Implement Spill Prevention and Containment Measures	All fuels and components with hazardous materials or wastes will be handled in accordance with applicable regulations, the SWPPP prepared for HYD-IAMF#3 and HYD-IAMF#4, and the Construction Management Plan prepared for HMW-IAMF#6. These materials will be kept in segregated, secured, and/or secondary containment facilities, as necessary. During concrete pours of the permanent bridge piles and bridge decks or other structures, spill containment will be installed and maintained to prevent uncured concrete releases to the wetted channel of the Santa Clara River or any other natural watercourse. Spill containment may include installation of K-rail barriers at the perimeter of work areas, between work areas and the wetted channel and/or underslung tarps to intercept all potential uncured concrete flows to the Santa Clara River or any other natural watercourse. During bridge construction, no continuous dewatering or drawdown within the shafts will occur. Casing water, if any, will be extracted and disposed at a legal disposal site in an upland location. No other construction dewatering associated with installation of the Santa Clara River crossing or other natural watercourse crossing bridges will occur within the work areas.	Pre-construction/ Construction	Design/Final design	Ongoing during construction	Authority/ Contractor	Authority/ Contractor	Implement spill prevention and containment measures	Contract requirements and specifications	Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		To ensure that water quality is not being affected by bridge and bank stabilization-related concrete pouring activities, the Authority will monitor the water quality at points, upstream, downstream, and immediately adjacent to the construction work zone daily during concrete pouring operations. Key parameters to be monitored are pH and turbidity.								
BIO-MM#88	Implement Construction or Maintenance Activity Debris Prevention Measures	Prior to initiation of construction or maintenance activities on any bridge over a natural water course (e.g., Santa Clara River, Big Tujunga Wash), an underslung tarp, debris platform or equivalent barrier extending at least 10 feet beyond the width of the wetted channel will be deployed beneath the bridge deck to prevent the inadvertent discharge of equipment, chemicals, or debris into the wetted channel. This buffer distance may be updated based on the results of the hydroacoustic analysis described in BIO-MM#89. The Authority will inspect and maintain tarps, debris platform or equivalent barrier to ensure catchments are functioning appropriately.	Pre-construction/ Construction	Design	Prior to initiation of construction or maintenance activities	Authority/ Contractor	Authority/ Contractor	Implementing barriers beneath any bridge over a natural water course for protection	Contract requirements and specifications	Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities.
BIO-MM#89	Implement Construction Measures for Unarmored Three-spine Stickleback Avoidance	During the installation of piles and piers for the bridge, vibratory or oscillating pile driving methods will be used in the Santa Clara River riverbed, outside of the wetted channel, in order to avoid effects to unarmored three-spine stickleback. A hydroacoustic analysis would be prepared prior to installation of piles and piers to avoid hydroacoustic impacts of vibratory or oscillating pile driving methods. Piles and footings associated with temporary structures required to construct the bridge will be installed and removed only by vibratory methods. Piles and footings will be installed and removed at least 10 feet away from the wetted channel at the time of installation or removal. The hydroacoustic study will also confirm if a 10-foot buffer distance is adequate to avoid effects to unarmored three-spine stickleback. This buffer distance may be updated based on the results of the hydroacoustic analysis. Construction activities in areas susceptible to winter flood flows will be conducted from May 1 through November 30, when winter flood flows do not occur in the Santa Clara River. Other construction activities in areas	Construction	Design	Weekly or as established by regulatory compliance agencies	Authority/ Contractor	Authority/ Contractor	Implement construction measures for unarmored three-spine stickleback	Contract requirements and specifications	Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		not at risk of flood flows may be constructed year-round. Vegetation management will be limited to trimming existing riparian vegetation outside the wetted channel. Woody debris generated by vegetation management activities will be prevented from contacting the wetted channel, either by hand or by deploying physical restraints or netting.								
BIO-MM#90	Prepare a Construction Groundwater Dewatering Plan	The Authority will prepare a Construction Groundwater Dewatering Plan for areas in close proximity to stream flow to ensure that any dewatering is conducted in a manner that does not affect river flow. Dewatering will be implemented in a manner that: (1) does not create temporary wetted channel habitat suitable for unarmored three-spine stickleback; (2) does not diminish existing river flow, and therefore does not result in stranding of unarmored three-spine stickleback or other fish; and (3) does not introduce pollutants to surface waters. The plan will include, but not be limited to: • No direct removal of surface water from or to the Santa Clara River or activities that may result in stranding of unarmored three-spine stickleback. • Groundwater discharges will be directed to appropriate legal disposal sites in an upland area that cannot flow into the Santa Clara River or other drainages along the Palmdale to Burbank Project Section alignment to avoid changing the river's flow and water quality. • The Authority will monitor daily surface water elevations upstream, adjacent to, and downstream of the extraction points, to assess any critical flow regimes susceptible to excessive draw down before, during, and after groundwater dewatering activities. • The biological monitor will have the authority to halt dewatering activities if water levels decrease in the wetted portion of the Santa Clara River where unarmored three-spine stickleback are present.	Pre-construction/ Construction	Final design/ Monitoring/ Reporting	Weekly	Authority/ Contractor	Authority/ Contractor	Prepare Construction Groundwater Dewatering Plan for areas in close proximity to stream flow	Contract requirements and specifications	Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat.
BIO-MM#92	Implement Avoidance Measures During Operations and Maintenance for the Santa Clara River	All maintenance of project facilities on the Santa Clara River and other drainages along the Palmdale to Burbank Project Section alignment will adhere to timing and work area restrictions, specifically: • No maintenance activities or personnel	Construction/Post-construction	Monitoring/ Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor	Authority/ Contractor	Implement timing and work area restrictions for all maintenance of project facilities on the Santa Clara	Contract requirements and specifications	Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		will occur within 10 feet of or near the edge of the wetted channel. This buffer distance may be updated based on the results of the hydroacoustic analysis described in BIO-MM#89. • Maintenance activities will not take place in the wetted channel of the Santa Clara River or other drainages along the Palmdale to Burbank Project Section alignment. • Repair, or replacement of bridge structures requiring access to the 25-year flood zone of the riverbed will be restricted to the period from June 1 to September 30, except in the case of an emergency. Any dewatering necessary during maintenance activities will not create a risk of fish stranding, either through draw down (zone of influence) or by flow discharge creating temporary habitat suitable for federally listed fish, nor will it involve direct removal of surface water from, or discharge to, the wetted channel of the Santa Clara River or other drainages along the Palmdale to Burbank Project Section alignment. Maintenance activities will implement additional conservation measures, BIO-MM#84 through BIO-MM#90, as applicable to the activity.						River and other drainages along the Project Section alignment		
BIO-MM#93	Adaptive Management Plan for Groundwater Effects on Species and Habitat	To avoid, minimize and mitigate for impacts on seeps, springs, streams, riparian vegetation, and special-status plant and wildlife species, the Authority will prepare and implement an AMMP prior to, during, and after tunnel construction to implement the requirements described under HYD-MM#4 and as described below concerning biological resources. The purpose of the AMMP relative to biological resources is to monitor groundwater-dependent biological resources within the tunnel construction RSA to detect and remediate adverse effects on habitat function in a timely manner. Implementation of the AMMP will provide information and data to identify hydrological and biological effects that may arise during tunnel construction, if any, and trigger actions to offset any such impacts. The AMMP will include the following components, at a minimum, to avoid or minimize and address impacts on habitat	Pre-construction/ Construction/Cost-construction	Prepare Plan/Reporting/ Monitoring	Monthly	Authority/ Contractor	Authority/ Contractor/ Project Biologist	Prepare and implement an AMMP prior to, during, and after tunnel construction	Condition of construction contract/condition of regulatory permits	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources. Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		for special-status species, and aquatic resources: **Baseline inventory—**The Authority will establish baseline hydrologic conditions within the tunnel construction RSA. Baseline surveys will characterize potential aquatic resources, including but not limited to mapping of wetland and riparian vegetation; hydroperiod (the duration of inundation); flow rates; area of feature; and the potential for special-status plant and fish and wildlife species to occur. **Construction monitoring—**The Authority will designate monitoring locations and methodologies for monitoring water levels, vegetation cover, and special-status species habitat most likely to be affected by tunnel construction. The Authority will monitor representative locations during periods when effects are most likely to occur. If effects (e.g., lowering water levels resulting in reduced habitat) are observed, the Authority will implement contingency plans that expand monitoring beyond the representative locations and increase monitoring frequency to capture the extent of effects on groundwater-dependent biological resources. **Supplemental water—**The Authority will prepare contingency plans to provide supplemental water as necessary to support riparian/aquatic vegetation, wildlife breeding cycles, aquatic wildlife, or protected tree health within the area of predicted effects determined through modeling or monitoring to be potentially affected by groundwater lowering. Any supplemental water used will be sourced locally, to the extent feasible, and will be free of toxins, harmful bacteria or harmful bacterial load, and invasive species. Seasonal variation as documented during the preconstruction baseline monitoring will be considered in establishing the amount of supplemental water. For all features, supplemental water will provide minimum flows and periods of inundation to match baseline conditions. The periods of supplemental water, in general, will likely be in periods of baseflow, which occurs in late spring, summer, and early fall outside of rain periods. For breeding habitats, the Authority will, at a minimum, supplement breeding habitat where necessary to maintain adequate depths for completion of								Section 1600 et seq.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		the reproduction cycle (defined as the time by which juveniles are viable and mobile such that they can feasibly leave the breeding location). However, where breeding habitat is perennial or long-seasonal, then supplemental water will be provided as necessary to maintain the entire wetted period as determined through baseline monitoring. For nonbreeding movement and foraging habitat in creeks and streams, water will be provided to maintain seasonal flow similar to baseline conditions. Water will be provided as needed to sustain habitat conditions up to the point of baseline conditions until the qualified biologist determines it is appropriate to cease its provision. If supplemental water is provided from wells, the effects on water supply and habitat features will be managed to avoid and minimize potential disruption by the selection of well location, depth, flow rate, and the use of alternative supplies. **Contingency plan for supplemental water in areas outside of predicted area of effect**—The Authority will establish contingency procedures to provide supplemental water to springs, seeps, and streams to support riparian/aquatic vegetation, wildlife breeding cycles, and aquatic wildlife outside the area of predicted effects, if warranted by monitoring. **Temporary relocation**—The Authority will relocate aquatic species where unavoidable drying of aquatic breeding habitat would occur and maintaining the habitat with supplemental water is not feasible. The Authority will relocate these species, as allowed by USFWS and CDFW. If holding facilities are used, the Authority will return affected wildlife to affected aquatic areas after recovery of baseline hydrologic conditions. **Post-construction monitoring**—After construction, the Authority will monitor water levels and aquatic resource conditions of affected features twice annually (spring and summer) for at least 5 years or as determined through consultation with USFWS and CDFW. As long as groundwater levels are demonstrated to be recovering, monitoring will continue until baseline conditions return or 10 years, whichever is longer. In the event that								

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		supplementary water is not successful at restoring aquatic resources to baseline conditions in the post-construction period and off-site compensation is triggered, then monitoring may be waived for certain features if it is determined that there is no further utility for monitoring the specific feature. **Post-construction riparian or wetland restoration**—The Authority will restore any lost riparian or wetland vegetation that is not recovering on its own within 1 year of construction and is determined to be the result of tunnel construction through comparison to baseline conditions. Subject to landowner approval, such restoration will occur on site, or at a suitable location nearby if not feasible on site. The Authority will implement restoration of riparian or wetland restoration, as applicable, as defined in mitigation measures BIO-MM#47 and BIO-MM#53. **Compensatory mitigation**—If the Authority determines through direct monitoring or data interpretation that substantial disruption (i.e., loss of 0.5 acre or greater) to habitat supporting special-status species has likely occurred during or after construction and that habitat restoration efforts did not achieve success criteria or that restoration was determined unfeasible, the Authority will provide compensatory mitigation to offset the loss of habitat pursuant to BIO-MM#47 and BIO-MM#53.								
BIO-MM#94	Avoid Direct Impacts on Monarch Butterfly Host Plant	Prior to ground-disturbing activities, a qualified Project Biologist shall survey for monarch butterfly within suitable habitat. The qualified Project Biologist shall also assess potential overwintering habitat (i.e., identify primary roosting trees and other structural components or flora integral to maintaining microclimate conditions) and delineate overwintering habitat following the Xerces Management Guidelines for Monarch Butterfly Overwintering Habitat (Xerces Society 2017). Subsequently, prior to and during the overwintering period (generally mid-September to mid-March), the qualified Project Biologist shall conduct multiple surveys for overwintering monarchs where overwintering habitat has been identified. If overwintering monarchs are present, the Project Biologist shall establish a 100-foot	Pre-construction/ Construction	Surveying/Monitoring/Reporting	Monthly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Pre-construction survey for any monarch butterfly within suitable habitat and maintain exclusion buffer/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		exclusion buffer from all identified overwintering monarchs. Project activities within this exclusion buffer may only start after all overwintering monarchs have departed the overwintering site as determined by the qualified Project Biologist. The Project will follow overwintering habitat management recommendations as provided in the Western Monarch Butterfly Conservation Recommendations (USFWS 2021b). During the breeding and larval foraging periods (generally mid-March to mid-September), and prior to any ground-disturbing activities, the Project Biologist shall survey for larval host plants, including native milkweed species, within suitable habitat areas. If host plants are found, the qualified Project Biologist shall conduct focused surveys for adult monarch butterflies during the peak of the flight period to determine presence/absence. If monarch butterflies are observed in suitable habitat, the Project Biologist shall establish a 50-foot exclusion buffer from all identified host plants to ensure that construction personnel avoid these areas. Project activities within this exclusion buffer may only start after all monarchs have departed as determined by the qualified Project Biologist.								
BIO-MM#95	Provide Compensatory Mitigation for Impacts on Monarch Butterfly Habitat	The Authority shall provide compensatory mitigation at a minimum of 1:1 ratio for impacts to occupied overwintering, breeding, and/or foraging habitat to offset impacts to monarch butterfly populations. Compensatory mitigation options shall include1 or more of the following: • Purchase of credits from an agency-approved conservation bank • Acquisition in fee title of USFWS-approved property • Establishment of a conservation easement over a property with replacement functions and values. Development of an agreement with an appropriate endowment in coordination with a long-term management entity and/or • Payment into an in-lieu fee program. Mitigation for monarch butterfly shall prioritize areas with any future designated	Pre-construction/ Construction	Design/final design/coordination	Monthly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Compensate for impacts to Monarch Butterfly	Condition of design-build contract	Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		critical habitat (if/when the monarch is listed and critical habitat is designated), and with existing monarch butterfly populations and suitable milkweed populations to support breeding. The secondary priority shall be to create suitable habitat in other areas, if feasible (i.e., establish self-sustaining milkweed populations). The ultimate mitigation option, or a combination of options, shall be determined in coordination with USFWS, and may include additional actions to guide management of habitats (e.g., grazing, weed control), monitor populations, and identify methods to establish or re-establish populations, as required.								
BIO-MM#96	Conduct Preconstruction Surveys and Implement Avoidance and Minimization Measures for Mountain Lion Dens	Prior to any ground-disturbing activity, regardless of the time of year, the Project Biologist will conduct preconstruction surveys for known or potential mountain lion dens within suitable habitat located within the work area and within 600 meters of the work area. These surveys will be conducted no less than 14 days and no more than 30 days prior to the start of ground-disturbing activities in a work area. Known and potential mountain lion den types will be defined as follows: • Known den. Any existing natural den or human-made structure that is used or has been used at any time in the past by a mountain lion. Evidence of use may include historical records; past or current radio telemetry or tracking study data; mountain lion sign, such as tracks, scat, and/or prey remains; or other reasonable proof that a given den is being or has been used by a mountain lion. • Potential den. Any thick vegetation, boulder piles, rocky outcrops, or undercut cliffs within the species' range for which available evidence is insufficient to conclude that it is being used or has been used by a mountain lion. Potential dens will include the following characteristics: (1) refuge from predators (coyotes, golden eagles, other mountain lions) or (2) shielding of the litter from heavy rain and hot sun. The Project Biologist will use location-specific survey methods to identify known and potential dens. The survey method will consider topography, vegetation density,	Pre-construction	Monitoring/ Reporting	Weekly	Authority/ Contractor/ Project Biologist	Authority/ Project Biologist	Preconstruction surveys for known or potential mountain lion dens within suitable habitat located within the work area	Condition of construction contract/condition of regulatory permits	Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		safety, and other factors. Surveys will be conducted by a qualified biologist (i.e., a biologist with demonstrated experience in mountain lion biology, identification, and survey techniques) and may involve the establishment of camera stations, scent stations, pedestrian surveys (looking for tracks, caches, etc.), or other appropriate methods. Survey methods used will be designed to avoid the disturbance of known or potential dens to the extent feasible If known or potential mountain lion dens are identified or observed during preconstruction surveys, mountain lion dens will be assumed to have kittens present until the Project Biologist can document that they are not present and/or that the den is not being used. A nondisturbance buffer of at least 1,970 feet will be established around the known or potential den until the Project Biologist can document and confirm that the den is not occupied. If the den is determined to be occupied, the 600-meter nondisturbance buffer will be maintained until the den is confirmed abandoned by the Project Biologist. The 600-meter nondisturbance buffer shall remain in place for 2 months after the initial survey and a re-survey at that time shall be conducted by the Project Biologist to determine if the female has abandoned the den and relocated the kittens. The Authority shall consult with CDFW on detection of an active den. Construction may proceed if the Project Biologist determines that a reduced buffer could be implemented because of topography or other factors, or that the den is not being used by mountain lions.								
BIO-MM#97	Provide Compensatory Mitigation for Impacts on Mountain Lion Habitat	The Authority will provide compensatory mitigation for impacts on mountain lion-suitable habitat through the preservation of suitable habitat that is acceptable to CDFW. Habitat will be replaced at a minimum ratio of 2:1 for permanent impacts on breeding/foraging habitat and high-priority foraging and dispersal habitat (CRC, MCH, SGB, CSC, COW, DSW, DSC, AGS, JUN, VRI, LAC), and at a ratio of 1:1 for low-priority foraging and dispersal habitat (BAR, DOR/VIN), unless a higher ratio is required by regulatory authorizations issued under CESA. Compensatory mitigation will be provided using1 or more of the methods described in BIO-MM#53: Prepare and Implement a Compensatory Mitigation Plan	Pre-construction/ Construction/Post-construction	Design/Final design/ Compensatory mitigation/ Reporting	Monthly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Compensatory mitigation for impacts on mountain lion-suitable habitat.	Condition of construction contract/condition of regulatory permits	Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		for Species and Species Habitat and would, where feasible and acceptable to CDFW, contribute to preserving important lands for movement.								
BIO-MM#98	Minimize Permanent Intermittent Impacts on Aerial Species Wildlife Movement	To address the permanent intermittent impact of operations on aerial wildlife movement from train strike and entrapment, the Authority will implement an array of deterrent and diversion features for avian species. These features include the following, which are specified in detail in the Wildlife Corridor Assessment Report (Authority 2019c): • Install pigeon wire or other features to discourage birds from perching on the overhead catenary system (OCS) throughout the project • In selected areas, place flight barriers such as fencing, pole barriers or a tubular screen (Life Impacto Cero 2015) to the height of the OCS to avoid birds flying into the rail alignment and being struck by the train in the following locations: • SR14A Build Alternative in the vicinity of Una Lake • poles (e.g., avoid the use of tubular poles or cap openings in all poles) • Design aerial structures and tunnel portals to discourage bats from roosting in expansion joints, light tunnel entrances, or other crevices.	Design/pre-construction/ Construction/ Post-construction	Design	As established by regulatory compliance agencies	Authority/ Contractor	Authority/ Contractor	Implement deterrent and diversion features to Project to minimize impacts to aviation species	Condition of construction contract/condition of regulatory permits	Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities.
BIO-MM#99	Implement Lighting Minimization Measures During Construction	The Authority will avoid conducting ground-disturbing activities within known wildlife habitat during nighttime hours, to the extent feasible. If nighttime work is necessary, the Authority will minimize impacts on adjacent habitat by: • Conducting nightwork only within the boundaries of previously disturbed, cleared and grubbed areas • Shielding and directing nighttime lighting to avoid illuminating wildlife habitat, including movement corridors • Using the minimum lighting levels approved by Occupational Safety and Health Administration (29 C.F.R. 1926.56) for general construction (i.e., 5 foot-candles or 54 lux) • Minimizing the direction of construction vehicle headlights toward off-site locations and use low beams or turn off headlights when safety considerations permit	Construction	Construction practices/Reporting	As needed	Authority/ Contractor	Authority/ Contractor	Avoid nighttime work to the extent feasible; minimize impacts to wildlife when night work is required.	Condition of construction contract/condition of regulatory permits	Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		• Minimizing the duration of lighting by using remote monitoring systems or other methods to ensure security of the construction site during hours it is not in use.								
BIO-MM#100	Implement Lighting Minimization Measures for Operations	To address the permanent and intermittent impacts from lighting, the Authority will implement measures to minimize the intensity and duration of operational lighting of permanent facilities (e.g., traction power facilities, radio sites, and maintenance facilities), as well as intermittent train lighting as follows: • Outdoor lighting at operational facilities will be consistent with minimum Occupational Safety and Health Administration requirements established by 29 C.F.R. 1926.56 when the facilities are in use. To the extent feasible, the Authority will minimize the duration of lighting at operational facilities by using methods other than lighting (e.g., remote monitoring systems) to ensure security of facilities during nighttime hours they are not in use;. • Nighttime lighting will have shields or cowls (or other device to limit lighting) installed to direct the light downward to reduce the standard luminous intensity distribution curve to contain the light to the boundaries of the project site to the extent practicable. • Train headlights will use the minimum standard allowed by the FRA under 49 C.F.R. 229.125 (a single headlight of at least 200,000 candelas) within non-tunnel portions of the project section.	Post-construction	Reporting	Prior to the commencement of operations	Contractor/Local districts	Contractor	Implement measures to minimize the intensity and duration of operational lighting of permanent facilities and intermittent train lighting	Reporting contract/requirements/specifications	Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities.
BIO-MM#101	Minimize Permanent, Intermittent Noise Impacts on Special-Status Bird Habitat	To address the permanent, intermittent impact of noise on suitable special-status bird habitat, the Authority will build sound barriers to minimize or avoid such impacts in locations where suitable special-status bird habitat would be exposed to 65 A-weighted decibels of permanent intermittent noise impact outside the fenced right-of-way. Sound barriers will be designed with the goal of minimizing exposure to noise produced by HSR trains by providing a 10 A-weighted decibel attenuation of sound generated by HSR operations, as measured 50 feet from the noise barrier. Typically this level of sound attenuation may require a 10- to 17-foot-tall sound barrier. The sound barriers will be constructed before HSR	Post-construction	Reporting	Prior to the commencement of operations	Authority/ Contractor	Authority/ Contractor	Construct sound barriers to minimize or avoid intermittent impact of noise on suitable special-status bird habitat	Reporting contract/requirements/specifications	Impact BIO#13: Project Effects on Wildlife Movement Corridors. Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities. Impact PK#3: Changes to Park, Recreation, and Open Space Resource Character.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		train operations begin. The location, length and height of the barriers will be determined based on detailed noise modeling for areas of suitable special-status bird habitat, and measurement of existing conditions so that the noise-attenuating effects of topography and other existing features can be accounted for during the final design phase.								
BIO-MM#102	Conduct Surveys and Implement Avoidance Measures for Crotch Bumble Bee	Surveys for Crotch bumble bee (*Bombus crotchii*) shall be conducted by qualified Project Biologists in suitable habitat (identified by species habitat suitability modeling) within 1 year prior to the start of construction. Surveys shall be conducted during 4 evenly spaced sampling periods during the flight season (March–September) (Thorp et al. 1983). For each of the 4 sampling events, the Project Biologist shall survey suitable habitat within the project footprint and a 100-foot buffer surrounding the project footprint (where access is allowed), using non-lethal netting methods for 1 person-hour per 3 acres of the highest quality habitat or until 150 bumble bees are sighted, whichever comes first. If initial sampling of a given habitat area indicates that the habitat suitability is of low quality or nonexistent, no further sampling of that area shall be required. General guidelines and best practices for bumble bee surveys shall follow USFWS' Survey Protocols for the Rusty Patched Bumble Bee (*Bombus affinis*) (USFWS 2019), consistent with other bumble bee survey protocols used by The Xerces Society (Hatfield et al. 2020). If surveys conducted within 1 year prior to construction identify occupied Crotch bumble bee habitat within the project footprint or the 100-foot buffer, including within inactive small mammal burrows and thatched/bunch grasses, additional preconstruction surveys of such habitat for active bee nest colonies and associated floral resources (i.e., flowering vegetation on which bees from the colony are observed foraging) within 7 days prior to scheduled disturbance between March and September. The purpose of this preconstruction survey would be to identify active nest colonies and associated floral resources within and adjacent to construction activities to determine areas of avoidance, and if needed, additional actions to address potential impact to Crotch bumble bees. The Project Biologist shall	Pre-construction/ Construction	Surveying/ Monitoring/ Reporting	Weekly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Pre-construction surveys of Crotch bumblebee habitat/ establish, and maintain no-work buffer/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		establish, monitor, and maintain exclusive-work buffers around nest colonies and floral resources identified during preconstruction surveys. The size and configuration of the exclusion buffer would be based on best professional judgment of the qualified Project Biologist. At a minimum, the buffer shall provide at least 50 feet of clearance around nest entrances and maintain disturbance-free airspace between the nest and nearby floral resources. Construction activities shall not occur within the exclusion buffers until the colony is no longer active (i.e., no bees are seen flying in or out of the nest for 3 consecutive days, indicating the colony has completed its nesting season and the next season's queen has dispersed from the colony).							
BIO-MM#103	Provide Compensatory Mitigation for Impacts on Crotch Bumble Bee Habitat	If take or adverse impacts to Crotch bumble bee cannot be avoided during construction or operation of the project, the Authority shall obtain appropriate take authorization from CDFW pursuant to CFGC section 2081 subdivision (b). The Authority shall provide compensatory mitigation for impacts on occupied habitat/floral resources for Crotch bumble bee (confirmed through surveys as described in BIO-MM#102) at a replacement ratio of no less than 1:1, unless a higher ratio is required pursuant to an authorization issued under the California Endangered Species Act. Compensatory mitigation may be implemented through purchase of CDFW-approved bank credits (if available), through preservation of habitat in perpetuity, including suitable habitat currently preserved by the Authority, or through replacement of floral resources as close to their original location as is feasible. Specific to the replacement option, if active Crotch bumble bee nests are identified and floral resources cannot be replaced within 200 meters (approximately 656 feet) of their original location, floral resources shall be planted in the most centrally available location relative to identified nests, no more than 1.5 kilometers (approximately 0.93 mile) from any identified nest. Replaced floral resources may be split into multiple patches to meet distance requirements for multiple nests. These floral resources shall be maintained in perpetuity and replanted/managed as needed to ensure the replacement habitat is preserved. The final mitigation option, or a combination of	Post-construction/ Operation	Design/Final design/ Compensatory mitigation/ Reporting	Monthly or as established by regulatory compliance agencies	Authority/ Contractor/ Project Biologist	Authority/ Contractor/ Project Biologist	Compensate for impacts to habitat for Crotch bumblebee/report findings	Condition of construction contract/condition of regulatory permits	Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		options, will be determined in coordination with CDFW.								
BIO-MM#104	Implement Scour Avoidance Features Around Bridge Piers	Scour and cavity (i.e., depression) formation around the base of bridge piers will be avoided through implementation of design features that prevent erosion by dissipating the energy of the water flowing around the base of piers. The following structural designs will be considered and implemented according to the best design considerations, constructability, and environmental protections at the time of construction of the project: • Vegetated riprap: Biotechnical methods can be used alongside rock or other inert materials to resist hydraulic forces, stabilize the stream system and prevent scour. Such methods can include the use of brush layering and poles, grass and ground cover, willow bundles, or other vegetated features that can resist hydraulic forces, increase geotechnical stability, and prevent soil loss behind the structures. Vegetation can thrive where riprap is constructed to encourage ongoing vegetative growth, and can also function to enhance riparian habitat while also protecting stream banks and bridge piers. • Collars: Collars are metal or concrete structures that are placed around the base of the bridge pier to prevent the erosion of the soil around it. The collars can be designed to create turbulence in the flowing water, which helps to prevent scour. • Varying the bridge pier shape: Design the piers with a cross section hydraulically favorable to the water flow to reduce the generation of the turbulent regime and consequently of the vortices that originate the scour. • Orientation of the bridge piers in a manner that follows the water flow lines, to minimize the bridge's obstruction to flow. This method typically involves minimizing the angle between approach flow and major horizontal axes of pier faces. Scour prevention features will be designed in such a way that no gaps, cracks, crevices, or spaces exist in the feature that might experience micro-scour of otherwise retain water that could strand unarmored	Post-construction	Design/final design	Monthly or as established by regulatory compliance agencies	Authority/ Contractor/	Authority/ Contractor/	Implement design features that prevent erosion by dissipating the energy of the water flowing around the base of piers	Condition of construction contract/condition of regulatory permits	Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		three-spine stickleback as flows recede. Scour prevention features will be solid in structure and will be developed within the existing design footprint of the bridge structures. No additional permanent impact footprint would be required for the scour prevention features.								
BIO-MM#105	BIO-MM#105: Wildlife Movement Working Group on Existing Wildlife Movement Barriers	In recognition of the shared interest of the Authority, federal and state agencies, and multiple non-governmental stakeholders to reduce currently existing barriers to wildlife movement such as SR 14 in the Palmdale to Burbank Project Section, the Authority shall convene a wildlife movement working group (WMWG) with Caltrans and the California Department of Fish and Wildlife (CDFW). Subject to agreement by all WMWG members, this group could be expanded, in later phases, to include representatives from appropriate federal, state, and regional agencies as well as interested non-governmental organization (NGO) stakeholders and state agencies. The first order of work of the WMWG will be development of a charter outlining roles and responsibilities, goals and objectives, and processes to guide the operation of the group. Additionally, as a part of its initial phase, the working group will also seek input from any other interested national, local, or regional stakeholders with an expertise or interest in wildlife movement. The Authority's CEO shall convene and kick-off the WMWG no later than 1 year from issuance of a Record of Decision for the Palmdale to Burbank Project Section. The WMWG may be convened earlier, with consensus from all WMWG members. The Authority will convene the WMWG no less than three times a year. The purpose of the WMWG is to complete a wildlife connectivity study to identify high-use wildlife areas in the Palmdale to Burbank Project Section that can be targeted as potential wildlife connectivity projects and evaluated for feasibility and species benefits, with the goal of prioritizing and selecting biologically and cost-effective projects that facilitate wildlife movement in the Palmdale to Burbank Project Section. In conjunction with working group members, the Authority would contribute its technical expertise, including dedicating staff time,	Design/Pre-construction	Develop WMWG charter; complete wildlife connectivity study	As established by WMWG members	Authority	Authority	Convene WMWG; develop charter, complete study, use study to prioritize cost-effective projects that facilitate wildlife movement in the Palmdale to Burbank Project Section	Authority to provide schedule of initial meeting with agencies and invitations; WMWG member consideration of expanding group, scheduling/invitations to additional appropriate agencies, NGOs; lead development of charter; contribute to wildlife connectivity study	Impact BIO #13: Project Effects on Wildlife Movement Corridors.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		towards seeking and securing state and federal funding for the formation of the WMWG. In addition, the Authority shall also financially contribute to the funding of any mutually agreed wildlife connectivity study in an amount equal to the contributions of other WMWG members, subject to SB 198, which requires evaluation by the Office of the Inspector General and notification to the Legislature of any proposed Authority contribution (funding or oversight personnel). Authority contributions cannot be made until the Authority has met the requirements of SB 198, and until the Authority receives authorization to use funding in Southern California project sections. The WMWG's charter shall conclude at a time mutually agreed by the WMWG members.								
Hydrology and Water Resources										
HWR-MM#1	HWR-MM#1: Minimize Construction-period Water Quality Impacts Associated with Tunnel Construction	Prior to construction start, the Authority will establish the baseline groundwater condition in existing private water wells within the tunnel construction RSA by collecting samples for analytical laboratory testing. These initial samples shall be collected quarterly for at least1 year before construction start to account for any seasonal variation in groundwater chemistry. During tunnel construction, the samples shall be collected on a monthly to quarterly basis, depending on the tunnel construction schedule. The frequency of sample collection and the number of sampled wells shall be determined by the Authority before construction start and after consultation with property owners whose wells are within the RSA. Before and during construction, all respective water well owners shall be offered the opportunity to be present while samples are collected from their private water wells. Split samples will be collected by the Authority from identified private water wells and submitted to laboratories for analysis of regulated constituents including Title 22 metals (i.e., mercury, antimony, arsenic, barium, beryllium, cadmium, total chromium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc) and any secondary geochemical parameters (i.e.,	Pre-construction/ Construction	Monitoring/ Reporting	Prior to construction/ Monthly during construction	Authority/ Contractor	Authority	During construction, monitor and test private water wells within the tunnel construction RSA for contamination and implement a plan to avoid or minimize risk from any groundwater quality changes in consultation with RWQCB.	Condition of construction contract/condition of regulatory permits	Impact HWR#2: Construction Activities Required for the Build Alternatives.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		pH, total hardness, calcium, magnesium, sodium, potassium, total alkalinity, hydroxide, carbonate, bicarbonate, chloride, sulfate, nitrate as nitrogen [N], fluoride, and nitrite as N) that the Authority determines to be appropriate after consultation with affected well owners. Split sampling consists of a single sample that is divided into two separate sub-samples for laboratory testing to determine the precision of laboratory results. If during tunnel construction, changes to the referenced constituents are detected and those changes exceed normal variations observed during baseline conditions, the Authority would notify the Regional Water Quality Control Board (RWQCB) of the detected changes and seek the RWQCB's approval for a plan to avoid or minimize the risk that changes to the groundwater would exceed applicable state and federal water quality standards in the existing private water wells. Avoidance or mitigation measures that may be undertaken could include: groundwater barriers designed and monitored to prevent further mobilization of changes, groundwater monitoring and treatment procedures to assess the extent of changes and potential causes. Before construction start, the Authority will consult with private well owners and the RWQCB on its proposed monitoring plan as well as any proposed measures to be taken in the event changes are detected during monitoring. The Authority's plan will include measures to ensure that changes, if they occur, will not exceed applicable federal and state water quality standards.							
HWR-MM#2	Minimize Impacts Associated with Construction in Floodplains Due to Permanent Structures Located within the SFHAs During Construction	The Authority will implement the following measures to reduce impacts on SFHAs: • Restore the floodplain to its prior operation in instances where floodplains would be affected by construction within 1 year of completing construction at each affected location. This would include grading to restore preconstruction contours and revegetation with appropriate native species. • Avoid placement of facilities in the floodplain or raise the ground with fill above the base flood elevation to the extent practicable.	Construction/Post-construction	Design/final design/restoration	After construction closeout	Authority/ Contractor	Authority	Implement measures to reduce potential impacts to SFHAs	Condition of construction contract	Impact HWR#3: Changes in Flood Risks Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		• Use construction methods and facilities to avoid or minimize potential encroachments onto surface water resources.								
HWR-MM#3	Compensation for Impacts on Hansen Spreading Grounds	For the Refined SR14, SR14A, E1, E1A Build Alternatives the reduction in the area and capacity of the Hansen Spreading Grounds would be mitigated as listed below or by an equally effective option to compensate for loss in recharge area and capacity. The Authority would provide replacement groundwater recharge areas to compensate for the HSR footprint within the Hansen Spreading Grounds and to ensure no net loss in recharge area or capacity. New recharge areas would be placed in the vicinity of existing recharge ponds.	Pre-construction/ Construction/Post-construction	Compensatory mitigation	Prior to operations	Authority	Authority	Provide replacement groundwater recharge areas in the vicinity of the Hansen Spreading Grounds to compensate for the Project footprint	Condition of construction contract	Impact HWR#4: Changes in Groundwater Recharge Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives.
HWR-MM#4	Implement a Water Resources Adaptive Management and Monitoring Plan Including Compensatory Mitigation Measures as Necessary	The Authority will implement an AMMP to detect adverse changes in surface and subsurface conditions within the ANF that could occur during and after construction of the HSR tunnels including the construction of associated adits. The actions described in this mitigation measure would provide for timely detection of hydrological changes and, if necessary, appropriate remediation. Monitoring would ensure the effectiveness of the measures and determine if additional action would be required. Additionally, monitoring activities would continue for a period of 10 years after completion of the Palmdale to Burbank Project Section. If impacts persist after this period, monitoring would continue, as necessary. Overall, the purpose of the AMMP is to: • Establish baseline groundwater and surface water hydrologic conditions within the tunnel construction RSA with data collection and in situ monitoring devices. • Develop a monitoring program to detect real-time changes in groundwater and surface water conditions during and after construction through comparisons to baseline conditions and evaluation of paired reference sites. • Establish numeric triggers, such as groundwater flow rate into the tunnel and groundwater levels, which would indicate that certain adaptive management measures are required to	Pre-construction/ Construction/Post-construction	Prepare Plan/Reporting	Quarterly and annually	Authority/ Contractor	Authority	Implement Adaptive Management and Monitoring Plan	Condition of construction contract	Impact HWR#4: Changes in Groundwater Recharge Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives. Impact HWR#5: Changes in Hydrogeologic Conditions Associated with Tunnel Construction Beneath the ANF which May Affect Surface and Subsurface Water Resources.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		avoid or reduce impacts on groundwater and surface water resources during construction. Adaptive management measures may include providing supplemental water to affected surface water resources and other feasible measures to substantially maintain surface water resource conditions during and after construction, such as stream flows documented during preconstruction, to avoid or minimize desiccation of known springs and streams and disruptions to private water supplies. Groundwater losses that are unaccounted for could create a loss of available groundwater to the surrounding habitat, springs, or domestic wells. Collection of data regarding tunnel outflows and groundwater levels would be collected daily. • Generate quarterly and annual reports to keep state and federal resource agencies apprised of groundwater and surface water conditions before, during, and after construction. ***Baseline Inventory and Monitoring of Groundwater and Surface Water Resources*** The Authority will establish baseline hydrologic conditions in the tunnel construction RSA through data collection and monitoring. The baseline inventory would include surveys and maps that identify the surface water resources in the RSA. Baseline surveys would generate information sufficient to characterize potential surface water and groundwater resources in the RSA. ***Construction Monitoring*** The Authority will designate locations in the tunnel construction RSA for monitoring springs, streams, and wells. The purpose of this monitoring is to capture nearly real-time changes in groundwater conditions (e.g., flow, pressure readings) that might be related to tunneling activities. Monitoring data collected during construction would be compared to baseline data collected during preconstruction monitoring and with paired reference sites that would not be affected by groundwater drawdown. The monitoring plan would include a schedule for monitoring activities that reflects periods								

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		when effects are most likely to occur at specific locations (e.g., when tunneling is nearing Moderate and High Risk Areas). The monitoring plan would account for a potential delay between groundwater drawdown associated with tunneling and the appearance of surface water effects. After construction, a substantial baseline monitoring system would be conducted to evaluate the recovery of water resources through datasets, and results would be compared to construction and preconstruction data to identify hydrogeological changes. The monitoring plan would include monitoring of inflow into the tunnels and would be quantified through use of 3-D surface and groundwater modeling programs to help predict rates of recovery for water resources affected during construction. ***Post-Construction Monitoring*** After construction, additional monitoring activities would be conducted to evaluate the recovery of water resources. The post-construction monitoring program would be modified to focus on areas where construction monitoring documented water resource effects caused by tunnel construction. The post-construction monitoring would continue for 10 years, or longer if required, until such time that conditions are comparable to the range of baseline conditions that existed before construction. Over time, groundwater resources would recover from losses sustained during construction through recharge by natural precipitation. Such recharge may take months to years after the tunnel lining system is installed (Berg 2012). ***Response Actions*** **Springs and Streams Impacts** The Authority will prepare contingency plans to provide supplemental water as necessary to support springs and streams determined through modeling and monitoring to be adversely affected by groundwater reductions. Seasonal variation as documented during the preconstruction baseline monitoring would be considered in establishing the amount of supplemental water sufficient to offset the impact. For all features, supplemental water would provide minimum flows and periods of inundation to								

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		match baseline conditions. The periods in which supplemental water would be provided, in general, would likely reflect the period in which baseflows occur, which is late spring, summer, and early fall outside of rain periods, but could vary between different types of springs and streams. The measures to address impacts on riparian/aquatic vegetation, wildlife breeding cycles, aquatic wildlife, or protected tree health are provided in Mitigation Measure BIO-MM#93 in Section 3.7, Biological and Aquatic Resources. **Adaptive Management Triggers** The AMMP includes quantitative triggers that signal the onset of effects on surface water resources and groundwater levels and compel the implementation of adaptive management measures. The triggers include water pressure/level readings measured in piezometers established along the project alignment and flow rates of springs and streams falling below baseline conditions. **Adaptive Management Measures** Supplemental water would be supplied to affected springs or streams to approximate baseline levels until groundwater recharged naturally. The actual method of distribution of supplemental water would vary according to site-specific characteristics. For example, at some locations, a drip irrigation system may be more appropriate, whereas at other locations, it may be more appropriate to simply discharge water directly to a creek bed. At the specific site, water would be discharged at a point within the creek, or more broadly distributed, according to the site characteristics. See Section 3.6, Public Utilities and Energy, for discussion of the potential sources of water for construction purposes. Those sources would also be relied on to provide supplemental water for affected seeps, springs, or streams. Well Impacts The AMMP includes quantitative triggers that signal the onset of effects on surface water resources and groundwater levels and compel the implementation of adaptive management measures. If a well is discovered to be affected by tunnel construction, the well would be evaluated to determine the best approach to address the effect. Actions could include modifying the								

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		well equipment, such as by lowering the pump in the well, cleaning the pump, or providing a larger pump. Other additional actions may include providing potable water supplementation until water levels recover in the water supply well. See Section 3.6, Public Utilities and Energy, for discussion of the potential sources of water for construction purposes. Those sources would also be relied on for potable water supplementation.								
Geology, Soils, Seismicity, and Paleontological Resources										
GEO-MM#1	Temporary and permanent soil stabilization at disposal sites	The contractor and/or Authority shall develop a restoration plan or temporary soil stabilization plan (interim reclamation plan) for spoil disposal sites. This plan would ensure that these locations are not left with exposed soils that would be vulnerable to wind and water erosion. Each restoration plan would address the final grade and elevation, temporary or permanent ground cover, stormwater and erosion control best management practices, expected future land use, and maintenance and inspection requirements. A restoration plan for the Vulcan Mine will be drafted if Vulcan Mine is to be used for spoils retention. The restoration plan or temporary soil stabilization plan would be prepared prior to spoils being deposited within the disposal sites.	Pre-construction	Prepare Plan	Prior to the initiation of construction activities	Authority/ Contractor	Authority/ Contactor	Prepare restoration plan or temporary soil stabilization plan	Condition of construction contract	Impact GSSP#4: Construction Could Expose Erodible Soils During Construction.
GEO-MM#2	Inundation and slope failure minimization at spoil disposal sites	Prior to commencing construction activities, the construction contractor shall develop an evacuation plan for areas where grading, building, or disposal activities would occur underground or below grade. This plan would consider accident conditions including flood inundation and slope failure. If required, the contractor will obtain adequate Federal Emergency Management Agency flood rate insurance for activities occurring within a floodplain or dam inundation zone. The Authority will notify dam owners or managing agencies where new fill material could displace floodwaters from a seismically induced failure of the Palmdale, Pacoima, or Hansen dams. The volume of fill within the dam inundation zone should be provided to dam owners and managing agencies to allow for necessary revisions to dam inundation zone maps.	Pre-construction	Prepare Plan, obtain insurance if needed, notify dam owners	Prior to the initiation of construction activities	Authority/ Contractor	Authority/ Contractor	Prepare evacuation plan; if needed, obtain adequate Federal Emergency Management Agency flood rate insurance; and notify dam owners of Palmdale, Pacoima, or Hansen dams	Condition of construction contract	Impact GSSP#10: Inundation Related to Seismically Induced Dam Failure Could Endanger People or Structures During Construction. Impact GSSP#13: Mine Conditions Could Pose Hazards During Construction.

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Hazardous Materials and Wastes										
HMW-MM#1	Limit handling of extremely hazardous materials near educational facilities.	Prior to construction, the contractor shall prepare a memorandum regarding construction BMPs for hazardous materials for the Authority's approval. The memorandum shall confirm that the contractor will not, within 0.25 mile of a school, use, handle or store any extremely hazardous substance (as defined in Cal. Public Res. Code Section 21151.4) or a mixture containing extremely hazardous substances in a quantity equal to or greater than the State threshold specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code. Prior to construction, signage shall be installed to delimit work areas within 0.25 mile of a school, informing contractors not to bring extremely hazardous substances into the area. The contractor shall be required to monitor use of extremely hazardous substances. The memorandum required by this measure shall be submitted to the Authority prior to construction involving an extremely hazardous substance. During operations, no extremely hazardous substances or a mixture of extremely hazardous substances would be used in a quantity equal to or greater than the state threshold quantity (Health and Safety Code Section 25532) within 0.25 mile of a school. An operations plan shall be created by the Authority and coordinated with the educational facilities to document compliance. Additionally, ongoing monitoring during construction shall take place in compliance with Cal. Public Res. Code Section 21151.4.	Pre-construction/ Construction/Post-construction	Reporting/ Monitoring	Memorandum approved 30 days prior to start of construction; during construction, submit weekly reports or reporting requirements as established by the approved memorandum	Authority/ Contractor/	Contractor	Hazardous materials memorandum	Hazardous materials memorandum and operation plan	Impact HMW#3: Potential for Handling Hazardous Materials or Waste Within 0.25 mile of an Educational Facility during Construction. Impact HMW#8: Potential for Handling Hazardous Materials or Waste Within 0.25 mile of and Educational Facility during Operations
Safety and Security										
S&S-MM#1:	Monitor Response of Local Fire, Rescue, and Emergency Service Providers to Incidents at Stations and Provide a Fair Share Cost of Service	During the first 3 years of operation and maintenance, the Authority shall monitor response of local fire, rescue, and emergency service providers to incidents at stations and provide a fair share of cost of service for 5 years. Monitoring shall begin 1 year prior to planned opening of an HSR station. Service levels consist of the monthly volume of calls for fire and police protection, as well as county-, city- or fire protection–funded emergency medical technician or ambulance calls that occur in the station site service areas.	Post-construction	Monitor emergency response/Fair Share of Services Agreement	Annually	Authority	Authority	Monitoring of emergency response service levels beginning1 year before station opening and during station operation to determine baseline service demands, Fair share agreement	Authority to fund the Authority's fair share of services through fair share services agreement	Impact S&S#3: Permanent Interference with Emergency Response Impact S&S#4: Interference with Emergency Response from Train Accidents and Increased Activity at Stations and Facilities.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		Prior to operation of the stations for HSR service, the Authority would enter into an agreement with the public service providers of fire, police, and emergency services to fund the Authority's fair share of services above the average baseline service demand level for the station and maintenance service areas (as established during the monitoring period). The fair share shall be based on projected passenger use for the first year of operations, with a growth factor for the first 5 years of operation. This cost-sharing agreement would include provisions for ongoing monitoring and future negotiated amendments as the stations expand or passenger use increases. Such amendments would be made on a regular basis for the first 5 years of station operation, as provided for in the agreement. To ensure that services are made available, fair share cost of service funds would not constitute the sole funding mechanism, although they may be used to fund capital improvements or fixtures (a police substation, additional fire vehicles, on-site defibrillators, etc.) necessary to service delivery. After the first 5 years of operation, the Authority would enter into a new or revised agreement with the public service providers of fire, police, and emergency services to fund the Authority's fair share of services. The fair share would consider the volume of ridership, past record and trends in service demand at the stations and maintenance sites, new local revenues derived from station area development, and services that the Authority may be providing at the station.							
Socioeconomics and Communities										
SO-MM#1	Implement measures to reduce impacts associated with the division of residential neighborhoods	Prior to construction (in residential areas) the Authority will minimize impacts in residential areas by conducting special outreach to affected homeowners and residents to understand their special relocation needs fully. The Authority will make efforts to locate suitable replacement properties that are comparable to those currently occupied by these residents, including constructing suitable replacement facilities if necessary. In cases where residents wish to remain in the immediate vicinity, the Authority will take measures to purchase vacant land or	Pre-construction/ Construction/Post-construction	Coordination/ Reporting	Annual	Authority	Authority	Authority to provide compensatory mitigation The Authority will meet with affected residents and property owners and design appropriate measures to minimize impacts	Condition of construction contract	Impact SOCIO#2: Permanent Disruption to Community Cohesion or Division of Established Communities from Construction Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from Construction of the Build Alternatives.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		buildings in the area and consult with local authorities over matters such as zoning, permits, and moving of homes and replacement of services and utilities, as appropriate. Before land acquisition, the Authority will conduct community workshops to obtain input from those homeowners whose property would not be acquired but whose community would be substantially altered by construction of HSR facilities, including the loss of many neighbors, to identify measures that could be taken to mitigate impacts on those who remain (including placement of noise barriers and landscaping, and potential uses for nonagricultural remnant parcels that could benefit the community in the long term). The Authority will document implementation of this measure through annual reporting.								
SO-MM#2	Implement measures to reduce impacts associated with the division of communities	Prior to construction (in mixed-use communities) the Authority will minimize impacts in the existing communities through a program of outreach to homeowners, residents, landowners, business owners, community organizations, and local officials in affected neighborhoods. The objective will be to maintain community cohesion and avoid physical deterioration. The Authority will evaluate the community's modified access, including the effectiveness of providing overcrossings or undercrossings of the HSR track to allow continued use of community facilities and connectivity. This includes the design of overcrossings or undercrossings to allow multimodal passage. The Authority will also conduct community workshops about the future use of the areas beneath the rail guideway, where these areas would exist. These meetings will provide the community an opportunity to identify design and use options that could strengthen community cohesion and be consistent with the existing community character. To maximize attendance and generate awareness of the workshops, the Authority will work with either community organizations or community leaders within the neighborhoods. A location and time will be selected to increase attendance and be based on the community's needs.	Pre-construction/ Construction/Post-construction	Reporting/Monitoring	Annually	Authority	Authority	Implement outreach programs and community workshops for impacted communities, implement identified measures	Condition of construction contract	Impact SOCIO#2: Permanent Disruption to Community Cohesion or Division of Established Communities from Construction. Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from Construction of the Build Alternatives.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		The Authority will present information at the workshops giving the community options for the future use of the area beneath or above the rail guideway and provide an opportunity for individuals to provide feedback and propose solutions. For example, if safety considerations prohibit such uses as bike paths or community gardens, alternatives, such as sculpture gardens or managed landscaping, could be considered. The Authority will consider comments and feedback in planning for the sites. On gathering feedback from the community, the Authority will use the input and define solutions. The Authority will report the decisions at a public workshop and in a written report made available to the public. The Authority will be responsible for implementing the measures to reduce impacts through project design and through the long-term management of the measures. This will involve documenting the desired design concepts, incorporating them into the final design, and facilitating ongoing maintenance. The Authority will identify potential uses that may be developed in the project right-of-way. These uses will be consistent with the character of the adjacent community and sensitive to project needs (as outlined in Section 3.11, Safety and Security). The costs associated with the development of these corridor improvements and how these costs will be paid will be determined during consultations with the affected jurisdictions or community organizations. Furthermore, the parties or entities (e.g., the Authority, local government, park or recreation district, nonprofit organization) responsible for ongoing maintenance of these community areas will be determined. The Authority will document compliance with this measure through annual reporting.								
SO-MM#3	Implement measures to reduce impacts associated with the relocation of important community facilities	Prior to construction, the Authority will minimize impacts resulting from the acquisition, displacement, and/or relocation of key community facilities. The Authority will consult with the appropriate parties before land acquisition to assess potential opportunities to reconfigure land use and buildings and/or relocate affected facilities, as necessary, to minimize the disruption of facility activities	Pre-construction/ Construction	Reporting/ Monitoring	Annually	Authority	Authority	Consult with appropriate parties before property acquisition/ implement outreach programs and community workshops for impacted communities	Condition of construction contract	Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from Construction of the Build Alternatives.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		and services and to provide for relocation that allows the community currently being served to continue to use these services. The Authority will continue to implement a comprehensive non-English-speaking language outreach program as land acquisition begins. This program will facilitate the identification of approaches that will maintain continuity of operation and allow space and access for the types of services currently provided and planned for these facilities. To avoid disruption to these community amenities, the Authority will provide for reconfiguring land uses or buildings, or relocation of community facilities prior to demolishing existing structures. The Authority will document compliance with this measure through annual reporting.								
Station Planning, Land Use, and Development										
LU-MM#1	California HSR System Station Area Development General Principles and Guidelines	Prior to station construction, the Authority shall document how Station Area Planning Agreements have been implemented with each station city. The California HSR System Station Area Development General Principles and Guidelines (February 3, 2011) describe the intended outcomes by the Authority for station cities. Upon review of each station city's plans, the Authority will determine if mitigation strategies (including consultant assistance) are necessary to assist station cities with implementation of station area plans to implement TOD strategies and value capture at and around the station. Station Area Planning documentation reports shall be produced to document mitigation measure compliance.	Pre-construction	Reporting	Prior to station construction	Authority	Authority	Authority will document how Station Area Planning Agreements have been implemented with each station city	Condition of construction contract	Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from Construction of the Build Alternatives.
Agricultural Farmland and Forest Land										
AG-MM#1	Design Utility Corridors to Avoid Agricultural Lands	The Authority will design and build electrical utility corridors to avoid placing structures on agricultural lands. This will entail coordination with the farm owners to ensure that electrical utilities are placed on poles with powerlines that span agricultural land uses, within the identified project footprint, so that no agricultural land would be converted to a nonagricultural use either directly or indirectly. Electrical utility lines are generally spaced from 125 to 300 feet apart and can often span over 1,000 feet between towers. Therefore, the electrical utility line could span the parcel of farmland for at least a length of approximately 250	Pre-construction/ Construction	Design/final design	Prior to construction	Authority/ Contractor	Authority/ Contractor	Authority will design and build electrical utility corridors to avoid placing structures on agricultural land.	Condition of construction contract	Impact AG#2: Permanent Conversion of Agricultural Land to Nonagricultural Land Impact SOCIO#14: Permanent Effects on Agricultural Operations from Project Operations.

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		feet without requiring conversion of farmland for the relocation of electrical towers. Utility easements would not affect existing agricultural operations and activities.								
Parks, Recreation, and Open Space										
PR-MM#1	Temporary Restricted Access to Park Facilities during Construction	Prior to construction (ground-disturbing activities affecting trails), the contractor would prepare a technical memorandum documenting how connections to the unaffected trail portions and nearby roadways would be maintained during construction. The contractor would provide alternative access via a temporary detour of the trail using existing roadways or other public rights-of-way. The contractor would provide detour signage and lighting and would provide that the alternative routes meet public safety requirements. The technical memorandum would be submitted to the Authority for review and approval.	Design/Pre-construction	Technical memorandum	Prior to construction	Authority/ Contractor	Authority	Technical memorandum documenting measures taken to restrict park access	Condition of construction contract	Impact PK#2: Construction-Related Access, Noise, Vibration, Air Quality, and Visual Changes to Parks, Recreation, and Open Space Resources.
PR-MM#2	Providing Park Access	Prior to construction (ground-disturbing activities affecting park access) the contractor shall prepare a technical memorandum documenting how the contractor would ensure that connections to the unaffected park portions or nearby roadways are maintained after construction. If a proposed linear park closure restricts connectivity, the contractor would provide permanent multimodal access using existing roadways or other public rights-of-way. The technical memorandum shall be submitted to the Authority for review and approval.	Pre-construction/Construction/ Post-construction/Operation	Technical memorandum	Prior to construction	Authority/ Contractor	Authority	Technical memorandum prior to construction	Condition of construction contract	Impact PK#2: Construction-Related Access, Noise, Vibration, Air Quality, and Visual Changes to Parks, Recreation, and Open Space Resources.
PR-MM#3	Implement Standard Safety Measures	During construction, contractors would follow standard safety procedures to protect motorized and non-motorized traffic and maintain access to and from recreation resources. The following features would be provided, where feasible: • Minimize closures to 3 days or less • Coordinate construction noticing and detours with park operations and surrounding community where applicable (see also TRA-MM#C-1 and SS-IAMF#1) • Provide detour signage and lighting to ensure that detour routes meet all public safety requirements (see also TRA-MM#C-1 and SS-IAMF#1) • Install brightly colored fencing	Construction	Implement during construction	Weekly or at another appropriate interval	Contractor	Contractor	Follow standard safety procedures and implement safety features.	Condition of construction contract	Impact PK#2: Construction-Related Access, Noise, Vibration, Air Quality, and Visual Changes to Parks, Recreation, and Open Space Resources.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		• Install signage indicating closures and construction areas (see also TRA-MM#C-1 and SS-IAMF#1) • Use overhead safety coverings or screens • Provide safe detours of pedestrian and motorized traffic around construction areas • If a proposed park closure restricts connectivity, provide alternative pedestrian and bicycle access via existing roadways or other public rights-of-way • Maintain interrupted trail connectivity and park access over or around the HSR system when the Palmdale to Burbank Project Section is completed								
PR-MM#4	Develop and Implement a Trail Facilities Plan	Trail Facilities Plan—During final design, the Authority's project engineer would require the design-build contractor to develop a trail facilities plan addressing the short-term project impacts on existing trails within the construction limits of the Palmdale to Burbank Project Section. That plan would address: • Identifying trails that would be closed temporarily and detoured during construction • Preparing a public awareness and notification plan • Temporarily closing portions of the following trails if the proposed extensions are operational at the time of project construction: • Palmdale Hills Trail (Proposed Extension) • Vasquez Loop Trail (Proposed Extension) • Littlerock Trail (Proposed Extension) • Acton Community Trail (Proposed Extension) • Darrell Readmond Trail (Proposed Extension) • Santa Clara River Trail (Proposed Extension) • Rim of the Valley Trail (Proposed Extension) • Developing and implementing detours for temporarily closed portions of trails	Pre-construction/ Construction/Post-construction	Prepare plan/implement plan	Prior to the initiation of construction; after restoration of trail access	Authority/ Contractor	Authority/ Contractor	Prepare Trail Facilities Plan; document restoration of access and connectivity	Condition of construction contract	Impact PK#2: Construction-Related Access, Noise, Vibration, Air Quality, and Visual Changes to Parks, Recreation, and Open Space Resources.

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		• Phasing of temporary trail closures to allow for effective detours to maintain connectivity of these facilities around the construction areas • Coordinating trail closures and detours with local jurisdictions having authority over those facilities • Establishing criteria for identifying detour routes and facilities • Providing informational signage for closures and detours • Requiring compliance with Americans with Disabilities Act access during construction • Maintaining signage for closures and detours throughout the closure period and replacing lost or damaged signage • Restoring trails to their original or better condition at the completion of project construction Temporary Closures of Trails—Prior to temporary closures of trails, the Authority's project engineer will require the design-build contractor to coordinate with the directors of the appropriate jurisdictions' public works and/or parks departments, or their representatives, to review the location of and need for each temporary trail closure. The Authority's project engineer would require the design-build contractor to develop detours for each closure in consultation with the public works and/or parks department directors or their representatives. Prior to and during construction activities that would require the temporary closure of a trail, the Authority's project engineer would require the design-build contractor to comply with and implement the procedures in the trail facilities plan, described above, for the affected trails. Signage for Trail Detours and Closures—The Authority's project engineer would require the design-build contractor to develop detour signs, in consultation with the appropriate jurisdiction's public works and/or parks departments, notifying trail and bike lane users of the upcoming temporary facility closure and directing trail users to the temporary detour routes with estimated timeframes. Appropriate directional and informational signage would be provided by the Palmdale to Burbank Project Section								

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		design-build contractor prior to each closure and in a location to ensure that trail users would not have to backtrack to get to the detour routes. Contact Information at Trail Detours—The Authority's project engineer would require the design-build contractor to provide detour signage that includes contact information for the Authority's project engineer and the design-build contractor, and that informs trail users to contact the Authority's project engineer and/or the design-build contractor with questions or concerns regarding upcoming or active temporary trail closures. Restoration of Impacted Trail Segments—The Authority's project engineer would require the design-build contractor to return trail segments closed temporarily during construction to their original, or better, condition after completion of construction, prior to their return to the control of the applicable public works or parks department. After project construction, the Authority's project engineer would require the design-build contractor to document that access to and connectivity of the affected trails was restored. Compliance with the Trails Facilities Plan—Compliance with the trails' facilities plan would be documented in the environmental commitments record with text, photographs, maps, and correspondence, as appropriate.								
PR-MM#5	Modifications to Recreational Uses	In the event a temporary impact area requires the temporary use of land at a park, recreation resource, or school play area that is used for recreation purposes, the Authority's project engineer would consult with the property owner/operator on two components: (1) whether the property owner/operator wants those recreation uses replaced temporarily or permanently elsewhere on the property; and (2) if temporary or permanent replacement of those recreation uses is desired, on modifications that could be made to the remaining recreation area on the property to temporarily or permanently replace the recreation uses displaced by the temporary impact area. Modifications to recreation areas outside the limits of a temporary impact area would be implemented prior to fencing and use of the temporary impact area.	Pre-construction/ Construction	Plan for temporary impact area	Prior to fencing and use of temporary impact area	Authority/ Contractor	Authority	Authority will consult with property owner/operator of any temporarily acquired land at a park, school, or open space.	Condition of construction contract	Impact PK#2: Construction-Related Access, Noise, Vibration, Air Quality, and Visual Changes to Parks, Recreation, and Open Space Resources.

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PR-MM#6	Return of Land Used by Temporary Impact Areas to the Property Owners	The Authority's project engineer would require the design-build contractor to return the land use for each temporary impact area to the owner in its original or better condition when construction in an area has been completed and the temporary impact area is no longer needed. The Authority's project engineer would require the design-build contractor to coordinate the restoration of the affected land with the property owner and the project engineer.	Post-construction	Restoration of temporarily impacted land	Following use of an area for temporary impact area	Authority/ Contactor	Authority/ Contractor	Authority to turn land use for each temporary impact area back to the owner in same or better condition.	Condition of construction contract	Impact PK#1: Acquisition of Parks, Recreation, and Open Space Resources.
PR-MM#7	Permanent Easement from Parks, Recreation Resources, and/or Trails	If a permanent easement (for the facility and facility maintenance access) is required across a park, recreation resource, and/or trail, the Authority would compensate for the loss of the park, recreation resource, and/or trail in accordance with the Uniform Act and the California Park Preservation Act. For resources whose acquisition are subject to the Act, the California Park Preservation Act requires that the compensation or land, or both, for the taking of the parkland and facilities be equal to1 of the following: • The cost of acquiring substitute parkland of comparable characteristics, substantially equal size, and condition • Substitute parkland of comparable characteristics, substantially equal size, and condition • Any combination of substitute parkland and compensation in an amount sufficient to provide substitute parkland of comparable characteristics, substantially equal size, and condition The Authority would consult with the property owner from whom the Authority requires that permanent easement of property regarding the specific conditions of acquisition, use of, and compensation for, or replacement or enhancement of, the park or recreation resource within the easement area, consistent with any applicable requirements of the California Park Preservation Act.	Pre-construction	Final design/ Consultation	Prior to obtaining permanent easement	Authority	Authority	Compensation to property owners for loss of recreation from permanent easement	Required by Uniform Act and California Park Preservation Act	Impact PK#1: Acquisition of Parks, Recreation, and Open Space Resources Impact PK#3: Changes to Park, Recreation, and Open Space Resource Character.
PR-MM#8	Permanent Changes to Access to Parks, Recreation Resources, and/or Trails	If permanent changes to vehicular, bicycle, or pedestrian access to a park or recreation resource are required, the Authority would ensure that connections to the unaffected park portions or nearby roadways would be maintained. If a proposed closure restricts connectivity to a park or recreation resource, the Authority would provide	Pre-construction	Final design/consultation	Prior to beginning construction and closure of any park or recreation resource	Authority	Authority	Authority would implement measures to ensure that connections to the unaffected park portions or nearby roadways would be maintained	Condition of construction contract	Impact PK#1: Acquisition of Parks, Recreation, and Open Space Resources Impact PK#2: Construction-Related Access, Noise, Vibration, Air Quality, and Visual Changes to Parks, Recreation, and Open Space Resources.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		alternative access to ensure the park or recreation resource remains accessible prior to beginning construction and the closure of any park or recreation resource. The Authority would consult with the property owner regarding the specific conditions of the changes to access and compensation for, or replacement or enhancement of, the access driveways or parking areas at the recreation resource.								Impact PK#3: Changes to Park, Recreation, and Open Space Resource Character. Impact PK#4: Increased or Decreased Use of Parks, Recreation, and Open Space Resources.
PR-MM#9	Permanent Acquisition of Public Property from Land and/or Trails Planned for Public Recreational Use	For planned recreation resources, final design of the HSR Build Alternatives would continue minimize right-of-way impacts at planned parks, bike paths, and recreation resources. The Authority would continue work with the relevant jurisdictions on the establishment of appropriate compensation and relocation/realignment of a resource or additional property to accommodate the displaced planned park and recreational uses as a result the HSR system. Mitigation may include preparing a plan for designing planned recreation uses to be consistent with the HSR facility, or compensation for the loss of the land in accordance with PR-MM #7, to ensure that there would be no net loss of park, recreation, or open space resources.	Pre-construction	Design/Final design	Prior to construction	Authority	Authority	Continue to minimize right-of-way impacts at planned parks; ensure that there would be no net loss of park, recreation, or open space resources	Condition of construction contract	Impact PK#1: Acquisition of Parks, Recreation, and Open Space Resources. Impact PK#3: Changes to Park, Recreation, and Open Space Resource Character.
Aesthetics and Visual Quality										
AVQ-MM#1	Minimize Visual Disruption from Construction Activities	Prior to construction (any ground-disturbing activity), the contractor will prepare a technical memorandum identifying how the Palmdale to Burbank Project Section would minimize construction-related visual/aesthetic disruption and include the following activities: • Minimize pre-construction clearing to that necessary for construction. • Limit the removal of buildings to those that would obstruct project components. • When possible, preserve existing vegetation, particularly vegetation along the edge of construction areas that may help screen views. • After construction, regrade areas disturbed by construction, staging, and storage to original contours and revegetate with plant material in compliance with local jurisdictional requirements. If no local jurisdictional requirements exist, replace removed vegetation at a 1:1 replacement ratio	Pre-construction	Reporting/ Monitoring	Prior to construction	Contractor	Contractor	Implement a variety of control measures during design and construction to minimize visual/aesthetic disruption; technical memorandum prior to construction	Contract requirements/ specifications	Impact AVQ#1: Temporary Construction Impacts on Existing Visual Quality. Impact AVQ#3: Temporary Construction Impacts on Scenic Vistas and Drives.

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		for shrubs and small trees, and a 2:1 replacement ratio for mature trees. For example, if the contractor removes 10 mature trees in an area, replant 20 younger trees that, within 5 to 15 years (depending on the growth rates of the trees), would be of a height and spread to provide visual screening similar to the visual screening provided by the trees that were removed for construction. Replaced shrubs would be minimum 5-gallon containers and replaced trees will be minimum 24-inch box and minimum 8 feet in height. • To the extent feasible, do not locate CSAs within the immediate foreground distance (0 to 500 feet) of existing residential neighborhoods, recreational areas, or other land uses that would include highly sensitive viewers. Where such siting would be unavoidable, screen staging sites from viewers using appropriate solid screening materials such as temporary fencing and walls. The contractor will paint over or remove any graffiti or visual defacement of temporary fencing and walls within 5 business days of it occurring. The technical memorandum would be submitted to the Authority for review and approval.								
AVQ-MM#2	Minimize Light Disturbance during Construction	Prior to construction (any ground-disturbing activity requiring nighttime construction), the contractor will prepare a technical memorandum verifying how they will shield nighttime construction lighting and direct it downward in such a manner to minimize light that falls outside the construction site boundaries. The technical memorandum will be submitted to the Authority for review and approval.	Pre-construction	Reporting/ Monitoring	Monthly	Contractor	Contractor	Technical memorandum on shielding nighttime construction lighting	Contract requirements/ specifications	Impact AVQ#2: Temporary Construction Impacts from Light and Glare.
AVQ-MM#3	Incorporate Design Aesthetic Preferences into Final Design and Construction of Non-Station Structures	Prior to construction (any ground-disturbing activity), the contractor shall work with the Authority and local jurisdictions to incorporate the Authority-approved aesthetic preferences for non-station structures into final design and construction. Refer to Aesthetic Review Process for Non-Stations Structures (Authority 2013). A technical memorandum will be submitted to the Authority to document compliance.	Pre-construction/Design	Reporting/ Monitoring	Final Design	Contractor and Authority	Contractor and Authority	Work with Authority and local jurisdictions to incorporate aesthetic preferences for non-station structures	Contract requirements/ specifications	Impact AVQ#4: Permanent Construction Impacts on Visual Quality.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
AVQ-MM#4	Provide Vegetation Screening Along At-Grade and Elevated Guideways Adjacent to Residential Areas	Prior to operation and maintenance of HSR, the contractor shall plant trees (minimum 24-inch box and 8 feet in height) along the edges of the HSR rights-of-way in locations adjacent to residential areas to visually screen the elevated guideway and the residential area. The species of trees to be installed will be selected based on their mature size and shape, growth rate, hardiness, and drought tolerance. No species on the Invasive Species Council of California's list (ISCC 2010) would be planted. On maturity, the crowns of trees used would be tall enough to partially, or fully, screen views of the elevated guideway from adjacent at-grade areas. On maturity, trees would allow ground-level views under the crowns (with pruning if necessary) and will not interfere with the 15-foot clearance requirement for the guideway. The trees will be maintained. Irrigation systems would be installed within the tree planting areas. The contractor will prepare a technical memorandum within 90 days of completing any construction section or segment documenting the species of trees that were incorporated into the edges of the HSR right-of-way adjacent to residential uses. The technical memorandum will be submitted to the Authority to document compliance.	Construction/Post-construction	Reporting	Prior to operation within 90 days of completing any construction section or segment	Contractor and Authority	Contractor	Prior to operation, plant trees for screening along the edge of HSR rights-of-way adjacent to residential areas; report within 90 days of completing any construction section or segment documenting the species of trees that were incorporated into design	Contract requirements/ specifications; landscaping, and maintenance will be provided by the Contractor for its scope of work until completion of the work at which time the Authority shall assume responsibility for landscaping or assign the responsibility to other third parties.	Impact AVQ#4: Permanent Construction Impacts on Visual Quality.
AVQ-MM#5	Replant Unused Portions of Land Acquired for the HSR	Prior to operations and maintenance, the contractor will plant vegetation within land acquired for the Palmdale to Burbank Project Section (e.g., shifting roadways) that is not used for the HSR or related supporting infrastructure, or other higher or better use. Plantings will allow adequate space between the vegetation and the HSR alignment and catenary lines. All street trees and other visually important vegetation removed in these areas during construction would be replaced with similar vegetation that, on maturity, would be similar in size and character to the removed vegetation. Replaced shrubs would be minimum 5-gallon containers and trees will be minimum 24-inch box and 8 feet in height. The Authority will provide for continuous maintenance with appropriate irrigation systems. The contractor will install the irrigation system within the planting areas. No species listed on the Invasive	Post-construction/ Pre-operations	Reporting	Prior to operation and maintenance; monthly reporting	Authority	Authority	Plant vegetation and provide appropriate irrigation prior to operation and maintenance; monthly reporting	Authority to implement appropriate maintenance plan	Impact AVQ#4: Permanent Construction Impacts on Visual Quality.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		Species Council of California's list of invasive species would be planted.								
AVQ-MM#6	Screen Traction Power Supply Stations and Radio Communication Towers	Within 90 days of completing station construction, the contractor will screen from public view the TPSSs (located at approximately 30-mile intervals along the HSR guideway), including radio towers where required, through the use of landscaping or solid walls or fences. This screening will consist of context-appropriate landscaping of a type and scale that does not draw attention to the station or feature. Plant species will be selected based on their mature size and shape, growth rate, hardiness, and drought tolerance. No species on the Invasive Species Council of California's list will be planted. The landscaping will be continuously maintained, and appropriate irrigation systems will be installed within the landscaped areas. Walls would be constructed of cinderblock, or similar material, and will be painted a neutral color to blend in with the surrounding context. If a chain-link or cyclone fence is used, it will include slats in the fencing. Any graffiti or visual defacement or damage of fencing and walls will be painted over or repaired within a reasonable period as agreed between the Authority and local jurisdiction. The contractor will prepare a technical memorandum documenting how the requirements in this measure were implemented. The technical memorandum will be submitted to the Authority to document compliance.	Construction/Post-construction	Reporting	Annually	Contractor	Contractor	A Traction Power Substations (TPPS) shall be screened.	Contract requirements/ specifications	Impact AVQ#4: Permanent Construction Impacts on Visual Quality.
Cultural Resources										
CUL-MM#1	Mitigate adverse effects to archaeological and built-environment resources identified during phased identification and comply with the stipulations regarding the treatment of archaeological and historic built resources in the PA and MOA	Once parcels are accessible and surveys have been completed, including consultation as stipulated in the MOA, additional archaeological and built-environment resources may be identified. For newly identified eligible properties that would be adversely affected, the following process will be followed, which is presented in detail in the BETP and ATP: • The Authority will consult with the MOA signatories and concurring parties to determine the preferred treatment of the properties/resources and appropriate mitigation measures.	Pre-construction/ Construction	Reporting	Weekly	Contractor/ Authority	Contractor/ Authority	Pre-construction surveys and construction/weekly reporting or as dictated by the ATP, BETP, and the MOA	PA	Impact CUL#1: Effects on Known Archaeological Resources Caused by Construction Activities. Impact CUL#2: Effects on Unknown Archaeological Resources Caused by Construction Activities. Impact CUL#3: Effects on Human Remains Discovered during Construction Activities.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		• For CRHR-eligible archaeological resources, the Authority shall determine if these resources can feasibly be preserved in place, or if data recovery is necessary. The methods of preservation in place shall be considered in the order of priority provided in CEQA Guidelines Section 15126.4(b)(3). If data recovery is the only feasible treatment, the Authority shall adopt a data recovery plan as required under CEQA Guidelines Section 15126.4(b)(3)(C). • Should data recovery be necessary, the contractor's Principal Investigator (PI), in consultation with the MOA signatories and consulting parties, would prepare a data recovery plan for approval from the Authority and in consultation with the MOA signatories. On approval, the contractor's PI will implement the plan. • For archaeological resources, the Authority shall also determine if the resource is a unique archaeological site under CEQA. If the resource is not a historical resource but is an archaeological site, the resource shall be treated as required in Cal. Public Res. Code Section 21083.2 by following protection, data recovery, and other appropriate steps outlined in the ATP. The review and approval requirements for these documents is outlined in the ATP. • For historic built resources, the contractor's PI will amend the BETP to include the treatment and mitigation measures identified by the Authority in consultation with the MOA signatories and concurring parties. The contractor's PI will implement the treatment and mitigation measures accordingly.								
CUL-MM#2	Halt work in the event of an archaeological discovery, and comply with the PA, MOA, ATP, and all state and federal laws, as applicable	During construction (i.e., ground-disturbing activities, including cleaning and grubbing) should there be an unanticipated discovery, the contractor shall follow the procedures for unanticipated discoveries as stipulated in the PA, MOA, and associated ATP. The procedures must also be consistent with the following: the SOI's Standards and Guidelines for Archaeology and Historic Preservation (48 Fed. Reg. 44716-42), as amended by the National Park Service, and	Construction	Reporting	During construction	Contractor/ Authority	Contractor	Daily logs during active monitoring	ATP/MOA	Impact CUL#2: Effects on Unknown Archaeological Resources Caused by Construction Activities. Impact CUL#3: Effects on Human Remains Discovered during Construction Activities.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		Guidelines for the Implementation of CEQA, as amended. Should the discovery include human remains, the contractor and the Authority shall comply with federal and state regulations and guidelines regarding the treatment of human remains, including relevant sections of the Native American Graves Protection and Repatriation Act (3l(d)); California Health and Safety Code, Section 8010 et seq.; and Cal. Public Res. Code Section 5097.98; and consult with the NAHC, tribal groups, and the SHPO. In the event of an unanticipated archaeological discovery, the contractor will cease work in the immediate vicinity of the find, based on the direction of the archaeological monitor or the apparent location of cultural resources if no monitor is present. If no qualified archaeologist is present, no work can commence until it is approved by the qualified archaeologist in accordance with the MOA, ATP, and monitoring plan. The contractor's qualified archaeologist will assess the potential significance of the find and make recommendations for further evaluation and treatment as necessary. These steps may include evaluation for the CRHR and NRHP, and necessary treatment to resolve significant impacts if the resource is a historical resource or historic property. If, after documentation is reviewed by the Authority, and they determine it is a historic property and the SHPO concurs that the resource is eligible for the NRHP, or the Authority determines it is eligible for the CRHR, preservation in place shall be considered by the Authority in the order of priority provided in CEQA Guidelines Section 15126.4(b)(3) and in consultation with the signatories and consulting parties to the MOA. If data recovery is the only feasible mitigation, then the contractor's qualified PI shall prepare a data recovery plan as required under CEQA Guidelines Section 15126.4(b)(3)(C), the MOA, and ATP, for the Authority's approval. The contractor shall notify the Authority, who shall notify the CSLC, if the find is a cultural resource on or in the submerged lands of California and consequently under the jurisdiction of the CSLC. The Authority will comply with all applicable rules and regulations promulgated by CSLC with								

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		respect to cultural resources in submerged lands. If human remains are discovered on State-owned or private lands, the contractor shall contact the relevant County Coroner to allow the Coroner to determine if an investigation regarding the cause of death is required. If no investigation is required and the remains are of Native American origin the Authority shall contact the NAHC to identify the most likely descendant (MLD). The MLD shall be empowered to reinter the remains with appropriate dignity. If the MLD fails to make a recommendation, the remains shall be reinterred in a location not subject to further disturbance and the location shall be recorded with the NAHC and relevant Information Center of the California Historical Resources Information System. If human remains are part of an archaeological site, the Authority and contractor shall, in consultation with the MLD and other consulting parties, consider preservation in place as the first option, in the order of priority called for in CEQA Guidelines Section 15126.4(b)(3). In consultation with the relevant Native American tribes, the Authority may conduct scientific analysis on the human remains if called for under a data recovery plan and amenable to all consulting parties. The Authority will work with the MLD to satisfy the requirements of Cal. Public Res. Code Section 5097.98. Performance tracking of this mitigation measure would be based on successful implementation and acceptance of the documentation by the SHPO and appropriate consulting parties.							
CUL-MM#3	Implement other mitigation for effects to precontact archaeological sites	Palmdale to Burbank Project Section, the Authority's ability to fully identify and evaluate archaeological resources within the archaeological APE has, correspondingly, also been limited. Thus, most of the archaeological APE has not been subject to archaeological field inventories. As pedestrian field surveys are a necessary component of the archaeological resource identification and evaluation effort, the commitment to complete the field surveys, prior to ground-disturbing activities associated with the project, is codified in the MOA that has	Pre-construction	Pre-construction surveys	Prior to ground-disturbing activities	Authority	Authority	Conduct archaeological surveys prior to ground-disturbing activities	ATP/MOA	Impact CUL#1: Effects on Known Archaeological Resources Caused by Construction Activities. Impact CUL#2: Effects on Unknown Archaeological Resources Caused by Construction Activities. Impact CUL#3: Effects on Human Remains Discovered during Construction Activities.

