ENVIRONMENTAL ASSESSMENT

Brightline West Cajon Pass High-Speed Rail Project

October 2022

Prepared for
Federal Railroad Administration

Prepared by
Circlepoint

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Abbreviations and Acronyms

AAM	Annual Arithmetic Mean
ACS	American Community Survey
APE	Area of Potential Effects
ARRIVE	Advanced Regional Rail Integrated Vision – East
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMPs	Best Management Practices
BTU	British Thermal Unit
CAAQS	California Ambient Air Quality Standards
Caltrans	California Department of Transportation
CalEEMod	California Emissions Estimator Model
CHP	California Highway Patrol
CDFW	California Department of Fish and Wildlife
CNDDB	California Natural Diversity Database
CWHR	California Wildlife Habitat Relationship
CO	Carbon Monoxide
CWA	Clean Water Act
CFR	Code of Federal Regulations
CMP	Congestion Management Program
CGP	Construction General Permit
CEQ	Council on Environmental Quality
CAP	criteria air pollutants
dBA	decibels
EB	eastbound
EMFAC	Emission FACtor model
EA	Environmental Assessment
EO	executive order
EPA	Energy Policy Act or Environmental Protection Agency
ESA	Endangered Species Act
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration

FEMA	Federal Emergency Management Agency or Flood Emergency Management Administration
FIRMs	Flood Insurance Rate Maps
GGE	gasoline gallons equivalent
GIS	geographic information systems
GWh	gigawatt-hours
GHG	greenhouse gas
HMMP	Hazardous Materials and Management Plan
HSR	high-speed rail
HEC-RAS	Hydraulic Engineering System River Analysis System
IPaC	Information for Planning and Consultation
I	interstate
KOPs	key observation points
kWh	kilowatt hour
Lb	pound
Leq	equivalent continuous sound level
LDA	light-duty automotive
Ldn	Day/Night Average Sound Level
LDIGR	Local Development Intergovernmental Review
LDT	light-duty truck
LOD	limits of disturbance
LOS	Level of Service
LT	long-term
LUST	leaking underground storage tanks
m^3	cubic meter
MDV	medium-duty truck
mi	mile
MOU	memorandum of understanding
MBTA	Migratory Bird Treaty Act
mph	miles per hour
MDAB	Mojave Desert Air Basin
MT	metric tons
MWh	megawatt hour

MDAQMD	Mojave Desert Air Quality Management District
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NB	northbound
No.	number
NO_x	oxides of nitrogen
NRHP	National Register of Historic Places
O_3	ozone
OHWM	ordinary high-water mark
PPB	parts per billion
PPDG	Project Planning Design Guide
PPM	parts per million
ROG	reactive organic compounds
RPS	Renewable Portfolio Standards
SANBAG	San Bernardino Associated Governments
SBCTA	San Bernardino County Transportation Authority
SB	senate bill or southbound
ST	short term
STB	Surface Transportation Board
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SCORE	Southern California Optimized Rail Expansion Program
SCRRA	Southern California Regional Rail Authority
SPCC	Spill Prevention, Control, and Countermeasure
SO_2	sulfur dioxide
SWPPP	Stormwater Pollution Prevention Plan
SR	State Route

SWRCB	State Water Resources Control Board
TESC	Temporary Erosion and Sediment Control Plan
TAC	toxic air contaminants
TDS	total dissolved solids
tpy	tons per year
USACE	United States Army Corps of Engineers
U.S.C.	United States Code
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USFS	United States Forest Service
USGS	United States Geological Survey
U.S.	United States
US-395	US Highway 395
VMT	vehicle miles traveled
VdB	vibration decibels
VVTA	Victor Valley Transit Authority
VOC	volatile organic compounds
WB	westbound
WOTUS	Waters of the United States

Cajon Pass High-Speed Rail Project
Environmental Assessment

Prepared by:
Federal Railroad Administration (FRA)
Pursuant to:

National Environmental Policy Act (42 U.S.C. Section 4321 et seq.), and implementing regulations (40 CFR Parts 1500-1508), 23 CFR Part 771; 23 U.S.C. Section 139; Section 4(f) of the United States Department of Transportation Act (49 U.S.C. Section 303) and implementing regulations (23 CFR Part 774); National Historic Preservation Act (54 U.S.C. Section 306101 et seq.) and implementing regulations (36 CFR Part 800); Clean Air Act as amended (42 U.S.C. Section 7401 et seq.) and implementing regulations (40 CFR Parts 51 and 93); the Endangered Species Act of 1973 (16 U.S.C. Section 1531-1544) and implementing regulations (50 CFR Part 402); the Clean Water Act (33 U.S.C. Section 1251-1387) and implementing regulations (33 CFR Parts 320 to 324 and 40 CFR Part 230); and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 U.S.C. Section 4601).

Approved:

10/26/2022
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EXECUTIVE SUMMARY

The United States Department of Transportation's (USDOT) Federal Railroad Administration (FRA) prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) to evaluate the potential environmental impacts for the Brightline West Cajon Pass High Speed Rail Project (Project), a 49-mile train system capable of reaching a top speed of approximately 140 miles per hour (mph) between Victor Valley and Rancho Cucamonga, California. The Project includes two new railway stations—one in Hesperia, and one in Rancho Cucamonga. The connecting station in Victor Valley was approved as part of a separate project that was evaluated in the DesertXpress Final Environmental Impact Statement (Final EIS; FRA 2011).

DesertXpress Enterprises, LLC (dba "Brightline West"), the Project Sponsor, proposes to construct and operate the Project under a lease agreement with the California Department of Transportation (Caltrans) for the use of the Interstate 15 (I-15) right-of-way and the station at Hesperia. Brightline West will secure additional agreements for Right-of-Way Use; Design & Construction Oversight and Reimbursement; and Operations & Maintenance, as necessary. For the last mile of the Project from I-15 to the Rancho Cucamonga Station, Brightline West will enter into agreements with the City of Rancho Cucamonga and the San Bernardino County Transportation Authority (SBCTA) for land rights, construction, operations, and maintenance, as necessary.

This EA evaluates and assesses the environmental impacts of the proposed Project. This EA examines a Build Alternative and a No Build Alternative. FRA is identifying the Build Alternative as the Preferred Alternative.

This EA is prepared pursuant to: NEPA (42 United States Code [U.S.C.] Section 4321 et seq.), and the Council on Environmental Quality's implementing regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), FRA's Environmental Procedures 23 CFR Parts 771; Section 4(f) of the USDOT Act (49 U.S.C. Section 303) and implementing regulations at 23 CFR Part 774; National Historic Preservation Act (54 U.S.C. Section 306101 et seq.) and implementing regulations (36 CFR Part 800); Clean Air Act as amended (42 U.S.C. Section 7401 et seq.) and implementing regulations (40 CFR Parts 51 and 93); the Endangered Species Act of 1973 (16 U.S.C. Section 1531- 1544) and implementing regulations (50 CFR Part 402); the Clean Water Act (33 U.S.C. Section 1251-1387) and implementing regulations (33 CFR Parts 320 to 324 and 40 CFR Part 230); Executive Order (EO) 11988 "Floodplain Management"; and EO 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations."

As disclosed in this EA, FRA did not identify any impacts associated with the Project, pursuant to the regulations listed above, for the following topics:

- Air Quality and Greenhouse Gas
- Floodplains
- Energy Resources

- Land Use and Community Facilities
- Socioeconomic Environment
- Hazardous Materials
- Cultural Resources
- Water Quality
- Safety
- Geology and Soils

FRA identified avoidance, minimization, and mitigation measures to reduce impacts for the following resource topics:

- Noise and Vibration –Construction noise impacts will be limited because most construction will take place in the median of the I-15 corridor, distant from most sensitive receptors. Construction noise will exceed the residential thresholds (both daytime and nighttime) at three locations at the northern end of the alignment: two hotels located near Stoddard Wells Road and one single-family residence on Pepper Tree Drive. The exceedance of the residential construction noise thresholds at these locations will require mitigation. Section 4.2.6 includes a discussion of noise and vibration mitigation measures to avoid, minimize, and/or mitigate noise and vibration impacts. Implementation of avoidance, minimization, and mitigation measures described in Section 4.2.6 will reduce noise and vibration impacts.
- Wetlands and Stream Areas – Temporary impacts from Project construction on aquatic resources are anticipated because the Project will cross the Mojave River wetland, the Mojave River, and other drainage features. During Project operation, railway crossings over Debris Cone Creek, Cajon Wash/Creek, and Lytle Creek will require new structures in the channels. All crossings will result in less than 0.1 acre of permanent fill. The Project will have no permanent impacts on the Mojave River itself, but a small portion (less than 0.01 acre) of the Mojave River wetland will be permanently impacted. Brightline West will coordinate with the United States Army Corps of Engineers to obtain a jurisdictional determination for aquatic resources. If applicable, Brightline West will obtain any required permits and implement any permit conditions (Section 4.3.6). Implementation of avoidance, minimization, and mitigation measures described in Section 4.3.6 will reduce impacts to wetlands and stream areas.
- Biological Resources – Construction activities will result in temporary and permanent impacts to the following Federally listed threatened or endangered species: arroyo toad, least Bell's vireo, southwestern willow flycatcher, and San Bernardino Merriam's kangaroo rat. The effects on the species will be limited to areas where suitable habitat is assumed to exist at the Mojave River, Cajon Canyon, Lytle Creek, and Cajon Wash. Project operation will likely impact the following Federally listed threatened or endangered species: arroyo toad, least Bell's vireo, southwestern willow flycatcher, San Bernardino Merriam's kangaroo rat, western yellow-billed cuckoo, and Coastal California gnatcatcher. Operation of the Project could result in mortality through collisions, and will be of concern for migratory birds. Refer to Section 4.5.6 for discussion of avoidance, minimization, and mitigation measures that will

be implemented by the Project Sponsor to avoid impacts on threatened and endangered species and their critical habitats. These avoidance and minimization measures may be refined through formal consultation with the United States Fish and Wildlife Service and will be documented in a Biological Opinion.

- Aesthetic and Design Quality – The Project would result in a temporary and permanent impact on visual quality at key observation point 6, which contains views of the surrounding San Gabriel and San Bernardino Mountains, and the Southern California Edison Boulder Dam–San Bernardino transmission lines (depicted in Figure 11). The Project would construct a raised access road on the east side of I-15, an elevated railway with retaining walls in the I-15 median, and new overpass structures to support California Highway Patrol and emergency vehicle access between the northbound and southbound lanes of I-15. As a result, the Project would affect and partially block views of the mountains and rolling terrain. Refer to Section 4.7.6 for discussion of avoidance, minimization, and mitigation measures that will be implemented to minimize impacts to visual quality. Implementation of avoidance, minimization, and mitigation measures described in Section 4.7.6 will reduce aesthetic and design quality impacts.
- Transportation – The Rancho Cucamonga station will result in traffic to three intersections that are projected to operate at unacceptable level of service during the 2045 No Build conditions, and will also degrade the level of service at the Milliken Avenue/7th Street Intersection compared to the 2045 No Build scenario. Operation of the Project is anticipated to increase demand for local transit at the Hesperia station, such that the hourly volume of passengers desiring to depart the station via bus will likely exceed the available bus capacity during any single hour. Additionally, based on ridership estimates, parking at the Hesperia and Rancho Cucamonga stations will have adequate parking available in the 2025 Opening Year but will exceed the amount of planned spaces at the station in the 2045 Horizon Year. Refer to Section 4.12.6 for a description of avoidance and mitigation measures that will minimize traffic impacts on local intersections and parking during Project operation. Implementation of avoidance, minimization, and mitigation measures described in Section 4.12.6 will reduce transportation impacts.

Based on the analysis in this EA, FRA has determined that the Project will not result in a significant impact on the environment. Furthermore, FRA has determined the Project would not result in disproportionately high and adverse effects on low-income and/or minority environmental justice (EJ) populations, pursuant to EO 12898. EJ-specific outreach to affected communities will be conducted to inform local community members of the Project and its status, to provide opportunities for EJ communities, including Tribes, to take part in the planning process for the Project, and so that FRA can understand the potential impacts of the Project.

1 Introduction

Brightline West, the Project Sponsor, proposes to construct and operate the Brightline West Cajon Pass High-Speed Rail Project (Project), a 49-mile train system capable of reaching a top speed approximately 140 miles per hour (mph) between Victor Valley and Rancho Cucamonga, California. The Project includes two new railway stations—one in Hesperia, and one in Rancho Cucamonga. The connecting station in Victor Valley was approved as part of a separate project that was evaluated in the DesertXpress Final Environmental Impact Statement (Final EIS; FRA 2011).

Brightline West proposes to construct and operate the Project within the I-15 right-of-way for 48 miles and on existing transportation corridors for the last mile into the proposed Rancho Cucamonga station. The Project will be powered by overhead electric catenary and require construction of one new traction power substation in the Hesperia area. The maintenance facility that was approved with the Brightline West Victor Valley High-Speed Rail (HSR) Passenger Project will provide the primary maintenance functions (Final EIS; FRA 2011).[1] Additional layover tracks are anticipated at the Rancho Cucamonga station, which could include light maintenance capability, such as interior cleaning and daily inspection.

Trains are expected to operate daily on 45-minute headways between Victor Valley and Rancho Cucamonga. The trip between Victor Valley and Rancho Cucamonga will be approximately 35 minutes. Service will be coordinated with existing and planned Metrolink service at the Rancho Cucamonga station to provide a convenient connection between the HSR and commuter rail systems.

Brightline West will construct and operate the Project under a lease agreement with the California Department of Transportation (Caltrans) for the use of the I-15 right-of-way and the station at Hesperia. Brightline West will secure additional agreements for Right-of-Way Use; Design & Construction Oversight and Reimbursement; and Operations & Maintenance, as necessary, including agreements with the City of Rancho Cucamonga and the San Bernardino County Transportation Authority (SBCTA) for land rights, construction, operations, and maintenance for the last mile of the Project from I-15 to Rancho Cucamonga station.

1.1 Federal Role

FRA, in coordination with the Federal Highway Administration (FHWA), Surface Transportation Board (STB), and the United States Army Corps of Engineers (USACE) prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.), the Council on Environmental Quality's (CEQ) implementing regulations (40 CFR Parts 1500-1508), FRA's Environmental Procedures (23 CFR Parts 771), and related environmental laws. FRA is the lead Federal agency for the environmental review of the Project. FRA has also prepared an evaluation consistent with Section 4(f) of the Department of

[1] Evaluation and approval of the maintenance facility was conducted as part of the environmental review process for the already approved Brightline West Las Vegas to Victor Valley High-Speed Rail Passenger Project; therefore, the maintenance facility is not discussed further in this EA.

Transportation Act (49 U.S.C. 303, and 23 U.S.C. 138), and has initiated consultation under Section 106 of the National Historic Preservation Act (NHPA) (54 U.S.C. 306108).

As the Project will connect to the interstate rail network, it requires approval by STB and is subject to the Board's exclusive jurisdiction pursuant to 49 U.S.C. 10501(b). Therefore, a review under the California Environmental Quality Act (CEQA) was not prepared concurrently with this EA.

2 Project Description

2.1 Background

Early project coordination for HSR service from Victor Valley to Rancho Cucamonga began in 2020, when Brightline West met with the SBCTA to examine a connection between Victor Valley and Rancho Cucamonga. This meeting resulted in a memorandum of understanding (MOU) that was fully executed in July 2020 between Brightline West and SBCTA to study the potential of construction and operation of HSR within the I-15 right-of-way between Victor Valley and Rancho Cucamonga and the feasibility of constructing within Caltrans right-of-way. A separate MOU was executed in September 2020 between Brightline West and the Southern California Regional Rail Authority (SCRRA), which operates Metrolink, to also study the potential of building a connection to the existing Metrolink station in Rancho Cucamonga. Additionally, the California State Transportation Agency, Caltrans, the California High-Speed Rail Authority, and Brightline West have executed an MOU regarding the Project.[2]

2.2 Project Area

The proposed rail alignment is located within the median of the I-15 highway between Victor Valley and Rancho Cucamonga, except for the last mile approaching the proposed Rancho Cucamonga station. The last mile of the Project, from I-15 to the Rancho Cucamonga station, will be constructed following agreements with the City of Rancho Cucamonga and the SBCTA for land rights, construction, operations, and maintenance. The project area is depicted in Figure 1.

[2] The Project will connect to the Brightline West Las Vegas to Victor Valley High-Speed Train Project, formerly referred to as DesertXpress or XpressWest. In preparing this EA, FRA determined the Project between Rancho Cucamonga and Victor Valley retains independent utility from the Las Vegas Project and connects logical termini. For the Las Vegas to Victor Valley Project, FRA, in cooperation with the BLM, STB, FHWA, and the National Park Service (NPS), prepared a Draft Environmental Impact Statement (DEIS) in March 2009, a Supplemental DEIS in August 2010, a Final Environmental Impact Statement (FEIS) in March 2011, and a Record of Decision (ROD) in July 2011. FRA most recently completed a reevaluation of the FEIS and ROD in September 2020. The station in Victor Valley and the associated maintenance facility were evaluated as part of the Las Vegas Project and are not individually discussed in this EA. Where applicable, the 2011 FEIS, ROD and 2020 reevaluation are incorporated by reference.

2.3 Purpose of and Need for the Project

2.3.1 Purpose

The purpose of the Project is to provide reliable and safe passenger rail transportation between the Los Angeles metropolitan region and the High Desert of San Bernardino County. The Project will provide a convenient, efficient, and environmentally sustainable alternative to automobile travel on the highly congested I-15 freeway. The Project will add capacity to the overall transportation system by introducing a new HSR service from Victor Valley to Rancho Cucamonga. The Project will reduce travel time, improve reliability, and increase the mobility options for travel between metropolitan regions. Travel time from Victor Valley to Rancho Cucamonga for HSR passengers will be approximately 30 percent faster than an automobile during normal conditions and at least twice as fast during periods of peak congestion. As discussed in Section 4.1.5, Air Quality Environmental Consequences, the Project will reduce vehicle miles traveled (VMT), resulting in a corresponding reduction in greenhouse gas (GHG) emissions and criteria pollutant emissions.

2.3.2 Multi-Modal Use of the I-15 Corridor

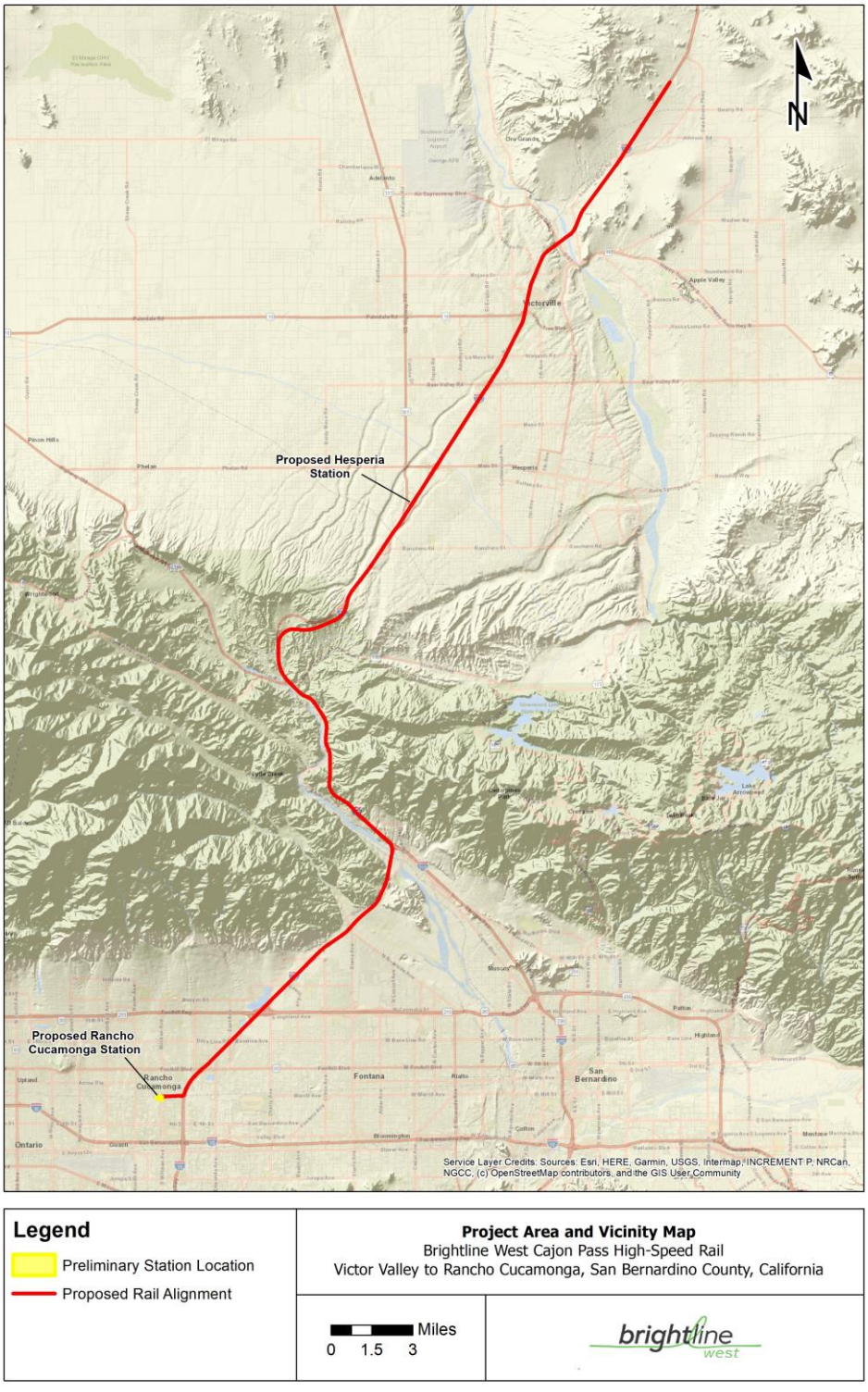
Operation of the Project will significantly increase the capacity of the I-15 corridor as a multi-modal corridor in Southern California. This increase in capacity will benefit freeway operations by providing an alternative to automobile travel that will reduce travel time. The shift of people from automobile to train travel along the I-15 corridor will also reduce the need for programmed and/or planned freeway improvement and widening projects.