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		been completed as a condition of this Final EIR/EIS (Authority 2019h). Access to previously inaccessible properties to complete the archaeological resource identification effort is expected to be available after the ROD, during the design-build phase of the Palmdale to Burbank Project Section. However, due to the design constraints associated with constructing a high-speed train, the ability to shift the alignment to avoid newly identified archaeological resources at this late phase of the project delivery process is substantially limited or unlikely because the alignment is already established. As such, impacts/effects on as-of-yet-unidentified significant archaeological resources as a result of the Palmdale to Burbank Project Section are anticipated; however, the nature and quantity of such effects remains unknown until completion of the archaeological field identification and evaluation effort, and after all ground-disturbing construction activities are complete. Protocols for the identification, evaluation, treatment, and data recovery mitigation of yet-to-be-identified archaeological resources are addressed in the MOA and ATP. Efforts to develop meaningful mitigation measures for effects on as-of-yet-unidentified Native American archaeological resources that cannot be avoided would be negotiated with the tribal consulting parties. Measures that are negotiated among the MOA signatories and tribal consulting parties will be the responsibility of the Authority to implement.								
CUL-MM#4	Minimize adverse effects to archaeological resources through BMPs	The Authority-prepared MOA and ATP may identify archaeological sites and resources that may be protected-in-place through implementation of BMPs for standard practice maintenance and utility connections to reduce ground disturbance activities (i.e., aboveground utility lines and overhead electrical connections).	Pre-construction	Reporting	Monthly or as needed	Authority	Authority	MPA and ATP may identify protected archaeological sites and resources	ATP/MOA/BMPs	Impact CUL#1: Effects on Known Archaeological Resources Caused by Construction Activities.
CUL-MM#5	Minimize adverse effects to Blum Ranch through consultation with SHPO	In the event the E1, E1A, E2 or E2A Build Alternatives are selected, prior to construction, the Authority will be required to consult with the SHPO and the owner of Blum Ranch to develop protection measures to minimize effects on the visual integrity of the Blum Ranch viewshed. The alternative design measures would modify	Pre-construction	Design/Ffinal design	Prior to construction activities	Authority	Authority	Development of protection measures for Blum Ranch	Contract requirements and specifications	Impact CUL#4: Effects to Historic Built Resources Caused by Construction Activities.

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		the color and design of the HSR structure and portal visible from the historic resources. Implementation of such visual modifications would minimize the contrast between the HSR structure and its surroundings within Aliso Canyon, and thus, the visual impact on Blum Ranch.								
CUL-MM#6	Construction Protocols for the Preservation of Eagle and Last Chance Mine Road	To preserve the integrity of the roadway and facilitate its restoration to pre-construction conditions, the road would be covered with geofabric before laying asphalt. Furthermore, asphalt would be removed following construction of the project.	Construction/Post-construction	Roadway covering with geofabric material	Prior to construction activities/Prior to asphalt covering/Post-construction	Contactor	Contactor	Preserve Eagle and Last Chance Mine Road	Contract requirements and specifications	Impact CUL#4: Effects to Historic Built Resources Caused by Construction Activities.
Environmental Justice										
EJ-MM#1	Pre-Construction EJ Community Review and Authority EJ Ombudsman Approval of final Construction-Phase Noise Mitigation and Monitoring Measures Program	The Authority's contractor will be required to submit its proposed and draft construction Noise Monitoring Program (required by N&V-MM#1) to the Authority and the Authority's EJ ombudsman (as this position is defined in EJ-IAMF#1). On the Authority and the Authority's EJ ombudsman's approval, the Authority's contractor will be required to ensure the draft Noise Monitoring Program (Program) is posted on the Authority's website. The posted, draft Program shall include all the Contractor's proposed construction noise mitigations and its proposed Noise Monitoring Program and shall be provided for community review and input in advance of construction start for community comment. The draft Program shall be posted no later than the advance period determined by the Authority's EJ ombudsman. Additionally, concurrent with the posting of the proposed draft Program on the Authority's website, the Authority's contractor shall distribute, for public review and comment, a copy of the draft Program to all community, neighborhood, and environmental justice organizations and affected individuals identified by the Authority's EJ ombudsman. Prior to determining (1) the advance periods for public posting of the Contractor's draft noise mitigations and monitoring program, (2) the noise monitoring locations, and (3) the outreach required by the Contractor for the draft program, the Authority's EJ ombudsman shall conduct direct outreach activities to solicit input from affected	Pre-construction	Plan implementation	Prior to final design	Authority/ Ombudsman	Authority	Ensure that the Contractor's final Noise Monitoring Program considers substantive concerns from affected communities experiencing potentially disproportionately high and adverse construction noise.	Condition of design- build contract.	Noise and Vibration

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		communities on their preferences in these three topic areas. Such outreach shall include, at minimum, affected neighborhoods in Pacoima, Sun Valley and any other community that the Authority determines may be affected by potentially disproportionately high and adverse construction noise, absent mitigation. • The Contractor's EJ liaison (as this position is defined in EJ-IAMF#1) and the Authority's EJ ombudsman shall review all public comments received by any posted comment deadline. The Contractor's EJ liaison shall propose to the Authority EJ ombudsman revisions to the draft Program to address substantive comments and concerns received from potentially affected communities. The Authority EJ ombudsman shall make the final determination as to the sufficiency of the revised, draft Program in addressing comments received from affected communities. That final determination shall include the EJ ombudsman's decision on all noise monitoring locations in the Program. The Contractor's EJ Liaison may not finalize or implement the Program (required under N&V-MM#1) until written approval from the Authority EJ ombudsman is received.							
EJ-MM#2	Pre-Construction Environmental Justice Air Quality Emissions Analysis and Mandatory Community Input on Potential Emissions Reductions and Reduction Exposure Measures	Through a letter agreement between the SCAQMD and the Authority for AQ-MM#1, the Authority committed to submitting an updated construction-phase air quality emissions estimate to the SCAQMD, after the Authority's receipt of funding for construction of this project section. Additionally, the Authority has committed to best available technology measures and best practices to reduce emissions from project construction. AQ-MM#3 sets goals for the Authority construction contractor's use of Zero Emission (ZE) and/or Near Zero Emission (NZE) Vehicles and off-road equipment (a minimum goal of 10%). To ensure that the Authority avoids disproportionate and adverse air quality effects on environmental justice	Preconstruction	Final Design	Prior to construction activities	Authority	Authority	Prepare an updated construction-phase air quality emissions estimate and an environmental justice air quality analysis for any emissions exceedances.	Condition of design- build contract	Air Quality and Global Climate Change

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		communities, the Authority commits as follows. Although the Authority's air quality emissions estimates in this EIR/EIS are conservative and do not model the Authority's commitment to using latest technologies, the Authority has committed to implement best available technology measures and best practices to reduce emissions from project construction. AQ-MM#3 sets goals for the Authority construction contractor's use of Zero Emission (ZE) and/or Near Zero Emission (NZE) Vehicles and off-road equipment (a minimum goal of 10%). Through a letter agreement between the SCAQMD and the Authority for AQ-MM#1, the Authority committed to submitting an updated construction-phase air quality emissions estimate to the SCAQMD, after the Authority's receipt of funding for construction of this project section. If the Authority's updated estimate submitted to the SCAQMD presents exceedances of CAAQs or NAAQs standards, then the Authority shall concurrently prepare and publicly circulate an environmental justice air quality analysis of those emissions exceedances. The environmental justice analysis shall assess whether project section emissions exceedances may disproportionately and adversely affect minority and/or low-income communities and shall also propose all feasible measures to reduce and mitigate any exceedances. The Contractor's EJ Liaison (as this position is defined in EJ-IAMF#1) shall ensure that the draft environmental justice air quality analysis is distributed to potentially affected communities for review and comment. Organizations receiving the draft analysis shall include the Los Angeles Unified School District and all schools, organizations and individuals identified by the Authority EJ ombusdsman. The draft environmental justice air quality analysis shall: • Attach a copy of the letter agreement between the South Coast Air Quality Management District and the Authority's revised emissions estimates submitted to SCAQMD,								

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		• Specifically identify the proposed on-road, off-road, and other construction equipment technology proposed to be used, state whether such technology represents the best available technology, and if no, explain why the best available technology is not feasible, • State what percentage of the Contractor's total on-road and off-road construction vehicles and equipment are zero emissions, and • If zero emissions technology or best available technology is not proposed at percentages that meet AV-MM#3 goals, the Authority's draft environmental justice air quality analysis shall disclose this fact and shall propose additional feasible emissions reductions measures and/or exposure reduction measures for communities affected by the exceedances. The draft environmental justice air quality analysis shall be circulated for a minimum 30-day public review period. The Contractor's EJ Liaison shall review all timely-submitted public comments and shall propose revisions to its proposed emissions reductions and/or exposure reduction measures, vehicles and/or equipment to address concerns. The Contractor's EJ Liaison shall revise the draft environmental justice air quality analysis accordingly and submit the final environmental justice air quality analysis to the Authority's EJ ombudsman. The Authority's EJ ombudsman shall make the final determination as to the adequacy of the Contractor's revisions and as to the adequacy of the revised environmental justice air quality analysis and any additional measures proposed by the Contractor to reduce emissions. The Authority's EJ ombudsman may, in their discretion, require additional public review of the Contractor's proposed revisions. The Authority's Contractor may not begin construction on a job site until written approval from the Authority's EJ ombudsman is received as to the adequacy								

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		of the environmental justice air quality analysis and proposed measures to reduce emissions or to reduce exposure to emissions. .								
OMM #1	Construction Jobs and Opportunities, Training and Workforce Development	The Authority's Regional Workforce Development Board and EJ ombudsman (defined in EJ-IAMF#1) shall develop a Construction Pre-Apprentice Training Program to provide pre-apprenticeship classes and hands-on construction training to EJ communities with potential disproportionately high and adverse effects. The program shall also include special recruitment and project construction job set-aside programs to offset any impacts to jobs associated with business displacements within those EJ communities. The program(s) shall be developed with feedback, input and suggestions made by the EJ communities during community roundtables held by the EJ ombudsman. The Authority shall involve Pacoima Beautiful as part of this program to consider support of its Workforce Development and Economic Opportunities Plan, administered through Los Angeles City College, in cooperation with the Building Trades Council, Plumbers, Cement Masons, Iron Workers, Teamsters, Sheet Metals Workers, Pipefitters, Electricians and Operating Engineers Building Trades Unions. Further, the Authority shall periodically distribute an updated Jobs Fact Sheet and provide press releases that report achieved construction job creation milestones resulting from dispatching workers to build the high-speed rail system. This Jobs Fact Sheet would include the most recent information regarding the National Targeted Hiring Initiative and the total number of minority and/or low-income workers.	Pre-construction	Program development/coordination	Prior to construction	Authority	Authority	Coordinate with local agencies to develop a special training program for disproportionately affected EJ communities.	Condition of design-built contract	Socioeconomic Impacts. effects described in Chapter 5, Environmental Justice, Table 5-25.
OMM #2	Community Connectivity Enhancements and Workshop	The Contractor's EJ liaison shall work with the Authority EJ ombudsman to hold community roundtables in neighborhoods identified in Chapter 5, Environmental Justice (Table 5-25) of the Final EIR/EIS, to seek input on locally desired pedestrian connectivity enhancements prior to the development of 60% Design Plans. Feasible enhancements shall be considered by the Authority (e.g., sidewalk continuity improvements, tree planting, bulb-	Pre-construction	Community outreach/Monitoring / Design	Quarterly	Authority ombudsman /Contractor liaison	Authority ombudsman /Contractor liaison	Conduct community roundtables for input on project designs at 60%.	Community outreach	Socioeconomic Impacts. effects described in Chapter 5, Environmental Justice, Table 5-25.

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		outs/corner extensions, high visibility crosswalks, reflective/high visibility stop signs, lighting, decorative crosswalks, or pedestrian crosswalk motion sensors) for implementation and incorporated into project plans.								
OMM #3	Safety and Montague Street Improvements	For the SR14A Build Alternative, the Contractor's EJ liaison shall work with the Authority EJ ombudsman to hold community roundtables to seek input on locally desired safety improvements at Montague Street (in Pacoima) and in all neighborhoods identified in Chapter 5 (Table 5-25) of the Final EIR/EIS for this Offsetting Mitigation Measure, prior to the development 60% Design Plans. Feasible safety improvements shall be considered by the Authority (e.g., traffic calming such as speed humps/tables, tree planting, sidewalk continuity improvements, bulb-outs/corner extensions, painted crosswalks, reflective/highly visible stop signs, reduced speed limits) for incorporation into project plans, acknowledging limited right-of-way space of approximately 40 feet from curb to curb.	Pre-construction	Community outreach/Monitoring / Design	As needed	Authority ombudsman /Contractor liaison	Authority ombudsman /Contractor liaison	Conduct community roundtables for input on project designs at 60%.	Community outreach	Socioeconomic Impacts. effects described in Chapter 5, Environmental Justice, Table 5-25.
OMM #4	Intermediate Window (SR14-W2), Conveyor Belt Usage Requirements and School Coordination	The Pacoima and Sun Valley Construction Safety Transportation Management Plan (CSTMP) subsections and Transportation Construction Management Plan (TCMP; per TR-MM#12), shall address all project components within a ½-mile radius of Broadus Elementary School and Roscoe Elementary School, emergency vehicle access, temporary road closures, spoils hauling routes, circulation and intermodal connections for travel during the duration of construction. During plan development, the Contractor's EJ liaison shall coordinate with the Authority EJ ombudsman to conduct outreach, hold community roundtables, and seek feedback from LAUSD (with regards to Broadus Elementary School and Roscoe Elementary School) and the communities identified in Table 5-25 of Chapter 5 of the Final EIR/EIS (e.g. Pacoima and Sun Valley communities). The Contractor's EJ liaison shall provide a copy of the draft CSTMP and TCMP to the Authority's EJ ombudsman and then shall provide a copy of these draft plans to communities (listed in Table 5-25) for their review and input in advance of implementing the Plans. The Authority's EJ ombudsman shall determine minimum	Pre-construction/construction	Coordination/Monitoring/Reporting	As needed community outreach; quarterly monitoring and reporting	Authority ombudsman /Contractor liaison	Authority ombudsman /Contractor liaison	Community review of draft CSTMP and TCMP and implement measures to construct conveyor belt	Community outreach	Socioeconomic Impacts. effects described in Chapter 5, Environmental Justice, Table 5-25.

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		advance periods, individuals/organizations receiving the draft, and the community input that must be included in the Authority Contractor's final plans. The Contractor's EJ liaison shall provide written confirmation of compliance with the Authority EJ Ombudsman's instructions at least1 1week before the Contractor implements the Plans. Within 1-week of the close of each quarterly reporting cycle, the Contractor's EJ liaison shall provide the Authority's EJ ombudsman with reports documenting compliance with CSTMP and TCMP requirements and implementation activities. For any construction hauling (including spoils hauling) or construction water truck deliveries within a ½ mile radius surrounding Broadus Elementary or Roscoe Elementary schools, the Contractor shall include the following measures in the CSTMP or the TCMP after seeking the aforementioned feedback from LAUSD through the EJ ombudsman. • Crossing guards and flagging • Up to 5 daily week-day hours of non-operation, immediately before and immediately after school hours as indicated by LAUSD (typically 8:00am to 2:24 pm – Mon, Wed, Thurs, Fri; 8:00am to 1:24 pm – Tues) • Mandatory designated construction vehicle/truck route(s) used during school drop-off/pickup and peak hours • Intersection restrictions on construction hauling and construction water trucks during school hours. For Broadus Elementary, construction traffic restrictions shall be in place at the intersections of Bromont Avenue/Filmore Street and Dronfield Avenue/Montford Street. For Roscoe Elementary, construction traffic restrictions shall be in place at the intersection of Stratham Street/Riverton Avenue. The LAUSD shall have authority to change these intersection restrictions, during the required local roads' encroachment permit process approval of the necessary local road encroachment permit. • The tunnel south of Broadus Elementary School shall be excavated								

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		from south to north to allow for conveyor belt transportation of appropriate spoils directly to Boulevard Mine. If the tunnel north of the school is excavated from south to north and concurrent with the tunnel to the south, appropriate spoils from the northerly excavation shall be stockpiled during peak school traffic hours identified by LAUSD, in construction staging/laydown areas adjacent to the intermediate window (IW), prior to truck transportation occurring outside of the peak school traffic hours. Conveyor belt transportation of all appropriate soils from the tunnel north of the school shall occur during all construction hours, immediately after the tunnel south of the school has been excavated. These requirements for the tunnel north of the school shall be in effect only in the event of contractor selection of IW SR14-W2. • Depending on phasing and direction of drilling near Roscoe Elementary School, the trench near Portal 11 shall be considered as a temporary stockpile location for appropriate spoils prior to transportation. For drilling, both north and south of Portal 11, the Contractor shall primarily use Boulevard Mine as a disposal site, accessed through Portal 10. Prior to the commencement of each subsequent construction phase, the Contractor's EJ liaison shall seek additional input from LAUSD schools in EJ communities (as identified in Table 5-25 of Chapter 5 of the Final EIR/EIS), through the Authority EJ ombudsman. The CSTMP shall be reviewed by the Authority EJ ombudsman and then subsequently by LAUSD for each of the phases of construction (discussed in TR-IAMF#2) and LAUSD may request updates or refinements to the CSTMP for the next construction phase.							
Regional Growth										
There are no mitigation measures required.										

Notes"

[1] Additional details regarding the listed Transportation Mitigation Measures are included in ages 3.2-117 through 3.2-121 of the Final EIR/EIS.

[2] References to Berg,2012 are listed on page 12-32 of the Final EIR/EIS.

Mitigation Measure	Title	Mitigation Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text

ADA	American Disabilities Act
APE	area of potential effects
ATP	Archaeological Treatment Plan
Authority	California High-Speed Rail Authority
AVAQMD	Antelope Valley Air Quality Management District
AVEK	Antelope Valley-East Kern Water Agency
BETP	built environment treatment plan
BMP	best management practice
BRMP	Biological Resources Management Plan
C.F.R.	Code of Federal Regulations
Cal. Public Res. Code	California Public Resources Code Caltrans California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CHRIS	California Historical Resources Information System
CMP	Construction Management Plan
CRHR	California Register of Historical Resources
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibels
EMI	electromagnetic interference
EMF	electromagnetic field
FESA	Federal Endangered Species Act
HSR	High-Speed Rail
IAMF	impact avoidance and minimization feature
LADWP	Los Angeles Department of Water and Power
LAUSD	Los Angeles Unified School District
Leq	equivalent sound level
LOS	level-of-service
MBTA	Migratory Bird Treaty Act
Metro	Los Angeles County Metropolitan Transportation Authority
MOA	memorandum of agreement
MOU	memorandum of understanding
MRI	magnetic resonance imaging
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
NZE	Near Zero Emission
PA	Programmatic Agreement
RF	radio frequency
ROD	records of decision
RWQCB	Regional Water Quality Control Board
SCAQMD	South Coast Air Quality Management District
SHPO	State Historic Preservation Officer
SR	State Route
SWP	State Water Project
TPSS	Traction Power Substations
UAS	Unoccupied Aircraft System
US-101	U.S. Route 101
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compounds
WOTUS	Waters of the United Stated
ZE	Zero Emission
ZEV	Zero Emission Vehicle

Table 3-2 Palmdale to Burbank Project Section Impact Avoidance and Minimization Features

IAMF	Title	IAMF Text	Phase	Implementation	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation	Impact # and Impact Text
Transportation										
TR-IAMF#1	Protection of Public Roadways during Construction	Prior to Construction, the Contractor shall provide a photographic survey documenting the condition of the public roadways along truck routes providing access to the proposed project site. The photographic survey shall be submitted for approval to the agency responsible for road maintenance and the Authority. The Contractor shall be responsible for the repair of any structural damage to public roadways caused by HSR construction or construction access, returning any damaged sections to the equivalent of their original pre-HSR construction structural condition or better. The Contractor shall survey the condition of the public roadways along truck routes providing access to the proposed project site after construction is complete. The Contractor shall complete a before- and after-survey report and submit it to the Authority for review, indicating the location and extent of any damage.	Pre-construction/Post-construction	Survey/Reporting	Immediately prior to and immediately following construction, and during construction as needed.	Authority/ Contractor	Contractor	Provide a photographic survey	Condition of construction contract	Impact TRA#1: Spoils Hauling Effects on Roadway Segments. Impact TRA#7: Project Construction Effects on Vehicles, Pedestrians, Bicyclists, and Transit.
TR-IAMF#2	Construction Transportation Plan	The design-build contractor shall prepare a detailed construction transportation plan (CTP) for the purpose of minimizing the impact of construction and construction traffic on adjoining and nearby roadways in close consultation with the local jurisdiction having authority over the site. Before finalizing the CTP, the Contractor shall provide a draft of the CTP to Los Angeles Unified School District, Acton-Agua Dulce Unified School District, and any other potentially affected public school districts upon their request, for their review and comment. The Authority must review and approve the CTP before the Contractor commences any construction activities. This plan will address, in detail, the activities to be carried out in each construction phase, with the requirement of maintaining traffic flow during peak travel periods. Such activities include, but are not limited to, the routing and scheduling of materials deliveries, materials staging and storage areas, construction employee arrival and departure schedules, employee parking locations, and temporary road closures, if any. The CTP will provide traffic controls pursuant to the California Manual on Uniform Traffic Control Devices sections on temporary traffic controls (Caltrans 2012) and will include a traffic control plan that includes, at a minimum, the following elements: • Temporary signage to alert drivers and pedestrians to the construction zone. • Flag persons or other methods of traffic control. • Traffic speed limitations in the construction zone.	Design/Construction	Prepare plan/Reporting Consult with local city, county, transit agencies, and any key stakeholders identified by the Authority on the draft CTP. Such consultation shall be undertaken prior to seeking Authority review and approval of the CTP. Comments from consulted entities on the CTP will be included in any draft CTP submitted for Authority approval.	At incorporation or completion of design/implementation during construction	Authority/ Contractor	Contractor	Prepare and implement CTP	Condition of construction contract	Impact TRA#1: Spoils Hauling Effects on Roadway Segments. Impact TRA#2: Spoils Hauling Effects on Intersections. Impact TRA#4: Spoils Hauling Effects on Freeway Segments. Impact TRA#5: Spoils Hauling Effects on Transit Services. Impact TRA#7: Project Construction Effects on Vehicles, Pedestrians, Bicyclists, and Transit. Impact PK#2: Construction-Related Access, Noise, Vibration, Air Quality, and Visual Changes to Parks, Recreation, and Open Space Resources

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		• Temporary road closures and provisions for alternative access during the closure. • Detour provisions for temporary road closures—alternating one-way traffic will be considered as an alternative to temporary closures where practicable and where it will result in better traffic flow than will a detour. • Identified routes for construction traffic. • Provisions for safe pedestrian and bicycle passage or convenient detour. • Provisions to minimize access disruption to residents, businesses, customers, delivery vehicles, and buses to the extent practicable—where road closures are required during construction, limit to the hours that are least disruptive to access for the adjacent land uses. • Provisions for farm equipment access. • Provisions for 24-hour access by emergency vehicles. • Safe vehicular and pedestrian access to local businesses and residences during construction. The plan will provide for scheduled transit access where construction will otherwise impede such access. Where an existing bus stop is within the work zone, the design-builder will provide a temporary bus stop at a safe and convenient location away from where construction is occurring in close coordination with the transit operator. Adequate measures will be taken to separate students and parents walking to and from the temporary bus stop from the construction zone. • Advance notification to the local school district of construction activities and rigorously maintained traffic control at all school bus loading zones, to provide for the safety of schoolchildren. Review existing or planned Safe Routes to Schools with school districts and emergency responders to incorporate roadway modifications that maintain existing traffic patterns and fulfill response route and access needs during project construction and HSR operations. • Identification and assessment of the potential safety risks of project construction to children, especially in areas where the project is located near homes, schools, day care centers, and parks. • Promotion of child safety within and near the project area. For example, crossing guards could be provided in areas where construction								

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		activities are located near schools, day care centers, and parks. CTPs will consider and account for the potential for overlapping construction projects.								
TR-IAMF#3	Off-Street Parking for Construction-Related Vehicles	The Contractor shall identify adequate off-street parking for all construction-related vehicles throughout the construction period to minimize impacts to public on-street parking areas. If adequate parking cannot be provided on the construction sites, the Contractor shall designate a remote parking area and arrange for the use a shuttle bus to transfer construction workers to/from the job site. This measure shall be addressed in the CTP.	Design/Construction	Prepare plan	Prior to construction	Authority/ Contractor	Contractor	Prepare CTP/Identify adequate off-street parking for all construction- related vehicles	Condition of construction contract	Impact TRA#7: Project Construction Effects on Vehicles, Pedestrians, Bicyclists, and Transit.
TR-IAMF#4	Maintenance of Pedestrian Access	The Contractor shall prepare specific construction management plans to address maintenance of pedestrian access during the construction period. Actions that limit pedestrian access will include, but not be limited to, sidewalk closures, bridge closures, crosswalk closures or pedestrian rerouting at intersections, placement of construction-related material within pedestrian pathways or sidewalks, and other actions that may affect the mobility or safety of pedestrians during the construction period. If sidewalks are maintained along the construction site frontage, provide covered walkways and fencing. The plan objective shall be to maintain pedestrian access where feasible (i.e., meeting design, safety, Americans with Disabilities Act (ADA) requirements). This measure shall be addressed in the CTP.	Design/Construction	Prepare plan	Prior to construction	Authority/ Contractor	Contractor	Prepare CMPs that address maintenance of pedestrian access	Condition of construction contract	Impact TRA#7: Project Construction Effects on Vehicles, Pedestrians, Bicyclists, and Transit.
TR-IAMF#5	Maintenance of Bicycle Access	The Contractor shall prepare specific construction management plans to address maintenance of bicycle access during the construction period. Actions that limit bicycle access will include, but not be limited to, bike lane closures or narrowing, closure or narrowing of streets that are designated bike routes, bridge closures, placement of construction-related materials within designated bike lanes or along bike routes, and other actions that may affect the mobility or safety of bicyclists during the construction period. Maintain bicycle access where feasible (i.e., meeting design, safety, ADA requirements). This measure shall be addressed in the CTP.	Design/Construction	Prepare plan	Prior to construction	Authority/ Contractor	Contractor	Prepare CMPs that address maintenance of bicycle access	Condition of construction contract	Impact TRA#6: Spoils Hauling Effects on Non-Motorized Modes. Impact TRA#7: Project Construction Effects on Vehicles, Pedestrians, Bicyclists, and Transit.
TR-IAMF#6	Restriction on Construction Hours	The Contractor shall limit construction material deliveries between 7 a.m. and 9 a.m. and between 4 p.m. and 6 p.m. on weekdays to minimize impacts to traffic on roadways. The contractor shall limit the number of construction employees arriving or departing the site between the hours of 7 a.m. and 8:30 a.m. and 4:30 p.m. and 6 p.m. Areas where these restrictions will be implemented will be determined as part of the CTP. Based on Authority	Construction	CTP to be prepared prior to construction followed by reporting	Prior to construction/Weekly	Authority/ Contractor	Contractor	Prepare CTP/Limit construction materials deliveries and employee arrival and departures	Condition of construction contract	Impact TRA#6: Spoils Hauling Effects on Non-Motorized Modes. Impact TRA#7: Project Construction Effects on Vehicles, Pedestrians, Bicyclists, and Transit.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		review of the CTP the restricted hours maybe altered due to local travel patterns.								
TR-IAMF#7	Construction Truck Routes	The Contractor shall deliver all construction-related equipment and materials on the appropriate truck routes and shall prohibit heavy-construction vehicles from using alternative routes to get to the site. Truck routes will be established away from schools, day care centers, and residences, or along routes with the least impact if the Authority determines those areas are unavoidable. This measure shall be addressed in the CTP.	Construction	CTP to be prepared prior to construction followed by reporting.	Prior to construction/Weekly	Authority/ Contractor	Contractor	Prepare CTP/Establish truck routes	Condition of construction contract	Impact TRA#1: Spoils Hauling Effects on Roadway Segments. Impact TRA#2: Spoils Hauling Effects on Intersections. Impact TRA#5: Spoils Hauling Effects on Transit Services. Impact TRA#7: Project Construction Effects on Vehicles, Pedestrians, Bicyclists, and Transit. Impact TRA#8: Project Construction Effects on Roadway Segments.
TR-IAMF#8	Construction during Special Events	The Contractor shall provide a mechanism to prevent roadway construction activities from reducing roadway capacity during major athletic events or other special events that substantially (10 percent or more) increase traffic on roadways affected by project construction. Mechanisms include the presence of police officers directing traffic, special-event parking, use of within-the-curb parking, or shoulder lanes for through-traffic and traffic cones. This measure shall be addressed in the CTP.	Design/Construction	CTP to be prepared prior to construction followed by reporting	Prior to construction/Weekly	Authority/ Contractor	Contractor	Prepare CTP/Event coordination	Condition of construction contract	Impact TRA#1: Spoils Hauling Effects on Roadway Segments.
TR-IAMF#9	Protection of Freight and Passenger Rail during Construction	The Contractor shall repair any structural damage to freight or public railways that may occur during the construction period and return any damaged sections to their original structural condition. If necessary, during construction, a “shoofly” track will be constructed to allow existing train lines to bypass any areas closed for construction activities. Upon completion, tracks will be opened and repaired; or new mainline track will be constructed, and the “shoofly” will be removed. Contractor repair responsibility will be included in the design/build contract.	Construction	CTP to be prepared prior to construction followed by reporting	Weekly	Authority/ Contractor	Contractor	Repair structural damage to freight or public railways	Condition of construction contract	Impact TRA#11: Project Construction Effects on Rail and Transit Services.
TR-IAMF#11	Maintenance of Transit Access	The Contractor shall prepare specific construction management plans to address maintenance of transit access during the construction period. Actions that limit transit access will include, but not be limited to, roadway lane closures or narrowing, closure or narrowing of streets that are designated transit routes, bus stop closures, bridge closures, placement of construction-related materials within designated transit lanes, bus stop or layover zones or along transit routes, and other actions that may affect the mobility or safety of bus transit during the construction period. Maintain transit access where	Construction	CTP to be prepared prior to construction followed by reporting	Prior to construction/Weekly	Authority/ Contractor	Contractor	Prepare CMPs to address maintenance of transit access	Condition of construction contract	Impact TRA#7: Project Construction Effects on Vehicles, Pedestrians, Bicyclists, and Transit.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		feasible (i.e., meeting design, safety, ADA requirements). This measure shall be addressed in the CTP.								
TR-IAMF#12	Pedestrian and Bicycle Safety	Prior to construction, the Contractor shall provide a technical memorandum describing how pedestrian and bicycle accessibility will be provided and supported across the HSR corridor, to and from stations and on station property. Priority of safety for pedestrians and bicycles and vulnerable populations over motor vehicle access will be done in a way so as to encourage maximum potential access from non-motorized modes. Local access programs, such as Safe Routes to Schools, shall be maintained or enhanced. Access to community facilities for vulnerable populations shall be maintained or enhanced.	Pre-construction	Prepare technical memorandum	Prior to construction	Authority/ Contractor	Contractor	Preparation of a pedestrian and bicycle accessibility technical memorandum	Condition of construction contract	Impact TRA#7: Project Construction Effects on Vehicles, Pedestrians, Bicyclists, and Transit.
Air Quality and Global Climate Change										
AQ-IAMF#1	Fugitive Dust Emissions	During construction, the Contractor shall employ the following measures to minimize and control fugitive dust emissions. The Contractor shall prepare a fugitive dust control plan for each distinct construction segment. At a minimum, the plan shall describe how each measure will be employed and identify an individual responsible for ensuring implementation. At a minimum, the plan shall address the following components unless alternative measures are approved by the applicable air quality management district. Before finalizing the plan, the Contractor shall provide a draft of the plan to Los Angeles Unified School District, Acton-Agua Dulce Unified School District, and any other potentially affected public school districts upon their request, for their review and comment. • Cover all vehicle loads transported on public roads to limit visible dust emissions and maintain at least 6 inches of freeboard space from the top of the container or truck bed. • Clean all trucks and equipment before exiting the construction site using an appropriate cleaning station that does not allow runoff to leave the site or mud to be carried on tires off the site. • Water exposed surfaces and unpaved roads at a minimum three times daily with adequate volume to result in wetting of the top 1 inch of soil but avoiding overland flow. Rain events may result in adequate wetting of top 1 inch of soil thereby alleviating the need to manually apply water. • Limit vehicle travel speed on unpaved roads to 15 miles per hour (mph).	Construction	Prepare plan/Reporting	Weekly	Authority/ Contractor	Contractor	Prepare a fugitive dust control plan	Condition of construction contract	Impact PK#2: Construction-Related Access, Noise, Vibration, Air Quality, and Visual Changes to Parks, Recreation, and Open Space Resources.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		• Suspend any dust-generating activities when instantaneous wind speed exceeds 25 mph. • Stabilize all disturbed areas, including storage piles that are not being used on a daily basis for construction purposes, by using water, a chemical stabilizer/suppressant, hydro mulch or by covering with a tarp or other suitable cover or vegetative ground cover, to control fugitive dust emissions effectively. In areas adjacent to organic farms, the Authority will use non-chemical means of dust suppression. • Stabilize all on-site unpaved roads and off-site unpaved access roads, using water or a chemical stabilizer/suppressant, to effectively control fugitive dust emissions. In areas adjacent to organic farms, the Authority will use non-chemical means of dust suppression. • Carry out watering or presoaking for all land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities. • For buildings up to 6 stories in height, wet all exterior surfaces of buildings during demolition. • Limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at a minimum of once daily, using a vacuum-type sweeper. After the addition of materials to or the removal of materials from surface or outdoor storage piles, apply sufficient water or a chemical stabilizer/ suppressant.								
AQ-IAMF#2	Selection of Coatings	During construction, the Contractor shall use: • Low-volatile organic compound (VOC) paint that contains less than 10 percent of VOC contents (VOC, 10%). • Super-compliant or Clean Air paint that has a lower VOC content than that required by SCAQMD Rule 1113 and Antelope Valley Air Quality Management District (AVAQMD) Rule 1113 when available. If not available, the Contractor shall document lack of availability, recommend alternative measure(s) to comply with SCAQMD Rule 1113 and AVAQMD Rule 1113 or disclose absence of measure(s) for full compliance and obtain concurrence from the Authority.	Construction	Low-VOC paint use	Monthly	Authority/ Contractor	Contractor	Use of low-VOC paint during construction	Condition of construction contract	Impact AQ#3: Compliance with Air Quality Plans during Construction.
AQ-IAMF#3	Renewable Diesel	During construction, the Contractor will use renewable diesel fuel to minimize and control exhaust emissions from all heavy-duty diesel-fueled construction diesel equipment and on-road diesel trucks. Renewable diesel must meet the most recent ASTM D975 specification for Ultra Low Sulfur Diesel and have a carbon intensity no greater than 50% of	Construction	Renewable diesel fuel use	Monthly	Authority/ Contractor	Contractor	Use of renewable diesel fuel during construction	Contract requirements and specifications	Impact AQ#2: Regional Air Quality Impacts during Construction. Impact AQ#3: Compliance with Air Quality Plans during Construction.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		diesel with the lowest carbon intensity among petroleum fuels sold in California. The Contractor will provide the Authority with monthly and annual reports, through the EMMA system, of renewable diesel purchase records and equipment and vehicle fuel consumption. Exemptions to use traditional diesel can be made where renewable diesel is not available from suppliers within 200 miles of the project site. The construction contract must identify the quantity of traditional diesel purchased and fully document the availability and price of renewable diesel to meet project demand.								Impact AQ#5: Localized Construction Effects.
AQ-IAMF#4	Reduce Criteria Exhaust Emissions from Construction Equipment	Prior to issuance of construction contracts, the Authority will incorporate the following construction equipment exhaust emissions requirements into the contract specifications: 1. All heavy-duty off-road construction diesel equipment used during the construction phase will meet Tier 4 Final engine requirements. 2. Small diesel generators (less than 30 horsepower) should be avoided whenever feasible. 3. A copy of each unit's certified tier specification and any required CARB or air pollution control district operating permit will be made available to the Authority at the time of mobilization of each piece of equipment. 4. The contractor will keep a written record (supported by equipment-hour meters where available) of equipment usage during project construction for each piece of equipment. 5. The contractor will provide the Authority with monthly reports of equipment operating hours (through the EMMA system) and annual reports documenting compliance.	Pre-construction	Contract specifications	Prior to construction	Authority	Authority	Exhaust emissions requirements incorporated into contract specifications	Contract requirements and specifications	Impact AQ#2: Regional Air Quality Impacts during Construction. Impact AQ#3: Compliance with Air Quality Plans during Construction. Impact AQ#4: Health Risks Assessment for Construction-Period Emissions. Impact AQ#5: Localized Construction Effects.
AQ-IAMF#5	Reduce Criteria Exhaust Emissions from On-Road Construction Equipment	Prior to issuance of construction contracts, the Authority will incorporate the following material-hauling truck fleet mix requirements into the contract specifications: 1. All on-road trucks used to haul construction materials, including fill, ballast, rail ties, and steel, will consist of an average fleet mix of equipment model year 2020 or newer, but no less than the average fleet mix for the current calendar year as set forth in the CARB's EMFAC 2017 database. 2. The contractor will provide documentation to the Authority of efforts to secure such a fleet mix. 3. The contractor will keep a written record of equipment usage during project construction for each piece of equipment and provide the Authority with monthly reports of VMT (through	Pre-construction	Contract specifications	Prior to construction	Authority	Authority	Material-hauling truck fleet mix requirements incorporated into contract specifications	Contract requirements and specifications	Impact AQ#2: Regional Air Quality Impacts during Construction. Impact AQ#3: Compliance with Air Quality Plans during Construction. Impact AQ#5: Localized Construction Effects.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		EMMA) and annual reports documenting compliance.								
AQ-IAMF#6	Reduce the Potential Impact of Concrete Batch Plants	Prior to construction of any concrete batch plant, the contractor will provide the Authority with a technical memorandum documenting consistency with the Authority's concrete batch plant siting criteria and utilization of typical control measures. Concrete batch plants will be sited at least 1,000 feet from sensitive receptors, including places such as daycare centers, hospitals, senior care facilities, residences, parks, and other areas where people may congregate. The concrete batch plant will implement typical control measures to reduce fugitive dust such as water sprays, enclosures, hoods, curtains, shrouds, movable and telescoping chutes, central dust collection systems, and other suitable technology, to reduce emissions to be equivalent to the United States Environmental Protection Agency AP-42 controlled emission factors for concrete batch plants. The contractor will provide to the Authority documentation that each batch plant meets this standard during operation.	Construction	Prepare plan/Reporting	Prior to construction of concrete batch plants	Authority/ Contractor	Contractor	Preparation of a concrete batch plant technical memorandum	Contract requirements and specifications	Impact AQ#2: Regional Air Quality Impacts during Construction. Impact AQ#3: Compliance with Air Quality Plans during Construction. Impact AQ#4: Health Risks Assessment for Construction-Period Emissions. Impact AQ#5: Localized Construction Effects.
Noise and Vibration										
NV-IAMF#1	Noise and Vibration	Prior to Construction, the Contractor shall prepare and submit to the Authority a noise and vibration technical memorandum documenting how the FTA and FRA guidelines for minimizing construction noise and vibration impacts will be employed when work is being conducted within 1,000 feet of sensitive receptors. Typical construction practices contained in the FTA and FRA guidelines for minimizing construction noise and vibration impacts include the following: • Construct noise barriers, such as temporary walls or piles on excavated material, between noisy activities and noise-sensitive resources. • Route truck traffic away from residential streets, when possible. • Construct walled enclosures around especially noisy activities or around clusters or noise equipment. • Combine noisy operations so that they occur in the same period. • Phase demolition, earthmoving, and ground impacting operations so as not to occur in the same time period. Avoid impact pile driving where possible in vibration-sensitive areas.	Pre-construction/ Construction	Prepare technical memorandum/Compliance reporting	Monthly	Authority/ Contractor	Contractor	Prepare a construction noise and vibration technical memorandum	Condition of construction contract	Impact N&V#1: Construction Noise Impacts on Sensitive Receivers. Impact N&V#2: Spoils Haul Route Noise Impacts on Sensitive Receivers. Impact N&V#3: Construction Vibration Impacts on Sensitive Receivers. Impact PK#2: Construction-Related Access, Noise, Vibration, Air Quality, and Visual Changes to Parks, Recreation, and Open Space Resources.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
Electromagnetic Fields and Electromagnetic Interference										
EMI/EMF-IAMF#1	Preventing Interference with Adjacent Railroads	TM 3.00.10. Implementation Stage Electromagnetic Compatibility Program Plan (ISEP) requires coordination with adjacent railroads. During Project Design the Contractor will work with the engineering departments of railroads that operate parallel the HSR to apply standard design practices to prevent interference with the electronic equipment operated by these railroads. Prior to Operation and Maintenance of each operating segment, the Contractor shall certify through issuance of a technical memorandum to the Authority that design provisions to prevent interference have been established and have been determined to be effective prior to the activation of potentially interfering systems of the HSR. The contractor will work with the railroad engineering departments where these railways parallel the HSR to apply the standard design practices to prevent interference with the electronic equipment operated by these railroads. Design provisions to prevent interference will be put in place and determined to be adequately effective by a qualified electrical engineering professional prior to the HSR activation of potentially interfering systems. The HSR Design Criteria Manual (DCM) Chapter 26 summarizes the applicable electromagnetic interference/electromagnetic field (EMI/EMF) design standards that the Authority will use for the project.	Design/Construction	Prepare technical memorandum/Compliance reporting	Monthly	Authority/ Contractor	Contractor/ Authority	Prepare technical memorandum	Condition of construction contract	Impact EMI/EMF#8: EMI Effects on Schools Impact EMI/EMF#11: Effects on Adjacent Existing Rail Lines.
EMI/EMF-IAMF#2	Controlling Electromagnetic Fields/ Electromagnetic Interference	Prior to Construction, the Contractor will prepare an electromagnetic field/electromagnetic interference technical memorandum for review and approval by the Authority. The HSR project shall adhere to international guidelines and comply with applicable federal and state laws and regulations. The HSR project design will follow TM 300.10, ISEP, the CHSR DCM Chapter 26, which provides detailed electromagnetic compatibility (EMC) design criteria for the HSR systems and equipment, and the HSR DCM Chapter 22, which addresses grounding requirements for third-party metallic structures, including fences and pipelines, which are parallel and adjacent to the CHSTS right-of-way. These documents describe the design practices to avoid EMI and to provide for HSR operational safety. Some measures of the ISEP include: • During the planning stage through system design, the Authority will perform EMC/EMI safety analyses, which will include identification of existing nearby radio systems, design of systems to prevent EMI with identified neighboring uses, and incorporation of these design requirements	Design/Construction	Prepare technical memorandum/Compliance reporting	Monthly	Authority/ Contractor	Contractor/ Authority	Prepare EMF/EMI interference technical memorandum	Condition of construction contract	Impact EMI/EMF#1: Temporary Impacts from Use of Heavy Construction Equipment. Impact EMI/EMF#3: Temporary Impacts from Operation of Electrical Equipment. Impact EMI/EMF#5: People with Implanted Medical Devices and Exposure to EMF. Impact EMI/EMF#8: EMI Effects on Schools. Impact EMI/EMF#9: Potential for Corrosion of Underground Pipelines, Cables, and Adjoining Rail. Impact EMI/EMF#10: Potential for Nuisance Shocks.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		into bid specifications used to procure radio systems. • Pipelines and other linear metallic objects that are not sufficiently grounded through the direct contact with earth will be separately grounded in coordination with the affected owner or utility to avoid possible shock hazards. For cases where metallic fences are purposely electrified to inhibit livestock or wildlife from traversing the barrier, specific insulation design measures will be implemented. HSR standard corrosion protection measures will be implemented to eliminate risk of substantial corrosion of nearby metal objects.								Impact EMI/EMF#12: Effects Related to Adjacent Airports.
Public Utilities and Energy										
PUE-IAMF#1	Design Measures	The HSR project design incorporates utilities and design elements that minimize electricity consumption (e.g., using regenerative braking, energy-saving equipment on rolling stock and at station facilities, implementing energy-saving measures during construction, and automatic train operations to maximize energy efficiency during operations). Thus, the project will not overburden utility services. The design elements are included in the design-build contract. Additionally, the Authority has adopted a sustainability policy that establishes project design and construction requirements that avoid and minimize impacts.	Design/Construction	Reporting	At incorporation or completion of design/monthly reporting (during construction)	Authority/ Contractor	Contractor	Incorporate utilities and design elements that minimize electrical consumption into design	Condition of construction contract	Impact PUE#6: Temporary Energy Consumption during Construction. Impact PUE#11: Permanent Operations Energy Demand.
PUE-IAMF#2	Irrigation Facility Relocation	Where relocating an irrigation facility is necessary, the Contractor will verify the new facility is operational prior to disconnecting the original facility, where feasible. Irrigation facility relocation preferences are included in the design-build contract and reduce unnecessary impacts to continued operation of irrigation facilities. The Contractor shall document all relocations in a memorandum for Authority review and approval.	Design/Pre-construction	Reporting	Monthly	Authority/ Contractor	Contractor	Verify new irrigation facilities are operational prior to disconnecting original facility	Condition of construction contract	Impact PUE#1: Planned Temporary Interruption of Utility Services.
PUE-IAMF#3	Public Notifications	Prior to Construction in areas where utility service interruptions are unavoidable, the Contractor will notify the public through a combination of communication media (e.g., by phone, email, mail, newspaper notices, or other means) within that jurisdiction and the affected service providers of the planned outage. The notification will specify the estimated duration of the planned outage and will be published no less than 7 days prior to the outage. Construction will be coordinated to avoid interruptions of utility service to hospitals and other critical users. The Contractor will submit the public communication plan to the Authority 60 days in advance of the work for verification that appropriate messaging and notification are to be provided.	Pre-construction/ Construction	Public notification	Monthly	Authority/ Contractor	Contractor	Public notification of utility service interruptions 60 days in advance of work for verification	Pre-construction/ Construction	Impact PUE#1: Planned Temporary Interruption of Utility Services.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
PUE-IAMF#4	Utilities and Energy	Prior to Construction, the Contractor shall prepare a technical memorandum documenting how construction activities will be coordinated with service providers to minimize or avoid interruptions. It will include upgrades of existing power lines to connect the HSR system to existing utility substations. The technical memorandum shall be provided to the Authority for review and approval.	Design/Pre-construction	Prepare a technical memorandum	At incorporation or completion of design/monthly reporting (during construction)	Authority/ Contractor	Contractor	Prepare service provider coordination technical memorandum	Condition of construction contract	Impact PUE#1: Planned Temporary Interruption of Utility Services. Impact PUE#2: Accidental Disruption of Utility Systems.
Biological and Aquatic Resources										
BIO-IAMF#1	Designate Project Biologist, Designated Biologists, Species-Specific Biological Monitors and General Biological Monitors	At least 15 business days prior to commencement of any ground-disturbing activity, including but not limited to geotechnical investigations, utility realignments, creation of staging areas, or initial clearing and grubbing, the Authority will submit the name(s) and qualifications of Project Biologists, Designated Biologists, Species-Specific Biological Monitors, and General Biological Monitors retained to conduct biological resource monitoring activities and implement avoidance and minimization measures. No ground-disturbing activity will begin until the Authority has received written approval from the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), where applicable, and the CDFW that the biologists and monitors have been approved to conduct the specified work. The Project Biologist is responsible for ensuring the timely implementation of the biological avoidance and minimization measures as outlined in the Biological Resources Management Plan (BRMP), and for guiding and directing the work of the Designated Biologists and Biological Monitors. Designated Biologists will be responsible for directly overseeing and reporting the implementation of general and species-specific conservation measures. In some instances, Designated Biologists will only be approved for specific species, in which case they will only be authorized to conduct surveys and implement measures for the species for which they have been approved. Species-Specific Biological Monitors will be responsible for implementation of species-specific measures for the species for which they have been approved and will report directly to a Designated Biologist. General Biological Monitors will report directly to a Designated Biologist or to the Project Biologist. General Biological Monitors will be responsible for conducting Worker Environmental Awareness Program (WEAP) training, implementing general conservation measures, conducting general compliance monitoring, and reporting on compliance monitoring activities. The term Project Biologist is used in these IAMFs to mean the Project Biologist, Designated Biologists, Species-Specific Biological Monitors, and General Biological Monitors, as appropriate. When the Authority is specified as	Pre-construction	Compliance reporting	15-days prior to ground disturbance	Authority	Authority	Submit names of biologists and monitors to regulatory agencies	Condition of construction contract	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat. Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources. Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq. Impact BIO#10: Project Construction Effects on Federally Designated Critical Habitat.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		implementing an IAMF, it is assumed that the Authority, or its contractor or agent, is implementing the IAMF under the supervision of biologists and biological monitors, as appropriate.								Impact BIO#11: Project Construction Effects on Significant Ecological Areas. Impact BIO#12: Project Construction Effects on Protected Trees. Impact BIO#13: Project Effects on Wildlife Movement Corridors. Operations Impacts Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities. Impact BIO#15: Indirect Effects on Federal and State Protected Aquatic Resources from Project Operation. Impact BIO#16: Indirect Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq. Impact BIO#17: Project Operation Effects on Designated Critical Habitat. Impact BIO#18: Indirect Effects on Significant Ecological Areas from Project Operation.
BIO-IAMF#2	Facilitate Agency Access	Throughout the construction period, the Authority will allow access by the USFWS, NMFS, U.S. Army Corps of Engineers, CDFW, USFS, and State Water Resources Control Board (SWRCB) to the project site. Because of safety concerns, all visitors will check in with the Authority's resident engineer prior to entering the project footprint. In the event that agency personnel visit the project footprint, the Project Biologist will prepare a memorandum within 3 business days after the visit documenting the issues raised during the field meeting. The Project Biologist will report any issues regarding regulatory compliance raised by agency personnel to the Authority.	Construction	Compliance reporting	3 days after regulatory agency site visit	Contractor	Contractor	Prepare memorandum documenting agency site visit	Condition of construction contract	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat. Impact BIO#6: Project Construction Effects on

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
										Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat.
BIO-IAMF#3	Prepare WEAP Training Materials and Conduct Construction Period WEAP Training	Prior to any ground-disturbing activity, the Project Biologist will prepare a Worker Environmental Awareness Program (WEAP) for the purpose of training construction crews to recognize and identify sensitive biological resources that may be encountered in the vicinity of the project footprint. The WEAP training materials will be submitted to the Authority for review and approval. A video of the WEAP training prepared and presented by the Project Biologist and approved by the Authority may be used if the Project Biologist is not available to present the training in person. At a minimum, WEAP training materials will include the following information: key provisions of the federal Endangered Species Act (federal ESA), the California Endangered Species Act (CESA), the BGEPA, the Migratory Bird Treaty Act (MBTA), California Fish and Game Code 1600, Porter-Cologne Water Quality Control Act (Porter-Cologne), and the Clean Water Act (CWA); the consequences and penalties for violation or noncompliance with these laws and regulations and project authorizations; identification and characteristics of special-status plants, special-status wildlife, jurisdictional waters, and special-status plant communities and explanations about their ecological value; hazardous substance spill prevention and containment measures; the contact person in the event of the discovery of a dead or injured wildlife species; and review of avoidance, minimization, and mitigation measures. The Project Biologist will present WEAP training to all construction personnel before they work in the project footprint. As part of the WEAP training, construction timing in relation to species' habitat and life-stage requirements will be detailed and discussed on project maps, which will show areas of planned minimization and avoidance measures. Crews will be informed during the WEAP training that, except when necessary, as determined in consultation with the Project Biologist, travel within the project footprint is restricted to established roadbeds, which include all pre-existing and project-constructed unimproved and improved roads. A fact sheet conveying this information will be prepared by the Project Biologist for distribution to the construction crews and to others who enter the	Pre-construction	Training program/Reporting	Annual (training)/Monthly (reporting)	Contractor/ Authority	Contractor/ Authority	Prepare WEAP/Annual (training)/monthly (reporting)	WEAP	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat. Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources. Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq. Impact BIO#10: Project Construction Effects on Federally Designated Critical Habitat. Impact BIO#11: Project Construction Effects on Significant Ecological Areas.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		project footprint. Fact sheet information will be duplicated in a wallet-sized format and will be provided in other languages as necessary to accommodate non-English speaking workers. All construction staff will attend the WEAP training prior to beginning work on-site and will attend the WEAP training on an annual basis thereafter. Upon completion of the WEAP training, each member of the construction crew will sign a form stating that they attended the training, understood the information presented, and agreed to comply with the requirements set out in the WEAP training. The Project Biologist will submit the signed WEAP training forms to the Authority on a monthly basis. On an annual basis, the Authority will certify that WEAP training had been provided to all construction personnel. On a monthly basis, the Project Biologist will provide updates relevant to the training to construction personnel during the daily safety ("tailgate") meeting.								Impact BIO#12: Project Construction Effects on Protected Trees. Impact BIO#13: Project Effects on Wildlife Movement Corridors.
BIO-IAMF#4	Conduct Operation and Maintenance Period WEAP Training	Prior to initiating operation and maintenance (O&M) activities, O&M personnel will attend a WEAP training session arranged by the Authority. At a minimum, O&M WEAP training materials will include the following information: key provisions of the ESA, CESA, the BGEPA, the MBTA, Porter-Cologne, and the CWA; the consequences and penalties for violation or noncompliance with these laws and regulations and project authorizations; identification and characteristics of special-status plants, special-status wildlife, jurisdictional waters, and special-status plant communities and explanations about their ecological value; hazardous substance spill prevention and containment measures; and the contact person in the event of the discovery of a dead or injured wildlife species. The training will include an overview of provisions of the biological resources management plan, annual vegetation, and management plan, weed control plan and security fencing and wildlife exclusion fencing maintenance plans pertinent to O&M activities. A fact sheet prepared by the Authority environmental compliance staff will be prepared for distribution to the O&M employees. The training will be provided by the Authority environmental compliance staff. The training sessions will be provided to employees prior to their involvement in any O&M activity and will be repeated for all O&M employees on an annual basis. Upon completion of the WEAP training, O&M employees will, in writing, verify their attendance at the training sessions and confirm their willingness to comply with the requirements set out in those sessions.	Post-construction	Training program/Reporting	Annual	Contractor/ Authority	Contractor/ Authority	WEAP Training/Annual reporting	WEAP	Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities. Impact BIO#15: Indirect Effects on Federal and State Protected Aquatic Resources from Project Operation. Impact BIO#16: Indirect Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq. Impact BIO#17: Project Operation Effects on Designated Critical Habitat. Impact BIO#18: Indirect Effects on Significant Ecological Areas from Project Operation. Impact BIO#19: Project Operation Effects on Protected Trees.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
BIO-IAMF#5	Prepare and Implement a Biological Resources Management Plan	Prior to any ground-disturbing activity, the Project Biologist will prepare the BRMP, which will include a compilation of the biological resources avoidance and minimization measures applicable to the HSR section. All project environmental plans, such as the Restoration and Revegetation Plan (RPP) and Weed Control Plan, which shall be made available to USFS for review and approval where it applies to USFS lands, will be included as appendices to the BRMP. The BRMP is intended to serve as a comprehensive document that sets out the range of avoidance and minimization measures to support the appropriate and timely implementation of those measures. The implementation of these measures will be tracked through final design, construction, and operation phases. The BRMP will contain, but not be limited to, the following information: • A master schedule that shows construction of the project, pre-construction surveys, and establishment of buffers and exclusions zones to protect sensitive biological resources. • Specific measures for the protection of special-status species. • Identification (on construction plans) of the locations and quantity of habitats to be avoided or removed, along with the locations where habitats are to be restored. • Identification of agency-approved Project Biologist(s) and Biological Monitor(s), including those responsible for notification and report of injury or death of federally or State-listed species. • Measures to preserve topsoil and control erosion. • Design of protective fencing around Environmentally Sensitive Areas and the construction staging areas. • Locations of trees to be protected as wildlife habitat (roosting sites) and locations for planting replacement trees. • Specification of the purpose, type, frequency, and extent of chemical use for insect and disease control operations as part of vegetative maintenance within sensitive habitat areas. • Specific measures for the protection of vernal pool habitat and riparian areas. These measures may include erosion and siltation control measures, protective fencing guidelines, dust control measures, grading techniques, construction area limits, and biological monitoring requirements.	Pre-construction	Prepare plan	Prior to any ground-disturbing activity	Contractor	Contractor	Prepare BRMP	USFS; USFWS, USACE, SWRCB, and CDFW permits	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat. Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources. Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq. Impact BIO#10: Project Construction Effects on Federally Designated Critical Habitat. Impact BIO#11: Project Construction Effects on Significant Ecological Areas. Impact BIO#12: Project Construction Effects on Protected Trees.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		• Provisions for biological monitoring during ground-disturbing activities to confirm compliance and success of protective measures. The monitoring will: (1) identify specific locations of wildlife habitat and sensitive species to be monitored; (2) identify the frequency of monitoring and the monitoring methods (for each habitat and sensitive species to be monitored); (3) list required qualifications of biological monitor(s); (4) identify the reporting requirements; and (5) provide an accounting of impacts to special-status species habitat compared to pre-construction impact estimates. The BRMP will be submitted to the Authority and USFS, where applicable, for review and approval prior to any ground-disturbing activity.								
BIO-IAMF#6	Establish Monofilament Restrictions	Prior to any ground-disturbing activity, the Project Biologist will verify that plastic monofilament netting (erosion control matting) or similar material is not being used as part of erosion control activities. The Project Biologist will identify acceptable material for such use, including: geomembranes, coconut coir matting, tackified hydroseeding compounds, and rice straw wattles (e.g., Earthsaver wattles: biodegradable, photodegradable, burlap). Within developed or urban areas, the Project Biologist may allow exceptions to the restrictions on the type of erosion control material if the Project Biologist determines that the construction area is of sufficient distance from natural areas to ensure the avoidance of potential impacts to wildlife.	Pre-construction	Compliance reporting	Prior to any ground-disturbing activity/Monthly	Contractor	Authority/ Contractor	Monthly reporting	Condition of construction contract	Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat.
BIO-IAMF#7	Prevent Entrapment in Construction Materials and Excavations	At the end of each workday during construction, the Authority will cover all excavated, steep-sided holes or trenches more than 8 inches deep and that have sidewalls steeper than 1:1 (45 degree) slope with plywood or similar materials, or provide a minimum of 1escape ramp per 100 feet of trenching (with slopes no greater than 3:1) constructed of earth fill or wooden planks. The Project Biologist will thoroughly inspect holes and trenches for trapped animals at the start and end of each workday. The Authority will screen, cover, or elevate at least 1 foot above ground, all construction pipe, culverts, or similar structures with a diameter of 3 inches or greater that are stored overnight within the project footprint. These pipes, culverts, and similar structures will be inspected by the Project Biologist for wildlife before such material is moved, buried, or capped.	Construction	Monitoring/Compliance reporting	Daily monitoring/Monthly reporting	Authority/ Contractor	Contractor	Daily monitoring/monthly reporting	Condition of construction contract	Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat.
BIO-IAMF#8	Delineate Equipment Staging Areas	Prior to any ground-disturbing activity, the Authority will establish staging areas for construction equipment in areas that minimize effects to sensitive biological resources, including habitat for special-	Pre-construction	Compliance reporting	Prior to any ground-disturbing activity/Monthly	Authority/ Contractor	Contractor	Monthly reporting	Condition of construction contract	Impact BIO#1: Project Construction Effects on Habitat for Special-Status

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
	and Traffic Routes	status species, seasonal wetlands, and wildlife movement corridors. Staging areas (including any temporary material storage areas) will be located in areas that will be occupied by permanent facilities, where practicable. Equipment staging areas will be identified on final project construction plans. The Authority will flag and mark access routes to ensure that vehicle traffic within the project footprint is restricted to established roads, construction areas and other designated areas.								Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat.
BIO-IAMF#9	Dispose of Construction Spoils and Waste	During ground-disturbing activities, the Authority may temporarily store excavated materials produced by construction activities in areas at or near construction sites within the project footprint. Where practicable, the Authority will return excavated soil to its original location to be used as backfill. Any excavated waste materials unsuitable for treatment and reuse will be disposed at an off-site location, in conformance with applicable State and federal laws. If a site is already identified as needing restoration post-disturbance, efforts should be made to remove and store the topsoil in a manner that would allow for it to be replaced as part of site restoration.	Construction	Compliance reporting	Monthly	Authority	Contractor	Monthly reporting	Condition of construction contract	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat.
BIO-IAMF#10	Clean Construction Equipment	Prior to any ground-disturbing activity, the Authority will ensure that all equipment entering the work area is free of mud and plant materials. The Authority will establish vehicle cleaning locations designed to isolate and contain organic materials and minimize opportunities for weeds and invasive species to move in and out of the project footprint. Cleaning may be done by washing with water, blowing with compressed air, brushing, or other hand cleaning. The cleaning areas will be located so as to avoid impacts to surface waters and appropriate Stormwater Pollution Prevention Plan (SWPPP) best management practices (BMPs) will be implemented so as to further control any potential for the spread of weeds or other invasive species. Cleaning stations will be inspected regularly (at least monthly).	Pre-construction	Compliance reporting	Prior to any ground-disturbing activity, monthly reporting	Authority/ Contractor	Contractor	Monthly reporting	Condition of construction contract	Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat.
BIO-IAMF#11	Maintain Construction Sites	Prior to any ground-disturbing activity, the Authority will prepare a construction site BMP field manual. The manual will contain standard construction site housekeeping practices required to be implemented by construction personnel. The manual will identify BMPs for the following topics: temporary soil stabilization, temporary sediment control, wind erosion control, non-storm water management, waste management and materials control, rodenticide use, and other general construction site cleanliness measures. The BMP field manual shall be reviewed and approved by USFS if the activities occur within USFS lands.	Pre-construction	Reporting	Prior to any ground-disturbing activity, annual reporting	Authority/ Contractor	Authority	Monthly reporting	Condition of construction contract	Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat. Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat. Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		All construction personnel will receive training on BMP field manual implementation prior to working within the project footprint. All personnel will acknowledge, in writing, their understanding of the BMP field manual implementation requirements. The BMP field manual will be updated by January 31st of each year. The Authority will provide, on an annual basis, training updates to all construction personnel.								Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat. Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat. Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources. Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq. Impact BIO#12: Project Construction Effects on Protected Trees. Impact BIO#13: Project Effects on Wildlife Movement Corridors.
BIO-IAMF#12	Design the Project to be Bird Safe	Prior to final construction design, the Authority will ensure that the catenary system, masts, and other structures such as fencing, electric lines, communication towers and facilities are designed to be bird and raptor-safe in accordance with the applicable recommendations presented in Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006 (APLIC 2006) and Reducing Avian Collisions with Power Lines: State of the Art in 2012 (APLIC 2012). Applicable APLIC recommendations include, but are not limited to: • Ensuring sufficient spacing of phase conductors to prevent bird electrocution. • Configuring lines to reduce vertical spread of lines and/or decreasing the span length if such options are feasible. • Marking lines and fences (e.g., Bird Flight Diverter for fencing and lines) to increase the visibility of lines and reduce the potential for collision. Where fencing is necessary, using bird compatible design standards to increase visibility of fences to prevent collision and entanglement. • Installing perch guards to discourage avian presence on and near project facilities. • Minimizing the use of guywires. Where the use of guywires is unavoidable, demarcating	Pre-construction	Design	Prior to final design	Authority	Authority	Bird and raptor- safe design catenary system, masts, and other structures such as fencing	Condition of construction contract	Impact BIO#10: Project Construction Effects on Federally Designated Critical Habitat. Impact BIO#11: Project Construction Effects on Significant Ecological Areas. Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		guywires using the best available methods to minimize avian strikes (e.g., line markers). • Reusing or co-locating new transmission facilities and other ancillary facilities with existing facilities and disturbed areas to minimize habitat impacts and avoid collision risks. • Structures will be monopole or dual-pole design versus lattice tower design to minimize perching and nesting opportunities. Communication towers will conform to Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning (UFWS 2018). • Use of facility lighting that does not attract birds or their prey to project sites. These include using non-steady burning lights (red, dual red and white strobe, strobe-like flashing lights) to meet Federal Aviation Administration requirements, using motion or heat sensors and switches to reduce the time when lights are illuminated, using appropriate shielding to reduce horizontal or skyward illumination, and avoiding the use of high-intensity lights (e.g., sodium vapor, quartz, and halogen). Lighting will not be installed under viaduct and bridge structures in riparian habitat areas. Additional bird operational actions will be required for dry lakes and playas, Audubon Important Bird Areas and documented avian movement corridors. These measures include: • Avoid, to the extent feasible, siting transmission lines across canyons or on ridgelines to prevent bird and raptor collisions. • Install bird flight diverters on all facilities spanning or within 1,000 feet of stream and wash channels, canals, ponds, and any other natural or artificial body of water. • Fencing or other type of flight diverter will be installed on all viaduct structures to encourage birds and raptors to fly over the HSR and avoid flying directly in the path of on-coming trains. • Ensure poles do not have openings that could entrap birds. Measures may include sealing or capping all openings in poles or providing for escape routes (e.g., openings accommodating escape for various species). Design aerial structures (e.g., viaducts and bridges) and tunnel portals to discourage birds and bats from roosting in expansion joints or other crevices.								
Hydrology and Water Resources										

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
HYD-IAMF#1	Stormwater and Groundwater Management	Prior to Construction, the Contractor shall prepare a storm and groundwater management and treatment plan for review and approval by the Authority. During the detailed design phase, each receiving storm and groundwater system's capacity to accommodate project runoff will be evaluated. As necessary, on-site storm and groundwater management measures, such as detention or selected upgrades to the receiving system, will be designed to provide adequate capacity and to comply with the design standards in the latest version of Authority Technical Memorandum 2.6.5 Hydraulics and Hydrology Guidelines. On-site storm and groundwater management facilities will be designed and constructed to capture runoff and provide treatment prior to discharge of pollutant-generating surfaces, including station parking areas, access roads, new road over- and underpasses, reconstructed interchanges, and new or relocated roads and highways. Low-impact development techniques will be used to detain runoff on site and to reduce off-site runoff such as constructed wetland systems, biofiltration and bioretention systems, wet ponds, organic mulch layers, planting soil beds, and vegetated systems (biofilters), such as vegetated swales and grass filter strips, will be used where appropriate.	Design	Prepare plan	At incorporation or completion of design	Authority/ Contractor	Contractor	Prepare a stormwater management and treatment plan	Condition of construction contract	Impact HWR#1: Permanent Alteration of Surface Drainage Patterns from Aboveground Temporary Construction Activities and Permanent Structures Required for the Build Alternatives. Impact HWR#3: Changes in Flood Risks Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives.
HYD-IAMF#2	Flood Protection	Prior to Construction, the Contractor shall prepare a flood protection plan for Authority review and approval. The project will be designed both to remain operational during flood events and to minimize increases in 100-year or 200-year flood elevations, as applicable to locale. Design standards will include the following: • Establish track elevation to prevent saturation and infiltration of stormwater into the sub-ballast. • Minimize development within the floodplain, to such an extent that water surface elevation in the floodplain will not increase by more than 1 foot, or as required by state or local agencies, during the 100-year or 200-year flood flow [as applicable to locale]. Avoid placement of facilities in the floodplain or raise the ground with fill above the base-flood elevation. • Design the floodplain crossings to maintain a 100-year floodwater surface elevation of no greater than 1 foot above current levels, or as required by state or local agencies, and project features within the floodway itself will not increase existing 100-year floodwater surface elevations in Federal Emergency Management Agency-designated floodways, or as otherwise	Design	Prepare plan	At incorporation or completion of design	Authority/ Contractor	Contractor	Prepare flood protection plan	Condition of construction contract	Impact HWR#1: Permanent Alteration of Surface Drainage Patterns from Aboveground Temporary Construction Activities and Permanent Structures Required for the Build Alternatives. Impact HWR#3: Changes in Flood Risks Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		agreed upon with the county floodplains manager. The following design standards will minimize the effects of pier placement on floodplains and floodways: • Design site crossings to be as nearly perpendicular to the channel as feasible to minimize bridge length. • Orient piers to be parallel to the expected high-water flow direction to minimize flow disturbance. • Elevate bridge crossings at least 3 feet above the high-water surface elevation to provide adequate clearance for floating debris, or as required by local agencies. • Conduct engineering analyses of channel scour depths at each crossing to evaluate the depth for burying the bridge piers and abutments. Implement scour-control measures to reduce erosion potential. • Use quarry stone, cobblestone, or their equivalent for erosion control along rivers and streams, complimented with native riparian plantings or other natural stabilization alternatives that will restore and maintain a natural riparian corridor. Place bedding materials under the stone protection at locations where the underlying soils require stabilization as a result of stream-flow velocity.								
HYD-IAMF#3	Prepare and Implement a Construction Stormwater Pollution Prevention Plan	Prior to Construction (any ground-disturbing activities), the Contractor shall comply with the SWRCB Construction General Permit requiring preparation and implementation of a SWPPP. The Construction SWPPP will propose BMPs to minimize potential short-term increases in sediment transport caused by construction, including erosion control requirements, stormwater management, and channel dewatering for affected stream crossings. These BMPs will include measures to incorporate permeable surfaces into facility design plans where feasible, and how treated stormwater will be retained or detained on site. Other BMPs shall include strategies to manage the amount and quality of overall stormwater runoff. The Construction SWPPP will include measures to address, but are not limited to, the following: • Hydromodification management to verify maintenance of pre-project hydrology by emphasizing on site retention of stormwater runoff using measures such as flow dispersion, infiltration, and evaporation (supplemented by detention where required). Additional flow	Pre-construction/ Construction	Permit compliance	At incorporation or completion of design/during monthly construction report	Authority/ Contractor	Contractor	Prepare Construction SWPPP	Condition of construction contract	Impact HWR#1: Permanent Alteration of Surface Drainage Patterns from Aboveground Temporary Construction Activities and Permanent Structures Required for the Build Alternatives Impact HWR#2: Construction Activities Required for the Build Alternatives. Impact PK#2: Construction-Related Access, Noise, Vibration, Air Quality, and Visual Changes to Parks, Recreation, and Open Space Resources.

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		control measures will be implemented where local regulations or drainage requirements dictate. • Implementing practices to minimize the contact of construction materials, equipment, and maintenance supplies with stormwater. • Limiting fueling and other activities using hazardous materials to areas distant from surface water, providing drip pans under equipment, and daily checks for vehicle condition. • Implementing practices to reduce erosion of exposed soil, including soil stabilization, regular watering for dust control, perimeter siltation fences, and sediment catchment basins. • Implementing practices to maintain current water quality, including: siltation fencing, wattle barriers, stabilized construction entrances, grass buffer strips, ponding areas, organic mulch layers, inlet protection, storage tanks and sediment traps to arrest and settle sediment. • Where feasible, avoiding areas that may have substantial erosion risk, including areas with erosive soils and steep slopes. • Using diversion ditches to intercept surface runoff from off site. • Where feasible, limiting construction to dry periods when flows in water bodies are low or absent. • Implementing practices to capture and provide proper off-site disposal of concrete wash water, including isolation of runoff from fresh concrete during curing to prevent it from reaching the local drainage system, and possible treatments (e.g., dry ice). • Developing and implementing a spill prevention and emergency response plan to handle potential fuel and/or hazardous material spills. Implementation of a SWPPP will be performed by the construction contractors as directed by the contractor's Qualified SWPPP Practitioner or designee. As part of that responsibility, the effectiveness of construction BMPs must be monitored before, during and after storm events. Records of these inspections and monitoring results are submitted to the local RWQCB as part of the annual report required by the Statewide Construction General Permit. The reports are available to the public online. The SWRCB and RWQCB will have the opportunity to review these documents.							

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HYD-IAMF#4	Prepare and Implement an Industrial Stormwater Pollution Prevention Plan	Prior to Construction of any facility classified as an industrial facility, the Contractor shall comply with existing water quality regulations. The stormwater general permit requires preparation of a SWPPP and a monitoring plan for industrial facilities that discharge stormwater from the site, including vehicle maintenance facilities associated with transportation operations. The permit includes performance standards for pollution control.	Design/Construction	Permit compliance	At incorporation or completion of design/during monthly operation report	Authority/ Contractor	Contractor	Prepare industrial SWPPP	Condition of construction contract	Impact HWR#6: Project Operation Effects on Water.
HYD-IAMF#5	Tunnel Boring Machine Design and Features	Certain types of Tunnel Boring Machines (TBMs) can operate in either an open hard rock tunneling mode (open-mode) or a pressurized tunneling mode (closed-mode). TBMs capable of operating in either of these modes are referred to as “hybrid” TBMs. Closed-mode operations will effectively prevent seepage from occurring at the cutterhead area, even under difficult ground conditions. The mode of operation for the proposed TBMs that will be employed will be determined by the specific conditions encountered along the tunnel alignment. The current technology allows TBMs to sustain up to 17 bar of groundwater pressure while boring without additional measures. In areas where pressures can be expected to be higher, additional measures such as pre-grouting will be taken to minimize the water inflow into the tunnel during construction (see HYD-IAMF#7 for details). In circumstances where groundwater pressures are 25 bar or less, a one-pass lining system will be installed in the tunnels constructed behind the passing TBM. In circumstances in which groundwater pressures exceed 25 bar, a two-pass lining system will be installed after the TBM has finalized its operations. A two-pass lining system will also be used in all instances for conventionally mined tunnels. See HYD-IAMF#6 below for more details. The TBMs that will be needed for this project will be required to operate in a closed-mode when needed. The pressurization of the face will be achieved with Slurry or Earth Pressure Balance (EPB) technologies. The precise type of TBMs that will be used for the Build Alternatives cannot be identified at this time, since the selection of a TBM type will depend on a detailed knowledge of the geotechnical and hydrogeological ground conditions that exist along the alignments. Nevertheless, Slurry TBMs are generally more compatible with the high-water pressure conditions that will be encountered under the Build Alternatives. The TBMs will be designed with ports for drilling horizontal probe holes through the TBM cutterhead, and angled probe holes through the TBM shields (see Figure 1). These holes will allow for water pressures and flow rates to be measured ahead of	Design	Design of TBMs	During Project design phase	Authority	Contractor	Design TBMs for the Project	Condition of construction contract	Impact HWR#4: Changes in Groundwater Recharge Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives. Impact HWR#5: Changes in Hydrogeologic Conditions Associated with Tunnel Construction Beneath the ANF which May Affect Surface and Subsurface Water Resources.