2.3.3 Need

The Project is needed to address transportation capacity, congestion, limited travel mode choices, safety, and reduce GHG emissions.

Travel demand analysis, described below in Section 2.3.2.3, forecasts 49.1 million one-way trips between Southern California and Las Vegas in 2025, with approximately 85 percent of travelers making the trip by automobile. Most of these trips use the capacity constrained Cajon Pass segment of I-15. Further, the freeway system leading into I-15 from points west, east, and south, including Interstate (I-) 10, State Route (SR-) 210, I-215 and SR-60 have similar delays and capacity constraints. To address capacity constraints, the Project will provide a transportation alternative to vehicle travel and allow access to the Brightline West service from the Greater Los Angeles Metropolitan area, the Riverside-San Bernardino-Ontario Metropolitan area, and beyond as a result of a connection to the Metrolink system in Rancho Cucamonga.

The Project will also support Federal and State policies focused on addressing climate change by reducing VMT and associated GHG emissions.



Source: HNTB 2022

Figure 1. Project Area and Vicinity

2.3.4 Capacity Constraints

The portion of I-15 traversing the Cajon Pass is one of the most congested segments of I-15, with no alternative, comparably direct routes because of the mountainous topography. The Cajon Pass segment of I-15 supports daily commuters, recreational travel, and regional and interstate freight. According to the traffic study prepared for the I-15 Corridor Project Initial Study/Environmental Assessment (Caltrans and SBCTA, 2018), unreliability in travel time along segments of I-15 and surrounding roadways is due to roadway capacity constraints, frequent accidents, and various factors that cause unanticipated congestion. Travelers using the Project will no longer need to drive through the most congested parts of the corridor on Cajon Pass for interstate or commuter trips, thereby avoiding idling and inefficient stop-and-go traffic conditions.

By 2045, travel speeds are expected to decrease on all but one segment of I-15 between the San Bernardino Valley and the Apple Valley in the AM (morning) peak period, and travel speeds on most segments will also decrease—some by more than 10 mph—in the PM (afternoon) peak period (SCAG 2020). Based on the Project Report for the I-15 Corridor Study (addition of express lanes), traffic volumes on I-15 between I-10 and SR-210 are expected to increase between 31 to 38 percent from 2014 to 2045. The report states the existing level of service (LOS) is acceptable in most locations, but there are bottlenecks in each direction of travel that degrade traffic operation, especially between Baseline Road and SR-210. Since the express lane project is increasing capacity by adding express lanes, the traffic volumes are projected to increase by an additional 27 percent. The report further mentions that although the express lane project will improve conditions in the general purpose lanes in many segments, it will cause the segment between I-10 and Fourth Street to worsen in the PM peak hour (both directions).[3] In the AM peak hour, the segment between Arrow Route and Fourth Street will worsen in the southbound direction. The segment between Baseline Road and SR-210 will continue to operate at over capacity conditions in all scenarios.

SCAG's Connect SoCal Goods Movement Technical Report identifies I-15 as part of the USDOT Primary Highway Freight Network and among the network segments that carry the highest volumes of truck traffic in the region. It also identifies the entirety of Cajon Pass as a truck bottleneck, with over 15,000 annual vehicle hours of delay. The transportation capacity constraints on I-15 limit reasonable highway access between Rancho Cucamonga, Hesperia, and Victor Valley.

2.3.5 Travel Demand

The anticipated substantial increases in population, housing, and employment in San Bernardino County will result in a greater demand for transportation facilities and services. This demand will result in congestion on roadways if capacity does not outpace the demand. The proposed Hesperia station will provide convenient connections between High Desert communities, the San Bernardino Valley, and Los Angeles. The High Desert provides lower cost

[3] The term "general purpose lane" refers to highway lanes that do not have a restricted use such as express lanes or carpool lanes.

housing options for Southern California residents, while the Rancho Cucamonga/Ontario area around Ontario International Airport has become an employment center.

SCAG forecasts, in its 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), that by 2045 the population of San Bernardino County will increase by 29 percent from the U.S. Census Bureau's 2018 population estimate of 2,180,085 and that the number of households will increase by 39 percent from the 2018 household estimate of 630,633 (U.S. Census Bureau 2020). Additionally, the 2020-2045 RTP/SCS forecasts employment in San Bernardino County will increase by 72 percent from the U.S. Census Bureau's estimate of 617,828 jobs in 2018.

While the proposed Victor Valley station site will be located at the convergence of all the highways *en route* to Las Vegas for Southern California travelers, the Rancho Cucamonga station will be closer to major population centers in Southern California. Compared to the Victor Valley station, the proposed HSR station in Rancho Cucamonga, located about 45 miles east of Downtown Los Angeles, will provide both drivers and Metrolink riders more direct access to Southern California's densely populated centers; 87 percent of the total 49.1 million potential market for trips between Las Vegas and Southern California (equivalent to 42.7 million of the one-way, in-scope trips in 2025) live within 75 miles of the location of the proposed Rancho Cucamonga station.

The proposed station in Rancho Cucamonga, with a Metrolink connection to Los Angeles, will further meet the forecasted demand of the 49.1 million one-way trips between Las Vegas and Southern California estimated in 2025. Similarly, the proposed Hesperia station will serve commuters to Greater Los Angeles from the major corridors in Victor Valley because of its location at the convergence of US Highway 395 (US-395) and I-15.

The Project will also support SCAG's Connect SoCal Passenger Rail Technical Report, which identifies closing connectivity gaps as a major strategy to increase mobility and improve sustainability. The Project will facilitate transit connections and will allow residents of the Greater Los Angeles and Riverside-San Bernardino-Ontario Metropolitan areas to travel exclusively by mass transit and passenger rail to and from the High Desert of San Bernardino and connect to the Brightline West station at Victor Valley for a connection to Las Vegas. From the Rancho Cucamonga station, Southern California residents can take the Metrolink San Bernardino line to Los Angeles Union Station and connect to the Los Angeles Metro rail, regional bus systems, Amtrak, or Metrolink to Los Angeles Union Station to connect via the Metrolink San Bernardino Line. Residents could also take the planned West Valley Connector Bus Rapid Transit service that will operate between the Pomona station on the Metrolink Riverside Line in eastern Los Angeles County and the Rancho Cucamonga station. While still in early planning and design stages, the planned Tunnel to Ontario International Airport (ONT) project may provide an additional connection from the Rancho Cucamonga station to the Ontario International Airport.

Additionally, SBCTA and SCAG's 2015 Advanced Regional Rail Integrated Vision – East (ARRIVE Corridor) plan proposes strategies for transitioning the Metrolink San Bernardino Line, which will serve the Rancho Cucamonga station, from a traditional commuter rail line to one that promotes transit-oriented development. Improvements to Metrolink, its transit connections,

and additional development of the station areas with transit-supportive uses at greater densities and intensities will encourage the development of walkable areas that provide mobility options in the region. The Project will further the goals of the ARRIVE Corridor plan by increasing the activity centers that can be accessed by Southern California's rail network. Additionally, the Southern California Optimized Rail Expansion (SCORE) program is intended to increase speeds, reliability, and capacity on Metrolink lines including the San Gabriel Subdivision serving the Rancho Cucamonga station.

In 2010, the San Bernardino Associated Governments (the predecessor agency to SBCTA) completed the Victor Valley Long Distance Commuter Needs Assessment, which identified a phased set of commuter improvement projects. Those projects ranged from expanded park and ride facilities to an express bus service linking the Victor Valley area of the High Desert to the Rancho Cucamonga Metrolink station. The Joshua Street Park & Ride is approximately 0.25 mile west of the proposed Hesperia station adjacent to US-395. Such commuter-focused planned improvements highlight the need for travel options that reduce the number of single occupancy automobiles on I-15 in San Bernardino County, particularly through the Cajon Pass.

FHWA's Southern California Regional Freight Study (USDOT, 2020) identifies I-15 among the highest truck volume corridors in the Western United States and as a major corridor providing access to the interior of the United States for goods arriving at the ports of the Los Angeles region. Caltrans' 2021 Interregional Transportation Strategic Plan identifies I-15 as a high priority corridor, among six nationally identified "Corridors of the Future," and a "a vital link between Mexico, Southern California, and locations to the north and east of the region." I-15 also connects Southern California and the southwestern United States to the San Joaquin Valley's agricultural goods via SR-58. By providing passenger rail capacity in the corridor, the Project will help protect freeway capacity for freight by removing passenger vehicles from the roadway network.

2.3.6 Ridership

Forecasted ridership for the Project is based on the 2020 Brightline West Cajon Pass Project - Ridership and Revenue Forecasts Report prepared by Steer (referred to hereafter as the Steer Report), [4] the findings of which are summarized in the Brightline West Cajon Pass Project Operating Memo (2022; included as Attachment A). Operating conditions analyzed in this EA assume that the Project and the separate, but interconnected DesertXpress High-Speed Passenger Train Project (DesertXpress Project) will operate simultaneously. Therefore, this section discusses ridership forecasts for passengers travelling from Las Vegas to Rancho Cucamonga and to stations in between. Ridership forecasts are summarized in Table 1 and Table 2.

[4] This analysis was prepared for Brightline West in December 2019 and June 2020 by Steer. The reports contain ridership information to support the environmental analysis and also contain confidential Brightline West business information. FRA has reviewed the ridership methodology in the reports and confirmed it is based on reliable methods; and has accepted the analysis. For more information on ridership, refer to the Transportation Technical Report, included as Attachment I to this EA.

Table 1. Ridership Forecast: Victor Valley to Rancho Cucamonga: Years 1 – 10 (millions)

Years	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Las Vegas -Southern California Total Travel Demand (one-way)	49.1	49.8	50.0	51.3	52.0	52.8	53.5	54.2	54.9	55.6
Forecasted Induced Ridership[1] (one-way)	.69	1.1	1.3	1.2	1.2	1.3	1.2	1.3	1.4	1.3
Forecasted Captured Ridership	6.9	9.2	9.7	9.8	9.9	10.1	10.1	10.3	10.5	10.5
Capacity	8.9	8.9	8.9	11.2	11.2	11.2	13.4	13.4	13.4	13.4
Annual LV-RC Ridership (excl. Victor Valley station)	4.1	4.9	4.9	6.0	6.0	6.1	6.8	6.9	6.9	7.0
Annual Las Vegas-Victor Valley-Rancho Cucamonga Ridership	5.6	6.4	6.5	7.5	7.6	7.6	8.3	8.4	8.5	8.5
Annual Hesperia-Rancho Cucamonga Ridership	.38	.43	.45	.51	.52	.53	.58	.59	.6	.61
Total Annual Ridership	**6.0**	**6.8**	**6.9**	**8.0**	**8.1**	**8.1**	**8.9**	**9.0**	**9.1**	**9.2**

Source: Brightline West 2022

[1]: Forecasted Induced Ridership is ridership that has been realized, or "generated", by improvements made to transportation infrastructure.

Table 2. Ridership Forecast: Victor Valley to Rancho Cucamonga: Years 11 - 20 (millions)

Years	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Las Vegas -Southern California Total Travel Demand (one-way)	56.4	57.1	57.9	58.7	59.4	60.2	60.9	61.6	62.4	63.1
Forecasted Induced Ridership[1] (one-way)	1.4	1.4	1.4	1.4	1.5	1.4	1.5	1.5	1.5	1.5
Forecasted Captured Ridership	11.4	11.6	11.6	11.8	11.9	12.1	12.2	12.4	12.5	12.7
Capacity	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9
Annual LV-RC Ridership (excl. Victor Valley station)	7.7	7.8	7.8	8.0	8.1	8.2	8.3	8.4	8.5	8.6
Annual Las Vegas-Victor Valley-Rancho Cucamonga Ridership	10.6	10.7	10.8	10.9	11.0	11.0	11.2	11.3	11.4	11.5
Annual Hesperia-Rancho Cucamonga Ridership	.69	.72	.74	.76	.77	.77	.78	.78	.79	.79
Total Annual Ridership	11.3	11.4	11.5	11.7	11.8	11.8	12.0	12.1	12.2	12.3

Source: Brightline West 2022

[1]: Forecasted Induced Ridership is ridership that has been realized, or "generated", by improvements made to transportation infrastructure.

As shown in Table 1 and Table 2, the Project is expected to capture approximately 14 percent of the Las Vegas – Southern California travel demand beginning in 2025 (i.e., the opening year). This capture rate will increase to 20 percent by Year 11. Induced ridership is expected to steadily increase from 693,937 in Year 1 to 1.4 million by 2035. By 2044, the Project is expected to have 12.3 million one-way trips annually. The subset of travelers who will only travel between Rancho Cucamonga and Hesperia will represent approximately 6 percent of the total annual ridership. Ridership between Victor Valley and Rancho Cucamonga is expected to be negligible; the majority of riders are expected to continue from Rancho Cucamonga and Hesperia to Las Vegas.

2.3.7 Safety

Alternatives to automobile travel would provide improved safety conditions on the I-15 corridor with diversion of vehicle trips to HSR. In 2019, the average rate of passenger fatalities from highway travel was more than 75 times the comparable rate for travel by air, and 34 times the comparable rate by rail. For the year 2016, the Bureau of Transportation Statistics' National Transportation Statistics (USDOT 2018) reported a rate of passenger fatalities per 100 million passenger miles traveled by highway nearly 10 times greater than the rates for travel by air or rail. HSR in a dedicated, grade-separated corridor such as is planned by Brightline West, is one of the safest forms of travel in the world. For example, the Japanese Shinkansen HSR system has been in existence for 50 years, has carried over 10 billion passengers, and has not experienced a single passenger fatality of injury on board die to derailments or collisions (JR Central, 2020).

The California Office of Traffic Safety ranks San Bernardino County as the 16th worst, out of 58 counties, for total fatal and injury crashes in 2018 (the most recent year of data available). According to the University of California, Berkeley, and SafeTREC's Transportation Injury Mapping System, there were 819 collisions with one or more deaths or injuries along I-15 in San Bernardino County in 2019. Of these, nearly one quarter (199) occurred within the 12 miles of the Cajon Pass, despite the Pass accounting for only 6.5 percent of the length of I-15 in the county.

A study by the I-15 Mobility Alliance found that the segment of I-15 from I-215 in San Bernardino to I-40 in Barstow had a fatality rate 0.009 per million VMT, well above the alliance's performance goal of 0.003 fatalities per million (CH2M 2017). By connecting Victor Valley to Rancho Cucamonga, the Project will allow more travelers to stay off the most dangerous segments of I-15.

2.4 Alternatives

2.4.1 No Build Alternative

The No Build Alternative will involve no action to create a passenger HSR system in the median and immediately alongside the I-15 highway between Victor Valley and Rancho Cucamonga. The I-15 corridor will remain operational without improving the major points of congestion or transportation capacity deficiencies along the highway. There are two planned improvements on I-15. The first project, Caltrans' the I-15 Interchange Reconstruction Project, consists of

improvements to the D Street, E Street, Stoddard Wells Road, and Mojave River Bridge interchanges to improve traffic safety, operational characteristics, and aesthetics. The second project is the I-15 Pavement Rehabilitation Project which is intended to improve the safety performance and smoothness of the roadway. Neither of these projects would increase capacity on I-15. The No Build Alternative will not result in temporary or permanent impacts to resources in the affected environment as no project related activities or construction will occur. As discussed below in Section 4.1.1 and Section 4.1.2, travelers between Victor Valley and Rancho Cucamonga will continue to use passenger cars for travel. Due to anticipated population increases, travel demand along I-15 will increase, along with VMT and associated criteria air pollutants, TACs, and GHG emissions from passenger vehicles.

2.4.2 Build Alternative

The Build Alternative (i.e., the Project) consists of a proposed HSR passenger railway with associated infrastructure, including two new proposed passenger stations. Nearly all of the Project will be built within the I-15 right-of-way. Near the proposed southern terminus station in Rancho Cucamonga, approximately one mile of the rail alignment will be in city street, railroad, or utility rights-of-way.

The proposed rail alignment will be located within the median of I-15 freeway between Victor Valley and Rancho Cucamonga except at the approach to the proposed Rancho Cucamonga station. The rail alignment will be predominantly at-grade (the same elevation as the existing freeway), with select segments of the alignment on aerial structures or in a trench to allow for grade separations (including four BNSF Railway[5] railroad crossings and three Union Pacific railroad crossings) and to provide a safe incline for train operation. The rail alignment will be predominantly single-track, with limited double-track segments in Victor Valley (2.6 miles, including 0.9 miles constructed as part of the approved DesertXpress Project), Hesperia (5.5 miles), and Rancho Cucamonga (2 miles). This will allow for 45-minute headways in the opening year between Victor Valley and Rancho Cucamonga. These headways along with the ability to couple trains (double passenger capacity), will address projected ridership needs for the foreseeable future.

For analytical purposes, the Build Alternative is described in sections. Sections were developed to reflect similarly developed areas with similar environmental sensitivity. The sections include:

- **Section 1:** High Desert - From the Victor Valley station, continuing south along I-15, to the I-15/Oak Hill Road interchange in Hesperia
- **Section 2:** Cajon Pass - From the Oak Hill Road interchange continuing south along I-15, through the Cajon Pass, to the I-15/Kenwood Avenue interchange
- **Section 3:** Greater Los Angeles - From the I-15/Kenwood Avenue interchange in San Bernardino continuing south along I-15, through the existing Metrolink Station in Rancho Cucamonga to Haven Avenue

[5] The BNSF Railway Company adopted its official name based on the initials of its original name, Burlington Northern and Santa Fe Railway, in January 2005.

2.4.3 Section 1 – High Desert

The proposed rail alignment will connect to the DesertXpress Project alignment approximately one mile south of the Victor Valley station in Apple Valley. From this point, the alignment will continue south within the I-15 median. The rail alignment throughout Section 1 will be predominantly single track, but the rail alignment will be double-track north of Stoddard Wells Road to the northern terminus of the alignment as it approaches the train platforms of the Victor Valley station. The Project will add a new rail bridge within the median of the existing I-15 bridge near the CEMEX facility in Victorville.

Brightline West will build new Southbound on and off ramps and a bridge at South Stoddard Wells Road to replace similar existing facilities further south.[6] This will require modifications of I-15 up to and including the Mojave River crossing.

At the Mojave River, a new rail bridge will be constructed within the median of I-15. The existing I-15 bridge will be widened to accommodate the rail line. The alignment will continue at grade in the I-15 median with minor roadway widenings for the remainder of Segment 1. This portion of the alignment will interface with the following interchanges: Stoddard Wells Road North, Stoddard Wells Road South, D Street/E Street, Mojave Drive, Roy Rogers Drive/Hook Road, Palmdale Road, La Mesa Road/Nisqualli Road, Bear Valley Road, Main Street/Phelan Road, Joshua Street, US-395, Ranchero Road, and Oak Hill Road.

A new traction power substation will be constructed to support the Project along I-15, between Mesa Street and Mojave Street. The area is mostly undeveloped other than existing overhead power lines and utility access.

Hesperia Station

Section 1 includes a new passenger station in Hesperia, at the I-15/Joshua Street interchange. This station will serve daily travelers between the High Desert of San Bernardino County and the Los Angeles Basin. This will be a limited service for select southbound AM and northbound PM weekday train coaches. The northbound on-ramp to Joshua Street will be realigned closer to the freeway and station parking will be added on the north side of Joshua Street. Parking will be accessed at the location of the existing northbound ramp intersection. To accommodate the rail alignment, the existing US-395 northbound connector and the existing Joshua Street bridge will be replaced within the existing right-of-way. The Joshua Street bridge will be reconstructed at a higher elevation, requiring the raising of the I-15 ramps and Mariposa Road. The passenger platform will be located within the I-15 median with direct access from the reconstructed Joshua Street bridge at the southern end of the double-track segment in Hesperia. The Project design includes adequate parking areas to accommodate parking demand.

[6] These improvements will be consistent with Caltrans' planned I-15 Interchange Reconstruction (D Street, E Street, Stoddard Wells Road, and Mojave River Bridge) project, which was originally analyzed under an Initial Study / Environmental Assessment in 2008.

Design Elements

Segment 1 of the Project includes the following design elements.

- Reconstructions/Interchange Modifications: Widening portions of the I-15 highway and modifications to interchanges at Stoddard Wells Road southbound on- and off-ramp, D Street/E Street, Mojave Drive, Roy Rogers Drive/Hook Road, Palmdale Road, La Mesa Road/Nisqualli Road, Bear Valley Road, Main Street/Phelan Road, Joshua Street, US-395, Ranchero Road, and Oak Hill Road.
- New Traction Power Substation: Construction of a new traction power substation along I-15 between Mesa Street and Mojave Street.
- Station area: Hesperia station platform, pedestrian bridge, station access/infrastructure, surface parking lot accommodating approximately 360 vehicles, bus pick up/drop off areas, Kiss and Ride.