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		the TBM. The probe holes, equipped with blow out preventers, will allow for pre-excavation grouting ahead of the TBM to cut-off groundwater inflows into the tunnel. The design and configuration of probe/grout holes will allow for concurrent drilling and grouting of multiple holes ahead of the TBM, and around the entire tunnel perimeter. Such probing and grouting operations are most applicable to a TBM operating in an open mode and will be mandatory in that instance (see HYD-IAMF#7). Two additional TBM features may be required for the construction of these tunnels: • capability for injection of pressurized bentonite to fill the void space between the TBM shield and the rock/soil outside the shield, when working in a closed-mode, and • the use of an automatic tail void grouting system in which grout is injected simultaneously with the TBM advance while operating both in closed-mode and open-mode (see HYD-IAMF#7 “Grouting” section below).								
HYD-IAMF#6	Tunnel Lining Systems	In circumstances where groundwater pressures are 25 bar or less, a one-pass lining system will be installed in the tunnels constructed using a TBM. The lining system, which will consist of segmental, precast, concrete lining with bolted and gasketed joints, will create a tunnel lining capable of resisting the groundwater pressure with minimal, leakage. A one-pass lining system could potentially be used in higher pressure locations if technological advancements were sufficient to ensure watertight seals under those pressures. The steps to build the first lining will be the following: 1. probing ahead of the front of the cutter head to gather data about groundwater and rock conditions, 2. if the water pressure is above the TBM design pressure and it cannot work in closed-mode alone, pre-grouting ahead of the TBM through the cutter head and the shield. 3. checking with additional bores the effectiveness of the pre-grouting, and drilling of new boreholes and pre-grouting again if required, 4. excavate the ground to allow mounting of a new segmental ring, building the first lining typically about 12 m (40 feet length) behind the cutter head and performing the backfill grouting of the gap with a quick-setting grout,	Construction	Install one-pass lining system	Prior to operations	Authority/ Contractor	Authority/Contactor	Design and install one-pass lining system in the tunnels constructed using a TBM	Condition of construction contract	Impact HWR#4: Changes in Groundwater Recharge Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives. Impact HWR#5: Changes in Hydrogeologic Conditions Associated with Tunnel Construction Beneath the ANF which May Affect Surface and Subsurface Water Resources.

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		5. finally, if leakage is detected through the first lining, punctual check grouting through the cast-in grout ports in the first lining takes place as needed to stop leakage. Even when following the steps above, during construction, some leakage might occur in the area between the cutter head and the first ring of lining segments. This might happen if the pre-grouting treatment fails, and the ground water pressure exceeds the maximum sustained by the TBM shield. In this situation, additional measures will be taken to reduce the permeability of the surrounding ground and therefore, the water inflow. These measures can be: • perform additional grouting through new holes drilled through the shield and the cutter head; • perform ground freezing techniques in case of loose soils with high-permeability. In sections where groundwater pressures are above 25 bar, a second tunnel lining would be installed to ensure water tight tunnels over the long-term. Current gaskets available in the market are nominally rated up to 50 bar; however these gaskets are assumed to withstand only 25 bars in the design (using a safety factor of 2) to account for construction quality defects and the 100-year lifespan of the infrastructure. In order to minimize water leakage into the tunnel for the complete lifespan of the infrastructure, in the segments where ground water pressures are expected to exceed 25 bar, a monolithic second lining will be put in place after the TBM has finalized its operations and all its facilities have been dismantled (approx. 16 months). If any water flow is detected during the construction period after the installation of the first lining and before the second lining deployment, additional check grouting will be implemented as needed. After completion of the second lining, the tunnel will be considered to be dry during the lifespan of the infrastructure.							
HYD-IAMF#7	Grouting	A multi-phase grouting program will be implemented during the construction of the tunnels. A primary objective of the grouting program will be to reduce or prevent potential groundwater flows into the tunnels. The grouting program will be implemented for both TBM constructed and conventionally mined tunnels, although in the case of conventionally mined tunnels only pre-excavation grouting, and check grouting will be used. The groundwater elevations can be obtained from the network of piezometers recommended in the Geotechnical Investigation Plan for the design phase	Construction/Post-construction	Implement grouting program	Monthly	Authority/ Contractor	Contractor	Implement a multi-phase grouting program within the Project tunnels	Condition of construction contract	Impact HWR#4: Changes in Groundwater Recharge Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives. Impact HWR#5: Changes in Hydrogeologic Conditions Associated with Tunnel Construction Beneath the ANF which May Affect

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		of the project. This will allow for development of appropriate grouting methods as well as provide a monitoring program to detect real-time changes of the groundwater elevations during construction. To the extent applicable and feasible, the following grouting methods will be used during the construction of the tunnels to avoid and minimize groundwater flows into the tunnels: • Pre-excavation grouting— During TBM tunnel construction using the open-mode approach, pre-excavation grouting will be implemented to reduce groundwater flow from the rock/soil mass prior to excavation, and to improve rock/soils conditions for tunneling. Systematic pre-excavation grouting ahead of the TBM will be performed to allow the TBM to advance, and the tunnel lining system to be installed, with minimum impacts to groundwater resources. Grout will be injected through the TBM shield and cutterhead holes. In circumstances where conventional mining methods are used, grout will be injected through drill holes advanced through the tunnel face and around the tunnel perimeter. The overall range of criteria for length and direction of drill holes, number of holes, grout composition and injection pressures will be determined based on a more extensive Geotechnical Baseline Report and the range of conditions anticipated from that report. The field conditions will then be used to select the appropriate application of the pre-excavation grouting technology at each specific location. The pre-grouting will create a zone of treated rock/soil around the tunnel that will be sealed to minimize groundwater inflows. Additional grouting will be implemented radially outward from the tunnel interior to broaden the diameter of the grouted zone surrounding the tunnel, as necessary, to further reduce groundwater flows into the tunnel. • There are many international examples showing that pre-excavation grouting is effective in preventing the flow of water in tunnels during its construction. This technique has existed for more than 60 years and has experienced a rapid development during the last 20 years. Pressure injection has been used up to 1650 feet of water column (50 bar). • A set of target water ingress flow rates should be established for this project prior to construction, based on the detailed studies to be developed in later phases, like ground water models and aquifer studies. Target inflow rates for both the construction and operation phases								Surface and Subsurface Water Resources.

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		should be defined, as well as differentiating per geologic formations or the different aquifers identified. • Steering (overcut) gap around the body of the shield—During construction, pressurized bentonite will be injected to fill the void space between the TBM shield and the rock/soil outside the shield. The void space will be filled to seal off any potential water leakage from the cutterhead of the TBM back towards the rear of the shield. The capacity to inject pressurized bentonite is a built-in characteristic of a Slurry TBM, but this feature will need to be added to an EPB TBM if that type of TBM were to be selected. After advancing the machine, the void will be filled with the backfill grout placed around the tunnel lining (see below). • Backfill grouting with two-component grout—During construction, backfill grouting will occur simultaneously with the advancement of the TBM. Grout will be injected from the tail of the shield to fill the annular gap between the TBM excavation limits and the segmental lining. The annular gap from the tail of the shield will be filled with a quick-setting grout to prevent water from traveling along the interface between the lining and the rock/soil. The accelerated two-component grout is superior to conventional cement grouts because it provides for complete and reliable backfilling of the annular gap. Moreover, this material hardens very quickly and provides resistance to water flow upon hardening. • Check grouting— After the tunnel lining has been installed and backfilled, check grouting will be injected through grout ports in the tunnel lining where the back filling volume is less than the theoretical volume or there is evidence of groundwater inflow. The ports will be opened to check for voids and groundwater inflows. If any voids were detected, grout will be injected into the annular space under pressure (typically 0.7 to 1.0 bar higher than the static groundwater pressure) between the lining and rock/soil wall to control groundwater flows. The check grouting will be used for both single pass and double pass linings and will further reduce the potential for water to leak through the lining and into the tunnel.								
HYD-IAMF#8	Private Well Monitoring and Minimizing	**Private Well Monitoring** Prior to tunnel construction, the Authority will identify all private water supply wells within the tunnel	Pre-construction/ Construction	Monitoring/Reporting	Monthly	Authority	Authority	Identify and monitor existing private wells for water quality impacts and replace	Condition of construction contract	Impact HWR#4: Changes in Groundwater Recharge Associated with Temporary Construction Activities and

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	Access Disruptions for Private Water Supply Wells Outside of the ANF	alignment outside of the ANF that may be rendered unusable due to tunnel construction. Baseline conditions prior to construction start, including pumping capacity and water quality, will be recorded for each well. Per the Authority's Right-of-Way Manual (see Section 8.07.00.00, Water Wells), if the project's tunneling intersects with a private well, the replacement of an affected private water supply well is among the options that the Authority will consider. Any final measures that the Authority undertakes will be determined only after consultation with the affected property owner. **General Approach for Replacing Private Wells** It is anticipated that any replacement well would be located on the owner's remainder property as close as reasonably possible to the existing well. If replacing a well is not feasible, the Authority will work with the property owner to identify an alternate water source for the affected property, which may include acquiring access to water wells on other properties or connecting to another water source to provide a water supply that is comparable to pre-existing conditions, to the extent feasible. Any replacement wells must be constructed in compliance with applicable regulations, including regulations by the Department of Water Resources (e.g., Bulletins 74-81 and 74-90, as adopted by local agencies), the SWRCB, and the Department of Toxic Substances Control. **Well Replacement** If the Authority determines that a well must be acquired and replacement is appropriate, the Authority will generally cause the original well to be abandoned and will fairly compensate the well owner for the cost of establishing a replacement well or connecting to another water source. Other options that the Authority will consider to replacing an existing well will include: the identification an alternative water source to provide a water supply that is equivalent in quantity and quality to pre-existing conditions for the affected well owner. Under Section 8.07.03.00 of the Authority's Right-of-Way Manual, the Authority's policies and procedures allow for a follow-on monitoring period to ensure that the new well's supply is equivalent to the initial well. If it is not, the Authority's policies and procedures allow for compensation to the well owner to address needs to reach an equivalent water supply. **Compensation to Property Owner** If impacts to water supply wells necessitate acquisition of wells and/or the real property in which they are situated, the acquisition (and compensation for the acquisition) will occur in compliance with the						private wells as needed		Permanent Structures Required for the Build Alternatives.

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		Authority's Right-of-Way Manual, and the Uniform Relocation Assistance and Real Property Acquisition Policies Act.								
Geology, Soils, Seismicity, and Paleontological Resources										
GEO-IAMF#1	Geologic Hazards	Prior to construction, the Contractor shall prepare a Construction Management Plan (CMP) addressing how the Contractor will address geologic constraints and minimize or avoid impacts to geologic hazards during construction. The plan will be submitted to the Authority for review and approval. Additionally, the CMP shall include, if deemed necessary, details regarding the automated remote monitoring and define the settlement/deformation thresholds. The CMP will be developed during future project stages. At a minimum, the plan will address the following geological and geotechnical constraints/ resources: a) Groundwater Withdrawal. Controlling the amount of groundwater withdrawal from the project, by re-inject groundwater at specific locations if necessary, or use alternate foundation designs to offset the potential for settlement. This control is important for locations with retained cuts in areas where high groundwater exists, and where existing buildings are located near the depressed track section. b) Unstable Soils and Slope Instability. Employing various methods to mitigate for the risk of ground failure from unstable soils or slope instability. If soft or loose soils are encountered at shallow depths, they can be excavated and replaced with competent soils. To limit the excavation depth, replacement materials can also be strengthened using geosynthetics. Where unsuitable soils are deeper, ground improvement methods, such as stone columns, cement deep-soil-mixing, or jet-grouting, can be used. Alternatively, if sufficient construction time is available, preloading—in combination with prefabricated vertical drains (wicks) and staged construction—can be used to gradually improve the strength of the soil without causing bearing-capacity failures. Unstable slopes or landslide areas should be mitigated through appropriate methods for slope stabilization and landslide remediation. Methods for stabilizing landslides include applications of dewatering, earthwork (mass grading including buttress construction or complete landslide removal), and structural solutions such as retaining walls, tie-back systems, or pile installation c) Subsidence. The Authority addresses subsidence in its design and construction processes. For the initial design, survey monuments were installed to establish a datum and set an initial track profile.	Design/Construction	Prepare plan	At incorporation or completion of design/during monthly construction report	Authority/ Contractor	Contractor	Prepare Construction Management Plan (CMP)	Condition of construction contract	Impact GSSP#1: Ground Subsidence and Ground Settlement Could Endanger People or Structures During Construction. Impact GSSP#2: Karst Terrain Could Endanger People or Structures During Construction. Impact GSSP#3: Landslides Could Endanger People or Structures During Construction. Impact GSSP#4: Construction Could Expose Erodible Soils During Construction. Impact GSSP#5: Expansive, Corrosive, and Collapsible Soils Could Endanger People or Structures During Construction. Impact GSSP#6: Areas of Difficult Excavation Could Potentially Endanger Workers and Facilities. Impact GSSP#7: Fault Rupture and Seismic Ground Shaking Could Endanger People or Structures During Construction. Impact GSSP#8: Liquefaction, Lateral Spreading, and Ground Lurching Could Endanger People or Structures During Construction. Impact GSSP#15: Surface Excavation and Subsurface Tunneling Could Destroy Unique Paleontological Resources. Impact GSSP#16: Effects of Geologic Hazards During Operations. Impact HMW#2: Potential to Encounter PEC Sites with Known and/or Suspected

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		In the construction phase, the design-build (DB) contractors for track bed preparation will conduct topographic surveys for preparation of final design. Because subsidence could have occurred since the original benchmarks (survey monuments) were established, the DB contractor's topographic surveys will be used to help determine whether subsidence has occurred. The updated topographic surveys will also be used to establish the top of rail elevations for final design where the HSR system is outside established floodplain areas and above water surface elevations. Where the HSR system is in floodplain areas susceptible to flooding, consideration is being given to overbuild the height of the rail bed in anticipation of future subsidence. d) Water and Wind Erosion. The Contractor will implement erosion control methods as appropriate from the various erosion control methods documented in the Construction Storm Water Pollution Prevention Plan (SWPPP) (See HYD-IAMF#3), the California Department of Transportation (Caltrans) Construction Manuals, and the construction technical memorandum (see GEO-IAMF#6), and in coordination with other erosion, sediment, stormwater management and fugitive dust control efforts. Water and wind erosion control methods may include, but are not limited to, use of revegetation, stabilizers, mulches, and biodegradable geotextiles. e) Soils with Shrink-Swell Potential. In locations where shrink-swell potential is marginally unacceptable, soil additives will be mixed with existing soil to reduce the shrink-swell potential. Construction specifications will be based upon the decision whether to remove or treat the soil. This decision is based on the soils, specific shrink-swell characteristics, the additional costs for treatment versus excavation and replacement, as well as the long-term performance characteristics of the treated soil. f) Soils with Corrosive Potential. In locations where soils have a potential to be corrosive to steel and concrete, the soils will be removed and buried structures will be designed for corrosive conditions, and corrosion-protected materials will be used in infrastructure. g) Health and Safety Plan. Contractor shall be responsible for developing and implementing a health and safety plan to address geologic hazards.							Contamination during Construction.
GEO-IAMF#2	Slope Monitoring	During O&M, the Authority shall incorporate slope monitoring by a Registered Engineering Geologist	Operation	Prepare plan/Monitoring	Monthly during operation	Authority/ Contractor	Contractor	Slope monitoring during operation	Condition of construction contract	N/A

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		into the O&M procedures. The procedures shall be implemented at sites identified in the CMP where a potential for long-term instability exists from gravity or seismic loading including but not limited to at-grade sections where slope failure could result in loss of track support, or where slope failure could result in additional earth loading to foundations supporting elevated structures.								
GEO-IAMF#3	Gas Monitoring	Prior to construction, the Contractor shall prepare a CMP addressing how gas monitoring will be incorporated into construction best management practices. The CMP will be submitted to the Authority for review and approval. Hazards related to potential migration of hazardous gases due to the presence of known oil and gas fields, areas of active or historic landfills, or other subsurface sources can be reduced or eliminated by following strict federal and state Occupational Safety & Health Administration (OSHA/Cal-OSHA) regulatory requirements for excavations, and by consulting with other agencies as appropriate, such as the Department of Conservation (Division of Oil and Gas) and the California Environmental Protection Agency, Department of Toxic Substances Control, regarding known areas of concern. Practices will include using safe and explosion-proof equipment during construction, and testing for gases regularly. Installation of passive or active gas venting systems, gas collection systems, as well as active monitoring systems and alarms will be required in underground construction areas and facilities where subsurface gases are present. Installing gas-detection systems can monitor the effectiveness of these systems.	Design/Construction	Prepare plan/Design	Prior to construction	Authority/ Contractor	Contractor	Preparation of a CMP	Condition of construction contract	Impact GSSP#13: Mine Conditions Could Pose Hazards During Construction. Impact HMW#4: Potential for Facilities Associated with all six Build Alternatives to be Located Adjacent to Landfills.
GEO-IAMF#4	Historic or Abandoned Mines	Prior to construction, the Contractor shall prepare a CMP addressing how historic and abandoned mines will be incorporated into construction best management practices. The CMP will be submitted to the Authority for review and approval. Depending on the properties of an individual mine, mitigations to address historic or abandoned mines could include: • ERCLA Cleanup. Environmental cleanups at sites that are releasing or threatening to release hazardous substances such as heavy metals from acid mine drainage and associated contaminated water and vapors as applicable. • Non-CERCLA Cleanup. Cleanups of nonhazardous substance-related surface disturbance such as revegetation of disturbed areas, stabilization of mine tailings, reconstruction of stream channels and floodplains.	Design/Construction	Prepare plan/Design	Prior to construction	Authority/ Contractor	Contractor	Preparation of a CMP	Condition of design-build contract	Impact GSSP#13: Mine Conditions Could Pose Hazards During Construction. Impact HMW#1: Hazards Due to the Routine Transport, Use, or Disposal of Hazardous Materials during Construction. Impact HMW#2: Potential to Encounter PEC Sites with Known and/or Suspected Contamination during Construction.

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		Safety Mitigation. Mitigation of physical safety hazards such as closure of adits and shafts and removal of dangerous structures.								
GEO-IAMF#5	Naturally Occurring Hazardous Materials	Prior to construction, the Contractor shall prepare a CMP addressing how the Contractor would minimize or avoid impacts related to hazardous naturally occurring materials (i.e., radon, mercury, and naturally occurring asbestos) during construction. The CMP would be submitted to the Authority for review and approval. The CMP shall include appropriate provisions for handling hazardous minerals, soils, or vapors including, but not limited to, dust control, control of soil erosion and water runoff, vapor control, and testing and proper disposal of excavated material. For operations, the Authority shall prepare and implement an Emergency Response Procedure Plan. In the unlikely event of a major naturally occurring hazardous materials release close to or in the vicinity of the Project, the Authority will develop emergency response procedures in conformance with Federal, State, and local regulations. Procedures for preventing, responding to, and mitigating releases of hazardous materials from non-natural sources are addressed in HMW-IAMF#4.	Design/Construction	Design/Monitoring/Reporting	Prior to construction	Authority/ Contractor	Contractor	Preparation of a CMP	Condition of construction contract	Impact HMW#1: Hazards Due to the Routine Transport, Use, or Disposal of Hazardous Materials during Construction.
GEO-IAMF#6	Ground Rupture Early Warning Systems	Prior to construction, the Contractor shall document how the project design incorporates installation of early warning systems, triggered by strong ground motion association with ground rupture. Known nearly active fault will be monitored. Linear monitoring systems such as time domain reflectometers or similar technology shall be installed along rail lines in the zone of potential ground rupture. These devices emit electronic information that is processed in a centralized location and will be used to temporarily control trains, thus reducing accidents due to fault creep. Damage to infrastructure from fault creep can be mitigated with routine maintenance including minor realignment.	Design/Construction	Design/Monitoring/Reporting	Prior to construction	Authority/ Contractor	Contractor	Preparation of a CMP	Condition of construction contract	Impact GSSP#7: Fault Rupture and Seismic Ground Shaking Could Endanger People or Structures During Construction. Impact GSSP#7: Fault Rupture and Seismic Ground Shaking Could Endanger People or Structures During Construction.
GEO-IAMF#7	Evaluate and Design for Large Seismic Ground Shaking	Prior to construction, the Contractor shall document through preparation of a technical memorandum how all HSR components were evaluated and designed for large seismic ground shaking. Prior to final design, the Contractor will conduct additional seismic studies to establish up-to-date estimation of levels of ground motion. The most current Caltrans seismic design criteria at the time of design will be used in the design of any structures supported in or on the ground. These design procedures and features reduce to the greatest practical extent for potential movements, shear forces, and displacements that result from inertial response of the structure. In critical locations, pendulum base isolators may be used to reduce the levels of inertial forces. New	Design	Design/Studies	Prior to final construction	Contractor/ Authority	Contractor/ Authority	At incorporation or completion of design	Seismic ground shaking design technical memorandum	Impact GSSP#7: Fault Rupture and Seismic Ground Shaking Could Endanger People or Structures During Construction. Impact GSSP#7: Fault Rupture and Seismic Ground Shaking Could Endanger People or Structures During Construction.

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		composite materials may also be used to enhance seismic performance.								
GEO-IAMF#8	Suspension of Operations During an Earthquake	Prior to O&M activities, the Contractor shall document in a technical memorandum how suspension of operations during or after an earthquake was addressed in project design. Motion-sensing instruments to provide ground motion data and a control system to shut down HSR operations temporarily during or after a potentially damaging earthquake will be incorporated into final design. Monitoring equipment will be installed at select locations where high ground motions could occur. The system will then be inspected for damage due to ground motion and/or ground deformation, and then returned to service when appropriate.	Design/Construction /Operation	Reporting	As needed based on an earthquake event	Contractor/ Authority	Contractor/ Authority	At incorporation or completion of design/during monthly construction reporting	Technical memorandum prepared as needed based on an earthquake event	Impact GSSP#7: Fault Rupture and Seismic Ground Shaking Could Endanger People or Structures During Construction.
GEO-IAMF#9	Subsidence Monitoring	Prior to O&M, the Authority shall develop a stringent track monitoring program. Once tracks are operational, a remote monitoring program will be implemented to monitor the effects of ongoing subsidence. Track inspection systems will provide early warning of reduced track integrity. HSR train sets will be equipped with autonomous equipment for daily track surveys. This specification will be added to HSR train bid packages. If monitoring indicates that track tolerances are not met, trains will operate at reduced speed until track tolerances are restored. In addition, the contractor responsible for wayside maintenance will be required to implement a stringent program for track maintenance.	Design/Operation	Program development	Monthly	Authority	Contractor	Develop a stringent track monitoring program	Condition of design-build contract	Impact GSSP#1: Ground Subsidence and Ground Settlement Could Endanger People or Structures During Construction. Impact GSSP#16: Effects of Geologic Hazards During Operations.
GEO-IAMF#10	Geology and Soils	Prior to construction, the Contractor shall document through issuance of a technical memorandum how the following guidelines and standards have been incorporated into facility design and construction: • 2015 American Association of State Highway and Transportation Officials (AASHTO) Load and Resistance Factor Bridge Design Specifications and the 2015 AASHTO Guide Specifications for Load and Resistance Factor Seismic Bridge Design, or their most recent versions. These documents provide guidance for characterization of soils, as well as methods to be used in the design of bridge foundations and structures, retaining walls, and buried structures. These design specifications will provide minimum specifications for evaluating the seismic response of the soil and structures. • Federal Highway Administration Circulars and Reference Manuals: These documents provide detailed guidance on the characterization of geotechnical conditions at sites, methods for performing foundation design, and recommendations on foundation construction. These guidance documents include methods for	Design/Construction /Operation	Design/Reporting	At incorporation or completion of design/during monthly construction reporting	Authority/ Contractor	Contractor	Prepare technical memorandum/Implementation of guidelines during design, construction, and operation phases	Condition of construction contract	Impact GSSP#1: Ground Subsidence and Ground Settlement Could Endanger People or Structures During Construction. Impact GSSP#5: Expansive, Corrosive, and Collapsible Soils Could Endanger People or Structures During Construction. Impact GSSP#6: Areas of Difficult Excavation Could Potentially Endanger Workers and Facilities. Impact GSSP#7: Fault Rupture and Seismic Ground Shaking Could Endanger People or Structures During Construction. Impact GSSP#8: Liquefaction, Lateral Spreading, and Ground Lurching Could Endanger

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		designing retaining walls used for retained cuts and retained fills, foundations for elevated structures, and at-grade segments. Some of the documents include guidance on methods of mitigating geologic hazards that are encountered during design. • American Railway Engineering and Maintenance-of-Way Association Manual: These guidelines deal with rail systems. Although they cover many of the same general topics as AASHTO, they are more focused on best practices for rail systems. The manual includes principles, data, specifications, plans, and economics pertaining to the engineering, design, and construction of railways. • California Building Code: The code is based on 2015 International Building Code (IBC). This code contains general building design and construction requirements relating to fire and life safety, structural safety, and access compliance. • IBC and American Society of Civil Engineers (ASCE)-7: These codes and standards provide minimum design loads for buildings and other structures. They will be used for the design of the maintenance facilities and stations. Sections in IBC and ASCE-7 provide minimum requirements for geotechnical investigations, levels of earthquake ground shaking, minimum standards for structural design, and inspection and testing requirements. • Caltrans Design Standards: Caltrans has specific minimum design and construction standards for all aspects of transportation system design, ranging from geotechnical explorations to construction practices. These amendments provide specific guidance for the design of deep foundations that are used to support elevated structures, for design of mechanically stabilized earth walls used for retained fills, and for design of various types of cantilevers (e.g., soldier pile, secant pile, and tangent pile) and tie-back walls used for retained cuts. • ASTM International has developed standards and guidelines for all types of material testing—from soil compaction testing to concrete—strength testing. The ASTM International standards also include minimum performance requirements for materials.							People or Structures During Construction. Impact GSSP#16: Effects of Geologic Hazards During Operations.
GEO-IAMF#11	Engage a Qualified Paleontologic	Prior to the 90% design milestone for each construction package (CP) within the Project Section,	Design	Contractor will retain paleontological resources specialist	Prior to 90 percent design milestone for each CP	Authority/ Contractor	Contractor	Retain PRS	Condition of construction contract	Impact GSSP#15: Surface Excavation and Subsurface Tunneling Could Destroy

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	al Resources Specialist	the Contractor will retain a Paleontological Resources Specialist (PRS) responsible for • Reviewing the final design for the CP, • Developing a detailed Paleontological Resources Monitoring and Mitigation Plan (PRMMP) for the CP, and • The PRS will be responsible for implementing the PRMMP, including development and delivery of WEAP Training, supervision of Paleontological Resource Monitors (PRMs), evaluation and treatment of finds, if any, and preparation o f a final paleontological mitigation report, per the PRMMP and for each CP. Retention of PRS staff will occur in a timely manner, in advance of the 90% design milestone for each CP, such that the PRS is on board and can review the 90% design submittal without delay when it becomes available. If feasible, the same PRS will be responsible for all CPs within a given Project Section. All PRS staff will meet or exceed the qualifications for a Principal Paleontologist as defined in the California Department of Transportation's current Standard Environmental Reference, Chapter 8 (Caltrans 2014). Appointment of PRS staff will be subject to review and approval by the Authority.								Unique Paleontological Resources.
GEO-IAMF#12	Perform Final Design Review and Triggers Evaluation	For each CP within the Project Section, the responsible PRS will evaluate the 90% design submittal to identify the portions of the CP that will involve work in paleontologically sensitive geologic units (either at the surface or in the subsurface), based on findings of the final Paleontological Resources Technical Report (TR) prepared for the Project Section. Evaluation will consider the location, areal extent, and anticipated depth of ground disturbance, the construction techniques that are planned/proposed, and the geology (i.e., location of geologic units with high paleontological resources) of the CP and vicinity. The evaluation and resulting recommendations will be consistent with guidance in the Society of Vertebrate Paleontology (SVP) Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP Impact Mitigation Guidelines Revision Committee 2010), the SVP Conditions of Receivership for Paleontologic Salvage Collections (SVP Conformable Impact Mitigation Guidelines Committee 1996), and relevant guidance from Chapter 8 of the current Caltrans Standard Environmental Reference (Caltrans 2014). The purpose of the Final Design Review and Triggers Evaluation will be to develop specific language detailing the location and duration of paleontological monitoring and other requirements	Design	Reporting	Prior to 90 percent design milestone for each CP	Authority/ Contractor	Contractor	CP reporting	Condition of construction contract	Impact GSSP#15: Surface Excavation and Subsurface Tunneling Could Destroy Unique Paleontological Resources.

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		for paleontological resources applicable to each CP within the Project Section. Paleontological protection requirements identified through the Final Design Review and Triggers Evaluation will be recorded in a concise technical memorandum ("Final Design Review Requirements for Paleontological Resources Protection") which will then be incorporated in full detail into the PRMMP for each CP. Those portions of the CP requiring paleontological monitoring will also be clearly delineated in the project construction documents for each CP.								
GEO-IAMF#13	Prepare and Implement Paleontological Resources Monitoring and Mitigation Plan (PRMMP)	Following the Final Design Review and Triggers Evaluation for each CP, the PRS will develop a CP-specific PRMMP. For greater efficiency, PRMMPs may be written such that they cover more than1CP, as long as the specific requirements of the IAMF's are satisfied explicitly and in detail for each CP included. The PRMMP for each CP will incorporate the findings of the Design Review and Triggers Evaluation for that CP and will be consistent with the SVP Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP Impact Mitigation Guidelines Revision Committee 2010), the SVP Conditions of Receivership for Paleontologic Salvage Collections (SVP Conformable Impact Mitigation Guidelines Committee 1996), and relevant guidance from Chapter 8 of the current Caltrans Standard Environmental Reference (Caltrans 2014). As such, the PRMMP will provide for at least the following: • Implementation of the PRMMP by qualified personnel, including the following positions: o Paleontological Resource Specialist - The PRS will be required to meet or exceed Principal Paleontologist qualifications per Chapter 8 of the current Caltrans Standard Environmental Reference (Caltrans 2014). The Supervising Paleontologist may, but not necessarily, be the PRS who prepares the PRMMP. o Paleontological Resources Monitors - The PRS will be required to meet or exceed Paleontological Monitor qualifications per Chapter 8 of the current Caltrans Standard Environmental Reference (Caltrans 2014). • Development of pre-construction and construction-period coordination procedures and communications protocols. • Evaluation as to whether a pre-construction survey by qualified personnel is warranted for the CP. In general, pre-construction surveys are beneficial if there is a strong possibility that significant paleontological resources (e.g.,	Design	Reporting	Each CP	Authority/ Contractor	Contractor	CP reporting	Condition of construction contract	Impact GSSP#15: Surface Excavation and Subsurface Tunneling Could Destroy Unique Paleontological Resources.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		concentrations of vertebrate fossils) are exposed at the ground surface and will be destroyed during the initial clearing and grubbing phase of earthwork. Such a determination can usually be made during preparation of the paleontological resources TR. • Requirements for paleontological monitoring by qualified PRMs of all ground-disturbance activities known to affect, or potentially affect, highly sensitive geologic units and for ground-disturbance activities affecting other geologic units in any areas where the PRS considers it warranted based on the findings of the paleontological resources TR or any pre-construction surveys. In all areas of the CP subject to monitoring, monitoring will initially be conducted full-time for all ground-disturbance activities. However, the PRMMP may provide for monitoring frequency in any given location to be reduced once approximately 50% of the ground-disturbance activity in completed locations, if the reduction is appropriate based on the implementing PRS's professional judgment in consideration of actual site conditions. • Provisions, if recommended by the PRS for paleontological monitoring of specific construction drilling operations. In general, small diameter (i.e., <18 inches) drilling operations or drilling operations using bucket augers tend to pulverize impacted sediments and any contained fossils and are typically not monitored. The section in the PRMMP addressing monitoring for drilling operations will rely, in part, on the information supplied by the CP design and geotechnical teams but will also take into consideration of the nature, depth, and location of drilling needed, and the anticipated equipment and staging configurations. • Provisions for the content development and delivery of paleontological resources WEAP training. • Provisions for in-progress documentation of monitoring (and, if applicable, salvage/recovery operations) via "construction dailies" or a similar approved means. • Provisions for a "stop work, evaluate, and treat appropriately" response in the event of a known or potential paleontological discovery, including finds in highly sensitive geologic units as well as finds, if any, in geologic units identified as less sensitive, or non-sensitive, for paleontological resources.								

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		• Provisions for sampling and recovery of unearthed fossils consistent with SVP Standard Procedures (SVP Impact Mitigation Guidelines Revision Committee 2010) and the SVP Conditions of Receivership (SVP Conformable Impact Mitigation Guidelines Committee 1996). Recovery procedures will provide for recovery of both macrofossils and microfossils. • Provisions for acquiring a repository agreement from an approved regional repository for the curation, care, and storage of recovered materials, consistent with the SVP Conditions of Receivership (SVP Conformable Impact Mitigation Guidelines Committee 1996). If more than1repository institution is designated, separate repository agreements must be provided. • Provisions for preparation of a final monitoring and mitigation report that meets the requirements of the Caltrans Standard Environmental Reference Chapter 8 provisions for the Paleontological Monitoring Report and Paleontological Stewardship Summary (Caltrans 2014). Provisions for the preparation, identification, and analysis and curation of fossil specimens and data recovered, consistent with the SVP Conditions of Receivership (SVP Conformable Impact Mitigation Guidelines Committee 1996) and any specific requirements of the designated repository institution(s).								
GEO-IAMF#14	Provide WEAP Training for Paleontological Resources	Prior to groundbreaking for each CP within the Project Section, the Contractor will provide paleontological resources WEAP training delivered by the PRS. All management and supervisory personnel and construction workers involved with ground-disturbing activities will be required to take this training before beginning work on the project. Refresher training will also be made available to management and supervisory personnel and workers as needed, based on the judgment of the PRS. At a minimum, paleontological resources WEAP training will include information on: • The coordination between construction staff and paleontological staff. • The construction and paleontological staff roles and responsibilities in implementing the PRMMP. • The possibility of encountering fossils during construction. • The types of fossils that may be seen and how to recognize them, and	Pre-construction	Training program/Reporting	Prior to groundbreaking for each CP within the Project Section, then annual (training)/Monthly (reporting)	Contractor/ Authority	Contractor/ Authority	WEAP training	Condition of construction contract	Impact GSSP#15: Surface Excavation and Subsurface Tunneling Could Destroy Unique Paleontological Resources.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		• The proper procedures in the event fossils are encountered, including the requirement to halt work in the vicinity of the find and procedures for notifying responsible parties in the event of a find. Training materials and formats may include, but are not necessarily limited to, in-person training, prerecorded videos, posters, and informational brochures that provide contacts and summarize procedures in the event paleontological resources are encountered. WEAP training contents will be subject to review and approval by the Authority. Paleontological resources WEAP training may be provided concurrently with cultural resources WEAP training. Upon completion of any WEAP training, the Contractor will require workers to sign a form stating that they attended the training and understand and will comply with the information presented. Verification of paleontological resources WEAP training will be provided to the Authority by the Contractor.								
GEO-IAMF#15	Halt Construction, Evaluate, and Treat if Paleontological Resources Are Found	Consistent with the PRMMP if fossil materials are discovered during construction, regardless of the individual making the discovery, all activity in the immediate vicinity of the discovery will halt and the find will be protected from further disturbance. If the discovery is made by someone other than the PRS or PRM(s), the person who made the discovery will immediately notify construction supervisory personnel, who will in turn notify the PRS. Notification to the PRS will take place promptly (prior to the close of work the same day as the find), and the PRS will evaluate the find and prescribe appropriate treatment as soon as feasible. Work may continue on other portions of the CP while evaluation (and, if needed, treatment) takes place, as long as the find can be adequately protected in the judgment of the PRS. If the PRS determines that treatment (i.e., recovery and documentation of unearthed fossil[s]) is warranted, such treatment, and any required reporting, will proceed consistent with the PRMMP. The Contractor will be responsible for ensuring prompt and accurate implementation, subject to verification by the Authority. The stop work requirement does not apply to drilling operations since drilling typically cannot be suspended in mid-course. However, if finds are made during drilling, the same notification and other follow-up requirements will apply. The PRS will coordinate with construction supervisory and drilling staff regarding the handling of recovered fossils.	Construction	Reporting	Daily logs during active monitoring	Authority/ Contractor	Contractor	Weekly reporting (if resource is identified during construction)	PRMMP, WEAP	Impact GSSP#15: Surface Excavation and Subsurface Tunneling Could Destroy Unique Paleontological Resources.

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		The requirements of this IAMF will be detailed in the PRMMP and presented as part of the paleontological resources WEAP training.								
Hazardous Materials and Wastes										
HMW-IAMF#1	Property Acquisition Phase I and Phase II Environmental Site Assessments, Additional Preconstruction Investigations, and Associated Actions to Control Site Contamination	During the right-of-way acquisition phase, Phase I environmental site assessments shall be conducted in accordance with standard ASTM International methodologies to characterize each parcel, including parcels at potential environmental concern sites. Parcels that require a Phase II Environmental Site Assessment (e.g., soil, groundwater, soil vapor subsurface investigations) will be identified using information and data obtained in the Phase I Environmental Site Assessments. Phase II and subsequent investigation may require coordination with federal, state, and local agency officials, as well as other stakeholders. Depending on the arrangement negotiated during property acquisition, potential environmental concern sites with known or suspected contamination may be remediated prior to construction on the site. For sites that are not remediated prior to acquisition, data obtained during the Phase I Environmental Site Assessment will be used to evaluate the need for and the extent of additional investigation. The Phase II Environmental Site Assessment and any additional characterization data collected will be used to inform aspects of detailed project design and actions required during construction and/or operation of the project to protect human health and the environment from contaminants present on the parcels (e.g., targeted removal of contamination, in situ treatment, or soil capping). Project design details for construction at sites subject to cleanup or land use controls will be reviewed and approved by appropriate environmental oversight agencies. Design and other corrective actions required to protect human health and the environment shall be coordinated with appropriate federal, state, and local agency officials and stakeholders (as necessary) and conducted in full compliance with recorded land use restrictions, and applicable state and federal laws and regulations and local ordinances. For construction within the San Fernando Valley Superfund Site Area 1, coordination with stakeholders shall be in accordance with HMW-IAMF#11. Controls necessary to protect workers, the public, and the environment from contamination discovered during the Environmental Site Assessments and pre-construction site investigations shall be identified and required to be implemented during construction in accordance with HMW-IAMF#4.	Pre-construction/ Construction	Reporting	During the right- of-way acquisition phase	Authority/ Contractor	Contractor	Prepare Phase I and II ESAs and additional investigation materials, if needed	Condition of construction contract	Impact HMW#2: Potential to Encounter PEC Sites with Known and/or Suspected Contamination during Construction. Impact HMW#4: Potential for Facilities Associated with all six Build Alternatives to be Located Adjacent to Landfills. Impact HMW#7: Hazards Due to Operation Within Areas of Historical Contamination.

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HMW-IAMF#2	Landfill	Prior to Construction (any ground-disturbing activities), the Contractor shall verify to the Authority through preparation of a technical memorandum that methane protection measures will be implemented for all work within 1,000 feet of a landfill, including development of new structures within 1,000 feet of a landfill, gas-detection systems and personnel training. This will be undertaken pursuant to State of California Title 27, Environmental Protection – Division 2, Solid Waste, and the hazardous materials best management practices plan.	Pre-construction/ Construction	Reporting	Prior to Construction (any ground-disturbing activities)	Authority/ Contractor	Contractor	Monthly record keeping	Contract requirements and specifications	Impact HMW#4: Potential for Facilities Associated with all six Build Alternatives to be Located Adjacent to Landfills.
HMW-IAMF#3	Work and Vapor Barriers	Prior to Construction (any ground-disturbing activities), the Contractor shall verify to the Authority through preparation of a technical memorandum the use of work barriers. Nominal design variances, such as the addition of a plastic barrier beneath the ballast material to limit the potential release of volatile subsurface contaminants, may be implemented in conjunction with site investigation and remediation. Vapor barriers and associated venting systems determined to be necessary to prevent intrusion of hazardous concentrations of volatile compounds into occupied project structures (e.g., stations or tunnels) shall be designed in accordance with standard engineering practices and reviewed and accepted by relevant stakeholders and regulatory agencies. Existing vapor barriers for controlling vapor intrusion at potential environmental concern sites shall be protected during construction, and if damaged, shall be repaired or replaced in accordance with discussions and coordination with relevant stakeholders and regulatory agencies.	Pre-construction/ Construction	Prepare technical memorandum	Prior to Construction (any ground-disturbing activities)	Authority/ Contractor	Contractor	Prepare work barrier technical memorandum	Condition of construction contract	Impact HMW#2: Potential to Encounter PEC Sites with Known and/or Suspected Contamination during Construction. Impact HMW#4: Potential for Facilities Associated with all six Build Alternatives to be Located Adjacent to Landfills. Impact HMW#7: Hazards Due to Operation Within Areas of Historical Contamination.
HMW-IAMF#4	Known, Suspected, and Unanticipated Environmental Contamination	The Authority, or its Design Contractor, prior to completion of 30 percent design, will develop a soil management plan that incorporates information and data regarding known and suspected contamination obtained per HMW-IAMF#1. The plan will include requirements for protection of human health and environmental to be implemented by the Construction Contractor during construction on sites at which contamination is or may be present. The soil management plan will be reviewed and approved by appropriate agencies with oversight responsibilities for sites subject to cleanup or land use controls and will be provided to the Construction Contractor who shall be contractually obligated to meet requirements the plan requirements. Prior to Construction, the Construction Contractor in accordance with the soil management plan, shall prepare a CMP addressing provisions for the disturbance and handling of known, suspected, and unanticipated contamination, and protection of existing remedial systems and contamination controls (e.g., vapor barriers) where construction	Pre-construction	Prepare plan	Prior to completion of 30 percent design	Authority/Design Contractor	Design Contractor, Construction Contractor	Prepare soil management plan/report as needed	Condition of construction contract	Impact HMW#1: Hazards Due to the Routine Transport, Use, or Disposal of Hazardous Materials during Construction. Impact HMW#2: Potential to Encounter PEC Sites with Known and/or Suspected Contamination during Construction. Impact HMW#5: The Construction Footprint Would be in the Vicinity of Oil and Natural Gas Resources or Facilities.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		may impact or damage such systems and controls. The plan shall require that an environmental professional provide oversight of activities that may result in encountering known or suspected contamination. The CMP shall require the Contractor to develop and implement site-specific health and safety protocols that address site hazards in compliance with Cal OSHA regulations for handling contaminated media; including training of construction workers in hazard recognition and monitoring for hazardous contaminants to which workers may be exposed in areas where contamination is known or suspected based on data obtained under HMW-IAMF#1. Use of field screening equipment shall be specified as appropriate based on data obtained under HMW-IAMF#1 (e.g., for volatile organic vapors). The CMP shall include specifications for controlling releases of contaminants or contaminated media during construction, including dust control, control of soil erosion and contaminated water runoff, vapor control, and testing and proper storage and disposal of excavated material. The CMP shall include an effective monitoring and cleanup program for spills and leaks of any hazardous materials or contaminated media. Requirements for sampling and analysis of media suspected to be contaminated shall be included in the CMP. For work at sites subject to contaminant cleanup, the CMP shall be submitted, as required, to regulatory agencies with oversight authority for the cleanup and to stakeholders. For work at the San Fernando Valley Superfund Site Area 1, consultation with regulatory agencies and stakeholders shall be in accordance with HMW-IAMF#11. The CMP shall include requirements for notification by the Contractor to the Authority, which will notify appropriate stakeholders and agencies, of newly discovered contamination. The Authority will work closely with the stakeholders and regulatory agencies to resolve any such encounters and address necessary cleanup or disposal. Recordkeeping requirements shall be specified in the CMP. For operations in areas with known and suspected contamination, the Authority shall prepare and implement emergency response procedures that address the unlikely potential of a major hazardous materials release close to or in the vicinity of the Project as required by Federal, State, and local regulations. The CMP will be submitted to the Authority for review and approval. Copies of all documentation generated in accordance with the CMP, including monitoring and analytical results, shall be provided to the Authority within 30 days of receipt of analytical results and/or								

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		encountering of apparent contaminated media (soil, groundwater, or vapor).								
HMW-IAMF#5	Demolition Plans	Prior to construction that involves demolition, the Contractor shall prepare demolition plans for the safe dismantling and removal of building components and debris. The demolition plans will include a plan for lead and asbestos and polychlorinated biphenyl abatement. The plans shall be submitted to the Project Construction Manager (PCM) on behalf of the Authority for verification that appropriate demolition practices have been followed consistent with federal and state regulations regarding asbestos and lead paint abatement.	Pre-construction/ Construction	Prepare plan/Reporting	Prior to construction that involves demolition	Authority/ Contractor	Contractor	Prepare demolition plans/reporting as needed	Condition of construction contract	Impact HMW#1: Hazards Due to the Routine Transport, Use, or Disposal of Hazardous Materials during Construction.
HMW-IAMF#6	Spill Prevention	Prior to construction (any ground-disturbing activities), the Contractor shall prepare a Construction Management Plan addressing spill prevention. A Spill Prevention, Control, and Countermeasure (SPCC) plan (or Spill Prevention and Response Plan if the total above ground oil storage capacity is less than 1,320 gallons in storage containers greater than or equal to 55-gallons) shall prescribe BMPs to follow to prevent hazardous material releases and cleanup of any hazardous material releases that may occur. The plans will be prepared and submitted to the PCM on behalf of the Authority and shall be implemented during Construction.	Pre-construction/ Construction	Prepare plan/Reporting	Prior to Construction (any ground-disturbing activities)/reporting	Authority/ Contractor	Contractor	Prepare Construction Management Plan/reporting as needed	Condition of construction contract	Impact HMW#1: Hazards Due to the Routine Transport, Use, or Disposal of Hazardous Materials during Construction. Impact HMW#2: Potential to Encounter PEC Sites with Known and/or Suspected Contamination during Construction. Impact HMW#5: The Construction Footprint Would be in the Vicinity of Oil and Natural Gas Resources or Facilities.
HMW-IAMF#7	Storage and Transport of Materials	During construction, the Contractor will comply with applicable state and federal regulations, such as the Resource Conservation and Recovery Act, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Hazardous Materials Release Response Plans and Inventory Law, and the Hazardous Waste Control Law. Prior to Construction the Contractor will provide the Authority with a hazardous materials and waste plan describing responsible parties and procedures for hazardous waste and hazardous materials transport.	Pre-construction/ Construction	Regulation compliance/Reporting	Monthly	Authority/ Contractor	Contractor	Weekly record keeping/monthly reporting	Condition of construction contract	Impact HMW#1: Hazards Due to the Routine Transport, Use, or Disposal of Hazardous Materials during Construction. Impact HMW#2: Potential to Encounter PEC Sites with Known and/or Suspected Contamination during Construction. Impact HMW#5: The Construction Footprint Would be in the Vicinity of Oil and Natural Gas Resources or Facilities.
HMW-IAMF#8	Permit Conditions	During Construction and Operation, the Contractor will comply with the SWRCB Construction Clean Water Act Section 402 General Permit conditions and requirements for transport, labeling, containment, cover, and other BMPs for storage of hazardous materials during Construction and Operation. Prior to Construction and Operation, the Contractor shall provide the Authority with a	Pre-construction/ Construction/ Operation	Reporting	Prior to construction	Authority/ Contractor	Contractor	Prepare hazardous materials and waste plan	Condition of construction contract	Impact HMW#1: Hazards Due to the Routine Transport, Use, or Disposal of Hazardous Materials during Construction. Impact HMW#2: Potential to Encounter PEC Sites with

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		hazardous materials and waste plan describing responsible parties and procedures for hazardous waste and hazardous materials transport, containment, and storage BMPs that will be implemented during Construction and Operation.								Known and/or Suspected Contamination during Construction. Impact HMW#5: The Construction Footprint Would be in the Vicinity of Oil and Natural Gas Resources or Facilities.
HMW-IAMF#9	Environmental Management System	To the extent feasible, the Authority is committed to identifying, avoiding, and minimizing hazardous substances in the material selection process for construction, operation, and maintenance of the HSR system. The Authority will use an Environmental Management System to describe the process that will be used to evaluate the full inventory of hazardous materials as defined by federal and state law employed on an annual basis and will replace hazardous substances with nonhazardous materials. The Contractor shall implement the material substitution recommendation contained in the annual inventory.	Pre-construction/ Construction	Reporting	Annual	Authority/ Contractor	Contractor	Annual reporting	Condition of construction contract/Environmental Management System	Impact HMW#6: Hazards Due to the Routine Transport, Use, or Disposal of Hazardous Materials during Operation.
HMW-IAMF#10	Hazardous Materials Plans	Prior to Operations and Maintenance activities, the Authority shall prepare hazardous materials monitoring plans. These will be used as a basis source, such as a hazardous materials business plan as defined in Title 19 California Code of Regulations and a SPCC plan.	Post-construction	Prepare plans	Prior to operation	Authority	Authority	Prepare hazardous materials monitoring plans	Condition of construction contract	Impact HMW#6: Hazards Due to the Routine Transport, Use, or Disposal of Hazardous Materials during Operation.
HMW-IAMF#11	Stakeholder Consultation for the San Fernando Valley Superfund Site Area 1	As design of the Palmdale to Burbank Project Section progresses, more project-specific information will be developed regarding the requisite permitting and project design for the potential replacement of, or modification to, extraction wells and/or other ancillary infrastructure used for municipal water supply and remediation of groundwater within the Burbank and Glendale Operable Units of the Superfund Sites in the San Fernando Valley. As the design progresses, the Authority will coordinate with relevant stakeholders on an ongoing basis to review the permitting requirements as well as the project design and construction methods for proposed modifications to the extraction wells and ancillary infrastructure to ensure that municipal water supplies and the effectiveness of the Superfund Site cleanup remedies are not impaired by construction and operation of the HSR Build Alternative. Relevant stakeholders include the United States Environmental Protection Agency, the California Department of Toxic Substances Control, RWQCB - Los Angeles Region, the California Department of Water Resources, RWQCB Division of Drinking Water, the City of Burbank, the City of Glendale, and Potentially Responsible Parties named in the Second Consent Decree for San Fernando Valley Superfund	During Design	Stakeholder Coordination/ Reporting	Ongoing	Authority	Contractor	Coordination with relevant stakeholders on an ongoing basis to review the permitting requirements as well as the project design and construction methods for proposed modifications to the extraction wells and ancillary infrastructure to ensure that municipal water supplies and the effectiveness of the Superfund Site cleanup remedies are not impaired by construction and operation of the HSR Build Alternative	Coordination with stakeholders to address Superfund Sites	Impact HMW#2: Potential to Encounter PEC Sites with Known and/or Suspected Contamination during Construction. Impact HMW#7: Hazards Due to Operation Within Areas of Historical Contamination.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		Site, Burbank Operable Unit, Civil Action No. 4527-MRP(tx) (C.D. Cal. June 23, 1998) and the Consent Decree for the San Fernando Valley Superfund Site and the Consent Decree for the Glendale Operable Unit, Civil Action No. 99-00552 MRP (ANx). The purpose of this ongoing stakeholder coordination is to ensure that municipal water supplies and the effectiveness of the Superfund Site cleanup remedies are not impaired by construction and operation of the HSR Build Alternative. The Authority would coordinate with relevant stakeholders on issues such as ensuring system shutdowns occur within normal timeframes, maintaining operating of existing systems while testing new replacement systems, and providing additional groundwater or surface water supplies if needed. Depending upon the scope of the potential modifications to the extraction wells and ancillary infrastructure, the Authority shall enter into enforceable agreements with United States Environmental Protection Agency as the agency responsible for the Superfund Program. In addition, all extractions of groundwater from the San Fernando groundwater basin (which is part of the Upper Los Angeles River Area) must be reported to the Upper Los Angeles River Area Watermaster. Groundwater extractions from Upper Los Angeles River Area must be reported to the Upper Los Angeles River Area Watermaster, and to the City of Los Angeles (via the Los Angeles Department of Water and Power).								
Safety and Security										
SS-IAMF#1	Construction Safety Transportation Management Plan	Prior to construction (any ground-disturbing activity), the Contractor shall prepare for submittal to the Authority a construction safety transportation management plan. The plan will describe the contractor's coordination efforts with local jurisdictions for maintaining emergency vehicle access. The plan will also specify the Contractors procedures for implementing temporary road closures including: access to residences and businesses during construction, lane closures, signage and flag persons, temporary detour provisions, alternative bus and delivery routes, emergency vehicle access, and alternative access locations. The Contractor shall prepare and submit monthly reports to the Authority documenting construction transportation plan implementation activities for compliance monitoring.	Pre-construction	Prepare plan	Prior to construction (any ground-disturbing activity)	Contractor	Contractor	Prepare construction safety transportation management plan	Condition of construction contract	Impact S&S#1: Temporary Interference with Emergency Response Times from Construction Activities. Impact S&S#7: Temporary Exposure to Traffic Hazards. Impact S&S#16: Temporary and Permanent Exposure to Wildfire Hazards. Impact S&S#19: Fire and Wildfire Hazards from Operations and Maintenance.
SS-IAMF#2	Safety and Security	Sixty days after receiving from the Authority a construction notice-to-proceed, the Contractor shall provide the Authority with a technical memorandum	Pre-construction	Prepare plan	60 days after receiving a construction notice-to-proceed	Authority/ Contractor	Authority/ Contractor	Prepare technical memorandum documenting	Condition of construction contract	Impact S&S#3: Permanent Interference with Emergency Response.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
	Management Plan	documenting how the following requirements, plan, programs and guidelines were considered in design, construction and eventual operation to protect the safety and security of construction workers and users of the HSR. The Contractor shall be responsible for implementing all construction-related safety and security plans and the Authority shall be responsible for implementing all safety and security plans related to HSR operation. • Workplace worker safety is generally governed by the Occupational Health and Safety Act of 1970, which established the OSHA. OSHA establishes standards and oversees compliance with workplace safety and reporting of injuries and illnesses of employed workers. In California, OSHA enforcement of workplace requirements is performed by California Occupational Safety and Health Administration (Cal OSHA). Under Cal OSHA regulations, as of July 1, 1991, every employer must establish, implement, and maintain an injury and illness prevention program. • The Authority has adopted a Safety and Security Management Plan to guide the safety and security activities, processes, and responsibilities during design, construction and implementation phases of the project to protect the safety and security of construction workers and the public. A Systems Safety Program Plan (SSPP) and a System Security Plan will be implemented prior to the start of revenue service to guide the safety and security of the operation of the high-speed rail system. • Prior to Construction, the Contractor shall provide the Authority with a Safety and Security Management Plan documenting how they will implement the Authority's safety and security requirements within their project scope. • Implement site-specific health and safety plans and site-specific security plans to establish minimum safety and security guidelines for contractors of, and visitors to, construction projects. Contractors will be required to develop and implement site-specific measures that address regulatory requirements to protect human health and property at construction sites. • Preparation of a Valley Fever action plan that includes: A) information on causes, preventive measures, symptoms, and treatments for Valley Fever to individuals who could potentially be exposed through construction activities (i.e., construction workers, monitors, managers, and support personnel); B) continued outreach and coordination with California Department of						compliance with safety requirements, plans, programs, and guidelines		Impact S&S#4: Interference with Emergency Response from Train Accidents and Increased Activity at Stations and Facilities. Impact S&S#5: Temporary Exposure to Criminal Activity at Construction Sites. Impact S&S#6: Temporary Exposure to Construction Site Hazards. Impact S&S#10: Temporary Exposure to Valley Fever. Impact S&S#11: Temporary Exposure to Risk from High-Risk Facilities. Impact S&S#13: Permanent Exposure to High-Risk Facilities and Fall Hazards. Impact S&S#14: Permanent Criminal and Terrorist Activity. Impact S&S#16: Temporary and Permanent Exposure to Wildfire Hazards. Impact S&S#19: Fire and Wildfire Hazards from Operations and Maintenance.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		Public Health; C) coordination with county departments of public health to ensure that the above referenced information concerning Valley Fever is readily available to nearby residents, schools, and businesses and to obtain area information about Valley Fever outbreaks and hotspots; and D) provide a qualified person dedicated to overseeing implementation of the Valley Fever prevention measures to encourage a culture of safety of the contractors and subcontractors. The Valley Fever Health and Safety (VFHS) designee shall coordinate with the county Public Health Officer and oversee and manage the implementation of Valley Fever control measures. The VFHS designee is responsible for ensuring the implementation of measures in coordination with the county Public Health Officer. Medical information will be maintained following applicable and appropriate confidentiality protections. The VFHS in coordination with the county Public Health Officer will determine what measures will be added to the requirements for the Safety and Security Management Plan regarding preventive measures to avoid Valley Fever exposure. Measures shall include, but are not limited to the following: A) train workers and supervisors on how to recognize symptoms of illness and ways to minimize exposure, such as washing hands at the end of shifts; B) provide washing facilities nearby for washing at the end of shifts; C) provide vehicles with enclosed, air conditioned cabs and make sure workers keep the windows closed; D) equip heavy equipment cabs with high efficiency particulate air (HEPA) filters; and E) make NIOSH approved respiratory protection with particulate filters as recommended by the CDPH available to workers who request them. • System safety program plans incorporate FRA requirements and are implemented upon FRA approval. FRA's SSPPs requirements will be determined in FRA's new System Safety Regulation (49 C.F.R. 270). • Rail systems must comply with FRA requirements for tracks, equipment, railroad operating rules and practices, passenger safety, emergency response, and passenger equipment safety standards found in 49 C.F.R. Parts 200-299. • The HSR Urban Design Guidelines (Authority 2011) require implementing the principles of crime prevention through environmental design. The contractor shall consider 4 basic principles								

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		of crime prevention through environmental design during station design and site planning: territoriality (design physical elements that express ownership of the station or site); natural surveillance (arrange physical features to maximize visibility); improved sightlines (provide clear views of surrounding areas); and access control (provide physical guidance for people coming and going from a space). The HSR design includes emergency access to the rail right-of-way, and elevated HSR structure design includes emergency egress points. • Implement fire/life safety and security programs that promote fire and life safety and security in system design, construction, and implementation. The fire and life safety program is coordinated with local emergency response organizations to provide them with an understanding of the rail system, facilities, and operations, and to obtain their input for modifications to emergency response operations and facilities, such as evacuation routes. The Authority will establish fire/life safety and security committees throughout the HSR section. • Implement system security plans that address design features intended to maintain security at the stations within the track right-of-way, at stations, and onboard trains. A dedicated police force will ensure that the security needs of the HSR system are met. • The design standards and guidelines require emergency walkways on both sides of the tracks for both elevated and at-grade sections and the provision of appropriate space as defined by fire and safety codes along at-grade sections of the alignment to allow for emergency response access. Implement standard operating procedures and emergency operating procedures, such as the FRA-mandated Roadway Worker Protection Program to address the day-to-day operation and emergency situations that will maintain the safety of employees, passengers, and the public								
SS-IAMF#3	Hazard Analyses	The Authority's hazard management program includes the identification of hazards, assessment of associated risk, and application of control measures (mitigation), to reduce the risk to an acceptable level. Hazard assessment includes a preliminary hazard analysis (PHA) and threat and vulnerability assessment (TVA). • The Authority's programmatic PHAs are developed in conformance with the FRA's	Pre-construction/ Construction	Reporting	Monthly	Authority's Safety and Security committees	Authority	Identification of hazards, assessment of risk and application of control measures	Condition of construction contract	Impact S&S#4: Interference with Emergency Response from Train Accidents and Increased Activity at Stations and Facilities. Impact S&S#11: Temporary Exposure to Risk from High-Risk Facilities.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		Collison Hazard Analysis Guide: Commuter and Intercity Passenger Service (FRA 2007) and the U.S. Department of Defense's System Safety Program Plan (MIL-STD-882) to identify and determine the facility hazards and vulnerabilities so that they can be addressed by—and either eliminated or minimized—the design. • TVAs establish provisions for the deterrence and detection of, as well as the response to, criminal and terrorist acts for rail facilities and system operations. Provisions include right-of-way fencing, intrusion detection, security lighting, security procedures and training, and closed-circuit televisions. Intrusion-detection technology could also alert to the presence of inert objects, such as toppled tall structures or derailed freight trains, and stop HSR operations to avoid collisions. • During design and construction, the Contractor will conduct site-specific PHA and TVA assessments to apply the programmatic work to their specific project designs. The Authority's safety and security committees will be responsible for implementing the recommendations contained in the hazard analysis during HSR operation.								Impact S&S#12: Permanent Operational Safety Impacts. Impact S&S#13: Permanent Exposure to High-Risk Facilities and Fall Hazards. Impact S&S#14: Permanent Criminal and Terrorist Activity.
SS-IAMF#4	Oil and Gas Wells	Prior to ground-disturbing activities, the Contractor shall identify and inspect all active and abandoned oil and gas wells within 200 feet of the HSR tracks. Any active wells will be abandoned and relocated by the Contractor in accordance with the California Department of Conservation, Division of Oil, and Gas and Geothermal Resources (DOGGR) standards in coordination with the well owners. In the event that relocated wells do not attain the current production rates of the now-abandoned active wells, the Authority will be responsible for compensating the well owner for lost production. All abandoned wells within 200 feet of the HS tracks will be inspected and re-abandoned, as necessary, in accordance with DOGGR standards and in coordination with the well owner. The Contractor will provide the Authority with documentation that the identification and inspection of the wells has occurred prior to construction.	Pre-construction	Regulatory Compliance/ Reporting	Prior to ground-disturbing activities	Contractor/ Authority	Contractor	Identify and inspect all active and abandoned oil and gas wells and abandon identified active oil wells.	Condition of construction contract	Impact S&S#6: Temporary Exposure to Construction Site Hazards.
SS-IAMF#5	Aviation Safety	To address Federal Aviation Administration (FAA) requirements related to their mandate of ensuring civil aviation safety and to prevent the potential for disruption of airfield and airspace operations at Hollywood Burbank Airport as a result of construction and/or operation of the Palmdale to Burbank Project Section, the Authority and/or its contractor(s) on behalf of the Authority will:	Pre-Construction	Prepare designs, construction plans	Monthly	Authority and/or its contractor	Authority	Compliance with FAA requirements related to aviation safety	Submittal of design and construction plans	Impact S&S#9: Temporary and Permanent Interference with Airport Safety.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		• Submit designs and/or information to the FAA as required by Code of Federal Regulations, Title 14, Part 77, to ensure design of permanent HSR features within and adjacent to the boundary of Hollywood Burbank Airport do not intrude into imaginary surfaces as defined in 14 C.F.R. section 77.9(b). • Submit construction plans and/or information to the FAA as required by Code of Federal Regulations, Title 14, Part 77, which may include the location of planned HSR construction and construction staging areas within and adjacent to the boundary of the Hollywood Burbank Airport, the types and height of proposed equipment, and planned time/duration of construction, to ensure construction within and adjacent to the boundary of Hollywood Burbank Airport does not intrude into imaginary surfaces as defined in 14 C.F.R. section 77.9(b). • Implement measures required by the FAA to ensure continued safety of air navigation during HSR construction and operation, pursuant to 14 C.F.R. section 77.5(c). • Ensure that the planned HSR facilities do not violate any grant assurances that are imposed at Hollywood Burbank Airport as a condition for obtaining an Airport Improvement Grants from the FAA. If necessary, work with and the Burbank-Glendale-Pasadena Airport Authority to amend the current Airport Layout Plan for any temporary or permanent construction-related facilities required for the HSR project, to be submitted to the FAA for approval.							
SS-IAMF#6	Stakeholder Coordination for the Hollywood Burbank Airport	As design of the Burbank to Los Angeles Project Section progresses, the Authority shall continue to coordinate with the FAA and Burbank-Glendale-Pasadena Airport Authority to avoid conflicts due to overlapping construction schedules and future operations at the Hollywood Burbank Airport. The purpose of this ongoing stakeholder coordination is to ensure that the design, construction, and operation of the HSR Build Alternative takes into consideration the Airport Layout Plan and any future improvements to the Hollywood Burbank Airport identified in SCAG's 2020-2045 Regional Transportation Plan/Sustainable Community Strategy (SCAG 2020) and to ensure that construction and operation of the HSR Build Alternative do not negatively impact these future improvements.	During design	Coordination with the FAA and Burbank-Glendale-Pasadena Airport Authority	Monthly	Authority	Authority	Authority shall continue to coordinate with FAA and Burbank-Glendale-Pasadena Airport Authority to avoid conflicts due to overlapping construction schedules and future operations at the Hollywood Burbank Airport	Stakeholder coordination of construction schedules and future improvements	Impact S&S#9: Temporary and Permanent Interference with Airport Safety.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
Socioeconomics and Communities										
SOCIO-IAMF#1	Construction Management Plan	Prior to Construction, the Contractor shall prepare a CMP providing measures that minimize impacts on low-income households and minority populations. The plan shall be submitted to the Authority for review and approval. The plan will include actions pertaining to communications, visual protection, air quality, safety controls, noise controls, and traffic controls to minimize impacts on low-income households and minority populations. The plan will verify that property access is maintained for local businesses, residences, and emergency services. This plan will include maintaining customer and vendor access to local businesses throughout construction by using signs to instruct customers about access to businesses during construction. In addition, the plan will include efforts to consult with local transit providers to minimize impacts on local and regional bus routes in affected communities.	Design/Construction	Prepare plan	Prior to construction	Authority/ Contractor	Contractor	Prepare CMP	Condition of construction contract	Impact SOCIO#1: Temporary Disruption to Community Cohesion or Division of Existing Communities from Construction. Impact SOCIO#11: Temporary Effects on Children's Health and Safety from Construction.
SOCIO-IAMF#2	Compliance with Uniform Relocation Assistance and Real Property Acquisition Policies Act	The Authority must comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act, as amended (Uniform Act). The provisions of the Uniform Act, a federally mandated program, will apply to all acquisitions of real property or displacements of persons resulting from this federally assisted project. It was created to provide for fair and equitable treatment of all affected persons. Additionally, the Fifth Amendment of the U.S. Constitution provides that private property may not be taken for a public use without payment of "just compensation." The Uniform Act requires that the owning agency provide notification to all affected property owners of the agency's intent to acquire an interest in their property. This notification includes a written offer letter of just compensation. A right-of-way specialist is assigned to each property owner to assist him or her through the acquisition process. The Uniform Act also provides benefits to displaced individuals to assist them financially and with advisory services related to relocating their residence or business operation. Benefits are available to both owner occupants and tenants of either residential or business properties. The Uniform Act requires provision of relocation benefits to all eligible persons regardless of race, color, religion, sex, or national origin. Benefits to which eligible owners or tenants may be entitled are determined on an individual basis and explained in detail by an assigned right-of-way specialist. The California Relocation Assistance Act essentially mirrors the Uniform Act and also provides for consistent and fair treatment of property owners.	Design/Construction /Operation	Reporting and meeting with interested parties	Prior to completion of property acquisition/Monthly	Authority	Authority	Comply with Uniform Act/Monthly reporting and record keeping	Compliance with acts, creation of ombudsman office and reporting	Impact SOCIO#1: Temporary Disruption to Community Cohesion or Division of Existing Communities from Construction. Impact SOCIO#3: Permanent Displacement of Community Facilities from Construction. Impact SOCIO#5: Permanent Displacement and Relocation of Sensitive Residential Populations from Construction.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		However, because the project will receive federal funding, the Uniform Act takes precedence. Owners of private property have federal and state constitutional guarantees that their property will not be acquired or damaged for public use unless owners first receive just compensation. Just compensation is measured by the "fair market value," where the property value is considered to be the highest price that will be negotiated on the date of valuation. The value must be agreed upon by a seller who is willing, not obliged to sell, but under no particular or urgent necessity and by a buyer who is ready, willing, and able to buy but under no particular necessity. Both the owner and the buyer must deal with the other with the full knowledge of all the uses and purposes for which the property is reasonably adaptable and available (Code of Civil Procedure Section 1263.320a). More-detailed information about how the Authority plans to comply with the Uniform Act and the California Relocation Assistance Act is provided in the following three detailed relocation assistance documents modeled after Caltrans versions: • Your Rights and Benefits as a Displacee under the Uniform Relocation Assistance Program (Residential) • Your Rights and Benefits as a Displacee under the Uniform Relocation Assistance Program (Mobile Home) • Your Rights and Benefits as a Displaced Business, Farm, or Nonprofit Organization under the Uniform Relocation Assistance Program								
SOCIO-IAMF#3	Relocation Mitigation Plan	Before any acquisitions occur, the Authority will develop a relocation mitigation plan, in consultation with affected cities and counties and property owners. In addition to establishing a program to minimize the economic disruption related to relocation, the relocation mitigation plan will be written in a style that also enables it to be used as a public-information document. The relocation mitigation plan will be designed to meet the following objectives: • Provide affected property and business owners and tenants a high level of individualized assistance in situations when acquisition is necessary, and the property owner desires to relocate the existing land use. • Coordinate relocation activities with other agencies acquiring property resulting in displacements in the study area to provide for	Design/Construction	Prepare plan	Prior to property acquisitions	Authority	Authority	Develop relocation mitigation plan	Condition of construction contract	Impact SOCIO#3: Permanent Displacement of Community Facilities from Construction. Impact SOCIO#5: Permanent Displacement and Relocation of Sensitive Residential Populations from Construction.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		all displaced persons and businesses to receive fair and consistent relocation benefits. • Make a best effort to minimize the permanent closure of businesses and nonprofit agencies as a result of property acquisition. • Within the limits established by law and regulation, minimize the economic disruption caused to property owners by relocation. • In individual situations, where warranted, consider the cost of obtaining the entitlement permits necessary to relocate to a suitable location and take those costs into account when establishing the fair market value of the property. • Provide those business owners who require complex permitting with regulatory compliance assistance. The relocation mitigation plan will include the following components: • A description of the appraisal, acquisition, and relocation process as well as a description of the activities of the appraisal and relocation specialists. • A means of assigning appraisal and relocation staff to affected property owners, tenants, or other residents on an individual basis. • Individualized assistance to affected property owners, tenants, or other residents in applying for funding, including research to summarize loans, grants, and federal aid available, and research areas for relocation. • Creation of an ombudsman's position to act as a single point of contact for property owners, residents, and tenants with questions about the relocation process. The ombudsman will also act to address concerns about the relocation process as it applies to the individual situations of property owners, tenants, and other residents.								
Station Planning, Land Use and Development										
LU-IAMF#1	HSR Station Area Development: General Principles and Guidelines	Prior to O&M, the Authority shall prepare a memorandum for each station describing how the Authority's station area development principles and guidelines are applied to achieve the anticipated benefits of station area development. Refer to HSR Station Area Development General Principles and Guidelines, February 3, 2011.	Post-construction	Reporting	Prior to O&M for each station	Authority	Authority	Authority would prepare a technical memorandum for each station	Condition of construction contract	Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from Construction of the Build Alternatives.
LU-IAMF#2	Station Area Planning and Local Agency Coordination	Prior to O&M, the Authority shall prepare a memorandum for each station describing the local agency coordination and station area planning conducted to prepare the station area for HSR	Post-construction	Reporting	Prior to O&M for each station	Authority	Authority	Authority would prepare a technical memorandum for each station	Condition of construction contract	Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		operations. Refer to HSR Station Area Development: General Principles and Guidelines, February 3, 2011.								Construction of the Build Alternatives.
LU-IAMF#3	Restoration of Land Used Temporarily During Construction	Prior to any ground-disturbing activities at the site of land to be used temporarily during construction, the Contractor shall prepare a restoration plan addressing specific actions, sequence of implementation, parties responsible for implementation and successful achievement of restoration for temporary impacts. Before beginning construction use of land, the Contractor shall submit the restoration plan to the Authority for review and obtain Authority approval. The restoration plan shall include time-stamped photo documentation of the pre-construction conditions of all temporary staging areas. All construction access, mobilization, material laydown, and staging areas will be returned to a condition equal to the pre-construction staging condition. This requirement is included in the design-build construction contract requirements.	Pre-construction	Prepare restoration plan	Prior to construction	Authority/ Contractor	Contractor	Contractor would prepare a restoration plan	Condition of construction contract	Impact LU#1: Temporary Alternations to Existing and Planned Land Uses from Construction Staging Areas.
Agricultural Farmland and Forest Land										
AG-IAMF#1	Restoration of Important Farmland Used for Temporary Staging Areas	Prior to any ground-disturbing activities at the site of a temporary construction staging area located on Important Farmland, the Contractor shall prepare a restoration plan addressing specific actions, sequence of implementation, parties responsible for implementation and successful achievement of restoration for temporary impacts. Actions shall include removing and stockpiling the top 18 inches of soil for replacement on-site during restoration activities. Before beginning construction use of sites on Important Farmland, the Contractor shall submit the restoration plan to the Authority for review and obtain Authority (and if applicable, the landowner) approval. The restoration plan shall include time-stamped photo documentation of the pre-construction conditions of all temporary staging areas. All construction access, mobilization, material laydown, and staging areas on Important Farmlands will be returned to a condition equal to the pre-construction staging condition. This requirement is included in the design-build construction contract requirements.	Pre-construction	Reporting	Prior to any ground-disturbing activities on Important Farmland	Authority/ Contractor	Contractor	Prepare restoration plan	Condition of construction contract	Impact AG#1: Temporary Use of Agricultural or Forest Land for Construction Staging, Material Laydown, and Access.
AG-IAMF#2	Permit Assistance	Prior to disturbance causing activities affecting any segment of a confined animal facility, the Authority will assign a representative to act as a single point of contact to assist each confined animal facility owner during the process of obtaining new or amended permits or other regulatory compliance necessary to the continued operation or relocation of the facility. The Authority will consider and may provide compensation when acquisition of a confined animal site will require either relocation of the facility or	Pre-construction	Reporting	Prior to disturbance causing activities affecting any segment of a confined animal facility/Monthly	Authority	Authority	At incorporation or completion of design/monthly reporting during construction	Condition of construction contract	Impact AG#2: Permanent Conversion of Agricultural Land to Nonagricultural Land.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		amendment of its existing regulatory permits. The Authority will create a permit assistance center for landowners and operators whose operations will be out of compliance with permits because of the HSR. This permit center will focus on helping the permit holders modify or obtain any new permits that are required because of the HSR impacts.								
AG-IAMF#3	Farmland Consolidation Program	The Authority will establish and administer a farmland consolidation program to sell remnant parcels to neighboring landowners for consolidation with adjacent farmland properties. In addition, the program will assist the owners of remnant parcels in selling those remnants to adjacent landowners, upon request. The goal of the program is to provide for continued agricultural use on the maximum feasible amount of remnant parcels that otherwise may not be economic to farm. The program will focus on severed remainder parcels, including those that were under Williamson Act or Farmland Security Act contract at the time of right-of-way acquisition and have become too small to remain in the local Williamson Act or Farmland Security Act program. The program will assist landowners in obtaining lot line adjustments where appropriate to incorporate remnant parcels into a larger parcel that is consistent with size requirements under the local government regulations. The program will operate for a minimum of 5 years after construction of the section is completed. The Authority shall document implementation of this measure through issuance of a compliance memorandum- after the minimum operation period of 5 years has elapsed. The document shall be filed with Environmental Mitigation Management and Assessment system (EMMA).	Operation	Establish program	Program will operate for a minimum of 5 years after construction of the project section is completed	Authority	Authority	Establish farmland consolidation program	Condition of construction contract	N/A
AG-IAMF#4	Notification to Agricultural Property Owners	Prior to the start of any construction activity adjacent to farmland, the Authority shall provide written notification to agricultural property owners or leaseholders immediately adjacent to the disturbance limits for the HSR project section. The notification is to indicate the intent to begin construction, including an estimated date for the start of construction. In order to provide agricultural property owners or leaseholders sufficient lead time to make any changes to their operations due to project section construction, this notification shall be provided at least 3 months, but no more than 12 months, prior to the start of construction activity.	Pre-construction	Public notification	Monthly	Authority	Authority	Notification to adjacent property owners and leaseholders at least 3 months, but no more than 12 months, prior to the start of construction activity	Condition of construction contract	Impact AG#6: Noise and Vibration Effects on Farm Animals.
AG-IAMF#5	Temporary Livestock and Equipment Crossings	Prior to the start of any construction activity adjacent to any farmland, the Authority shall coordinate with agricultural property owners or leaseholders to provide temporary livestock and equipment crossings to minimize impacts to livestock movement, as well	Pre-construction	Public coordination/Project design	Monthly	Authority	Authority	Coordination with agricultural property owners and leaseholders, design	Condition of construction contract	Impact AG#1: Temporary Use of Agricultural or Forest Land for Construction Staging, Material Laydown, and Access.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		as routine operations and normal business activities, during project construction.						of livestock and equipment crossings		Impact AG#6: Noise and Vibration Effects on Farm Animals.
AG-IAMF#6	Equipment Crossings	During final design, and in coordination with the property owners of land in use for agricultural operations, the Authority shall finalize the realignments of any affected access roads to provide equipment crossings to minimize impediments to routine agricultural operations and normal business activities that may result from long-term project operation.	Final design	Public coordination	Monthly	Authority	Authority	Coordination with agricultural property owners and leaseholders, design of agricultural access road realignments	Condition of construction contract	Impact AG#1: Temporary Use of Agricultural or Forest Land for Construction Staging, Material Laydown, and Access. Impact AG#2: Permanent Conversion of Agricultural Land to Nonagricultural Land. Impact AG#6: Noise and Vibration Effects on Farm Animals.
Parks, Recreation and Open Space										
PK-IAMF#1	Parks, Recreation, and Open Space	Prior to Construction, the Contractor shall prepare and submit to the Authority a technical memorandum that identifies project design features to be implemented to minimize impacts on parks, recreation and open space. Typical design measures to avoid or minimize impacts to parks and recreation may include: • Provide safe and attractive access for present travel modes (e.g., motorists, bicyclists, pedestrians—as applicable) to existing park and recreation facilities. • Design guideway, system, and station features in such a way as to enhance the surrounding local communities. Provide easy crossings of the guideway which allows for community use under the guideway or at station areas.	Pre-construction	Reporting	At incorporation or completion of design/monthly reporting during construction	Authority/ Contractor	Contractor	Prepare technical memorandum that documents project design features that minimize impacts on park, recreation, and open space	Condition of construction contract	Impact PK#4: Increased or Decreased Use of Parks, Recreation, and Open Space Resources.
Aesthetics and Visual Quality										
AVQ-IAMF#1	Aesthetic Options	Prior to construction the Contractor shall document, through issue of a technical memorandum, how the Authority's aesthetic guidelines have been employed to minimize visual impacts. The Authority seeks to balance providing a consistent, project-wide aesthetic with the local context for the numerous high-speed rail non-station structures across the state. Examples of aesthetic options will be provided to local jurisdictions that can be applied to non-standard structures in the high-speed rail system. Refer to Draft Design Opportunities for Local Jurisdictions and Aesthetic Requirements (October 2017).	Pre-construction	Reporting	At incorporation or completion of design	Contractor	Contractor	Prepare aesthetics technical memorandum	Condition of construction contract	N/A
AVQ-IAMF#2	Aesthetic Review Process	Prior to construction, the Contractor shall document that the Authority's aesthetic review process has been followed to guide the development of non-station area structures. Documentation shall be through issuance of a technical memorandum to the Authority. The Authority will identify key non-station	Pre-construction	Reporting	At incorporation or completion of design	Authority/ Contractor	Authority	Prepare aesthetics review process technical memorandum	Condition of construction contract	N/A

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		structures recommended for aesthetic treatment, consult with local jurisdictions on how best to involve the community in the process, solicit input from local jurisdictions on their aesthetic preferences, and evaluate aesthetic preferences for potential cost, schedule and operational impacts. The Authority will also evaluate compatibility with project-wide aesthetic goals, include recommended aesthetic approaches in the construction procurement documents, and work with the contractor and local jurisdictions to review designs and local aesthetic preferences and incorporate them into final design and construction. Refer to Aesthetic Review Process for Non-Stations Structures (Authority 2013), Draft Design Opportunities for Local Jurisdictions and Aesthetic Requirements (October 2017).								
Cultural Resources										
CUL-IAMF#1	Geospatial Data Layer and Archaeological Sensitivity Map	Prior to construction (any ground-disturbing activities) and staging of materials and equipment, the Contractor's archaeologist or geoarchaeologist shall prepare a geospatial data layer identifying the locations of all known archaeological resources and built historic resources that require avoidance or protection, and areas of archaeological sensitivity that require monitoring within the area of potential effect (APE). The Contractor's archaeologist, who meets the Secretary of the Interior's Professional Qualifications Standards provided in 36 Code of Federal Regulations (C.F.R.) Part 61, is to use, as appropriate, a combination of the following: known locations of archaeological sites and built historic properties, tribal consultation, landforms, depositional processes, distance to water, mapping provided in the Archaeological Treatment Plan, or historic mapping. This mapping is to be updated as the design progresses if it results in an expansion of the area of ground disturbance/APE, including temporary construction easements and new laydown and access areas. This mapping will be used to develop an archaeological monitoring plan to be prepared by the Contractor's archaeologist, and upon approval by the Authority, implemented by the Contractor's archaeologist. When design is sufficiently advanced, a geospatial data layer will be produced by the Contractor overlaying the locations of all known archaeological resources and built historic resources within the APE, for which avoidance measures are necessary, and all archaeologically sensitive areas, for which monitoring is required.	Design/Pre-construction	Prepare plan	At incorporation or completion of design	Contractor's archaeologist or geoarchaeologist	Authority	Prepare geospatial data layer	Condition of construction contract	Impact CUL#1: Effects on Known Archaeological Resources Caused by Construction Activities. Impact CUL#3: Effects on Human Remains Discovered during Construction Activities.
CUL-IAMF#2	WEAP Training Session	Prior to construction (any ground-disturbing activity) construction contractor personnel who work on site will attend a WEAP training session provided by the Contractor. The WEAP will include cultural resources awareness training performed by the Contractor's	Pre-construction	Training program/Reporting	Annual (training)/monthly (reporting)	Authority/ Contractor	Contractor	WEAP training	WEAP	Impact CUL#1: Effects on Known Archaeological Resources Caused by Construction Activities.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		archaeologist who meets the Secretary of the Interior's Professional Qualification Standards provided in 36 C.F.R. Part 61. The Contractor will develop instructional materials and a fact sheet for distribution to the construction crews, and submit the materials, as well as qualifications of the personnel providing the training, to the Authority for approval at least 15 days prior to being permitted on-site access. The training will address measures required to avoid or protect built historic resources, educate crews on artifacts and archaeological features they may encounter and the mandatory procedures to follow should potential cultural resources be exposed during construction. Translation services shall be provided by the Contractor for non-English speaking participants. The training sessions shall be given prior to the initiation of any ground disturbance activities and repeated on an annual basis. Additionally, new construction crewmembers shall attend an initial WEAP training session prior to working on site. On completion of the WEAP training, construction crews will sign a form stating that they attended the training, understood the information presented, and will comply with the WEAP requirements. The Contractor's archaeologist will submit the signed WEAP training forms to the Mitigation Manager on a monthly basis. On an annual basis, the Contractor will provide the Authority with a letter indicating that regular WEAP training has been implemented and will provide at least1PowerPoint annually of the WEAP training. On a monthly basis, the Contractor's archaeologist will provide updates and synopsis of the training to workers during the daily safety ("tailgate") meeting. Construction crews will be informed during the WEAP training that, to the extent possible, travel within the marked project site will be restricted to established roadbeds.							
CUL-IAMF#3	Pre-construction Cultural Resource Surveys	Prior to construction (any ground-disturbing activities in areas not yet surveyed) and the staging of materials and equipment, the Contractor shall conduct pre-construction cultural resource surveys. Resulting from lack of legal access, much of the construction footprint may not have been surveyed. Once parcels are accessible the Contractor will have archaeologists or architectural historians, as appropriate, who meet the Secretary of the Interior professional qualification standards survey and complete reporting in appropriate document for archaeology and /or built resources, in accordance with documentation requirements stipulated in the Programmatic Agreement (PA). Identified resources shall be evaluated for the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR). The qualified	Pre-construction	Conduct pre-construction surveys; Identify historic and/or cultural resources	Surveys conducted prior to ground disturbance	Authority/ Contractor	Contractor	Cultural resource surveys conducted prior to ground disturbance	Condition of construction contract	Impact CUL#2: Effects on Unknown Archaeological Resources Caused by Construction Activities.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		archaeologist or architectural historian, as appropriate, will assess the potential to affect to historic properties (NRHP) by applying the effects criteria in 36 C.F.R. Part 800.5(a)(1), and the potential of significant impacts to CRHR by applying the criteria in California Environmental Quality Act Guidelines 15064.5(b). Should the Authority and FRA determine, in consultation with the State Historic Preservation Office (SHPO), that any newly identified historic properties or historical resources would be adversely affected, the Built Environment Treatment Plan or Archaeological Treatment Plan, as appropriate, will be amended, to document mitigation measures agreed upon by the Memorandum of Agreement (MOA) signatories. The schedule of these surveys will be dependent on the timing of obtaining legal access to the properties and may be driven by the need to complete construction-related activities, e.g., geotechnical borings, laydown yards, etc. Prior to beginning surveys, updated records searches may be required by the FRA and Authority, depending on the length of the passage of time, to validate that accurate information was obtained regarding previous inventory and evaluation efforts. The Contractor's archaeologist, in consultation with the Authority, will determine if an updated records search is required. If an updated records search is necessary, the search shall be performed by the Contractor's archaeologist.								
CUL-IAMF#4	Relocation of Project Features when Possible	Changing the rail alignment to avoid newly discovered sites is likely infeasible; however, access areas and laydown sites may be relocated should their proposed location be found to be on archaeological sites or have the potential to affect historic built resources in the vicinity. The contractor will delineate all avoidance and protection measures for identified archaeological and built resources on construction drawings.	Construction	Relocation of access areas and laydown sites	As needed	Authority/ Contractor	Contractor	Relocation access areas and laydown sites as needed to avoid archaeological or historic built resources	Condition of construction contract	Impact CUL#1: Effects on Known Archaeological Resources Caused by Construction Activities. Impact CUL#3: Effects on Human Remains Discovered during Construction Activities.
CUL-IAMF#5	Archaeological Monitoring Plan and Implementation	Prior to construction the Contractor's professionally qualified archaeologist, as defined in the PA, will prepare a monitoring plan based on the results of geospatial data layer and archaeological sensitivity map. The plan is to be reviewed and approved by the Authority prior to any ground-disturbing activities. During Construction (any ground-disturbing activities) or staging of materials or equipment, the Contractor will be responsible for implementing the monitoring plan and providing archaeological and tribal monitoring of ground-disturbing construction activities with a potential to affect archaeological remains in areas identified as archaeologically sensitive in the Archaeological Treatment Plan. The Contractor shall obtain Authority approval of all persons providing archaeological or tribal monitoring.	Pre-construction/ Construction	Prepare and implement monitoring plan	Prior to construction (prepare plan)/during construction (implement plan)	Authority/ Contractor	Contractor	Prepare archaeological monitoring plan	Condition of construction contract	Impact CUL#1: Effects on Known Archaeological Resources Caused by Construction Activities. Impact CUL#3: Effects on Human Remains Discovered during Construction Activities.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
CUL-IAMF#6	Pre-Construction Conditions Assessment, Plan for Protection of Historic Built Resources, and Repair of Inadvertent Damage	Prior to construction (any ground-disturbing activities that are within 1,000 feet of a historic built property) the Contractor may be required to assess the condition of construction-adjacent historic properties and prepare a Plan for the Protection of Historic Built Resources and Repair of Inadvertent Damage. The MOA and Built Environment Treatment Plan (BETP) will stipulate for which properties the plan is to be prepared. MOA signatories and consulting parties may comment on the adequacy of the assessments. Protection measures will be developed in consultation with the landowner or land-owning agencies as well as the SHPO and the MOA signatories and consulting parties, as required by the PA. As the design progresses, additional properties may be identified by the Authority as requiring this plan. The plan shall record existing conditions in order to (1) establish a baseline against which to compare the property's post-project condition, (2) to identify structural deficiencies that make the property vulnerable to project construction-related damage, such as vibration, and (3) to identify stabilization or other measures required to avoid or minimize inadvertent adverse effects. The plan will be further described in the BETP and be prepared by an interdisciplinary team, including (but not limited to) as appropriate, an architectural historian, architect, photographer, structural engineer, and acoustical engineer. Ambient conditions will be used to identify buildings that are sensitive receptors to construction-related vibration and require vibration monitoring during construction activities. Additional protective measures may be required if the property is vacant during construction. The plan content shall be outlined in the BETP and is to be completed and approved by the Authority, with protective measures implemented before construction begins within 1,000 feet of the subject building. The plan shall describe the protocols for documenting inadvertent damage (should it occur), as well as notification, coordination, and reporting to the SHPO, MOA signatories, and the owner of the historic property. The plan shall direct that inadvertent damage to historic properties shall be repaired in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (U.S. Department of the Interior, 1995). The plan shall be developed in coordination with the Authority and FRA and shall be submitted to the SHPO for review and approval. Protective plans will be required for buildings that will be moved as part of the project mitigation, including stabilization before, during, and after relocation; protection during temporary storage; and relocation to a new site, followed by rehabilitation.	Pre-construction	Conduct assessment and protection plan	Required if within 1,000 feet of historic built property	Contractor/Authority	Contractor/Authority	Assess the condition of construction-adjacent historic properties and prepare a Plan for the Protection of Historic Built Resources and Repair of Inadvertent Damage	MOA/PA/BETP	Impact CUL#4: Effects on Historic Built Resources Caused by Construction Activities.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
CUL-IAMF#7	Built Environment Monitoring Plan	Prior to construction (any ground-disturbing activities within 1,000 feet of a historic property or resource) the Contractor shall prepare a Built Environment Monitoring Plan (BEMP). Draft and final BEMP's will be prepared describing the properties that will require monitoring, the type of activities or resources that will require full-time monitoring or spot checks, the required number of monitors for each construction activity, and the parameters that will influence the level of effort for monitoring. Maximum vibration level thresholds may be established in the Plan for Protection of Historic Resources and Repair of Inadvertent Damage the monitoring of which will be included in this monitoring plan. The BETP will outline the process for corrective action should the protection measures prove ineffective. Consultation procedures will also be defined in the BETP. The Contractor shall develop both the draft and final plans in coordination with the Authority and FRA, and shall be submitted to the SHPO for review and approval. The plan will be implemented prior to any ground-disturbing activities within 1,000 feet of properties identified as requiring monitoring, as specified in the BETP.	Pre-construction	Prepare monitoring plan	Required if within 1,000 feet of historic built property	Contractor/ Authority	Contractor/ Authority	Prepare a BEMP	BETP	N/A
CUL-IAMF#8	Implement Protection and/or Stabilization Measures	Implement the plan described in the Plan for Protection of Historic Resources and Repair of Inadvertent Damage and in the Built Environment Treatment Plan. Such protection measures will include, but will not be limited to, vibration monitoring of construction in the vicinity of historic properties; cordoning off of resources from construction activities (e.g., traffic, equipment storage, personnel); shielding of resources from dust or debris; and stabilization of buildings adjacent to construction. Temporary stabilization and protection measures will be removed after construction is complete, and the historic properties will be restored to their pre-construction condition. For buildings that will be moved, treatment will include stabilization before, during, and after relocation; protection during temporary storage; and relocation to a new site, followed by rehabilitation.	Pre-construction	Implement protection and/or stabilization measures	Per BETP	Authority/ Contractor	Contractor	Implement historic built resource protection measures per BETP	BETP	Impact CUL#4: Effects on Historic Built Resources Caused by Construction Activities.
Environmental Justice										
EJ-IAMF#1	Authority EJ Ombudsman and Contractor's EJ Liaison	EJ communities are historically underrepresented, thus requiring special outreach. Prior to final design, the Authority shall create an ombudsman position to address the needs of adversely affected EJ communities, Los Angeles Unified School District's (LAUSD) Broadus Elementary and Roscoe Elementary schools and, upon request, additional private and charter schools. For purposes of all EJ-specific measures (EJ-IAMFs and EJ-MMs), reference to eligible "EJ communities" shall mean	Pre-construction	Outreach and Reporting	Prior to final design	Authority	Authority	Creation of an ombudsman position	Recruitment/Appointments	Transportation Noise and Vibration Socioeconomics and Communities

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		Pacoima and Sun Valley for Refined SR14, SR14A, E1 and E1A alternatives and Lakeview Terrace and Sun Valley for E2 and E2a alternatives. In addition, the students of Project alignment-adjacent schools in the above-defined EJ communities (LAUSD's Broadus Elementary and Roscoe Elementary, and any private/charter schools) are also included in the definition of EJ communities for purposes of these measures. The Authority will also make available resources developed for EJ-IAMFs to any other EJ communities that are identified in Chapter 5 of the EIR/EIS as EJ communities along the alignment, if a specific EJ community so requests. The Authority' final design plans and contract documents shall require the Contractor to establish a full-time EJ liaison to serve as a multilingual single point of contact for the EJ communities. The scope of the Authority's EJ ombudsman and Contractor's EJ liaison responsibilities and duties include those articulated in the other EJ-related IAMFs. These responsibilities include: implementing programs (e.g., the Workforce Development Program, community air quality monitoring), holding community roundtables to obtain ideas for business spotlighting, developing appropriate aesthetic treatments, proposing potential intersection and/or safety improvements, and obtaining community-specific feedback on the following plans not typically reviewed by the general public: • Construction Management Plan (SOCIO-IAMF#1) • Relocation Mitigation Plan (SOCIO-IAMF#3) • Construction Safety Transportation Management Plan (SS-IAMF#1) • Safety and Security Management Plan (SS-IAMF#2) • Transportation Construction Management Plan (TR-MM#12) • Operations Noise and Vibration Technical Memorandum (NV-IAMF#1) The EJ ombudsman and Contractor's EJ liaison shall have stop work authority in the event of safety concerns and may also apply stop work authority for project-related concerns regarding fugitive dust, construction noise and traffic (e.g., noncompliance with designated truck hauling routes and the CTP). Beginning with final design and throughout the construction phase of the project, the Contractor's EJ liaison shall submit reports (quarterly, at minimum) to the ombudsman providing evidence of compliance with all EJ-IAMFs, maintenance of pedestrian access per TR-IAMF#4, communication of relocation								

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		mitigation plan and relocation ombudsman availability (SOCIO- IAMF#3). During construction, the Contractor's EJ liaison shall provide multilingual notices (e.g., online information, e- blasts, text messaging, voice messaging or mailers) to inform EJ communities (specifically, communities identified in the first paragraph of this IAMF) of the Authority's hotline for reporting community concerns or complaints regarding construction noise and traffic effects and updates. These notices shall be provided 2 weeks in advance of each planned instance of vehicle, pedestrian, bicycle, transit access, and utility service disruption. Notices shall continue, at a minimum, until the EJ communities receive post-construction guidance with details of how to access and ride the HSR system. The EJ liaison's report to the ombudsman shall include all concerns and complaints received from EJ communities and measures taken by the Authority or its Contractors to address those concerns and complaints. The Authority's construction Contractor shall implement all corrective actions communicated by the EJ ombudsman, or their EJ liaison, within a 24-hour period unless written authorization from the EJ ombudsman provides the Contractor with an alternate timeline. The EJ liaison shall also serve as the primary point of contact for LAUSD for schools with construction-related concerns within adversely affected EJ communities (as identified in Table 5-24 and Section 5.5 of the Final EIR/EIS). The Authority shall ensure the point of contact has access to the Authority's contract interpretation and translation services for substantial Limited English Proficiency (LEP) languages in the affected area. Substantial shall be as defined in state LEP law (the Dymally Alatorre Bilingual Services Act). The Authority may also consider contracting with a community organization for substantial LEP communities to assist with outreach.							
EJ-IAMF#2	Business Spotlighting	To minimize any potential access disruptions or inconveniences to businesses within adversely affected EJ communities (as defined in EJ-IAMF#1) during construction activities, the Authority shall provide assistance to those businesses to maintain visibility during construction, such as providing signage and targeted advertising and marketing campaigns, incentives for construction worker patronage (as applicable), and/or Authority-sponsored community events. Business spotlighting will supplement efforts described in TR- MM#12 and includes street vendors permitted by the City of Los Angeles.	Construction	Implement visibility spotlighting measures	Prior to operation	Authority	Authority	Provide assistance to businesses to maintain their visibility	Condition of construction contract	Socioeconomics and Communities.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
EJ-IAMF#3	EJ Community-Inclusive Development of Aesthetic Treatments and Community Cohesion Enhancements	In addition to the requirements in AVQ-IAMF#1 (Aesthetic Options) and AVQ-IAMF#2 (Aesthetic Review Process), the Contractor's EJ liaison shall work with the Authority EJ ombudsman to hold community roundtables to seek input on locally desired aesthetic treatment preferences from the adversely affected EJ communities (as defined in EJ-IAMF#1), possibly developed by local artists. Treatment options may include streetscape, vegetation screening, consideration of a community mural, and/or beautification tree plantings or plant plantings (such as improvements to an existing community garden or establishment of a new community garden location). When applicable, tree plantings shall involve the Pacoima Beautiful Street Tree Planting/Adopt a Tree Program collaboration with the Los Angeles Conservation Corps. As appropriate, reuse of property purchased by the Authority that are within the EJ communities (as defined in EJ-IAMF#1) shall be considered for plant and/or tree plantings. Specific consideration to plantings at Boulevard Mine shall be given to both, fulfill the requirements of this measure and support the EPA Abandoned Mines Land Program and to implement AVQ-MM#5. Upon Authority review for compatibility with the Draft Design Opportunities for Local Jurisdictions and Aesthetic Requirements (October 2017) and approval, the identified locally desired aesthetic treatments shall be included in the final design plans. The Authority's Contractor shall implement the aesthetic treatments in the construction of HSR infrastructure.	Pre-construction/ Construction	Outreach	Prior to operation	Contractor's EJ liaison/ Authority EJ ombudsman	Contractor's EJ liaison/ Authority EJ ombudsman	Conduct community roundtables to seek input on locally desired aesthetic treatment	Condition of construction contract	Aesthetics and Visual Quality.
EJ-IAMF#4	EJ Business Relocation/Displacement Assistance	Pursuant to SOCIO-IAMF#3 Relocation Mitigation Plan, the Authority will develop a relocation mitigation plan. The Plan will include a subsection dedicated to addressing adverse effects to businesses in the EJ communities (as defined in EJ-IAMF#1). This subsection shall include a description of measures taken or proposed to offset the adverse effects of business displacements and relocations in EJ communities, including a description of measures to relocate displaced businesses in proximity to their same community. The Authority shall hold community roundtable meetings to seek and consider input from affected EJ communities prior to finalizing the Authority's Relocation Mitigation Plan.	Pre-construction/Construction	Preparation of Plan	Prior to acquisitions	Authority	Authority	Implement the Relocation Mitigation Plan to address adverse effect on EJ communities	Condition of design-build contract	Socioeconomics and Communities.
EJ-IAMF#5	EJ Community Post-Construction Communication	The Contractor's EJ liaison shall ensure multilingual notices (e.g., online information, e-blasts, text messaging, voice messaging, or mailers) are distributed to EJ communities (as defined in EJ-IAMF#1), providing an estimated operation commencement date. The notices shall include information regarding underground and aboveground	Post-construction	Community outreach	Prior to operations	Contractor's EJ liaison/ Authority EJ ombudsman	Contractor's EJ liaison/ Authority EJ ombudsman	Send out notices of commencement of project operations	Condition of design-build contract	Air Quality and Global Climate Change Noise and Vibration Socioeconomics and Communities.

IAMF	Title	IAMF Text	Phase	Implementation Action	Reporting Schedule	Implementing Party	Reporting Party	Implementation Text	Implementation Mechanism	Impact # and Impact Text
		facilities, boarding platforms, ticketing areas, passenger waiting areas, restrooms, pickup/drop-off facilities for private automobiles, transit center for buses and shuttles, and surface parking areas. Notices shall clearly describe various modes of access to the HSR system. If available, the notices shall also specify HSR system ticket costs.								
EJ-IAMF#6	Non-Regulatory Supplemental and Informational Monitoring	Prior to the start of construction, the Authority shall reference the EPA Air Sensor Toolbox and the SCAQMD Air Quality Sensor Performance Evaluation Center (AQ-SPEC) to propose stationary outdoor air quality sensors and applicable monitoring locations within EJ communities (as identified in EJ-IAMF#1). Data from these air quality sensors could be used for increasing environmental awareness and educating the communities about air quality. The selected sensors will be required, at a minimum, to provide PM2.5 community monitoring. It should be noted that the data from these air quality monitors cannot be used for regulatory purposes; however, they could provide the neighborhoods with greater access to publicly accessible, local air quality data.	Pre-construction	Coordination/monitoring/reporting	Prior to operations	Authority/ Contractor	Authority/ Contractor	Install outdoor air quality sensors within EJ communities	Condition of design-build contract	Air Quality and Global Climate Change.

AASHTO	American Association of State Highway and Transportation Officials	CHSR	California High-Speed Rail	IAMF	impact avoidance and minimization feature	RWQCB	Regional Water Quality Control Board		
ADA	Americans with Disabilities Act	CHSTS	California Safety Test Solutions	IBC	International Building Code	SEM	sequential excavation method		
APE	area of potential effect	CMP	construction management plan	ISEP	Implementation Stage Electromagnetic Compatibility Program Plan	SHPO	State Historic Preservation Office		
AREMA	American Railway Engineering and Maintenance-of-Way Association	CP	construction package	MBTA	Migratory Bird Treaty Act	SOI	Secretary of the Interior		
ASCE	American Society of Civil Engineers	CRHR	California Register of Historical Resources	MOA	Memorandum of Agreement	SPCC	Spill Prevention, Control, and Countermeasure		
ASTM	American Society for Testing and Materials	CTP	construction transportation plan	mph	miles per hour	SSPP	Systems Safety Program Plan		
Authority	California High-Speed Rail Authority	CWA	Clean Water Act	MSE	mechanically stabilized earth	SVP	Society of Vertebrate Paleontology		
BEMP	Built Environment Monitoring Plan	DB	design-build	NCCAB	North Central Coast Air Basin	SWPPP	stormwater pollution prevention plan		
BETP	built environment treatment plan	DCM	Design Criteria Manual	NIOSH	National Institute for Occupational Safety and Health	SWRCB	State Water Resources Control Board		
BGEPA	Bald and Golden Eagle Protection Act	DOGGR	California Department of Conservation, Division of Oil, and Gas and Geothermal Resources	NMFS	National Marine Fisheries Service	TBM	tunnel boring machine		
BMP	best management practice			NOA	naturally occurring asbestos	TR	triggers review		
BRMP	biological resources management plan	EMC	electromagnetic compatibility	NRHP	National Register of Historic Places	TVA	threat and vulnerability assessment		
Cal-OSHA	California Occupational Safety and Health Administration	EMF	electromagnetic field	O&M	operations and maintenance	Uniform Act	Uniform Relocation Assistance and Real Property Acquisition Policies Act, as amended		
Caltrans	California Department of Transportation	EMI	electromagnetic interference	OSHA	Occupational Safety and Health Administration				
CARB	California Air Resources Board	EMMA	Environmental Mitigation Management and Assessment	PA	Programmatic Agreement	US	United States		
CDFW	California Department of Fish and Wildlife	EPB	Earth Pressure Balance	PCM	Project Construction Manager	USACE	U.S. Army Corps of Engineers		
CDPH	California Department of Public Health	ESA	Endangered Species Act	PHA	preliminary hazard analysis	USEPA	U.S. Environmental Protection Agency		
CDSM	cement deep-soil-mixing	ESA	environmental site assessment	Porter-Cologne	Porter-Cologne Water Quality Control Act	USFWS	U.S. Fish and Wildlife Service		
CEQA	California Environmental Quality Act	FHWA	Federal Highway Administration	PRMMP	paleontological resources monitoring and mitigation plan	VFHS	Valley Fever Health and Safety		
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	FRA	Federal Railroad Administration	PRS	paleontological resources specialist	VMT	vehicle miles traveled		
		FTA	Federal Transit Administration	PSI	pounds per square inch	VOC	volatile organic compound		
CESA	California Endangered Species Act	HEPA	high efficiency particulate air	RCRA	Resource Conservation and Recovery Act	WCP	Weed Control Plan		
C.F.R.	Code of Federal Regulations	HSR	high-speed rail	RPP	restoration and revegetation plan	WEAP	Worker Environmental Awareness Program		

APPENDIX D: STATE HISTORIC PRESERVATION OFFICER SECTION 106 CONCURRENCE LETTER, SEPTEMBER 3, 2021 AND MEMORANDUM OF AGREEMENT, DECEMBER 14, 2023

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State of California • Natural Resources Agency
Gavin Newsom, *Governor*

DEPARTMENT OF PARKS AND RECREATION
OFFICE OF HISTORIC PRESERVATION

Lisa Ann L. Mangat, *Director*

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September 3, 2021 Reference Number: FRA_2018_0418_001

Submitted Via Electronic Mail

Brett Rushing
Cultural Resources Program Manager
California High-Speed Rail Authority
770 L Street, Suite 620
Sacramento, CA 95814

Re: High Speed Rail Program, Palmdale to Burbank Project Section, Request for Review and Concurrence on the Findings Presented in the Finding of Effect Report

Dear Mr. Rushing:

The California State Historic Preservation Officer (SHPO) is in receipt of the California High-Speed Rail Authority's (Authority) August 6, 2021 letter continuing consultation regarding the Palmdale to Burbank project section of the California High-Speed Rail Program. This consultation is undertaken in accordance with the 2011 *Programmatic Agreement Among the Federal Railroad Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California High-Speed Rail Authority, as Amended (PA)*. In support of this consultation, the Authority has prepared the following report: California High-Speed Rail Authority, Palmdale to Burbank Project Section, Section 106 Finding of Effect Report (FOE) (May 2021)

There are 18 historic properties within the SR14A Build Alternative APE, consisting of five built-environment properties, 12 unevaluated archaeological resources treated as historic properties for the purposes of this undertaking, and once archaeological property listed on the National Register of Historic Places (NRHP). The FOE concludes that the construction and operation of the Palmdale to Burbank Project Section will have no effect on two built-environment historic properties and no adverse effect on three built-environment historic properties, as listed in Table 1 included in your August 6, 2021 letter.

Additionally, the FOE finds that construction and operation of the Palmdale to Burbank Project Section will have no effect on two of the 13 archaeological resources and that determination of effects for the 11 remaining archaeological resources will be phased as access to sites in granted and the project design

advances. These sites are listed in Table 2 of your August 6, 2021 letter. None of the archaeological resources listed in Table 2 appear exempt from evaluation under Attachment D of the Section 106 PA. To date, approximately 9.6 percent of the archaeological APE has been surveyed for the current undertaking, and additional archaeological resources may be identified during future phased identification efforts, including survey and construction monitoring. Moreover, consultation with tribal consulting parties will continue to be conducted for the undertaking, as appropriate. To date, this consultation has not identified previously unrecorded archaeological resources or traditional cultural properties. The SR14A alignment would have no effect on two archaeological resources, as shown in Table 2.

Section 4(f) of the United States Department of Transportation Act of 1966 requires consultation with the SHPO, the official with jurisdiction over historic properties, as stipulated in 23 CFR § 774.17. The Authority is consequently notifying the SHPO of its intent to make a de minimis impact determination for the Palmdale Ditch and the East Branch of the California Aqueduct in accordance with 23 CFR § 774.5. For historic properties, a de minimis impact determination under Section 4(f) is based on findings made in the Section 106 consultation process and can be made if the project will have no adverse effect on the historic property. The Authority has determined that the Palmdale Ditch and the East Branch of the California Aqueduct will not be adversely affected and, therefore, will incur a de minimis use under Section 4(f). By concurring with the Authority's finding of no adverse effect under Section 106, the SHPO also concurs with this 4(f) determination.

In accordance with PA Stipulation VII.A, the Authority requests SHPO concurrence findings presented in the FOE. Having reviewed the recommendations summarized in the FOE, SHPO concurs that the undertaking will not adversely affect historic properties.

If you have any questions, please contact State Historian Tristan Tozer at (916) 445-7027 or tristan.Tozer@parks.ca.gov.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

MEMORANDUM OF AGREEMENT
AMONG THE CALIFORNIA HIGH-SPEED RAIL AUTHORITY, THE SURFACE TRANSPORTATION BOARD, AND THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE PALMDALE TO BURBANK PROJECT SECTION OF THE CALIFORNIA HIGH-SPEED RAIL PROGRAM IN LOS ANGELES COUNTY, CALIFORNIA

WHEREAS, the California High-Speed Rail Authority (Authority) proposes to construct the Palmdale to Burbank Project Section (the Undertaking), an approximately 42-mile portion of the California High-Speed Rail Program in Los Angeles County, which would consist of modifying existing tracks and stations and constructing a new rail alignment, stations, a maintenance facility, electrical substations, and other appurtenant facilities;

WHEREAS, the Palmdale to Burbank Project Section was identified as an undertaking subject to review under Section 106 of the National Historic Preservation Act (54 United States Code [U.S.C.] § 306108) (Section 106) and its implementing regulations (36 Code of Federal Regulations [CFR] Part 800) in the *Programmatic Agreement among the Federal Railroad Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California High-Speed Authority regarding compliance with Section 106 of the National Historic Preservation Act as it pertains to the California High-Speed Train Project* executed on July 22, 2011, which was amended with the *First Amendment to the Programmatic Agreement among the Federal Railroad Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California High-Speed Rail Authority regarding compliance with Section 106 of the National Historic Preservation Act as it pertains to the California High-Speed Train Project* executed on July 21, 2021 (PA; **Attachment 1**); and

WHEREAS, the Authority has coordinated compliance with Section 106 and 36 CFR Part 800 with steps taken to meet the requirements of the National Environmental Policy Act (NEPA), Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. § 303), and the California Environmental Quality Act (CEQA) and has planned public participation, analysis, and review in such a way to satisfy the requirements of each statute; and

WHEREAS, on July 23, 2019, the State of California and the Federal Railroad Administration (FRA) executed a memorandum of understanding under the Surface Transportation Project Delivery Program (known as NEPA Assignment), pursuant to the legal authority under 23 U.S.C. § 327; and under NEPA Assignment, the State, acting through the California State Transportation Agency and the Authority, assumed FRA's responsibilities under NEPA and other federal environmental laws, including Section 106, for the California High-Speed Rail Program, including the Undertaking; and

WHEREAS, the FRA notified the Authority that the FRA would not be participating in consultation regarding the Undertaking; and

WHEREAS, government-to-government consultation with federally recognized Native American tribes remains the FRA's responsibility under NEPA Assignment; and

WHEREAS, on April 18, 2013, the Surface Transportation Board (STB) issued a decision concluding that it has jurisdiction over the construction of the California High-Speed Rail Program, requiring the Authority to obtain STB approval for the construction of each project section, and the STB subsequently designated FRA lead agency to act on its behalf for the purposes of compliance with Section 106 for

California High-Speed Rail Program undertakings; and on June 23, 2021, the STB designated the Authority as lead Federal agency for Section 106 and the STB accepted the Authority's invitation to be an Invited Signatory to this memorandum of agreement (MOA); and

WHEREAS, on May 20, 2020, the United States Army Corps of Engineers (USACE), San Francisco, Sacramento, and Los Angeles districts, sent a letter to the Authority reaffirming their understanding regarding the Authority's role as lead agency for compliance with Section 106, and that the Authority has the responsibility to act on the USACE's behalf for their discretionary federal actions related to all project sections of the California High-Speed Rail Program; and

WHEREAS, the Undertaking would be designed and constructed using a procurement process, in which the current level of design is generally 15 percent complete and which the Authority's contractor (the Contractor) will advance to 100 percent, potentially resulting in adjustments to the project footprint; and

WHEREAS, the Authority has delineated the Area of Potential Effects (APE) for the Undertaking based on the current level of design in accordance with Stipulation VI.A of the PA to encompass the geographic areas within which the Undertaking may directly or indirectly cause alterations in the character or use of historic properties, as depicted in **Attachment 2**; and

WHEREAS, the Authority surveyed the APE for built-environment resources and, in consultation with the California State Historic Preservation Officer (SHPO) and other Consulting Parties, determined that the APE contains 5 built-environment historic properties listed in or considered eligible for listing in the National Register of Historic Places (**Attachment 3**); and

WHEREAS, due to access restrictions and the predominance of paved or otherwise non-visible ground surfaces, the Authority has not yet surveyed all of the project footprint for archaeological resources and, in consultation with the SHPO and other Consulting Parties, determined that the APE contains 12 previously identified archaeological resources (**Attachment 3**) that are presumed to be NRHP-eligible for planning purposes; and

WHEREAS, the Authority proposes to phase the identification and evaluation of archaeological historic properties as provided for in Stipulation VI.E of the PA and 36 CFR § 800.4(b)(2); and

WHEREAS, the Advisory Council on Historic Preservation (ACHP) notified the Authority that the ACHP would not be participating in consultation regarding the Undertaking by letter on December 22, 2022; and

WHEREAS, the Authority, in consultation with the SHPO, STB, and other Consulting Parties, determined that the Undertaking as currently designed may have no adverse effect on 3 built-environment historic properties and no effect on 2 built-environment historic properties, as documented in the Finding of Effect (FOE) report for the Palmdale to Burbank Project Section and as listed in **Attachment 3** of this MOA; the Undertaking will have no effect on 2 archaeological properties and the Authority will phase the evaluation and effects assessment for 10 archaeological properties that have been identified in the APE; and

WHEREAS, the Authority will ensure the avoidance, minimization, or resolution of adverse effects of the Undertaking on historic properties through the execution and implementation of this MOA and the implementation of the Archaeological Treatment Plan (ATP; **Attachment 4**) and the Built Environment Treatment Plan (BETP; **Attachment 5**) (collectively referred to as the Treatment Plans); and

WHEREAS, in accordance with Stipulations V.A and V.B of the PA, the Authority has consulted with agencies with jurisdiction over portions of the APE and other parties with a demonstrated interest in the Undertaking, a legal or economic relation to an affected historic property, or concern with the Undertaking's effects on historic properties, as noted in **Attachments 6** and **7**, about the Undertaking and its effects on historic properties and has taken into account all comments received from them; and

WHEREAS, in accordance with Stipulations IV.B and IV.C of the PA, the Authority has consulted with or made a good faith effort to consult with California Native American tribes that are on the Native American Heritage Commission's consultation list and are traditionally and culturally affiliated with the APE of the Undertaking; the California Native American tribes that have chosen to participate in the consultation are identified in **Attachment 7**; and

WHEREAS, the parties listed in **Attachments 6** and **7** have accepted the Authority's invitation to be consulting parties to the Undertaking (collectively referred to as the Consulting Parties); and

WHEREAS, the Authority sought and considered the views of the public on this Undertaking through its public involvement program as part of the environmental review process and requirements of NEPA and CEQA, as described in the Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Undertaking, which included distributing informational materials to the public, making presentations and soliciting comments at public meetings, and circulating the draft and final EIR/EIS and supporting technical reports for public review and comment; and

WHEREAS, the Authority and SHPO are collectively referred to as the Signatories; STB is referred to as an Invited Signatory; and

WHEREAS, the Consulting Parties other than the Signatories and Invited Signatory have been invited to sign this MOA as concurring parties (collectively referred to as Concurring Parties); and

NOW, THEREFORE, the Authority and SHPO agree the Undertaking will be implemented in accordance with the following stipulations in order to take into account the effects of the Undertaking on historic properties, and further agree that these stipulations shall govern the Undertaking and all its parts until this MOA expires or is terminated.

STIPULATIONS

The Authority, with the assistance of its Contractor, shall ensure that the following stipulations of this MOA are carried out:

I. OVERSIGHT AND COORDINATION

The Authority, as the lead federal agency, will be responsible for ensuring compliance with all stipulations of this MOA, with the exception of government-to-government consultation with federally recognized Native American tribes, which remains the FRA's responsibility under NEPA Assignment.

The Authority shall ensure that the terms of this MOA, including the ATP and BETP, are incorporated in their entirety in all contracts, licenses, or other approvals for this Undertaking and shall ensure the completion of all measures specified in this MOA, including in the ATP and BETP.

The Authority shall ensure that it carries out its responsibilities under the PA (as may be amended from time to time) and any subsequent programmatic agreements regarding compliance with Section 106, to the extent such responsibilities are applicable to the Undertaking and in effect.

As an Invited Signatory, STB will receive all documentation related to this MOA and Treatment Plans, will be provided the opportunity to review and comment on such documentation during the implementation of this MOA, and will be part of the ongoing consultation process during implementation of this MOA. The Authority will consider any comments made by STB prior to finalizing all MOA-associated documentation.

II. MODIFICATIONS TO THE AREA OF POTENTIAL EFFECTS

In accordance with the PA, the APE was developed and agreed upon by the Authority and the SHPO, and accounts for potential impacts on both archaeological and built-environment resources that may result from the construction and operation of the Undertaking.

If modifications to the Undertaking, subsequent to the execution of this MOA, necessitate the revision of the APE, the Authority is responsible for informing the SHPO, Invited Signatory, and other Consulting Parties within 15 days of identification of the needed changes in accordance with PA Stipulation VI. The Authority shall document the revised APE in an appropriate supplemental identification report (e.g., APE Modification Memo, addendum Archaeological Survey Report, and/or addendum Historic Architecture Survey Report). The SHPO will have 30 days to review the modified APE. If the SHPO objects to the modified APE, the Authority will revise the APE to address SHPO comments and resubmit for review. The SHPO will have 30 days to review and comment on this revised APE.

III. COMPLETION OF HISTORIC PROPERTIES IDENTIFICATION AND EVALUATION EFFORT PRIOR TO CONSTRUCTION

The Authority will ensure that any additional historic property identification and evaluation efforts are completed as outlined below and that documentation of the identification and evaluation efforts is prepared in accordance with this MOA, including the ATP and BETP, and PA Stipulation VI. The Authority will submit documentation of these efforts to the SHPO, Invited Signatory, and other interested Consulting Parties for a 30-day review period. Prior to finalizing any inventory and evaluation documentation, the Authority shall consider the comments regarding identification efforts that are received through this consultation process.

Completion of the historic properties identification and evaluation effort will be consistent with Stipulation VI (Identification and Evaluation of Historic Properties) and Stipulation IX (Changes in Ancillary Area/Construction Right-of-Way) of the PA, including archaeological survey of areas not previously accessible/surveyed prior to construction. The Authority shall provide the SHPO, Invited Signatory, and other Consulting Parties with the information necessary to document that efforts to identify and evaluate historic properties in the Undertaking's APE are sufficient to comply with 36 CFR § 800.4(b) and (c).

The Authority will ensure that addendum FOEs (aFOE) are prepared, in accordance with PA Stipulation VII, once supplemental historic property identification efforts are completed. The Authority will submit aFOEs to the SHPO, Invited Signatory, and other Consulting Parties with an interest in the historic

property for a concurrent 30-day review period. The Authority shall take into consideration all comments regarding effects received within the review period prior to finalizing aFOEs for submission to the SHPO for review and concurrence. The SHPO shall have an additional 30 days to review final aFOE reports. If the SHPO makes no objection within the final 30-day review period, the findings for resources documented in the aFOE will become final. Should SHPO have any objections, the Authority will follow Stipulation VII.A, Dispute Resolution, in this MOA.

IV. TREATMENT OF HISTORIC PROPERTIES IDENTIFIED IN THE APE

This MOA outlines the Authority's commitments regarding the treatment of all historic properties, both currently known and yet-to-be-identified, that may be affected by the Undertaking. As allowed under Stipulation VIII.B of the PA, this MOA includes provisions for treatment plans that include use of a combined archaeological testing and data recovery program. Two detailed historic property Treatment Plans have been prepared for the Undertaking: the ATP and the BETP.

The ATP (**Attachment 4**) describes treatments for effects on archaeological properties and Native American traditional cultural properties. The BETP (**Attachment 5**) describes the treatments for effects on built environment resources. The work described in the Treatment Plans will be conducted prior to construction, during construction, and/or after construction of the Undertaking in the manner specified in the Treatment Plans. The treatments to historic properties known at the time of execution of this MOA are summarized in an impact/treatment table, organized by historic property, in **Attachment 3**. The treatment measures listed will be applied to historic properties affected in order to avoid, minimize, and/or mitigate effects of the Undertaking. The Authority shall implement and complete the treatment measures within 2 years of completion of construction of the Undertaking, or earlier if so specified. The Authority shall ensure that sufficient time and funding are provided to complete all necessary preconstruction commitments before disturbances related to the Undertaking occur.

A. Archaeological Treatment Plan

The ATP describes in detail the methods that will be employed to complete the historic properties identification effort within the Undertaking's APE as part of the phased identification of archaeological resources. More specifically, the ATP builds upon the identification efforts completed to date and specifies where and under what circumstances further efforts to identify significant archaeological deposits will take place within the Undertaking's areas of physical impact.

The ATP also describes in detail the avoidance, minimization, and/or mitigation treatment measures for all currently known and yet-to-be-identified significant archaeological resources and Native American cultural resources affected by the Undertaking. Additional measures to avoid, minimize, or mitigate adverse effects on archaeological historic properties may be developed in consultation with Consulting Parties as identification and evaluation efforts are performed in future planning and construction phases of the Undertaking. The Authority commits to implementing the terms of the ATP.

The SHPO, Invited Signatory, and other Consulting Parties with an interest in archaeological resources shall have the opportunity to review and comment on cultural resources documentation specified in the ATP in accordance with Stipulation VI of this MOA.

B. Built Environment Treatment Plan

The BETP provides detailed descriptions of treatment measures for built environment historic properties located within the APE that may be affected by the Undertaking. The treatments will be carried out by qualified professionals pursuant to Stipulation III of the PA. The treatment measures are included in the BETP and are intended to avoid, minimize, and/or mitigate adverse effects caused by the Undertaking. The Authority commits to implementing the terms of the BETP.

The Authority shall provide documentation produced under the BETP to the SHPO, Invited Signatory, and other Consulting Parties with an interest in historic properties included in the BETP for review and comment in accordance with Stipulation VI of this MOA.

C. Avoidance and Minimization Measures

The Authority has identified property-specific and programmatic Impact Avoidance and Minimization Features (IAMF) to ensure the Undertaking would result in no adverse effect to 5 built historic properties, as outlined in the BETP (**Attachment 5**).

a. The Authority will ensure that the IAMFs are incorporated into project design and construction contracts for the Undertaking.

b. In consultation with the SHPO, Invited Signatory, and other Consulting Parties, the Authority will ensure that the IAMFs are implemented during the appropriate design and construction phases of the Undertaking.

c. The Authority may revise the IAMFs or develop additional IAMFs to ensure the Undertaking would result in no adverse effects in accordance with Stipulation VII.B below, should project design changes result in new potential effects to previously identified historic properties or to additional historic properties within revised APEs.

V. POST-REVIEW DISCOVERIES

If properties are discovered that may be historically significant or unanticipated effects on historic properties are found, the Authority shall follow the processes detailed in the ATP and BETP.

VI. PREPARATION AND REVIEW OF DOCUMENTS

A. Professional Qualifications

The Authority shall ensure that all cultural resources studies carried out pursuant to this MOA are performed by or under the direct supervision of personnel meeting *The Secretary of the Interior's Professional Qualifications Standards* (48 Federal Register 44738–39) in the disciplines of history, architectural history, historic architecture, and/or archaeology, as appropriate.

B. Confidentiality

The Signatories and Invited Signatory acknowledge that the handling of documentation regarding historic properties covered by this MOA are subject to the provisions of Section 304 of the National Historic Preservation Act of 1966 (54 U.S.C. § 307103) and Section 6254.10 of the California Government Code (Public Records Act).

C. Review

Unless otherwise specified, parties to this MOA will have 30 calendar days from receipt to provide the Authority comments on all technical materials, findings, and other documentation arising from this MOA. If no comments are received from a party within the 30-calendar-day review period, the Authority may assume that the non-responsive party has no comment. The Authority shall take into consideration all comments received in writing within the 30-calendar-day review period and may make revisions before finalizing the documentation.

For documentation that is amended or revised, the Authority will prepare a comment and response summary or matrix and provide it to the SHPO, Invited Signatory, and other Consulting Parties.

If a party to this MOA objects to documentation provided for review within 30 calendar days of the receipt of any submissions, the Authority shall resolve the objection in accordance with Stipulation VII.A of this MOA.

D. Electronic Submittals

Unless otherwise requested, documentation produced under this MOA will be distributed electronically. Additionally, electronic mail may serve as an official method of communication regarding this MOA.

VII. ADMINISTRATIVE STIPULATIONS

A. Dispute Resolution

In accordance with Stipulation XVII of the PA, should any Signatory, Invited Signatory, or other Consulting Party to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, the Authority shall consult with such party to resolve the objection. If the Authority determines that such objection cannot be resolved, the Authority will:

1. Forward all documentation relevant to the dispute, including the Authority's proposed resolution, to the ACHP. The Authority will also provide a copy to the SHPO, Invited Signatory, and other Consulting Parties with a demonstrated interest in the affected property or subject of the dispute. Pursuant to Stipulation XVII.A.1 of the PA, the ACHP shall provide the Authority with its advice on the resolution of the objection within 30 days of receiving adequate documentation. Prior to reaching a final decision on the dispute, the Authority shall prepare a written response that takes into account any advice or comments regarding the dispute from the ACHP, Signatories, Invited

Signatory, and interested Consulting Parties, and provide them with a copy of this written response. The Authority will then proceed according to its final decision.

2. If the ACHP does not provide its advice regarding the dispute within the 30-day time period, the Authority may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, the Authority shall prepare a written response that takes into account any comments regarding the dispute from the Signatories, Invited Signatory, and other Consulting Parties with a demonstrated interest in the affected property or subject of the dispute and provide them and the ACHP with a copy of such written response.

3. The Authority's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remains unchanged.

B. Amendment and Revisions to Attachments

This MOA may be amended by written request from any Signatory or Invited Signatory. Consulting Parties shall be afforded 30 days to review and comment on any proposed amendments to this MOA. The Signatories and Invited Signatory shall take into consideration all comments received prior to executing an amendment. The amendment will be effective when a copy of the amendment is signed by all Signatories and Invited Signatory that signed this MOA. The Authority will file a copy of any executed amendment with the ACHP pursuant to 36 CFR § 800.6(c)(7).

Notwithstanding the prior paragraph, to address changes in the Undertaking or the treatment of historic properties affected by the Undertaking, the Authority may revise the ATP, the BETP, or other attachments to this MOA in consultation with the SHPO, Invited Signatory, and other Consulting Parties, without executing a formal amendment to this MOA. The Authority shall provide proposed ATP or BETP revisions to the SHPO, Invited Signatory, and other Consulting Parties with an interest in historic properties that may be affected by the proposed revisions for a 30-day review. The Signatories shall take into consideration all timely comments received prior to agreeing to the revisions. Upon the written concurrence of all the Signatories, such revisions to the ATP, the BETP, or other attachments shall take effect and be considered a part of this MOA.

C. Termination

If any Signatory or Invited Signatory determines that its terms will not or cannot be carried out, that party shall immediately consult with the other Signatories and Invited Signatory to attempt to resolve the issue under Stipulation VII.A, above, or to develop an amendment under Stipulation VII.B, above. If within 30 days (or another time period agreed to by all Signatories and Invited Signatory) an amendment cannot be reached, any Signatory or Invited Signatory may terminate this MOA upon written notification to the other Signatories and Invited Signatory. Termination hereunder shall render this MOA without further force or effect.

If this MOA is terminated, and the Authority determines that the Undertaking will proceed, the Authority must either execute a new MOA pursuant to 36 CFR § 800.6 prior to proceeding further with the Undertaking or follow the procedures for termination of consultation pursuant to 36 CFR § 800.7. The Authority shall notify the SHPO, Invited Signatory, and other Consulting Parties as to the course of action it will pursue.

D. Duration

If the Authority determines that construction of the Undertaking has not been completed within 10 years following execution of this MOA, the Signatories and Invited Signatory shall consult to reconsider its terms. Reconsideration may include continuation of the MOA as originally executed, amendment, or termination.

This MOA will be in effect through the Authority's implementation of the Undertaking and will terminate and have no further force or effect when the Authority, in consultation with the SHPO and Invited Signatory, determines that the terms of this MOA have been fulfilled in a satisfactory manner. The Authority shall provide the SHPO and Invited Signatory with written notice of its determination and of termination of this MOA.

E. Annual Reporting and Meetings

The Authority shall prepare an annual report documenting the implementation of the actions taken under this MOA as stipulated in PA Stipulation XVII.C. The annual report shall include specific lists of studies, reports, actions, evaluations, and consultation and outreach efforts related to implementation of this MOA. The Authority will provide the annual report to the SHPO, Invited Signatory, and other Consulting Parties. If requested by the SHPO, Invited Signatory, and other Consulting Parties, the Authority will coordinate a meeting or call to discuss the annual report.

VIII. EFFECTIVE DATE AND EXECUTION

This MOA may be executed in counterparts, with a separate page for each Signatory, and will take effect on the latest date of execution by the Authority and SHPO. STB's signature is not required to execute this MOA or for its effectiveness. Separate concurrence pages may also be provided for each Concurring Party. The Authority shall ensure that each Signatory, Invited Signatory, and Concurring Party is provided with a copy of the fully executed MOA. The refusal of any Invited Signatory or Concurring Party to sign this MOA shall not invalidate this MOA or prevent this MOA from taking effect.

Execution of this MOA by the Authority and SHPO and implementation of its terms evidence that the Authority has taken into account the effects of this Undertaking on historic properties and afforded the ACHP an opportunity to comment.

MEMORANDUM OF AGREEMENT
AMONG THE CALIFORNIA HIGH-SPEED RAIL AUTHORITY, THE SURFACE TRANSPORTATION BOARD, AND THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE PALMDALE TO BURBANK PROJECT SECTION OF THE CALIFORNIA HIGH-SPEED RAIL PROGRAM
LOS ANGELES COUNTY, CALIFORNIA

SIGNATORIES:

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

By: _____ Date: October 26, 2023
Brian P. Kelly
Chief Executive Officer

CALIFORNIA STATE HISTORIC PRESERVATION OFFICER

By: _____ Date: 12/14/2023
Julianne Polanco
State Historic Preservation Officer

INVITED SIGNATORY:

SURFACE TRANSPORTATION BOARD

By: _____ Date: 11/8/23
Danielle Gosselin
Director, Office of Environmental Analysis

MEMORANDUM OF AGREEMENT
AMONG THE CALIFORNIA HIGH-SPEED RAIL AUTHORITY, THE SURFACE TRANSPORTATION BOARD, AND THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE PALMDALE TO BURBANK PROJECT SECTION OF THE CALIFORNIA HIGH-SPEED RAIL PROGRAM
LOS ANGELES COUNTY, CALIFORNIA

CONCURRING PARTIES:

BUREAU OF LAND MANAGEMENT

By: _____ Date: _____
Name
Title

UNITED STATES FOREST SERVICE – ANGELES NATIONAL FOREST

By: _____ Date: _____
Name
Title

YUHAAVIATAM OF SAN MANUEL NATION
By: _____ Date: _____
NAME
Chairperson

FERNANDEÑO TATAVIAM BAND OF MISSION INDIANS

By: _____ Date: _____
NAME
Chairperson

GABRIELEÑO BAND OF MISSION INDIANS – KIZH NATION

By: _____ Date: _____
NAME
Chairperson

GABRIELINO/TONGVA NATION

By: _____ Date: 11-30-23

NAME SAM DUNLAP

~~Chairperson~~ CULTURAL RESOURCE DIRECTOR

LOS ANGELES COUNTY DEPARTMENT OF PARKS AND RECREATION

By: _____ Date: _____

Name

Title

ATTACHMENT 3: HISTORIC PROPERTIES WITHIN THE AREA OF POTENTIAL EFFECTS AS LISTED IN THE FINDING OF EFFECT REPORT

Built Environment Historic Properties within the Palmdale to Burbank Project Section Area of Potential Effects

Property Name and Address	City, County	Effects Finding	Treatment Measures[1]
Palmdale Subsection			
There are no built environment historic properties in the Palmdale Subsection that are listed on, determined eligible for, or assumed eligible for listing in the NRHP.			
Central Subsection			
Big Creek Hydroelectric System Historic District – Vincent Transmission Lines (contributing structure)	Los Angeles County	No effect	
Los Pinetos Nike Missile Site Forest Road 3N 17	Angeles National Forest/Los Angeles	No effect	
East Branch of the California Aqueduct	Palmdale vicinity/Los Angeles	No adverse effect	
Palmdale Ditch	Palmdale vicinity/Los Angeles	No adverse effect	
Pink Motel and Café 9457–9475 San Fernando Road	Los Angeles/Los Angeles	No adverse effect	
Burbank Subsection			
There are no built environment historic properties in the Burbank Subsection that are listed on, determined eligible for, or assumed eligible for listing in the NRHP.			

[1] The full text of these measures can be found in the EIR/EIS and will be attached to any NEPA Record of Decision as a part of the Mitigation Monitoring and Enforcement Plan (MMEP)

Archaeological Historic Properties within the Palmdale to Burbank Project Section Area of Potential Effects

Resource Number*	Resource Type	Attributes	Effect Findings	Treatment Measures
Palmdale Subsection				Applies to all archaeological historic properties: Inventory (Addenda ASRs) Evaluation (AEPs/AERs) Data Recovery (Archaeological Data Recovery Reports) Archaeological Monitoring Plan Avoidance/Protection Measures/Best Management Practices Cultural Resources Awareness Training Archaeological/Native American Monitoring Observation of Protocols for Unanticipated Discoveries Additional measures to avoid, minimize, or mitigate effects on archaeological historic properties may be developed in consultation with signatories and consulting parties as identification and evaluation efforts are performed in future planning and construction phases of the Undertaking.
There are no archaeological resources in the Palmdale Subsection that are listed on, determined eligible for, or assumed eligible for listing in the NRHP.				
Central Subsection				
19-000305	Prehistoric site	Habitation site	Phased	
19-000541	Prehistoric site	Habitation site	Phased	
19-000591	Prehistoric site	Complex lithic scatter	Phased	
19-000628	Prehistoric site	Earthen oven; lithic scatter	No effect	
19-001846	Historic site	Landfill	Phased	
19-001847	Historic site	House foundations; debris scatter	Phased	
19-001859	Prehistoric site	Rock shelter; rock art; cultural material mixed in large packrat nests	Phased	
19-001860	Prehistoric site	Rock shelter; lithic scatter	Phased	
19-001888	Prehistoric site	Lithic scatter	Phased	
19-003536	Historic site	Refuse deposit	Phased	
19-003890	Prehistoric site	Vasquez Rocks Archaeological District	Phased	
19-004606	Prehistoric site	Lithic scatter	No effect	
Burbank Subsection				
There are no archaeological resources in the Burbank Subsection that are listed on, determined eligible for, or assumed eligible for listing in the NRHP.				

Resources are listed in numerical order.
NRHP = National Register of Historic Places

ATTACHMENT 6: AGENCIES AND OTHER INTERESTED PARTIES CONSULTED

California State Historic Preservation Officer
Surface Transportation Board
Bureau of Land Management
USFS Angeles National Forest
Los Angeles County Department of Parks and Recreation

ATTACHMENT 7: NATIVE AMERICAN TRIBAL GOVERNMENTS CONSULTED

Yuhaaviatam of San Manuel Nation[2]
Fernandeño Tataviam Band of Mission Indians
Gabrieleño Band of Mission Indians – Kizh Nation
Gabrielino/Tongva Nation

[2] Formerly known as San Manuel Band of Mission Indians

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APPENDIX E: NATIONAL MARINE FISHERIES SERVICE CONCURRENCE LETTER, MAY 25, 2022

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
650 Capitol Mall, Suite 5-100
Sacramento, California 95814-4700

Refer to NMFS ECO#: WCRO-2022-00790

May 25, 2022

Serge Stanich
Director of Environmental Services
California High-Speed Rail Authority
770 L Street
Suite 620
Sacramento, California 95814

Re: Endangered Species Act Section 7(a)(2) Concurrence Letter for the California High Speed Rail Authority's Palmdale to Burbank Project Section

Dear Mr. Stanich:

On April 4, 2022, NOAA's National Marine Fisheries Service (NMFS) received your request for written concurrence that California High Speed Rail Authority (Authority)'s proposed action of constructing, operating, and maintaining the Palmdale to Burbank Project Section of the high speed rail system, under the National Environmental Policy Act, Assignment of Memorandum of Understanding between the Federal Railroad Administration (FRA) and the State of California, effective July 23, 2019 (California State Transportation Agency 2019), is not likely to adversely affect (NLAA) species listed as threatened or endangered or critical habitats designated under the Endangered Species Act (ESA). This response to your request was prepared by NMFS pursuant to section 7(a)(2) of the ESA and implementing regulations at 50 CFR 402.

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available within two weeks at the Environmental Consultation Organizer (https://www.fisheries.noaa.gov/resource/tool-app/environmental-consultation-organizer-eco). A complete record of this consultation is on file at NMFS's California Central Valley Office in Sacramento, California.

Consultation History

On January 22, 2021, the Authority requested NMFS review and provide comments on the Administrative Draft of the EIR/EIS for the Palmdale to Burbank project section.

On February 4, 2021, NMFS staff Katie Schmidt provided three comments on the 2021, Administrative Draft for the EIR/EIS for the Palmdale to Burbank project section, via email.

On April 4, 2022, Authority representative Sue Meyer transmitted a letter requesting NMFS concur with the Authority's determination that the Palmdale to Burbank Project Section was NLAA Southern California (SC) steelhead (*Oncorhynchus mykiss*), with a biological assessment (BA) supporting that determination (Authority 2021e), via email.

On April 6, 2022, Katie Schmidt requested more information concerning (a) proposed conservation measures (CMs) in the Project Section for fishes in the action area, (b) proposed construction and post-construction water quality best management practices (BMPs), and (c) a more detailed map of the proposed crossing design over the Santa Clara River.

On April 26, 2022, Sue Meyer transmitted the requested information via email (Authority 2022).

On April 28, 2022, Katie Schmidt had a telephone conversation with Sue Meyer and determined the documents downloaded and filed during the 2021, EIR/EIS comment period would suffice for the project description of the proposed action and provided the best source of necessary information needed to complete the consultation. The consultation was initiated on this date.

Proposed Action

The Authority proposes to construct, operate, and maintain an electric-powered high-speed rail (HSR) system in California, connecting the San Francisco Bay Area and Central Valley to Southern California. When complete, the nearly 800-mile train system will provide new passenger rail service to more than 90 percent of the state's population. The California HSR system would use state-of-the art electrically powered, steel-wheel-on-steel-rail technology, including contemporary safety, signaling, and automated train control systems (Authority 2021d).

The proposed 35- to 41-mile Palmdale to Burbank section would provide a connection between the rest of the HSR system that provides transit service from the California Central Valley and San Francisco Bay Area to southern California metropolitan areas; however, each section of the HSR system has independent utility regardless of whether other sections are completed (Authority 2009). The County of Los Angeles is the most populous county in the United States with more than ten million residents (U.S. Census Bureau 2021), and proposed HSR service through this section would have independent utility by providing expanded commuter services within the County. During operation, the Palmdale to Burbank project section would support regional transportation needs and improve long-distance commuter passenger rail services by offering a reduced travel time option from the northern County (Antelope Valley) to the middle of the County.

The proposed HSR viaduct will be approximately 90 feet tall and constructed using cast-in-place concrete bent caps and columns supported by structural steel and installed upon pile caps. A self-climbing formwork system may be used to construct piers and portal beams more than 90 feet high. The self-climbing formwork system is equipped with a winched lifting device, which is raised up along the column by hydraulic means with a structural frame mounted on top of the previous concrete pour. The final size and spacing of the piers depend on the type of superstructure and spans they will support. A typical aerial structure foundation pile cap is supported by an average of four large-diameter (5 to 9 feet) bored piles. Additional available pile

installation methods include bored piles, rotary drilling cast-in-place piles, driven piles, and a combination of pile jetting and driving. Following completion of the piles, pile caps can be constructed using conventional methods supported by structural steel: either precast and pre-stressed piles or cast-in-drilled hole piles. For pile caps constructed near existing structures such as railways, bridges, and underground drainage culverts, temporary sheet piling (i.e., temporary walls) may be used to minimize disturbances to adjacent structures. Construction activities necessary to complete the HSR structures include pre-construction biological surveys, installation of a variety of environmental BMPs, erosion-control measures, site access establishment, vegetation clearing, temporary road construction, heavy equipment movement and operation, earthwork preparation, excavation, vibratory and impact pile driving, material storage, railbed construction, and eventually site clean-up and restoration after construction is complete.

In association with the construction of the project section, the Authority has proposed to incorporate a variety of impact avoidance and minimization features (IAMFs (Authority 2016, 2021a)) as CMs or BMPs to minimize or avoid construction impacts to sensitive biological and hydrologic resources (Authority 2021b, c). NMFS hereby incorporates by reference the Supplementary Information provided, "Conservation Measures Specific to Unarmored Three-spined Stickleback" and "Hydrology and Water Resources IAMFs" (Authority 2022). According to the BA (Authority 2021e), construction at this location will occur outside the wetted channel of the river, proposed permanent pile installation locations will be located outside of the 25-year flood zone, and permanent structure construction will be completed during the dry season (June 1st through November 1st).

The Authority will regularly perform maintenance along the track and railroad right-of-way (ROW), as well as on the power systems, train control, signalizing, communications, and other vital systems required for the safe operation of the HSR system. A proposed Lancaster Maintenance Facility would occupy approximately 105 acres to accommodate rail car storage, cleaning, repair, overnight layover facilities, and servicing facilities for the lifetime of the HSR system. The Authority expects maintenance methods to be comparable to those of existing European and Asian HSR systems, adapted to the specifics of the California HSR system, with inspection and maintenance for some project elements occurring several times per week (e.g., track and overhead power system) and some inspection occurring only a few times a year (e.g., structural inspection, vegetation control within the ROW). Approximately every 4–5 years, ballasted track would require tamping where used. Steel structures would require painting every several years. Fencing and intrusion protection systems would be remotely monitored, as well as periodically inspected, with maintenance taking place as needed. The FRA will specify standards of maintenance, inspection, and other items in a set of regulations to be issued in the next several years.

Action Area

The action area consists of the approximately 35- to 41-mile Palmdale to Burbank Project Section's footprint which spans from Lancaster (north of Palmdale) in the north to Burbank in the south (Figure 1). The Palmdale to Burbank Project Section proposes to site a Maintenance Facility in the Lancaster area, which may not be needed depending on maintenance facilities included in the HSR project sections to the north and the south of this one. The Palmdale to

Burbank Project Section includes a station in the city of Palmdale at the existing Palmdale Transportation Center, and a station in the city of Burbank near the Hollywood Burbank Airport (Formerly Bob Hope Airport) (Authority 2021d). In addition, each of the Palmdale to Burbank Project Section Build Alternatives would require the construction of one adit and one intermediate window facility.

The Build Alternatives evaluated in this consultation include the Refined SR14 and SR14A, as described in the Final EIR/EIS for the Project Section. These two project alternatives require a viaduct crossing of the upper Santa Clara River (Figure 2). Project Alternatives E1, E1A, E2, and E2A as described in the Admin Draft EIR/EIS would effectively avoid the main channel of the upper Santa Clara River. Because a preferred alternative has not yet been chosen, NMFS took a conservative approach and evaluated the alternatives with the greatest potential to impact Southern California steelhead or their habitats. Therefore, NMFS assumed the proposed route under consultation is either Alternative SR14 or SR14A, which are identical in their crossing type and location over the Santa Clara River. NMFS will rely on EIR/EIS analyses assigned to these alternatives specifically to evaluate potential adverse impacts to Southern California (SC) steelhead and their habitat.

Alternatives Refined SR14 and SR14A consist of the HSR route from Lancaster and the new Palmdale Transportation Center Station, with underground tunnels through the San Gabriel Mountain Range, emerging through portals on the mountain and canyon sides to elevated aerial structures down to the San Fernando Valley, ending at the Burbank Airport Station. Throughout the action area NMFS analyzed locations where the SR14 and SR14A could affect waterways with NMFS trust resources, specifically the route from Soledad Canyon to elevated viaducts over the Santa Clara River, and in some cases, its tributaries. The location of greatest potential impact is a crossing over the Santa Clara River mainstem (Latitude 34.435698°, Longitude -118.369955°) approximately 58 river miles upstream from the Santa Clara River's connection with the Pacific Ocean (USGS 2022), and 26 miles upstream from the upstream extent of SC steelhead designated critical habitat at the Santa Clara and the Piru Reservoir tributary confluence.

We considered, under the ESA whether or not the proposed action would cause any other activities and determined that it would not.

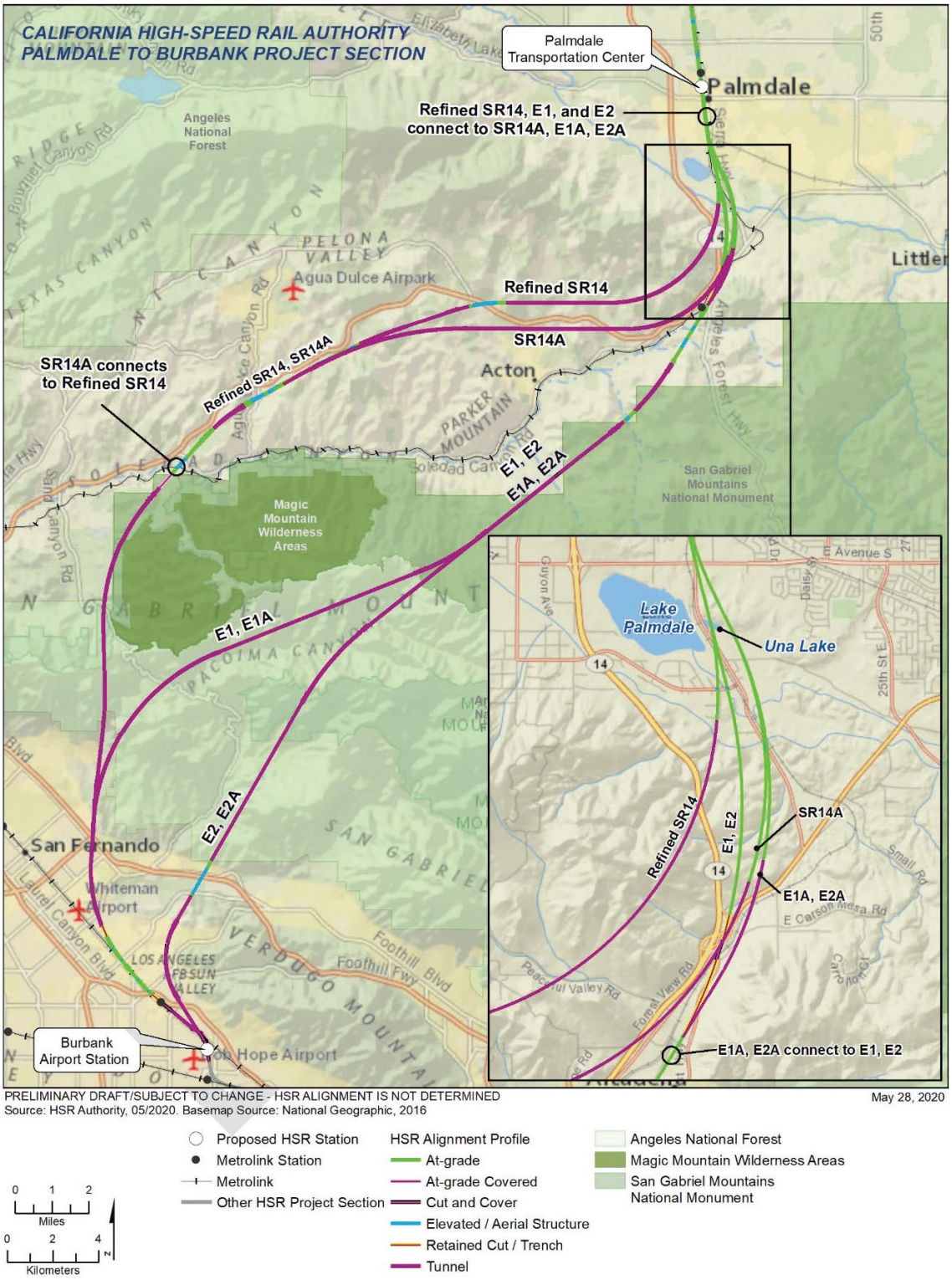

Figure 1. HSR Palmdale to Burbank Alternatives and Stations. Note Refined SR14 and SR 14A routes are identical at their Santa Clara River crossing (Authority 2021b).

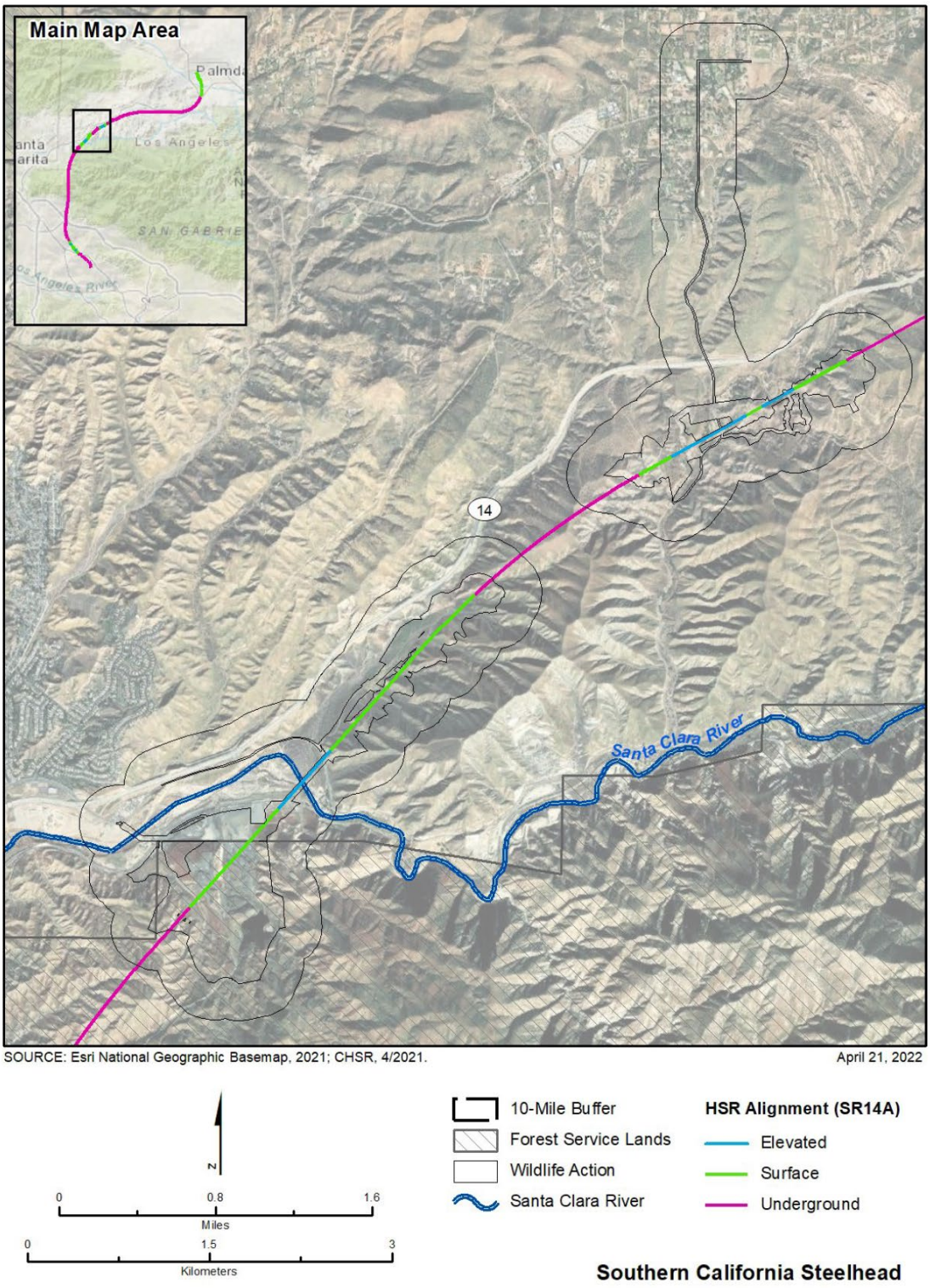

Figure 2. Focused map of Refined SR14 and SR 14A routes as the HSR route exits underground tunnels at Soledad Canyon and crosses the Santa Clara River on viaduct (Authority 2022).

Background and Action Agency's Effects Determination

The Authority determined the HSR Palmdale to Burbank Project Section may affect but is not likely to adversely affect the SC distinct population segment (DPS) of steelhead or its designated critical habitat. The Authority made this determination due to:

- The 26-mile distance between the active construction and operating locations in the project's footprint (the major crossing of HSR on the Santa Clara River) from current extant occurrences of steelhead downstream,

- The presence of one 'natural' barrier and a man-made barrier to fish passage several miles downstream of the action area, and

- Implementation of avoidance and minimization measures for unarmored three-spined stickleback (*Gasterosteus aculeatus williamsoni*) that are expected to occur at the viaduct crossing over the Santa Clara River mainstem near Soledad Canyon, and adoption and implementation of the water quality BMPs/IAMFs as proposed for both the construction and operations and maintenance phases of the proposed action.

SC steelhead have been federally listed as an endangered since August 18, 1997 (62 FR 43937; updated 79 FR 20802, April 14, 2014). The SC steelhead DPS description includes naturally spawned steelhead originating downstream of natural and manmade impassable barriers from the Santa Maria River to the U.S.-Mexico Border (NMFS 2016). Their critical habitat was designated September 2, 2005 (70 FR 52487). In the NOAA Fisheries 2019-2021 Report to Congress (NMFS 2022), SC steelhead had been given a recovery priority number of 1C. A recovery priority number is used to prioritize agency resources for recovery plan development and implementation, and is assigned based on the application of Endangered and Threatened Species Listing and Recovery Priority Guidelines. Recovery numbers range from 1 to 24, and the lower a recovery number indicates a higher recovery priority. The inclusion of 'C' indicates conflict. Therefore, a recovery number of 1C indicates a high demographic risk, that major threats are well understood, a high amount of U.S. jurisdiction, authority, or influence exists for management or protective actions to address major threats, high certainty that management or protective actions would be effective, and that conflict is present or expected (April 30, 2019; 84 FR 18243). For more information on SC steelhead, visit: https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/southern-california-steelhead.

The SC DPS of steelhead consists of five biogeographic population groups (BPGs). SC steelhead originating from the Santa Clara River watershed are part of the Monte Arido Highlands BPG. This area is naturally dominated by a series of steep mountain ranges and dry coastal valleys and terraces. The area has a Mediterranean climate with long, dry summers and brief winters that occasionally produce short-lived but intense storms that generate flash floods in the upper washes in river systems that extend inland. According to NMFS's SC steelhead recovery plan (NMFS 2012) the greatest threats to the Santa Clara River population are dams and surface water diversions, groundwater extraction, agricultural and urban development, and non-native species (NMFS 2012).

The priority recovery actions for the Monte Arido BPG, specific to the Santa Clara River, are:

- Developing and implementing dam operation plans for Santa Felicia, Pyramid, Vern Freeman Diversion, and Castaic Dams that include water releases that support adult and juvenile SC steelhead/*O. mykiss* life history requirements and provide essential habitat functions,

- Developing and implementing plans to physically modify Santa Felicia, Pyramid, Vern Freeman Diversion, and Castaic Dams to allow natural passage of adult and juvenile SC steelhead/*O. mykiss* between the estuary/ocean and upstream spawning/rearing habitats and,

- Developing and implementing a groundwater monitoring program to guide groundwater extractions within steelhead bearing watersheds to ensure surface flows can support all life-history stages.

Effects of the Action

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR 402.02). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b). When evaluating whether the proposed action is not likely to adversely affect listed species or critical habitat, NMFS considers whether the effects are expected to be completely beneficial, insignificant, or discountable. Completely beneficial effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Effects are considered discountable if they are extremely unlikely to occur.