2.4.4 Section 2 – Cajon Pass

Beginning at the Oak Hill Road interchange traveling south, the alignment will run on the west side of the I-15 northbound lanes at-grade and within the existing I-15 right-of-way. In this area, I-15 runs through the San Bernardino National Forest for approximately 12 miles. The rail alignment throughout Section 2 will be entirely single track. The Project will require replacement of California Highway Patrol (CHP) emergency crossovers where the new guideway will block existing crossovers. Four new crossovers will be placed to take advantage of existing CHP access between the separated I-15 alignments in the following locations:

- West of Forestry Road crossing the northbound lanes
- Approximately 1.25 miles in the southbound direction along I-15 from the crossover near Forestry Road, across the northbound lanes
- West of the Baldy Mesa (Trestles) off-highway vehicles Staging Area, across the northbound lanes
- West of Perdew Canyon and approximately 1.25 miles north of Mathews Ranch Road, across both the north and southbound lanes.

The alignment will remain at grade throughout Segment 2. Where I-15 northbound and southbound lanes reconnect at the foot of Cajon Pass, the rail alignment will be within the I-15 median. This will require widening portions of the I-15 highway and minor realignment of ramps at the I-15/SR-138 interchange.

Design Elements

Segment 2 of the Project includes the following design elements.

- Reconstructions/Interchange Modifications: Widening portions of the I-15 highway including several miles of retained fill, and realignment of ramps at the I-15/SR-138 interchange
- Other facilities: CHP emergency crossovers

2.4.5 Section 3 – Greater Los Angeles

Beginning at the Kenwood Avenue interchange, the proposed rail alignment will continue at-grade in the I-15 median. At the I-15/I-215 interchange, the alignment will continue between the divided I-15 freeway at the same elevation as the freeway including the Devore interchange viaduct, curving to the southwest parallel to freeway. The rail alignment will require the I-15 highway and interchange ramp modifications at Baseline Avenue, SR-210, Beech Avenue, Duncan Canyon Road, Sierra Avenue, and Glen Helen Parkway.

The rail alignment will transition to an aerial alignment over the I-15 southbound lanes south of Church Street and cross at Foothill Boulevard. It will continue along the west side of the I-15 highway on an elevated alignment to enter the San Gabriel Subdivision and Eighth Street corridor. The alignment will transition onto an aerial structure and will turn west, running parallel to and partially within the existing rail corridor and partially within the Eighth Street right-of-way before entering the existing Rancho Cucamonga Metrolink station area on an elevated structure. The rail alignment will maintain a single-track configuration prior to exiting the freeway median south of Church Street, where the alignment will transition to a double track configuration for the remaining distance to the Rancho Cucamonga station. At the Rancho Cucamonga station, an elevated station with a center platform and tracks on either side will be constructed parallel to and above the existing eastbound Metrolink platform, extending over Milliken Avenue. A new parking structure is proposed at Rancho Cucamonga station and will replace existing surface parking to accommodate increased parking demand. The Project design includes adequate parking areas to accommodate parking demand in the opening year.

Design Elements

Segment 3 of the Project includes the following design elements:

- Bridges/Viaducts: Viaduct of approximately 3.5 miles to cross I-15 southbound lanes and along existing rail corridor near Rancho Cucamonga station
- Reconstructions/Interchange Modifications: I-15 freeway and interchange ramp modifications at SR-210, Beech Avenue, Duncan Canyon Road, and Glen Helen Parkway.
- Station: Dedicated Brightline station adjacent to the existing Rancho Cucamonga Metrolink station with vertical circulation down to the platform, shared access with existing Metrolink station, a shared parking structure for vehicles, and a bus plaza.

2.5 Train Technology and Operations

2.5.1 Technology

The Project will use high-speed electric trainsets powered by an overhead catenary wire system. The Electric Multiple Unit (EMU) technology under consideration is used on existing European intercity high-speed train systems and will be customized for the unique characteristics of the corridor. Brightline West has identified a Siemens train set, the Velaro, as a representative example of the EMU technology. The Velaro was selected because it is service-proven and has the operating characteristics required for the operating parameters of the Project including: grades, speed, profile, propulsion, and interoperability. Various derivations of

the Velaro trains are currently operating throughout the world including in Great Britain, France, Germany, Turkey, Russia, and China.

2.5.2 Signaling Systems

The Project will use the European Train Control System (ETCS) planned signaling system, which includes a Positive Train Control system to prevent train-to-train collisions, over-speed derailments, incursions into established work zones, and movements of trains through switches left in the wrong position. This system meets all of the FRA's signal, train control, and crossing regulations and meets 49 CFR, Part 214, 228, and Part 233-236 international HSR specifications, including: speed control for derailment protection, collision avoidance using location-based movement authority, continual train tracking using train vacancy provision and worker protection during maintenance. This Cab Signaling type system includes speed and safety information provided to the driver in real-time using in-cab displays. ETCS has a long history of safe operation worldwide and has been used in harsh climates comparable to the Brightline West operating conditions.

2.5.3 Operating Plan

The initial schedule established for the corridor schedules trains departing every 45 minutes, for a total of 23 daily departures in each direction. Fleet size and configuration is intended to scale with demand such that in year 11, with infrastructure improvements, the schedule could be modified to increase daily departures to 45 in each direction and 22.5-minute headways.

Coupled seven-car trains will allow the system to increase passenger capacity without adding to the rail infrastructure. The Project is anticipated to begin operations coupling one third of departures for the first three years of operations, then by coupling two thirds of departures for the following three years, and then scaling up to 100 percent of departures with coupled trains by year 7. Because the coupled trains need to make full roundtrips, the departures with coupled trains will be evenly spread throughout the day.

2.6 Construction

In general, construction activities will consist of clearing, grading, excavation, placing fill, stockpiling materials, constructing bridges and walls, installing drainage, installing sub-ballast and subgrade, placing and anchoring railroad ties, placing and tamping ballast material, constructing stations and traction power substation, mobilization, and demobilization. Construction equipment will likely include dump trucks, excavators, loaders, cranes, water trucks, backhoes, scrapers, rollers, ballast tampers, concrete trucks, and drill rigs.

For the relocation of highway lanes, and construction of new or reconstructed overpasses and bridges, construction activities will include clearing, grubbing, demolition of existing structures, excavation and drilling foundations, concrete pouring, formwork and rebar placement for foundations, falsework installation, construction of bridge decking, placement of ballast and ties, mobilization, and demobilization.

Most construction activities will occur within Caltrans' right-of-way. Construction of the stations and traction power substation will occur on public property owned by the City of Rancho

Cucamonga, SBCTA, or State of California. Temporary construction areas, or TCAs, are properties that will be temporarily utilized for construction staging and storage. The Project will require TCAs along the alignment between Victor Valley and Rancho Cucamonga.

3 Permits and Approvals

Brightline West will design, construct, operate, and maintain the Project in accordance with applicable law. Brightline West will secure the necessary financing and approvals to construct and operate the Project. Implementation of the Project will require coordination and approvals from the Federal agencies listed in Table 3.

Table 3. Federal Permits and Approvals

Agency	Coordination and Approvals
USFWS	Consultation consistent with Section 7 of the Endangered Species Act
USACE	Section 404 Permit, pursuant to the Federal Clean Water Act
STB	Approval for Construction and Operation
FRA	49 U.S.C. Sections 103, 20103 – Authority to regulate the safety of railroads 49 CFR Part 236 – Type and safety approval for the signaling system (ETCS) 49 CFR Part 238 – Vehicle qualification for the rolling stock
FHWA	Jurisdiction over the use of and/or modification of Interstate highway right-of-way

Additionally, because the Project will be constructed within Caltrans right-of-way; Brightline West will design, construct, operate, and maintain the Project in accordance with all relevant Caltrans requirements including but not limited to those listed in Table 4. Requirements for design, construction, and operation will be refined, documented, and enforced separately through the execution of a Design and Construction Agreement.

Table 4. Caltrans Requirements

Requirement	Description
Project Aesthetics and Landscape Masterplan (PALM)	A PALM will be created to provide a management tool for deciding when and where different levels of landscape and aesthetic treatments will be constructed, and ensure Project consistency with Caltrans design guidelines; adjacent city master plans or specific plans; and recent nearby freeway projects. During the design review and approval process, coordination will continue to occur with all corridor stakeholders for decisions on specific design elements. All visible concrete structures and surfaces will be designed to visually blend with the adjacent landscaping and natural plantings.
Stormwater Requirements	The Project will incorporate all relevant stormwater management BMPs listed in the Caltrans-approved Stormwater Pollution Prevention Plan (SWPPP).
Landscape and Irrigation Plans	Landscaping and irrigation plans will be coordinated with Caltrans Landscape Architecture staff to ensure that the design is consistent with Caltrans' design policies. Reclaimed/recycled water sources will be used where feasible.
Tree Preservation and Removal Plan	A Tree Preservation and Removal Plan would be developed and implemented to preserve trees and vegetation to the maximum extent feasible, as required by Caltrans 2022 *Standard Specifications*.
Caltrans Department of Toxic Substance Control (DTSC) Aerially-Deposited Lead (ADL) Testing	All medium- and high-risk hazardous waste sites where there will be soil disturbance should have soil sampling prior to disturbance to ensure proper classification and identification of hazardous waste as well as proper handling, and disposal consistent with standard Caltrans BMPs.
Caltrans National Emissions Standards for Hazardous Air Pollutants (NESHAP) Requirements	Any demolition or renovation of bridge structures and buildings will require lead-based paint and asbestos testing.
Additional Environmental Requirements for Caltrans Encroachment Permits	To issue an encroachment permit it should be anticipated that some additional environmental studies (e.g., wildlife connectivity, impacts to State-listed and Candidate species) will need to be performed in order to address matters of Caltrans policy, State laws, and requirements from State regulatory agencies.

4 Affected Environment and Environmental Consequences

This chapter describes the current environmental context for each environmental resource potentially impacted by the Project, describes the direct, indirect, and cumulative impacts from the No Build Alternative and from construction and operation of the Build Alternative, and identifies proposed mitigation to reduce environmental impacts.

4.1 Air Quality and Greenhouse Gas

Air quality is the measure of the condition of the air expressed in terms of ambient pollutant concentrations and their temporal and spatial distribution. Air quality regulations in the United States are based on concerns that high concentrations of air pollutants can harm human health, especially for children, the elderly, and people with compromised health conditions; as well as adversely affect public welfare by damage to crops, vegetation, buildings, and other property. The following analysis is based on the Air Quality and Greenhouse Gas Technical Report prepared by FRA and included as Attachment B to this EA.

4.1.1 Regulatory Setting

The following existing Federal, State, and local regulations and regional plans are relevant to air quality and GHG emissions:

- United States Environmental Protection Agency (USEPA), General Conformity Rule: Established under the Clean Air Act (section 176(c)(4)), the General Conformity rule plays an important role in helping states and Tribes improve air quality in those areas that do not meet the National Ambient Air Quality Standards (NAAQS). Under the General Conformity rule, Federal agencies must work with State, tribal, and local governments in a nonattainment or maintenance area to ensure that Federal actions conform to the air quality plans established in the applicable State or tribal implementation plan.
- South Coast Air Basin Management District, Rule 403: The purpose of this Rule is to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions during construction and operations.
- Mojave Desert Air Basin Management District, Rule 403: The purpose of this Rule is to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions during construction and operations.

4.1.2 Study Area

The air quality and GHG study area comprises two air basins in California: the South Coast Air Basin (SCAB) and the Mojave Desert Air Basin (MDAB), located within the Mojave Desert Air Quality Management District (MDAQMD) and the South Coast Air Quality Management District (SCAQMD), respectively. The SCAB includes Orange County and portions of Los Angeles, San Bernardino, and Riverside counties. The MDAB includes portions of San Bernardino, Kern, Los Angeles, and Riverside counties.

4.1.3 Methodology

The Project will result in emissions of criteria pollutants and GHGs within the air quality and GHG study area during construction and operation. To evaluate emissions during the construction period, FRA quantified emissions of criteria pollutants and GHGs using the California Emissions Estimator Model (CalEEMod®) Version 2020.4.0, a statewide program tool. Using this model, FRA evaluated the following criteria pollutants: oxides of nitrogen (NO_X),

carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter less than 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and volatile organic compounds (VOCs). Since there are no large sources of lead (Pb) emissions associated with the construction of the Project, lead emissions were not evaluated. Sources of GHG emissions from construction activities will include off-road construction equipment, construction-related truck trips, vendor deliveries, and worker commute trips. FRA estimated GHG emissions using the CalEEMod® and emission factors from the Emission FACtor model (EMFAC) and the Emissions Inventory Program model (OFFROAD).

To evaluate emissions during operation, FRA relied on the same model. As the predominant source of GHG emissions during Project operation is associated with electricity produced by Southern California Edison (SCE) used to power the rail line, GHG emissions were estimated using the projected electricity use (in Megawatt hours, or MWh) and electricity carbon intensity factors estimated from data published in SCE sustainability reports. The reductions in the on-road VMT anticipated as a result of Project operation will result in reductions in GHG emissions (refer to Section 4.12.5.2 for a full discussion of Project impacts on VMT). Therefore, net GHG impacts were estimated as a difference in the GHGs associated with electricity and reductions from on-road VMT. This qualitative analysis considers the potential direct and indirect impacts of air quality and GHG from the Project on the communities within San Bernardino County, and the cities of Victorville, Hesperia, Rancho Cucamonga, and Fontana.

FRA also qualitatively evaluated operational emissions of criteria air pollutants (CAP)s, toxic air contaminants (TAC)s, and GHGs. Such emissions were assumed to be reduced by the Build Alternative, due to the reduction in on-road VMT.

In addition, FRA considered whether the Project will contribute to adverse traffic impacts and result in the formation of CO hotspots. FRA used a screening evaluation of the potential for CO hotspots was conducted. Nine intersections were classified as LOS D, E, or F in the Project opening year (2025) and/or the horizon year (2045) and, as such, will require a CO hotspot analysis.

4.1.4 Affected Environment

The affected environment includes the following:

- Air Quality
- GHG

4.1.4.1 Air Quality

Both SCAB and MDAB are in non-attainment status for ozone and particulate matter. Specifically, the SCAB is in extreme non-attainment for ozone and serious non-attainment for $PM_{2.5}$ relative to the NAAQS for 8-hour ozone and 24-hour $PM_{2.5}$.[7] The NAAQS and California Ambient Air Quality Standards (CAAQS) are presented in Table 5. Though the SCAB is currently in non-attainment for $PM_{2.5}$, a Final 2021 Redesignation Request and Maintenance Plan for the

[7] South Coast Air Quality Management District (SCAQMD) 2016, National Ambient Air Quality Standards and California Ambient Air Quality Standards Attainment Status for South Coast Air Basin.

2006 and 1997 24-Hour $PM_{2.5}$ Standards for South Coast Air Basin[8] was submitted to request the redesignation of the Basin to attainment for both the 2006 and 1997 24-hour average $PM_{2.5}$ standards because design values decreased since the original designation. The MDAB is in non-attainment for ozone and moderate non-attainment for PM_{10}.[9] SCAB and MDAB adopted rules to align with the attainment plans prepared by the air basins for attainment of these criteria air pollutants and include rules specific to fugitive dust control. De minimis levels and NAAQS attainment status for SCAB and MDAB are presented in Table 6. Table 7 shows the existing local ambient air quality levels near the proposed Rancho Cucamonga and Hesperia stations.

Table 5. National and State (California) Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS[1]		CAAQS[2]
		Primary	Secondary	
Ozone (O_3)	1-Hour	-	-	0.09 ppm
	8-Hour	0.070 ppm	0.070 ppm	0.07 ppm
Carbon Monoxide (CO)	1-Hour	35 ppm	-	20 ppm
	8-Hour	9 ppm	-	9 ppm
Nitrogen Dioxide	1-Hour	0.100 ppm	-	0.18 ppm
	Annual	0.053 ppm	0.053 ppm	0.03 ppm
Sulfur Dioxide (SO_2)	1-Hour	0.075 ppm	-	0.25 ppm
	3-Hour	-	0.5 ppm	-
	24-Hour	0.14 ppm	-	0.04 ppm
	Annual	0.03 ppm	-	-
Inhalable Particulate Matter (PM_{10})	24-Hour	150 µg/m[10]	150 µg/m^3	50 µg/m^3
	Annual	-	-	20 µg/m^3
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	35 µg/m^3	35 µg/m^3	-
	Annual	12 µg/m^3	15 µg/m^3	12 µg/m^3
Sulfates	24-Hour	-	-	25 µg/m^3

[8] SCAQMD. 2021. Final 2021 Redesignation Request and Maintenance Plan for the 2006 and 1997 24-Hour PM2.5 Standards for South Coast Air Basin.

[9] Mojave Desert Air Quality Management District (MDAQMD). n.d. Mojave Desert AQMD Attainment Status.

[10] Mojave Desert Air Quality Management District (MDAQMD). n.d. Mojave Desert AQMD Attainment Status.

Pollutant	Averaging Time	NAAQS[1]		CAAQS[2]
		Primary	Secondary	
Lead (Pb)	30-Day	-	-	1.5 µg/m^3
	Calendar Quarter	1.5 µg/m^3	1.5 µg/m^3	-
	Rolling 3-Month Average	0.15 µg/m^3	0.15 µg/m^3	-
Hydrogen Sulfide	10-Hour	-	-	0.03 ppm
Vinyl Chloride	24-Hour	-	-	0.01 ppm

Source: Ramboll 2022

Notes: [1]The NAAQS, other than O_3 and those based on annual averages, are not to be exceeded more than once a year.

[2]CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and $PM_{2.5}$ are values not to be exceeded. All other California standards shown are values not to be equaled or exceeded.

µg/m^3=10^{-6} gram, NAAQS = National Ambient Air Quality Standards, CAAQS = California Ambient Air Quality Standards, ppm = parts per million by volume, m^3 = cubic meter

Table 6. SCAB and MDAB De Minimis Levels and NAAQS Attainment Status

Pollutant	De Minimis Level (tons/year)		NAAQS Classification	
	South Coast Air Basin	Mojave Desert Air Basin	South Coast Air Basin	Mojave Desert Air Basin
Ozone (VOCs or NO_x)	10	25	Nonattainment - Extreme	Nonattainment - Severe
CO	100	100	Attainment – Maintenance	Unclassified/ Attainment
NO_2	100	100	Unclassifiable/ Attainment (1-hour)	Unclassified/ Attainment
			Attainment – Maintenance (Annual)	
SO_2	100	100	Unclassified/ Attainment	Unclassified/ Attainment
PM_{10}	100	100	Attainment - Maintenance	Nonattainment - Moderate
$PM_{2.5}$	70	100	Nonattainment - Serious	Unclassified/ Attainment

Source: Ramboll 2022

Notes: CO = carbon monoxide, NO_x = oxides of nitrogen (NO + NO_2), PM_{10} = particulate matter less than 10 microns in diameter, $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter, SO_2 = sulfur dioxide, VOC = volatile organic compounds

Table 7. Local Ambient Air Quality Data Near the Rancho Cucamonga and Hesperia Stations

Pollutant	Rancho Cucamonga Station Area			Hesperia Station Area		
	2018	2019	2020	2018	2019	2020
Ozone (O_3)						
Maximum Concentration 1-hr period, ppm	0.133	0.131	0.158	0.113	0.108	0.118
Maximum Concentration 8-hr period, ppm	0.111	0.107	0.123	0.100	0.088	0.094
Days greater than CAAQS 1-hr Standard	25	31	82	9	9	9
Days greater than CAAQS 8-hr Standard	54	54	118	73	52	48
Days greater than NAAQS 8-hr Standard	52	52	116	71	47	46
Carbon Monoxide (CO)						
Maximum Concentration 1-hr period, ppm	1.7	1.5	1.5	1.4	1.5	1.6
Maximum Concentration 8-hr period, ppm	1.2	1.1	1.1	1.1	1.1	1.4
Number of Exceedances, CAAQS 8-hr Standard	0	0	0	0	0	0
Number of Exceedances, NAAQS 1-hr Standard	0	0	0	0	0	0
Nitrogen Dioxide (NO_2)						
Maximum Concentration 1-hr period, ppm	0.059	0.058	0.055	0.051	0.056	0.059
Annual Arithmetic Mean (AAM), ppm	0.0147	0.014	0.0139	0.0115	0.0114	0.0125
Exceed NAAQS 1-hr Standard?	No	No	No	No	No	No
Exceed CAAQS Annual Standard	No	No	No	No	No	No
Sulfur Dioxide (SO_2)						
Maximum Concentration 1-hr period, ppm	0.0029	0.0024	0.0025	0.0099	0.0043	0.0036
Maximum Concentration 24-hr period, ppm	0.0009	0.0009	0.0009	0.0027	0.0034	0.0022
Number of Exceedances, NAAQS 24-hr Standard	0	0	0	0	0	0
Respirable Particulate Matter (PM_{10})						
Maximum Concentration 24-hr period, µg/m^3	157	126	175	139	158	224
Annual Arithmetic Mean (AAM), µg/m^3	33.4	29.0	33.5	27.8	24.5	28.2
Number of Exceedances, CAAQS 24-hr Standard	N/A	N/A	N/A	N/A	N/A	N/A
Exceed CAAQS Annual Standard?	Yes	Yes	Yes	Yes	Yes	Yes
Number of Exceedances, NAAQS 24-hr Standard	N/A	N/A	1	0	1	1

Pollutant	Rancho Cucamonga Station Area			Hesperia Station Area		
	2018	2019	2020	2018	2019	2020
Fine Particulate Matter ($PM_{2.5}$)						
Maximum Concentration 24-hr period, µg/m^3	60.4	57.7	59.2	32.7	17.8	48.4
Annual Arithmetic Mean (AAM), µg/m^3	14.5	12.8	15.1	7.9	7.0	9.7
Exceed CAAQS Annual Standard?	Yes	Yes	Yes	No	No	No
Number of Exceedances, NAAQS 24-hr Standard	7	6	14	0	0	4
Exceed NAAQS Annual Standard?	Yes	Yes	Yes	No	No	No

Source: Ramboll 2022
Notes: µg/m^3 = micrograms per cubic meter, hr = hour, ppm = parts per million

4.1.4.2 Greenhouse Gas

GHGs allow the sun's radiation to penetrate the atmosphere and warm the Earth's surface, but do not let the infrared radiation emitted from Earth to escape back into outer space. Emissions of carbon dioxide are the leading cause of global warming, with other pollutants such as methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride also contributing to the GHG effect. Under existing conditions (Year 2020), on-road motor vehicles are the primary contributor of emissions to the South Coast and Mojave Desert air basins. Table 8 shows the GHG emissions for passenger cars in SCAB and MDAB for the 2025 Opening Year and 2045 Horizon Year. As shown in Table 8, emissions within the affected environment are anticipated to decrease due to rising efficiency and the gradual shift to electric and alternative fuel vehicles between 2025 and 2045. Table 9 shows the level of emissions in 2020 from on-road motor vehicles in San Bernardino County.