As identified in the action area description, the HSR viaduct for Refined SR14 and SR14A routes over the Santa Clara River near Soledad Canyon which is over 20 miles upstream of Vern Freeman Dam, the current limit of anadromy. The full extent of anadromy displayed in the SC steelhead recovery plan depicts the Santa Clara River as being viable past the viaduct crossing location, to the Santa Clara County boundary near Acton, California (NMFS 2012). Vern Freeman Dam and operation of its fishway is a significant, if not complete, passage barrier to SC steelhead (NMFS 2012) and is currently under litigation due, in part, to its impact on fish passage (Bottorff 2019, Center for Biological Diversity 2020). Timing for resolution of this issue is unknown and therefore the timing for upstream passage remains uncertain. Until such a time that litigation is resolved, adult SC steelhead passage to areas upstream of Vern Freemen will likely occur on a very infrequent basis.

However, flood events do occur in this region (Worden 2013, The City of Santa Clara 2022), and climate change forecasting warn that significant rain events, such as atmospheric rivers, are expected to increase in magnitude into the next century (Bedsworth et al. 2018, Huang et al. 2020). The upper Santa Clara River was regularly subjected to flash flooding before the region's

water resources were fully developed. Under these historical conditions SC steelhead likely capitalized on water years when additional spawning and rearing habitat were made available in the upper reaches of the Santa Clara River and its tributaries. Now that several of its tributaries are dammed into reservoirs and diversions redirect water outside of active flooding periods, the Santa Clara River channel in this reach is often dry.

In the event SC steelhead are able to access the action area (during an extreme wet water year for example) the Authority adopted several CMs with the intention to avoid three-spined stickleback. These measures will also serve to sufficiently avoid exposing juvenile SC steelhead to construction effects in the unlikely event they were in the action area. The foremost of these avoidance and minimization measures is that structure construction will only proceed during a work window of June 1 through November 1. This work window is the dry season in this region and outside of the adult migration and smolt migration season (January – May) (Sharpovalov and Taft 1954). Also, all work is proposed to occur outside of the wetted channel with special precautions to avoid disturbance to the wetted channel of the Santa Clara River, should it be wetted. In addition, the aforementioned CMs (Authority 2021a, b, c, 2022) stipulate construction stormwater management, offsite disposal of concrete wash, and pollution prevention plans to address construction pollution, debris, and sediment from entering the Santa Clara River and its tributaries. These measures are also expected to sufficiently contain and prevent construction pollutants from being transported outside of the action area.

Effects of the proposed action is not expected impact SC steelhead or potential historical habitat in the action area for the following reasons:

- The HSR viaduct footings will be located outside of the 25-year flood zone. It is unlikely that the new artificial structures will adversely affect spawning sediment supply or its transport down to accessible reaches of designated SC steelhead habitat, and

- During the operations and maintenance phase of the proposed action, the Authority proposes to capture and treat project-related stormwater prior to discharge, including using low-impact development (LID) designs, constructed wetlands, biofiltration, and bioretention techniques for pollutant-generating surfaces such as parking lots, access roads, over- and under-passes, reconstructed interchanges, and new or relocated roads/highways (Authority 2022) that have been proven to address contaminant of emerging concern, 6-PPD quinone (Tian et al., 2021, Brinkmann et al., 2022), which is acutely toxic to *O. mykiss* and other listed salmonids. Implementation of these measures is expected to be protective to both individual steelhead and the ability of their habitats to support steelhead through all life stages (McIntyre et al., 2015, Spromberg et al., 2016).

There are several efforts to conserve the remaining natural aspects of the Santa Clara River and to restore habitat functionality were opportunity and community engagement coincide (NMFS 2012, Carlson 2019, Stillwater Sciences et al., 2020). At this time there is no indication that construction, operation, or maintenance of the Palmdale to Burbank HSR project section would come into conflict with any of these efforts, or the prescribed recovery actions for the Santa Clara River watershed in pursuit of the recovery of the SC steelhead DPS in the action area.

Conclusion

Based on this analysis, NMFS concurs with the Authority that the proposed action is not likely to adversely affect the subject listed species.

Reinitiation of Consultation

Reinitiation of consultation is required and shall be requested by the Authority or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) the proposed action causes take; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the written concurrence; or (4) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16). This concludes the ESA consultation.

Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of threatened and endangered species. The Authority, under its National Environmental Policy Act (NEPA) assignment and Memorandum of Understanding between the FRA and the State of California as the lead federal agency on the proposed action, also has the same responsibilities, and informal consultation offers action agencies an opportunity to address their conservation responsibilities under section 7(a)(1). NMFS offers the following conservation recommendations in pursuit of these responsibilities in the context of the proposed action:

- The Authority should protect existing riparian buffer zones or establish new zones on all permanent and ephemeral streams that the Palmdale to Burbank Project Section interacts with in the action area as most will eventually drain to SC steelhead riverine, estuarine, and marine habitats downstream. Re-vegetate sites to resemble the natural plant community and maintain buffers that support large woody material and leaf litter input. Utilize alternatives to traditional riprap and hard armoring where streambank stabilization is needed, such as designing compacted fill lifts and vegetation plantings to stabilize banks where feasible. Doing so would aid in the maintenance of the functionality of existing habitats downstream, and improve the resiliency and probability of recovery of SC steelhead in the region.

- The Authority should incorporate LID designs and greenscape features into all HSR ROW and access roads, station designs, maintenance facilities, utilities, and parking area features whenever possible, including tree plantings, vegetated roofs, stormwater planters, infiltration or lined rain gardens, bioswales, vegetated strips, bioretention devices, and the enhancement of onsite natural hydrologic features that maximum water evapotransport and groundwater infiltration (as appropriate for the local biome). Doing so would aid in the restoration of the functionality of existing critical habitat water quality and water quantity PBFs for SC steelhead critical habitat in general, even in locations far from extant populations, and improve the resiliency and probability of recovery of SC

steelhead in the region by helping replenish available surface and groundwater supplies of the watersheds in the action area.

- The Authority and its contractors should continue to work cooperatively with other State and Federal agencies, private landowners, governments, and local watershed groups as possible to identify opportunities for fish passage and water management solutions, habitat restoration, biological monitoring, and/or funding to otherwise support SC steelhead recovery in this watershed, particularly efforts associated with the Wishtoyo Chumash Foundation, Santa Clara River Steelhead Coalition, Friends of the Santa Clara River, the Santa Clara River Conservancy, and CalTrout. Doing so would aid in the restoration of the functionality of existing habitats and connection between historically used waterways, and improve the resiliency and probability of recovery of SC steelhead in the region.

Please direct questions regarding this letter to Katie Schmidt, Fish Biologist for the Central Valley Office in Sacramento, California, at katherine.schmidt@noaa.gov or (916) 542-3515.

Sincerely,

Jonathan Ambrose,
San Joaquin River Branch Chief
California Central Valley Office

cc: To the File: ARN 15422-WCR2018-SA00467

Sue Meyer, California High Speed Rail Authority, Permitting, Compliance, and Mitigation Manager, Sue.Meyer@hsr.ca.gov

Mike Aviña, California High Speed Rail Authority, Senior Permitting Manager, mike.avina@hsr.ca.gov

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APPENDIX F: UNITED STATES ARMY CORPS OF ENGINEERS AND UNITED STATES ENVIRONMENTAL PROTECTION AGENCY LEAST ENVIRONMENTALLY DAMAGING PRACTICABLE ALTERNATIVE CONCURRENCE LETTER, JANUARY 5, 2024 AND JANUARY 9, 2024

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REGION 9
SAN FRANCISCO, CA 94105

January 9, 2024

Stefan Galvez-Abadia
Director of Environmental Services
California High-Speed Rail Authority
770 L Street, Suite 620
Sacramento, California 95814

Subject: Palmdale to Burbank Project Section: Checkpoint C Summary Report, Request for Agreement on Preliminary Least Environmentally Damaging Practicable Alternative and Preliminary Compensatory Mitigation Plan

Dear Director Galvez-Abadia:

Thank you for the opportunity for the U.S. Environmental Protection Agency to provide comments in advance of publication of the Final Environmental Impact Statement (FEIS) for the Palmdale to Burbank project section of California High Speed Rail (HSR). This letter responds to your November 16, 2023 request for agreement on the Preliminary Least Environmentally Damaging Practicable Alternative determination and Preliminary Compensatory Mitigation Plan for the proposed SR14A Build Alternative. We appreciate the significant revisions made to the Checkpoint C materials in response to comments provided by our agency via email on September 13, 2023, and through a series of coordination meetings and technical workshops held between August and November 2023. We also understand that the Checkpoint C Summary Report will be further revised to incorporate feedback presented at the formal Checkpoint C meeting on December 7, 2023.

The EPA feedback provided is aimed at integrating permitting requirements of Clean Water Act (CWA) Section 404 with NEPA requirements. The purpose of this letter is to provide the EPA's "agreement" with "Checkpoint C", a step in the integration process described in the *NEPA/ CWA Section 404/Rivers and Harbors Act Section 14 (33 U.S.C. 408) Integration Process for the California High-Speed Train Program Memorandum of Understanding* (NEPA/404 MOU) dated December 2010. To facilitate effective integration of CWA Section 404 and NEPA for this project, the EPA continues to coordinate closely with your agency and the U.S. Army Corps of Engineers (Corps).

Least Environmentally Damaging Practicable Alternative (LEDPA)
After reviewing the information provided in the Checkpoint C Summary Report, and per the NEPA/404 MOU, the EPA provides agreement with CHSRA's determination that the SR14A Build Alternative is the preliminary LEDPA for the Palmdale to Burbank Project Section of HSR. As this determination has been made prior to public circulation of the FEIS, it will be revisited if necessary should additional information become available after public comments are received and/or as project design advances.

Preliminary Compensatory Mitigation Plan
The Preliminary Compensatory Mitigation Plan is a conceptual strategy specifying resources available for the establishment and/or rehabilitation of aquatic resources. The Checkpoint C Summary Report provides a general overview of mitigation needs, opportunities, and potential implementation scenarios. According to the

submittal, the SR14A Build Alternative will result in permanent impacts to 0.87 acres of wetlands and 25.91 acres of other waters of the United States (WOUS). Of that, 17.74 acres consist of constructed waters/basins that are likely to be replaced on-site, with functions of the existing constructed features being retained. Off-site mitigation will likely be needed for all other permanent, direct impacts on jurisdictional waters, totaling approximately 9.04 acres of impact. The submittal presents a preliminary determination that compensation for these unavoidable impacts on jurisdictional waters can likely be completed through a combination of approved mitigation bank credits and permittee-responsible mitigation in partnership with one or more of the open-space, parkland, or other natural resource management agencies in the region.

Per the NEPA/404 MOU, the EPA provides agreement that the Preliminary Compensatory Mitigation Plan may provide sufficient mitigation to meet the needs of the project under Section 404 of the Clean Water Act. The EPA expects that more site-specific information will be made available prior to Clean Water Act Section 404 permitting. Specifically, the Final Mitigation Plan should include information on all key elements of the mitigation rule (Subpart J of the 404(b)(1) Guidelines at 40 CFR Part 230) in order to ensure compliance. The EPA looks forward to collaborating with your agency and Corps staff in the use of the program technical procedures to implement a watershed approach to mitigation. We understand that impacts will likely be refined and reduced as design advances, and we recommend that all possible measures be taken to reduce impact numbers through further avoidance and minimization measures. If impacts to WOUS are reduced as a result of changes in project design, adjustments to the amount of compensatory mitigation will be made accordingly. Permitted impacts to WOUS will be confirmed during project construction.

Thank you for your collaboration and efforts over these past few months to reach agreement on the LEDPA and Preliminary Compensatory Mitigation Plan for the Palmdale to Burbank Project Section. We look forward to further coordination in the development of future environmental documents for this project. The EPA will ultimately review EISs for each section of the California HSR system pursuant to NEPA, Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act. The EPA will also review CWA Section 404 permit applications for each HSR section for compliance with the EPA's 404(b)(1) Guidelines (40 CFR 230.10). We appreciate this opportunity to address potential environmental issues as early as possible. If you have any questions regarding our comments, please contact the NEPA lead for this project, Clifton Meek, at (415) 972-3370 or by email at meek.clifton@epa.gov.

Sincerely,

CONNELL DUNNING

Digitally signed by CONNELL DUNNING
Date: 2024.01.09 16:17:05 -08'00'

Connell Dunning
Transportation Team Lead
Environmental Review Branch

cc: Sue Meyer
Deputy Assistant Environmental Services Manager, California High Speed Rail Authority

Susan A. Meyer Gayagas
Regional Technical Specialist for Transportation & Infrastructure, U.S. Army Corps of Engineers

Jonathan Snyder
Assistant Field Supervisor, U.S. Fish and Wildlife Service

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT
915 WILSHIRE BOULEVARD, SUITE 1109
LOS ANGELES, CALIFORNIA 90017-3409

January 5, 2024

California High-Speed Rail Authority
Attn: Stefan Galvez-Abadia
Director of Environmental Services
770 L Street, Suite 620
Sacramento, California 95814

Dear Mr. Galvez-Abadia:

I am writing in response to your November 16, 2023, Checkpoint C Summary Report, and appendices for the proposed California High-Speed Rail (CHSR) Program, Palmdale to Burbank (P-B) Project Section located in Los Angeles County, California (reference to Department of the Army file number SPL-2009-00933). This letter constitutes the U.S. Army Corps of Engineers, Los Angeles District's (Corps) formal response to your Checkpoint C request in accordance with our "*National Environmental Policy Act/Clean Water Act Section 404/Rivers and Harbors Act of 1899 Section 14 Integration Process for the California High-Speed Train Program Memorandum of Understanding*", dated November 2010 ("NEPA/404/408 MOU").

As a cooperating agency under the National Environmental Policy Act (NEPA) on the preparation of the project's joint Environmental Impact Report/Environmental Impact Statement (EIR/EIS) and in fulfillment of our responsibilities under the NEPA/404/408 MOU, we reviewed the draft and final versions of the Checkpoint C documents, dated July 2023 and November 2023, respectively, and provided written comments on issues specific to our Section 404 of the Clean Water Act ("Section 404"; 33 U.S.C. § 1344) and Section 14 of the Rivers and Harbors Act of 1899 ("Section 408"; 33 U.S.C. § 408) authorities. We also participated in a series of coordination meetings and technical workshops with the California High-Speed Rail Authority (Authority), your consultants, and the U.S. Environmental Protection Agency between August 2023 and November 2023.

Following our December 7, 2023, formal Checkpoint C meeting and our independent review of the information and analyses presented in the Checkpoint C Summary Report and appendices, we concur the SR14A Build Alternative appears to be the "preliminary" least environmentally damaging practicable alternative (LEDPA) based on the information and analysis made available to us. We further concur that while the draft compensatory mitigation plan ("CMP"; Appendix A, dated November 2023) is only conceptual in nature it demonstrates a range of opportunities the Authority may pursue to provide sufficient mitigation for offsetting the unavoidable losses of aquatic resource functions and services pursuant to the Section 404(b)(1) Guidelines and the 2008 "*Final*

Rule for Compensatory Mitigation for Losses of Aquatic Resources" ("2008 Mitigation Rule"; 33 CFR Part 332).

Furthermore, based on our review under Section 408 of the information and analyses presented in the Checkpoint C Summary Report, appendices, and conceptual plans, we have determined that the alignment portions near Lopez Basin, Hansen Basin, through Hansen Basin, and crossing Tujunga Channel have potential concerns. Technical comments have been provided to and acknowledged by the Authority for consideration. Technical comments regarding the preferred SR14A Build Alternative include, but not limited to, potential design challenges through seismic areas and faults, the potential for leakage or flooding from the Reservoir inundation events into tunnels or portals, and concerns about structural integrity of existing channel wall due to lowering adjacent grade. Technical comments regarding alternative alignments such as the E2 Build Alternative include, but not limited to, consideration for scour and debris for piers within Hansen Basin, potential flooding of portal P5, and requirements to offset fill in the flood pool. Notwithstanding the foregoing technical comments, we do not object to the preliminary recommendation of carrying forward the SR14A Build Alternative for further coordination and review under Section 408, as long as the Authority adheres to the conditions specified below.

Please note, our concurrence and preliminary recommendation reflect the Corps' professional judgment in light of the limitations documented in the Checkpoint C Summary Report and are based on conditions and information existing at the time the Checkpoint C documents were provided to us. Therefore, our responses do not take into account any subsequent changes the Authority may make in the future. Toward this end, on December 11, 2023, the Corps transmitted additional written comments, guidance, and suggestions for revising the Checkpoint C Summary Report and [preliminary] draft CMP based on our Checkpoint C meeting discussions. As a condition of our concurrence, we expect the Authority to revise the Checkpoint C Summary Report and CMP to incorporate our feedback.

I also highlight the Authority requested our Checkpoint C responses prior to the Authority a) completing formal consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act and obtaining the USFWS' biological opinion; b) performing site-specific geotechnical investigations; c) conducting on-the-ground aquatic, biological, and cultural resource surveys and other fieldwork (e.g., aquatic resource functional or condition assessment) within the SR14A Build Alternative footprint of disturbance; and d) providing the Corps with greater than 15% engineering design. Accordingly, our responses are commensurate with the level of information made available in the Checkpoint C documents. Should new or additional data come forward that would have a material bearing on the "preliminary" LEDPA, draft CMP, or the preliminary 408 recommendation that was not previously considered by the Corps, we may revisit, modify, or rescind one or both responses.

Additionally, as conditions of our preliminary 408 recommendation and to assist in your compliance with Section 408, the Authority will need to coordinate closely with the Corps in providing us with sufficient engineering analysis. Specifically, we request a 30% and 60% design process review of the preferred alternative Tujunga Channel crossing prior to the submittal of the Section 408 permission request. We also request final designs of the preferred alternative portions near Lopez Basin and Hansen Basin for final concurrence. This preliminary 408 recommendation with conditions is valid for 5 years from the date of this letter. If the design changes such that the preferred alternative is no longer a minor, low-impact modification to the Corps' flood risk reduction projects, this recommendation is no longer valid and may require approval from Corps Headquarters.

Lastly, we recognize the importance our Section 404 permit and Section 408 permission decision-making is to the Authority's ability to implement the Palmdale to Burbank project section. For this reason, it is worth reiterating that a Section 404 standard individual permit decision will first require we approve a final CMP consistent with the 2008 Mitigation Rule (or superseding mitigation regulations/policies in effect at the time when a Section 404 permit application is processed); receive a copy of your Section 401 water quality certification (or waiver) and evidence of the Authority's compliance with Section 7 of the Endangered Species Act and Section 106 of the National Historic Preservation Act; ensure all applicable subparts of the Section 404(b)(1) Guidelines have been satisfied; render our public interest review determination; and issue our Record of Decision under NEPA adopting your Final EIS or parts thereof; and make a Section 408 permission decision, if applicable.

Thank you for your continued collaboration on the CHSR P-B Project Section. We value our partnership and appreciate the Authority's efforts to work with us in reaching Checkpoint C concurrence and a preliminary 408 recommendation. If you have questions, please contact Susan A. Meyer Gayagas at (213) 304-9810 or via email at susan.a.meyer@usace.army.mil. Please also help me evaluate and improve the regulatory experience for others by completing the customer survey form at https://regulatory.ops.usace.army.mil/customer-service-survey/.

Sincerely,

Spencer D. MacNeil, D. Env.
Deputy Chief, Regulatory Division

cc:

Clifton Meek, U.S. Environmental Protection Agency (meek.clifton@epa.gov)
Jonathan Snyder, U.S. Fish and Wildlife Service (jonathan_d_snyder@fws.gov)
Sarvy Mahdavi, U.S. Environmental Protection Agency (Mahdavi.sarvy@epa.gov)
Scott Rothenberg, California High-Speed Rail Authority (scott.rothenberg@hsr.ca.gov)
Sue Meyer, AECOM-Fluor (sue.meyer@hsr.ca.gov)

APPENDIX G: SECTION 4(F) CONCURRENCE LETTERS

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CALIFORNIA
High-Speed Rail Authority

Gavin Newsom
GOVERNOR

Brian P. Kelly
CHIEF EXECUTIVE OFFICER

December 18, 2023

Sean Woods, Chief of Planning
Los Angeles County Department of Parks and Recreation
1000 S Fremont Ave Ste 40
Alhambra, CA 91803

Subject: Request for Section 4(f) Concurrences

Dear Mr. Woods,

In September 2022, the California High-Speed Rail Authority (Authority) released a Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Palmdale to Burbank Project Section (project) of the statewide California High-Speed Rail Program in accordance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The Draft EIR/EIS included descriptions and preliminary engineering drawings of six build alternatives; analysis of environmental impacts of the alternatives; and discussion of measures to avoid, minimize, and mitigate adverse environmental effects. Chapter 4 of the Draft EIR/EIS is a Draft Section 4(f) Evaluation pursuant to Section 4(f) of the Department of Transportation Act of 1966, as amended (codified at Title 49 United States Code (U.S.C.), section 303). The Draft EIR/EIS evaluated the project's impacts on resources subject to Section 4(f), including the proposed Littlerock Trail Extension, the proposed Palmdale Hills Trail extension, and the proposed Vasquez Loop Tail extension. The Authority is preparing a Final EIR/EIS, which will include responses to comments received on the Draft EIR/EIS and a Final Section 4(f) Evaluation.

The purpose of this letter is to request concurrence on the Section 4(f) *de minimis* impact findings that the Authority would intend to make with respect to the proposed Littlerock Trail Extension, the proposed Palmdale Hills Trail extension, and the proposed Vasquez Loop Tail extension, to the extent the preferred alternative (known as the SR14A Build Alternative) is considered to use each of the three trails. The basis for this finding was originally detailed in the Draft EIR/EIS. A summary of the Authority's Section 4(f) evaluation for each of the three trails is set forth below.

Overview of Section 4(f) and the Authority's Responsibilities

Section 4(f) declares that "it 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." The Authority is responsible for Section 4(f) compliance for the California High-Speed Rail Program as the federal lead agency pursuant to 23 U.S.C. § 327 and the terms of the NEPA Assignment Memorandum of Understanding dated July 23, 2019, and executed by the Federal Railroad Administration (FRA) and the State of California, under which the Authority assumed FRA's responsibilities for compliance with NEPA and other federal environmental laws, including Section 4(f) and related U.S. Department of Transportation (USDOT) orders and guidance, for the California High-Speed Rail Program.

In general, Section 4(f) specifies that the USDOT agencies may only approve a project that "uses" a Section 4(f) resource if (1) there is no prudent and feasible alternative that completely avoids the Section 4(f) resource and (2) the project includes all possible planning to minimize harm to that resource. In lieu

of making these findings, the USDOT also can approve the use of a Section 4(f) resource if the USDOT determines that the project will have a "*de minimis*" impact on that resource and the official with jurisdiction over the resource concurs in that determination. For public parks, recreation areas, and wildlife and waterfowl refuges, the official with jurisdiction is the agency (or agencies) that owns or administers the property.

Prior to making a *de minimis* impact determination for parks, recreation areas, and wildlife and waterfowl refuges, public notice and an opportunity for public review and comment concerning the effects on the protected activities, features, or attributes of the property must be provided. This requirement was satisfied in conjunction with the public circulation and comment period provided on the Draft EIR/EIS. In addition, following this opportunity for public review and comment, the official with jurisdiction over the Section 4(f) resource must concur in writing that the project will not adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection.

1. Proposed Littlerock Trail Extension

Applicability of Section 4(f) to Proposed Littlerock Trail Extension

The Littlerock Trail is a publicly owned and publicly accessible resource that is managed by the Los Angeles County Department of Parks and Recreation, the official with jurisdiction. Recreation is a primary use of the multi-use trail. For these reasons, the Littlerock Trail is protected by Section 4(f). The proposed extension of the trail is evaluated as protected by Section 4(f) in the EIR/EIS because the Los Angeles County Department of Parks and Recreation has confirmed the trail extension has been formally designated as a planned recreational resource.

Description of High-Speed Rail Project Impacts to Proposed Littlerock Trail Extension

The SR14A Build Alternative, would include a new traction power facility[1] and overhead utility power lines that would cross over a short segment of the proposed Littlerock Trail Extension in the area of the SR 14/Sierra Highway interchange. Refer to Attachment A: Parks and Recreation Resource Study Area – SR14A Mapbook to see the proposed trail extension in relation to the SR14A Build Alternative. In this location, the proposed Littlerock Trail Extension would be adjacent to the existing SR 14 and Angeles Forest Highway, and the existing Metrolink corridor, exposing future trail users to noise associated with the operation of these existing transportation facilities.

The overhead utility lines would be approximately 70 to 200 feet above the trail at the crossing and would not require realignment of the trail. The overhead utility lines would permanently cross approximately 270 feet of the 1-mile proposed Littlerock Trail Extension, constituting a permanent use of that portion of the trail. If the trail extension is built before the SR14A Build Alternative is built, the trail would remain open and available to the public during project construction through a minor detour and would function as it did before construction and operation of the SR14A Build Alternative. Construction of the SR14A Build Alternative would not involve construction easements or staging areas within the trail.

If the trail extension has not been constructed prior to implementation of the SR14A Build Alternative, the SR14A Build Alternative would not preclude the proposed Littlerock Trail Extension.

Coordination Activities with the Los Angeles County Department of Parks and Recreation

[1] Traction power facilities are power stations and accompanying facilities that produce only traction current, which is the electric current used for railways, trams, trolleybuses or other conveyances.

The Los Angeles County Department of Parks and Recreation confirmed through email communication with the Authority in June 2023 that the proposed trail extensions to Littlerock Trail, Palmdale Hills Trail, Acton Community Trail, and Vasquez Loop Trail are still anticipated to be completed. The public was given an opportunity to comment on the preliminary Section 4(f) determination for the proposed Littlerock Trail Extension during the public comment period of the Draft EIR/EIS from September 2022 to December 2022. No comments regarding the proposed Littlerock Trail Extension were received during the public comment period.

The Authority's Section 4(f) Determination

The Authority has determined that the SR14A Build Alternative would neither adversely affect or otherwise restrict the public's use of the proposed Littlerock Trail Extension for recreation, nor would the project adversely affect the activities, features, or attributes that make the proposed Littlerock Trail Extension eligible for Section 4(f) protection as a recreational resource. Therefore, the Authority has determined that the SR14A Build Alternative would result in a *de minimis* impact to the proposed Littlerock Trail Extension, as defined by 49 U.S.C. § 303(d).

2. Proposed Palmdale Hills Trail Extension

Applicability of Section 4(f) to Proposed Palmdale Hills Trail Extension

The Palmdale Hills Trail is a publicly owned and publicly accessible resource that is managed by the Los Angeles County Department of Parks and Recreation, the official with jurisdiction. Recreation is a primary use of the multi-use trail. For these reasons, the Palmdale Hills Trail is protected by Section 4(f). The proposed extension of the trail is evaluated as protected by Section 4(f) in the EIR/EIS because the Los Angeles County Department of Parks and Recreation has confirmed the trail extension has been formally designated as a planned recreational resource.

Description of High-Speed Rail Project Impacts to Proposed Palmdale Hills Trail Extension

The SR14A Build Alternative would include a new, at-grade railway that would cross the proposed Palmdale Hills Trail Extension at grade. Refer to Attachment A: Parks and Recreation Resource Study Area – SR14A Mapbook to see this resource in relation to the SR14A Build Alternative. The SR14A Build Alternative would require permanent realignment of an approximately 300-foot (0.06-mile) portion of the proposed 12-mile trail extension. This impact would be a permanent use of the proposed Palmdale Hills Trail Extension. A realignment plan for the approximately 300-foot (0.06-mile) portion of the 12-mile proposed trail extension would be developed in consultation with the Los Angeles County Department of Parks and Recreation.

If the trail extension is built before the SR14A Build Alternative is built, access to the trail may be temporarily restricted during project construction; however, segments of the trail outside of the temporary construction area would remain open and accessible to the public. The Authority commits to implementing Impact Avoidance and Minimization Feature PK-IAMF#1: Parks, Recreation, and Open Space (described in Section 3.15 of the Draft EIR/EIS) to minimize project impacts on parks, recreation, and open space, including the proposed Palmdale Hills Trail Extension. Specifically, PK-IAMF#1 requires that prior to construction, the Authority's contractor will prepare a technical memorandum that identifies project design features to be implemented to minimize impacts on parks, recreation, and open space, including the proposed trail extension. In preparing the technical memorandum, the Authority (or its contractor) will coordinate with the Los Angeles County Department of Parks and Recreation to

determine connectivity features surrounding the proposed trail extension. These features may include safe and attractive access for present travel modes to ensure ease of use. By applying PK-IAMF#1, the connectivity of the trail would not be diminished and the trail would remain open and available to the public along its new alignment after construction of the SR14A Build Alternative is completed.

If the proposed trail extension has not been constructed prior to implementation of the SR14A Build Alternative, the SR14A Build Alternative would not preclude future extension of the proposed Palmdale Hills Trail.

Coordination Activities with the Los Angeles County Department of Parks and Recreation

The Los Angeles County Department of Parks and Recreation confirmed through email communication with the Authority in June 2023 that the proposed trail extensions to Littlerock Trail, Palmdale Hills Trail, Acton Community Trail, and Vasquez Loop Trail are still anticipated to be completed. The public was given an opportunity to comment on the preliminary Section 4(f) determination for the proposed Palmdale Hills Trail Extension during the public comment period of the Draft EIR/EIS from September 2022 to December 2022. No comments regarding the proposed Palmdale Hills Trail Extension were received during the public comment period.

The Authority's Section 4(f) Determination

The Authority has determined that the SR14A Build Alternative would neither adversely affect or otherwise restrict the public's use of the proposed Palmdale Hills Trail Extension for recreation, nor would the SR14A Build Alternative adversely affect the activities, features, or attributes that make the proposed Palmdale Hills Trail Extension eligible for Section 4(f) protection as a recreational resource. Therefore, the Authority has determined that the SR14A Build Alternative would result in a *de minimis* impact to proposed Palmdale Hills Trail Extension, as defined by 49 U.S.C. § 303(d).

3. Proposed Vasquez Loop Trail Extension

Applicability of Section 4(f) to Proposed Vasquez Loop Trail Extension

The Vasquez Loop Trail is a publicly owned and publicly accessible resource that is managed by the Los Angeles County Department of Parks and Recreation, the official with jurisdiction. Recreation is a primary use of the multi-use trail. For these reasons, the Vasquez Loop Trail is protected by Section 4(f). The proposed extension of the trail is evaluated as protected by Section 4(f) in the EIR/EIS because the Los Angeles County Department of Parks and Recreation has confirmed the trail extension has been formally designated as a planned recreational resource.

Description of High-Speed Rail Project Impacts to Proposed Vasquez Loop Trail Extension

The SR14A Build Alternative would cross under the proposed Vasquez Loop Trail Extension in a bored tunnel near the SR 14/Sierra Highway interchange (see Attachment A: Parks and Recreation Resource Study Area – SR14A Mapbook to see the proposed trail extension in relation to the SR14A Build Alternative). No topographical changes at the ground surface and/or other permanent changes to the proposed trail extension would occur as a result of tunneling. However, overhead electrical utility lines would be installed across the proposed trail extension at Red Rover Mine Road. Construction of the overhead electrical utility lines would require the permanent acquisition of approximately 160 feet of the 3-mile proposed Vasquez Loop Trail extension.

If the proposed trail extension is built before the SR14A Build Alternative is built, the trail would remain open and available to the public during project construction through a minor detour and would function as it did before construction and operation of the SR14A Build Alternative. Construction of the SR14A Build Alternative would involve a construction easements at the utility crossing but no staging areas within the trail.

The Authority has preliminarily concluded that the permanent use of a portion of the proposed trail would constitute a *de minimis* impact because the features and attributes that qualify the resource for protection under Section 4(f), including its purpose as a contiguous recreational hiking trail, would not be diminished with operation of the Build Alternatives. The existing trail intersects with and crosses existing transportation corridors along its alignment. The trail would remain open and connectivity would be maintained after construction of the SR14A Build Alternative.

If the proposed trail extension has not been constructed prior to implementation of the SR14A Build Alternative, the SR14A Build Alternative would not preclude the future proposed extension of the Vasquez Loop Trail.

Coordination Activities with the Los Angeles County Department of Parks and Recreation

The Los Angeles County Department of Parks and Recreation confirmed through email communication with the Authority in June 2023 that the proposed trail extensions to Littlerock Trail, Palmdale Hills Trail, Acton Community Trail, and Vasquez Loop Trail are still anticipated to be completed. The public was given an opportunity to comment on the preliminary Section 4(f) determination for the proposed Vasquez Loop Trail Extension during the public comment period of the Draft EIR/EIS from September 2022 to December 2022. No comments regarding the proposed Vasquez Loop Trail Extension were received during the public comment period.

The Authority's Section 4(f) Determination

The Authority has determined that the SR14A Build Alternative would neither adversely affect or otherwise restrict the public's use of the proposed Vasquez Loop Trail Extension for recreation, nor would the project adversely affect the activities, features, or attributes that make the proposed Vasquez Loop Trail Extension eligible for Section 4(f) protection as a recreational resource. Therefore, the Authority has determined that the SR14A Build Alternative would result in a *de minimis* impact to proposed Vasquez Loop Trail Extension, as defined by 49 U.S.C. 303(d).

Request for Los Angeles County Department of Parks and Recreation Concurrence on Section 4(f) Findings

The Authority seeks your concurrence in these Section 4(f) determinations for the proposed Littlerock Trail Extension, the proposed Palmdale Hills Trail Extension, and the proposed Vasquez Loop Trail Extension. A concurrence clause is provided at the end of this letter for this purpose.

We respectfully request your reply to this matter within **30 days** of receipt of this letter. We look forward to continuing our successful working relationship with you and should you have any questions or need additional information, please feel free to contact us.

Please return a scanned copy of this letter by email to Stefan Galvez-Abadia, Director of Environmental Services, at Stefan.Galvez@hsr.ca.gov.

If you have any questions, please contact Brett Rushing, Cultural Resources Program Manager, at Brett.Rushing@hsr.ca.gov or (916) 908-1230.

Sincerely,

Stefan Galvez

Stefan Galvez-Abadia
Director of Environmental Services
California High-Speed Rail Authority

Cc: LaDonna DiCamillo, Southern California Regional Director, Authority
Christine C. Inouye, P.E., Chief Engineer of Strategic Delivery, Authority

CONCURRENCE:

Based on the information set forth in this letter and the Draft EIR/EIS, the Los Angeles County Department of Parks and Recreation concurs with the California High-Speed Rail Authority's determinations that the SR14A Build Alternative for the Palmdale to Burbank Project Section of the California High-Speed Rail Program would not adversely affect the activities, features, or attributes that make the proposed Littlerock Trail Extension, the proposed Palmdale Hills Trail Extension, and the proposed Vasquez Loop Trail Extension eligible for Section 4(f) protection. Therefore, the Los Angeles County Department of Parks and Recreation concurs in the Authority's determinations that the SR14A Build Alternative for the Palmdale to Burbank Project Section of the California High-Speed Rail Program will have *de minimis* impacts on the proposed Littlerock Trail Extension, the proposed Palmdale Hills Trail Extension, and the proposed Vasquez Loop Trail Extension in accordance with Section 4(f) of the United States Department of Transportation Act of 1966.

SEAN WOODS

Printed Name

2/14/2024

Date

CHIEF OF PLANNING

Title

PARKS AND RECREATION - PLANNING & DEVELOPMENT

Agency

Attachment A: Parks and Recreation Resource Study Area – SR14A Mapbook

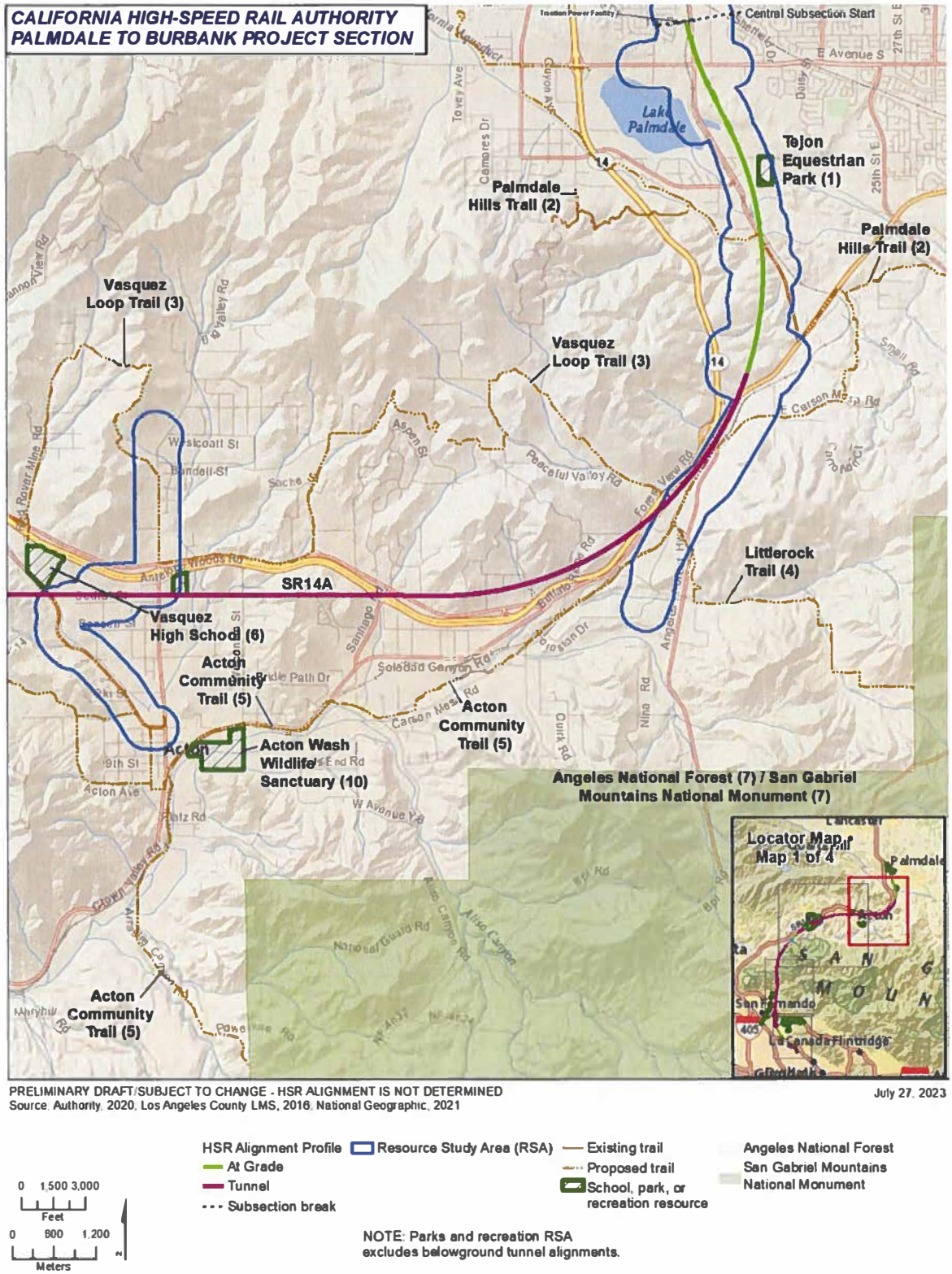

Figure 1 Parks and Recreation Resource Study Area – SR14A

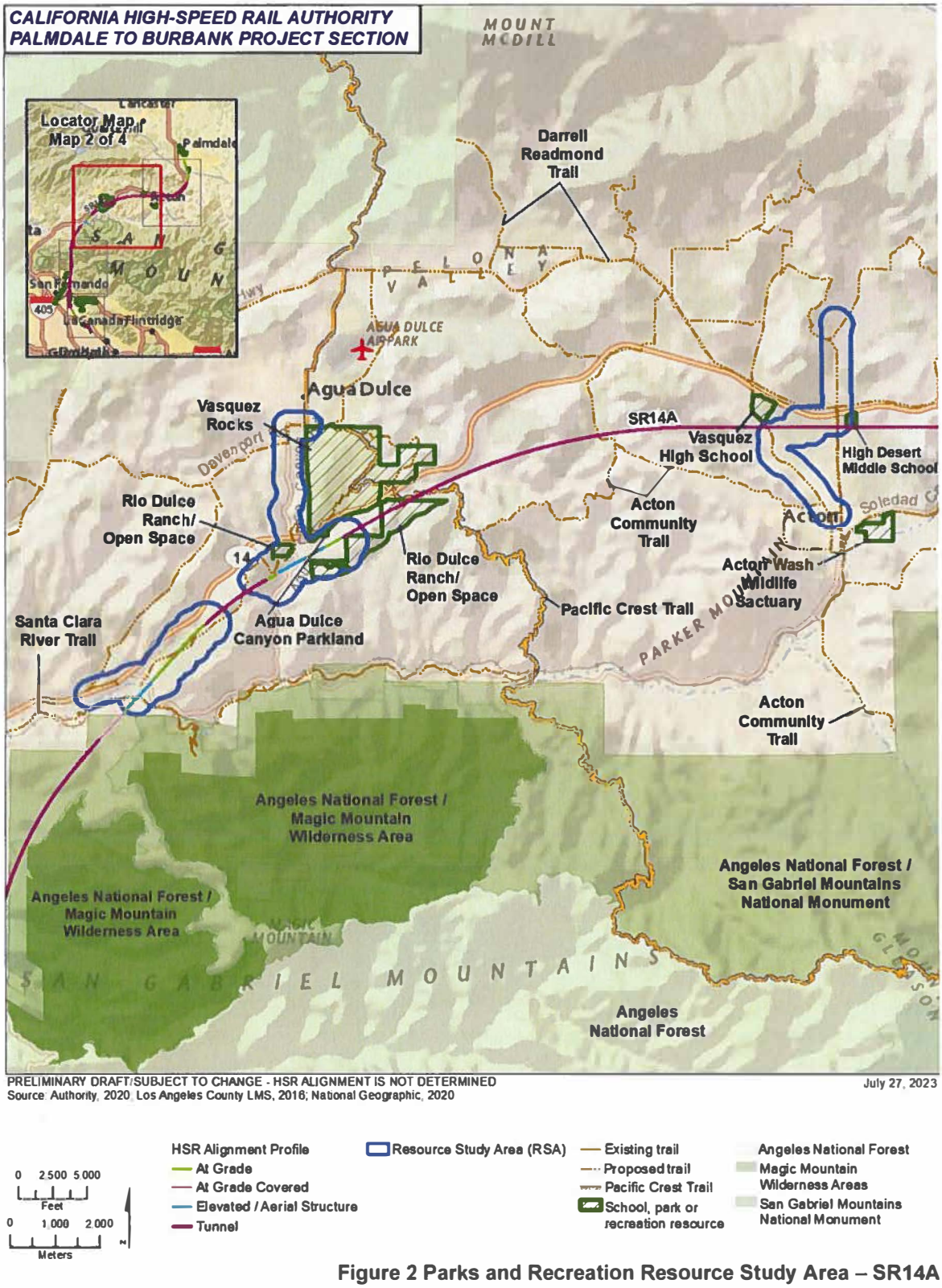

Figure 2 Parks and Recreation Resource Study Area – SR14A

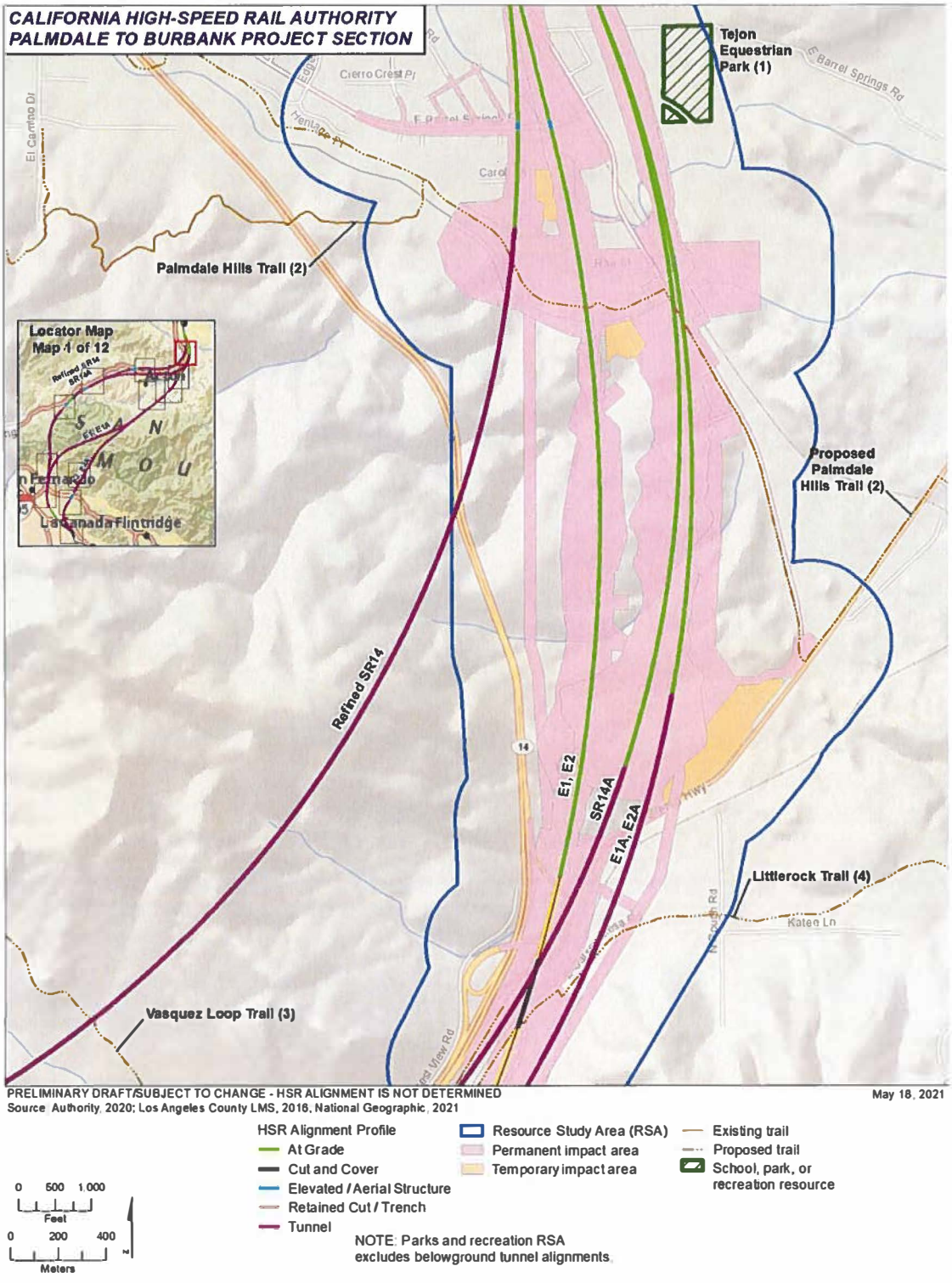

Figure 3 Potential Recreational Section 4(f) Resources

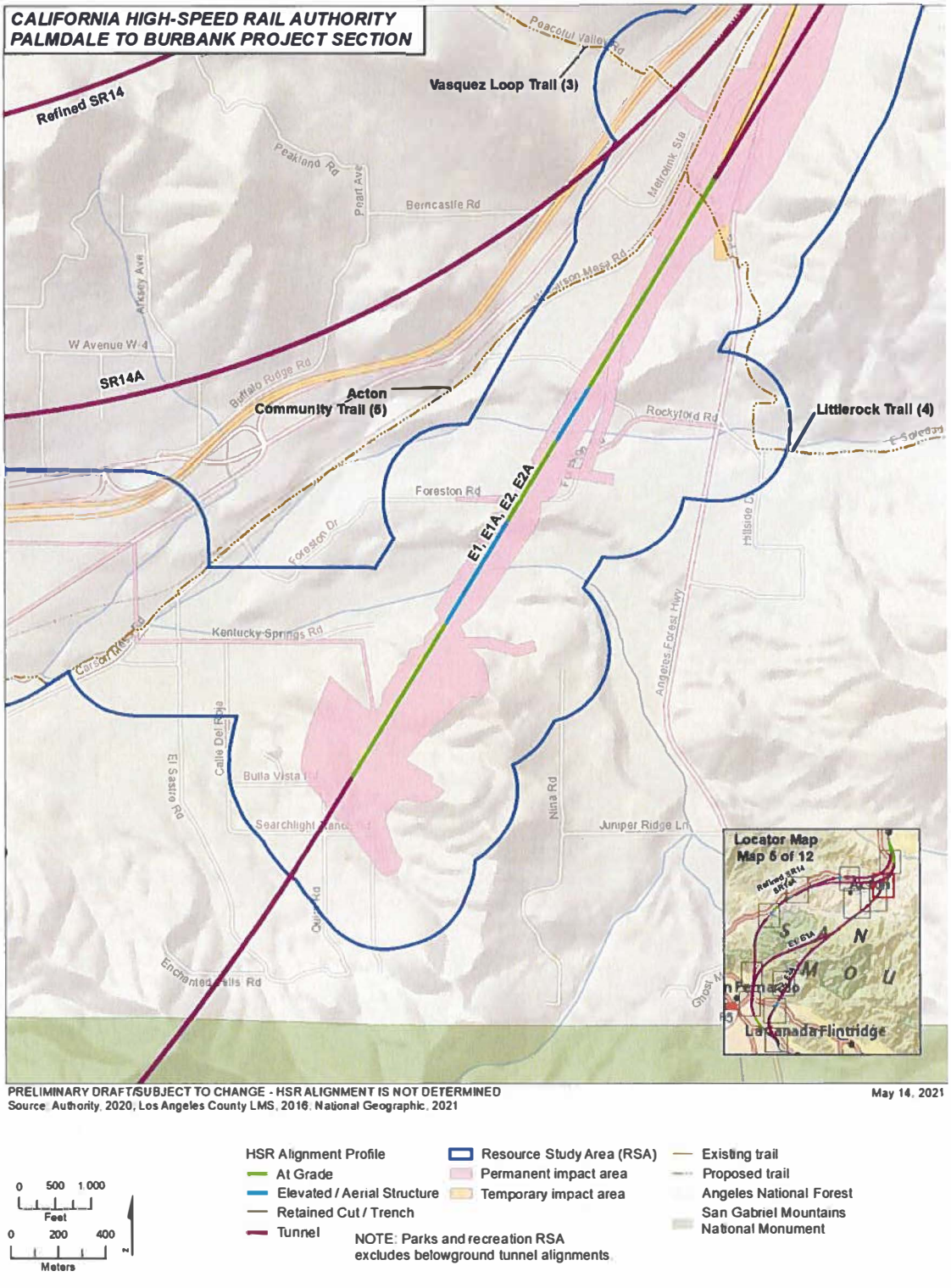

Figure 4 Potential Recreational Section 4(f) Resources

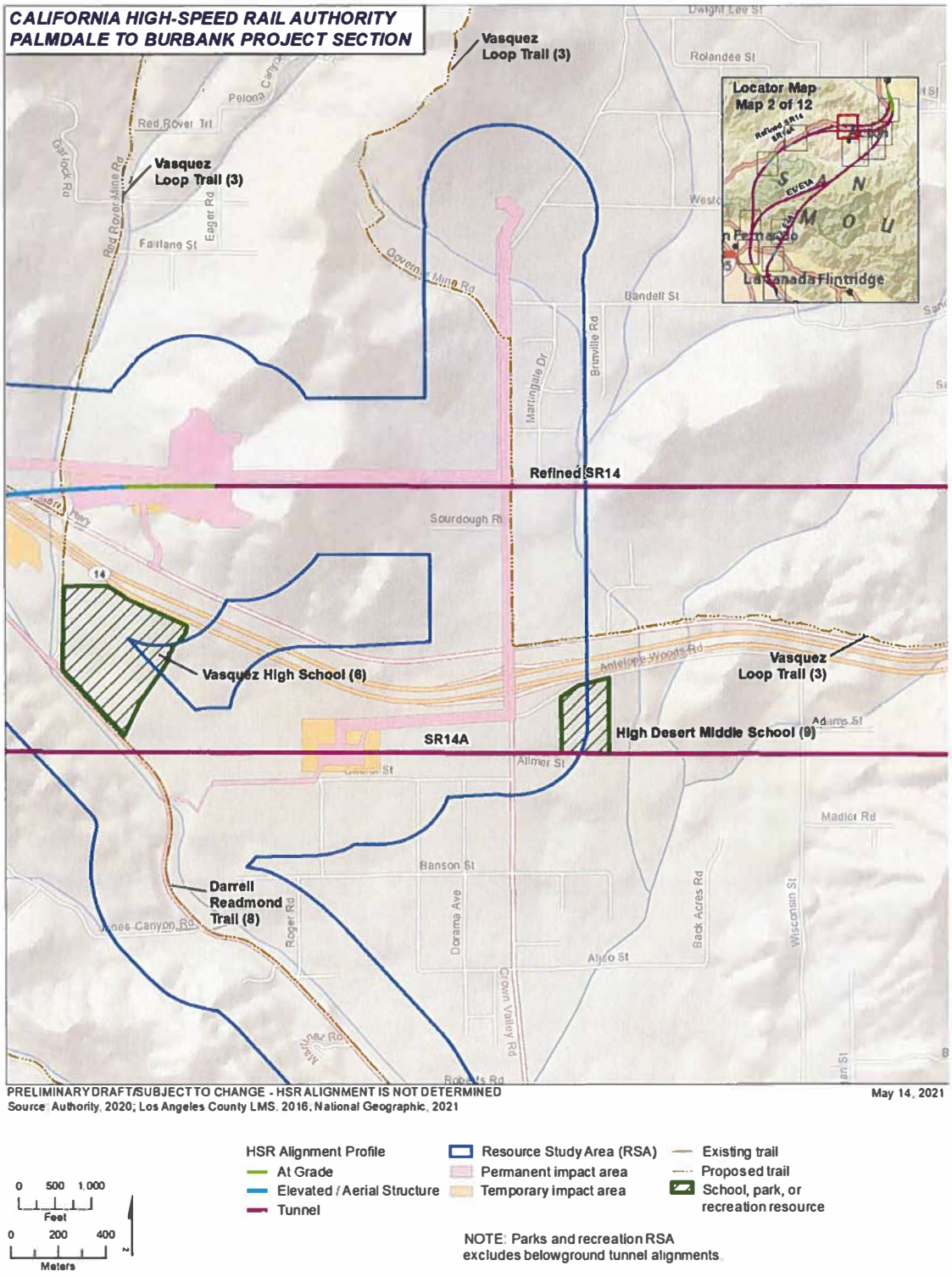

Figure 5 Potential Recreational Section 4(f) Resources

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
2800 Cottage Way, Room E-1712
Sacramento, CA 95825

January 22, 2024

IN REPLY REFER TO:
ER 22/0384
411

Mr. Brett Rushing
Cultural Resources Program Manager
California High-Speed Rail Authority
770 L Street
Sacramento, CA 95814

Subject: California High-Speed Rail Authority Palmdale to Burbank Project Section: Draft Environmental Impact Report / Environmental Impact Statement

Dear Brett Rushing:

This letter is in response to your recent request for the Department of the Interior (Department) to provide concurrence on the Section 4(f) *temporary occupancy – no use* finding on the proposed Rim of the Valley Trail Extension, to the extent the preferred alternative (known as the SR14A Build Alternative) is considered to use the proposed trail. As required under Section 4(f) of the Department of Transportation Act of 1966, the Department, through the National Park Service (NPS), has reviewed the Department of Transportation Act (DOTA), Section 4(f) Evaluation report for the California High-Speed Rail Authority Palmdale to Burbank Project Section: Draft Environmental Impact Report / Environmental Impact Statement.

In a report dated August 2022, the California High-Speed Rail Authority evaluated Section 4(f) properties affected by the California High-Speed Rail Project between Palmdale, California and Burbank, California. Relevant NPS programs have indicated no comments, and no other Department Bureaus have identified any concerns with the 4(f) evaluation. The Department has no objection to Section 4(f) approval of this project and concurs with the California High Speed Rail Authority's finding of Temporary Occupancy/No Use under DOTA Section 4(f). If you have any questions, please contact me at (415) 420-0524 or at janet_whitlock@ios.doi.gov.

Sincerely,

JANET WHITLOCK

Digitally signed by JANET WHITLOCK
Date: 2024.01.22 13:05:03 -08'00'

Janet Whitlock
Regional Environmental Officer

cc: Roxanne Runkel, National Park Service: roxanne_runkel@nps.gov
Danette Woo Nolan, National Park Service: danette_woo@nps.gov
Shawn Alam, Department of the Interior: shawn_alam@ios.doi.gov

TRANSMITTED ELECTRONICALLY – NO HARDCOPY TO FOLLOW

State of California • Natural Resources Agency
Gavin Newsom, *Governor*

DEPARTMENT OF PARKS AND RECREATION
OFFICE OF HISTORIC PRESERVATION
Lisa Ann L. Mangat, *Director*

Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

September 3, 2021 Reference Number: FRA_2018_0418_001

Submitted Via Electronic Mail

Brett Rushing
Cultural Resources Program Manager
California High-Speed Rail Authority
770 L Street, Suite 620
Sacramento, CA 95814

Re: High Speed Rail Program, Palmdale to Burbank Project Section, Request for Review and Concurrence on the Findings Presented in the Finding of Effect Report

Dear Mr. Rushing:

The California State Historic Preservation Officer (SHPO) is in receipt of the California High-Speed Rail Authority's (Authority) August 6, 2021 letter continuing consultation regarding the Palmdale to Burbank project section of the California High-Speed Rail Program. This consultation is undertaken in accordance with the 2011 *Programmatic Agreement Among the Federal Railroad Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California High-Speed Rail Authority, as Amended (PA)*. In support of this consultation, the Authority has prepared the following report: California High-Speed Rail Authority, Palmdale to Burbank Project Section, Section 106 Finding of Effect Report (FOE) (May 2021)

There are 18 historic properties within the SR14A Build Alternative APE, consisting of five built-environment properties, 12 unevaluated archaeological resources treated as historic properties for the purposes of this undertaking, and once archaeological property listed on the National Register of Historic Places (NRHP). The FOE concludes that the construction and operation of the Palmdale to Burbank Project Section will have no effect on two built-environment historic properties and no adverse effect on three built-environment historic properties, as listed in Table 1 included in your August 6, 2021 letter.

Additionally, the FOE finds that construction and operation of the Palmdale to Burbank Project Section will have no effect on two of the 13 archaeological resources and that determination of effects for the 11 remaining archaeological resources will be phased as access to sites in granted and the project design

advances. These sites are listed in Table 2 of your August 6, 2021 letter. None of the archaeological resources listed in Table 2 appear exempt from evaluation under Attachment D of the Section 106 PA. To date, approximately 9.6 percent of the archaeological APE has been surveyed for the current undertaking, and additional archaeological resources may be identified during future phased identification efforts, including survey and construction monitoring. Moreover, consultation with tribal consulting parties will continue to be conducted for the undertaking, as appropriate. To date, this consultation has not identified previously unrecorded archaeological resources or traditional cultural properties. The SR14A alignment would have no effect on two archaeological resources, as shown in Table 2.

Section 4(f) of the United States Department of Transportation Act of 1966 requires consultation with the SHPO, the official with jurisdiction over historic properties, as stipulated in 23 CFR § 774.17. The Authority is consequently notifying the SHPO of its intent to make a de minimis impact determination for the Palmdale Ditch and the East Branch of the California Aqueduct in accordance with 23 CFR § 774.5. For historic properties, a de minimis impact determination under Section 4(f) is based on findings made in the Section 106 consultation process and can be made if the project will have no adverse effect on the historic property. The Authority has determined that the Palmdale Ditch and the East Branch of the California Aqueduct will not be adversely affected and, therefore, will incur a de minimis use under Section 4(f). By concurring with the Authority's finding of no adverse effect under Section 106, the SHPO also concurs with this 4(f) determination.

In accordance with PA Stipulation VII.A, the Authority requests SHPO concurrence findings presented in the FOE. Having reviewed the recommendations summarized in the FOE, SHPO concurs that the undertaking will not adversely affect historic properties.

If you have any questions, please contact State Historian Tristan Tozer at (916) 445-7027 or tristan.Tozer@parks.ca.gov.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
2800 Cottage Way, Room E-1712
Sacramento, CA 95825

June 21, 2024

IN REPLY REFER TO:
ER 24/0205
4111

Stefan Galvez-Abadia
Director of Environmental Services
California High-Speed Rail Authority
770 L Street, Suite 620
Sacramento, CA 95814

Subject: California High-Speed Rail Authority Palmdale to Burbank Project Section FEIR/EIS Appendix 4-B Lang Station Open Space Section 4(f) and Section 6(f) Evaluation for the Lang Station Open Space at Bee Canyon, Santa Clarita, California

Dear Mr. Galvez-Abadia:

The Department of the Interior (Department) reviewed the *California High-Speed Rail Authority Palmdale to Burbank Project Section FEIR/EIS Appendix 4-B Lang Station Open Space Section 4(f) and Section 6(f) Evaluation,* dated April 2024. As required under Section 4(f) of the Department of Transportation Act of 1966, the review included the Section 4(f) evaluation in addition to the findings of evaluation of properties under Section 6(f) of the Land and Water Conservation Fund Act of 1965, for the Lang Station Open Space at Bee Canyon. The Department, through the National Park Service (NPS), concurs that the preferred alternative (known as the SR14A Build Alternative) would result in *de minimis* impacts to the fewest park, recreation, and open-space resources. The Department also concurs that no Section 6(f) properties occur within the Section 4(f)/Section 6(f) resource study area for the Lang Station Open Space at Bee Canyon Project. If you have specific questions related to our comments, please contact Danette Woo, NPS Regional Environmental Coordinator at Danette_Woo@nps.gov. For all other questions, please contact me at Janet_Whitlock@ios.doi.gov.

Sincerely,

Janet Whitlock
Regional Environmental Officer

Electronic distribution: Stefan.Galvez@hsr.ca.gov

cc: Shawn Alam, Department of the Interior: shawn_alam@ios.doi.gov
Danette Woo, National Park Service: danette_woo@nps.gov
Roxanne_runkel@nps.gov
Brett Rushing, California High-Speed Rail Authority: Brett.Rushing@hsr.ca.gov

APPENDIX H: COMMENTS RECEIVED BETWEEN THE PUBLICATION OF THE FINAL EIR/EIS AND THE JUNE 26-27, 2024 BOARD MEETING

No.	Name	Business/ Organization	Summary of Stakeholder Comments/Issues	Responses/Status Update
1	Skylar Feltman, Specialist for Wildlife Connectivity	California Department of Fish and Wildlife (CDFW)	The commenter expressed disagreement with the Authority's conclusion that a dedicated wildlife crossing in Bee Canyon would not benefit mountain lions. The commenter recommended that the Authority work with CDFW and the California Department of Transportation (Caltrans) to identify wildlife crossing opportunities and/or opportunities for land acquisition within the San Gabriel-Castaic Linkage as mitigation for project impacts to wildlife connectivity in Bee Canyon.	The Authority acknowledges CDFW's position regarding the benefit of a dedicated wildlife crossing in Bee Canyon. The Authority's conclusion that providing a wildlife crossing at Bee Canyon would not constitute a benefit to mountain lions and other species was based on its technical studies, undertaken by wildlife connectivity technical experts, which assessed a number of factors in reaching its conclusion, including the existing Caltrans State Route 14 and the challenges that it represents to wildlife permeability. These studies were documented in the Palmdale to Burbank Project Section Final EIR/EIS (see responses to prior comments from CDFW in Submission 4512 in Volume 4). This analysis and conclusions were discussed with CDFW during a workshop with the agency on April 11, 2024. Notwithstanding the differing views on this topic, the Authority is committed to continuing to work with CDFW, Caltrans, and other stakeholders having technical expertise to identify opportunities that would enhance regional wildlife connectivity within the project area. Accordingly, the Authority is committed to convene a wildlife connectivity working group for the Palmdale to Burbank Project Section to advance the technical knowledge and science, and to support and seek joint funding options to address existing barriers and conflicts between wildlife and transportation infrastructure within the resource study area of the Palmdale to Burbank Project Section. (See BIO-MM#105, added to the Draft Mitigation Monitoring and Enforcement Plan, and as noted in the Draft CEQA Findings of Fact

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				and Statement of Overriding Considerations and in the Draft Record of Decision for the Palmdale to Burbank Project Section. These documents may be found on the Authority's website [https://hsr.ca.gov/about/board-of-directors/schedule/] in connection with the June 26-27, 2024 Board Meeting.) As documented in the Palmdale to Burbank Project Section Final EIR/EIS and Wildlife Connectivity Assessment, the project would implement a number of wildlife connectivity improvements in this project section, including full permeability of approximately 83 percent of the proposed alignment (via tunnels, cut and cover, and elevated structures), as well as committing to the construction of two wildlife crossings in the Palmdale area. Impacts to wildlife movement would be less than significant with the mitigation measures identified in the Final EIR/EIS and no additional mitigation is required under CEQA. In addition, although not required to reduce a significant impact, the Authority commits to convening the wildlife connectivity working group within one year of project approval. This requirement has been incorporated as part of BIO-MM#105: Wildlife Movement Working Group on Existing Wildlife Movement Barriers into approval documents, including the Record of Decision and Mitigation Monitoring Enforcement Plan, for the Palmdale to Burbank Project Section.

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2	Alexander Friedman	Individual	The commenter expressed support for the Palmdale to Burbank Project Section and the California HSR program as a whole.	The Authority acknowledges the comment and appreciates the support from the commenter.
3	Anonymous (email: ducks23271@yahoo.com)	Individual	The commenter asked why the Authority is building a Palmdale to Burbank Project Section when Metrolink already has a track from Palmdale to Burbank.	As described in Chapter 1, Project Purpose, Need, and Objectives, of the Palmdale to Burbank Project Section Final EIR/EIS, the purpose of the Palmdale to Burbank Section of the California HSR system is to provide the public with electric-powered HSR service that provides predictable and consistent travel times between the Antelope Valley and the San Fernando Valley, and provides connectivity to airports, mass transit systems, and the highway network in the Antelope Valley and the San Fernando Valley; and to connect the Northern and Southern portions of the Statewide HSR system. While the existing Metrolink network of rail services operates between Palmdale and Burbank, it does not meet the objectives adopted by the Authority to meet future intercity travel demand that would be unmet by current transportation systems and increase capacity for intercity mobility, maximize intermodal transportation opportunities by locating stations to connect with local transit, airports, and highways, and improve the intercity travel experience for Californians by providing comfortable, safe, frequent, and reliable high-speed travel. Non-HSR trains between Palmdale and downtown Burbank currently have a run time that varies from 1 hour 24 minutes to 1 hour 53 minutes. Proposition 1A travel time objectives for HSR travel would not be achievable if the section between Palmdale and Burbank required this much time to traverse. The Selected Alternative would include 38.38 miles of alignment, designed at speeds that

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				would support a 13-minute nonstop travel time, with operation time about 17 minutes. Thus, the Palmdale to Burbank Project Section would provide HSR service that would reduce the overall travel time between Palmdale and Burbank and facilitate connectivity within the region.
4	Donald Dunham	Individual	The commenter expressed support for the Palmdale to Burbank Project Section and the California HSR program as a whole, but expressed opposition to a route that extends along I-210 through the Northeast San Fernando Valley, Angeles Forest, Angeles mountains, Hansen Dam, or Shadow Hills-Sunland areas. The commenter asserted that the train speeds, noise, and vibration would adversely affect small ranches, horseback riding, and equestrian facilities in these areas. The commenter suggested that the alignment should instead travel along the I-5 freeway and through San Fernando.	The Authority acknowledges the commenter's support for the California HSR program and recommendations regarding alignment alternatives for the Palmdale to Burbank Project Section. Please refer to Standard Response PB-Response-ALT-1: Alternatives Selection and Evaluation Process, in Volume 4 of the Final EIR/EIS, which discusses the Authority's evaluation of various alternative routes, including routes following the I-5 freeway corridor, and why these alternative routes and alignments were not carried forward. Operational noise and vibration impacts of the project have been fully analyzed in the EIR/EIS. Refer to Section 3.4, Noise and Vibration in the Final EIR/EIS. With respect to the specific locations of concern raised by the commenter, the community of Shadow Hills and the Hansen Dam open space is approximately 1.5 miles east of the Preferred Alternative, SR14A, at its nearest location. As discussed in the Final EIR/EIS under Impact BIO#14, Noise and Vibration, noise levels at this distance would not be expected to disturb domestic animals (horses) and wildlife. Standard Response PB-Response-N&V-3: Noise Impacts on Domestic Animals/Wildlife provides additional detail regarding the potential effects of the Build Alternatives and the Preferred Alternative on domestic animals (horses),

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				ranches, and wildlife and summarizes measures incorporated into the project design (IAMFs) and mitigation measures.
5	Kristin Sabo	Individual	The commenter asserts that the Final EIR/EIS does not address the construction impacts of the ADIT SR14-A-1 on the Migratory Bird Flyway through Bear Divide. The commenter recommends ADIT SR14-A-1 be removed from consideration as it is more impactful than the A-2 and A-3 ADIT choices.	The SR14A Build Alternative includes three options for adits, only one of which would be selected (see pages 2-122 and 2-123 of the Final EIR/EIS for description of each of the adit options). The Authority has not yet selected which adit location will be utilized, if any. The Authority acknowledges that the adit location noted by the commenter is located within a well-established migratory bird flyway. Section 3.7, Biological and Aquatic Resources, of the Final EIR/EIS identifies relevant federal statutes and regulations, including the Migratory Bird Treaty Act as well as the Protection of Migratory Bird Populations (USEO 13186). The project's effects on migratory birds are evaluated under Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. The Final EIR/EIS includes numerous mitigation requirements to address project impacts on birds, including migratory birds (beginning on page 3.7-151). For example, refer to BIO-MM#58 which requires the Project Biologist to monitor construction activities to ensure the appropriate avoidance and minimization measures are applied, including establishment of Environmentally Sensitive Areas (ESAs). The establishment of ESAs would reduce impacts on areas that support special-status birds (including migratory birds) or associated habitat as access to these areas would be restricted during construction activities. With the mitigation measures identified in the Final EIR/EIS, impacts to migratory birds would be less than significant with any of the ADIT locations.

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6	George Lange, Chairperson	Mountains Recreation & Conservation Authority	The commenter recommended that the Authority contribute to a new State Route 14 (SR 14) wildlife crossing structure in Bee Canyon and highlights the importance of habitat connectivity in the Angeles National Forest (ANF). The commenter also recommended that the Authority fully mitigate construction and operation impacts to natural, public recreation, and fire resources at Lang Station Open Space and Bee Canyon.	The Authority acknowledges the commenter's recommendations related to contributions towards a new wildlife crossing of SR 14 in Bee Canyon. The Final EIR/EIS includes detailed responses to comments on wildlife crossing opportunities, including in Bee Canyon. Please refer to Standard Response PB-Response-BIO-3, Wildlife Movement Corridors, and the response to comment #8697 in Chapter 22, Business and/or Organizations, of Volume 4 of the Final EIR/EIS. In addition, the Authority has committed to convening a wildlife connectivity working group (as part of BIO-MM#105) in the project approval documents, including the Record of Decision and Mitigation Monitoring Enforcement Plan, for the Palmdale to Burbank Project Section. BIO-MM#105 was added to the Draft Mitigation Monitoring and Enforcement Plan and as noted in the Draft CEQA Findings of Fact and Statement of Overriding Considerations and in the Draft Record of Decision for the Palmdale to Burbank Project Section, all of which may be found on the Authority's website (https://hsr.ca.gov/about/board-of-directors/schedule/) in connection with the June 26-27, 2024 Board Meeting. As described in Standard Response PB-Response-BIO-1, Impacts in Bee Canyon, the SR14A Build Alternative would pass through Bee Canyon on an at-grade (above ground) alignment. In response to comments received on the Draft EIR/EIS raising concerns for impacts to species in Bee Canyon and requesting an underground alternative, the Authority conducted an assessment of the feasibility of

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				tunneling through Bee Canyon, thereby avoiding impacts to suitable habitat for special-status species. However, the Authority concluded that the tunneling options for each alignment conflict with engineering design requirements such that they are not feasible. The Draft EIR/EIS fully evaluated potential impacts to biological resources in Bee Canyon that would result from construction and operation of an at-grade segment. Mitigation measures outlined in Section 3.7.8.2 of the Draft EIR/EIS would avoid, minimize, and offset construction and operation impacts on special-status plants and animals. As such, no additional mitigation is required. Following public circulation of the Draft EIR/EIS and through consultation with resource agencies, the Authority developed a design refinement in the vicinity of Bee Canyon that minimized the temporary and permanent footprint for the SR14A Build Alternative. In Bee Canyon, the temporary and permanent footprint along this 2.4-mile stretch of the alignment was reduced from 141.92 acres to 100.87 acres (a 22% reduction) for the SR14A Build Alternative, as described in Section 2.5.3, High-Speed Rail Build Alternatives – Detailed Description in Chapter 2, Alternatives. These refinements reduced impacts to slender-horned spineflower and coastal California gnatcatcher, as described in Section 3.7, Biological and Aquatic Resources, of the Final EIR/EIS. The commenter disagrees with the Authority's evaluation of impacts to trails within Bee Canyon

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				and notes that a spur trail and fire road that travels east across the project footprint would be impacted by the project. The Authority conducted field surveys and mapped trails in the vicinity of Lang Station Open Space and generally found that spur trails heading east of the main trail were unmarked and not clearly in use. The commenter has suggested a new connection to the ridgeline fire road on APN 3210-017-040 to provide a public recreation connection to the eastern portion of Lang Station Open Space to replace access that is currently provided to the main trail in Bee Canyon. The Authority does not currently have plans to provide the suggested connection to the ridgeline fire road. However, mitigation measures PR-MM#8 and PR-MM#9 in Section 3.15, Parks, Recreation, and Open Space, of the Final EIR/EIS, includes the provision of alternate access to ensure that accessibility is maintained, and also requires that the Authority consult with potentially affected property owners regarding the specific conditions of changes to access and compensation for, or replacement or enhancement of, the access driveways or parking areas at the recreation resource. This consultation will occur during the advanced and final design stages, prior to any construction activity or potential disruption to access. In addition to PR-MM#8 and PR-MM#9, refer to Section 3.15, Parks, Recreation, and Open Space, of the Final EIR/EIS for a description of the project features, such as PK-IAMF#1, that would maintain access to parks and recreation facilities. Other mitigation measures, including PR-MM#1, PR-MM#2, PR-MM#3, PR-MM#4, PR-MM#5, and PR-MM#7, would reduce

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				impacts by maintaining or providing alternative access as necessary, compensating for loss of park or recreational land consistent with the California Park Preservation Act and in consultation with the public owner on appropriate conditions for compensation, developing a trail facilities plan, providing temporary or permanent replacement recreation uses as necessary, and providing alternative access if temporary closure restricts connectivity or accessibility to Lang Station Open Space. The commenter also proposes the purchase of a nearby property for an alternative parking and trailhead location. The commenter's suggestion would represent an expansion of the facilities compared to the existing condition, relocation of the trailhead to the south of Soledad Canyon Road, and would also require a new pedestrian crossing of Soledad Canyon Road. The property suggested by the commenter at APN 3210-017-055 also lies mostly to the south of the Santa Clara River. As documented in the Final EIR/EIS, the Authority found that a minor adjustment to the location of the existing trailhead and a portion of the main trail could address the effect on the existing facilities from construction of the project. These relocated features would remain outside of the Bee Creek channel, and unlike the suggestion by the commenter they would not require the potential additional impacts of expanded facilities on APN 3210-017-055, new pedestrian facilities along Soledad Canyon Road, or a new potential crossing of Bee Creek Canyon or Santa Clara River. The

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				Authority maintains that the potential effects of the project have been adequately addressed with the proposed minor adjustment to the location of the existing trailhead and main trail. The commenter recommends the Authority connect an existing dirt road on APN 3210-017-040 to the ridgeline fire road which could provide a replacement trail and serve the dual role of providing fire safety access. The information provided by the commenter does not include enough information for the Authority to determine if this is feasible. Additionally, the Authority will need confirmation from relevant property owners and fire safety officials to confirm that any such connections are appropriate and adequate. The Authority has committed to consulting with the public owner of the resource to identify suitable replacement trail locations (PR-MM#7 and PR-MM#9) and also has committed to consulting with local fire and safety officials in developing these measures at the appropriate design stage (SS-IAMF#1 and SS-IAMF#2). As described in PB-Response-S&S-1: Wildfire, fire risks would be minimized through the application of SS-IAMF#1 (Construction Safety Transportation Management Plan) and SS-IAMF#2 (Safety and Security Management Plan), which will require the development and incorporation of a fire and life safety program into the design and construction of the Palmdale to Burbank Project Section. Fire risks would also be reduced by the Authority's formation of a statewide Fire and Life Safety and Security Committee (FLSSC) through implementation of SS-IAMF#2 (Safety and Security

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				Management Plan), which will be composed of representatives from fire, police, and local building code agencies.
7	Steve Veres, Chairperson	Santa Monica Mountains Conservancy	The commenter is concerned about connectivity between the Castaic mountains and San Gabriel Mountains and indicates that the Final EIR/EIS is deficient in analyzing baseline intermountain range connectivity and the effects of the project. The commenter also states the Final EIR/EIS analysis does not address the full range of the existing SR 14 freeway potential wildlife crossing structures or degradation from future development. The commenter states that the project degrades the baseline level of inter-mountain range connectivity along an approximately 18-mile-long section of the SR 14 freeway with exposed track (at grade and elevated), permanent noise and light impacts, and long-term temporary construction and maintenance impacts, and that BIO-MM#64 does not mitigate impacts in this area. The commenter is requesting the construction of a wildlife crossing over or under the SR-14 freeway. The commenter disagrees with the Authority's conclusion that an undercrossing proposed by commenter in an October 17, 2022 comment letter would need to be approximately 550 feet in length and as such would be inconsistent with established criteria for wildlife undercrossings. The commenter states that it believes a crossing between	As described in Standard Response PB-Response-BIO-3, the Authority is committed to addressing wildlife connectivity based on the best available science and based on input from knowledgeable stakeholders in the region. As demonstrated in the Wildlife Corridor Assessment and Section 3.7.4.4, Biological Resource Methodology of the Final EIR/EIS, the Authority undertook an extensive review of information on regional wildlife movement. Standard Response PB-Response-BIO-3 describes how much of the San Gabriel-Castaic Linkage Design would be permeable to wildlife movement where the alignment occurs on elevated viaducts or underground in tunnels. According to UC Davis Roadkill data, mountain lion movement largely occurs in areas along the SR 14 Freeway where the Build Alternatives would be underground. The Project will not significantly degrade the baseline level of inter-mountain range connectivity for wildlife that would seek to cross it. The Authority determined that there are substantial existing constraints to wildlife connectivity including the Sierra Highway as well as a number of frontage roads parallel to the Sierra Highway. While project design features and mitigation measures do not completely eliminate the effects of the project, they do minimize the effects to a less-than-significant level. More specifically, wildlife movement conditions for each wildlife movement guild would not be substantially different than the existing

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			Spring and Bee Canyons could be accomplished with a maximum length of 260 feet. The commenter states that it identified four locations between Stonecrest Road and Agua Dulce Canyon Road where a wildlife overcrossing of SR-14 could be accommodated. The commenter suggests the Authority provide compensatory mitigation for all temporary and permanent HSR-related impacts to Bee Canyon at a minimum ratio of 3:1 as established by other regulatory agencies for impacts to high-quality habitat within Southern California	condition. This is primarily due to the extensive use of tunnel and viaduct, which do not represent barriers to movement, and the fact that the tunnel and viaduct segments align well with existing crossing opportunities under the SR14 freeway. The majority of the SR14A Build Alternative alignment through the 18-mile section of freeway that the commenter is referring to (from the Santa Clara River to the Pear Blossom Highway interchange) is underground in tunnel, including a 13.25-mile long tunnel that can be traversed by wildlife. In areas where the SR14A Build Alternative is in tunnel, there would be no noise or light effects that would deter wildlife from moving across the alignment. For the at-grade segment in Bee Canyon, as described in Standard Response PB-Response-BIO-3, the Authority concluded that alternative design options would not increase the permeability of the Build Alternative alignments to wildlife movement in the Bee Canyon area. The Authority considered options along the at-grade segments in Bee Canyon which includes the four potential locations between Agua Dulce Canyon Road and Stonecrest Road raised by the commenter. but concluded that there would be no biological benefit because the freeway constitutes a substantial barrier in this area. The roadkill data from the U.C Davis Real-time Deer Incidents & Wildlife-Vehicle Conflict (WVC) Hotspots map and the mountain lion roadkill data suggests this stretch of freeway is not being used by wildlife as a crossing area compared

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				to the existing crossing opportunities to the north and south of Bee Canyon. The Authority's methodology for determining the locations for potential wildlife crossings only considered areas that were permeable or did not have existing constraints to wildlife movement. The Authority's methodology assumed that design features such as tunnels and elevated viaducts are permeable. As discussed above. the area described by the commenter was determined to be impermeable due to the presence of existing constraints including the Sierra Highway and frontage roads parallel to the Sierra Highway. The commenter suggests that the Authority could build an undercrossing tunnel less than 260 feet long underneath the Caltrans right-of-way. The commenter's suggestion for an underpass does not account for the topography and technical requirements, and it does not provide any additional information to support its assertion that a shorter tunnel would be feasible. The Authority considered alternative design options and feasibility of a wildlife undercrossing at the SR 14 freeway between Spring and Bee Canyons. Based on available literature, including the Federal Highway Administration (FHWA) Wildlife Crossing Structure Handbook, a wildlife crossing for this specific location should have a minimum width/height of 10 feet and a length preferably not exceeding 200 to 260 feet. The wildlife crossing should also maintain a horizontal profile, or as close to horizontal as possible. A wildlife crossing in the location recommended by the

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				commenter would need to have a length of approximately 550 feet. The length of the wildlife crossing greatly exceeds the suggested maximum length for this type of crossing. Furthermore, given that wildlife undercrossings are designed to be relatively level, the crossing entrance would need to be positioned relatively high on the slope above Soledad Canyon Road. A wildlife crossing with these characteristics would not meet the crossing's intended goal (Authority 2024).[1] The Authority's conclusion that providing a wildlife crossing at Bee Canyon would not constitute a benefit to mountain lions and other species was based on its technical studies, undertaken by wildlife connectivity technical experts, which assessed a number of factors in reaching its conclusion, including the existing topography and median barrier along the Caltrans State Route 14 and the challenges that it represents to wildlife permeability. These studies were documented in the Wildlife Corridor Assessment and the Palmdale to Burbank Project Section Final EIR/EIS (see responses to prior comments from CDFW in Submission 4512-10544 in Volume 4). The commenter is requesting construction of an overcrossing or undercrossing for the SR 14 Freeway, or acquisition of wildlife movement habitat at Stonecrest Road. In particular, it suggests acquiring an approved 542-unit residential development project as "advance mitigation." The Authority concluded, however, that with the extensive tunnel and viaduct areas and the

[1] California High-Speed Rail Authority (Authority). 2024. EIR/EIS - Comment Response - Design Refinements - 2.a.4 Wildlife Crossings Bee Canyon. June 26, 2023.