Table 8. Greenhouse Gas Emissions Factors for Passenger Cars

Air Basin	Calendar year	EMFAC Output[1, 2]				GHG Emission Factors[3]			
		VMT (miles/day)[4]	CO_2 Emissions (tons per day)	CH_4 Emissions (tons per day)	NO_2 Emissions (tons per day)	CO_2 (tons per mile)	CH_4 Emissions (tons per mile)	NO_2 (tons per mile)	CO_2e (tons per mile)
South Coast	2025	38,904,655	11,924	0.35	0.33	3.07E-04	9.11E-09	8.61E-09	3.09E-04
	2045	47,393,631	10,917	0.17	0.30	2.30E-04	3.65E-09	6.26E-09	2.32E-04
Mojave Desert	2025	26,007,882	7,845.10	0.25	0.24	3.02E-04	9.46E-09	9.06E-09	3.05E-04
	2045	31,819,197	7,115	0.11	0.20	2.24E-04	3.56E-09	6.24E-09	2.26E-04

Source: Ramboll 2022

Notes:

[1] Emissions factors for passenger car vehicle classes derived from EMFAC2017 (v1.0.3).

[2] Passenger car vehicles include light duty automotive, light duty truck, and medium duty truck vehicle classes.

[3] GHG emission factors use the Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials of 1, 25, and 298 for carbon dioxide, methane, and nitrous oxide, respectively.

[4] Brightline West. 2022. Transportation Technical Report (Attachment I)

CH_4 =methane, CO_2 = carbon dioxide, CO_2e = carbon dioxide equivalents, EMFAC = Emission FACtor model, GHG = greenhouse gas, N_2O = nitrous oxide, VMT = vehicle miles traveled

Table 9. Existing Mobile On-Road Emissions for San Bernardino County

Region[1]	Greenhouse Gas Emissions[2] (tons CO_2e/day)
San Bernardino County- South Coast	19,085
San Bernardino County- Mojave Desert	14,191
Total Daily Emissions	**33,276**

Source: Ramboll 2022

Notes: [1] The GHG emissions are obtained from EMFAC2017 for San Bernardino County – South Coast and San Bernardino County – Mojave Desert 2020. And newer version of EMFAC, EMFAC2021, was released in January 2021, but it has not been approved by USEPA.

[2] GHG emissions use the Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials of 1, 25, and 298 for carbon dioxide, methane, and nitrous oxide, respectively.

CO_2e = carbon dioxide equivalents.

4.1.5 Environmental Consequences

Impacts to air quality could result from the proposed construction activities and certain activities during operation of the Project. These impacts on air quality are on a local and regional scale are expected to be minimal. In addition, the Project is expected to generate a net benefit to air quality by reducing emissions of criteria pollutants and GHGs.

4.1.5.1 No Build Alternative

Section 2.4.1 provides a description of the No Build Alternative. Under the No Build Alternative, no HSR would be constructed, and air quality impacts will generally remain at their current level, described in Section 4.1.2. In this scenario, travelers between Victor Valley, Hesperia, and Rancho Cucamonga will continue to use passenger cars for travel and there will be no reduction in VMT due to rail travel. Due to anticipated population increases, travel demand along I-15 is anticipated to increase, along with associated criteria air pollutants, TACs, and GHG emissions from passenger vehicles.

4.1.5.2 Construction of Build Alternative

Air Quality

Construction of the Project will temporarily generate emissions of both criteria pollutants and GHGs, and for the purposes of modeling construction was assumed to occur between 2022 and 2025. This is a conservative assumption. If construction begins later than 2022, it is reasonably assumed that emissions will be the same or less given the increase in equipment efficiency and rollout of EPA Tier 4 engines. Project construction would result in exceedances of NO_x from 2022 to 2024, if left unmitigated. Appendix A of the Air Quality and Greenhouse Gas Technical Report (Attachment B) shows the unmitigated emissions associated with the Project for the SCAB and MDAB, respectively. Implementation of Mitigation Measures AQ-1 through AQ-3 (described in Section 4.1.6) will reduce CAP emissions below de minimis thresholds. As shown in Table 10 the annual criteria air pollutant emissions in the SCAB that will result from construction of the Project will not exceed General Conformity de minimis thresholds with

mitigation incorporated. The annual CAP emissions that will be generated in the MDAB from construction of the Project are also below the de minimis levels with mitigation incorporated, as shown in Table 10 and Table 11.

Table 10. Criteria Air Pollutant Emissions for Project Construction in the South Coast Air Basin

Year	Source	Maximum Annual Mitigated Emission Estimates (tpy)					
		VOC[1]	NO_x	CO	SO_2	PM_{10}[2]	$PM_{2.5}$[2]
2022	Total	1.18	7.57	45.95	0.10	2.55	0.65
	Exceedance?[3]	**No**	**No**	**No**	**No**	**No**	**No**
2023	Total	1.58	9.89	59.31	0.13	2.26	0.82
	Exceedance?[3]	**No**	**No**	**No**	**No**	**No**	**No**
2024	Total	1.14	7.56	38.27	0.09	1.83	0.66
	Exceedance?[3]	**No**	**No**	**No**	**No**	**No**	**No**
2025	Total	0.01	0.16	0.50	0.001	0.13	0.02
	Exceedance?[3]	**No**	**No**	**No**	**No**	**No**	**No**
De Minimis Threshold[4]		10	10	100	100	100	70

Source Ramboll 2022

Notes:

[1]For purposes of this analysis VOC emissions are assumed to be equal to ROG.

[2]PM emissions are estimated as a sum of exhaust, tire wear, brake wear, and fugitive emissions. Watering of the site is assumed to take place twice daily, resulting in a 55 percent reduction in fugitive PM per CalEEMod® default assumptions.

[3]Evaluation of exceedance of the Federal annual de minimis threshold by project emissions.

[4]40 CFR 93.153 (b)(1). Federal annual emission thresholds based on attainment status of the NAAQS within the air district.

CO = carbon monoxide, NO_x = oxides of nitrogen (NO + NO_2), SO_2 = sulfur dioxide, $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter, PM_{10} = particulate matter less than 10 microns in diameter, tpy = tons per year, VOC = volatile organic compounds

Table 11. Criteria Air Pollutant Emissions for Project Construction in the Mojave Desert Air Basin

Year	Source	Maximum Annual Mitigated Emission Estimates (tpy)					
		VOC[1]	NO_x	CO	SO_2	PM_{10}[2]	$PM_{2.5}$[2]
2022	Total	0.60	3.34	23.84	0.05	0.54	0.18
	Exceedance?[3]	**No**	**No**	**No**	**No**	**No**	**No**
2023	Total	1.60	10.68	63.00	0.14	2.65	0.88
	Exceedance?[3]	**No**	**No**	**No**	**No**	**No**	**No**
2024	Total	1.55	11.10	58.78	0.14	2.78	1.00
	Exceedance?[3]	**No**	**No**	**No**	**No**	**No**	**No**

Year	Source	Maximum Annual Mitigated Emission Estimates (tpy)					
		VOC[1]	**NO_x**	**CO**	**SO_2**	**PM_{10}[2]**	**$PM_{2.5}$[2]**
2025	Total	0.25	1.52	9.23	0.02	0.71	0.20
	Exceedance?[3]	**No**	**No**	**No**	**No**	**No**	**No**
De Minimis Threshold[4]		25	25	100	100	100	100

Source: Ramboll 2022

Notes: [1]For purposes of this analysis VOC emissions are assumed to be equal to ROG.

[2]PM emissions are estimated as a sum of exhaust, tire wear, brake wear, and fugitive emissions. Watering of the site is assumed to take place twice daily, resulting in a 55 percent reduction in fugitive PM per CalEEMod® default assumptions.

[3]Evaluation of exceedance of the Federal annual de minimis threshold by project emissions.

[4]40 CFR 93.153 (b)(1). Federal annual emission thresholds based on attainment status of the NAAQS within the air district.

CO = carbon monoxide, NO_x = oxides of nitrogen (NO + NO_2), SO_2 = sulfur dioxide, $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter, PM_{10} = particulate matter less than 10 microns in diameter, tpy = tons per year, VOC = volatile organic compounds

Greenhouse Gas

The Project will result in short-term increases in GHG emissions from construction activities in both air basins. Construction activities will include grading, excavation, placing fill, stockpiling materials, construction of bridges and walls, and demolition of existing structures (refer to Section 2.6, for a full description of construction activities). Table 12 shows the GHG emissions generated by Project construction.

Table 12. Greenhouse Gas Emissions for Project Construction

Air District	Source[1]	Maximum Annual Mitigated Emission Estimates[2] (MT CO_2e/year)					
		2022	**2023**	**2024**	**2025**	**Total**	**Amortized Yearly Emissions[3]**
SCAQMD	On-site	7,749	10,182	6,587	86	24,604	820
	Off-site	1,300	1,905	1,744	50	4,998	167
	Total	**9,049**	**12,087**	**8,331**	**137**	**29,603**	**987**
MDAQMD	On-site	4,030	10,650	10,077	1,641	26,397	880
	Off-site	457	2,209	2,458	253	5,377	179
	Total	**4,487**	**12,858**	**12,535**	**1,894**	**31,774**	**1,059**

Source: Ramboll 2022

Notes: [1]On-site emissions are from off-road construction equipment for the Build Alternative. Off-site emissions are from worker, vendor, and hauling trips.

[2]GHG emissions use the Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials of 1, 25, and 298 for carbon dioxide, methane, and nitrous oxide, respectively.

[3]Construction emissions are amortized over a 30-year project lifetime.

CO_2e = carbon dioxide equivalents, MDAQMD = Mojave Desert Air Quality Management District, MT = metric tons, SCAQMD = South Coast Air Quality Management District

4.1.5.3 Operation of Build Alternative

Air Quality

Operation of the Project will result in CAP and TAC emissions from the power generation required for the Project's electric-powered rail line. Operations will also result in a reduction in emissions of criteria pollutants by reducing on-road VMT from passenger car travel (refer to Table 15 and Table 16 below for a quantification of VMT reductions in the project area as a result of the Project).

Based on the opening year CO hotspot analysis of the most congested Project intersection locations (Table 13), the Project will not violate CAAQS and NAAQS thresholds (i.e., result in a CO hot spot) at any intersection. In the horizon year 2045, the CO concentrations at all evaluated intersections will be below the CAAQS and NAAQS threshold concentrations, as shown in Table 14.

Table 13. Carbon Monoxide Concentrations for 2025 Opening Year

Intersections	CO Concentration (ppm)											
	AM Peak Hour				PM Peak Hour				8-hour			
	Roadway Edge	25 feet from Roadway Edge	50 feet from Roadway Edge	100 feet from Roadway Edge	Roadway Edge	25 feet from Roadway Edge	50 feet from Roadway Edge	100 feet from Roadway Edge	Roadway Edge	25 feet from Roadway Edge	50 feet from Roadway Edge	100 feet from Roadway Edge
Highway (US) 395/Joshua Tree	1.9	1.8	1.8	1.7	2.1	1.9	1.9	1.8	1.5	1.3	1.3	1.2
Fourth Street/I-15 Southbound Ramps	1.8	1.7	1.7	1.6	2.0	1.9	1.8	1.7	1.5	1.4	1.3	1.3
Fourth Street/I-15 Northbound Ramps	1.8	1.7	1.7	1.6	1.9	1.8	1.7	1.7	1.4	1.3	1.2	1.2
Milliken Avenue/Foothill Boulevard	1.7	1.7	1.6	1.6	2.1	1.9	1.8	1.8	1.5	1.4	1.3	1.3
Milliken Avenue/Fourth Street	1.8	1.7	1.7	1.6	2.1	1.9	1.8	1.8	1.5	1.4	1.3	1.3
Milliken Avenue/I-10 Westbound Ramps	1.7	1.6	1.6	1.6	2.0	1.8	1.8	1.7	1.5	1.3	1.3	1.3
Milliken Avenue/I-10 Eastbound Ramps	1.7	1.6	1.6	1.6	2.0	1.9	1.8	1.7	1.5	1.4	1.3	1.3
Maximum CO Concentration	1.9	1.8	1.8	1.7	2.1	1.9	1.9	1.8	1.5	1.4	1.3	1.3

Intersections	CO Concentration (ppm)											
	AM Peak Hour				PM Peak Hour				8-hour			
	Roadway Edge	25 feet from Roadway Edge	50 feet from Roadway Edge	100 feet from Roadway Edge	Roadway Edge	25 feet from Roadway Edge	50 feet from Roadway Edge	100 feet from Roadway Edge	Roadway Edge	25 feet from Roadway Edge	50 feet from Roadway Edge	100 feet from Roadway Edge
CAAQS Threshold	20.0								9.0			
Above CAAQS Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
NAAQS Threshold	35.0								9.0			
Above NAAQS Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Source: Ramboll 2022

Notes: AM = ante meridiem (before noon), CAAQS = California Ambient Air Quality Standards, CO = carbon monoxide, EB = Eastbound, LOS = level of service, NAAQS = National Ambient Air Quality Standards, NB = Northbound, PM = post meridiem (after noon), ppm = parts per million, SB = southbound, WB = westbound

Table 14. Carbon Monoxide Concentrations for 2045 Horizon Year

Intersections	CO Concentration (ppm)											
	AM Peak Hour				PM Peak Hour				8-hour			
	Roadway Edge	25 feet from Roadway Edge	50 feet from Roadway Edge	100 feet from Roadway Edge	Roadway Edge	25 feet from Roadway Edge	50 feet from Roadway Edge	100 feet from Roadway Edge	Roadway Edge	25 feet from Roadway Edge	50 feet from Roadway Edge	100 feet from Roadway Edge
Highway (US) 395/Joshua Tree	2.0	1.8	1.8	1.7	2.1	1.9	1.9	1.8	1.4	1.3	1.3	1.2
Foothill Boulevard/I-15 Northbound Ramps	1.8	1.7	1.7	1.6	2.1	1.9	1.8	1.7	1.5	1.4	1.3	1.3

Intersections	CO Concentration (ppm)											
	AM Peak Hour				PM Peak Hour				8-hour			
	Roadway Edge	25 feet from Roadway Edge	50 feet from Roadway Edge	100 feet from Roadway Edge	Roadway Edge	25 feet from Roadway Edge	50 feet from Roadway Edge	100 feet from Roadway Edge	Roadway Edge	25 feet from Roadway Edge	50 feet from Roadway Edge	100 feet from Roadway Edge
Fourth Street/I-15 Southbound Ramps	1.7	1.7	1.6	1.6	1.9	1.8	1.7	1.7	1.4	1.3	1.3	1.2
Fourth Street/I-15 Northbound Ramps	1.7	1.6	1.6	1.6	1.9	1.7	1.7	1.7	1.3	1.3	1.2	1.2
Milliken Avenue/Foothill Boulevard	1.7	1.6	1.6	1.6	2.0	1.8	1.8	1.7	1.4	1.3	1.3	1.2
Milliken Avenue/Fourth Street	1.7	1.7	1.6	1.6	2.1	1.9	1.8	1.8	1.5	1.4	1.3	1.3
Milliken Avenue/Azusa Court (access to Metrolink Station)	1.7	1.6	1.6	1.6	1.9	1.7	1.7	1.6	1.4	1.3	1.2	1.2
Milliken Avenue/7th Street (access to Metrolink station)	1.7	1.6	1.6	1.6	1.9	1.7	1.7	1.6	1.4	1.3	1.2	1.2
Milliken Avenue/I-10 Westbound Ramps	1.7	1.7	1.6	1.6	2.1	1.9	1.8	1.7	1.5	1.4	1.3	1.3

Intersections	CO Concentration (ppm)											
	AM Peak Hour				PM Peak Hour				8-hour			
	Roadway Edge	25 feet from Roadway Edge	50 feet from Roadway Edge	100 feet from Roadway Edge	Roadway Edge	25 feet from Roadway Edge	50 feet from Roadway Edge	100 feet from Roadway Edge	Roadway Edge	25 feet from Roadway Edge	50 feet from Roadway Edge	100 feet from Roadway Edge
Maximum CO Concentration	2.0	1.8	1.8	1.7	2.1	1.9	1.9	1.8	1.5	1.4	1.3	1.3
CAAQS Threshold	20.0								9.0			
Above CAAQS Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
NAAQS Threshold	35.0								9.0			
Above NAAQS Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Source: Ramboll 2022

Notes: AM = ante meridiem (before noon), CAAQS = California Ambient Air Quality Standards, CO = carbon monoxide, EB = Eastbound, LOS = level of service, NAAQS = National Ambient Air Quality Standards, NB = Northbound, PM = post meridiem (after noon), ppm = parts per million, SB = southbound, WB = westbound

Greenhouse Gas

Operation of the Project will result in an initial increase in GHG emissions in the air quality and GHG study area, but as ridership increases the Project will result in a net decrease in overall emissions in both air basins. Emissions in the 2025 scenario are higher in the MDAB than the SCAB as a majority of the alignment is located within the MDAB. Additionally, the Hesperia traction power substation, which will supply electricity to the Project, is located in the MDAB. In the SCAB, the Project will result in a net increase in GHG emissions 338 MT CO_2e in the opening year. The Project will result in a net decrease in GHG emissions of 13,608 MT CO_2e in the horizon year 2045 as the ridership increases. In the MDAB, the Project will result in an increase in GHG emissions by 9, 612 MT CO_2e in the initial operating year, but will result in a net decrease in GHG emissions of 20,861 MT CO_2e in the MDAB by 2045 (Table 16). Therefore, the Project will generate a net reduction in GHG emissions in the MDAB over time.

Table 15. Operational Greenhouse Gas Emissions in South Coast Air Basin

Calendar Year[1]	**2025**	**2045**
Train Trips per Day[2]	46	90
Train Trip Length (mi)[2]	19	19
Electricity Required to Power Trains (MWh/year)	53,213	104,112
Carbon Intensity of Electricity (lb CO_2e/MWh)[3]	390.65	0
GHG Emissions from Electricity Generation (MT CO_2e/year)	9,429	0
Passenger Car VMT Reductions (miles/year)[4]	32,401,311	64,569,303
Passenger Car EF (ton CO_2e/mile)	3.09E-04	2.32E-04
Avoided Passenger Car Tailpipe GHG Emissions (MT CO_2e/year)	9,091	13,308
Total Net Annual GHG Emissions due to the Project (MT CO_2e/year)	**338**	**-13,608**

Source: Ramboll 2022

Notes: [1]Emissions are calculated for 2025, the first year of full Project operation, and 2045, the Project horizon year.

[2]The number of trips per day, trip lengths, and electricity required per train mile traveled were all provided by the proponent and external consultants.

[3]The carbon intensifies in 2025 and 2045 are based on the carbon intensity of SCE's current power mix and adjusted in order to account for RPS. It is assumed that 47.2 percent of provided electricity will be renewable by 2025, and that 100 percent of provided electricity will be renewable based on California Senate Bill (SB) 100.

[4]Estimated VMT reductions for each subarea in each calendar year as provided by an external traffic consultant.

lb = pound, mi = mile, MT = metric ton, MWh = megawatt hour, RPS = Renewable Portfolio Standards, SCE = Southern California Edison, VMT = vehicle miles traveled

Table 16. Operational Greenhouse Gas Emissions in Mojave Desert Air Basin

Calendar Year[1]	**2025**	**2045**
Train Trips per Day[2]	46	90
Train Trip Length (mi)[2]	30	30
Electricity Required to Power Trains (MWh/year)	134,020	214,387

Calendar Year[1]	**2025**	**2045**
Carbon Intensity of Electricity (lb CO_2e/MWh)[3]	390.65	0
GHG Emissions from Electricity Generation (MT CO_2e/year)	23,748	0
Passenger Car VMT Reductions (miles/year)[4,5]	51,159,965	101,951,532
Passenger Car EF (ton CO_2e/mile)	3.05E-04	2.26E-04
Avoided Passenger Car Tailpipe GHG Emissions (MT CO_2e/year)	14,136	20,861
Total Net Annual GHG Emissions due to the Project (MT CO_2e/year)	**9,612**	**-20,861**

Source: Ramboll 2022

Notes: [1]Emissions are calculated for 2025, the first year of full Project operation, and 2045, the Project horizon year.

[2]The number of trips per day, trip lengths, and electricity required per train mile traveled were all provided by the proponent and external consultants.

[3]The carbon intensifies in 2025 and 2045 are based on the carbon intensity of SCE's current power mix, and adjusted in order to account for RPS. It is assumed that 47.2 percent of provided electricity will be renewable by 2025, and that 100 percent of provided electricity will be renewable based on California Senate Bill (SB) 100.

[4]Estimated VMT reductions for each subarea in each calendar year as provided by an external traffic consultant.

[5]VMT for Air Quality purposes was analyzed by air basin while VMT analyzed in Section 4.12.5.2, Transportation, was evaluated by trip endpoint.

BTU = British thermal unit, kWh = kilowatt hour, lb = pound, mi = mile, MT = metric ton, MWh = megawatt hour, RPS = Renewable Portfolio Standards, SCE = Southern California Edison, VMT = vehicle miles traveled

Overall, construction and operation of the Project will result in emissions of criteria pollutants and GHGs. By implementing Mitigation Measures AQ-1 through AQ-3 (described in Section 4.1.6), Brightline West will ensure emissions are below the applicable thresholds. In addition, as ridership increases during the operation period, the Project will reduce emissions of both criteria pollutants and GHGs by providing an alternative to passenger car travel and reducing VMT within the SCAB and MDAB. These long-term reductions will offset the short-term increases in emissions. Furthermore, the Project will not result in CO hotspots within the affected environment because traffic associated with the Project will not violate CAAQS and NAAQS thresholds at any intersection.

4.1.5.4 Cumulative Impacts

This Project, in combination with other past, present, and reasonably foreseeable future actions, will convert undeveloped areas to developed ones, resulting in the increase of emissions of criteria pollutants and GHGs. This, in part, is due to potential population growth and proposed developments, with associated increase in traffic congestion.

While the Project will result in short-term increases in GHG emissions from construction activities in both air basins, with incorporation of Mitigation Measure AQ-1 through AQ-3, the Project would be below applicable threshold standards during construction and operation.

With the potential of population growth within the project area, pollutant and GHG emissions associated with cumulative development represents a cumulative impact. Operation of the Project would help with the reduction in statewide air pollutants emissions due to a reduction in VMT, and would not considerably contribute to the cumulative impact.

4.1.6 Avoidance, Minimization, and Mitigation Measures

Brightline West will implement the following mitigation measures prior to construction. The mitigation measures were assumed as part of the air quality modeling and will be required to avoid exceedances of criteria pollutant emissions.

- **Mitigation Measure AQ-1**: Fugitive Dust Control Plan during Construction to Meet Mojave Desert Air Quality Management District (MDAQMD) Rule 403[11] (Fugitive Dust Control) Requirements.
  - Consistent with the MDAQMD Rule 403, Brightline West will implement the following control measures:
    - Use periodic watering (two times daily) for short-term stabilization of disturbed surface area to minimize visible fugitive dust emissions. Use of a water truck to maintain moist disturbed surfaces and actively spread water during visible dusting episodes will be considered sufficient to maintain compliance.
  - Brightline West will take actions sufficient to prevent Project-related trackout onto paved surfaces. Actions may include the use of:
    - Gravel or aggregate vehicle tracking pads at temporary site entrances and exits.
    - Wash racks that use pressurized water to clean tires as they pass through. Wash racks introduce water to the trackout control system which must be contained within the jobsite.
    - Rumble plates, rumble strips, cattle guards that use vibration to shake off debris from vehicle tires.
    - Cover loaded haul vehicles while operating on publicly maintained paved surfaces.
    - Stabilize graded site surfaces upon completion of grading when subsequent development is delayed or expected to be delayed more than 30 days, except when such a delay is due to precipitation that dampens the disturbed surface sufficiently to eliminate visible fugitive dust emissions.
    - Clean up Project-related trackout or spills on publicly maintained paved surfaces within 24 hours.
    - Reduce nonessential earth-moving activity under high wind conditions. A reduction in earth-moving activity when visible dusting occurs from moist and dry surfaces due to wind erosion will be considered sufficient to maintain compliance.
  - Alternatively, Brightline West can elect to apply for and obtain an MDAQMD-approved Alternative PM_{10} Control Plan that incorporates emission reducing measures other than those defined above, as long as it generates equivalent emission reductions and is obtained pursuant to the requirements outlined in MDAQMD Rule 403.

[11] MDAQMD. 2020. *Rule 403*.

- **Mitigation Measure AQ-2**: Fugitive Dust Control Plan during Construction to Meet South Coast Air Quality Management District (SCAQMD) Rule 403[12] Requirements.
  - Brightline West will follow the Best Available Control Measures in Table 1 of Rule 403.
- **Mitigation Measure AQ-3**: Utilize additional means to reduce construction period emissions of air pollutants.
  - Brightline West will demonstrate that construction-period emissions of criteria air pollutants will not exceed General Conformity de minimis thresholds by integrating control measures into approved design-build plans. Examples of control measures include the following:
    - All off-road internal-combustion engine construction equipment will be USEPA Tier-4 Final certified.
    - All signal boards will be solar-powered.

All architectural coatings products will contain no more than 250 grams of volatile organic compound (VOCs) per liter of coating (2.08 pounds per gallon).

4.2 Noise and Vibration

Sound is a physical phenomenon consisting of pressure fluctuations that travel through a medium, such as air, and are sensed by the human ear. Noise is considered any unwanted sound that interferes with normal activities (e.g., sleep, conversation, student learning) and can cause annoyance. Noise sources can be constant or of short duration and contain a wide range of frequency (pitch) content. Determining the character and level of sound aids in predicting the way it is perceived.

Ground-borne vibration refers to the fluctuating or oscillatory motion experienced by persons on the ground and in buildings near railroad tracks. Ground-borne vibration can lead to ground-borne noise, which is a low-volume, low-frequency rumble inside buildings that occurs when ground vibration causes the flexible walls of the buildings to resonate and generate noise. Ground-borne vibration above a certain threshold can physically damage existing structures.

The following analysis is based on the Noise and Vibration Technical Report prepared by FRA and included as Attachment C to this EA.

4.2.1 Regulatory Setting

FRA promulgated the Railroad Noise Emission Compliance Regulations at 49 CFR Part 210. Part 210 prescribes minimum compliance regulations for enforcement of the Railroad Noise Emission Standards established by the EPA in 40 CFR Part 201.

The FRA guidelines for assessing noise and vibration impacts from high-speed train operations (FRA 2012) incorporate and build upon FTA guidelines for conventional rail projects (i.e., those with speeds below 90 mph) and their associated stationary facilities (FTA 2018). FRA uses FTA's guidelines for the analysis of fixed facilities, such as storage and maintenance yards, passenger stations and terminals, parking facilities, and traction power substation. Impact criteria for fixed

[12] SCAQMD. 2005. *Rule 403*.

facilities are shown and described in detail in Section 5.2.1 of the Noise and Vibration Technical Report (Attachment C). Unless otherwise stated, all noise and vibration impact thresholds discussed in Sections 4.2.3 and Section 4.2.5 are based on FRA guidelines.

4.2.2 Study Area

The noise study area extends 350 feet on either side of the Project centerline in accordance with screening distances established by the FRA (refer to Table 17). This distance represents the area where noise has the potential to cause either physical damage or annoyance. Beyond this area impacts from project-related noise are either *de minimis* or imperceptible. Noise-sensitive land uses (residences, schools, parks, libraries, and hospitals, etc.) within the noise study area are designated as sensitive receptors.[13] Additionally, coordination with local Federally-Recognized Native American Tribes revealed concerns about the Project's potential to increase noise levels to the extent that it would disturb the potential cultural setting and landscape in areas adjacent to the alignment.[14] Given this, the noise analysis considers potential impacts to tribal cultural settings and landscape within the noise study area. Please refer to Section 4.11.2 for a description of the cultural setting within the project area.

Table 17. Operational Noise Screening Distances

Existing Noise Environment	Screening Distance in Feet for HSR[1]	
	90 to 170 mph	170 mph or More
Existing rail corridor, urban/noisy suburban – unobstructed	300 feet	700 feet
Existing rail corridor, urban/noisy suburban – obstructed[2]	200 feet	300 feet
Existing rail corridor, quiet suburban/rural	500 feet	1,200 feet
New rail corridor, urban/noisy suburban – unobstructed	350 feet	700 feet
New rail corridor, urban/noisy suburban – obstructed[2]	250 feet	350 feet
New rail corridor, quiet suburban/rural	600 feet	1,300 feet

Source: FRA 2012
Notes:
[1] Measured from the centerline of the guideway or rail corridor. Minimum distance is assumed to be 50 feet.
[2] Rows of buildings assumed to be 200, 400, 600, 800, and 1,000 feet parallel to the guideway.
HSR = high-speed rail
mph = miles per hour

Similar to the noise study area, the vibration study area is defined by screening distances established by FRA, which are shown in Table 18. As described in the project description, the proposed HSR will travel up to 140 mph. Therefore, in accordance with FRA's guidelines the vibration screening distance for this Project is 220 feet from the Project centerline in residential areas, which accounts for speeds up to 200 mph. This distance represents the area where

[13] The terms "receptor" and "receiver" are similar but distinct. Receptors represent noise-sensitive locations, such as a backyard or an outdoor seating area at a restaurant. Receivers are discreet modeling points that represent receptors. A receiver can represent a single receptor or a group of receptors, such as using one receiver to represent a group of residences with similar sound levels.

[14] The United States Bureau of Indian Affairs defines a Federally-Recognized Tribe as an American Indian or Alaskan Native tribe that has a government-to-government relationship with the United States with responsibilities, powers, limitations, and obligations that are attached to that designation.

vibration has the potential to cause either physical damage or annoyance. Beyond this area impacts from project-related vibration are either *de minimis* or imperceptible. Although the screening distance for institutional land uses is only 160 feet for speeds up to 200 mph, this analysis uses the higher residential screening distance is used for the entire alignment because (1) residential uses are more common than institutional uses within the project corridor and (2) the higher screening distance allows for a more conservative impact analysis.

Table 18. Operational Vibration Screening Distances

Land Use	Screening Distance for HSR (feet from centerline)		
	Up to 100 mph	Up to 200 mph	Up to 300 mph
Residential	120 feet	220 feet	275 feet
Institutional	100 feet	160 feet	220 feet

Source: CSA 2022

4.2.3 Methodology

FRA conducted a noise and vibration assessment by first identifying sensitive receptors, then considering how Project-generated noise changed at sensitive receptors relative to existing noise levels. Additionally, through consultation with Federally-Recognized Tribes, FRA considered whether noise and vibration from the Project could impact the traditional cultural setting and landscape within the noise study area.

Existing ambient noise levels was determined through direct measurements at selected sites along the proposed alignment in November 2021. These sites were selected to represent a range of existing noise conditions within the noise study area. The measurements consisted of long-term (24-hour) and short-term (one-hour) monitoring of the A-weighted sound level at measurement sites.[15] Figure 2 shows the general locations of the eight long-term (LT) and six short-term (ST) measurement sites.

The results of the existing ambient noise measurements, summarized in Table 19, serve as the basis for determining the existing noise conditions at all noise-sensitive receptors along the proposed rail alignment.

Table 19. Summary of Existing Noise Measurement Results

Site No.	Measurement Location	Start of Measurement		Meas. Duration	Noise Level (dBA)	
		Date	Time	(hrs)	Leq	Ldn
LT-2	7420 Bungalow Way, Rancho Cucamonga	10/27/2021	16:00	24	65.1	71.4
LT-3	15165 Crane Street, Fontana	11/1/2021	19:00	24	64.6	70.9
LT-4	3733 Bur Oak Road, San Bernardino	10/27/2021	15:00	24	66.1	71.6

[15] 'A'-weighted is a sound level meter weighting that makes its readings confirm to a notional human heading response. The 'A' weighting adjusts the sound pressure level readings to reflect the sensitivity of the human ear.

Site No.	Measurement Location	Start of Measurement		Meas. Duration (hrs)	Noise Level (dBA)	
		Date	Time		Leq	Ldn
LT-5	13296 Amargosa Road, Victorville	11/2/2021	16:00	24	72.3	76.4
LT-6	15665 Kingswood Drive, Victorville	11/2/2021	17:00	24	66.6	71.8
LT-7	14983 S Culver Road, Victorville	11/2/2021	17:00	24	59.3	68.3
LT-8	15410 La Paz Drive, Victorville	11/3/2021	12:00	24	76.7	80.5
LT-9	17251 Dante Street, Victorville	11/3/2021	12:00	24	51.8	65.0
ST-2	7950 Etiwanda Avenue, Rancho Cucamonga	10/28/2021	15:42	1	65.6	71.9*
ST-3	Nedlee Avenue, San Bernardino	10/28/2021	12:40	1	68.0	72.7*
ST-5	Farmington Street and Mariposa Road, Hesperia	11/4/2021	14:09	1	69.2	67.2*
ST-6	11335 Verde Avenue, Hesperia	11/4/2021	9:00	1	61.3	66.0*
ST-7	16424 E Street, Victorville	11/4/2021	15:47	1	66.7	64.7
ST-8	15834 Joshua Street, Victorville	11/4/2021	15:45	1	54.5	52.5

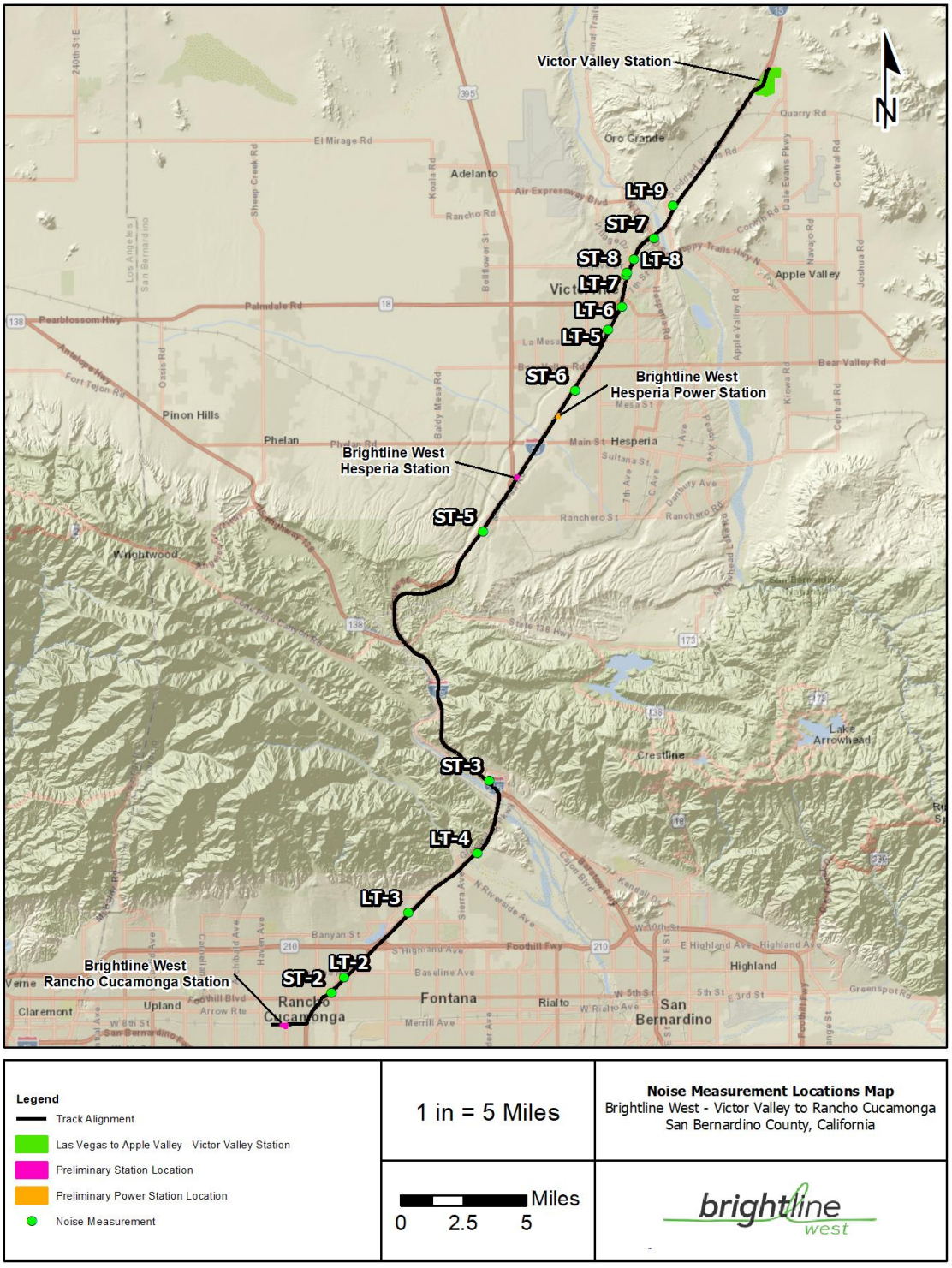
Source: Ramboll 2022

Notes: Leq represents the changing sound level over a period of time (in this case either 1 hour or 24 hours, see the "Meas. Duration" column). Ldn is a 24-hour cumulative A-weighted noise level that includes all noises that occur during a day, with a 10-dB penalty for nighttime noise (10 pm to 7 am).

* At these locations, the Ldn was estimated based on the Leq measurements and similar long-term noise measurement sites nearby.

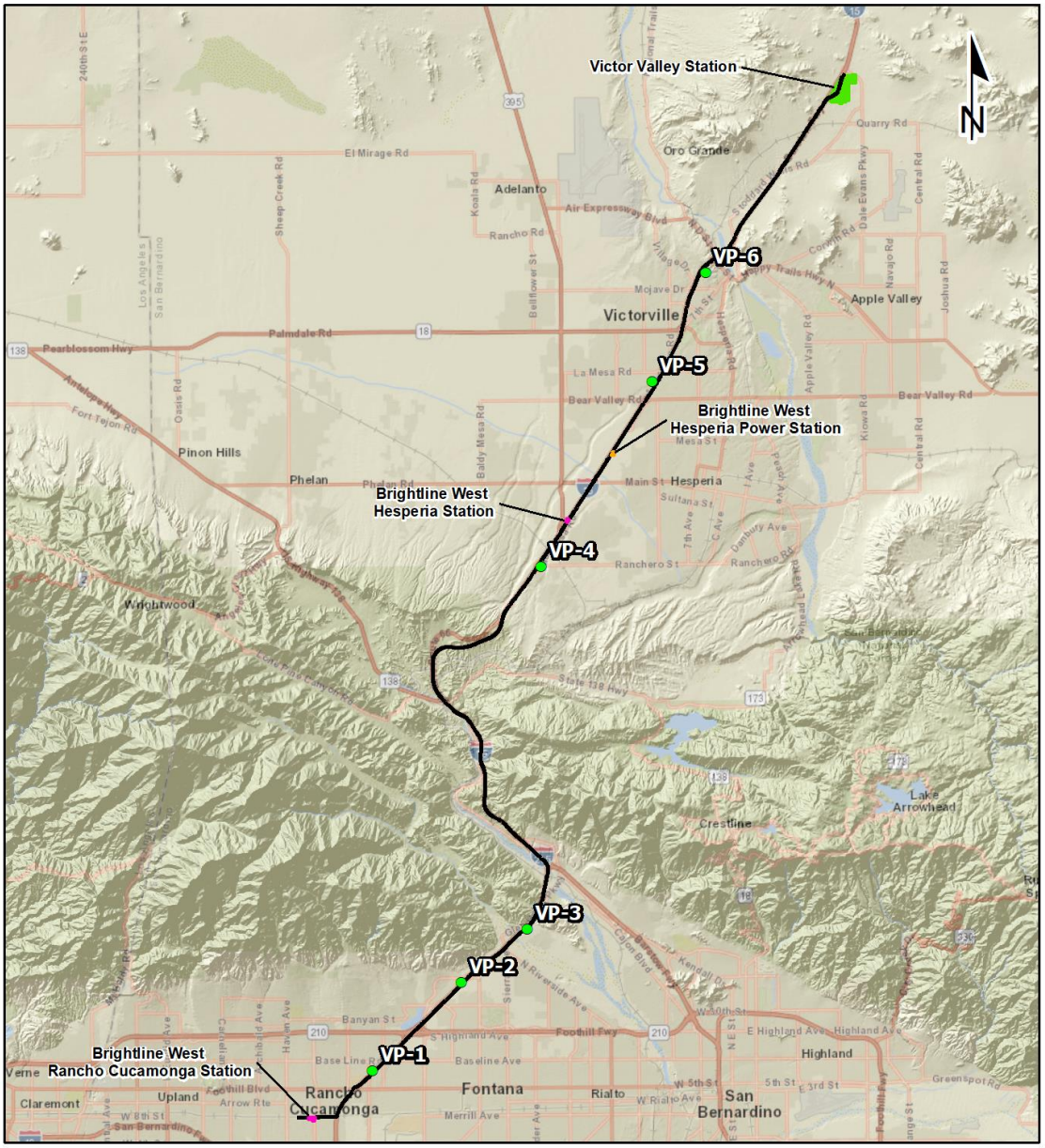
Measurements of existing vibration were made in November 2021. Measurements were made to determine the vibration response characteristics of the ground near vibration-sensitive locations in the study area. Six vibration propagation test sites were selected for measurements for the Project, as shown in Figure 3. The existing vibration levels are a result of traffic on the I-15 freeway. Existing vibration at sensitive receptors within the affected environment is negligible. The full results of these measurements are included in the Noise and Vibration Technical Report (Attachment C) and summarized in this EA. This qualitative analysis considers the potential direct and indirect noise and vibratory impacts of the Project on the communities within San Bernardino County, and the cities of Victorville, Hesperia, Rancho Cucamonga, and Fontana.