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				mitigation measures set out in the Final EIR/EIS, the project would not cause an adverse or significant impact on wildlife connectivity. Therefore, nothing requires additional mitigation measures. The Authority recognizes the importance of habitat connectivity and is committed to continuing to work with CDFW, Caltrans, SMMC, and other stakeholders having technical expertise to identify opportunities that would enhance regional wildlife connectivity within the project area. This would include convening a wildlife connectivity working group for the Palmdale to Burbank Project Section to advance the technical knowledge and science, and to support and seek joint funding options to address existing barriers and conflicts between wildlife and transportation infrastructure within the resource study area of the Palmdale to Burbank Project Section. (See BIO-MM#105, added to the Draft Mitigation Monitoring and Enforcement Plan and as noted in the Draft CEQA Findings of Fact and Statement of Overriding Considerations and in the Draft Record of Decision for the Palmdale to Burbank Project Section, all of which may be found on the Authority's website (https://hsr.ca.gov/about/board-of-directors/schedule/) in connection with the June 26-27, 2024 Board Meeting. In response to the suggestion of higher compensatory mitigation ratios, the Authority has concluded that its mitigation will avoid, minimize, and offset construction and operation impacts on special-status plants and animals, including those in

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				Bee Canyon such as spineflower, gnatcatcher, and mountain lion such that the impacts would be less than significant. Standard Response PB-Response-BIO-1 and the mitigation measures outlined in Section 3.7.8.2 of the Draft EIR/EIS describe that analysis. BIO-MM#53, in particular, requires the Authority to prepare and implement a Compensatory Mitigation Plan inclusive of all compensatory mitigation MMs and sets out details required to be in the compensatory mitigation plan. BIO-MM#53 indicates that where compensatory mitigation is identified as the preferred approach, mitigation ratios for federal and state-listed species and their habitat will ultimately be determined pursuant to regulatory authorizations issued under FESA and CESA if the Authority receives incidental take authority for such species. As discussed in Section 3.7 of the Final EIR/EIS, the compensatory mitigation proposed is sufficient to ensure that impacts to species and habitat would be less-than-significant.
8	Francisco Donez, Acting Manager, Environmental Review Section 2	U.S. Environmental Protection Agency	The commenter expressed appreciation for the collaborative approach taken by the Authority throughout the EIR/EIS process, especially related to refinements to project alternatives to minimize environmental and community impacts. The commenter commended the extensive community outreach and the robust set of impact avoidance and minimization features (IAMFs) and additional mitigation measures that were incorporated into the Final EIR/EIS to offset adverse effects on minority communities and low-income communities. The commenter also commended the	The Authority acknowledges the comment and appreciates the U.S. Environmental Protection Agency's efforts throughout the environmental review to provide input as part of the consultation process for this project.

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			Authority's work with respect to wildlife connectivity, and encouraged further coordination with wildlife agencies, Caltrans, and local agencies to further refine measures and commitments to maintain wildlife connectivity and movement throughout the project area.	
9	Stuart Waldman, President	Valley Industry & Commerce Association	The commenter expresses support for the Palmdale to Burbank Project Section, based on the careful consideration and mitigation of environmental impacts in the Final EIR/EIS and the significant economic benefits that would be generated by the project.	The Authority acknowledges the commenter's support for the project.
10	Jeremiah Owen, President	Acton Town Council	The commenter appreciated the manner in which their concerns about maintaining natural drainages was addressed and look forward to working with the Authority on implementing the mitigation measures included in the Final EIR/EIS The commenter expressed concerns about the possibility of the installation of traffic signals in their rural community. The commenter would rather see other measures such as restricting construction hours and the use of flaggers over installing traffic signals. The commenter appreciated the clarification regarding the source of water for construction purposes and ask that the Authority confirm that "water haulers" (local drinking water providers) would not be used as a source of water for construction.	The Authority acknowledges the commenter's comments and appreciates the commenter confirming that the clarifications provided in the Final EIR/EIS and selection of SR14A have, and would, address many of their concerns. The Authority understands the commenter's concerns about installing traffic signals in their rural community, and the Authority will consider that rural community character when deciding how to address construction traffic. The commenter's letter seems to assume that the traffic signals would be permanent, but it is the Authority's intention to remove temporary traffic signals installed to address construction traffic generated by spoils haul-trucks after the construction period is over. TR-MM#4 is one of many mitigation measures that were developed to reduce the effect of spoils hauling on local intersections. TR-MM#4 states that temporary traffic signals may be provided during construction to improve traffic flows at unsignalized intersections.

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			The commenter acknowledged that the selection of SR14A would avoid all their concerns regarding noise impacts in Acton. Finally, the commenter acknowledged that the section of SR14A would avoid their concerns about impacts to the historic Blum Ranch.	The traffic conditions at unsignalized intersections in Acton may not qualify for temporary traffic signals. In areas like Acton where use of temporary signals may not be appropriate from a land use/rural character perspective, the Authority will likely consider other measures, first. Consistent with the commenter's preferences stated in its letter, in rural areas, the Authority will consider employing flaggers, temporary intersection/roadway restriping, modifications to haul routes, and the development of detour routes. If the Authority installs a new traffic signal, it would do that within existing pavement or disturbed graded right-of-way and would involve only temporary, minor physical disturbance. For all these reasons, temporary signals would not likely interfere with Acton's rural character. The commenter proposes discussing options with the Authority. Indeed, as part of TR-MM#12, the construction contractor will coordinate with local agencies on the construction management plan (CMP). Regarding the use of "water haulers," the Authority has identified water districts that it expects to rely for construction water. On Final EIR/EIS page 3.6-43, Table 3.6-11 identifies the most likely water distributors and suppliers for the construction and operation of the Palmdale to Burbank Project Section. For the Central Subsection, which includes Acton, the Authority has identified three water districts as potential suppliers: Palmdale Water District, the Los Angeles County Waterworks Districts, and the Los Angeles Department of Water and Power. The commenter asked for confirmation

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				that the Authority would not rely on three particular local "water haulers." According to the analysis in the Final EIR/EIS, the Authority does not anticipate relying on the "water haulers" listed by the Town as sources of water for construction. The Authority acknowledges the commenter's support for the project and recognition of the work the Authority completed in responding to the commenter's concerns.
11	Arthur Sohikian, Executive Director	High Desert Corridor Joint Powers Agency	The commenter expresses support for the Palmdale to Burbank Project Section Final EIR/EIS and the Authority's efforts to mitigate the project's impacts.	The Authority acknowledges the commenter's support for the project.
12	Austin Bishop, Mayor	City of Palmdale	The commenter expresses support for the Palmdale to Burbank Project Section Final EIR/EIS and recommends the Authority move forward with project approval, based on the project's environmental, economic, and transportation connectivity benefits.	The Authority acknowledges the commenter's support for the project.
13	Kathryn Barger, Supervisor, Fifth District	County of Los Angeles	The commenter recognizes that the Authority has made meaningful improvements to the project to reduce impacts and improve benefits. The commenter also recognizes that some stakeholders are still concerned about construction-related and permanent impacts, and requests the Authority to continue to work with these stakeholders to minimize impacts.	The Authority acknowledges the commenter's recognition of the Authority's efforts to reduce project impacts, as well as the benefits of the project. Many of the mitigation requirements in the Final EIR/EIS require the Authority to continue to minimize impacts through refined design and working with stakeholders, specifically those mitigation measures related to impacts on private property and local communities (see SO-MM#1, SO-MM#2, and SO-MM#3).
14	Cameron Smyth, Mayor	City of Santa Clarita	The commenter in their comments on the Draft EIR/EIS requested the Authority evaluate	The Authority acknowledges the City's request for evaluation of an elevated viaduct alternative through

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			undergrounding the project through Bee Canyon. The commenter currently requests the Authority evaluate an elevated viaduct alternative through Bee Canyon. The commenter also disagrees with the Authority's determination that the CEMEX Soledad Canyon mining project is speculative and not a reasonably foreseeable project.	Bee Canyon. The Authority has determined that an elevated viaduct through Bee Canyon would not be feasible from an engineering perspective. This is because it is not feasible to raise the profile in Bee Canyon while avoiding surface impacts within ANF without substantially increasing the height of the proposed Santa Clara River or Agua Dulce viaducts and without lengthening the proposed construction schedule due to the additional length and complexity of the Santa Clara River viaduct, should an elevated viaduct be located within Bee Canyon. As explained in the Final EIR/EIS the Authority has reviewed the status of CEMEX, Inc.'s proposed Soledad Canyon mining project. CEMEX's holds contracts that would allow for the mining of 56 million tons of sand and gravel from Soledad Canyon. These contracts have been the subject of litigation over the last 25 years. In 2015, the BLM issued a letter to CEMEX noting the following, "BLM no longer believes that the old environmental analysis and record will be sufficient to support CEMEX in its efforts to obtain the remaining permits and authorizations," and that its contracts had been cancelled. In 2021, a U.S. District Court of Washington, D.C. overturned the BLM's decision, but did not make it clear as to the next steps and how and if the project would move forward. In May 2022, the U.S. District Court reinstated the BLM contracts that would allow mining production. Nevertheless, the mining project is running into other obstacles. In 2023, the State Water Resources Control Board decided to require new notice and comment for the mining project. In 2024, CEMEX

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				sued the State Water Resources Control Board. There continues to be substantial local opposition to the project moving forward and substantial permitting and environmental reviews remain to be completed and obtained. Given the long-standing controversy, uncertainty, and lack of permitting for the project, the Authority did not consider the project "reasonably foreseeable" at the time of preparation of this EIR/EIS and continues to believe the project is too speculative and undefined to allow meaningful analysis of potential cumulative effects. However, if the CEMEX project were considered reasonably foreseeable, the primary effects of its implementation would be habitat removal on the 460 acres site. As noted in the Authority's cumulative analysis (see Final EIR/EIS page 3.19-51) construction of one of the Build Alternatives, in combination with past, present, and reasonably foreseeable future development, could result in the further loss of biological and aquatic resources. This represents a significant cumulative impact. However, IAMFs and mitigation measures will be applied to avoid, minimize, and compensate for loss of biological and aquatic resources. The Authority, for instance, would establish non-disturbance zones for sensitive biological resources, restore habitat, and acquire habitat off site for restoration or enhancement, among other measures. With implementation of these IAMFs and mitigation measures, the project's contribution to this significant cumulative impact would not be cumulatively considerable. Therefore, CEQA does not require any mitigation to address cumulative

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				impacts. This conclusion would not change. In addition, the CEMEX project, if it were to proceed, would be subject to similar measures to reduce impacts to habitat as part of regulatory permits.
15	Monica Rodriguez, Councilwoman, 7th District	City of Los Angeles	The commenter raises concerns about mitigating impacts on commercial jobs, relief for existing residential uses within industrial zoning, community input for haul routes, and coordination between various projects affecting the Pacoima community.	The comment expresses a concern for businesses that would require relocation as a result of the project. Among the new measures identified in the Final EIR/EIS, the Authority has included a robust response to effects due to business relocations. The Authority recognizes that the project will cause adverse business displacements in Pacoima and Sun Valley. Table 5-5, footnote 4, in the Final EIR/EIS identifies the particular EJ census block groups with those effects. The Authority has incorporated several EJ-IAMFs (environmental justice impact avoidance and minimization features) that will reduce these effects. EJ-IAMF#2 Business Spotlighting will require the Authority's EJ Ombudsman and Contractor's EJ Liaison to provide assistance to those businesses to maintain visibility during construction, such as providing signage and targeted advertising and marketing campaigns, incentives for construction worker patronage (as applicable), and/or Authority-sponsored community events. The comment mentioned EJ-IAMF#1: Authority EJ Ombudsman and Contractor's EJ Liaison, which will require the Authority and the contractor to hold roundtables with EJ community members to obtain ideas for business spotlighting. Also, EJ-IAMF#4 EJ Business Relocation/Displacement Assistance will require the Authority to develop a relocation mitigation plan with a subsection dedicated to addressing adverse effects to businesses in the EJ communities. The

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				plan will include a description of measures to relocate displaced businesses in proximity to their same community. The Authority's EJ Ombudsman and Contractor's EJ Liaison will hold roundtables to consider the affected EJ communities' input on this plan as well. EJ-IAMF#5 will also benefit EJ communities by requiring the Contractor's EJ Liaison to distribute to EJ communities multilingual notices that estimate the operation commencement date. The notices will explain where and how EJ communities can access the HSR facilities (e.g., stations), so EJ community members could use them. These efforts will decrease the impacts on Pacoima and Sun Valley. **Construction Pre-Apprentice Training Program** Aside from the impacts on the businesses themselves, the comment expressed concern regarding impacts on the people employed at those businesses and suggested partnerships with building trades and apprenticeship opportunities. The commenter mentions the East San Fernando Valley Light Rail Project, which, she explained, provides a "training-to-employment program for construction and office jobs on the project itself." The Authority will also provide training and construction jobs on the HSR project. As part of the project, the Authority will develop a Construction Pre-Apprentice Training Program to provide pre-apprenticeship classes and hands-on construction training with a focus on assisting individuals whose jobs have been directly impacted by a business displacement within the Pacoima and

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				Sun Valley EJ communities. The program shall also include special recruitment and job set-aside programs for jobs created by the project to offset any impacts to jobs associated with business displacements within those EJ communities. The program(s) shall be developed with feedback, input and suggestions made by the Pacoima, Sun Valley, and Lake View Terrace EJ communities during community roundtables held by the EJ Ombudsman (EJ-IAMF#1). **Workforce Development and Economic Opportunities Plan** The Authority also adopted a new offsetting mitigation measure (EJ-OMM). Under EJ-OMM#1, the Authority shall implement a Workforce Development and Economic Opportunities Plan, administered through Los Angeles City College (LACC), in cooperation with the Building Trades Council, Plumbers, Cement Masons, Iron Workers, Teamsters, Sheet Metals Workers, Pipefitters, Electricians and Operating Engineers Building Trades Unions. Further, the Authority shall periodically distribute an updated Jobs Fact Sheet and provide press releases that report construction job creation milestones resulting from dispatching workers to build the high-speed rail system. This Jobs Fact Sheet will include the most recent information regarding the National Targeted Hiring Initiative and the total number of disadvantaged workers.

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				Community Benefits Agreement The Authority will also implement a Community Benefits Agreement and other programs to help displaced workers in environmental justice communities. As discussed in Section 3.18.6.3, in Section 3.18, Regional Growth, of the Draft EIR/EIS, the Authority will use a Community Benefits Agreement to establish a cooperative partnership and commitment between the Authority, its contractors, and unions. See California High-Speed Rail Authority, Community Benefits Agreement website at: https://hsr.ca.gov/business-opportunities/general-info/community-benefits-agreement/. The aim of the Community Benefits Agreements is to facilitate efficient and timely execution of this project while promoting employment opportunities and careers in the construction industry during construction of the project, and to remove potential barriers small businesses may encounter in participating in the project. The Community Benefits Agreement will be implemented in accordance with Federal Railroad Administration guidance and in compliance with federal and state laws and governing regulations, including Title 49 Code of Federal Regulations (CFR) Part 26 “US Department of Transportation DBE Program" and Title VI of the Civil Rights Act of 1964 and related statutes. The Community Benefits Agreement is designed to assist small businesses and employment seekers in finding or obtaining construction contracts, jobs, and training opportunities for residents who reside in

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				economically disadvantaged areas or extremely economically disadvantaged areas, which includes those designated as National Targeted Workers and Disadvantaged Workers (as defined in Article 1 of the Agreement). National Targeted Worker is defined as an individual whose primary place of residence is within an Economically Disadvantaged Area or an Extremely Economically Disadvantaged Area in the United States; or (b) a Disadvantaged Worker. A Disadvantaged Worker is defined as an individual who, prior to commencing work on the project, resides in an Economically Disadvantaged Area or Extremely Economically Disadvantaged Area and faces at least one of the following barriers to employment: (1) being a veteran; (2) being homeless; (3) being a custodial single parent; (4) receiving public assistance; (5) lacking a GED or high school diploma; (6) having a criminal record or other involvement with the criminal justice system; (7) suffering from chronic unemployment; (8) emancipated from the foster care system; and/or (9) being an apprentice with less than 15% of the apprenticeship hours required to graduate to journey level in an approved apprenticeship program. Article 1 of the Agreement defines "economically disadvantaged area" as "a zip code that includes a census tract or portion thereof in which the median annual household income is between $32,000 and $40,000 per year," and "extremely economically disadvantaged areas" as “zip codes that include a census tract or portion thereof in which the median annual household income is less than $32,000 per year.” Thus, the Community Benefits Agreement extends to low-income populations.

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				As described in Article 7 of the Community Benefits Agreement, local unions with geographic jurisdiction over the work to be performed for the project will make every effort to recruit National Targeted Workers and to refer and utilize National Targeted Workers on the project. In recognition of the Authority's policy to utilize National Targeted Workers, the Unions and Contractor/Subcontractor/Employers (C/S/E) agree that as long as they possess the requisite skills and qualifications, National Targeted Workers shall be first referred for project work, including journey persons and apprentices, and are responsible for ensuring the following Targeted Hiring Requirements are met: (1) a minimum of 30% of all hours of project work shall be performed by National Targeted Workers; and (2) a minimum of 10% of all National Targeted Worker hours shall be performed by Disadvantaged Workers. The C/S/E(s) shall submit written documentation to the Authority on a quarterly basis, or as required by the Authority, which sets forth the steps taken by the C/S/E(s) to recruit, refer, and utilize qualified National Targeted Workers recruited by the Unions and referred to or utilized on the project. The Authority concluded that these programs would reduce or offset any potential disproportionately high and adverse effects on environmental justice communities. To be clear, the Authority does not see its work as complete, but sees these as future commitments.

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				Regarding noise near the Montague portal, the comment notes that some sensitive receivers will be as near as 78 feet during construction, and some residences will be as near as 100 feet during construction. The Final EIR/EIS concluded that no adverse construction noise impacts would occur on sensitive receptors in Pacoima See page 3.4-145 of the Final EIR/EIS, which states the SR14A Build Alternative (the Preferred Alternative and the Selected Alternative) would not cause severe construction noise impacts from spoils hauling. Nevertheless, the Authority will implement NV-IAMF#1 and N&V-MM#1. The comment suggests that the project would require complaints to initiate noise monitoring. Those measures, however, require more proactive measures. Because specific equipment, methods, and duration of construction activities cannot be fully defined in the EIR/EIS stage of the project, NV-IAMF#1 requires the Authority's construction contractor to prepare a noise technical memorandum documenting how the FTA and FRA guidelines for minimizing construction noise impacts will be employed when work is being conducted within 1,000 feet of sensitive receivers, such as schools. Although NV-IAMF#1 would reduce construction noise, ambient noise levels in the project vicinity would temporarily, or periodically, substantially increase above levels existing without the project. Mitigation Measure N&V-MM#1 (discussed in Section 3.4.7 of this Final EIR/EIS) will require the Authority's construction contractor to prepare a noise monitoring program describing how

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				the contractor will monitor construction noise to verify compliance with the noise limits. Using these methods, the Authority expects that the construction noise near Montague and Bromwich Streets would not cause adverse impacts. The comment also suggests that the construction noise could be so severe that it could make some properties near Montague and Bromwich Streets eligible for Uniform Relocation Assistance and Real Property Acquisition Policies Act (URA) process. However, because construction noise would not cause a significant impact, it is not likely that act could apply. The comment asks the Authority to consult with neighbors to develop haul route plans in Sun Valley and Pacoima. EJ-MM#1 responds to this request. The Authority's contractor will be required to submit its proposed and draft construction Noise Monitoring Program (required by N&V-MM#1) to the Authority and the Authority's EJ ombudsman (as this position is defined in EJ-IAMF#1). Upon the Authority and the Authority's EJ ombudsman's approval, the Authority's contractor will be required to ensure the draft Noise Monitoring Program (Program) is posted on the Authority's website. The posted, draft Program shall include all the Contractor's proposed construction noise mitigations and its proposed noise monitoring program and shall be provided for community review and input in advance of construction start for community comment. The draft Program shall be posted no later than the advance period determined by the Authority's EJ

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				ombudsman. EJ-MM#1 describes in more detail these measures. In this way, the Authority will provide early opportunities for EJ communities to provide input for the Authority's consideration. The comment requests additional consultation with neighbors for beautification of the area around Portal 9 for its effects once the train is operational. The Authority designed OMM#2 for that purpose. The Contractor's EJ liaison shall work with the Authority EJ ombudsman, in neighborhoods identified in Table 2-1 of Appendix 5-B and Table 5-25 of Chapter 5, Environmental Justice, of the Final EIR/EIS to hold community roundtables to seek input on locally desired pedestrian connectivity enhancements. Feasible enhancements shall be considered by the Authority (e.g., sidewalk continuity improvements, tree planting, bulb-outs/corner extensions, high visibility crosswalks, reflective/high visibility stop signs, lighting, decorative crosswalks, or pedestrian crosswalk motion sensors) for implementation and incorporated into project plans. It intends a robust dialogue with members of those communities to design an appropriate strategy for maximizing the benefits consistent with the community members' visions for their neighborhoods. The comment recognizes these efforts and asks for a community advisory committee and for "consulting with the community on a regular schedule." Although CEQA requirements for public notice were met and exceeded for the Draft EIR/EIS, the Authority will continue to explore opportunities for

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				additional outreach in the future. The Authority expects that these measures will provide sufficient community input during project implementation. The portions of Little Tujunga Canyon Road that would be utilized are paved and sufficient to carry typical construction vehicles and activity. TR-IAMF#1 requires the protection of public roadways during construction. This IAMF describes the Authority's commitment to returning public roadways to the equivalent of their original pre-HSR construction structural condition or better. Prior to construction, the Contractor shall provide a photographic survey documenting the condition of the public roadways along truck routes providing access to the project site. The photographic survey shall be submitted for approval to the agency responsible for road maintenance, and the Authority and the Contractor shall be responsible for the repair of structural damage to public roadways caused by HSR construction or construction access, returning damaged sections to the equivalent of their original pre-HSR construction structural condition or better.
16	Arthur Calloway	Antelope Valley Black Chamber of Commerce	The commenter expresses support for the Palmdale to Burbank Project Section due to the project benefits of increased connectivity, economic opportunities, and environmental and safety improvements.	The Authority acknowledges the commenter's support for the project.
17	Mark Pestrella	Los Angeles County Department of Public Works	The commenter raised concerns with a number of items related to crossing the Hansen Spreading grounds and project effect on flood control facilities.	The items raised by the commenter do not raise any new issues. Details related to crossing the Hansen Spreading grounds, mitigation for impacts to the capacity and function of the spreading grounds and mitigation for impacts to regulated floodways have

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				been addressed in the Final EIR/EIS. The Authority determined that with the incorporation of HWR-MM#2, HWR-MM#3 and HWR-MM#4, impacts to the Hansen Spreading grounds and regulated floodways would be less than significant. The Authority will continue to work with the Los Angeles County Department of Public Works during the detailed design phase. For additional discussion regarding impacts related to the crossing of the Hansen Spreading grounds and regulated floodways as well as the associated mitigation measures, please refer Standard Response PB-Response-HYD-1: Impacts on the Hansen Dam and Hansen Spreading Grounds and Section 3.8.6, Environmental Consequences and Section 3.8.7, Mitigation Measures of the Final EIR/EIS.
18	Spencer MacNeil	U.S Army Corp of Engineers (USACOE)	The commenter raises concerns about the Authority's methodology in analyzing permanent adverse effects at major water crossings, specifically referring to the Santa Clara River as well as how the approach used by the Authority would affect the permits and level of NEPA documentation required by USACE.	In regard to the commenter's concerns about the Authority's methodology for determining permanent adverse effects, the Authority's approach to impact analysis is based on a methodology used across project sections. Impacts are based on the project footprint which is the area that includes all project components and rights-of-way needed to construct and operate the Palmdale to Burbank Project Section. The Palmdale to Burbank Build Alternative footprint components include the proposed California HSR System rights-of-way and associated facilities, such as train signaling and communication facilities, intrusion protection barriers, traction power substations, wildlife crossings, and switching and paralleling stations.

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				For the Palmdale to Burbank project, areas that would be used during construction but then restored once construction is complete, were also considered areas of permanent impact because they would be occupied for multiple years before they could be restored. This was disclosed in the Authority's Checkpoint C document on page 2-91 as follows: "Temporary impacts are impacts on habitat that will last fewer than 2 years. The Authority estimates that all identified impacts would last longer than 2 years; therefore, temporary impacts have not been included in the impact analysis." Instead, these impacts are considered permanent. A Resource Study Area (RSA) was identified for each resource in order to study the relevant geographic boundaries associated with that resource's characteristics. For analysis of impacts to aquatic resources, an Aquatic RSA is developed which consists of the Build Alternative footprint plus a 250-foot buffer around the Build Alternative footprint to evaluate impacts on aquatic resources (including wetlands) and vernal pools. The Authority's approach to calculating impacts is based on the Build Alternative footprint as defined by the Authority's methodology and explained above. Impacts to aquatic resources were based on the Aquatic RSA as described above. At locations such as the Santa Clara River crossing for the SR14A Build Alternative (Preferred Alternative), this approach provides a consistent, yet conservative estimate of project impacts, and allows comparison

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				between Build Alternatives. The Authority's approach to impact calculations does not take into account detailed engineering designs, such as bridge design across water courses (e.g. span length, pier locations, etc). This is because the Preliminary Engineering for Project Definition (PEPD) is considered "preliminary" and used to define the project in terms of feasibility, cost and footprint. This approach does not preclude any opportunity for avoidance and minimization of the direct effects on the physical and biological characteristics of the aquatic system that is required as part of the Section 404 and 408 permitting processes, as supported by the appropriate environmental document tiered to the Palmdale to Burbank Final EIS. The PEPD is required to develop a complete project definition for environmental impact assessment and design of impact mitigation measures, support for federal and state regulatory processes coordinated under CEQA and NEPA, assessment of utility relocation and extension, collaboration with agencies and other stakeholders over HSR and consequential actions, initiation of right-of-way acquisition, and provide a more detailed construction cost estimate. Because the PEPD is preliminary, it is not used by the Authority for the basis of permit applications such as obtaining a 404 permit from the USACOE. The Authority did develop additional detail regarding the Santa Clara River crossing but did not use this design to calculate areas of impact to any species or

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				habitat. The additional design detail was developed to evaluate the feasibility of crossing the Santa Clara River and avoiding impact to unarmored three-spine stickleback (UTS), which is a fully protected state-listed species. The Authority's preliminary engineering analysis determined that bridge supports could be located outside the wetted channel of the river, that scour methods and design appear feasible, and construction methods exist and could be applied to avoid impacts to UTS. However, this engineering analysis was still preliminary and did not result in a specific bridge design for which impacts to aquatic resources could be calculated with assurance they would be accurate, and therefore was not used to quantify impacts in the EIR/EIS. The Authority's process following completion of CEQA/NEPA is to begin detailed engineering development. The Authority's practice is to seek regulatory permits, such as a 404 permit once the PS&E is developed to the 60% design level. At the 60% design level, sufficient detail will be available to more precisely calculate impacts for which a permit can be issued. The Palmdale to Burbank project section is not currently funded for detailed design and therefore the Authority is not able to predict when a 404 application will be submitted to the USACOE.

Note: The Authority received verbal comments at the June 26, 2024, Board Meeting on the Palmdale to Burbank Project Section. A review of those verbal comments indicated that all comments addressed issues that were either already fully addressed in the Final EIR/EIS Volume 1 analysis or Volume 4, Responses to Comments, were not related to NEPA or CEQA adequacy, or were otherwise speculative in nature and lacked substantial evidentiary support.

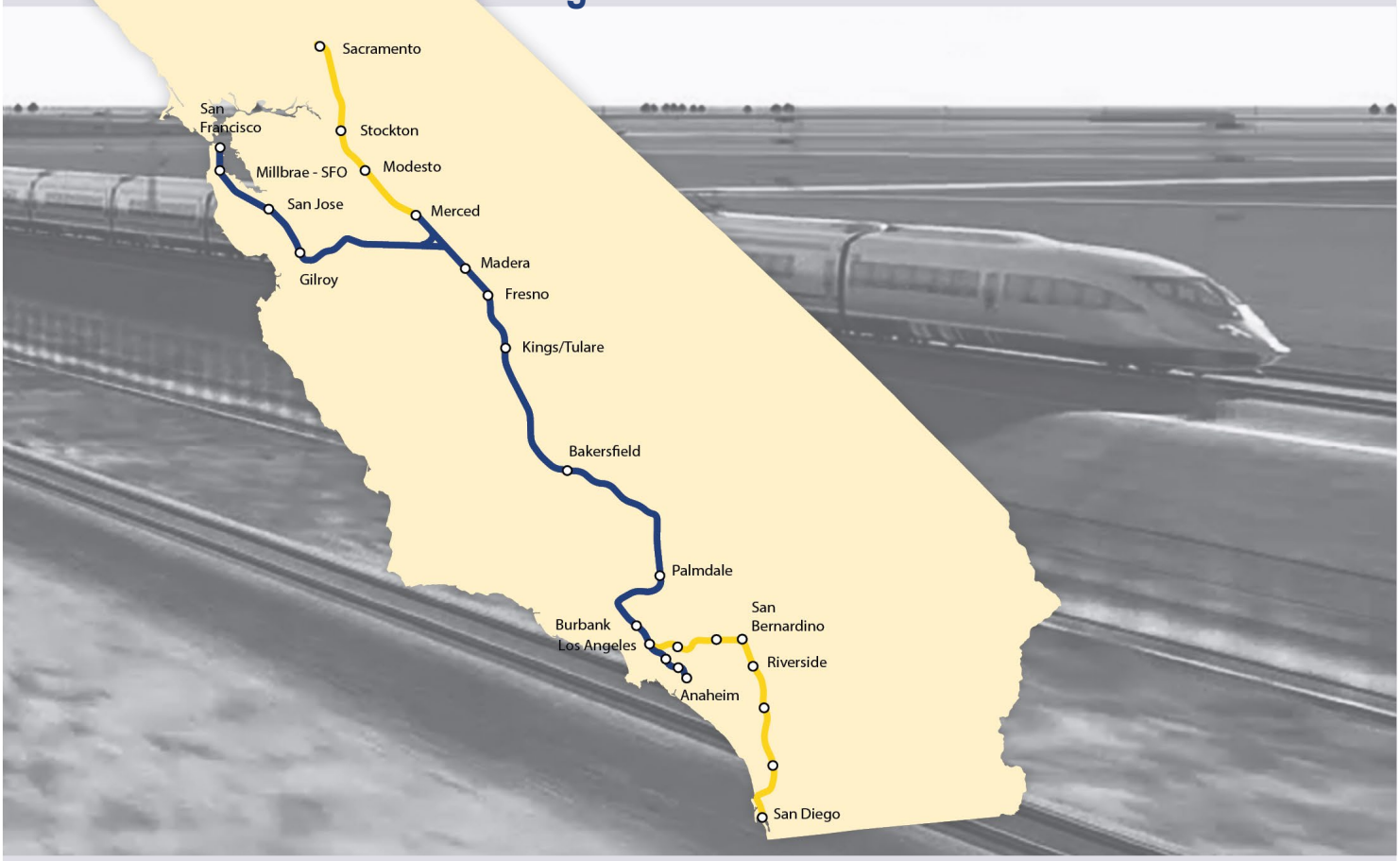
California High-Speed Rail Authority

Palmdale to Burbank Project Section

Final Environmental Impact Report/ Environmental Impact Statement

Errata

August 2024



CALIFORNIA High-Speed Rail Authority

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being or have been carried out by the State of California pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated July 23, 2019 (renewed July 22, 2024), and executed by the Federal Railroad Administration and the State of California.

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Table 1, Errata in the Final EIR/EIS
Attachment A, Table S-6

ACRONYMS AND ABBREVIATIONS

CEQA	California Environmental Quality Act
EIR	environmental impact report
EIS	environmental impact statement
HSR	high-speed rail
IAMF	impact avoidance and minimization feature
NEPA	National Environmental Policy Act

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ERRATA SHEET FOR THE PALMDALE TO BURBANK PROJECT SECTION FINAL EIR/EIS

The following items are clarified and/or corrected (note revised text in underline and strikethrough). Clarifications and corrections requiring underline and strikethrough text are indicated with a vertical line in the margin of this errata document. The Authority considered these clarifications/corrections, and has determined that no clarifications and/or corrections in Table 1 would require supplementation/recirculation of the Final EIR/EIS because nothing individually, and not all of these changes together, qualify as a substantial change to the proposed action that are relevant to environmental concerns or significant new circumstances or information.

* *Italics*: Italics are used in the table below to describe text in the Final EIR/EIS that is not able to be included as verbatim language, such as content within tables.

Table 1 Errata in the Final EIR/EIS

No.	Reference	Published Final EIR/EIS Text	Clarification of or Correction to Final EIR/EIS	Reason for Clarification or Correction
1	Global (Executive Summary Table S-3, Page S-32; Chapter 5, Environmental Justice Page 5-127)	EJ-IAMF#5: EJ Community Post-Construction Transition to Operation	**Correction**: EJ-IAMF#5: EJ Community Post-Construction ~~Transition to Operation~~ Communication	Correction to the title of EJ-IAMF#5.

No.	Reference	Published Final EIR/EIS Text	Clarification of or Correction to Final EIR/EIS	Reason for Clarification or Correction
2	Executive Summary Table S-5, Page S-66	Page S-66: Impacts BIO#1 through BIO#7 Mitigation Measures: BIO-MM#1, BIO-MM#2, BIO-MM#3, BIO-MM#4, BIO-MM#5, BIO-MM#6, BIO-MM#7, BIO-MM#8, BIO-MM#14, BIO-MM#15, BIO-MM#16, BIO-MM#17, BIO-MM#18, BIO-MM#20, BIO-MM#21, BIO-MM#25, BIO-MM#26, BIO-MM#27, BIO-MM#28, BIO-MM#29, BIO-MM#32, BIO-MM#33, BIO-MM#34, BIO-MM#36, BIO-MM#38, BIO-MM#39, BIO-MM#43, BIO-MM#44, BIO-MM#46, BIO-MM#47, BIO-MM#50, BIO-MM#52, BIO-MM#53, BIO-MM#54, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#60, BIO-MM#61, BIO-MM#62, BIO-MM#63, BIO-MM#65, BIO-MM#66, BIO-MM#67, BIO MM#68, BIO-MM#69, BIO-MM#70, BIO-MM#71, BIO-MM#72, BIO-MM#73, BIO-MM#74 BIO-MM#76, BIO-MM#78, BIO-MM#79, BIO-MM#80, BIO-MM#81, BIO-MM#82, BIO-MM#84, BIO-MM#85, BIO-MM#86, BIO-MM#87, BIO-MM#88, BIO-MM#89, BIO-MM#90, BIO-MM#91, BIO-MM#92, BIO-MM#93, BIO-MM#94, BIO-MM#95, BIO-MM#96, BIO-MM#97, BIO-MM#98, BIO-MM#99, BIO-MM#100, BIO-MM#101, BIO-MM#102, BIO-MM#103, and BIO-MM#104	**Correction**: The following text edit was made: Mitigation Measures: BIO-MM#1, BIO-MM#2, BIO-MM#3, BIO-MM#4, BIO-MM#5, BIO-MM#6, BIO-MM#7, BIO-MM#8, BIO-MM#14, BIO-MM#15, BIO-MM#16, BIO-MM#17, BIO-MM#18, BIO-MM#20, BIO-MM#21, BIO-MM#25, BIO-MM#26, BIO-MM#27, BIO-MM#28, BIO-MM#29, BIO-MM#32, BIO-MM#33, BIO-MM#34, BIO-MM#36, BIO-MM#38, BIO-MM#39, BIO-MM#43, BIO-MM#44, BIO-MM#46, BIO-MM#47, BIO-MM#50, BIO-MM#52, BIO-MM#53, BIO-MM#54, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#60, BIO-MM#61, BIO-MM#62, BIO-MM#63, BIO-MM#65, BIO-MM#66, BIO-MM#67, BIO MM#68, BIO-MM#69, BIO-MM#70, BIO-MM#71, BIO-MM#72, BIO-MM#73, BIO-MM#74 BIO-MM#76, BIO-MM#78, BIO-MM#79, BIO-MM#80, BIO-MM#81, BIO-MM#82, BIO-MM#84, BIO-MM#85, BIO-MM#86, BIO-MM#87, BIO-MM#88, BIO-MM#89, BIO-MM#90, ~~BIO-MM#91,~~ BIO-MM#92, BIO-MM#93, BIO-MM#94, BIO-MM#95, BIO-MM#96, BIO-MM#97, BIO-MM#98, BIO-MM#99, BIO-MM#100, BIO-MM#101, BIO-MM#102, BIO-MM#103, and BIO-MM#104	Correction to remove BIO-MM#91 from the list of relevant mitigation measures for Impacts BIO#1 through BIO#7, as this mitigation measure does not apply to these impacts. This change is consistent with Section 3.7, Biological and Aquatic Resources.

No.	Reference	Published Final EIR/EIS Text	Clarification of or Correction to Final EIR/EIS	Reason for Clarification or Correction
3	Executive Summary Table S-5, Page S-66	Page S-66: Impact BIO#14 Mitigation Measures: BIO-MM#1, BIO-MM#2, BIO-MM#3, BIO-MM#4, BIO-MM#5, BIO-MM#6, BIO-MM#7, BIO-MM#8, BIO-MM#14, BIO-MM#15, BIO-MM#16, BIO-MM#17, BIO-MM#18, BIO-MM#20, BIO-MM#21, BIO-MM#25, BIO-MM#26, BIO-MM#27, BIO-MM#28, BIO-MM#29, BIO-MM#32, BIO-MM#33, BIO-MM#34, BIO-MM#36, BIO-MM#38, BIO-MM#39, BIO-MM#43, BIO-MM#44, BIO-MM#46, BIO-MM#47, BIO-MM#50, BIO-MM#52, BIO-MM#53, BIO-MM#54, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#60, BIO-MM#61, BIO-MM#62, BIO-MM#63, BIO-MM#65, BIO-MM#66, BIO-MM#67, BIO MM#68, BIO-MM#69, BIO-MM#70, BIO-MM#71, BIO-MM#72, BIO-MM#73, BIO-MM#74 BIO-MM#76, BIO-MM#78, BIO-MM#79, BIO-MM#80, BIO-MM#81, BIO-MM#82, BIO-MM#84, BIO-MM#85, BIO-MM#86, BIO-MM#87, BIO-MM#88, BIO-MM#89, BIO-MM#90, BIO-MM#91, BIO-MM#92, BIO-MM#93, BIO-MM#94, BIO-MM#95, BIO-MM#96, BIO-MM#97, BIO-MM#98, BIO-MM#99, BIO-MM#100, BIO-MM#101, BIO-MM#102, BIO-MM#103, and BIO-MM#104	**Correction**: The following text edit was made: Mitigation Measures: BIO-MM#1, BIO-MM#2, BIO-MM#3, BIO-MM#4, BIO-MM#5, BIO-MM#6, BIO-MM#7, BIO-MM#8, BIO-MM#14, BIO-MM#15, BIO-MM#16, BIO-MM#17, BIO-MM#18, BIO-MM#20, BIO-MM#21, BIO-MM#25, BIO-MM#26, BIO-MM#27, BIO-MM#28, BIO-MM#29, BIO-MM#32, BIO-MM#33, BIO-MM#34, BIO-MM#36, BIO-MM#38, BIO-MM#39, BIO-MM#43, BIO-MM#44, BIO-MM#46, BIO-MM#47, BIO-MM#50, BIO-MM#52, BIO-MM#53, BIO-MM#54, BIO-MM#55, ~~BIO-MM#56, BIO-MM#58,~~ BIO-MM#60, BIO-MM#61, BIO-MM#62, BIO-MM#63, BIO-MM#65, BIO-MM#66, BIO-MM#67, BIO MM#68, BIO-MM#69, BIO-MM#70, BIO-MM#71, BIO-MM#72, BIO-MM#73, BIO-MM#74 BIO-MM#76, BIO-MM#78, BIO-MM#79, BIO-MM#80, BIO-MM#81, BIO-MM#82, BIO-MM#84, BIO-MM#85, BIO-MM#86, BIO-MM#87, BIO-MM#88, BIO-MM#89, BIO-MM#90, ~~BIO-MM#91,~~ BIO-MM#92, BIO-MM#93, BIO-MM#94, BIO-MM#95, BIO-MM#96, BIO-MM#97, BIO-MM#98, BIO-MM#99, BIO-MM#100, BIO-MM#101, BIO-MM#102, BIO-MM#103, and BIO-MM#104	Correction to remove BIO-MM#56, BIO-MM#58, and BIO-MM#91 from the list of relevant mitigation measures for Impact BIO#14, as these mitigation measures do not apply to this impact. This change is consistent with Section 3.7, Biological and Aquatic Resources.
4	Executive Summary Table S-5, Page S-68	Page S-68: Impact BIO#13 Mitigation Measures: BIO-MM#6, BIO-MM#36, BIO-MM#37, BIO-MM#58, BIO-MM#60, BIO-MM#64, BIO-MM#77, BIO-MM#78, and BIO-MM#83	**Correction**: The following text edit was made: Mitigation Measures: BIO-MM#6, BIO-MM#36, BIO-MM#37, BIO-MM#58, BIO-MM#60, BIO-MM#64, BIO-MM#77, BIO-MM#78, ~~and~~ BIO-MM#83, and BIO-MM#101	Correction to add BIO-MM#101 to the list of relevant mitigation measures for Impact BIO#13 in Executive Summary, as detailed in Section 3.7, Biological and Aquatic Resources.

No.	Reference	Published Final EIR/EIS Text	Clarification of or Correction to Final EIR/EIS	Reason for Clarification or Correction
5	Executive Summary Table S-5, Page S-69	Page S-69: Impact HWR#3 Mitigation Measure: HWR-MM#2: The Authority will implement the following measures to reduce flood hazards: • Restore floodplains disturbed by construction activities by grading to pre-construction topography and revegetation. • Avoid placement of facilities in the floodplain or raise the ground with fill above the base flood elevation. • Use construction methods and facilities to minimize potential encroachments onto surface water resources.	**Correction**: The following text edit was made: Mitigation Measure: HWR-MM#2: The Authority will implement the following measures to reduce flood hazards: • Restore floodplains disturbed by construction activities by grading to pre-construction topography and revegetation. • Avoid placement of facilities in the floodplain or raise the ground with fill above the base flood elevation. • Use construction methods and facilities to minimize potential encroachments onto surface water resources. HWR-MM#3: New groundwater recharge areas would be constructed, or the Authority would implement other equally effective measures to ensure there is no net loss in recharge area capacity.	Correction to add HWR-MM#3 to the mitigation measures relevant to Impact HWR#3 in Executive Summary, as detailed in Section 3.8, Hydrology and Water Resources.
6	Executive Summary Table S-6, Pages S-91 and S-92	**Table S-6 in some electronic copies of the Final EIR/EIS Executive Summary presented incorrect capital cost information for the Palmdale to Burbank Project Section Build Alternatives.*	**Clarification:** **Please see Attachment A for the correct capital cost information for the Palmdale to Burbank Project Section Build Alternatives.*	Table correction.
7	Section 3.7, Biological and Aquatic Resources Page 3.7-16	Compliance with the SWRCB Procedures for the project would be achieved through adherence to the provisions set forth in a Memorandum of Understanding between the SWRCB and the Authority (dated January 19, 2017, and amended March 11, 2019) or through other means agreed on by both parties.	**Correction**: The following text edit was made: Compliance with the SWRCB Procedures for the project would be achieved through adherence to the provisions set forth in a Memorandum of Understanding between the SWRCB and the Authority (dated January 19, 2017, and ~~amended March 11, 2019~~renewed on March 26, 2024) or through other means agreed on by both parties.	Clarification to reflect the recent renewal of the Memorandum of Understanding.

No.	Reference	Published Final EIR/EIS Text	Clarification of or Correction to Final EIR/EIS	Reason for Clarification or Correction
8	Section 3.7, Biological and Aquatic Resources Table 3.7-38, Page 3.7-316	Page 3.7-316: Impact BIO#5 Mitigation Measures: BIO-MM#3, BIO-MM#4, BIO-MM#5, BIO-MM#6, BIO-MM#39, BIO-MM#47, BIO-MM#50, BIO-MM#53, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#60, BIO-MM#61, BIO-MM#63, BIO-MM#94, BIO-MM#95	**Correction**: The following text edit was made: Mitigation Measures: BIO-MM#3, BIO-MM#4, BIO-MM#5, BIO-MM#6, BIO-MM#39, BIO-MM#47, BIO-MM#50, BIO-MM#53, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#60, BIO-MM#61, BIO-MM#63, BIO-MM#94, BIO-MM#95, BIO-MM#103	Correction to add BIO-MM#103 to the list of relevant mitigation measures for Impact BIO#5 in Table 3.7-38. This change is consistent with the analysis presented for Impact BIO#5 in Section 3.7.6, Environmental Consequences.

No.	Reference	Published Final EIR/EIS Text	Clarification of or Correction to Final EIR/EIS	Reason for Clarification or Correction
9	Section 3.7, Biological and Aquatic Resources Page 3.7-239	BIO-MM#15: Conduct Preconstruction Surveys and Monitoring for Non-Special-Status Raptors If construction or other vegetation removal activities are scheduled to occur during the breeding season for non-special-status raptors (January 1 to September 1), no more than 14 days before the start of the activities, the Project Biologist shall conduct preconstruction surveys for non-special-status nesting raptors in areas where suitable habitat is present. Specifically, such surveys will be conducted in habitat areas within the construction footprint and, where access is available, within 500 feet of the boundary of the construction footprint. If non-special-status breeding raptors with active nests are found, the Project Biologist will delineate a 500-foot buffer around the nest, to be maintained until the young have fledged from the nest and are no longer reliant on the nest or parental care for survival or until such time as the Project Biologist determines that the nest has been abandoned. A vertical buffer of no less than 500 feet shall also be maintained for any aerial (helicopter or drone) activities to be undertaken. Nest buffers may be adjusted if the Project Biologist determines that smaller buffers would be sufficient to avoid impacts on non-special-status nesting raptors.	BIO-MM#15: Conduct Preconstruction Surveys and Monitoring for ~~Non-Special-Status~~ Raptors If construction or other vegetation removal activities are scheduled to occur during the breeding season for ~~non-special-status~~ raptors <u>(special-status or non special-status)</u> (January 1 to September 1), no more than 14 days before the start of the activities, the Project Biologist shall conduct preconstruction surveys for ~~non-special-status~~ nesting raptors in areas where suitable habitat is present. Specifically, such surveys will be conducted in habitat areas within the construction footprint and, where access is available, within 500 feet of the boundary of the construction footprint. If ~~non-special-status~~ breeding raptors with active nests are found, the Project Biologist will delineate a 500-foot buffer around the nest, to be maintained until the young have fledged from the nest and are no longer reliant on the nest or parental care for survival or until such time as the Project Biologist determines that the nest has been abandoned. A vertical buffer of no less than 500 feet shall also be maintained for any aerial (helicopter or drone) activities to be undertaken. Nest buffers may be adjusted if the Project Biologist determines that smaller buffers would be sufficient to avoid impacts on ~~non-special-status~~ nesting raptors.	Correction to BIO-MM#15 and its applicability to both special-status and non-special status raptors.
	Page 3.7-249	BIO-MM#15: Conduct Preconstruction Surveys and Monitoring for Non-Special-Status Raptors	BIO-MM#15: Conduct Preconstruction Surveys and Monitoring for ~~Non-Special-Status~~ Raptors	
	Page 3.7-285	BIO-MM#15: Conduct Preconstruction Surveys and Monitoring for Non-Special-Status Raptors	BIO-MM#15: Conduct Preconstruction Surveys and Monitoring for ~~Non-Special-Status~~ Raptors	

No.	Reference	Published Final EIR/EIS Text	Clarification of or Correction to Final EIR/EIS	Reason for Clarification or Correction
10	Section 3.12, Socioeconomics and Communities Pages 3.12-102 and 3.12-103	Each Build Alternative would permanently divide the community of Harold within the city of Palmdale to the south of Lake Palmdale.	**Clarification:** ~~Each Build Alternative~~ The Refined SR 14, E1, and E2 Build Alternatives would permanently divide the community of Harold within the city of Palmdale to the south of Lake Palmdale.	Clarification regarding the impacts of the Build Alternatives near Lake Palmdale.
11	Global Chapter 3.17, Cultural Resources Page 3.17-93	The Authority has made a finding of no adverse effect on the Prehistoric Vasquez Rocks Archaeological District (P-19-003890) because the SR14A Build Alternative design is expected to avoid disturbance of known archaeological deposits that would diminish the integrity of the district.	**Clarification:** The Authority has made a preliminary finding of no adverse effect on the Prehistoric Vasquez Rocks Archaeological District (P-19-003890) because the SR14A Build Alternative design is expected to avoid disturbance of known archaeological deposits that would diminish the integrity of the district. However, because access to site P-19-003890 was not granted, the State Historic Preservation Officer concurred that determination of effects will be phased as access is granted and the project design advances.	Clarification that the preliminary no adverse effect finding is contingent upon access and evaluation of effects after design advances.
	Chapter 4, Section 4(f) and Section 6(f) Evaluations Page 4-111	Therefore, a Section 4(f) use of Site 19-003890 would occur with implementation of the Refined SR14 and SR14A Build Alternatives and would be de minimis.		
	Chapter 4, Section 4(f) and Section 6(f) Evaluations Page 4-112	This resource would not experience an adverse effect under Section 106, and the protected features or attributes of the resource would not be diminished. Construction activities of the Refined SR14 and SR14A Build Alternatives would result in a physical effect to the property; however, effects would be mitigated and would not substantially impair the protected features or attributes of the resource. Therefore, the Authority has concluded that with implementation of the Refined SR14 and SR14A Build Alternatives, impacts on this resource would be de minimis.		

No.	Reference	Published Final EIR/EIS Text	Clarification of or Correction to Final EIR/EIS	Reason for Clarification or Correction
12	Chapter 4, Section 4(f) and Section 6(f) Table 4-10	**Table 4-10 identifies Prehistoric Vasquez Rocks Archaeological Districts as being affected by the Build Alternatives and does not include the Palmdale Ditch as a historic resource affected by SR14A and Refined SR14.*	**Table 4-10 was updated to remove Prehistoric Vasquez Rocks Archaeological Districts as being affected by the six Build Alternatives, and to add Palmdale Ditch as a historic resource affected by SR14A and Refined SR14.*	Revisions to Table 4-10 for accuracy.
13	Chapter 7, Other CEQA/NEPA Considerations Table 7-1, Pages 7-1 and 7-3	Transportation Transportation Transportation *Indicates a significant and unavoidable impact at the project and cumulative conditions.	**Correction**: The following text edit was made: Transportation** Transportation** Transportation** *Indicates a significant and unavoidable impact at the project and cumulative conditions. **While transportation impacts from spoils hauling would not result in a significant impact under CEQA, they would result in an adverse effect at the project and cumulative conditions under NEPA.	Clarification regarding the impact of spoils hauling under CEQA and NEPA. This clarification is not a change in impact conclusions.
14	Volume 2, Table of Contents Page ii	Appendix 9-A, Consultation with Authorities with Jurisdiction	**Correction**: Appendix 9-A, ~~Consultation with Authorities with Jurisdiction~~ Concurrence and Agreement Letters	Correction to the title of Appendix 9-A in the Volume 2 Table of Contents.
15	Volume 2, Appendix 2-E Page 2-E-4	**AQ-IAMF#4: Reduce Criteria Exhaust Emissions from Construction Equipment** Prior to issuance of construction contracts, the Authority will incorporate the following construction equipment exhaust emissions requirements into the contract specifications: • All heavy-duty off-road construction diesel equipment used during the construction phase will meet Tier 4 engine requirements.	**Correction:** **AQ-IAMF#4: Reduce Criteria Exhaust Emissions from Construction Equipment** Prior to issuance of construction contracts, the Authority will incorporate the following construction equipment exhaust emissions requirements into the contract specifications: • All heavy-duty off-road construction diesel equipment used during the construction phase will meet Tier 4 Final engine requirements.	Update to AQ-IAMF#4 to commit to Tier 4 Final engine requirements consistent with the Final General Conformity Determination for the Palmdale to Burbank Project Section.

No.	Reference	Published Final EIR/EIS Text	Clarification of or Correction to Final EIR/EIS	Reason for Clarification or Correction
16	Volume 4, Chapter 17 Page 17-27	The E2 Refined alternative introduced in the 2016 SAA Report was designed to reduce surface impacts by increasing tunnel length and avoiding the Big Tujunga Wash Mitigation Area.[2] The 2016 SAA Report withdrew E2a and E2b and proposed E2 Refined for further evaluation based on the following key criteria: • The overall length of E2 Refined would be similar to the length of E2a and E2b. However, an additional 2 miles would be within tunnels near Arrastre Canyon in the E2 Refined alternative, reducing the amount of at-grade or elevated alignment overall. E2 Refined would also tunnel beneath the ANF, including the SGMNM, thereby reducing surface effects, including reduced impacts on critical biological habitat, wetlands, streams, creeks, and canals; it would also have fewer visual impacts due to less aboveground alignment. • Less of the E1 Refined alignment would fall within a fire hazard area compared to the E2a and E2b alternatives.	**Correction:** The E2 Refined alternative introduced in the 2016 SAA Report was designed to reduce surface impacts by increasing tunnel length and avoiding the Big Tujunga Wash Mitigation Area.[2] The 2016 SAA Report withdrew E2a and E2b and proposed E2 Refined for further evaluation based on the following key criteria: • The overall length of E2 Refined would be similar to the length of E2a and E2b. However, an additional 2 miles would be within tunnels near Arrastre Canyon in the E2 Refined alternative, reducing the amount of at-grade or elevated alignment overall. E2 Refined would also tunnel beneath the ANF, including the SGMNM, thereby reducing surface effects, including reduced impacts on critical biological habitat, wetlands, streams, creeks, and canals; it would also have fewer visual impacts due to less aboveground alignment. • Less of the ~~E1~~ E2 Refined alignment would fall within a fire hazard area compared to the E2a and E2b alternatives.	Correction to refer to the E2 Refined Alternative.
17	Volume 4, Chapter 22 Page 22-90	The lengths of those tunnels and viaducts are listed in Table 6-6 in the WCA (Authority 2019c) and Table 2-13 of the supplemental WCA (Authority 2019c). The SR14A Build Alternative includes six permeable segments that include 13.25-mile, 8.28-mile, and 1.04-mile tunnel segments where wildlife can cross over the alignment.	**Correction:** The following text edit was made: The lengths of those tunnels and viaducts are listed in Table 6-6 in the WCA (Authority 2019c) and Table 2-13 of the supplemental WCA (Authority 2019c). The SR14A Build Alternative includes six permeable segments that include 13.25-mile, 12.4 ~~8.28~~-mile, and 1.04-mile tunnel segments where wildlife can cross over the alignment.	Correction to the length of one of the tunnel segments referenced in response to comment #8697 in Volume 4.

ATTACHMENT A: TABLE S-6

Table S-1 Estimated Capital Costs of the High-Speed Rail Alternatives Palmdale to Burbank (2018$ millions)

Authority Cost Category	Refined SR14 Build Alternative	SR14A Build Alternative	E1 Build Alternative	E1A Build Alternative	E2 Build Alternative	E2A Build Alternative
10 Track structures and track	$13,387	$13,465	$13,960	$14,592	$14,238	$14,828
20 Stations, terminal, intermodal[1,2]	$582	$617	$559	$557	$692	$653
30 Support facilities: yards, shops, administration buildings[3]	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
40 Sitework, right-of-way, land, existing improvements	$3,978	$4,197	$3,506	$3,053	$3,135	$3,215
50 Communications and signaling	$186	$194	$183	$193	$174	$168
60 Electric traction	$264	$438	$251	$252	$226	$226
70 Vehicles	Considered a systemwide cost and not included as part of the Build Alternatives within individual project sections.					
80 Professional services	$2,759	$2,863	$2,809	$2,963	$2,909	$3,012
90 Unallocated contingency[4]	$750	$776	$756	$795	$765	$791
100 Finance charges	Estimate to be developed prior to project construction.					
Total[5]	**$21,906**	**$22,550**	**$22,064**	**$22,064**	**$22,139**	**$22,139**

Source: Appendix 6-B, Preliminary Engineering for Project Definition Record Set Capital Cost Estimate Report

[1] Station costs overlap. The Palmdale Station and the Maintenance Facility are also included in the Bakersfield to Palmdale Project Section costs. The Burbank Station costs are also included in the Burbank to Los Angeles Project Section costs.

[2] Roadway modifications and accesses to the alignment are accounted for under station cost estimates. The SR14A, E1A, and E2A Build Alternatives would require significantly fewer roadway modifications due to more tunneling and through avoidance of the Pearblossom Interchange, resulting in lower station construction cost estimates compared to the Refined SR14, E1, and E2 Build Alternatives.

[3] The Palmdale to Burbank Project Section cost information does not include support facilities due to the limited level of design information available for these project features.

[4] All cost categories include unallocated contingencies, including relocation of the Antelope Valley-East Kern Water Treatment Plant (Authority 2023). Category SCC 90 represents only unallocated monies.

[5] Totals may not sum due to rounding.

Authority = California High-Speed Rail Authority
SCC = standard capital cost
SR = State Route

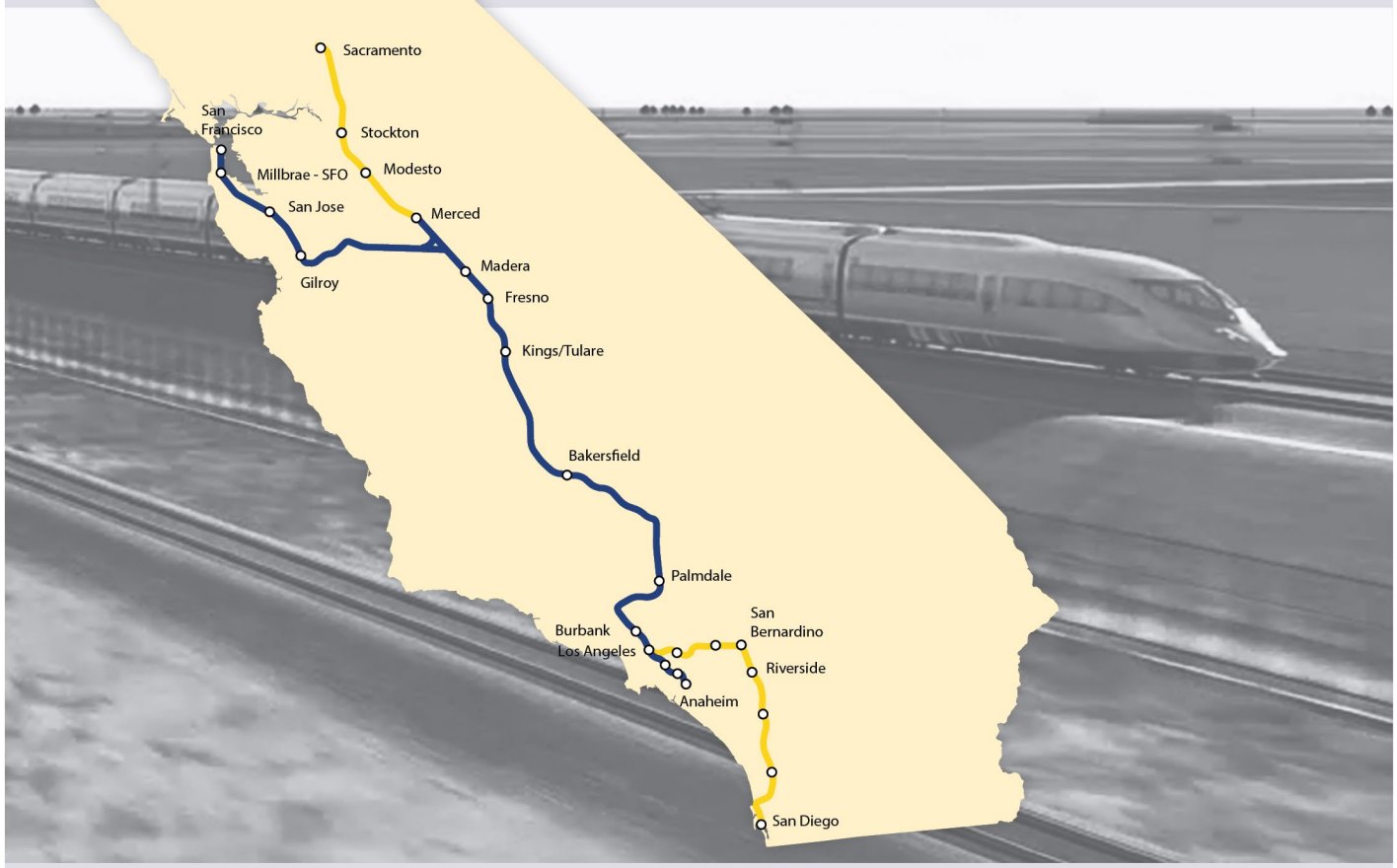
California High-Speed Rail Authority

Palmdale to Burbank Project Section

Final Environmental Impact Report/ Environmental Impact Statement

Appendix 4-B Lang Station Open Space Section 4(f) and Section 6(f) Evaluation

August 2024



CALIFORNIA High-Speed Rail Authority

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being or have been carried out by the State of California pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated July 23, 2019 (renewed July 22, 2024), and executed by the Federal Railroad Administration and the State of California.

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Lang Station Open Space Section 4(f) and Section 6(f) Evaluation

The Palmdale to Burbank Project Section Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) was posted on the California High-Speed Rail Authority's (Authority) website and formally made available to California state agencies by the State Clearinghouse beginning August 31, 2022. The public review and comment period originally ran for a 60-day public review from September 2, 2022 through November 1, 2022, pursuant to the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). In response to agency and stakeholder requests, the Authority extended the public review and comment period by 30 days, to December 1, 2022, for a total of 90 days after the document was published.

In June 2022, the City of Santa Clarita (City) acquired approximately 208 acres of open space known as Lang Station Open Space at Bee Canyon (Lang Station Open Space). Lang Station Open Space, which was dedicated by the City after publication of the Draft EIR/EIS, is located within the Section 4(f) resource study area (RSA). Section 3.15, Parks, Recreation, and Open Space, of the Final EIR/EIS provides a description of Lang Station Open Space.

During the extended comment period, the City submitted a comment letter (dated November 22, 2022) stating that in June 2022, "the City acquired 208 acres of open space, known as Bee Canyon, located east of State Route (SR) 14 and north of Soledad Canyon Road." The City's comment letter also stated that the SR14A Build Alternative (the Preferred Alternative) would bifurcate Lang Station Open Space at grade, which would result in potential impacts "on recreational uses and wildlife corridors within this open space" during construction and operation of the SR14A Build Alternative.

In compliance with 23 United States Code (U.S.C.) 138 and 49 U.S.C. 303.4(f) (Section 4[f]), the Authority has prepared this Section 4(f) evaluation for Lang Station Open Space. This Section 4(f) evaluation, as well as this Section 6(f) evaluation, focuses on Lang Station Open Space within the Section 4(f)/Section 6(f) RSA, and also includes a preliminary Section 4(f) least harm analysis of the Build Alternatives based on all affected Section 4(f) resources within the Section 4(f) RSA. For the evaluations of other potential Section 4(f)/Section 6(f) resources within the Section 4(f)/Section 6(f) RSA outside Lang Station Open Space, see Chapter 4, Final Section 4(f) and Section 6(f) Evaluations, of the Final EIR/EIS.

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1 INTRODUCTION

This evaluation provides the analysis to support the Authority's compliance with the provisions of 23 U.S.C. 138 and 49 U.S.C. 303.4(f) (Section 4(f)), and applicable sections of the Land and Water Conservation Fund (LWCF) Act of 1965 (Section 6[f]). No LWCF monies were used to acquire or develop any of the recreational resources in Lang Station Open Space. The Authority is responsible for compliance with Section 4(f) and Section 106 of the National Historic Preservation Act (NHPA), in lieu of the Federal Railroad Administration (FRA), pursuant to a memorandum of understanding (MOU) under which FRA assigned those responsibilities to the Authority in accordance with 23 U.S.C. 327.[1]

Section 4(f)

The United States Department of Transportation Act of 1966 includes special provisions for the approval of a transportation program or project that uses land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites. Effects on Section 4(f)-protected resources resulting from federally funded transportation projects are regulated. These regulations require the project to include a full evaluation to avoid impacts to these resources. If effects are unavoidable, further planning must be completed to try to minimize harm.

This Section 4(f) evaluation is being released for comment by the Authority pursuant to 23 U.S.C. 327 and the terms of the NEPA Assignment Memorandum of Agreement (FRA and State of California 2019) assigning to the Authority responsibility for compliance with NEPA and other federal environmental laws, including Section 4(f) and related United States Department of Transportation (U.S. DOT) orders and guidance.

Under Section 4(f), an operating administration of the U.S. DOT may not approve a project that uses protected resources, unless one of the following conditions is met:

- There is a finding of *de minimis* impact for use of resources
- If there are no prudent or feasible alternatives to such use, and the project includes all possible planning to minimize harm to such resources

Section 4(f) resources are publicly owned lands of a park, recreation area, or wildlife or waterfowl refuge; or a historical site of national, state, or local significance that is listed on or eligible for listing on the National Register of Historic Places (NRHP) as determined by the federal, state, regional, or local officials with jurisdiction (OWJ) over the resource. The State Historic Preservation Officer (SHPO) is the OWJ over historic properties. Historic properties, including archeological resources, may be publicly or privately owned. The information contained in this chapter demonstrates the Authority's compliance with Section 4(f), as follows:

- Describes the statutory requirements associated with Section 4(f)
- Identifies the resources protected by Section 4(f) in the RSA
- Preliminarily determines whether the Palmdale to Burbank Project Section would result in the use of those resources

If a Section 4(f) protected property is subject to permanent use or constructive use (see Section 1.4.31.3), the following are required for compliance with Section 4(f):

- Identification of feasible and prudent alternatives, to the extent any exist, that would avoid or minimize use of the resources
- Identification of measures to minimize harm
- A preliminary least harm analysis for the Build Alternatives that would result in the use of Section 4(f) resources

Section 6(f) resources are recreation resources created or improved with funds from the LWCF. Land purchased with these funds cannot be converted to nonrecreational use without

[1] Memorandum of Understanding for the National Environmental Policy Act Assignment (Authority 2019a)

coordination with the California Department of Parks and Recreation and the United States Department of the Interior National Park Service (NPS), and mitigation that includes replacement of the quality and quantity of land used. Lang Station Open Space is not a Section 6(f) resource, as discussed in Section 10 below.

Additional information on publicly owned parks, recreation lands, wildlife and waterfowl refuges, and historic sites, as well as public concern regarding these resources, is provided in the following Final EIR/EIS sections:

- Section 3.7, Biological Resources and Wetlands, evaluates biological resources within the parks, recreation lands, wildlife and waterfowl refuges discussed in this section.
- Section 3.15, Parks, Recreation, and Open Space, evaluates parks, recreation, and open space resources within 1,000 feet from the edge of the Build Alternatives' footprint, or further for exceptionally sensitive resources.
- Section 3.17, Cultural Resources, evaluates historic built resources and archaeological resources in the area of potential effects (APE).

In addition, the following technical reports provide more detailed information:

- *Palmdale to Burbank Project Section: Historic Architectural Survey Report* (Authority 2019b) identifies and evaluates built resources in the historic built resources APE.
- *Palmdale to Burbank Project Section Finding of Effect* (Authority 2021), evaluates impacts of the High-Speed Rail (HSR) Preferred Alternative to cultural resources.
- Appendix 2-E, Impact Avoidance and Minimization Features (IAMFs), lists IAMFs included as applicable in each of the Build Alternatives for purposes of the environmental impact analysis.

1.1 Laws, Regulations, and Orders

The Palmdale to Burbank Project Section is an intercity passenger rail project that is receiving federal funding through FRA, which therefore requires the project to comply with Sections 4(f) and 6(f). Whereas Section 4(f) applies only to programs and policies undertaken by the U.S. DOT and the Authority, Section 6(f) compliance applies to programs and policies of any federal agency.

1.1.1 United States Department of Transportation Act (23 U.S.C. 138 and 49 U.S.C. 303(c) (Section 4[f])

Projects undertaken by an operating administration of the U.S. DOT or projects that may receive federal funding or discretionary approvals from such an operating administration of the U.S. DOT must demonstrate compliance with Section 4(f). Section 4(f) protects publicly owned parks, recreational areas, and wildlife and waterfowl refuges of national, state, or local significance that are open to the public. Section 4(f) also protects historic sites of national, state, or local significance located on public or private land that are listed on or eligible for listing on the NRHP.

FRA's Procedures for Considering Environmental Impacts (64 Federal Register 25445) contains FRA processes and protocols for compliance with NEPA and other federal laws, including Section 4(f). As of November 28, 2018, FRA adopted the regulations in 23 Code of Federal Regulations (C.F.R.) Part 774 as FRA's Section 4(f) implementing regulations. FRA also considers the interpretations provided in the Federal Highway Administration's (FHWA) Section 4(f) Policy Paper (FHWA 2012) when implementing these regulations. Pursuant to U.S.C. Title 23 Section 237, under the NEPA Assignment MOU between FRA and the State of California, effective July 23, 2019, the Authority is the federal lead agency and is responsible for compliance with NEPA and other federal environmental laws, including Section 4(f) (49 U.S.C. 303) and

related U.S. DOT orders and guidance. The Authority is releasing this Section 4(f) statement for comment pursuant to 23 U.S.C. 237, 23 C.F.R. Part 774, and the NEPA Assignment MOU.[2]

The Authority may not approve the use of a Section 4(f) property, as described in 49 U.S.C. 303(c), unless it determines that there is no feasible and prudent alternative to avoid the use of the property and the action includes all possible planning to minimize harm resulting from such use, or the project has a *de minimis* impact consistent with the requirements of 49 U.S.C. 303(d) (see Section 1.4.4 for a definition of *de minimis* impacts). An alternative is not feasible if it cannot be built as a matter of sound engineering judgment. In determining whether an alternative is prudent, the Authority may consider if the alternative would result in any of the following:

- The alternative does not meet the project's stated Purpose and Need.
- The alternative would entail unacceptable safety or operational problems.
- After reasonable mitigation, the alternative would result in severe social, economic, or environmental impacts; severe disruption to established communities; severe disproportionate impacts on minority or low-income populations; or severe impacts on environmental resources protected under other federal statutes.
- The alternative would require additional construction, maintenance, or operational costs of an extraordinary magnitude.
- The alternative would pose other unique problems or unusual factors.
- The project would entail multiple factors that, while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

If the Authority determines there is both the use of a Section 4(f) property and that there is no prudent and feasible alternative to the use of a Section 4(f) resource, the Authority must ensure the project includes all possible planning (including coordination with and concurrence of the OWJ over the property) to minimize harm to the property, which includes all reasonable measures to minimize harm or mitigate impacts (49 U.S.C. 303(c)(2)). OWJ and "all possible planning" are defined in 23 C.F.R. 774.17. Pursuant to federal guidance, all possible planning means that all reasonable measures identified in the Section 4(f) evaluation to minimize harm or mitigate for adverse impacts and effects must be included in the project. With regard to public parks, recreation areas, and wildlife and waterfowl refuges, the measures may include (but are not limited to): design modifications or design goals; replacement of land or facilities of comparable value and function; or monetary compensation to enhance the remaining property or to mitigate the adverse impacts of the project in other ways. Additionally, in evaluating the reasonableness of measures, the Authority will consider preservation purpose, the views of the officials with jurisdiction, whether the cost of the measure is a reasonable public expenditure in light of the adverse impacts of the project on the Section 4(f) property and the benefits of the measure to the property, any impacts or benefits of the measures "to communities or environmental resources outside of the Section 4(f) property."

When determining if Section 4(f) approval is necessary for the use of a trail, path, bikeway, or sidewalk, the Authority must comply with 23 C.F.R. 774.13(f). If the publicly owned facility is primarily used for transportation and is an integral part of the local transportation system, the requirements of Section 4(f) would not apply since it is not a recreational area. Section 4(f) would apply to a publicly owned, shared use path, or similar facility (or portion thereof) designated or functioning primarily for recreation, unless the OWJ determines that it is not significant for such purpose.

[2] The Authority cannot make any determination that an action constitutes a constructive use of a publicly owned park, public recreation area, wildlife refuge, waterfowl refuge, or historic site under Section 4(f) without first consulting with FRA and obtaining FRA's views on such determination. Thus, any determinations of a constructive use by the Authority would be preliminary only. The Authority will provide FRA written notice of any proposed constructive use determination, and FRA will have thirty (30) calendar days to review and provide comment. If FRA objects to the constructive use determination, the Authority will not proceed with the determination.

After making a Section 4(f) determination and identifying the reasonable measures to minimize harm, if there is more than one alternative that results in the use of a Section 4(f) resource, the Authority must also compare the alternatives to determine which alternative has the potential to cause the least overall harm in light of the preservationist purpose of the statute. The least overall harm may be determined by balancing the following factors:

- The ability to mitigate adverse impacts on each Section 4(f) resource (including any measures that result in benefits to the resource)
- The relative severity of the remaining harm—after mitigation—to the protected activities, attributes, or features that qualify each Section 4(f) resource for protection
- The relative significance of each Section 4(f) resource
- The views of the OWJ over each Section 4(f) resource
- The degree to which each alternative meets the Purpose and Need for the project
- After reasonable mitigation, the magnitude of any adverse impacts on resources not protected by Section 4(f)
- Substantial differences in costs among the alternatives

1.1.2 Section 6(f) of the Land and Water Conservation Fund Act of 1965 (16 U.S.C. 460l-8(f) and 36 C.F.R. Part 59.1)

State and local governments often obtain grants through the LWCF Act to acquire or make improvements to parks and recreation areas. Section 6(f) of the act prohibits the conversion of property acquired or developed with these grants to a nonrecreational purpose without the approval of the NPS. Section 6(f) directs the NPS to ensure that replacement lands of comparable value and function, or monetary compensation (used to enhance the remaining land), location, and usefulness are provided as conditions to such conversions. Lang Station Open Space is not a Section 6(f) resource, as discussed in Section 10 below.

1.1.3 National Historic Preservation Act (54 U.S.C. 300101 et seq.) including Section 106, 54 U.S.C. 306108

The NHPA, as amended, establishes the federal government's policy on historic preservation and the programs, including the NRHP, through which this policy is implemented. Under the NHPA, significant cultural resources, referred to as historic properties, include any prehistoric or historic district, site, building, structure, object, or landscape included in, or determined eligible for inclusion in, the NRHP. Historic properties also include resources determined to be National Historic Landmarks. National Historic Landmarks are nationally significant historic places designated by the Secretary of the Interior because they possess exceptional value or quality in illustrating or interpreting U.S. heritage. A property is considered historically significant if it meets one or more of the NRHP criteria and retains sufficient historic integrity to convey its significance. This act also established the Advisory Council on Historic Preservation, an independent agency responsible for implementing Section 106 of the NHPA by developing procedures to protect cultural resources included in, or eligible for inclusion in, the NRHP. Regulations are published in 36 C.F.R. Parts 60, 63, and 800. There are no historic properties listed or eligible for listing in the NRHP within Lang Station Open Space, as discussed in Section 5.2 below.

1.2 Definition of Resource Study Area

The Resource Study Area (RSA) for publicly owned parks, recreation resources, and wildlife and waterfowl refuges is defined as 1,000 feet from the edge of the proposed Build Alternative footprint. The RSA for cultural resources is the historic resources Area of Potential Effect.

As defined in Section 3.1, Introduction, of Chapter 3, Affected Environment, Environmental Consequences, and Mitigation Measures, of the Final EIR/EIS, RSAs are the geographic boundaries in which the environmental investigations specific to each resource topic were conducted. The Section 4(f) RSA comprises the geographic boundary in which the environmental investigations specific to each resource topic were conducted. The Section 4(f) RSA, as defined below, identifies the Section 4(f) resources considered for evaluation. For temporary laydown areas, utility relocations, or any other land used temporarily to implement the California HSR System that would be returned to its original condition, the RSA for Section 4(f) use is the area of direct impact unless the temporary use prevents access to a potential Section 4(f) protected property. This evaluation focuses on Lang Station Open Space. See Chapter 4, Final Section 4(f) and Section 6(f) Evaluations, of the Final EIR/EIS for a detailed discussion of each of the other resources evaluated and figures showing the specific locations of the resources evaluated within the RSA (outside Lang Station Open Space) in relation to the physical extent of the Palmdale to Burbank Project Section.

1.2.1 Public Park and Recreation Lands, and Wildlife and Waterfowl Refuges

The Section 4(f) RSA for publicly owned parks, recreational facilities, and wildlife and waterfowl refuges includes the footprint for each of the Build Alternatives, as described in Chapter 2, Alternatives, of the Final EIR/EIS, including the Burbank Airport Station, road construction, temporary laydown areas, or other land used temporarily or permanently required to implement the California HSR System.

As a means to address nonphysical impacts (i.e., noise, visual, and air quality), the Section 4(f) RSA also includes resources within 1,000 feet from the edge of the proposed Build Alternative footprint. The Section 4(f) analysis for the Palmdale to Burbank Project Section also considers parks, recreation facilities, and wildlife and waterfowl refuges that are more than 1,000 feet from the Build Alternative footprint (as described in Chapter 2, Alternatives, of the Final EIR/EIS) that may be exceptionally sensitive to noise or visual impacts. Figure 4-B-1 through Figure 4-B-4 illustrate in detail the Section 4(f) RSA for parks and recreation resources. This RSA is inclusive of parks, recreation facilities, school play areas, trails, and wildlife and waterfowl refuges.

1.2.2 Historic Properties

Because this project is a federal undertaking, it must also comply with the NHPA. A Programmatic Agreement Among the Federal Railroad Administration, the Advisory Council on Historic Preservation, SHPO, the Surface Transportation Board, and the Authority Regarding Compliance with Section 106 of the NHPA Act, as it pertains to the California High-Speed Train Project (FRA et al. 2011) outlines an approach for compliance with Section 106 of the NHPA for the California HSR System. The NHPA implementing regulations in 36 C.F.R. Section 800.4(a)(1) require the establishment of an APE. For Section 106 compliance, the APE is used for the technical reports that document the identification of historic properties and the assessment of effects. The APE is the geographic area or areas within which an undertaking may alter the character or use of historic properties, if such properties exist. Therefore, the APE serves as the RSA for Section 4(f) historic properties that are potentially eligible for listing or are listed on the NRHP.

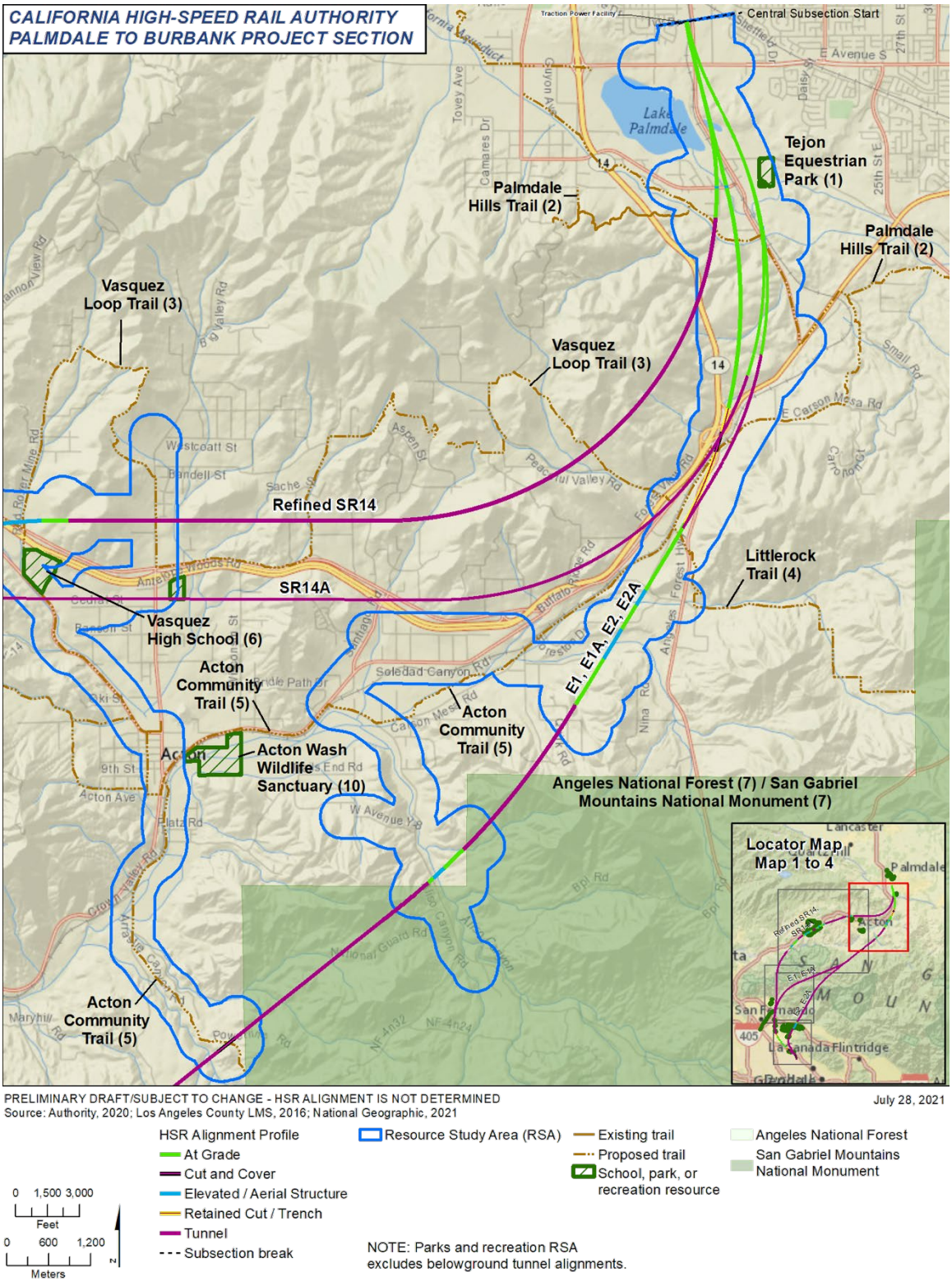

Figure 4-B-1 Parks and Recreation Resource Study Area (Map 1 of 4)

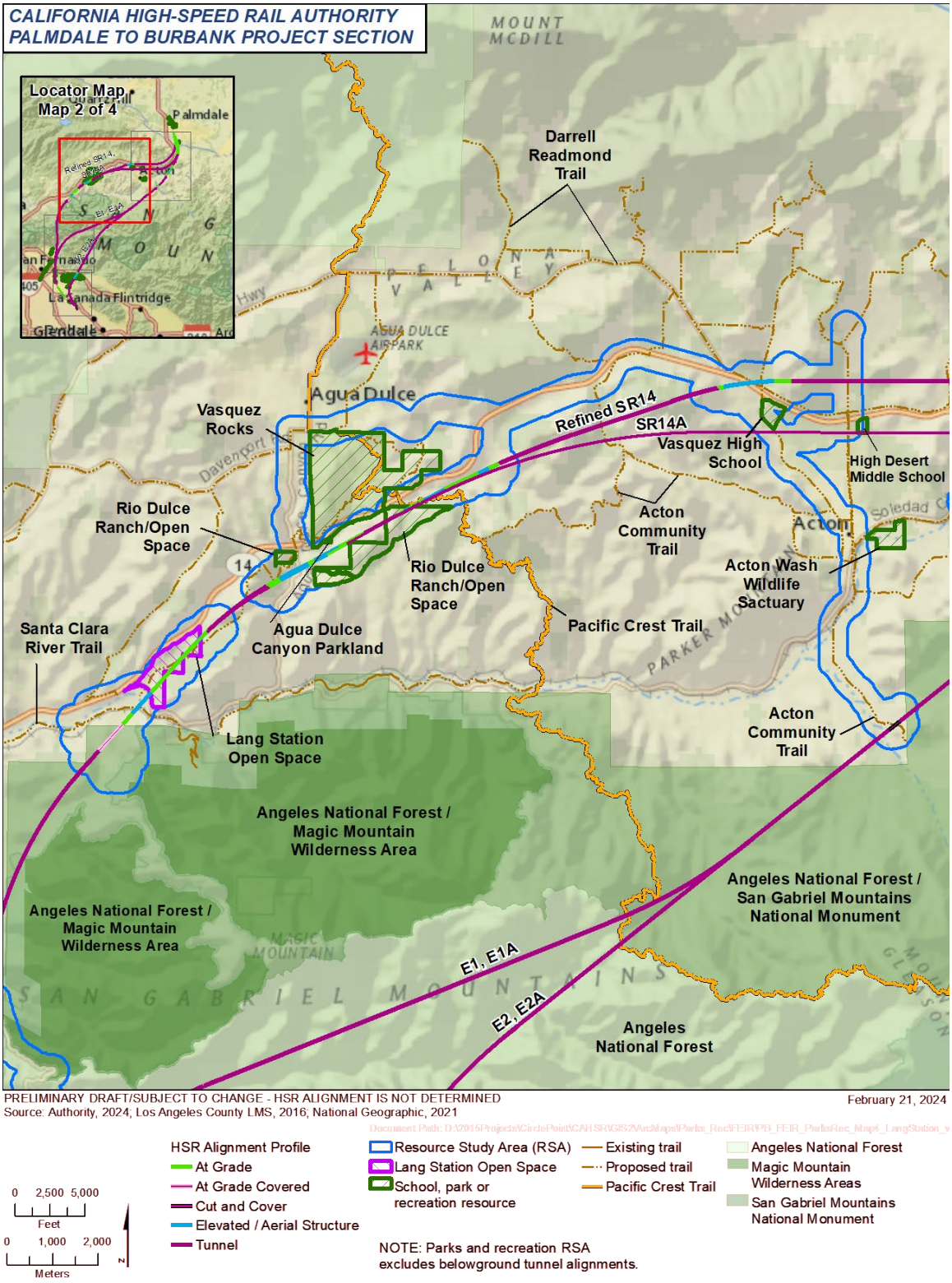

Figure 4-B-2 Parks and Recreation Resource Study Area (Map 2 of 4)

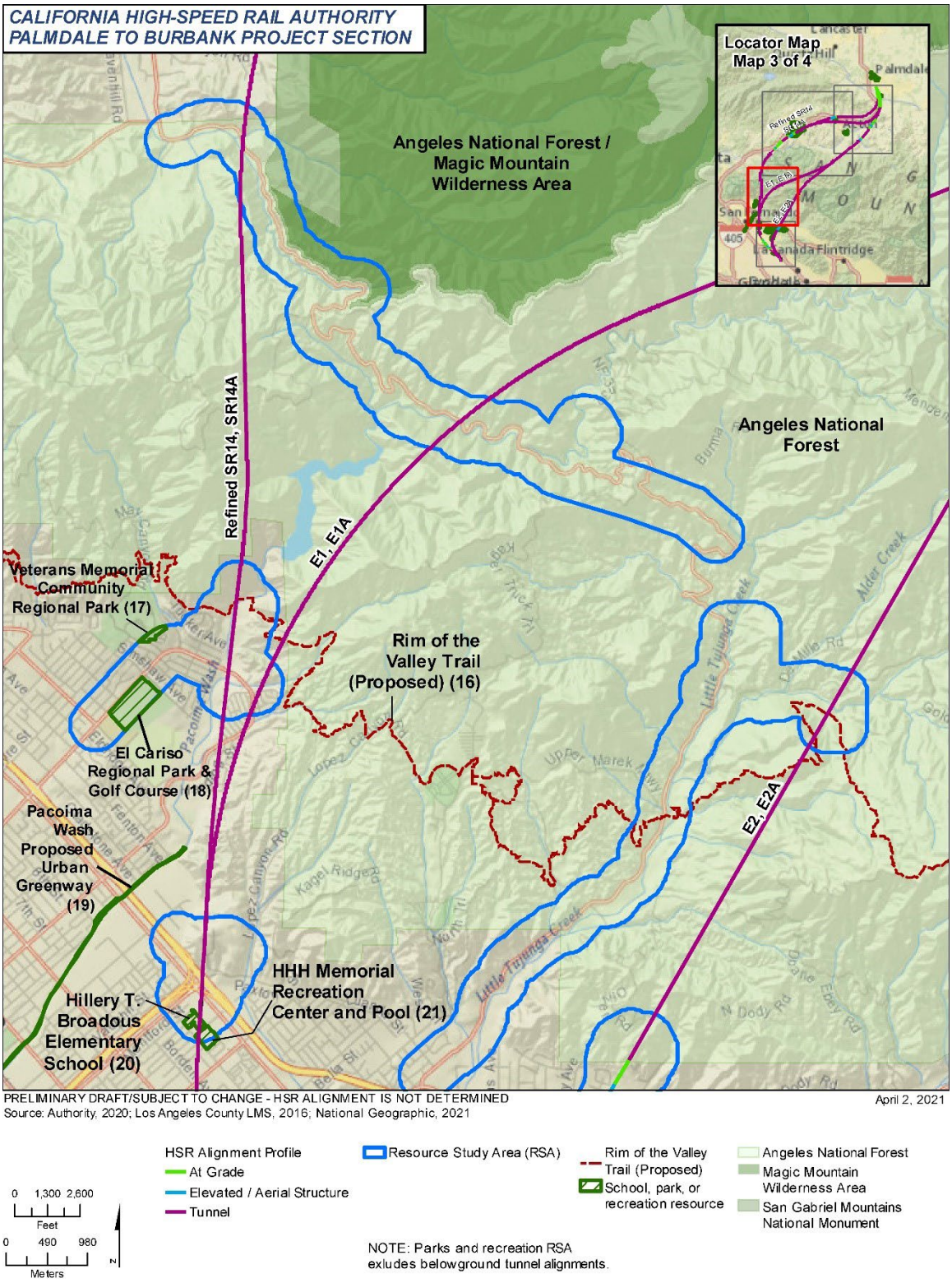

Figure 4-B-3 Parks and Recreation Resource Study Area (Map 3 of 4)

Figure 4-B-4 Parks and Recreation Resource Study Area (Map 4 of 4)

The APE takes into consideration the potential effects of the project on both archaeological and historic built resources. For archaeological resources, the APE includes each of the six Build Alternative footprints, within which ground-disturbing activities may directly and physically alter the character or use of the historic property. For built resources, the APE includes the Build Alternative footprint and any area outside the footprint where visual, atmospheric, or audible intrusions may directly alter the character or use of a historic property, as well as any area where a historic property may be indirectly affected by project-related effects that are farther removed in distance or would occur later in time but are still reasonably foreseeable. The APE for the Palmdale to Burbank Project Section is described in detail in Section 3.17, Cultural Resources, of the Final EIR/EIS.

The historic built APE includes all properties that may contain buildings, structures, objects, sites, landscapes, and districts that are 50 years of age or older at the time the cultural resources survey was conducted. The APE includes:

- Properties within the proposed right-of-way
- Properties where historic materials or associated landscape features would be demolished, moved, or altered by construction
- Properties near the undertaking where railroad materials, features, and activities have not been part of their historic setting and where the introduction of visual or audible elements may affect the use or characteristics of those properties that would be the basis for their eligibility for listing in the NRHP
- Properties near the undertaking that were either used by a railroad or served by a railroad, or where railroad materials, features, and activities have long been part of their historic setting

The historic built resources APE is delineated to take into consideration effects, such as visual, audible, or atmospheric intrusions onto a property; the potential for vibration-induced damage; demolition of resources on the surface above tunnels; or isolation of a property from its setting. Visual and audible changes have the potential to affect character-defining features of some historic built resources.

1.3 Section 4(f) Applicability

A park or recreation area qualifies for protection under Section 4(f) if it is: (1) publicly owned at the time at which the “use” occurs; (2) open to the public; (3) the land has been officially designated as a park or recreation area by a federal, state, or local agency; (4) the primary purpose is consistent with the property’s primary function and how it is intended to be managed; and (5) considered significant by the OWJ over the property. This definition of park and recreation areas includes school play areas that are open to the public.

A wildlife or waterfowl refuge qualifies for protection under Section 4(f) if it is: (1) publicly owned at the time at which the “use” occurs; (2) the land has been officially designated as a wildlife and/or waterfowl refuge area by a federal, state, or local agency; (3) its primary designated purpose is consistent with the property’s primary function and how it is intended to be managed; and (4) considered significant by the OWJ over the property. Section 4(f) applies when the public agency that owns the property has formally designated and determined it to be significant for wildlife and waterfowl refuge purposes. Evidence of formal designation would be the inclusion of the publicly owned land, and its function as a Section 4(f) property into a city or county Master Plan.

For publicly owned multi-use land holdings, Section 4(f) applies only to those portions of a property that are designated by statute or identified in an official management plan of the administering agency as being primarily for public park, recreation, or wildlife and waterfowl refuge purposes, and are determined by the OWJ to be significant for such purposes.

A historic site eligible for, or listed in, the NRHP may be protected under Section 4(f). Although the statutory requirements of Section 106 and Section 4(f) are similar, if a proposed action results in an “adverse effect” under Section 106, there will not automatically be a Section 4(f) “use.” To

determine whether a use of a historic property would occur, the Authority completes a separate Section 4(f) analysis and determination, in addition to those completed in compliance with the Section 106 process.

To qualify as a historic property to be eligible for the NRHP, a resource must meet at least one of the four NRHP criteria (i.e., Criteria A–D) described below. The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and meet one or more of the following criteria:

- Criterion A—Properties that are associated with events that have made a significant contribution to the broad patterns of our history
- Criterion B—Properties that are associated with the lives of persons significant in our past
- Criterion C—Properties that embody distinctive characteristics of a type, period, or method of construction; or that represent the work of a master; or that possess high-artistic values; or that represent a significant and distinguishable entity whose components may lack individual distinction
- Criterion D—Properties that have yielded, or may be likely to yield, information important in prehistory or history

An archaeological resource that is eligible solely under NRHP Criterion D, as defined above, is considered valuable primarily in terms of the data that can be recovered from it. For such resources (such as pottery scatters and refuse deposits), Section 4(f) does not apply. Conversely, archaeological resources eligible under Criteria A, B, or C, as defined above, may have value intrinsic to the resource's location and may be protected under Section 4(f).

1.4 Section 4(f) Use Definition

1.4.1 Permanent Use

A permanent use of a Section 4(f) resource occurs when property is permanently incorporated into a proposed transportation facility. This might occur as a result of partial or full acquisition, permanent easements, or temporary easements that exceed limits for temporary occupancy as defined below.

1.4.2 Temporary Occupancy

A temporary occupancy of a Section 4(f) resource occurs when a Section 4(f) property is required for construction-related activities. Temporary occupancy would be considered use if the property is not permanently incorporated into a transportation facility, but the activity is considered adverse in terms of the preservationist purposes of the Section 4(f) statute. However, 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 must 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 must be no permanent adverse physical impacts on the protected resource or 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 existed before project construction.
- There must be documented agreement of the appropriate OWJ over the resource regarding the foregoing requirements.

1.4.3 Constructive Use

A constructive use of a Section 4(f) resource occurs when a transportation project does not permanently incorporate the property of a protected resource, but the proximity of the project results in impacts (e.g., noise, vibration, visual, access, or ecological) after incorporation of mitigation that are 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 after taking the following steps:

- Identifying the current activities, features, or attributes of the resource that may be sensitive to proximity impacts
- Analyzing the proximity impacts on the resource
- Consulting with the appropriate OWJ over the resource

It is important to note that erecting a structure over a Section 4(f) resource, and thus requiring an air lease, does not by itself constitute a use, unless the effect constitutes a constructive use. Further, a noise- or visual-related adverse effect under Section 106 of the NHPA to a historic property does not in and of itself result in a constructive use.

1.4.4 De Minimis Impact

According to 49 U.S.C. 303(d), the following criteria must be met to reach a *de minimis* impact determination:

- For parks, recreation areas, and wildlife and waterfowl refuges, a *de minimis* impact determination may be made if the Authority concludes that the transportation project would not adversely affect the activities, features, and attributes qualifying the resource for protection under Section 4(f) after mitigation. In addition, to make a *de minimis* impact determination there must be:
  - The OWJ over the property must be informed regarding the intent to make a *de minimis* impact determination, after which, public notice and opportunity for public review and comment must be provided.
  - After consideration of comments, if the OWJ over the property concur in writing that the project would not adversely affect the activities, features or attributes that make the property eligible for Section 4(f) protection, then the Authority may finalize the finding of *de minimis* impact.
- For a historic site, a *de minimis* impact determination may be made only if, in accordance with the Section 106 process, the Authority determines that the transportation program or project would have no effect or no adverse effect on historic properties, has received written concurrence from the OWJ over the property (e.g., SHPO), and has taken into account the views of consulting parties to the Section 106 process as required by 36 C.F.R. Part 800.

2 COORDINATION

Title 49 U.S.C. Section 303(b) requires cooperation and consultation with the Secretary of the Interior (and the Secretaries of Housing and Urban Development and Agriculture, if appropriate) and with the state in developing transportation plans and programs that include measures to maintain or enhance the natural beauty of lands crossed by transportation activities or facilities. Throughout the EIR/EIS process, the Authority is consulting with or will consult with SHPO, local jurisdictions, the Native American Heritage Commission and interested tribes, and the NPS. Section 4(f) requires consultation with the SHPO, pursuant to 36 C.F.R. Part 800, and agencies of jurisdiction in identifying Section 4(f) properties and assessing impacts on the properties. In addition, the California State Parks maintains a list of LWCF Projects throughout the State. The list was reviewed for Section 6(f) properties within Lang Station Open Space, and no Section 6(f) properties were identified (California Department of Parks and Recreation 2024).

Related activities, such as Section 106 consultation under the NHPA, are summarized in Section 3.17, Cultural Resources, of the Final EIR/EIS. The Authority and the FRA have consulted, and the Authority continues to consult, with the SHPO, the Surface Transportation Board, the U.S. Army Corps of Engineers, the U.S. Department of the Interior Bureau of Reclamation, local agencies, interested parties, the Native American Heritage Commission, and interested tribes to identify and assess impacts on cultural resources in compliance with Section 106.

The Authority has continued to consult with these agencies regarding the impacts of the project on the features and attributes of Section 4(f) properties, and provided opportunity for public comment. The Authority's preliminary Section 4(f) determinations regarding Lang Station Open Space are presented in this evaluation and the public is invited to comment on those preliminary determinations. The Final Section 4(f) determinations will be made and published as part of the Record of Decision (ROD).

2.1 Coordination with the Official with Jurisdiction

This section documents the Authority's coordination efforts with the City since 2013, specifically those efforts where the City expressed concern about potential impacts to recreation and wildlife resources. As provided in this section, the City through the outreach process did not identify Lang Station Open Space as a recreational use or a designated wildlife refuge, but rather for the preservation of natural open space in perpetuity.

The Authority and the City met on October 3, 2013 to discuss the status of the project, engineering refinements, and the Authority's 2012 Business Plan. Discussions continued through a March 12, 2014 meeting between the Authority and the City to review the proposed alignments of the Palmdale to Los Angeles Section, specifically between Palmdale and Burbank and through the City of Santa Clarita. Discussions during this meeting focused on the route options between Palmdale and Burbank, tunneling, and the Authority's 2014 Business Plan.

The Authority published the Notice of Preparation in July 2014 announcing project scoping and the preparation of an EIR for the Project Section. The NOP identified the Santa Clarita North alignment, which included more tunneling segments through the Santa Clarita Valley, while the Santa Clarita South included more at-grade and viaduct segments through Santa Clarita Valley. The two alternatives through the Santa Clarita Valley are shown on Figure 4-B-5, which is also included in Chapter 2, Alternatives, of the Final EIR/EIS as Figure 2-38. In response to the NOP, City Mayor Laurene Weste sent a letter dated August 4, 2014 to the Authority Director of Environmental Services to that stated that of the two alignments through Santa Clarita Valley, "the City Council believes the tunnel extension created far less environmental and community damage than the proposed surface alignment. … [The City Council] strongly opposes the proposed surface alignment, as it has the potential of eliminating homes and devastating neighborhoods, two local schools and an approved job center in the eastern area of our community."

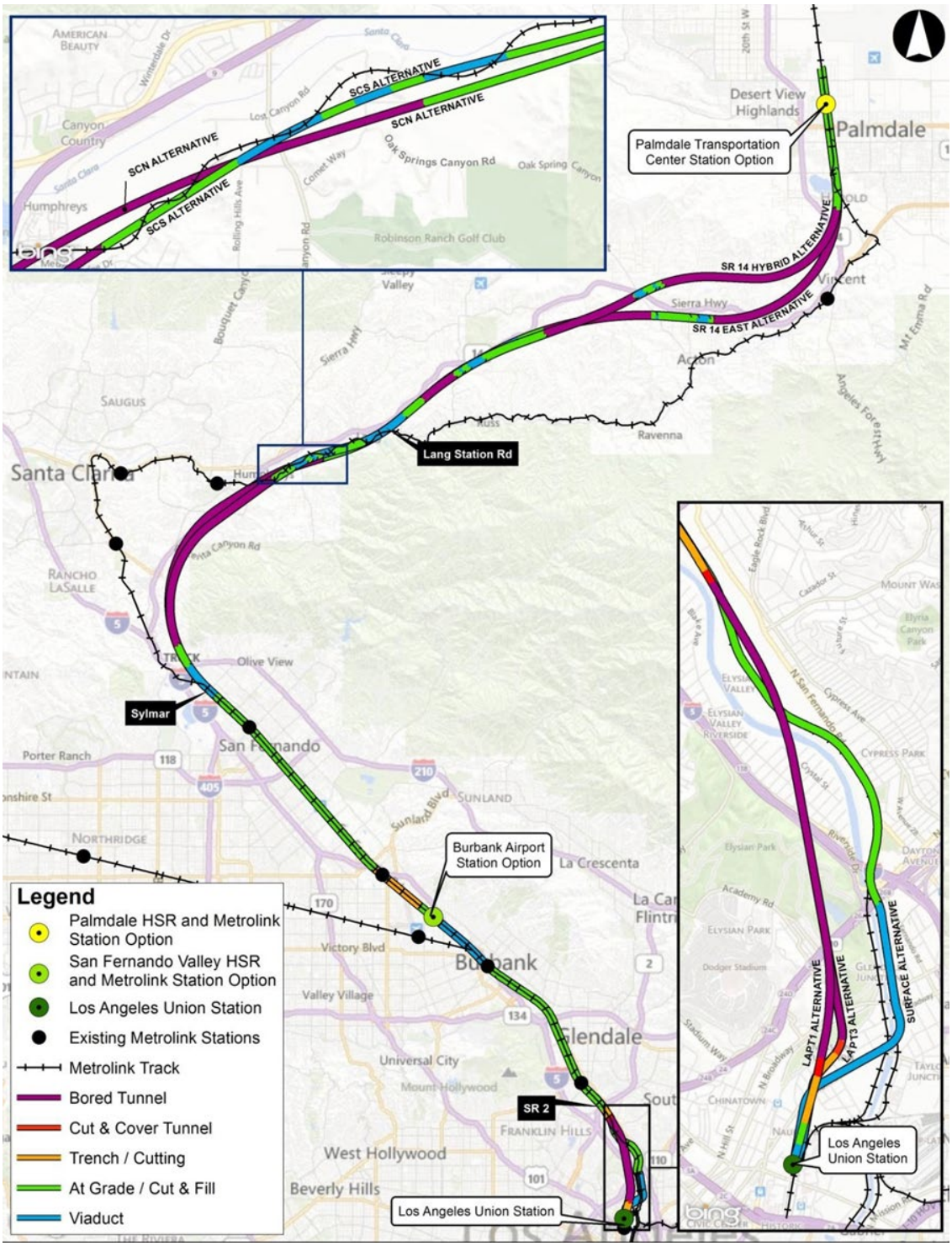

Figure 4-B-5 Alignment and Station Alternatives Carried Forward from the 2014 Supplemental Alternatives Analysis Report

On July 14, 2015, the Santa Clarita City Council adopted a position to support fully underground alignments for the Palmdale to Burbank Project Section (City of Santa Clarita 2015b). During the public scoping period (Summer 2014), the City provided a letter stating that of the two alignments through Santa Clarita Valley, "the City Council believes the tunnel extension created far less environmental and community damage than the proposed surface alignment. … [The City Council] strongly opposes the proposed surface alignment, as it has the potential of eliminating homes and devastating neighborhoods, two local schools and an approved job center in the eastern area of our community." The letter requested that the Authority "fully consider the impacts of noise and vibration of the rail alignment under homes, businesses, schools and open space area" (City of Santa Clarita 2014); however, while the letter references open space area, it should be noted that the City of Santa Clarita did not acquire the Bee Canyon property (where Lang Station Open Space is located) until 8 years later in 2022. The letter included no specific mention of Bee Canyon (Lang Station Open Space).

In advance of the November 15, 2018 Authority Board Meeting, at which Authority Board would consider staff's recommendation on the Preferred Alternative for the Palmdale to Burbank Project Section, the City sent a letter dated November 5, 2018 to the Authority's Board Chairperson that stated the City Council was opposed to all Build Alternatives for the project section, particularly the Preferred Alternative (SR14A Build Alternative). The letter stated the City Council's concern regarding the Preferred Alternative's "at-grade and bridge structures across the sensitive environmental areas of the Santa Clara River, Bee Canyon and City of Santa Clarita-owned open space. The City has been working with a wide variety of partners to establish a pathway for connecting the northern and southern section of the Angeles National Forest, thus facilitating a critical wildlife corridor interconnection." At the time of this letter (2018), the City had not acquired the Bee Canyon property. It appears the City Council's concern regarding Bee Canyon (in which Lang Station Open Space is located) relates to biological resources, rather than parks and recreational facilities. The letter restated the City Council's support for a fully underground alignment to "significantly minimiz[e] or eliminat[e] any impact to neighborhoods and communities" (City of Santa Clarita 2018).

On October 16, 2020, the Authority had a conversation with the City's Intergovernmental Relations Officer, Masis Hagobian, who clarified that the City is committed to preserving open space and has purchased land both within and outside the City boundaries, using taxpayer/City funding, to support this goal. The City's concern is impacts to open spaces and wildlife corridors from the SR14A Build Alternative (Hagobian, pers. comm. 2020).

On November 3, 2020, Authority staff met with elected officials, the City Manager, and the Intergovernmental Relations Manager from the City. During the meeting, the City expressed a desire that the HSR alignment be undergrounded entirely so that impacts to community facilities and residences in the City as well as impacts to the Lang Station Open Space would be avoided. At the time of the meeting, the City had not finalized acquisition of the open space but indicated that an at-grade alignment would bisect the open space and did not offer recommended measures to minimize impact to the open space (Authority 2020c).

On April 5, 2022, Authority staff conducted a site visit with elected officials, the City Manager, the Assistant City Manager, the Open Space Manager, and the Intergovernmental Relations Manager from the City. During the field meeting, the City Open Space Manager explained that the City acquired the open space property with a plan to utilize the flat, usable land as an open space/trail area for mountain bikers, horseback riders, and hikers. The City Open Space Manager discussed the unique flora on the property (Authority 2022b).

The Palmdale to Burbank Project Section Draft EIR/EIS was posted on the Authority's website on August 31, 2022. The public review and comment period originally ran for a 60-day public review from September 2, 2022 through November 1, 2022, pursuant to NEPA and CEQA. In response to agency and stakeholder requests, the Authority extended the public review and comment period by 30 days, to December 1, 2022, for a total of 90 days after the document was published. The City submitted five copies of the same comment letter, signed by Mayor Laurene Weste and

dated November 22, 2022. The City's comment letter on the Draft EIR/EIS reiterated the City Council's position that a fully underground alignment is supported. The letter also stated:

> Earlier this year, the City acquired 208 acres of open space, known as Bee Canyon, located east of State Route 14 (SR-14) and north of Soledad Canyon Road. As the SR-14A Build Alternative proposes to bifurcate Bee Canyon, at-grade, we respectfully request that the EIR include mitigation measures on the potential impacts the construction and operation of the [p]roject could have on recreational uses and wildlife corridors within this open space. Additionally, we respectfully request that the Authority take into serious consideration these potential impacts to Bee Canyon in its decision on an alignment within this segment.

During the Draft EIR/EIS public review and comment period, Authority staff met with elected officials, the City Manager, the Assistant City Manager, the Open Space Manager, and the Intergovernmental Relations Manager from the City. During this meeting, Mayor Weste noted the City had recently closed escrow on the Lang Station Open Space property and that the City is concerned with the SR14 alignment through the area as well as the CEMEX operations mountainside in the same area (Authority 2022c).

On September 15, 2023, the Authority sent an email to Masis Hagobian (the City's Intergovernmental Relations Officer) asking if Lang Station Open Space is publicly owned and open to the public, and if the major purpose was park or recreation (Rosenson, pers. comm. 2023).

Masis Hagobian (the City's Intergovernmental Relations Officer) responded on September 21, 2023, stating, "The City acquired Bee Canyon as protected open space in October 2022" (Hagobian, pers. comm. 2023). Mr. Hagobian also stated that Lang Station Open Space is publicly owned and open to the public. Additionally, he stated, "There are two developed trails and a third in the works. In addition to the trails in Bee Canyon, there are three additional trailheads in the surrounding area. There are no other recreational facilities, besides the aforementioned trails and associated parking areas" (Hagobian, pers. comm. 2023).

As previously stated, pursuant to the City's Open Space Acquisition Implementation Work Program for Fiscal Year 2023-24 (City of Santa Clarita 2023b):

> Funds derived from the [Open Space Preservation District] that are utilized for this Work Program shall fund the acquisition of acres of undeveloped land in the following ratio:
>
> - At least 90 percent of the acres purchased will be preserved natural open space.
> - No more than 10 percent of the acres purchased will be used for future improved active parkland.

It is noted the previous versions of the Open Space Acquisition Implementation Work Program (from previous fiscal years) also state identical percent allocations (at least 90 percent of the City's open space lands will be preserved natural open space and no more than 10 percent will be used for future improved active parkland).

2.2 Public Review and Comment

In September 2022, public notice regarding the availability and circulation of the Draft EIR/EIS was provided pursuant to NEPA and CEQA requirements, and text of the public notice was prepared in English, Spanish, Armenian, and Arabic. Notification included publication of an advertisement in newspapers with general circulation in areas potentially affected by the project. The Draft EIR/EIS public comment period was advertised in the following newspapers:

- Acton-Agua Dulce Weekly News
- Antelope Valley Press
- Asbarez News
- Asian Journal
- The Burbank Leader

- Daily News
- Korea Daily
- La Opinión
- Los Angeles Times
- Nguoi Viet-Daily
- Panorama
- San Fernando Valley Sun
- San Fernando Valley El Sol
- Santa Clarita Valley Signal
- The Signal Newspaper
- Siamtownus
- World Journal Chinese Daily News

The newspaper advertisements indicated that the Draft EIR/EIS was available on the Authority's website for review. These advertisements and the Authority's website also noted the times and locations of workshops, public hearing, and the period during which public comments would be received. A summary, fact sheet, and Notice of Availability were provided in English, Spanish, Armenian, and Arabic; these items were distributed by direct mail to members of the public who subscribed to the project mailing list, had attended project events (scoping, public meetings, etc.), or had sent comments or questions via email or on the Authority's website. In addition, notice was sent to persons who own or live on properties as follows:[3]

- Within 1,000 feet of the Build Alternatives' footprints for above ground activity
- Within 500 feet of the Build Alternatives' footprints for tunnel activity
- Within 1,000 feet of the Build Alternatives' footprints for unincorporated areas
- Within 500 feet of the Build Alternatives' footprints for incorporated areas
- Within 1,200 feet of the Burbank Airport Station footprint

A postcard in English, Spanish, and other languages was mailed to additional stakeholders who had indicated interest in the project and requested that they be kept informed. A Notice of Completion indicating the availability of the Draft EIR/EIS was filed with the State Clearinghouse, and copies were sent to state agencies. Several dozen notices were displayed at businesses, public gathering places (e.g., post offices, Amtrak stations, local libraries, community centers), and the offices of city and county elected officials in the communities surrounding the project section alternative alignments.

Printed and/or electronic copies of the Draft EIR/EIS were sent to federal, state, and local agencies; regional transportation agencies; and other organizations and persons who had expressed an interest in the project. Transportation agencies with facilities within 0.5 mile of the alignment and regional transportation agencies included the Antelope Valley Transit Authority, the Burbank Transportation Division, Santa Clarita Transit, Metrolink, the Los Angeles Public Works Department, Amtrak, and Mission City Transit. The entire Draft EIR/EIS, and appendices are available on the Authority's website (www.hsr.ca.gov). Electronic copies of these documents are available upon request at no cost at the Authority's main office (700 L Street, Suite 800, Sacramento, California 95814) and Southern California regional office (355 S. Grand Avenue, Suite 2050, Los Angeles, California 90071). Electronic copies also can be requested by mail or at: https://buildhsr.com/contact_us/. Printed and electronic copies of the Draft EIR/EIS were available at public libraries, the Authority's offices, and county clerk offices. Chapter 10, EIR/EIS Distribution, provides a full distribution list for the Draft EIR/EIS with updates for this Final EIR/EIS.

California Governor Gavin Newsom announced directives to address the need to slow the spread of novel coronavirus (COVID-19) in California (and globally) by prohibiting gatherings of any size.

[3] The boundaries of each of the Build Alternative footprints for unincorporated areas and incorporated areas differ in distance due to the variance in both population rates and parcel ownership. In unincorporated areas, parcels tend to be larger, thus a larger footprint is necessary.

In addition, Governor Newsom issued Executive Order N-33-20, which ordered all individuals living in the state of California to stay home or at their place of residence until further notice. In order to comply with the governor's directives and Executive Order N-33-20, and to protect public health, the traditional in-person format of the public hearing was changed to a "virtual" public hearing held online and via telephone.

The Palmdale to Burbank Project Section Draft EIR/EIS was posted on the Authority's website for public review on September 2, 2022, and was formally made available to California state agencies by the State Clearinghouse beginning August 31, 2022. The public comment period ran from September 2, 2022, to November 1, 2022, initially; but was extended to December 1, 2022, for a total of 90 days. A news release was posted on the Authority's website on September 7, 2022, and posted in regional and major newspapers on September 1, 2022. A news release dated September 27, 2022, was posted on the Authority's website, which notified the public that the comment period had been extended.

3 PURPOSE AND NEED

The purpose of the statewide HSR system is to provide a reliable high-speed electric-powered train system that links the major metropolitan areas of the state, and that delivers predictable and consistent travel times. A further objective is to provide an interface with commercial airports, mass transit, and the highway network and to relieve capacity constraints of the existing transportation system as increases in intercity travel demand in California occur, in a manner sensitive to and protective of California's unique natural resources (Authority and FRA 2005).

The purpose of the Palmdale to Burbank Section of the California HSR system is to provide the public with electric-powered HSR service that provides predictable and consistent travel times between the Antelope Valley and the San Fernando Valley, provide connectivity to airports, mass transit systems, and the highway network in the Antelope Valley and the San Fernando Valley; and to connect the Northern and Southern portions of the Statewide HSR system.

For more information on the California HSR System objectives and the need for an HSR system in California and in the Los Angeles County region, refer to Chapter 1, Project Purpose, Need, and Objectives, of the Final EIR/EIS.

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4 PROJECT ALTERNATIVES

4.1 No Project Alternative

The No Project Alternative does not include construction of the Palmdale to Burbank Project Section or associated facilities. The No Project Alternative considers the effects of growth planned for the region, as well as existing and planned improvements to the highway, aviation, conventional passenger rail, and freight rail systems in the Palmdale to Burbank Project Section study area through 2040. The No Project Alternative is based on a review of all city and county general plans, regional transportation plans for all modes of travel, and agency-provided lists of pending and approved projects within Los Angeles County.

4.2 Build Alternatives

4.2.1 Palmdale to Burbank Project Section Overview

The Build Alternatives for the Palmdale to Burbank Project Section include six primary end-to-end Build Alternatives. The Palmdale to Burbank Project Section is approximately 31 to 38 miles. Each end-to-end Build Alternative is composed of two subsections—Central and Burbank. The Palmdale to Burbank Project Section extends through a variety of land uses and ecoregions, including urban, rural, and mountainous terrain. Each Build Alternative would involve areas of tunneling beneath the Angeles National Forest (ANF), including portions within the San Gabriel Mountains National Monument (SGMNM).

From the north, the Palmdale to Burbank Project Section would extend south through Palmdale, southwest through the ANF, including SGMNM, and then continue into the San Fernando Valley where it would connect with the Burbank Airport Station and terminate at Burton Avenue in the south. Elevated tracks would be on retained fill (earth), embankments, or structures and would consist of cast-in-place, reinforced-concrete columns supporting the box girders and bridge deck.

The six Palmdale to Burbank Project Section Build Alternatives and the No Project Alternative are briefly described below. The alignments are described in geographical order, from north to south, for each of the subsections (Central and Burbank). Figure 4-B-6 shows the Build Alternatives and Figure 4-B-7 shows the proposed Burbank Airport Station. The Build Alternatives and No Project Alternative for the Palmdale to Burbank Project Section are described in further detail in Chapter 2, Alternatives, of the Final EIR/EIS.

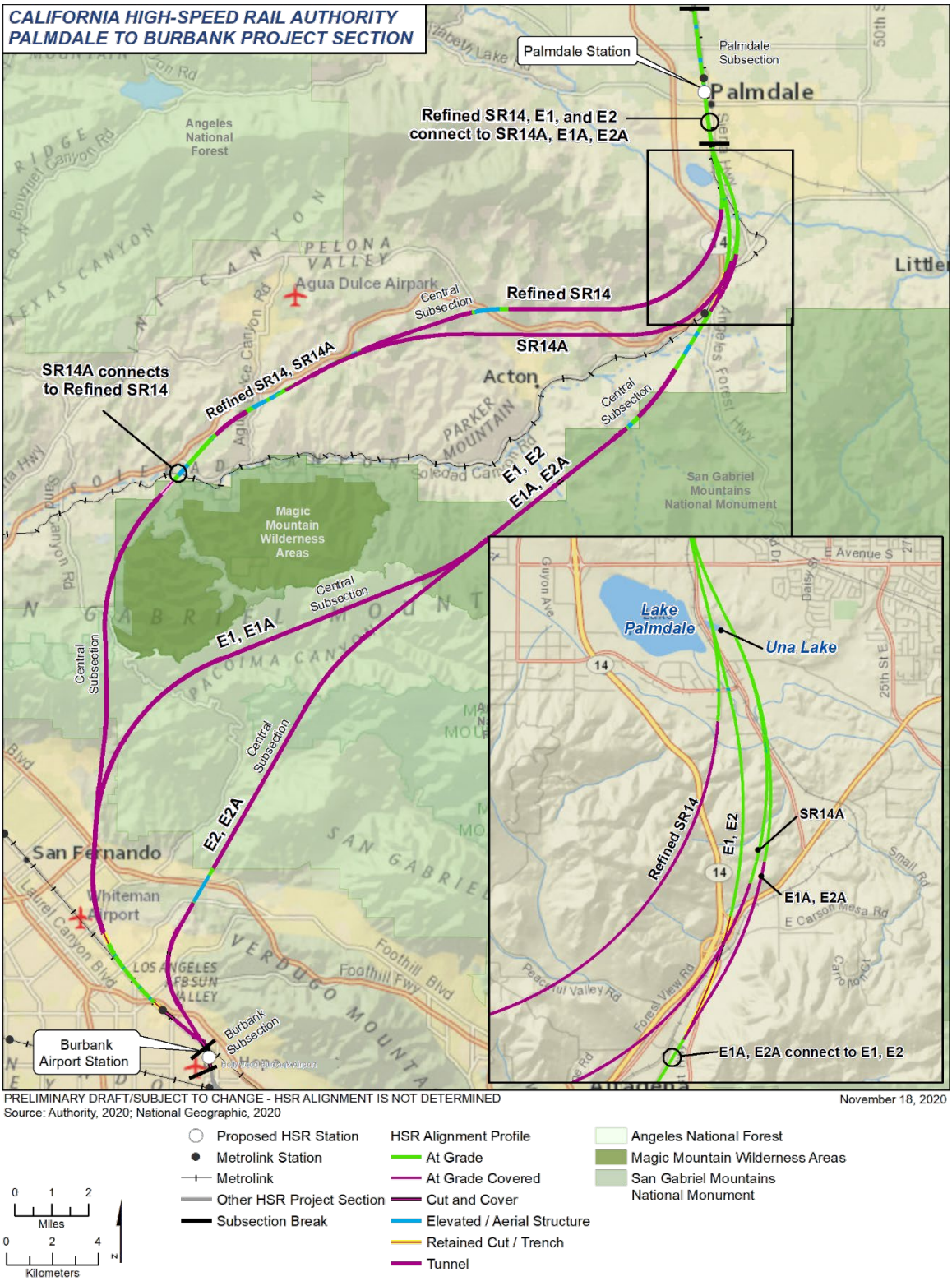

Figure 4-B-6 Palmdale to Burbank Project Section Build Alternatives and Station

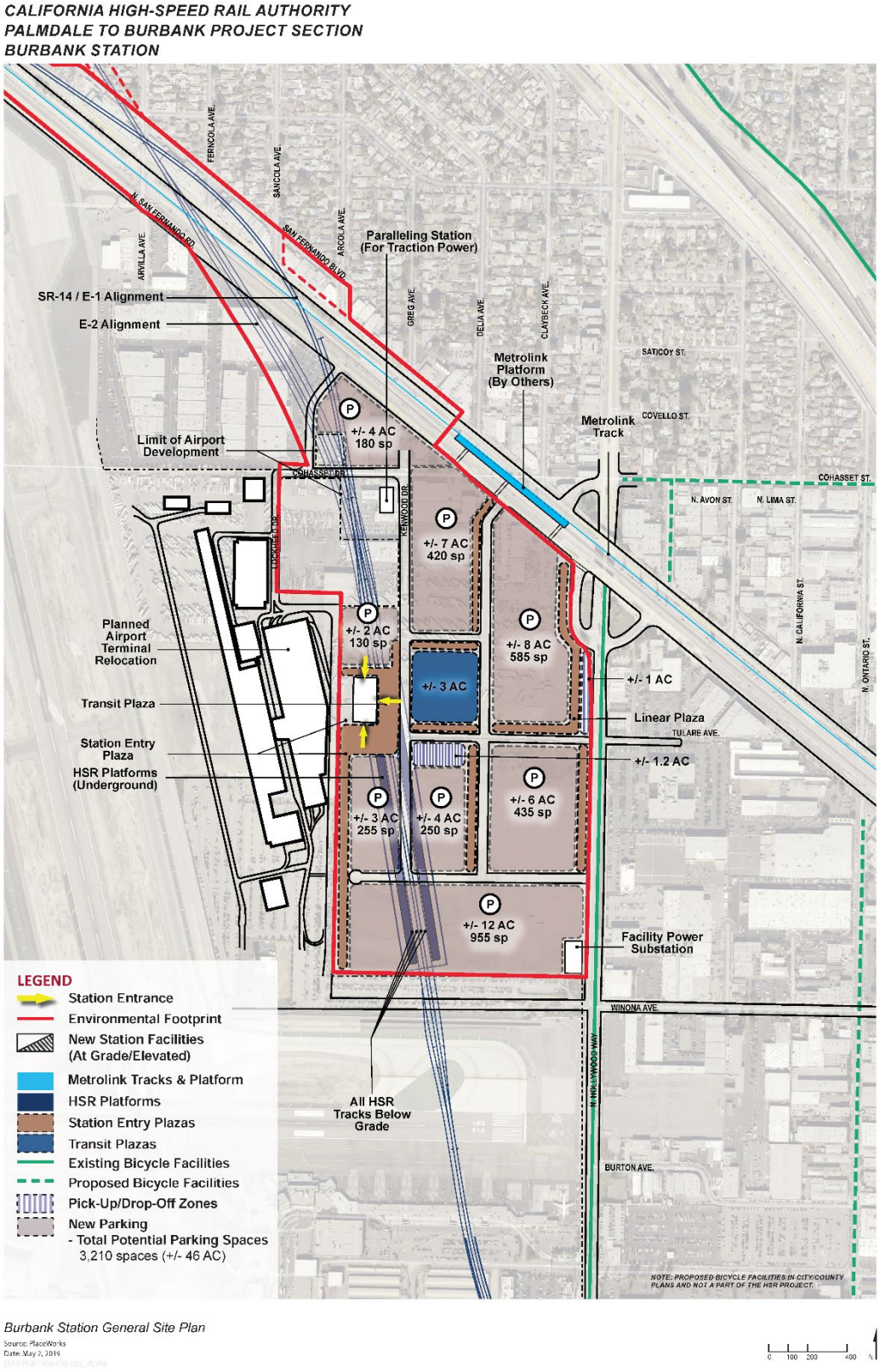

Figure 4-B-7 Proposed Burbank Airport Station

4.2.2 Refined SR14 Build Alternative

4.2.2.1 Central Subsection

North of Lang Station Open Space and Bee Canyon Area

In the Central Subsection, the Refined SR14 Build Alternative alignment would begin just east of Spruce Court, then continue south at grade, crossing the current alignment of Sierra Highway near the intersection of East Avenue S. The Refined SR14 Build Alternative alignment would cross Una Lake on an embankment, requiring partial filling of the lake. The alignment would also cross the San Andreas Fault Zone in the vicinity of Una Lake. South of Una Lake, the Refined SR14 Build Alternative alignment would cross Sierra Highway and the Metrolink rail line, which would both be relocated within this subsection.

Continuing south, the Refined SR14 Build Alternative alignment would cross over East Barrel Springs Road, continuing at grade before entering twin tunnels. The tunnels would pass beneath the East Branch of the California Aqueduct (EBA), SR-14, and various residential communities. The tunnels either would be constructed with a continuous bore or may include a section of cut-and-cover tunnel. For the purposes of this analysis, it is conservatively assumed that the alignment would include a cut-and-cover tunnel in this location.

The Refined SR14 Build Alternative alignment would emerge from the tunnels east of Red Rover Mine Road. The alignment would continue west at grade and on a viaduct over Red Rover Mine Road, Sierra Highway, SR (State Route) 14, and Escondido Canyon Road. The Refined SR14 Build Alternative alignment would then enter twin-bored tunnels, continuing southwest and emerging east of Big Springs Road.

Continuing southwest from Big Springs Road, the Refined SR14 Build Alternative alignment would be either at grade or on viaduct before briefly entering a tunnel. The Refined SR14 Build Alternative alignment would emerge from the tunnel approximately 1 mile east of Agua Dulce Canyon Road. From this point, the Refined SR14 Build Alternative alignment would continue southwest at grade and on viaduct, passing over Agua Dulce Canyon Road on a viaduct structure.

From about 0.5 mile west of Agua Dulce Canyon Road, the Refined SR14 Build Alternative alignment would enter twin tunnels, moving southwest.

Lang Station Open Space and Bee Canyon Area

Upon emerging from the tunnels west of Agua Dulce Canyon Road, the Refined SR14 Build Alternative alignment would continue at grade or on viaduct, crossing the Santa Clara River, Soledad Canyon Road, and the existing Metrolink rail alignment on a viaduct.

South of Lang Station Open Space and Bee Canyon Area

Continuing from the Santa Clara River toward Lang Station Road, the Refined SR14 Build Alternative alignment would enter the ANF, including SGMNM, in an at-grade covered tunnel, moving south through the Vulcan Mine and abandoned Nike Missile Headquarters site, both of which are within the ANF, including SGMNM. Details on tunnel types and example cross-sections can be found in Chapter 2, Alternatives.

Spoils from construction of the Refined SR14 Build Alternative would be deposited at the Vulcan Mine,[4] restoring a more natural topography in the area. Additionally, spoils associated with tunneling would be disposed of at the Boulevard Mine, which is west of San Fernando Road and north of the Interstate (I)-5/SR 170 interchange.

[4] The Authority is conducting ongoing coordination with the United States Forest Service regarding spoils disposal within Vulcan Mine.

From this point, the Refined SR14 Build Alternative alignment would enter twin bored tunnels, proceeding underneath portions of the ANF, including SGMNM, the City of Santa Clarita, and the Pacoima neighborhood in the City of Los Angeles. The twin tunnels would pass through the San Gabriel Fault Zone and the Sierra Madre Fault Zone.

Adits

Adits are intermediate tunnel access shafts intended to facilitate construction of bored tunnels. An adit can serve as a tunnel boring machine entry or exit point and can enable the use of multiple tunnel boring machines to shorten construction time.

Intermediate Windows

An *intermediate window* is a vertical shaft connecting to an underground construction area. Windows would comprise an elevator and gantry cranes to provide access to water, power, ventilation, and other support during construction. After construction is complete, a small structure for permanent access, and possibly ventilation equipment, would remain at the surface.

The Refined SR14 Build Alternative includes three options for adits, one of which would be selected. Refer to Chapter 2, Alternatives, of the Final EIR/EIS for a detailed description of adits. The first adit option (SR14-A1) would be located within the ANF along Little Tujunga Canyon Road and is near the aforementioned fault zones. This would facilitate future remedial work that may need to occur in the event of seismic ground movement. The temporary construction staging area associated with this adit option (SR14-A1) is located on in-holdings within the ANF.[5] The second (SR14-A2) and third adit options (SR14-A3) would be just south of the Pacoima Dam. SR14-A2 would surface west of the Refined SR14 Build Alternative alignment and connect to Gavina Avenue, while SR14-A3 would surface east of the Refined SR14 Build Alternative alignment and connect to Wallabi Avenue.

The Refined SR14 Build Alternative also includes two options for an intermediate window, one of which would be selected to provide construction access to tunnels. Please refer to Chapter 2, Alternatives, of the Final EIR/EIS for a detailed description of intermediate windows. Both options would be in proximity to the I-210/SR 118 interchange. The first option would be directly north of the intersection of these freeways, while the second option would be south of the intersection of these freeways.

The Refined SR14 Build Alternative alignment would emerge from the tunnel east of the existing Antelope Valley Metrolink Corridor near Montague Street in the Pacoima neighborhood in the City of Los Angeles. From Montague Street, the alignment would continue south in a retained cut/trench before transitioning to at-grade tracks until crossing the Los Angeles County Flood Control Channel on viaduct. This viaduct would also cross over a realigned Metrolink track and Sheldon Street before entering the existing Metrolink corridor south of Sheldon Street. Continuing along the Metrolink corridor, the Refined SR14 Build Alternative alignment would then continue southeast at grade from immediately south of Allegheny Street to the I-5 undercrossing. Continuing from the I-5 undercrossing, the alignment would transition to a retained-cut/trench extending to Olinda Street. Continuing from Olinda Street, the Refined SR14 Build Alternative alignment would enter a cut-and-cover tunnel, where the alignment would be located in a box adjacent to the realigned Metrolink rail alignment. From this point, the Central Subsection Refined SR14 Build Alternative would continue on to the Burbank Subsection.

The Refined SR14 Build Alternative alignment would continue in the cut-and-cover tunnel adjacent to the realigned Metrolink railway from Olinda Street until reaching the southern limit of Lockheed Drive. The end of this alignment would be the southern limit of the Central Subsection.

4.2.2.2 Burbank Subsection

The northern limit of this subsection is Lockheed Drive. From Lockheed Drive, the Refined SR14 Build Alternative alignment would continue in a cut-and-cover tunnel until entering Burbank Airport Station. The Burbank Airport Station would be an underground station, beginning near Kenwood Street.

[5] An in-holding is privately owned land within the boundary of a publicly owned, protected area such as a national park or forest.

4.2.3 SR14A Build Alternative

4.2.3.1 Central Subsection

Within the Central Subsection, the SR14A Build Alternative alignment would diverge from the Refined SR14 Build Alternative alignment south of Spruce Court curving eastward and south approximately 300 feet east of Una Lake. South of Una Lake, the SR14A Build Alternative alignment would curve westward; cross over the Metrolink Antelope Valley Line, Sierra Highway, and the Soledad Siphon; and continue southwest entering a tunnel portal approximately 0.5 mile northeast of the Sierra Highway/Pearblossom Highway intersection. The SR14A Build Alternative alignment would then continue westward, in an approximately 13-mile-long tunnel before surfacing approximately 0.75 mile east of Agua Dulce Canyon Road. The SR14A Build Alternative also includes an intermediate window south of SR 14 in Acton. The alignment would transition between at-grade and elevated profiles closely paralleling SR 14 before entering an approximately 1-mile-long tunnel. Transitioning from tunnel to at grade, the SR14A Build Alternative alignment would converge with the Refined SR14 Build Alternative alignment at the Soledad Canyon Mining Operations (Vulcan Mine) site. The remaining SR14A Build Alternative alignment (south of the Vulcan Mine site, under the ANF including the SGMNM, and into the San Fernando Valley) would be identical to the Refined SR14 Build Alternative alignment.

Within the Lang Station Open Space and Bee Canyon area, the SR14A Build Alternative alignment would be identical to the Refined SR14 Build Alternative alignment.

4.2.3.2 Burbank Subsection

Within the Burbank Subsection, the SR14A Build Alternative would be identical to the Refined SR14 Build Alternative, including alignment and ancillary features, described under the Refined SR14 Build Alternative discussion above.

4.2.4 E1 Build Alternative

4.2.4.1 Central Subsection

Within the Central Subsection, the E1 Build Alternative alignment would begin east of Spruce Court at grade, and generally follow the existing Sierra Highway alignment. The alignment would continue at grade across Una Lake, which would be partially filled. South of Una Lake, the alignment would curve west, crossing the existing Sierra Highway and Metrolink corridors, which would be realigned to the east. In the vicinity of Una Lake, the E1 Build Alternative alignment would cross the San Andreas Fault Zone.

After continuing east of the Harold neighborhood and passing over Barrels Springs Road, the E1 Build Alternative alignment would reach the California Aqueduct approximately 0.2 mile west of where the aqueduct passes beneath Sierra Highway. This Build Alternative would require the relocation of a portion of the California Aqueduct. The E1 Build Alternative alignment would cross the California Aqueduct right-of-way at grade and would continue south before entering a stretch of retained cut/trench and cut-and-cover tunnel that would be beneath the Pearblossom Highway/SR 14 interchange, Sierra Highway, Metrolink corridor, Carson Mesa Road, and an extension of Mountain Springs Road. The alignment would continue at grade in between Angeles Forest Highway and the Vincent Grade/Acton Metrolink Station in a southwesterly direction.

Immediately south of Rockyford Road, the E1 Build Alternative alignment would transition from at grade to a viaduct structure to cross an unnamed wash area northwest of the existing Vincent Substation. The alignment would return to at grade at the southern bank of the wash and pass underneath Foreston Drive. Immediately south of Foreston Drive, the alignment would continue on a viaduct, crossing another drainage area. The E1 Build Alternative alignment would return to at grade approximately 0.2 mile east of the terminus of Kentucky Springs Road. This at-grade section would continue until approximately 0.2 mile south of the Enchanted Hills Road western terminus, where the alignment would enter twin tunnels. The tunnels would pass beneath rural residences and then under the ANF, including SGMNM.

The E1 Build Alternative alignment would emerge from the tunnels outside the ANF, including SGMNM, boundaries in the Aliso Canyon Road area. The alignment would continue at grade before crossing a tributary of the Santa Clara River on a viaduct. Aliso Canyon Road would need to be re-profiled as it approaches the prospective rail alignment to achieve grade separation. The new profile of Aliso Canyon Road would lower it so the road would run beneath the E1 Build Alternative alignment. This re-profiling would extend into the ANF, including SGMNM, by approximately 0.4 mile. The tunnel portal construction would require approximately 25.2 acres of surface area disturbance within the ANF, including SGMNM. Additionally, approximately 6.5 acres would be needed for lowering the profile of Aliso Canyon Road, and 6.2 acres within the ANF, including SGMNM would be needed for an electrical utility line.

The E1 Build Alternative alignment would return to at grade after the viaduct until entering a second pair of twin tunnels immediately west of Aliso Canyon Road. The initial 16.5 miles of the tunnels would be beneath the ANF, including some 6 miles beneath the SGMNM. There are two adit options for the E1 Build Alternative, one of which would be selected. Both adit options are located on private in-holdings along Little Tujunga Canyon Road, within the ANF. The first adit option would extend east from the underground cavern to a construction staging area along Little Tujunga Canyon Road, while the second adit option would extend west from the underground cavern to a construction staging area north of Little Tujunga Canyon Road. The selected adit site may serve as a permanent mid-tunnel ventilation structure.

The E1 Build Alternative would also have three options for intermediate windows, two of which would be selected. The first intermediate window would be located north of Arrastre Canyon, just outside the ANF, including SGMNM, boundary. The second and the third option would be in proximity to the I-210/SR 118 interchange. The second window option would be directly north of the intersection of these freeways, and the third window option would be south of the intersection of these freeways. Given the similar access provided by options two and three, one of these two options would be selected, in addition to the first option.

The E1 Build Alternative alignment would continue southwesterly, turning to a more southerly direction after crossing beneath Little Tujunga Canyon Road and the San Gabriel Fault. The alignment would continue in a tunnel passing approximately 0.3 mile east of the Pacoima Reservoir and exit the ANF (remaining underground) beneath the Sylmar neighborhood in the City of Los Angeles. The E1 Build Alternative alignment would continue underground, crossing the Sierra Madre Fault Zone, and then passing beneath the I-210/SR 118 interchange in the Pacoima neighborhood in the City of Los Angeles, where the alignment would curve from a southerly to southeasterly direction.

With implementation of the E1 Build Alternative, spoils would be deposited at the Boulevard Mine site as described above for the Refined SR14 Build Alternative. The E1 Build Alternative would emerge from the tunnel immediately after passing beneath Montague Street in the Pacoima neighborhood. From Montague Street, the alignment would follow the same routing as described for the Refined SR14 Build Alternative from its emergence at Montague Street. Similar to the Refined SR14 Build Alternative, the E1 Build Alternative would connect to the Burbank Airport Station near Olinda Street. From Olinda Street, the E1 Build Alternative would be identical to the Refined SR14 Build Alternative.

Accordingly, the E1 Build Alternative alignment is not located within the vicinity of Lang Station Open Space.

4.2.4.2 Burbank Subsection

Within the Burbank Subsection, the E1 Build Alternative would be identical to the Refined SR14 Build Alternative, including alignment and ancillary features, described under the Refined SR14 Build Alternative discussion above.

4.2.5 E1A Build Alternative

4.2.5.1 Central Subsection

In the Central Subsection, the E1A Build Alternative alignment would diverge from the E1 Build Alternative alignment south of Spruce Court following a more easterly route. In contrast to the E1 Build Alternative alignment, the E1A Build Alternative alignment would include elevated structures to cross over the California Aqueduct before entering a tunnel portal approximately 1,900 feet southwest of the Sierra Highway/Pearblossom Highway intersection. After proceeding underground for approximately 1.5 miles, the E1A Build Alternative alignment would transition to an at-grade profile approximately 350 feet north of Vincent View Road. Just south of Vincent View Road, the E1A Build Alternative alignment would converge with the E1 Build Alternative alignment. The remaining E1A Build Alternative alignment (south of Vincent View Road, under the ANF including SGMNM, into the San Fernando Valley, and to the southern terminus of the Central Subsection) would be identical to the E1 Build Alternative alignment.

Accordingly, the E1A Build Alternative alignment is not located within the vicinity of Lang Station Open Space.

4.2.5.2 Burbank Subsection

Within the Burbank Subsection, the E1A Build Alternative would be identical to the Refined SR14 and E1 Build Alternatives, including alignment and ancillary features, described under the Refined SR14 and E1 Build Alternative discussions above.

4.2.6 E2 Build Alternative

4.2.6.1 Central Subsection

Within the Central Subsection, the E2 Build Alternative alignment would be identical to the E1 Build Alternative alignment between Spruce Court and Aliso Canyon Road. This includes the area passing over Una Lake, the San Andreas Fault Zone, the California Aqueduct, the Santa Clara River tributary, and the Aliso Canyon Road crossing and re-profiling.

To the immediate west of Aliso Canyon Road, the E2 Build Alternative alignment would enter twin tunnels, initially proceeding to the southwest. A total of 7 miles of this tunnel would be beneath the ANF, including SGMNM. Similar to the E1 Build Alternative, the E2 Build Alternative would have an intermediate construction window in Arrastre Canyon as described below. The E2 Build Alternative alignment would continue southwesterly, curving to a more south-southwesterly direction as the alignment passes beneath Mendenhall Ridge Road and then through the San Gabriel Fault.

The E2 Build Alternative includes two options for adits, one of which would be selected. Both adit options for the E2 Build Alternative would connect to Little Tujunga Canyon Road on private in-holdings within the ANF. The first adit option would extend west from the underground cavern to a temporary construction staging area within a private in-holding approximately 0.4-mile north of Gold Creek Road, while the second adit option would also extend west from the underground cavern to a temporary construction staging area located within a private in-holding along Gold Creek Road.

The E2 Build Alternative also includes two intermediate window locations to provide construction access to tunnels. The first intermediate window location is just outside the ANF, north of Arrastre Canyon; the second intermediate window location is at the current site of the CalMat Mine.

The E2 Build Alternative alignment would transition from tunnel to at grade in the hills above the Lake View Terrace neighborhood in the City of Los Angeles, near the (private, unimproved) BP & L Road. This tunnel portal would require approximately 20 acres of grading and slope stabilization within ANF boundaries. After crossing the Sierra Madre Fault Zone, the E2 Build Alternative alignment would continue at grade before transitioning to an elevated viaduct structure. The viaduct would cross over Arnwood Road, Foothill Boulevard, and I-210 and then would continue

to cross Big Tujunga Wash in the Hansen Dam Open Space Area, crossing below Wentworth Street in the Shadow Hills neighborhood in the City of Los Angeles.

After crossing Wentworth Street, the E2 Build Alternative alignment would have a relatively short at-grade section before transitioning to a tunnel. This portion of the alignment would continue in the same south-southwesterly direction until approximately Peoria Street in the Sun Valley neighborhood in the City of Los Angeles. Beneath Peoria Street, the E2 Build Alternative alignment would curve to the southeast. At Peoria Street, the tunnel construction method would change. North of Peoria Street, the tunnels would be bored; between Peoria Street and approximately Fleetwood Street, however, the tunnel would either be cut-and-cover via an open construction method or would extend in a continuous bored tunnel. For the purpose of this environmental review, it is assumed that the alignment would transition to a cut-and-cover tunnel in this location.

At Fleetwood Street the E2 Build Alternative alignment would pass beneath Sunland Boulevard, I-5, and San Fernando Road in a bored or mined tunnel. The tunnel would extend until just past Lockheed Drive, the southern limit of the Central Subsection.

With implementation of the E2 Build Alternative, some spoils would be deposited at the CalMat Mine, adjacent to Stonehurst Recreation Center east of Glenoaks Boulevard.

Accordingly, the E2 Build Alternative alignment is not located within the vicinity of Lang Station Open Space.

4.2.6.2 Burbank Subsection

From Lockheed Drive, the E2 Build Alternative alignment would transition into a cut-and-cover tunnel before entering the Burbank Airport Station underneath Kenwood Street.

After exiting the underground station, the E2 Build Alternative alignment would continue southeast in a cut-and-cover tunnel to reach Burton Avenue. At Burton Avenue (the southern limit of this subsection), the alignment would join with the tunnel alignment proposed within the Burbank to Los Angeles Project Section.

4.2.7 E2A Build Alternative

4.2.7.1 Central Subsection

In the Central Subsection, the E2A Build Alternative alignment would follow an identical route to the E1A Build Alternative to Vincent View Road, where it would rejoin with the E2 Build Alternative alignment. Accordingly, the E2A Build Alternative alignment is not located within the vicinity of Lang Station Open Space.

4.2.7.2 Burbank Subsection

Within the Burbank Subsection, the E2A Build Alternative would be identical to the Refined SR14 and E2 Build Alternatives, including alignment and ancillary features, described under the Refined SR14 and E2 Build Alternative discussions above.

4.3 Station Sites

The Palmdale to Burbank Project Section would be served by a station in Burbank. The Burbank Airport Station would be designed to optimize access to the California HSR System, particularly to allow for intercity travel and connections to local transit, airports, highways, and bicycle and pedestrian networks. All California HSR System stations would include the following elements:

- Passenger boarding and alighting platforms
- Station head house with ticketing, waiting areas, passenger amenities, vertical circulation, administration and employee areas, and baggage and freight-handling service
- Vehicle parking (short-term and long-term)

- Pick-up and drop-off areas
- Motorcycle/scooter parking
- Bicycle parking
- Waiting areas and queuing space for taxis and shuttle buses
- Pedestrian walkway connections

4.3.1 Burbank Airport Station

The Burbank Airport Station would be located along the Build Alternative alignments, with rail facilities underground to meet the tracks. Both underground and aboveground facilities would be constructed at the station site. Aboveground facilities would cover approximately 70 acres.

Station facilities would include train boarding platforms, a station building (that would house ticketing areas, passenger waiting areas, restrooms, and related facilities), pick up/drop off facilities for private autos, a transit center for buses and shuttles, and surface parking areas.

Underground portions of the station would be beneath Cohasset Street, which parallels the boundary between the City of Los Angeles to the north and the City of Burbank to the south.

The station site would be located west of Hollywood Way and east of the Hollywood Burbank Airport. The airport and ancillary properties occupy much of the land south of the proposed station site. Industrial and light industrial land uses are located to the east, and residential land uses are located north of the station site. I-5 runs parallel to the station site, approximately 0.25 mile north of the proposed passenger platforms.

The Burbank Airport Station would have up to 3,210 surface parking spaces by 2040. Approximately 1,640 of these spaces would be available by the start of operations (2029). Proposed surface parking at the Burbank Airport Station would be in addition to parking spaces that might be included in the replacement terminal project if the Preferred Alternative site is ultimately selected.

4.4 Maintenance Facilities

The California HSR System includes four types of maintenance facilities: maintenance of infrastructure facilities; maintenance of infrastructure siding facilities; heavy maintenance facilities; and light maintenance facilities. One heavy maintenance facility would be required for the entire system. At this time, the Authority is anticipating the identification and selection of a heavy maintenance facility site built in the Central Valley, outside of the Palmdale to Burbank Project Section. The design and spacing of other types of maintenance facilities along the HSR alignment require the Bakersfield to Palmdale Project Section to include a Maintenance Facility in the Lancaster area at Avenue M, which is outside of the Palmdale to Burbank Project Section.

5 LANG STATION OPEN SPACE SECTION 4(f) APPLICABILITY ANALYSIS

Section 5.15.1 identifies whether Lang Station Open Space meets the criteria for protection as a Section 4(f) park, recreation, open space, or wildlife or waterfowl refuge property, and Section 5.2 identifies whether Lang Station Open Space meets the criteria for protection as a Section 4(f) cultural resource.

The evaluation of potential use of Section 4(f) resources below includes the application of IAMFs that are included in the Build Alternatives and are listed in Chapter 2, Alternatives, of the Final EIR/EIS. The Authority pledged to integrate programmatic IAMFs consistent with (1) the Final Program EIR/EIS for the Proposed California High-Speed Train System (Authority and FRA 2005); (2) the Bay Area to Central Valley High-Speed Train Program EIR/EIS (Authority and FRA 2008); and (3) the Bay Area to Central Valley High-Speed Train Partially Revised Final Program EIR (Authority 2012a). To avoid or reduce impacts, the Authority will implement these IAMFs during design and construction of the Preferred Alternative, as relevant to the Palmdale to Burbank Project Section. Use determinations examine the net effect on a resource after the application of IAMFs and project- or resource-specific avoidance, minimization, or mitigation measures.

5.1 Parks, Recreation Areas, and Wildlife and Waterfowl Refuges

Data collection to identify if Lang Station Open Space is a potential Section 4(f) park, recreation, open space, or wildlife or waterfowl refuge property consisted of a review of adopted and publicly available draft City of Santa Clarita plans and maps; correspondence with the City (the OWJ); and field reviews.

Although Lang Station Open Space is not included in any City plans or depicted on the City's trails map, as discussed in Section 3.15, Parks, Recreation, and Open Space, of the Final EIR/EIS, Lang Station Open Space includes a trailhead and several trails totaling approximately 1.15 miles, as discussed below. The publicly available recreational components of Lang Station Open Space are shown on Figure 4-B-8.

5.1.1 Lang Station Open Space

5.1.1.1 Size and Location

The approximately 208-acre Lang Station Open Space, shown on Figure 4-B-8, is located on undeveloped land southeast of SR 14, east of the intersection of Stonecrest Road and Soledad Canyon Road in Los Angeles County to the east of the city boundaries of Santa Clarita. The Refined SR14 and SR14A Build Alternatives would traverse Lang Station Open Space at grade, requiring the permanent acquisition of 85.3 acres, including 56.0 acres of permanent footprint that would be fenced off from the public, as well as 29.3 acres that would be permanently inaccessible from the remainder of the property due to the permanent footprint dividing the property. These two Build Alternatives would also result in removal of the existing trailhead and approximately 0.13 mile of existing trails within the open space. Lang Station Open Space is located more than 1,000 feet from the construction footprints for the E1, E1A, E2, and E2A Build Alternatives.