Since exact equipment and locations were not known at the time of this analysis, analysts compared the noise generated by a conservative typical construction scenario comprising the type and amount of equipment normally used for this type of project. FRA considered an exceedance of the thresholds identified in Table 20 at a specific receptor to be an adverse impact.



Source: CSA 2022

Figure 2. Noise Measurement Site Locations



Source: CSA 2022

Figure 3. Vibration Measurement Site Locations

Table 20. FRA Construction Noise Assessment Criteria (Maximum Noise Thresholds)

Land Use	8-hour L_{eq} (dBA)		L_{dn} (dBA)
	Day	Night	30-Day Average[a]
Residential	80	70	75
Commercial	85	85	80*
Industrial	90	90	85*
* Twenty-four-hour L_{eq}, not L_{dn}.			

Source: CSA 2022

a: A 30-day average is used to assess longer-term effects on the typical ambient noise environment, while 8-hour Leq is used to assess more acute noise impacts on particularly loud construction days.

To evaluate operational noise impacts, FRA compared Project noise with existing noise conditions, and land use category, as shown in Table 21.

Table 21. Land Use Categories and Metrics for Noise Impact Criteria

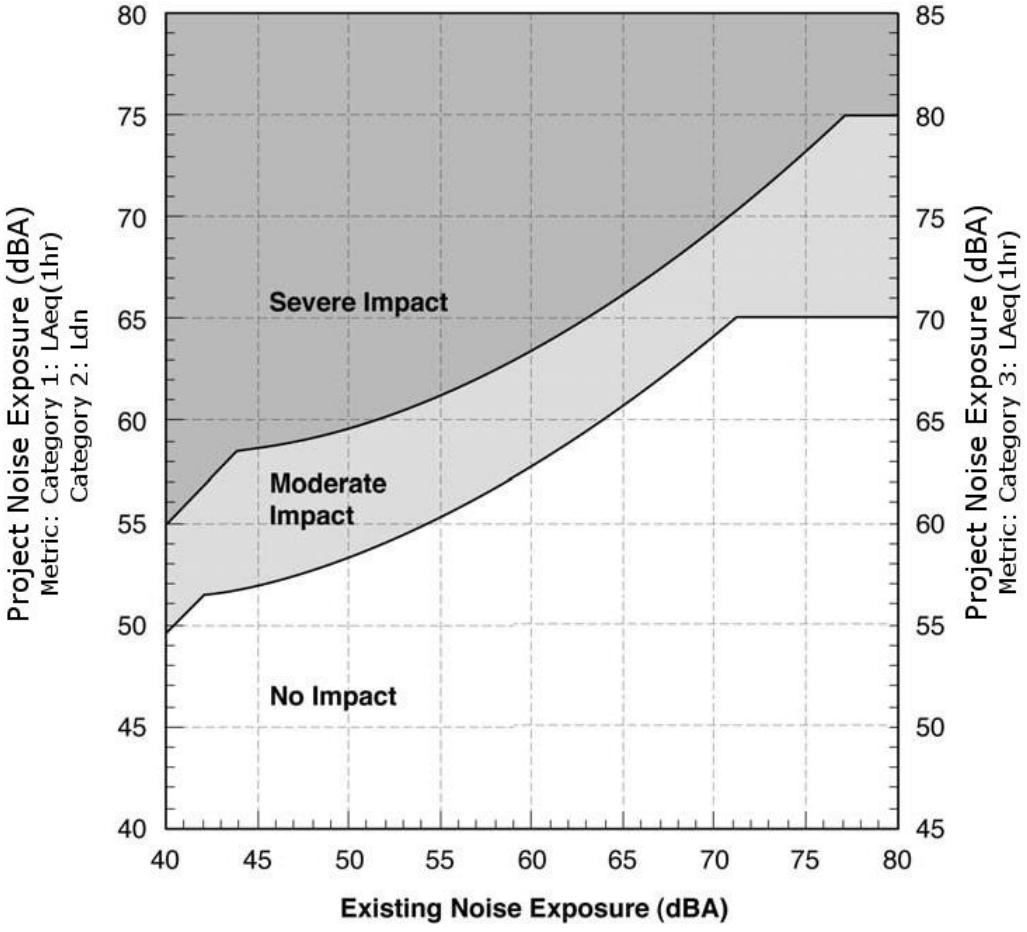
Land Use Category	Description	Noise Metric (dBA)
1	Land where quiet is an essential element of its intended purpose. Example land uses include preserved land for serenity and quiet, outdoor amphitheaters and concert pavilions, and National Historic Landmarks with considerable outdoor use. Recording studios and concert halls are also included in this category.	Outdoor L_{eq}(h)*
2	This category is applicable to all residential land use and buildings where people normally sleep, such as hotels and hospitals.	Outdoor L_{dn}
3	This category is applicable to institutional land uses with primarily daytime and evening use. Example land uses include schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities are also included in this category.	Outdoor L_{eq}(h)*

Source: FRA 2012

Note: * L_{eq} (Equivalent Sound Level) for the noisiest hour of transit-related activity during hours of noise sensitivity.

The noise impact criteria are shown in Figure 4 allows for increasing project noise as existing noise levels increase, up to a point at which impact is determined based on project noise alone. The noise impact criteria include noise for operational train noise, as well as operational traffic noise. The FTA noise impact criteria include the following three levels of impact:

- **No Impact:** In this range, the Project is considered to have no impact since, on average, the introduction of the Project will result in an insignificant increase in the number of people highly annoyed by the new project noise.
- **Moderate Impact:** Project-generated noise in this range is considered to cause impact at the threshold of measurable annoyance. Moderate impacts serve as an alert to project planners for potential adverse impacts and complaints from the community. Mitigation should be considered at this level of impact based on project specifics and details concerning the affected properties.
- **Severe Impact:** Project-generated noise in this range is likely to cause a high level of community annoyance. Noise mitigation should be applied for severe impacts where feasible.



Source: CSA 2022

Figure 4. Noise Impact Criteria for High-Speed Rail Projects

To analyze construction vibration impacts, FRA used FTA's construction vibration damage threshold of 94 vibration decibels (VdB) to represent the level at which vibration could damage

buildings, and 72 VdB to represent the level at which vibration will annoy surrounding receptors. For the purposes of this analysis, exceedance of these thresholds was considered an impact to buildings and people, respectively. These thresholds are conservative in that they represent the level at which only the most sensitive receptors and buildings would be affected. The same conservative typical construction scenario was used to identify where these thresholds may be exceeded at specific receptors.

Operational vibration impacts were determined using FRA guidelines shown in Table 22, which vary based on land use category and frequency of vibration events.

Table 22. Ground-Borne Vibration and Noise Impact Criteria

Land Use Category	Ground-Borne Vibration Impact Levels (VdB re 1 micro-inch /sec)			Ground-Borne Noise Impact Levels (dBA re 20 micro-Pascals)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where vibration will interfere with interior operations	65 VdB[4]	65 VdB[4]	65 VdB[4]	N/A[5]	N/A[5]	N/A[5]
Category 2: Residences and buildings where people normally sleep	72 VdB	75 VdB	80 VdB	35 dBA	38 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use	75 VdB	78 VdB	83 VdB	40 dBA	43 dBA	48 dBA

Source: CSA 2022
Notes:
[1] Frequent Events is defined as more than 70 vibration events of the same kind per day.
[2] Occasional Events is defined as between 30 and 70 vibration events of the same kind per day.
[3] Infrequent Events is defined as fewer than 30 vibration events of the same kind per day.
[4] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. For vibration-sensitive manufacturing or research equipment, a Detailed Vibration Analysis must be performed.
[5] Vibration-sensitive equipment is generally not sensitive to ground-borne noise.

The potential vibration impact from Project operations was assessed on an absolute basis using the FRA criterion of 72 VdB for residential land uses with frequent events. The approach used for assessing vibration impact generally follows the approach used for the noise impact, except that existing vibration was not assumed when evaluating impacts.

There are no established resource-specific thresholds to determine noise impacts on cultural landscapes. As of October 2022, FRA has not received specific information by the Tribes on their interpretation of potential impacts to cultural landscapes due to noise or vibration from the Project. Therefore, FRA applied its guidelines and thresholds for non-residential land uses (i.e., Land Use Category 3) to consider potential impacts to tribal cultural settings and landscape within the noise study area.[16] At approximately 200 feet, noise from train operations will not

[16] Analysts considered using Land Use Category 1 (land where quiet is an essential element of its intended purpose), but ultimately decided to use Land Use Category 3 due to the relatively loud existing noise environment.

result in an impact based on FRA noise criteria for non-residential land uses. This distance is applied to consider whether cultural practices, activities, or resources, would experience increases to the extent of annoyance with Project-generated noise levels. For vibratory impacts to the cultural setting and landscape, FRA applied the FRA criterion of 72 VdB for residential land uses with frequent events. For a full discussion of noise and vibration impacts to historic properties and other cultural resources, refer to Section 4.11, Cultural Resources.

4.2.4 Affected Environment

The affected environment for noise and vibration encompasses a variety of noise-sensitive land uses including residential, institutional, commercial, and industrial areas, as well as cultural settings and landscape areas defined by Federally-Recognized Tribes. The primary source of noise and vibration in the study area are traffic on the I-15 highway and development adjacent to the highway. As shown in Table 19, existing noise levels within the study area range from 52.5 to 80.5 dBA Ldn.[17] Existing vibration at sensitive receptors within the noise study area is negligible. For a complete discussion of existing noise and vibration levels in the study area, refer to Section 5 of the Noise and Vibration Technical Report (Attachment C).

4.2.5 Environmental Consequences

Noise impacts would occur when project noise levels exceed ambient noise levels at a sensitive receptor as shown in Figure 4. FRA used FTA's construction vibration damage threshold of 94 VdB to represent the level at which vibration could damage buildings, and 72 VdB to represent the level at which vibration will annoy surrounding receptors.

4.2.5.1 No Build Alternative

Under the No Build Alternative, the Project will not be constructed. Therefore, the No Build Alternative will not result in any noise or vibration impacts for either operations or construction as no other large-scale transportation projects are currently planned for the I-15 corridor. Due to anticipated population increases and travel demand along I-15 as discussed in Section 2.3, Purpose and Need for the Project, there will likely be increases in highway and local roadway noise from increased traffic volumes.

4.2.5.2 Construction of Build Alternative

Noise

Construction of the Project will result in short-term noise impacts to resources in the affected environment. Elevated noise levels are associated with construction activities, including construction equipment, diesel engines, impact pile driving and jackhammering. Short-term noise during construction of the Project may be intrusive to residents near the construction sites. Construction activities will primarily occur during daytime hours, consistent with local noise ordinances.

Because exact equipment types and locations are unknown at this time, the conservative typical example construction scenario shown in Table 23 was used to identify impacts. Using this construction scenario and FTA's guidance to model construction noise, an 8-hour Leq of 88

[17] dBA is noise metric used as a weighting system, which measures what humans hear in a more meaningful way by reducing the sound levels of higher and lower frequency sounds. Ldn is a day-night sound level which is the average noise level over a 24-hour period. The noise level measurements between the hours of 10pm and 7am are artificially increased by 10 dB before averaging.

dBA is anticipated at a distance of 50 feet from Project construction sites.[18] At some locations, more extensive work than what is included in the typical construction scenario will occur, such as pile driving for elevated structures, bridges, and retaining walls.

Table 23. Typical Construction Scenario

Equipment Type	Typical Noise Level at 50 feet (dBA)	Equipment Utilization Factor (%)	Leq (dBA)
Grader	85	50	82
Backhoe	80	40	76
Compactor	82	20	75
Loader	85	20	78
Roller	74	20	67
Truck	88	40	84
Crane, Mobile	83	20	76
Total 8-hour workday Leq at 50 feet:			88

Source: CSA 2022

Under the scenario shown in Table 23 construction noise impacts will be limited because most construction will take place in the median of the I-15 corridor, distant from most sensitive receptors. Construction noise will exceed the residential thresholds (both daytime and nighttime) at three locations at the northern end of the alignment: two hotels located near Stoddard Wells Road and one single-family residence on Pepper Tree Drive. Mitigation will be incorporated at each of these location to reduce noise impacts. No exceedances of commercial or industrial standards will occur.

Through consultation with Federally-Recognized Tribes under Section 106 of the NHPA, FRA sought information as to whether project-related noise could impact traditional cultural landscapes, cultural resources, and the cultural setting.[19] Increases in noise have the potential to impact the cultural setting by disrupting cultural practices and other activities that may occur within the broader cultural landscape. Construction activities will occur within the Caltrans right-of-way, adjacent to or in the I-15 highway median. Because traffic on I-15 already generates noise throughout the corridor and noise from construction activities would be an imperceptible increase above existing conditions, it is unlikely the Project will expose these resources to noise impacts beyond what they currently experience. Construction noise will also be temporary and minimized to the extent possible.

[18] Leq is "equivalent" sound level which represents the changing sound level over a period of time, typically 1 hour or 24 hours in transit noise assessments.

[19] FRA will make a formal finding of effect for the Project and seek concurrence from SHPO through the Section 106 process. In its effects determination, FRA will consider whether the Project results in significant effects to historic properties and, if applicable, resolve those effects.

Vibration

Based on equipment types shown in Table 24, the potential for damage from most construction-related vibration will be limited to within 25 feet of construction activities. For impact pile driving, a conservative distance for potential damage is 55 feet. Given that the alignment would be constructed primarily within the median of I-15, and therefore separated from existing development by at least 100 feet, no impacts are anticipated. Because the exact type and placement of construction equipment is not known at this time, FRA will revisit and confirm this determination during final design. The vibration levels generated by select construction equipment are summarized below in Table 24.

Table 24. Summary of Potential Construction Vibration Impacts

Equipment Type	Typical Vibration Level at 25 feet (VdB)	Distance for Potential Damage (ft)	Distance for Potential Annoyance (ft)
Impact Pile Driving	104	55	290
Push Piling	84	25	125
Hoe Ram	87	15	80
Caisson Drilling	87	15	80
Loaded Trucks	86	15	75
Clam Shovel	94	25	135
Vibratory Roller	94	25	135

Source: CSA 2022

4.2.5.3 Operation of Build Alternative

Noise

As described in Section 2.3.3 and Section 2.3.4, the Project includes widening the short distances of I-15 in some areas to accommodate the new rail alignment. This may create a potential operational noise impact associated with the shift in traffic closer to sensitive receptors. Operational noise impacts were considered for the locations described below, using the operational noise criteria discussed in Section 4.2.2 and shown on Figure 4. At the locations described below, the highway widening includes moving portions of I-15 in a manner that associated automobile and truck traffic will be shifted toward sensitive receptors to widen the median for the Project. These locations are also shown in Figure 5 through Figure 7. At all locations, the impacts due to traffic noise are in the low end of the moderate impact range and are therefore not considered significant impacts.

- **Mojave Drive to N D Street (NB):** There are 40 single and multi-family homes along the northbound side of the proposed alignment between Mojave Drive and N D Street projected to have moderate noise impacts.
- **Mojave Drive to N D Street (SB):** There are 9 single family homes along the southbound side of the proposed alignment between Mojave Drive and N D Street projected to have moderate noise impacts.

- **La Mesa Road to Palmdale Road (NB):** There is one hotel along the northbound side of the proposed alignment between La Mesa Road and Palmdale Road projected to have a moderate noise impact.
- **Main Street to La Mesa Road (NB):** There are two hotels and 22 single-family homes along the northbound side of the proposed alignment between Main Street and La Mesa Road projected to have moderate noise impacts.
- **Arrow Road to Base Line Road (NB):** There are 9 single-family homes along the northbound side of the proposed alignment between Arrow Road and Base Line Road projected to have moderate noise impacts.

In addition to traffic noise impacts described above, impacts will occur from operation of the new HSR trains as part of the Project. Detailed comparisons of the existing noise and noise levels generated by HSR Operation are presented below in Table 25 for residential land uses and Table 25 for institutional land uses. These locations are also pictured in Figure 5 through Figure 7. As with traffic noise impacts, noise impacts from HSR operation are in the low end of the moderate impact range and are therefore not considered significant impacts.

Table 25. Summary of Residential Noise Impacts from HSR Operations

Location	Side of Track	Distance to Near Track (ft)	Max Train Speed (mph)	Existing Noise Level (Ldn, dBA)	Noise Level (Ldn, dBA)			Type and # of Impacts	
					Project	Impact Criteria			
						Mod.	Sev.	Mod.	Sev.
Section 1 – High Desert									
Victor Valley station to N D St	NB	359	100	65	57	61	66	0	0
Victor Valley station to N D St	SB	165	100	65	62	61	66	2	0
N D St to Mojave Dr	NB	122	90	81	63	65	75	0	0
N D St to Mojave Dr	SB	137	90	81	62	65	75	0	0
Mojave Dr to Palmdale Rd	NB	No noise sensitive receivers.							
Mojave Dr to Palmdale Rd	SB	129	80	68	62	63	68	0	0
Palmdale Rd to La Mesa Rd	NB	160	140	72	65	65	71	0	0
Palmdale Rd to La Mesa Rd	SB	202	140	76	63	65	74	0	0
La Mesa Rd to Main St	NB	163	140	76	65	65	74	0	0

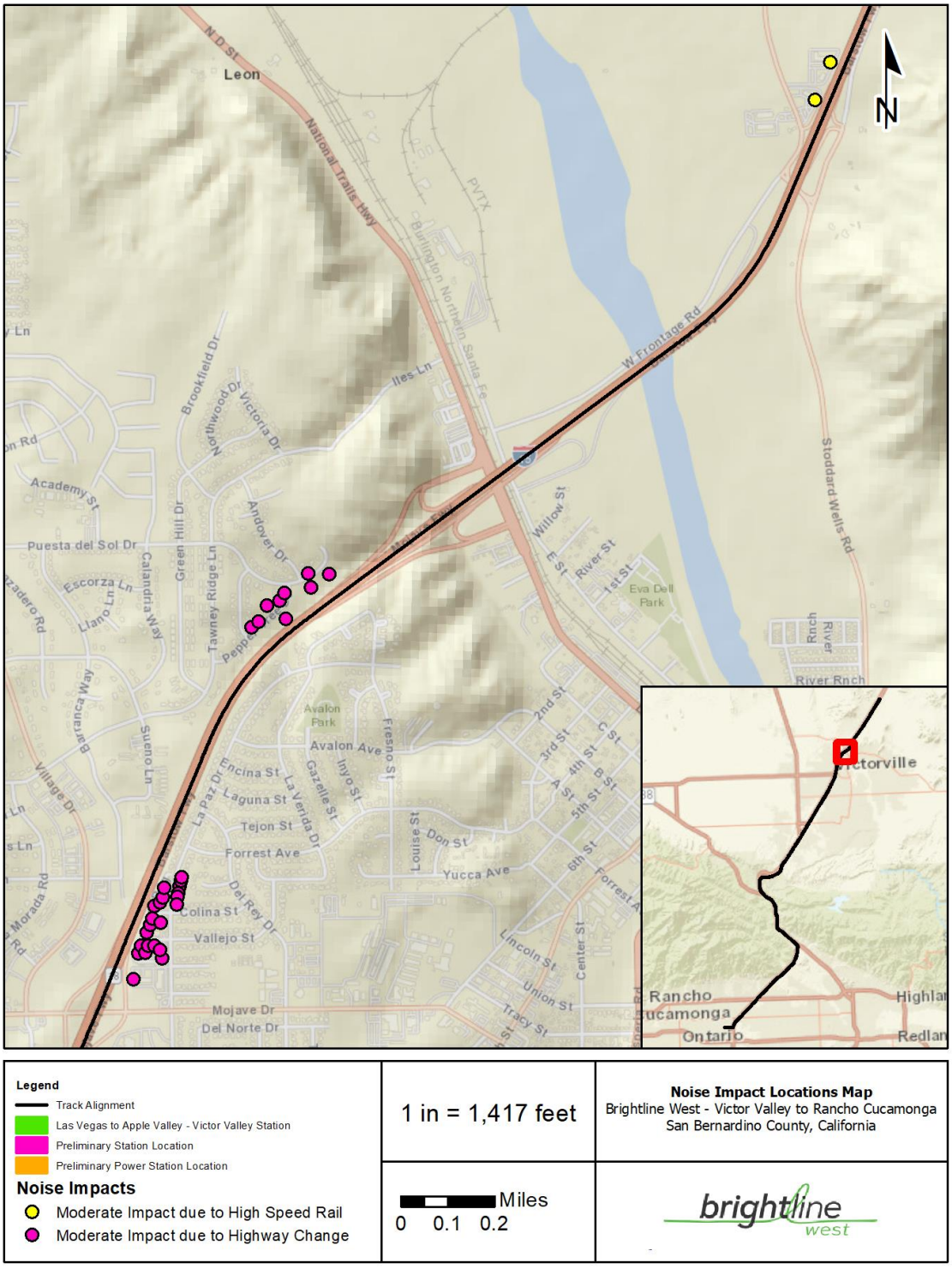
Location	Side of Track	Distance to Near Track (ft)	Max Train Speed (mph)	Existing Noise Level (Ldn, dBA)	Noise Level (Ldn, dBA)			Type and # of Impacts	
					Project	Impact Criteria			
						Mod.	Sev.	Mod.	Sev.
La Mesa Rd to Main St	SB	272	140	76	61	65	74	0	0
Main St to Oak Hill Rd	NB	422	120	67	57	62	68	0	0
Main St to Oak Hill Rd	SB	231	80	67	58	62	68	0	0
Section 2 – Cajon Pass									
Oak Hill Rd to W Kenwood Ave	NB	No noise sensitive receivers.							
Oak Hill Rd to W Kenwood Ave	SB	No noise sensitive receivers.							
Section 3- Greater Los Angeles									
W Kenwood Ave to Sierra Ave	NB	212	140	72	63	65	71	0	0
W Kenwood Ave to Sierra Ave	SB	No noise sensitive receivers.							
Sierra Ave to Rt 210	NB	No noise sensitive receivers.							
Sierra Ave to Rt 210	SB	256	140	71	61	65	70	0	0
Rt 210 to Base Line Rd	NB	245	140	71	62	65	70	0	0
Rt 210 to Base Line Rd	SB	217	140	71	63	65	70	0	0
Base Line Rd to Arrow Route	NB	177	140	71	64	65	70	0	0
Base Line Rd to Arrow Route	SB	164	140	71	65	65	70	0	0
Arrow Route to Rancho Cucamonga station	NB	No noise sensitive receivers.							
Arrow Route to Rancho Cucamonga station	SB	No noise sensitive receivers.							
Total:								2	0

Source: CSA 2022

Table 26. Summary of Institutional Noise Impacts from HSR Operations

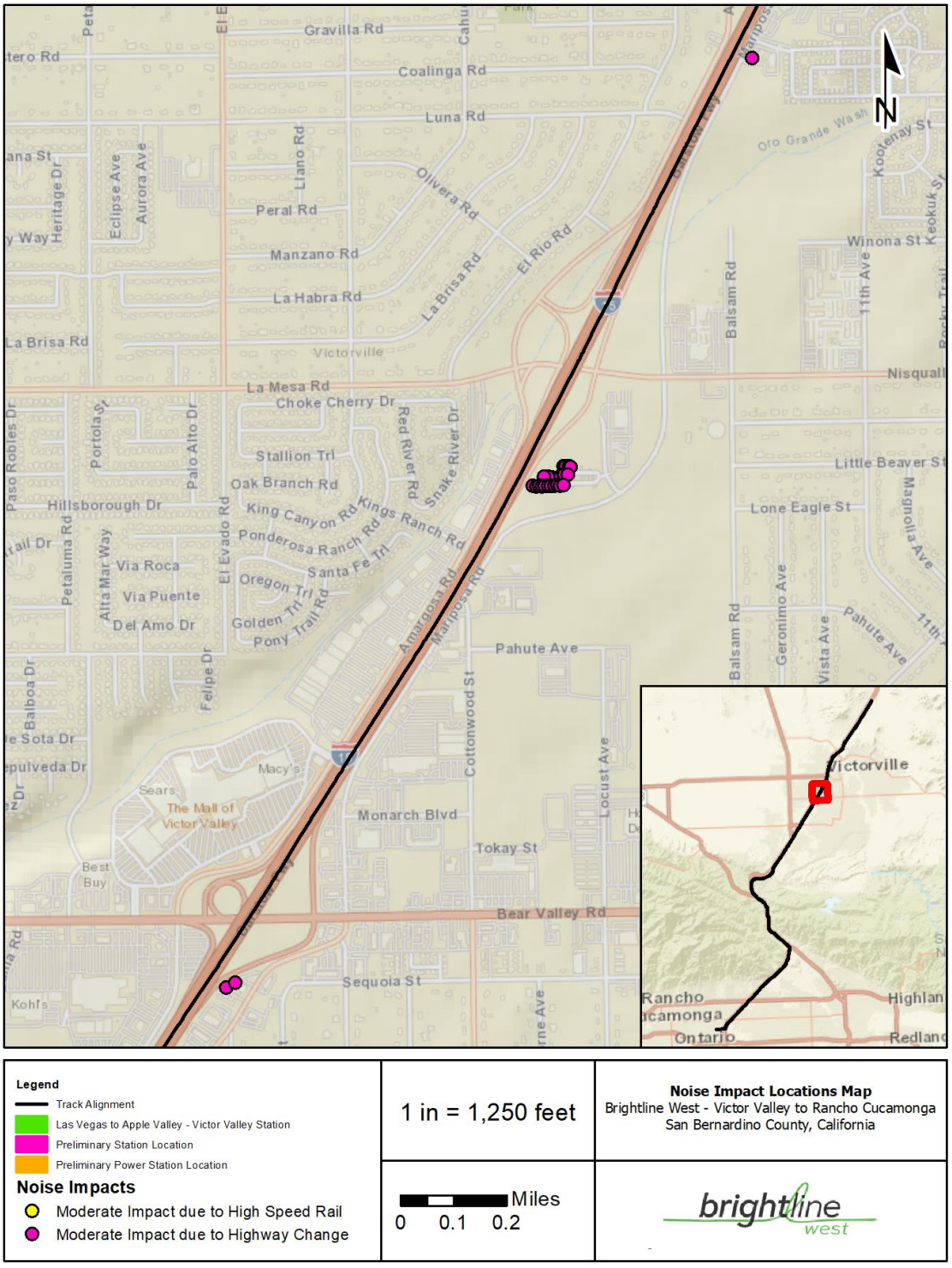
Name	Location	Side of Track	Distance to Near Track (ft)	Max Train Speed (mph)	Existing Noise Level (Leq, dBA)	Noise Level (Leq, dBA)			Type and # of Impacts	
						Project	Impact Criteria			
							Mod.	Sev.	Mod.	Sev.
Section 1 – High Desert										
Grace Christian Preschool	Palmdale Rd to La Mesa Rd	SB	423	140	72	57	70	76	0	0
Victor Valley Apostolic Church	Palmdale Rd to La Mesa Rd	SB	430	140	72	56	70	76	0	0
Desert View Memorial Park	La Mesa Rd to Main St	SB	161	120	61	61	63	69	0	0
Section 3 – Greater Los Angeles*										
Summit Water of Life Church	Sierra Ave to Rt 210	NB	329	140	65	58	65	71	0	0
Sacred Heart Parish School	Base Line Rd to Arrow Route	NB	239	80	66	56	66	72	0	0

Source: CSA 2022
Note: *There are no institutional receptors in Section 2.



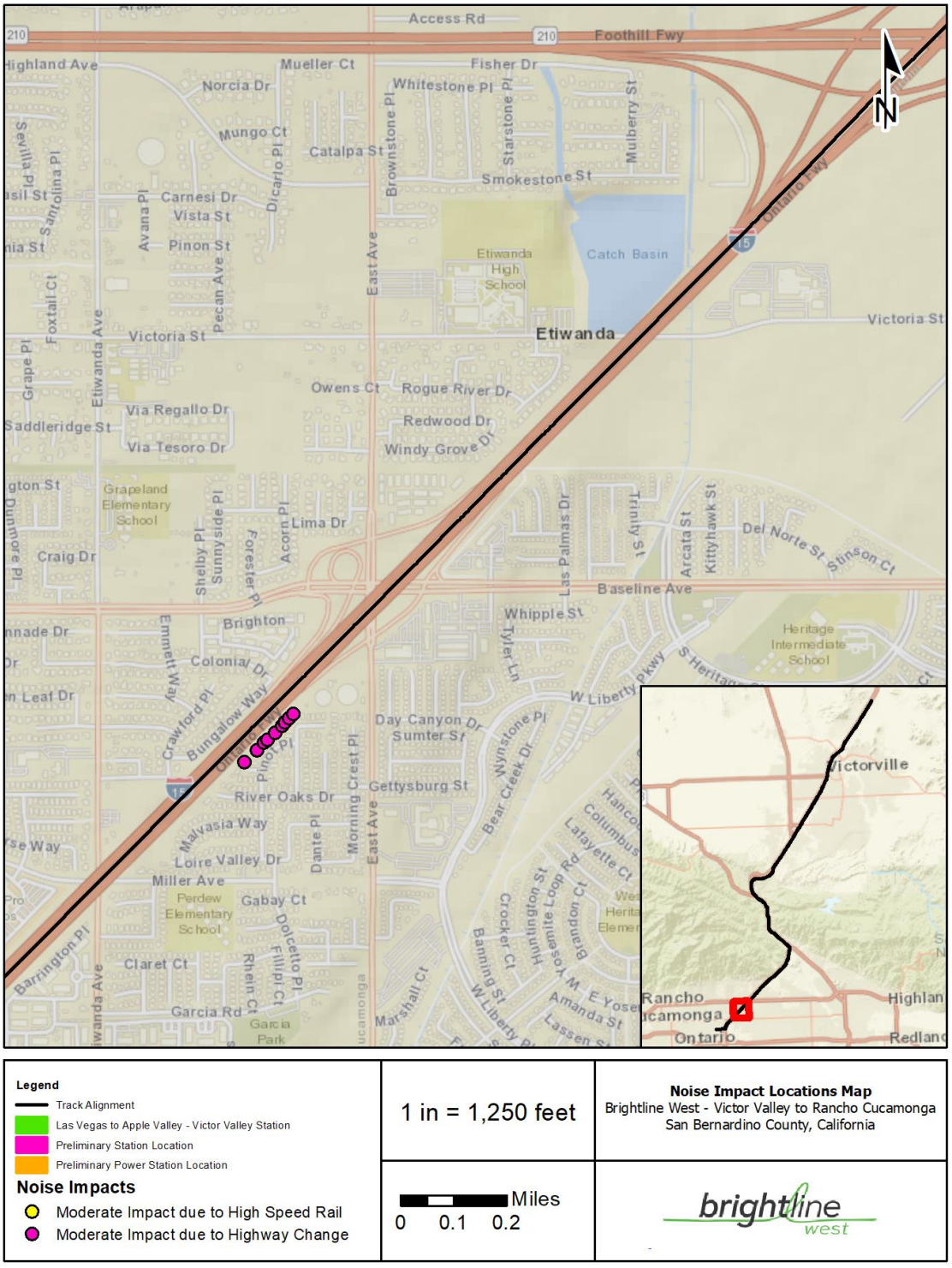
Source: CSA 2022

Figure 5. Noise Impact Locations (1 of 3)



Source: CSA 2022

Figure 6. Noise Impact Locations (2 of 3)



Source: CSA 2022

Figure 7. Noise Impact Locations (3 of 3)

As previously mentioned, the Federally-Recognized Tribes also expressed concerns about changes to the cultural landscape through increased noise from train operations. As discussed below in Section 4.2.6.2, due to the existing noise environment, changes to existing noise levels during project operation are not anticipated to be significant, as noise from the train is anticipated to dissipate over 200 feet. FRA did not identify any cultural resources within 200 feet of the rail alignment and is not aware of any traditional practices that would occur within this distance. As a result, operation of the Project will not significantly alter noise levels within the traditional cultural landscape or impact use of the landscape.

Vibration

Operational vibration generated in each section of the Project is presented in Table 27 for residential land uses and Table 28 for institutional land uses. Each table lists the locations of the closest receptor for each location, the distance to the near track, the train speed, and the projected vibration level in each location. As shown in Table 27 and Table 28, the Project will not result in significant vibration impacts at any residential or institutional locations because the thresholds discussed in Section 4.2.3 will not be exceeded.

Table 27. Summary of Residential Vibration Impacts

Location	Side of Track	Distance to Near Track (ft)	Max Train Speed (mph)	Project Levels (VdB)	Impact Criteria (VdB)	# of Impacts
Section 1 – High Desert						
Victor Valley station to N D St	NB	192	100	57	72	0
Victor Valley station to N D St	SB	165	100	58	72	0
N D St to Mojave Dr	NB	No vibration sensitive receivers.				
N D St to Mojave Dr	SB	137	90	58	72	0
Mojave Dr to Palmdale Rd	NB	No vibration sensitive receivers.				
Mojave Dr to Palmdale Rd	SB	129	80	57	72	0
Palmdale Rd to La Mesa Rd	NB	160	140	60	72	0
Palmdale Rd to La Mesa Rd	SB	202	140	60	72	0
La Mesa Rd to Main St	NB	163	140	60	72	0
La Mesa Rd to Main St	SB	272	140	59	72	0
Main St to Oak Hill Rd	NB	422	120	68	72	0
Main St to Oak Hill Rd	SB	477	120	68	72	0
Section 2 – Cajon Pass						
Oak Hill Rd to W Kenwood Ave	NB	No vibration sensitive receivers.				
Oak Hill Rd to W Kenwood Ave	SB	No vibration sensitive receivers.				

Location	Side of Track	Distance to Near Track (ft)	Max Train Speed (mph)	Project Levels (VdB)	Impact Criteria (VdB)	# of Impacts
Section 3 – Greater Los Angeles						
W Kenwood Ave to Sierra Ave	NB	212	140	58	72	0
W Kenwood Ave to Sierra Ave	SB	No vibration sensitive receivers.				
Sierra Ave to Rt 210	NB	No vibration sensitive receivers.				
Sierra Ave to Rt 210	SB	256	140	69	72	0
Rt 210 to Base Line Rd	NB	245	140	50	72	0
Rt 210 to Base Line Rd	SB	217	140	52	72	0
Base Line Rd to Arrow Route	NB	177	140	54	72	0
Base Line Rd to Arrow Route	SB	164	140	55	72	0
Arrow Route to Rancho Cucamonga station	NB	No vibration sensitive receivers.				
Arrow Route to Rancho Cucamonga station	SB	No vibration sensitive receivers.				
Total:						0

Source: CSA 2022

Table 28. Summary of Institutional Vibration Impacts

Name	Location	Side of Track	Distance to Near Track (ft)	Max Train Speed (mph)	Project Levels (VdB)	Criteria	# of Impacts
Section 1 – High Desert							
Grace Christian Preschool	Palmdale Rd to La Mesa Rd	SB	423	140	59	83	0
Victor Valley Apostolic Church	Palmdale Rd to La Mesa Rd	SB	430	140	58	83	0
Desert View Memorial Park	La Mesa Rd to Main St	SB	161	120	59	83	0
Section 3 – Greater Los Angeles*							
Summit Water of Life Church	Sierra Ave to Rt 210	NB	329	140	68	83	0
Sacred Heart Parish School	Base Line Rd to Arrow Route	NB	239	80	46	83	0

Source: CSA 2022; *There are no institutional receptors in Section 2.

As shown in Table 27 and Table 28, the closest identified sensitive receptors are located approximately 130 feet from the new track. Even at this distance, Project-related vibration would only reach 57 VdB, which is well below the human receptor impact criteria of 72 VdB. Because no cultural resources have been identified within 200 feet of the rail alignment, the Project will not result in significant impacts to the cultural landscape.

4.2.5.4 Cumulative Impacts

Construction of the Project in combination with other past, present, and reasonably foreseeable future actions within the project area would result in noise effects that would last for the duration of construction activities, but would not be permanent. It is possible that multiple projects in urban areas along I-15, such as projects implemented pursuant to local general and specific plans as well as transportation projects (e.g., Interstate 15 Interchange Reconstruction Project and the I-15 Pavement Rehabilitation Project) - could be under construction at the same time as the Project. Together with the Project, construction of these projects could result in exceedance of noise generated at sensitive receptors. However, construction of the project would occur in areas of predominantly vacant land, where construction of the Project would not result in noise impacts because there are few existing and reasonably anticipated sensitive receptors.

Operation of the Project and other transportation projects could contribute to noise effects on adjacent sensitive receptors. Operation of nearby projects could result in the increase of the existing noise environment. However, the proposed rail alignment would be adjacent to large areas of vacant land, and few sensitive receptors. Therefore, in combination with past, present, and reasonably foreseeable future actions, the Project would not cumulatively increase noise within the project area.

4.2.6 Avoidance, Minimization, and Mitigation Measures

Brightline West will implement the following noise mitigation measures to avoid, minimize, and/or mitigate all impacts identified above.

4.2.6.1 Construction

Mitigation Measure NOI-1: Brightline West will require the contractors to prepare a detailed Noise Control Plan. A noise control engineer or acoustician will work with the contractor to prepare a Noise Control Plan in conjunction with the contractor's specific equipment and methods of construction.

Mitigation Measure NOI-2: Brightline West will comply with all applicable local noise regulations. The following measures will be applied as necessary to minimize temporary construction noise and vibration impacts:

- Avoid nighttime construction in residential neighborhoods,
- Locate stationary construction equipment as far as possible from noise-sensitive sites,
- Construct noise barriers, such as temporary walls or piles of excavated material, between noisy activities and noise-sensitive receivers,
- Route construction-related truck traffic to roadways that will cause the least disturbance to residents, and

- Use alternative construction methods to minimize the use of impact and vibratory equipment (e.g., pile-drivers and compactors).

4.2.6.2 Operation

Significant impacts requiring mitigation are not anticipated, and Brightline West will comply with all permitting conditions, and any applicable requirements.

4.3 Wetland and Stream Areas

Water resources are surface waters and groundwater that are vital to society; they are important in providing drinking water and in supporting recreation, transportation and commerce, industry, agriculture, and aquatic ecosystems. This impact category includes surface waters and wetlands. These resources do not function as separate and isolated components of the watershed but rather as a single, integrated natural system. Disruption of any one part of this system can have consequences to the functioning of the entire system.

The following analysis is based on the Wetlands and Streams Technical Report prepared by HNTB and included as Attachment D to this EA.

4.3.1 Regulatory Setting

The Project is expected to be subject to the exclusive jurisdiction of the STB and thus Federal law. As such, the Clean Water Act of 1972, as amended, governs actions affecting aquatic resources in the study area. Specifically, Section 401, requires that applicants applying for a Federal license or permit to conduct activities that may result in a discharge into WOTUS must obtain certification that the discharge would not violate water quality standards, including water quality objectives and beneficial uses. The SWRCB issues the Section 401 certification for the Project. Section 402 of the Clean Water Act requires that a discharge of any pollutant or combination of pollutants to surface waters that are deemed waters of the United States be regulated by a National Pollutant Discharge Elimination System (NPDES) permit. Section 404 of the Clean Water Act (33 U.S.C. Section 1344) primarily governs the discharge of dredged or fill material into Waters of the United States (WOTUS) within the study area. WOTUS are defined in 33 CFR Part 328 and include navigable waters, interstate waters, territorial seas, other waters that are, were, or may be used in interstate or foreign commerce, tributaries, lakes, ponds, impoundments of jurisdictional water, and adjacent wetlands. USACE have jurisdiction over all WOTUS. Similarly, Section 10 of the Rivers and Harbors Appropriation Act of 1899 (33 U.S.C. Section 403) requires authorization by the Secretary of the Army, through the USACE, for the construction of structures in or over navigable rivers. If project proponents require substantial discharge of fill or dredged materials into a WOTUS, a Nationwide Permit or Individual Permit is required. If project work affects the course, location, or condition of the navigable water, a Section 10 permit is required. Accordingly, the USACE administers Section 404 and Section 10 permits.

The Lahontan Regional Water Quality Control Board (RWQCB) and Santa Ana RWQCB oversee surface water and groundwater within the study area. The Lahontan Basin Plan is the basis for the Lahontan RWQCB's regulatory program. It sets forth water quality standards for the surface and ground waters of the Lahontan Region. The Santa Ana River Basin Plan includes the water quality standards (water quality objectives, beneficial uses, and anti-degradation policy) for the

Region, regionally important water quality management and improvement initiatives, policies, and practices for implementing water quality standards, and implementation plans.

4.3.2 Study Area

Wetlands and other aquatic resources in the study area were identified based on review of the existing available information and field surveys. In October and November 2021, biologists performed field investigations to identify aquatic resources in the study area. The study area represents the limits of disturbance (LOD), which include proposed railway and related infrastructure, such as the rail stations and power stations, as well as construction areas and temporary staging areas.

4.3.3 Methodology

Wetlands and other aquatic resources in the study area were identified based on review of the existing available information and field surveys. In October and November 2021, biologists performed field investigations to identify aquatic resources in the study area. The data collected in the field reviews described in Section 4.3.2 were incorporated into a geographic information systems (GIS) database. This qualitative analysis considers the Project's potential direct and indirect impacts of wetlands and streams within the communities of San Bernardino County, and the cities of Victorville, Hesperia, Rancho Cucamonga, and Fontana. Biologists then reviewed the preliminary design plan for the Project and estimated potential impacts on the wetland by overlaying the preliminary design plan against the field-verified wetland boundary. For other aquatic resources such as streams and drainage systems, biologists evaluated potential impacts by reviewing field results and the preliminary design including profiles and cross sections.