5.1.1.2 Ownership

This resource is owned and maintained by the City of Santa Clarita Open Space Preservation District (District).

Usage (Intended, Actual/Current, and Planned)

Pursuant to the Section 4(f) Policy Paper (FHWA 2012):

> Publicly owned land is considered to be a park, recreation area or wildlife and waterfowl refuge when the land has been officially designated as such by a Federal, State or local agency, and the officials with jurisdiction over the land determine that its primary purpose is as a park, recreation area, or refuge. Primary purpose is related to a property's primary

> function and how it is intended to be managed. Incidental, secondary, occasional or dispersed activities similar to park, recreational or refuge activities do not constitute a primary purpose within the context of Section 4(f). Unauthorized activities, such as ad hoc trails created by the public within a conservation area, should not be considered as part of [the federal lead agency's] determination of Section 4(f) applicability.

Regarding whether multiple-use public land holdings are subject to the requirements of Section 4(f), the Section 4(f) Policy Paper (FHWA 2012) states:

> When applying Section 4(f) to multiple-use public land holdings, [the federal lead agency] must comply with 23 CFR 774.11(d). Section 4(f) applies only to those portions of a multiple-use public property that are designated by statute or identified in an official management plan of the administering agency as being primarily for public park, recreation, or wildlife and waterfowl refuge purposes, and are determined to be significant for such purposes. … Multiple-use public land holdings are often vast in size, and by definition these properties are comprised of multiple areas that serve different purposes. Section 4(f) does not apply to those areas within a multiple-use public property that function primarily for any purpose other than significant park, recreation or refuge purposes. For example, within a National Forest, there can be areas that qualify as Section 4(f) resources (e.g., campgrounds, trails, picnic areas) while other areas of the property function primarily for purposes other than park, recreation or a refuge such as timber sales or mineral extraction. Coordination with the [OWJ] and examination of the management plan for the area will be necessary to determine if Section 4(f) should apply to an area of a multiple-use property that would be used by a transportation project.
>
> For multiple-use public land holdings which either do not have formal management plans or when the existing formal management plan is out-of-date, [the federal lead agency] will examine how the property functions and how it is being managed to determine Section 4(f) applicability for the various areas of the property. This review will include coordination with the [OWJ] over the property.

Lang Station Open Space is depicted on the City's Parks and Open Space Map (City of Santa Clarita 2024a) as "public open space." As of February 12, 2024, the City map shows no trailheads or trails within Lang Station Open Space. According to the City, "the City acquired [Lang Station Open Space] as protected open space" (Hagobian, pers. comm. 2023). Pursuant to the City's Open Space Acquisition Implementation Work Program for Fiscal Year 2023-24 (City 2023b):

> Funds derived from the [Open Space Preservation District] that are utilized for this Work Program shall fund the acquisition of acres of undeveloped land in the following ratio:
>
> - At least 90 percent of the acres purchased will be preserved natural open space.
> - No more than 10 percent of the acres purchased will be used for future improved active parkland.

It is noted the previous versions of the Open Space Acquisition Implementation Work Program (from prior fiscal years) also state identical percent allocations (at least 90 percent of the City's open space lands will be preserved natural open space and no more than 10 percent will be used for future improved active parkland or recreation).

In addition to the preserved open space lands, Lang Station Open Space includes three public trails, totaling approximately 1.15 miles, for hiking, mountain biking, and equestrian use. It is noted that pursuant to City Municipal Code Section 14.10.110, Trails, human intrusion into City open space areas is prohibited (City of Santa Clarita 2023a). Therefore, trail users at Lang Station Open Space are required to remain on the trails and keep out of the remainder of the open space area.

Bee Canyon (Lang Station Open Space) contains suitable habitat for several special-status plant and wildlife species, including slender-horned spineflower (spineflower), which is a federally endangered species, coastal California gnatcatcher (gnatcatcher), which is a federally threatened

species, and the southern California/Central Coast Evolutionary Significant Unit of mountain lion (mountain lion).

Spineflower

The Authority acquired permission to enter public and private lands within Bee Canyon and conducted a botanical floristic survey of a 60-acre area just northeast of Soledad Canyon Road in May 2023 to determine the extent of the spineflower population. The results of the survey were negative for the presence of spineflower, and no suitable habitat was observed in the construction footprint within the 60-acre survey area. While seasonal variation in conditions may affect the detectability of the species, the lack of suitable habitat in the construction footprint of the 60-acre area surveyed indicates that no direct effects to spineflower would occur in this area. However, protocol-level surveys of all modeled suitable habitat areas will be conducted prior to construction to determine whether this species is present in the plant study area (the construction footprint and 100-foot plant indirect effect area).

Gnatcatcher

Modeled suitable gnatcatcher habitat in the area, where direct and indirect effects would occur for the S14A Build Alternative, consists of 21.0 acres of moderate quality habitat and 217.5 acres of low value habitat. The coastal sage scrub habitat in Bee Canyon is considered occupied by gnatcatcher.

Mountain Lion

In March 2024, Authority biologists walked the canyon bottom of Bee Canyon from Soledad Canyon Road to the eastern most ridge above the tunnel segment with CDFW staff. The biologists observed steep escarpments and freeway road cuts to the north (north of the freeway), and to the south, there is a tall ridge where it transitions from coastal sage scrub to chaparral. The steep road cuts and natural terrain when considered in combination with the SR 14 freeway, act as a barrier to north-south wildlife crossings.

Substantial evidence developed for the WCA indicates that the approximately 1-mile stretch of the SR 14 freeway adjacent to Bee Canyon is a complete barrier to movement. The 2014 annual average daily traffic volume (AADT) for the SR 14 freeway ranged between 71,000 and 99,000 vehicles in Palmdale and Santa Clarita (Caltrans 2014), which is seven to ten times the volume that Clevenger and Huijser (2009) found to repel wildlife due to the almost constant level of disturbance and heavy traffic volume. In addition, the steep road cuts and steep terrain along the SR 14 freeway, between Stonecrest Road and Agua Dulce Canyon Road, make the freeway less likely to facilitate wildlife movement as highlighted in the UC Davis roadkill data.

The City's Open Space Acquisition Implementation Work Program for Fiscal Year 2023-24 (City of Santa Clarita 2023) defines "wildlife corridors" as "pathways or habitat linkages that connect discrete areas of natural open space otherwise separated or fragmented by topography, changes in vegetation, and other natural factors in combination with urbanization. Corridors: 1) allow animals to move between remaining habitats, which allow depleted populations to be replenished and promotes genetic exchange; 2) provide escape routes from fire, predators, and human disturbances, thus reducing the risk that catastrophic events, such as fire or disease, will result in population or species extinction; 3) serve as travel paths for individual animals as they wander throughout their home ranges in search of food, water, mates, and other needs, or for dispersing juveniles in search of new home ranges." Immediately north of Bee Canyon (Lang Station Open Space), the approximately 1-mile stretch of the SR 14 freeway is a complete barrier to movement. Additionally, the Lang Station Open Space trailhead signage does not indicate the site is a wildlife refuge nor has the City published planning documents designating the Lang Station Open Space as a wildlife refuge.

Conclusion

Publicly available information does not clearly document the purpose nor the significance of Lang Station Open Space as a recreational area or wildlife refuge. The City has not made publicly

available any resource management plan or implementation work plan for Lang Station Open Space, and this property and its trails are not mentioned in the City's General Plan or Master Plan of Trails, or any other City specific plan or master plan, despite the City's acquisition of this property more than 20 months ago in June 2022.

As discussed in the 2012 FHWA Section 4(f) Policy Paper, a wildlife or waterfowl refuge qualifies for protection under Section 4(f) if: (1) is publicly owned at the time at which the use occurs; (2) is officially designated as a wildlife or waterfowl refuge by a federal, state, or local agency; (3) its primary designated purpose is consistent with its primary function and how it is intended to be managed; and (4) it is considered significant by the OWJ. The Lang Station Open Space does not satisfy criteria 2 and 3 as it is not officially designated as a wildlife or waterfowl refuge by the City nor has the City prepared planning documents declaring the site's purpose as a wildlife or waterfowl refuge.

Additionally, and as discussed above, given the steep road cuts to the north and the tall ridge to the south, wildlife movement through this area is less likely (UC Davis 2023). Further, the volume of traffic on the SR 14 freeway is a deterrent to wildlife due to the almost constant level of disturbance and heavy traffic volume.

Additionally, per the City's Open Space Acquisition Implementation Work Program for Fiscal Year 2023-24, the funding restrictions on acquisition of undeveloped lands by the City's Open Space Preservation District requires that at least 90 percent of acquired open space lands be preserved natural open space and no more than 10 percent be used for future improved active parkland or recreation (City of Santa Clarita 2023b). While the Authority has determined there is not enough evidence to support a determination that Lang Station Open Space is a Section 4(f) property since there is not sufficient documentation to support a 4(f) multiple-use of the trails within Lang Station Open Space as they remain undocumented and unplanned by the City, Lang Station Open Space, inclusive of the trails and trailhead will be evaluated as a Section 4(f) resource. In this Evaluation, the Authority will demonstrate that all possible planning has been conducted as a best practice and in the spirit of avoiding impacts to resources.

5.2 Cultural Resources

For purposes of identifying cultural resources potentially protected under Section 4(f), the RSA is the same as the APE defined in Section 3.17, Cultural Resources, of the Final EIR/EIS. Within the archaeological and historic built APEs, background research and field surveys identified no historic properties, both built and archaeological, listed or eligible for listing in the NRHP that also qualify as Section 4(f) resources within or adjacent to Lang Station Open Space. Therefore, no further discussion of Section 4(f) cultural resources is necessary related to Lang Station Open Space.

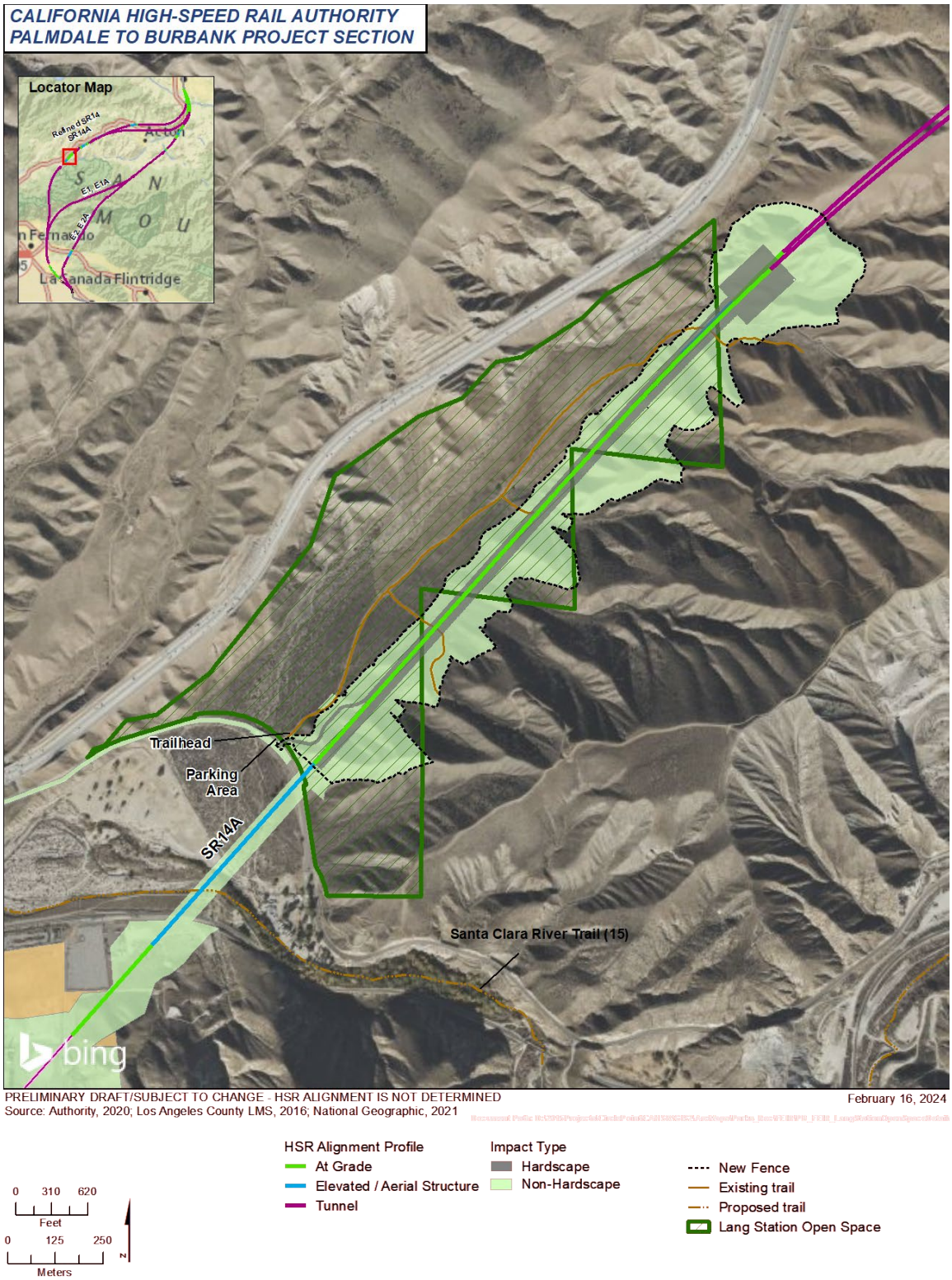

Figure 4-B-8 Lang Station Open Space

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6 LANG STATION OPEN SPACE PRELIMINARY SECTION 4(f) USE ASSESSMENT

Preliminary use assessments for the park, recreation, and wildlife and waterfowl refuge resources relative to Build Alternatives are discussed in this section. The following Section 4(f) findings are preliminary and final use determinations will be made after coordination with the OWJ and a formal public review period that begins with the publication of the Section 4(f) evaluation. Final use determinations will be published as part of the ROD. All parks and recreation Section 4(f) resources are shown in Figure 4-B-1 through Figure 4-B-4; see Chapter 4, Final Section 4(f) and Section 6(f) Evaluations, of the Final EIR/EIS for a discussion of resources other than Lang Station Open Space.

A resource is first evaluated for permanent use. If a permanent use is determined to occur, an evaluation of whether the use would be *de minimis* is completed. If no permanent use is found, an analysis is conducted to evaluate for temporary occupancy. If there is no temporary occupancy, an analysis of constructive use is completed. The analysis below takes into consideration IAMFs and mitigation measures identified in other sections of the Final EIR/EIS that would reduce Build Alternative impacts on Lang Station Open Space. Evaluation of use under Section 4(f) is based on the "net" effect remaining after the application of avoidance, minimization, and mitigation measures.

6.1 Lang Station Open Station

6.1.1 Permanent Use

Lang Station Open Space is an approximately 208-acre open space area located on undeveloped land southeast of SR 14, east of the intersection of Stonecrest Road and Soledad Canyon Road in Los Angeles County to the east of the city boundaries of Santa Clarita. The open space features a public trailhead and three public trails, totaling approximately 1.15 miles, for hiking, mountain biking, and equestrian use. A public parking area for the open space is located adjacent to Soledad Canyon Road near the Lang Station Open Space trailhead. It is noted that, as of February 19, 2024, no City documentation is available (or has been provided to the Authority by the City) that shows or discusses the existing or planned recreational trails within Lang Station Open Space. The property is owned and maintained by the City of Santa Clarita Open Space Preservation District. According to the City, Lang Station Open Space was acquired as protected open space (Hagobian, pers. comm. 2023), and pursuant to the City's Open Space Acquisition Implementation Work Program for Fiscal Year 2023-24, no more than 10 percent purchased open space will be used for future improved active parkland or recreation (City of Santa Clarita 2023b).

Two of the six Build Alternatives (Refined SR14 and SR14A) would require permanent use of 85.3 acres (41 percent of the total area of the open space). The permanent use area would include 56.0 acres of permanent footprint that would be fenced off to the public. The remaining 29.3 acres of permanent use area would be comprised of six isolated areas that would occur due to the Refined SR14 and SR14A Build Alternatives dividing the property; these isolated areas would be permanently inaccessible from the remainder of the property because of the project. No additional land beyond the 85.3 acres under permanent use would be required for temporary use. Impacts to Lang Station Open Space from the Refined SR14 and SR14A Build Alternatives are illustrated on Figure 4-B-8. For both the Refined SR14 and SR14A Build Alternatives, the permanent use of Lang Station Open Space would occur on the southeastern portion of the open space, which is the portion furthest away from SR 14, and includes the existing trailhead near Soledad Canyon Road and approximately 0.13 mile of the 1.17 miles of existing trails within the property. It should be noted that in accordance with the City Municipal Code Section 14.10.110, Trails, human intrusion into City open space areas is prohibited (City of Santa Clarita 2023a). Therefore, trail users at Lang Station Open Space are required to remain on the trails and keep out of the remainder of the open space area.

The permanent use would be required under Refined SR14 and SR14A Build Alternatives as the HSR alignment in that area would transect the property, and the majority of the proposed tracks within Lang Station Open Space would occur at grade. Elevated tracks are proposed at only the southwestern- and northeastern-most ends of the open space. In the southwestern end of the open space, the tracks would be elevated to traverse over Soledad Canyon Road and avoid the need to realign the existing roadway. The proposed tracks would be elevated on the northeastern end of the open space to cross a canyon. Of the 85.3 acres under permanent use, after project construction, approximately 14.0 acres would constitute hardscape (i.e., track, ballast, concrete) and 42.0 acres would be graded areas that would be revegetated. Although the areas to be revegetated would not include hardscape, these areas, in addition to the hardscape areas, would be fenced off to ensure no public access to the railroad right-of-way for safety purposes. The remaining 29.3 acres of permanent use would include six isolated areas of the property as previously discussed. The permanent use of portions of Lang Station Open Space would adversely affect the protected activities, features, or attributes that could qualify the open space for protection under Section 4(f).

As discussed in the 2012 FHWA Section 4(f) Policy Paper, a wildlife or waterfowl refuge qualifies for protection under Section 4(f) if: (1) is publicly owned at the time at which the use occurs; (2) is officially designated as a wildlife or waterfowl refuge by a federal, state, or local agency; (3) its primary designated purpose is consistent with its primary function and how it is intended to be managed; and (4) it is considered significant by the OWJ. While the Lang Station Open Space would be publicly owned at such time a use would occur, the Lang Station Open Space does not satisfy criteria 2 and 3 as it is not officially designated as a wildlife or waterfowl refuge by the City nor has the City prepared planning documents declaring the site's purpose as a wildlife or waterfowl refuge. Therefore, while the Authority has determined there is not enough evidence to support a determination that Lang Station Open Space is a wildlife or waterfowl refuge for protection under Section 4(f), the IAMFs and mitigation measures discussed below would minimize the Refined SR14 and SR14A Build Alternatives' effects to the Lang Station Open Space.

Project features (PK-IAMF#1) would maintain access to park and recreation facilities because the contractor will prepare and submit to the Authority a technical memorandum that identifies project design features to be implemented to minimize impacts on parks and recreation facilities, such as providing safe and attractive access for existing travel modes (e.g., motorists, bicyclists, pedestrians) to existing park and recreation facilities. Similarly, pursuant to PR-MM#3, during construction, the contractor will follow standard safety procedures to protect motorized and non-motorized traffic and maintain access to and from Lang Station Open Space. The contractor will prepare a technical memorandum to identify how connections to the unaffected trail portions and nearby roadways would be maintained during construction, and, if necessary, will provide alternative access via a temporary detour of the trail using existing roadways or other public rights-of-way (PR-MM#1). If temporary closure would restrict connectivity, the contractor will provide permanent multimodal access using existing roadways or other public rights-of-way (PR-MM#2). During final design, the Authority's project engineer will require the contractor to develop a trail facilities plan addressing the short-term project impacts on existing trails, consult with the City's Open Space Preservation District, develop detour signs, and restore impacted trail segments (PR-MM#4). The Authority's project engineer will consult with the City's Open Space Preservation District on (1) whether the property owner/operator wants those recreation uses replaced temporarily or permanently elsewhere on the property; and (2) if temporary or permanent replacement of those recreation uses is desired, on modifications that could be made to the remaining recreation area on the property to temporarily or permanently replace the recreation uses displaced by the temporary impact area (PR-MM#5). The Authority will also (1) ensure that the unaffected portions of Lang Station Open Space would not preclude future trail development, and (2) provide alternative access if temporary closure restricts connectivity or accessibility to Lang Station Open Space, in consultation with the property owner (the City) (PR-MM#8). Finally, the Authority will compensate for the loss of a portion of the open space in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act,

as amended (SOCIO-IAMF#2). In addition, potential temporary construction impacts on air quality, biological resources, geology, hazardous materials, hydrology and water quality, noise, safety and security, and access and traffic will be minimized by implementation of applicable IAMFs, including AQ-IAMF#1 through 5; BIO-IAMF#1 through 12; GEO-IAMF#1, 2, and 10; HMW-IAMF#4 and 6 through 10; HYD-IAMF#1 and 3; NV-IAMF#1; SS-IAMF#1; and TR-IAMF#1 through 8. The IAMFs would be incorporated into the design specifications and would be a pre-condition requirement. These technical memoranda would be provided to the OWJ during the advanced design or construction phase to demonstrate how access would be maintained.

While the IAMFs and mitigation measures stated above would minimize the Refined SR14 and SR14A Build Alternatives' effects on Lang Station Open Space, the permanent use would be of a severity that the protected activities, features, or attributes that qualify as the recreational portion of the open space (i.e., trails) for protection under Section 4(f) would be adversely affected.

Therefore, while the Authority has determined there is not enough evidence to support a determination that Lang Station Open Space is a Section 4(f) property, the Authority has preliminarily concluded the Refined SR14 and SR14A Build Alternatives would result in a permanent use of this resource.

The other four Build Alternatives (E1, E1A, E2, and E2A) would not affect Lang Station Open Space, as the open space is located more than 1,000 feet from the construction footprints of these Build Alternatives.

The Authority sought comments from the City on its proposed measures coordinated with City representatives in early June 2024, and has invited the City to submit additional comments. The City provided additional comments prior to the June 26, 2024 Board Presentation and requested that the Authority evaluate an elevated viaduct alternative through Bee Canyon. The Authority has determined that an elevated viaduct through Bee Canyon would not be feasible from an engineering perspective. This is because it is not feasible to raise the profile in Bee Canyon while avoiding surface impacts within ANF without substantially increasing the height of the proposed Santa Clara River or Agua Dulce viaducts and without lengthening the proposed construction schedule due to the additional length and complexity of the Santa Clara River viaduct, should an elevated viaduct be located within Bee Canyon. For additional discussion regarding the comments provided by the City prior to the June 26, 2024 Board Presentation, refer to Appendix H.

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7 LANG STATION OPEN SPACE SECTION 4(f) AVOIDANCE ALTERNATIVES

Section 4(f) prohibits the use of a Section 4(f) property if there is a feasible and prudent alternative that avoids use of a Section 4(f) property. FRA considers an alternative to be not feasible if it cannot be built as a matter of sound engineering judgment. FRA considers an alternative not prudent if:

- It compromises a project to a degree that it is unreasonable to proceed considering a project's stated need and purpose (i.e., the alternative does not address the need and purpose of a project).
- 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 or disproportionate impacts to minority or low-income populations; or severe impacts to environmental properties protected under other federal statutes.
- It results in additional construction, maintenance, or operational costs of extraordinary magnitude.
- It causes other unique problems or unusual factors.
- It involves multiple factors as outlined above that, while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

The Purpose and Need statement presented in Chapter 1, Purpose and Need, of the Final EIR/EIS tiers off the approved program EIR/EIS documents (Authority and FRA 2005). The project alternatives evaluation process conducted as part of the HSR project for the Palmdale to Burbank Project Section concluded that there were no feasible and prudent HSR alternatives within the Central Subsection that did not result in at least a *de minimis* impact to Section 4(f) resources (Authority 2022a).[6] Although the project alternatives analysis process considered multiple criteria, the screening emphasized the project objective to maximize the use of existing transportation corridors and available right-of-way to the extent feasible; the result of this effort was the carrying forward of the north-south alignment alternatives that follow the existing Caltrain and UPRR rail corridor and the SR 14 corridor.

The Authority solicited input from the public and agencies throughout the project-level environmental review process for the Palmdale to Burbank Project Section since commencement in 2010. The development of initial project-level alternatives in 2010 followed the process described in Alternatives Analysis Methods for Project-Level EIR/EIS (Authority 2011). The Authority evaluated potential alternatives against HSR system performance criteria. The project alternatives screening process and evaluation criteria are discussed in detail in Section 2.4, Potential Alternatives Considered during Alternatives Screening Process, of the Final EIR/EIS.

Each alternative was evaluated to isolate concerns and to screen and refine the overall project section to avoid key environmental issues or improve performance. The alternatives not carried forward for detailed analysis had greater direct and indirect environmental impacts, were impracticable, or failed to meet the project Purpose and Need.

The No Project Alternative does not include construction of the Palmdale to Burbank Project Section or associated facilities, and would thus have no impact on Section 4(f) resources; however, there would be impacts to Section 4(f) resources as a result of the existing and planned improvements that would occur under the No Project Alternative, particularly in developed areas such as Palmdale and Burbank. Due to land use restrictions in the ANF, including SGMNM, no major development would occur within the ANF, including SGMNM, under the No Project

[6] See Chapter 4, Final Section 4(f) and Section 6(f) Evaluations, of the Final EIR/EIS for a discussion of resources other than Lang Station Open Space.

Alternative. Nonetheless, the No Project Alternative would not address the Purpose and Need for the Palmdale to Burbank Project Section. This alternative is insufficient to meet existing and future travel demand; current and projected future congestion of the transportation system would continue to result in deteriorating air quality, reduced reliability, and increased travel times. Because the No Project Alternative does not meet the project's Purpose and Need, it is neither feasible nor prudent and is not discussed further as an avoidance alternative for Section 4(f) resources.

Greater detail on alternatives considered but dismissed is provided in Section 2.4 of the Palmdale to Burbank Project Section Final EIR/EIS, and in the Final Program EIR/EIS for the Proposed California High-Speed Train System (Authority and FRA 2005), Alternatives Analysis Methods for Project-Level EIR/EIS (Authority 2011), Palmdale to Los Angeles Preliminary Alternatives Analysis Report (Authority 2010), three Palmdale to Los Angeles Supplemental Alternatives Analysis reports (Authority 2012b, 2012c, 2014), and two Palmdale to Burbank Supplemental Alternative Analysis Reports (Authority 2015a, 2016) available via request on the Authority's website.

In response to comments received on the Draft EIR/EIS, the Authority considered two tunneling options, the first of which would cross in tunnel under Lang Station Open Space and the Santa Clara River (Option 1). The second option would tunnel under the northern portion of the Lang Station Open Space and emerge from tunnel to cross over the Santa Clara River on viaduct (Option 3). The Authority concluded that both tunneling options conflict with engineering design requirements such that they are not feasible. Construction of Option 1 (a tunnel in the Bee Canyon area and under the Santa Clara River) is not feasible because it would require a vertical profile for the HSR alignment that exceeds the maximum allowable grade of 2.5 percent as defined in the Authority's Technical Memorandum (TM) 2.1.2, Section 3.3.1.

In addition to considering Options 1 and 3, the Authority considered three additional options (Options 2, 4, and 5) that could reduce the Refined SR14 and SR14A Build Alternative footprints through the Lang Station Open Space. The five design options are discussed in more detail in Section 8.1, Lang Station Open Space Individual Resource Avoidance Assessment.

As described in Section 6, permanent use of Lang Station Open Space would occur under two of the six Build Alternatives (Refined SR14 and SR14A). However, the E1, E1A, E2, and E2A Build Alternatives would avoid potential effects to Lang Station Open Space, as the property is located more than 1,000 feet from the construction footprints of these Build Alternatives.

8 MEASURES TO MINIMIZE HARM AT LANG STATION OPEN SPACE

As discussed in Section 1.1.1 of this evaluation, pursuant to federal guidance, all reasonable measures to minimize harm or mitigate for adverse impacts and effects on Section 4(f) resources must be included in the project. With regard to public parks, recreation areas, and wildlife and waterfowl refuges, the measures may include (but are not limited to): design modifications or design goals; replacement of land or facilities of comparable value and function; or monetary compensation to enhance the remaining property or to mitigate the adverse impacts of the project in other ways.

8.1 Lang Station Open Space Individual Resource Avoidance Assessment

Lang Station Open Space is an approximately 208-acre open space area located on undeveloped land southeast of SR 14, east of the intersection of Stonecrest Road and Soledad Canyon Road in Los Angeles County to the east of the city boundaries of Santa Clarita. The open space features a public trailhead and three public trails, totaling approximately 1.15 miles, for hiking, mountain biking, and equestrian use. A public parking area for the open space is located adjacent to Soledad Canyon Road near the Lang Station Open Space trailhead.

Two of the six Build Alternatives (Refined SR14 and SR14A) would require permanent use of 85.3 acres (41 percent of the total area of the open space); therefore, this discussion focuses on the Refined SR14 and SR14A Build Alternatives. The permanent use area would include 56.0 acres of permanent footprint that would be fenced off to the public. The remaining 29.3 acres of permanent use area would be comprised of six isolated areas that would occur due to the Refined SR14 and SR14A Build Alternatives dividing the property; these isolated areas would be permanently inaccessible from the remainder of the property because of the project. No additional land beyond the 85.3 acres under permanent use would be required for temporary use. For both the Refined SR14 and SR14A Build Alternatives, the permanent use of Lang Station Open Space would occur on the southeastern portion of the open space, which is the portion furthest away from SR 14, and includes the existing trailhead near Soledad Canyon Road and approximately 0.13 mile of the 1.17 miles of existing trails within the property. The permanent use would be required under Refined SR14 and SR14A Build Alternatives as the HSR alignment in that area would transect the property, and the majority of the proposed tracks within Lang Station Open Space would occur at grade. Elevated tracks are proposed at only the southwestern- and northeastern-most ends of the open space. In the southwestern end of the open space, the tracks would be elevated to traverse over Soledad Canyon Road and avoid the need to realign the existing roadway. The proposed tracks would be elevated on the northeastern end of the open space to cross a canyon.

In response to comments received on the Draft EIR/EIS, the Authority conducted an assessment of the feasibility of tunneling through Bee Canyon (including the Lang Station Open Space), to potentially reduce impacts to suitable habitat for special-status species and minimize the project footprint. The Authority examined a total of five options to underground the alignment or minimize the impact of the at-grade section in Bee Canyon. The five options include:

1. Maintain the Refined SR/SR14A horizontal alignment as in the Draft EIR/EIS and PEPD Record Set Addendum SR14A/E1A/E2A but modify the vertical profile to cross in tunnel under the Santa Clara River and Bee Canyon.
2. Change the Refined SR14/SR14A horizontal and vertical alignment to avoid Bee Canyon and maintain the crossing of the Santa Clara River on viaduct.
3. Maintain the Refined SR14/SR14A horizontal alignment as in the Draft EIR/EIS and PEPD Record Set Addendum SR14A/E1A/E2A but modify the vertical profile to tunnel under Bee Canyon but maintain the crossing of the Santa Clara River on viaduct.
4. Reduce footprint of ancillary facilities in Bee Canyon. This requires changes in some current design elements for the Refined SR/SR14A alignment: change the access road design, change energy supply line to Portal 4A, optimize staging areas, and reevaluate grading.

5. Reduce footprint of earthworks in Bee Canyon. This would require changes in some design elements for the Refined SR14/SR14A alignment: reevaluate grading considering extensive use of retaining walls or retaining walls plus slope-berm pattern along the HSR alignment in Bee Canyon. This option would also include changing the access road design, changing the energy supply line to Portal 4A, and optimizing staging areas.

As noted above, the Authority considered two tunneling options, the first of which would cross in tunnel under Lang Station Open Space and the Santa Clara River (Option 1). The second option would tunnel under the northern portion of the Lang Station Open Space and emerge from tunnel to cross over the Santa Clara River on viaduct (Option 3). The Authority concluded that both tunneling options conflict with engineering design requirements such that they are not feasible. Construction of Option 1 (a tunnel in the Bee Canyon area and under the Santa Clara River) is not feasible because it would require a vertical profile for the HSR alignment that exceeds the maximum allowable grade of 2.5 percent as defined in the Authority's Technical Memorandum (TM) 2.1.2, Section 3.3.1. Constructing Option 3 (the HSR alignment in tunnel in the northern portion of the Lang Station Open Space and then emerging from tunnel to cross over the Santa Clara River on viaduct) would also not be feasible because HSR alignment requirements and the topography of the area would not allow for maintaining the minimum vertical clearance of the HSR viaduct over Soledad Canyon Road. Additionally, Option 1 would increase project costs by $230 million while Option 3 would increase project costs by $165 million.

Option 2, which would involve extending the tunnel segment approximately 2,700 feet, would result in approximately 3,200 feet of at-grade alignment through the Lang Station Open Space. As vertical profile under Option 2 would be lower in order to increase tunnel length and reduce the at-grade section, the necessary cuts would be approximately 100 feet deeper than the SR14A Build Alternative. Option 2 would reduce the permanent impact area by 29 acres but would increase project costs by $420 million.

Option 5 would involve the use of retaining walls to reduce the area of permanent impact through Lang Station Open Space. Under Option 5, the permanent impact area would be reduced by approximately 67.6 acres; however, Option 5 would increase project costs by $162 million due to construction of retaining walls despite the decrease in excavation.

Option 4, which would involve changing the design of the access road between Soledad Canyon Road and Portal 4A, moving the power supply line along the access road, optimizing the staging areas, and an overall re-design of the grading. All these measures are aimed to get a more compact design and, therefore, minimize the footprint within the Lang Station Open Space. Option 4 would reduce the permanent impact area by 37 acres. Given the reduction in permanent impact area by 37 acres and an increase in project costs by $10 million, the Authority has evaluated this design option in the Final EIR/EIS.

Also in response to comments received on the Draft EIR/EIS and through consultation with resource agencies, the Authority developed a design refinement in the vicinity of Bee Canyon and Pacoima Wash that minimized the temporary and permanent footprint of the Refined SR14 and SR14A Build Alternatives. In Bee Canyon, the temporary and permanent footprint along this 2.4mile stretch of the alignment was reduced from 144.97 acres to 105.78 acres for the Refined SR14 Build Alternative, and from 141.92 acres to 100.87 acres for the SR14A Build Alternative. Given the physical constraints of the area, the conflict with engineering design requirements (i.e., a grade greater than 2.5 percent), the clearance requirements at Soledad Canyon Road, the additional excavation required under some of the considered design options, and the extraordinary magnitude of the costs of an underground alternative, it would not be prudent to avoid the resource under the Refined SR14 and SR14A Build Alternatives. Therefore, there are no reasonable and prudent alternatives to the Section 4(f) permanent use under the Refined SR14 and SR14A Build Alternatives. Consistent with 23 C.F.R. 774.17, the Authority has considered all reasonable design modifications to minimize harm in the Lang Station Open Space from the Refined SR14 and SR14A Build Alternatives.

8.2 Lang Station Open Space Measures to Minimize Harm

Further, the Authority has developed measures to minimize harm to Lang Station Open Space, including IAMFs that are incorporated into the project design to avoid or minimize impacts. Mitigation and enhancement measures to compensate for unavoidable project impacts mitigate project impacts that cannot be avoided or minimized with the incorporation of IAMFs. Each applicable IAMF and mitigation measure for Lang Station Open Space is described in Table 4-B-1, as required by 49 U.S.C. 303(c)(2). Additionally, avoidance alternatives have been developed to avoid uses to Section 4(f) properties where possible, as described in Section 7 above.

The Final EIR/EIS identifies measures that would mitigate adverse effects to the Lang Station Open Space. Those measures are identified in Table 4-B-1 and include PR-MM#5 (Modifications to Recreational Uses), PR-MM#7 (Permanent Easement from Parks, Recreation Resources, and/or Trails), PR-MM#8 (Permanent Changes to Access to Parks, Recreation Resources, and/or Trails), and PR-MM#9 (Permanent Acquisition of Public Property from Land and/or Trails Planned for Public Recreational Use) as well as BIO-MM#101 (Minimize Permanent, Intermittent Noise Impacts on Special-Status Bird Habitat). PR-MM#7 through PR-MM#9 will require compensation for land permanently acquired for the impacts to the Lang Station Open Space trailhead and affected trails. Compensation typically would be financial based on the value of the affected property; however, compensation could include relocation of the trailhead and trail replacement and/or enhancements. BIO-MM#101 will require that the Authority build sound barriers to address permanent or intermittent noise impacts on the suitable special-status bird habitat in Lang Station Open Space. These sound barriers would provide noise reduction of HSR train operations not only for special-status birds and wildlife in the area, but also for open space trail users.

Additionally, the Final EIR/EIS identifies measures that would mitigate adverse effects to the potential wildlife uses at Lang Station Open Space. Those measures are also identified in Table 4-B-1. The Authority would implement measures to avoid, minimize, and mitigate for impacts to gnatcatcher. BIO-MM#14 (Conduct Pre-construction Surveys and Delineate Active Nest Exclusion Areas for Breeding Birds) and BIO-MM#79 (Conduct Surveys for Coastal California Gnatcatcher) would require nesting bird surveys and establishment of adequate buffers around gnatcatcher nests. Through BIO-MM#53 (Prepare a Compensatory Mitigation Plan for Species and Species Habitat), the Authority would offset impacts to occupied gnatcatcher habitat through the protection and long-term management of in-kind habitat. To address intermittent operational noise, BIO-MM#101 (Minimize Permanent, Intermittent Noise Impacts on Special-Status Bird Habitat) would require the Authority to build sound barriers to minimize or avoid impacts in locations where special-status bird habitat would be exposed to 65 A-weighted decibels of permanent intermittent noise impact outside the fenced right-of-way, including Bee Canyon. Additional mitigation measures would also be implemented to reduce the effects of operations, including: wildlife rescue measures (BIO-MM#76, Implement Wildlife Rescue Measures), spill prevention and containment measures (BIO-MM#87, Prepare and Implement Spill Prevention and Containment Measures), construction or maintenance activity debris prevention measures (BIO-MM#88, Implement Construction or Maintenance Activity Debris Prevention Measures), and implementation of avoidance measures during operations (BIO-MM#92, Implement Avoidance Measures During Operations and Maintenance for the Santa Clara River). The general measures include establishment of wildlife crossings (BIO-MM#64, Establish Wildlife Crossings), implementation of wildlife height requirements for enhanced security fencing (BIO-MM#77, Implement Wildlife Height Requirements for Enhanced Security Fencing), installation of wildlife jump-outs (BIO-MM#78, Install Wildlife Jump-outs), and implementation of measures to reduce, avoid and minimize effects on wildlife movement (BIO-MM#83, Measures Intended to Reduce, Avoid, and Minimize Effects on Animal Movement). The specific measures include preconstruction surveys and implementation of avoidance and minimization measures for mountain lion dens (BIO-MM#96, Conduct Pre-Construction Surveys and Implement Avoidance and Minimization Measures for Mountain Lion Dens), and compensatory mitigation for impacts to mountain lion habitat (BIO-MM#97, Provide Compensatory Mitigation for Impact on Mountain Lion Habitat).

By incorporating the measures identified in Table 4-B-1, the Authority has undertaken all possible planning to minimize harm to the Lang Station Open Space.

Table 4-B-1 Measures to Minimize Harm

Impact	Measures to Minimize Harm
Potentially Affected Recreational Area: Lang Station Open Space	
▪ Acquisition of land from recreational area	▪ Under PR-MM#7, the Authority will compensate for the loss of a portion of the open space and/or trail in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act, as amended, and the California Park Preservation Act.
▪ Removal of existing trailhead ▪ Removal of 0.13 mile of existing public trails	▪ Under PR-MM#5, the Authority's project engineer will consult with the City's Open Space Preservation District on (1) whether the property owner/operator wants those recreation uses replaced temporarily or permanently elsewhere on the property; and (2) if temporary or permanent replacement of those recreation uses is desired, on modifications that could be made to the remaining recreation area on the property to temporarily or permanently replace the recreation uses displaced by the temporary impact area. ▪ Under PR-MM#7, the Authority will consult with the City's Open Space Preservation District regarding the specific conditions of acquisition, use of, and compensation for, or replacement or enhancement of, the trailhead and trail within the easement area, consistent with any applicable requirements of the California Park Preservation Act. ▪ Under PR-MM#8, the Authority will (1) ensure that connections to the unaffected portions of Lang Station Open Space are maintained, and (2) provide alternative access if temporary closure restricts connectivity or accessibility to Lang Station Open Space. The Authority will consult with the property owner (the City) regarding the specific conditions of the changes to access and compensation for, or replacement or enhancement of, the access driveways and/or parking areas at the Lang Station Open Space. ▪ Under PR-MM#9, the Authority will continue work with the City's Open Space Preservation District on the establishment of appropriate compensation and relocation/realignment of the trailhead and/or trail to accommodate the displaced planned park and recreational uses as a result the HSR system.
▪ Temporary changes in access	▪ PK-IAMF#1 would maintain access to park and recreation facilities because the contractor will prepare and submit to the Authority a technical memorandum that identifies project design features to be implemented to minimize impacts on parks and recreation facilities, such as providing safe and attractive access for existing travel modes (e.g., motorists, bicyclists, pedestrians) to existing park and recreation facilities. ▪ Pursuant to PR-MM#3, during construction, the contractor will follow standard safety procedures to protect motorized and non-motorized traffic and maintain access to and from Lang Station Open Space. ▪ Under PR-MM#1, the contractor will prepare a technical memorandum to identify how connections to the unaffected trail portions and nearby roadways would be maintained during construction, and, if necessary, will provide alternative access via a temporary detour of the trail using existing roadways or other public rights-of-way. ▪ Under PR-MM#2, if temporary closure would restrict connectivity, the contractor will provide permanent multimodal access using existing roadways or other public rights-of-way.
▪ Temporary construction activities in the recreational area	▪ Under PR-MM#4, during final design, the Authority's project engineer will require the contractor to develop a trail facilities plan addressing the short-term project impacts on existing trails, consult with the City's Open Space Preservation District, develop detour signs, and restore impacted trail segments.

Impact	Measures to Minimize Harm
Potentially Affected Recreational Area: Lang Station Open Space	
	▪ AQ-IAMF#1 (Fugitive Dust Emissions): During construction, the contractor shall employ measures to minimize and control fugitive dust emissions. ▪ AQ-IAMF#2 (Selection of Coatings): During construction, the contractor shall use low-volatile organic compound (VOC) paint that contains less than 10 percent of VOC contents. ▪ AQ-IAMF#3 (Renewable Diesel): During construction, the contractor will use renewable diesel fuel to minimize and control exhaust emissions from all heavy-duty diesel-fueled construction diesel equipment and on-road diesel trucks. ▪ AQ-IAMF#4 (Reduce Criteria Exhaust Emissions from Construction Equipment): Prior to issuance of construction contracts, the Authority will incorporate appropriate construction equipment exhaust emissions requirements into the contract specifications, as required by the California Air Resources Board (CARB). ▪ AQ-IAMF#5 (Reduce Criteria Exhaust Emissions from On-Road Construction Equipment): Prior to issuance of construction contracts, the Authority will incorporate appropriate material-hauling truck fleet mix requirements into the contract specifications, as required by CARB. ▪ HYD-IAMF#3 (Prepare and Implement a Construction Stormwater Pollution Prevention Plan [SWPPP]): Prior to construction, the contractor shall comply with the State Water Resources Control Board Construction General Permit requiring preparation and implementation of a SWPPP. The Construction SWPPP will propose best management practices (BMPs) to minimize potential short-term increases in sediment transport caused by construction, including erosion control requirements, stormwater management, and channel dewatering for affected stream crossings. ▪ NV-IAMF#1 (Noise and Vibration): Prior to construction, the contractor shall prepare and submit to the Authority a noise and vibration technical memorandum documenting how the Federal Transit Administration and FRA guidelines for minimizing construction noise and vibration impacts will be employed when work is being conducted within 1,000 feet of sensitive receptors. ▪ SS-IAMF#1 (Construction Safety Transportation Management Plan): Prior to construction, the contractor shall prepare for submittal to the Authority a construction safety transportation management plan. The plan will describe the contractor's coordination efforts with local jurisdictions for maintaining emergency vehicle access. The plan will also specify the contractor's procedures for implementing temporary road closures, including access to residences and businesses during construction, lane closures, signage and flag persons, temporary detour provisions, alternative bus and delivery routes, emergency vehicle access, and alternative access locations. ▪ TR–IAMF#6 (Restriction on Construction Hours): The contractor shall limit construction material deliveries between 7 a.m. and 9 a.m. and between 4 p.m. and 6 p.m. on weekdays to minimize impacts to traffic on roadways. The contractor shall limit the number of construction employees arriving or departing the site between the hours of 7 a.m. and 8:30 a.m. and 4:30 p.m. and 6 p.m.
▪ Permanent noise effects	▪ The Lang Station Open Space provides habitat for special-status bird species and consistent with BIO-MM#101, it is anticipated that sound barriers would be constructed along this portion of the project alignment through the entirety of the open space property. These sound barriers would provide noise reduction of HSR train operations not only for special-status birds and wildlife in the area, but also for open space trail users.

Impact	Measures to Minimize Harm
Potentially Affected Recreational Area: Lang Station Open Space	
▪ Permanent visual effects	▪ The sound barriers noted in BIO-MM#101 would also provide some visual shielding of train operations from trail users. To reduce visual effects, sound barriers would include surface design enhancements to blend with the area's visual context. Trail users would predominately view graded cut and fill slopes rather than hardscape. ▪ AVQ-IAMF#1 (Aesthetic Options): Prior to construction, the Contractor shall document, through issue of a technical memorandum, how the Authority's aesthetic guidelines have been employed to minimize visual impacts. The Authority seeks to balance providing a consistent, project-wide aesthetic with the local context for the numerous high-speed rail non-station structures across the state. Examples of aesthetic options will be provided to local jurisdictions that can be applied to non-standard structures in the high-speed rail system. Refer to Aesthetic Options for Non-Station Structures, 2017. ▪ AVQ-IAMF#2 (Aesthetic Review Process): Prior to construction, the Contractor shall document that the Authority's aesthetic review process has been followed to guide the development of non-station area structures. Documentation shall be through issuance of a technical memorandum to the Authority. The Authority will identify key non-station structures recommended for aesthetic treatment, consult with local jurisdictions on how best to involve the community in the process, solicit input from local jurisdictions on their aesthetic preferences, and evaluate aesthetic preferences for potential cost, schedule and operational impacts. The Authority will also evaluate compatibility with project-wide aesthetic goals, include recommended aesthetic approaches in the construction procurement documents, and work with the contractor and local jurisdictions to review designs and local aesthetic preferences and incorporate them into final design and construction. Refer to Aesthetic Options for Non-Station Structures, 2017.
▪ Effects to wildlife	▪ Under BIO-MM#14, the Authority would conduct pre-construction surveys during the bird breeding season. If active bird nests are observed, no-work buffers will be delineated to establish active nest exclusion areas for breeding birds. ▪ Under BIO-MM#53, the Authority would prepare a Compensatory Mitigation Plan to establish compensatory mitigation provided to offset permanent and temporary impacts to federal and state-listed species and their habitat, fish and wildlife resources regulated under Section 1600 et seq., and certain other special-status species. ▪ Under BIO-MM#64, the Authority would incorporate features to accommodate wildlife movement into the design of bridges and culverts that are replaced or modified as part of project construction, wherever feasible. ▪ Under BIO-MM#76, the Authority would implement wildlife rescue measures during construction, maintenance, and operation if an injured or trapped wildlife species, including but not limited to birds and raptors, is observed. ▪ Under BIO-MM#77, the Authority would implement wildlife height requirements to ensure security fencing design will prevent access into the right-of-way and tracks by mountain lion. ▪ Under BIO-MM#78, the Authority would install wildlife jump-outs in areas with documented ungulate or other large mammal movement, where terrain or project design (e.g., at-grade crossings) could allow these large animals to enter the ROW, features to reduce access (e.g., taller fencing or wildlife barriers at crossings) or features to allow large animals to escape from the fenced right-of-way (e.g., wildlife jump-outs or escape ramps). ▪ Under BIO-MM#79, the Authority would conduct surveys in suitable coastal California gnatcatcher habitat within 300 feet of vegetation removal, earthmoving, or use of heavy construction equipment. ▪ Under BIO-MM#83, the Authority would implement measures intended to reduce, avoid, and minimize effects on animal movement.

Impact	Measures to Minimize Harm
Potentially Affected Recreational Area: Lang Station Open Space	
	▪ Under BIO-MM#87, the Authority would prepare and implement spill prevention and containment measures as identified by the SWPPP prepared as part of HYD-IAMF#3 and HYD-IAMF#4. ▪ Under BIO-MM#88, the Authority would implement construction or maintenance activity debris prevention measures to prevent the inadvertent discharge of equipment, chemicals, or debris into the wetted channel. ▪ Under BIO-MM#92, the Authority would implement avoidance measures during operations and maintenance for the Santa Clara River. ▪ Under BIO-MM#96, the Authority would conduct pre-construction surveys and implement avoidance and minimization measures for mountain lion dens. The Authority will conduct preconstruction surveys for known or potential mountain lion dens within suitable habitat located within the work area and within 600 meters of the work area. ▪ Under BIO-MM#97, the Authority would provide compensatory mitigation for impact to suitable mountain lion habitat through the preservation of suitable habitat that is acceptable to CDFW. Habitat will be replaced at a minimum ratio of 2:1 for permanent impacts on breeding/foraging habitat and high-priority foraging and dispersal habitat (CRC, MCH, SGB, CSC, COW, DSW, DSC, AGS, JUN, VRI, LAC), and at a ratio of 1:1 for low-priority foraging and dispersal habitat (BAR, DOR/VIN), unless a higher ratio is required by regulatory authorizations issued under CESA. ▪ The Lang Station Open Space provides habitat for special-status bird species and consistent with BIO-MM#101, it is anticipated that sound barriers would be constructed along this portion of the project alignment through the entirety of the open space property. These sound barriers would provide noise reduction of HSR train operations not only for special-status birds and wildlife in the area, but also for open space trail users.

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9 PRELIMINARY SECTION 4(f) LEAST HARM ANALYSIS

When there is no feasible and prudent avoidance alternative to using Section 4(f) resources, the Authority must approve the alternative that causes the least overall harm to Section 4(f) resources, taking into consideration the preservation purpose of the statute. To ascertain which alternative that uses Section 4(f) properties would cause the overall least harm, the Authority considers the following seven factors:

- Ability to mitigate adverse impacts on each Section 4(f) property (including any measures that result in benefits to the property)
- Relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection
- Relative significance of each Section 4(f) property
- Views of the OWJ over each Section 4(f) property
- Degree to which each alternative meets the Purpose and Need for the project
- After reasonable mitigation, the magnitude of any adverse impacts on resources not protected by Section 4(f)
- Substantial differences in costs among the project alternatives

The first four factors relate to the net harm that each project alternative would cause to the Section 4(f) property, and the remaining three factors take into account concerns with the project alternatives that are not specific to Section 4(f). The following discussion demonstrates the overall least harm alternative for impacts in the project footprint that is consistent with the Preferred Alternative (see Chapter 8, Preferred Alternative and Station Sites, of the Final EIR/EIS).

9.1 Least Harm Analysis for Palmdale to Burbank Project Alternatives

The Authority has completed the following least harm analysis for the project. Table 4-B-2 shows the Section 4(f) properties that would incur a use as a result of the project alternatives and characterizes each alternative using the seven least harm analysis factors (23 C.F.R. 774.3[c]). Figure 4-B-1 through Figure 4-B-4 show an overview of the RSA and the parks and recreation resources within the RSA. Map identification numbers (map IDs) are shown on the figures parenthetically following the resource names to help identify and differentiate the resources. All resources are included in Table 4-B-2 because there is no true avoidance alternative that would avoid all Section 4(f) resources within the RSA for the Palmdale to Burbank Project Section.

Table 4-B-2 Least Harm Analysis for the Palmdale to Burbank Project Alternatives

Least Harm Factor	Refined SR14 Build Alternative	SR14A Build Alternative	E1 Build Alternative	E1A	E2 Build Alternative	E2A Build Alternative
Section 4(f) property incurring a use	Use or *de minimis* impact finding for 7 resources: • Palmdale Hills Trail (Proposed Extension) • Littlerock Trail (Proposed Extension) • Vasquez Loop Trail (Proposed Extension) • Pacific Crest Trail • **Lang Station Open Space** • East Branch of the California Aqueduct • Site 19-003890 (Prehistoric Vasquez Rocks Archaeological District)	Use or *de minimis* impact finding for 6 resources: • Palmdale Hills Trail (Proposed Extension) • Littlerock Trail (Proposed Extension) • Vasquez Loop Trail (Proposed Extension) • **Lang Station Open Space** • East Branch of the California Aqueduct • Site 19-003890 (Prehistoric Vasquez Rocks Archaeological District)	Use or *de minimis* impact finding for 8 resources: • Palmdale Hills Trail (Proposed Extension) • Acton Community Trail (Proposed Extension) • Littlerock Trail (Proposed Extension) • Vasquez Loop Trail (Proposed Extension) • San Gabriel Mountains National Monument • Palmdale Ditch • East Branch of the California Aqueduct • Eagle and Last Chance Mine Road	Use or *de minimis* impact finding for 8 resources: • Palmdale Hills Trail (Proposed Extension) • Acton Community Trail (Proposed Extension) • Littlerock Trail (Proposed Extension) • Vasquez Loop Trail (Proposed Extension) • San Gabriel Mountains National Monument • Palmdale Ditch • East Branch of the California Aqueduct • Eagle and Last Chance Mine Road	Use or *de minimis* impact finding for 10 resources: • Palmdale Hills Trail (Proposed Extension) • Acton Community Trail (Proposed Extension) • Littlerock Trail (Proposed Extension) • Vasquez Loop Trail (Proposed Extension) • San Gabriel Mountains National Monument • Angeles National Forest • Hansen Dam Open Space • Palmdale Ditch • East Branch of the California Aqueduct • Eagle and Last Chance Mine Road	Use or *de minimis* impact finding for 10 resources: • Palmdale Hills Trail (Proposed Extension) • Acton Community Trail (Proposed Extension) • Littlerock Trail (Proposed Extension) • Vasquez Loop Trail (Proposed Extension) • San Gabriel Mountains National Monument • Angeles National Forest • Hansen Dam Open Space • Palmdale Ditch • East Branch of the California Aqueduct • Eagle and Last Chance Mine Road
Factor 1: The ability to mitigate adverse impacts on each Section 4(f) property (including any measures that result in benefits to the property)	Palmdale Hills Trail (Proposed Extension), Littlerock Trail (Proposed Extension), and Vasquez Loop Trail (Proposed Extension): A *de minimis* impact is anticipated at each of the proposed trail extensions. Pacific Crest Trail: A *de minimis* impact is anticipated; measures to minimize harm will maintain access to the trail. **Lang Station Open Space:** Project features and mitigation can reduce adverse impacts to ensure access to recreational trails within the open space is maintained and the affected trailhead and 0.13 mile of trails are relocated/replaced; however, permanent use would not be avoided. East Branch of the California Aqueduct: A *de minimis* impact is anticipated and therefore no mitigation is proposed. Site 19-003890 (Prehistoric Vasquez Rocks Archaeological District): A *de minimis* impact is anticipated and therefore no mitigation is proposed.	The SR14A Build Alternative would affect the same resources in the same manner as described for the Refined SR 14 Alternative, except Pacific Crest Trail would not be affected under the SR14A Build Alternative.	The E1 Build Alternative would affect the Palmdale Hills Trail (Proposed Extension), Littlerock Trail (Proposed Extension), Vasquez Loop Trail (Proposed Extension), East Branch of the California Aqueduct, and Site 19-003890 (Prehistoric Vasquez Rocks Archaeological District) in the same manner as the Refined SR14 Build Alternative. However, the E1 Build Alternative would also affect the following three additional resources. Acton Community Trail (Proposed Extension): A *de minimis* impact is anticipated at the proposed trail extension. San Gabriel Mountains National Monument: A *de minimis* impact is anticipated and therefore no mitigation is proposed. Palmdale Ditch: A *de minimis* impact is anticipated and therefore no mitigation is proposed.	The E1A Build Alternative would affect the same resources in the same manner as described for the E1 Build Alternative.	The E2 Build Alternative would affect the same resources in the same manner as described for the E1 Build Alternative, with the following additional two resources affected. Angeles National Forest: A *de minimis* impact is anticipated and therefore no mitigation is proposed. Hansen Dam Open Space: A *de minimis* impact is anticipated; measures to minimize harm will maintain access to the open space.	The E2A Build Alternative would affect the same resources in the same manner as described for the E2 Build Alternative.
Factor 2: The relative severity of the remaining harm, after mitigation, to the protected activities,	Palmdale Hills Trail (Proposed Extension), Littlerock Trail (Proposed Extension), and Vasquez Loop Trail (Proposed Extension): The relative severity of harm would be similar under the six Build Alternatives; therefore, severity is not a differentiating	The SR14A Build Alternative would affect the same resources in the same manner as described for the Refined SR 14 Build Alternative, except Pacific Crest Trail would not be affected under the SR14A Build Alternative.	The E1 Build Alternative would affect the Palmdale Hills Trail (Proposed Extension), Littlerock Trail (Proposed Extension), Vasquez Loop Trail (Proposed Extension), East Branch of the California Aqueduct, and Site 19-003890 (Prehistoric Vasquez Rocks Archaeological District) in the same	The E1A Build Alternative would affect the same resources in the same manner as described for the E1 Build Alternative.	The E2 Build Alternative would affect the same resources in the same manner as described for the E1 Build Alternative, with the following additional two resources affected. Angeles National Forest: The relative severity of harm would be similar under	The E2A Build Alternative would affect the same resources in the same manner as described for the E2 Build Alternative.

Least Harm Factor	Refined SR14 Build Alternative	SR14A Build Alternative	E1 Build Alternative	E1A	E2 Build Alternative	E2A Build Alternative
attributes, or features that qualify each Section 4(f) property for protection	factor related to these proposed trail extensions. Pacific Crest Trail: Only the Refined SR14 Build Alternative would affect this resource, so severity is not a differentiating factor related to this resource. **Lang Station Open Space:** Refined SR14 and SR14A Build Alternatives would impact the trail and would interfere with the protected activities, attributes, or features of the open space, specifically the trailhead and trail, while the E1, E1A, E2, and E2A Build Alternatives would have no impact on this resource. Mitigation would not eliminate adverse effects on the protected features, attributes, or activities, after considering any avoidance, minimization, mitigation, or enhancement measures. East Branch of the California Aqueduct: A *de minimis* impact would not result in the loss of integrity that qualifies the resource for protection. Site 19-003890 (Prehistoric Vasquez Rocks Archaeological District): A *de minimis* impact would not result in the loss of integrity that qualifies the resource for protection.		manner as the Refined SR14 Build Alternative. However, the E1 Build Alternative would also affect the following three additional resources. Acton Community Trail (Proposed Extension): The relative severity of harm would be similar under the E1, E1A, E2, and E2A Build Alternatives; therefore, severity is not a differentiating factor related to this proposed trail extension. San Gabriel Mountains National Monument: The relative severity of harm would be similar under the E1, E1A, E2, and E2A Build Alternatives; therefore, severity is not a differentiating factor related to the SGMNM. Palmdale Ditch: A *de minimis* impact would not result in the loss of integrity that qualifies the resource for protection.		the E2 and E2A Build Alternatives; therefore, severity is not a differentiating factor related to the ANF. Hansen Dam Open Space: The relative severity of harm would be similar under the E2 and E2A Build Alternatives; therefore, severity is not a differentiating factor related to the ANF.	
Factor 3: The relative significance of each Section 4(f) property	Palmdale Hills Trail (Proposed Extension), Littlerock Trail (Proposed Extension), and Vasquez Loop Trail (Proposed Extension): The proposed extensions to existing equestrian, hiking, and mountain biking trails would provide significant recreational resources to Los Angeles County. The proposed trail extensions are considered high-value resources for the purposes of Section 4(f). Pacific Crest Trail: The Pacific Crest Trail is a series of ridgeline trails that extend approximately 2,650 miles along the Sierra Nevada and Cascade Mountain Ranges, from Mexico through California (including Los Angeles and Kern counties), Oregon, and Washington to Canada. It is considered a high-value resource for the purposes of Section 4(f). The affected portion includes an approximately 400-foot segment of the PCT that would be affected by construction and construction staging.	The SR14A Build Alternative would affect the same resources in the same manner as described for the Refined SR14 Build Alternative, except Pacific Crest Trail would not be affected under the SR14A Build Alternative.	The E1 Build Alternative would affect the Palmdale Hills Trail (Proposed Extension), Littlerock Trail (Proposed Extension), Vasquez Loop Trail (Proposed Extension), East Branch of the California Aqueduct, and Site 19-003890 (Prehistoric Vasquez Rocks Archaeological District) in the same manner as the Refined SR14 Build Alternative. However, the E1 Build Alternative would also affect the following three additional resources. Acton Community Trail (Proposed Extension): The proposed extension would provide a significant recreational resource to Los Angeles County. The proposed trail extension is considered a high-value resource for the purposes of Section 4(f). San Gabriel Mountains National Monument: The SGMNM is an approximately 342,000-acre national monument within the ANF, and also offers a variety of recreational resources. It is	The E1A Build Alternative would affect the same resources in the same manner as described for the E1 Build Alternative.	The E2 Build Alternative would affect the same resources in the same manner as described for the E1 Build Alternative, with the following two additional resources affected. Angeles National Forest: ANF includes areas designated for recreational activities. ANF offers natural environments and developed recreation areas including hiking trails, skiing trails, picnic areas, horseback riding, and campgrounds. According to the ANF Land and Resources Management Plan, 5 million visitors use the forest annually for recreation. It is considered a high-value resource for the purposes of Section 4(f). The affected portion is available for recreational uses as open space but does not have developed recreational facilities such as campgrounds, trails, or picnic areas.	The E2A Build Alternative would affect the same resources in the same manner as described for the E2 Build Alternative.

Least Harm Factor	Refined SR14 Build Alternative	SR14A Build Alternative	E1 Build Alternative	E1A	E2 Build Alternative	E2A Build Alternative
	Lang Station Open Space: The City of Santa Clarita Open Space Preservation District has preserved over 13,000 acres within and near Santa Clarita. The District's preserved lands are designed to expand the City's existing Open Space, Park, and Parkland Program to preserve natural land from development, create more parks for community usage, and protect rare biological and geological regions. In June 2022, the City acquired the 208-acre Lang Station Open Space. This open space is considered a high-value resource for the purposes of Section 4(f). East Branch of the California Aqueduct: SHPO reaffirmed its concurrence with the NRHP eligibility of the property on August 30, 2019. On December 14, 2023, the SHPO concurred with the Authority's no adverse effect under Section 106 (Authority et al. 2023). Site 19-003890 (Prehistoric Vasquez Rocks Archaeological District): This site was listed on the NRHP in 1972. The site has been identified with phased effects. Consultation with the SHPO will continue under the MOA (Authority et al. 2023).		considered a high-value resource for the purposes of Section 4(f). The affected portion is available for recreational uses as open space but does not have developed recreational facilities such as campgrounds, trails, or picnic areas. Palmdale Ditch: The SHPO concurred with the NRHP eligibility of the property on August 30, 2019. On December 14, 2023, the SHPO concurred with the Authority's no adverse effect under Section 106 (Authority et al. 2023).		Hansen Dam Open Space: The Hansen Dam Open Space is an approximately 813-acre recreation area and includes day-use facilities such as a golf course and riding stables; an aquatic center with a lake available for swimming, fishing, and boating; and picnic areas. Little Tujunga Creek and the Tujunga Wash are adjacent to the recreation area. It is considered a high-value resource for the purposes of Section 4(f). The affected portion includes open space with hiking opportunities.	
Factor 4: The views of the OWJ over each Section 4(f) property	Palmdale Hills Trail (Proposed Extension), Littlerock Trail (Proposed Extension), and Vasquez Loop Trail (Proposed Extension): Coordination is ongoing with the Los Angeles County Department of Parks and Recreation. Pacific Crest Trail: Coordination is ongoing with the Pacific Crest Trail Association. **Lang Station Open Space:** Coordination is ongoing with the City of Santa Clarita. East Branch of the California Aqueduct: The SHPO reaffirmed its concurrence with the NRHP eligibility of the property on August 30, 2019. On December 14, 2023, the SHPO concurred with the Authority's no adverse effect under Section 106 (Authority et al. 2023). Site 19-003890 (Prehistoric Vasquez Rocks Archaeological District): This site was listed on the NRHP in 1972. The site has been identified with phased effects. Consultation with the SHPO will continue under the MOA (Authority et al. 2023).	The SR14A Build Alternative would affect the same resources in the same manner as described for the Refined SR14 Build Alternative, except Pacific Crest Trail would not be affected under the SR14A Build Alternative. On February 14, 2024, the Los Angeles County Department of Parks and Recreation concurred with the Authority's *de minimis* determination for the Palmdale Hills Trail (Proposed Extension), Littlerock Trail (Proposed Extension), and Vasquez Loop Trail (Proposed Extension).	The E1 Build Alternative would affect the Palmdale Hills Trail (Proposed Extension), Littlerock Trail (Proposed Extension), Vasquez Loop Trail (Proposed Extension), East Branch of the California Aqueduct, and Site 19-003890 (Prehistoric Vasquez Rocks Archaeological District) in the same manner as the Refined SR14 Build Alternative. However, the E1 Build Alternative would also affect the following three additional resources. Acton Community Trail (Proposed Extension): Coordination is ongoing with the Los Angeles County Department of Parks and Recreation. San Gabriel Mountains National Monument: Coordination is ongoing with the United States Forest Service for this Build Alternative. Palmdale Ditch: The SHPO concurred with the NRHP eligibility of the property on August 30, 2019. On December 14, 2023, the SHPO concurred with the Authority's	The E1A Build Alternative would affect the same resources in the same manner as described for the E1 Build Alternative.	The E2 Build Alternative would affect the same resources in the same manner as described for the E1 Build Alternative, with the following two additional resources affected. Angeles National Forest: Coordination is ongoing with the United States Forest Service for this Build Alternative. Hansen Dam Open Space: Coordination is ongoing with the Los Angeles County Department of Parks and Recreation.	The E2A Build Alternative would affect the same resources in the same manner as described for the E2 Build Alternative.

Least Harm Factor	Refined SR14 Build Alternative	SR14A Build Alternative	E1 Build Alternative	E1A	E2 Build Alternative	E2A Build Alternative
			no adverse effect under Section 106 (Authority et al. 2023).			
Factor 5: The degree to which each alternative meets the Purpose and Need for the project	Meets the project Purpose and Need.	Meets the project Purpose and Need.	Meets the project Purpose and Need.	Meets the project Purpose and Need.	Meets the project Purpose and Need.	Meets the project Purpose and Need.
Factor 6: After reasonable mitigation, the magnitude of any adverse impacts on resources not protected by Section 4(f)[1]	Moderate (129) and severe (55) operational noise impacts at residential locations.	**Moderate (99) and severe (19) operational noise impacts at residential locations.**	Moderate (143) and severe (108) operational noise impacts at residential locations.	Moderate (173) and severe (44) operational noise impacts at residential locations.	Moderate (141) and severe (164) operational noise impacts at residential locations.	Moderate (168) and severe (102) operational noise impacts at residential locations.
	Number of displacements: 51-54 residential, 161-178 commercial and industrial, and 0 agricultural property or community and public facility displacements.	Number of displacements: 39-42 residential, 160-177 commercial and industrial, and 0 agricultural property or community and public facility displacements.	Number of displacements: **24-29 residential**, 160-177 commercial and industrial, and 0 agricultural property or community and public facility displacements.	Number of displacements: 39-42 residential, 162-179 commercial and industrial, and 0 agricultural property or community and public facility displacements.	Number of displacements: 49 residential**, 68 commercial and industrial,** and 0 agricultural property or community and public facility displacements.	Number of displacements: 64 residential, 70 commercial and industrial, and 0 agricultural property or community and public facility displacements.
	7.56 acres of discharge to jurisdictional waters, wetland.	**0.87 acre of discharge to jurisdictional waters, wetland.**	7.51 acres of discharge to jurisdictional waters, wetland.	**0.87 acres of discharge to jurisdictional waters, wetland.**	15.04 acres of discharge to jurisdictional waters, wetland.	8.39 acres of discharge to jurisdictional waters, wetland.
	15.77 acres of discharge to high and medium-high quality aquatic resources.	**4.77 acres of discharge to high and medium-high quality aquatic resources.**	17.71 acres of discharge to high and medium-high quality aquatic resources.	11.37 acres of discharge to high and medium-high quality aquatic resources.	25.25 acres of discharge to high and medium-high quality aquatic resources.	18.92 acres of discharge to high and medium-high quality aquatic resources.
	Impact on jurisdictional aquatic resources (47.37 acres).	Impact on jurisdictional aquatic resources (26.78 acres).	Impact on jurisdictional aquatic resources (40.13 acres).	**Impact on jurisdictional aquatic resources (20.58 acres).**	Impact on jurisdictional aquatic resources (42.51 acres.	Impact on jurisdictional aquatic resources (22.97 acres).
	Lowest risk of secondary effects from tunnel construction.	**Lowest risk of secondary effects from tunnel construction.**	High risk of secondary effects from tunnel construction.	High risk of secondary effects from tunnel construction.	Highest risk of secondary effects from tunnel construction).	Highest risk of secondary effects from tunnel construction.
	Avoidance of visual impacts to the Blum Ranch Historic District.	**Avoidance of visual impacts to the Blum Ranch Historic District.**	Significant adverse visual effects on the Blum Ranch Historic District.	Significant adverse visual effects on the Blum Ranch Historic District.	Significant adverse visual effects on the Blum Ranch Historic District.	Significant adverse visual effects on the Blum Ranch Historic District.
Factor 7: Substantial differences in costs among the project alternatives	$22.385 billion	$24.059 billion	$22.481 billion	$23.355 billion	$22.458 billion	$23.169 billion
Summary	The Refined SR14 Build Alternative would result in *de minimis* impacts on four park resources and two cultural resources and use of one recreational resource. The permanent use (Lang Station Open Space) is considered a high-value resource. The Refined SR14 Build Alternative would have the lowest risk of secondary effects from tunnel construction, would avoid	The SR14A Build Alternative would result in *de minimis* impacts on three park resources and two cultural resources and use of one recreational resource. The permanent use (Lang Station Open Space) is considered a high-value resource. The SR14A Build Alternative would have the fewest moderate and severe operational noise impacts, would have the	The E1 Build Alternative would result in *de minimis* impacts on five park resources and three cultural resources. The E1 Build Alternative would result in the fewest number of residential displacements, would have a high risk of secondary effects from tunnel construction, would result in visual effects	The E1A Build Alternative would result in *de minimis* impacts on five park resources and three cultural resources. The E1A Build Alternative would impact the fewest number of jurisdictional aquatic resources, would have a high risk of secondary effects from tunnel construction, would result in visual effects	The E2 Build Alternative would result in *de minimis* impacts on seven park resources and three cultural resources. The E2 Build Alternative would result in the fewest number of commercial and industrial displacements, would have the highest number of acres of discharge to high and medium-high quality aquatic	The E2A Build Alternative would result in *de minimis* impacts on seven park resources and three cultural resources. The E2A Build Alternative would result in the second lowest number of residential displacements, would have the second highest number of acres of discharge to high and medium-high quality aquatic

Least Harm Factor	Refined SR14 Build Alternative	SR14A Build Alternative	E1 Build Alternative	E1A	E2 Build Alternative	E2A Build Alternative
	visual effects to the Blum Ranch Historic District, and would have the lowest capital costs.	least number of acres of discharge to high and medium-high quality aquatic resources, would have the lowest risk of secondary effects from tunnel construction, would avoid visual effects to the Blum Ranch Historic District, and would have the highest capital costs.	to the Blum Ranch Historic District, and would have the third lowest capital costs.	to the Blum Ranch Historic District, and would have the fifth lowest capital costs.	resources, and would have the second lowest capital costs.	resources, and would have the fourth highest capital costs.

[1] **Bolded text** indicates the least impactful Build Alternative(s) on resources not protected by Section 4(f).

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9.2 Net Harm to Section 4(f) Property

Factors one through four in Table 4-B-2 consider the net harm that each Build Alternative would cause to a Section 4(f) property. Overall, the SR14A Build Alternative would affect the fewest Section 4(f) resources (6), compared to the Refined SR14 Build Alternative (7), the E1 Build Alternative (8), the E1A Build Alternative (8), the E2 Build Alternative (10), and the E2A Build Alternative (10).

The SR14A Build Alternative would result in *de minimis* impacts to the fewest park, recreation, and open-space resources (four), compared to five park, recreation, and open-space resources under the Refined SR14 Build Alternative; five park, recreation, and open-space resources under the E1 Build Alternative; five park, recreation, and open-space resources under the E1A Build Alternative; seven park, recreation, and open-space resources under the E2 Build Alternative; and seven park, recreation, and open-space resources under the E2A Build Alternative. Except for the Section 4(f) use at Lang Station Open Space (the Refined SR14 and SR14A Build Alternatives), the impacts to park, recreation and open-space resources would be *de minimis*.

As discussed above in Section 7 above, there are no feasible and prudent alternatives that would avoid a Section 4(f) use in any of the project alternatives. Since the SR14A Build Alternative would result in the least impacts on Section 4(f) resources of the project alternatives, including the least impacts to park, recreation, and open-space resources and least impacts to historic property resources, the SR14A Alternative has the least overall harm.

9.3 Impacts on Environmental Resources Outside Section 4(f) Uses

Factors five through seven in Table 4-B-2 show a comparison with non-Section 4(f) considerations and are helpful in determining overall least harm where the impacts on the Section 4(f) qualifying attributes of the resources do not provide a clear distinction. As shown in Table 4-B-2, while all six Build Alternatives are consistent with the project's Purpose and Need, each would result in different comparative impacts on the other resource areas. For example, the SR14A Build Alternative would result in the least number of moderate (99) and severe (19) operational noise impacts at residential locations. Comparatively, the Refined SR14 Build Alternative would result in the second fewest moderate (129) and severe (55) operational noise impacts at residential locations, while the E1A Alternative would result in the most moderate (141) and severe (164) operational noise impacts at residential locations.

As discussed in the Palmdale to Burbank Project Section Checkpoint C Summary Report (Authority 2024), the SR14A and E1A Build Alternatives would cause the fewest direct impacts on wetlands among the alternatives. The Refined SR14, E1, E2, and E2A Build Alternatives would cause the most direct impacts on wetlands, with the E2 Build Alternative causing the most impacts on wetlands.

Although the SR14A Build Alternative would affect more acres of nonwetland aquatic resources (26.78 acres) than the E1A and E2A Build Alternatives (20.58 and 22.97 acres, respectively), approximately 68 percent of those proposed impacts under the SR14A Build Alternative would be on constructed basins or constructed watercourses that provide minimal functions and values, as compared to 34 percent and 2 percent of proposed impacts on constructed basins and watercourses for the E1A and E2A Build Alternatives, respectively.

Based on the findings presented in the Watershed Evaluation/Qualitative Aquatic Resource Assessment Report prepared for the Palmdale to Burbank Project Section, natural and modified natural streams were found to have a higher quality of condition and consequently, an inferred higher functional integrity than constructed basins and watercourses. Of the E1A and E2A Build Alternatives nonwetland waters impacts, 66 percent and 98 percent of the impacts, respectively, would be on natural and modified natural streams that have higher functions and services, resulting in a far greater impact on aquatic ecosystem functional integrity as compared to 32 percent of the impacts on nonwetland waters from the SR14A Build Alternative that would be on natural and modified natural streams. Therefore, while the SR14A Build Alternative would result in the greatest number of permanent impacts on waters of the U.S. compared to the E1A and

E2A Build Alternatives, it would have the fewest impacts on High and Medium-High quality aquatic resources, affecting 4.77 acres of this quality of feature compared to 11.37 acres affected by the E1A Build Alternative and up to 18.92 acres affected by the E2A Build Alternative.

The SR14A and Refined SR14 Build Alternatives would have the lowest potential to cause secondary adverse impacts on surface water resources in the ANF from tunnel construction. The SR14A and Refined SR14 Build Alternatives would traverse areas with lower groundwater pressures and no known groundwater-dependent surface resources (e.g., springs, perennial streams). The E1, E1A, E2, and E2A Build Alternatives would all cross areas with high groundwater pressures and considerable surface aquatic resources.

In addition, the SR14A and Refined SR14 Build Alternatives would avoid impacts to the Blum Ranch Historic District, a historic property listed on the NRHP. Conversely, the E1, E1A, E2, and E2A Build Alternatives would result in significant adverse environmental consequence regarding visual effects on the Blum Ranch Historic District.

Based on this information, while each of the project alternatives would cause impacts on resources not protected by Section 4(f), the SR14A Build Alternative would cause the least amount of impacts on non-Section 4(f) resources compared to the Refined SR14, E1, E1A, E2, and E2A Build Alternatives.

10 SECTION 6(f) ANALYSIS

Based on a review of the list of LWCF Projects throughout California, Lang Station Open Space is not a Section 6(f) property. Additionally, no Section 6(f) properties occur within the Section 4(f)/Section 6(f) RSA for the Palmdale to Burbank Project Section. Therefore, no LWCF monies were used to acquire or develop recreational resources in the RSA, including within Los Angeles County. Accordingly, there are no Section 6(f) protected resources in the Section 4(f)/Section 6(f) RSA, and no further analysis of potential conversion of Section 6(f) resources is needed.

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