4.3.4 Affected Environment

FRA identified one wetland and numerous other surface waters and features in the affected environment. Based on the existing document review and field investigation, the Mojave River and its associated wetland are WOTUS. Approximately 48 other drainage features were identified in the affected environment, consisting of ephemeral washes, intermittent stream channels, and human-made ditches. Jurisdictional determination of these 48 drainage features in the affected environment are currently in progress through coordination with the USACE. More information can be found in the Wetlands and Streams Technical Report (Attachment D).

4.3.5 Environmental Consequences

4.3.5.1 No Build Alternative

The No Build Alternative will involve no action to create a passenger high-speed rail (HSR) system in the median and immediately alongside the I-15 highway between Victor Valley and Rancho Cucamonga. The existing I-15 corridor will remain operational without improving the major points of congestion or transportation capacity deficiencies along the highway. The No Build Alternative will not result in temporary or permanent impacts to wetlands and streams, as no activities or construction within or adjacent to wetlands or streams will occur.

4.3.5.2 Construction of Build Alternative

Railway

Temporary impacts from project construction on aquatic resources are anticipated because the Project will cross the Mojave River wetland, the Mojave River, and other drainage features. Construction of bridges, over the Bell Mountain Wash, Mojave River, Brush Creek, Cleghorn Creek, Cajon Wash/Creek and Lytle Creek, will involve work in the ordinary high-water mark (OHWM). Placement of columns needed for those bridge spans may involve phased construction with flow diversion BMPs, such as gravel bag berms placed around the work areas during construction in the streambed. This will allow water to flow around the construction area and reduce potential for construction material to reach the waterway during a storm event. Staging, equipment storage, and stockpiling will occur outside the OHWM. The Project may require temporary soil disturbance and vegetation clearing within the Mojave River riparian area and in and around other drainages along the corridor. The estimated temporary ground disturbance acreages below the OHWM associated with the construction of bridge columns are provided in Table 29.

Table 29. Estimated Temporary Ground Disturbance Below OWHM

Crossing Name	Project Section	Temporary Ground Disturbance (acres)
Lytle Creek	3	4.55
Cajon Wash/Creek	3	1.11
Cleghorn Creek	2	0.57
Brush Creek	2	0.29
Mojave River	1	0.01
Bell Mountain Wash	1	0.11
	Total	**6.64**

Source: HNTB 2022

The Project will avoid and minimize effects on the Mojave River wetland and other aquatic resources to the extent feasible during construction by developing and implementing best management practices (BMPs) and other measures such as a Temporary Erosion and Sediment Control Plan (TESC), Stormwater Pollution Prevention Plan (SWPPP), and Spill Prevention, Control, and Countermeasure Plan (SPCC). In addition, the Project will comply with all applicable conditions that result from the Clean Water Act Section 404 permit. Section 402 permit, and Section 401 water quality certification.

Hesperia Station and Rancho Cucamonga Station

No aquatic resources were identified in the temporary or permanent footprint for the proposed Hesperia and Rancho Cucamonga stations. Therefore, station construction will not impact wetlands or streams in the proposed station areas.

4.3.5.3 Operation of Build Alternative

Railway

Operational impacts will include permanent effects on some drainages due to installation of new bridge support structures. Most drainage features will not be affected because the proposed bridge structures will span the entire feature without placing any structures in the channels. Debris Cone Creek, Cajon Wash/Creek, and Lytle Creek crossings, however, will require new structures in the channels. All crossings will result in less than 0.1 acre of permanent fill. Additionally, new structures will be placed within the Mojave River wetland. The Project will have no permanent impacts on the Mojave River itself, but a small portion (less than 0.01 acre) of the Mojave River wetland will be permanently impacted. Total avoidance of the wetland is not possible because piers in the wetland will be required to allow the Project to span over the Mojave River active channel. Modifications to existing culverts and newly designed culverts, if any, will be designed to maintain existing conveyance patterns of the drainage features that cross existing roadways and will not alter flow conditions or functions of the drainage features. The Project will maintain the existing drainage flows throughout the affected environment and will not significantly alter the functions of the existing aquatic resources. This impact will be minimal; and no avoidance, minimization, or mitigation measures will be required.

Hesperia Station and Rancho Cucamonga Station

No aquatic resources were identified in the temporary or permanent footprint for the proposed Hesperia and Rancho Cucamonga stations. Therefore, operation of the stations will not impact wetlands or streams in the proposed station areas.

4.3.5.4 Cumulative Impacts

The Project, in combination with other past, present, and reasonably foreseeable future actions, will convert undeveloped areas to developed ones, resulting in loss of wetlands and stream areas.

Implementation and development of avoidance and minimization approaches could reduce cumulative effects on wetlands and stream areas. Preserving and conversing wetlands and stream areas in addition to other water resources will help to reduce cumulative effects on wetlands and stream areas.

4.3.6 Avoidance, Minimization, and Mitigation Measures

4.3.6.1 Design

Brightline West will design the Project to avoid and minimize environmental impacts. The proposed rail alignment will be restricted to existing transportation corridors. Most bridges will avoid permanent impacts below the OHWM of aquatic resources, avoiding effects on the Mojave River and its associated wetland as well as other drainage features. Where full spans over a drainage channel or a wetland cannot be achieved because of design constraints, Brightline West will design the Project to minimize impacts by placing support structures above the OHWM or outside of a wetland.

4.3.6.2 Best Management Practices

During construction, Brightline West will implement BMPs to minimize impacts on aquatic resources. In addition, the Project will comply with all applicable conditions that result from the Clean Water Act Section 404 permit, Section 402 permit, and Section 401 water quality certification.

Aquatic Resource Identification and Restoration

Requirements of the permits, agreements, and certifications will be implemented in the construction phase of the Project. A USFWS-approved Biologist will be on site prior to and during construction of the Project to identify and protect aquatic resources. The biologist will define the boundaries of the aquatic resources and will supervise the placement of exclusion fencing to protect those areas during all project activities. Additionally, a silt fence around the construction areas adjacent to aquatic resources will protect the resources, including WOTUS, from runoff and spills associated with construction activities, if any.

Aquatic resources that are affected by construction activities (e.g., clearing, ground disturbance) will be restored with native vegetation after construction is complete. Restoration plans will be reviewed and approved by the applicable regulatory agencies. Monitoring efforts will be ongoing throughout the construction phase to ensure that all components of the compliance documents are adhered to during construction.

Temporary Erosion and Sediment Control

A temporary erosion and sediment control plan will be developed for construction of the railway, stations, and maintenance facilities and will be employed to control erosion from disturbed areas. Standard erosion control BMPs, such as management, structural, and vegetative controls, will be identified in the plan and will be implemented for all construction activities that expose soil. These BMPs will be selected to achieve maximum sediment removal and to represent the best available science and technology practicable. BMPs will be regularly inspected and maintained throughout construction. Some BMPs for rail installation include but are not limited to:

- Installation of erosion control material consisting of silt fences along the outside limits of construction.
- Implementing wind erosion control practices on all stockpiled materials.
- Stripping and transporting topsoil to stockpile for use in the restoration of temporary ground disturbances.
- Preservation of existing vegetation as much as practicable.
- Establishment of native grass or other native vegetative cover on the construction site as soon as possible after disturbance. Non-native seeds or vegetation will not be used.
- Controlled erosion in disturbed areas by grading so that direct routes for conveying runoff to drainage channels are eliminated.
- Compliance with all applicable conditions and mitigation requirements that result from the permits, certifications, and agreements.

Stormwater Pollution Prevention Plan

Prior to beginning construction activities, a stormwater pollution prevention plan will be developed and implemented, thereby reducing the likelihood that stormwater will carry any sediments or spilled contaminants to drainages. The Project will comply with all applicable conditions and mitigation requirements that result from the permits, certifications, and agreements.

Spill Prevention, Control, and Countermeasure Plan

As part of the approved Storm Water Pollution Prevention Plan (SWPPP), a spill prevention, control, and countermeasure plan will be developed to reduce the potential for accidental chemical spills or releases of contaminants, including any non-stormwater discharge to drainage channels and outline measures to use in the case of a spill. BMPs in this plan may include but are not limited to:

- Inspecting the project site for spills daily; document spills weekly and before and after every rainfall event.
- Having equipment and materials for cleanup of spills and leaks available on site; immediately cleaning up spilled or leaked material, and properly disposing of the material.
- Protecting stockpiled materials.
- Complying with all applicable conditions and mitigation requirements of permits, certifications, and agreements related to the Project.

If a spill is reportable, a superintendent will notify appropriate agencies and the contractor will take action to contact any other appropriate safety and cleanup crews to ensure the plan is followed. A written description of reportable releases will be submitted to the appropriate agency and will include a description of the release, including the type of material, an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent future releases.

4.3.6.3 Mitigation Measures

Brightline West will coordinate with USACE to obtain a jurisdictional determination for aquatic resources. If applicable, Brightline West will obtain any required permits and implement any permit conditions.

4.4 Floodplains

Floodplains are lowland areas adjoining inland and coastal waters which are periodically inundated by flood waters, including flood-prone areas of offshore islands. Floodplains are often discussed in terms of the 100-year flood. The 100-year flood is a flood having a 1 percent chance of occurring in any given year. The 100-year flood is also known as the base flood. Floodplains are valued for their natural flood and erosion control, enhancement of biological productivity, and socioeconomic benefits and functions.

The following analysis is based on the Floodplains Technical Report prepared by HNTB and included as Attachment E to this EA.

4.4.1 Regulatory Setting

Executive Order 11988 "Floodplain Management" and USDOT Order 5650.2, *Floodplain Management and* Protection, addresses floodplain issues related to public safety, conservation, and economics and requires that Federal agency construction, permitting, and funding of a project:

- Identify risks of the action: The Project will cross the Flood Emergency Management Administration (FEMA) high-risk flood zones of the Etiwanda Creek/Channel, Mojave River, and Lytle Creek.
- Avoid incompatible floodplain development: The Project will not support incompatible floodplain development because no new permanent access to the floodplains will be created by the proposed bridges and structures and flow rates and water quality within the floodplains will remain unchanged.
- Be consistent with the standards and criteria of the National Flood Insurance Program (NFIP): Locations where the Project crosses high risk flood zones identified by the NFIP Flood Insurance Rate Maps (FIRMs) are described above and the crossings will be designed to avoid and or minimize any anticipated rises in base flood elevations to within FEMA NFIP standards and criteria.
- Restore and preserve natural and beneficial floodplain values: Bridge locations where the Project crosses the floodplains will be placed adjacent to existing transportation corridors that already cross the floodplains and with piers placed outside wetland habitat to the maximum extent practicable to maintain beneficial uses of the floodplain.
- Address measures to minimize any net rise in floodplain level: When Project features are located in the floodplain, the base elevation of the railway structure will be elevated above the 100-year floodplain and features such as piers will be located to avoid impacts to existing conditions such as in-line with existing bridge piers for structures adjacent to the Project.

4.4.2 Study Area

The study area for floodplains is defined separately for areas not crossing the floodplain and those that do. For those areas not crossing the floodplain, the study area is defined as the LOD. For areas crossing the floodplain, the study area includes the LOD and the entirety of the affected floodplain as mapped by FEMA to study the Project's effect on these floodplains. Based on review of the FEMA FIRMs, the study area includes two high-risk flood hazard zones: A and AE. Both zones are subject to inundation by 1-percent-annual-chance (100-year) flood events. Zone A flood zones do not have Base Flood Elevations (BFEs) because detailed hydraulic analyses have not been performed, as opposed to the Zone AE flood zones that provide BFEs.

Zone A: high-risk flood zones at Lytle Creek and Lytle Creek Wash in unincorporated San Bernardino County and Rialto.

Zone AE: high-risk flood zones at the Mojave River in Victorville and at the Etiwanda Channel/Creek in Fontana and Rancho Cucamonga.

4.4.3 Methodology

FEMA Flood Insurance Rate Maps (FIRMs) were reviewed to identify the location of high-risk flood zones within the study area. Existing design information was then reviewed to determine if the Project will affect identified flood zones by placing fill, including structures, within the floodplain. This qualitative analysis considers the potential direct and indirect floodplain impacts of the Project on the communities within San Bernardino County, and the cities of Victorville, Hesperia, Rancho Cucamonga, and Fontana.

Preliminary, one-dimensional, hydraulic models were developed, using the Hydraulic Engineering Centers-River Analysis System (HEC-RAS) computer program, to analyze the potential effects of the Project on the upstream water surface during the 100-year storm event at the Project crossings of the Mojave River and Lytle Creek. Pre-project and post-project scenarios were developed for each of the two sites.

4.4.4 Affected Environment

Based on review of the FEMA FIRMs, the affected environment includes two high-risk flood hazard zones: A and AE. Both zones are subject to inundation by 1-percent-annual-chance (100-year) flood events. Zone A flood zones do not have Base Flood Elevations (BFEs) because FEMA has not performed detailed hydraulic analyses, as opposed to the Zone AE flood zones that have BFEs.[20]

Zone A: high-risk flood zones at Lytle Creek and Lytle Creek Wash in unincorporated San Bernardino County and Rialto.

Zone AE: high-risk flood zones at the Mojave River in Victorville and at the Etiwanda Channel/Creek in Fontana and Rancho Cucamonga.

4.4.5 Environmental Consequences

Impacts on floodplains include alterations to the floodplain that significantly impact the natural and beneficial floodplain values. Natural floodplains provide benefits like reducing flood-related hazards by slowing runoff and storing flood water. Floodplains also often contain wetlands and other important ecological areas such as fish and wildlife habitat, which directly benefit the quality of the local environment.

4.4.5.1 No Build Alternative

The No Build Alternative will involve no action to create a passenger HSR system in the median and immediately alongside the I-15 highway between Victor Valley and Rancho Cucamonga. The existing I-15 corridor will remain operational without improving the major points of congestion or transportation capacity deficiencies along the highway. The No Build Alternative will not result in temporary or permanent impacts to floodplains, as no activities or construction within floodplains will occur.

[20] The affected environment does not include the Cajon Wash Zone A high-risk flood zone, which is located downstream of the study area in unincorporated San Bernardino County, and the Hawker-Crawford Channel Zone A high-risk flood zone, located adjacent to the study area in Rancho Cucamonga.

4.4.5.2 Construction of Build Alternative

Railway

Project construction will involve the use of heavy, earth-moving equipment in the floodplains of the Mojave River and Lytle Creek, and near the floodplains of Etiwanda Channel and Hawker-Crawford Channel. Most of the railway construction activities will occur on Caltrans right-of-way and will comply with the State Construction General Permit (CGP) during all stages of construction. Placement of bridge columns in the streambeds of the Mojave River and Lytle Creek will involve phased construction with flow diversion BMPs. The bridge columns will be placed next to existing I-15 bridge columns to minimize potential impacts and will result in minimal redirection of flood flows and net rise.

Project construction activities within floodplains will likely result in temporary impacts such and minor erosion and runoff on floodplains. These activities could include vegetation clearing, soil disturbance, and construction of bridge piers and abutments. Disturbed areas will be restored after construction and bridge elements will be constructed in phases with flow diversion BMPs protecting the construction site, and no long-term impacts are anticipated. Any dewatering or diversion of flows within track sections during construction will be done in accordance with State and local requirements.

Hesperia Station and Rancho Cucamonga Station

The construction footprints of the proposed Hesperia and Rancho Cucamonga stations are not located within Federal Emergency Management Agency (FEMA)-mapped floodplains. Therefore, station construction will not impact floodplains or water surface elevations in the proposed station areas.

4.4.5.3 Operation of Build Alternative

Railway

The Project will cross the FEMA high-risk flood zones of the Etiwanda Creek/Channel, Mojave River, and Lytle Creek. At the Etiwanda Creek/Channel crossing, the Project will fully span the floodplain, but will not result in impacts because the Etiwanda floodway is contained within the channel. Bridge columns will be placed within the floodplains of the Mojave River and Lytle Creek. The bridge columns will be placed next to existing I-15 bridge columns to minimize potential impacts and will result in minimal redirection of flood flows and net rise. Preliminary Hydraulic Engineering System River Analysis System (HEC-RAS) modeling was conducted for the pre-and post-Project condition for Lytle Creek and the Mojave River. HEC-RAS modeling is designed to provide flow simulations through one and two-dimensional hydraulic calculations. Based on this modeling, surface water elevation for Lytle Creek is not anticipated to increase. Surface water elevation in the Mojave River Channel is anticipated to rise by 1.9 inches, which is within the allowable increase of FEMA regulations.

New bridge columns will be next to, but not within, the high-risk flood zones of the Cajon Wash and the Hawker-Crawford Channel. At Cajon Wash, bridge columns will be located upstream of the mapped floodplain and, therefore, will not affect downstream water surface elevations. FEMA mapping shows the Hawker-Crawford Channel to overtop during the 100-year storm event, though the floodplain remains in a low-lying area that is below the grade of the

proposed Project. In both cases, the Project will be outside the floodplain, and Project improvements will have no impact on the high-risk flood hazard areas.

The Project will increase the area of impervious surfaces within the study area and, therefore, the amount of stormwater runoff. The Project will follow applicable local city, county, and State agency requirements for flow control. Drainage facilities for the Project will be designed to retain flows so as not to contribute additional flows to the Mojave River, Lytle Creek, or other streams or washes. The Project design will incorporate hydromodification facilities such as detention basins, infiltration basins, design pollution prevention infiltration areas, and other permanent BMPs included in the Caltrans Stormwater Management Plan. Additionally, drainage facilities for the proposed railway, as well as for station facilities and the I-15 highway, will be sized to accommodate the design flow. New culverts will be sized to accommodate the 100-year, 24-hour storm flow to prevent on-site flooding. Therefore, the Project will not impact beneficial floodplain values.

Hesperia Station and Rancho Cucamonga Station

The Hesperia station and Rancho Cucamonga station will not impact floodplains because there are no floodplains in the temporary or permanent footprint of either station. Adding the stations will add impervious surfaces and increase stormwater runoff. No impacts are anticipated on floodplains because the Project will follow applicable agency requirements for flow control.

4.4.5.4 Cumulative Impacts

Construction of the Project in combination with other past, present, and reasonably foreseeable future actions, will convert undeveloped areas to developed ones, resulting in minimal redirection of flood flows and net rise. Implementation and development of BMPs will minimize or avoid the Project's contribution to cumulative effects on floodplains.

4.4.6 Avoidance, Minimization, and Mitigation Measures

Brightline West will implement BMPs prior to construction to minimize the temporary effects on floodplains, and construction equipment and materials will not be stored within the floodplain. Brightline West will return any temporary effects on floodplains to preconstruction conditions. No additional measures are necessary.

During operation, no mitigation is required because minimal changes to floodplains will occur. Brightline West will confirm this at the final design stage when location hydraulics studies are completed for all bridges.

4.5 Biological Resources

Biological resources are valued for their intrinsic, aesthetic, economic, and recreational qualities, and include fish, wildlife, and plants, and their respective habitats. Typical categories of biological resources include terrestrial and aquatic plant and animal species, game and non-game species, special status species (State or Federally listed threatened or endangered species, marine mammals, or species of concern, such as species proposed for listing or migratory birds), and environmentally sensitive or critical habitats.

The following analysis is based on the Critical Habitats and Threatened and Endangered Species Technical Report prepared by HNTB and included as Attachment F to this EA. Government-to-government consultation has been undertaken by FRA and tribal entities that may be affected by the Project. Habitats, plants, and wildlife of interest to indigenous people include those that contribute to the communities' cumulative body of knowledge and to beliefs regarding relationships with the environment as well as those related to resource use practices. The Critical Habitats and Threatened and Endangered Species Technical Report (Attachment F) contains more information regarding tribal consultation of biological resources.

4.5.1 Regulatory Setting

The following existing Federal regulations and regional plans are relevant to Federally protected species and their associated habitats:

- **Federal Endangered Species Act of 1973 (ESA; 16 U.S.C. Sections 1531–1543), as amended**: The US Fish and Wildlife Service (USFWS) has jurisdiction over ESA-listed plants, animals, and fish and their critical habitats. For the Project, FRA is the lead Federal agency responsible for compliance with Section 7 of the ESA. Section 7 requires FRA to consult with USFWS to ensure the Project will not jeopardize the continued existence of an endangered or threatened species or destroy or adversely modify critical habitat. Critical habitat is defined in the ESA, Section 3(5)(A), as:

  > *Specific areas within the geographic area occupied by the species, at the time it is listed . . . on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require specific management considerations or protection.*

  Critical habitat is further defined by the ESA as:

  > *Specific areas outside the geographical area occupied by the species at the time it is listed . . . upon a determination . . . that such areas are essential for the conservation of the species.*

On July 15, 2022, FRA submitted a Biological Assessment to USFWS and requested initiation of formal consultation under Section 7 for the Project. To conclude formal consultation USFWS will issue a Biological Opinion for the Project.[21]

- **Migratory Bird Treaty Act of 1918 (MBTA; 16 U.S.C. Part 703), as amended:** The MBTA authorizes the United States Secretary of the Interior to protect and regulate the taking of migratory birds. The MBTA protects migratory birds, their occupied nests, and their eggs and prevents the taking of birds listed as "migratory." The MBTA defines migratory birds broadly and includes common songbirds, waterfowl, shorebirds, hawks, owls, eagles, ravens, crows, native doves and pigeons, swifts, martins, and swallows. Executive Order 13186 (January 10, 2001) directs Federal agencies taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to work with USFWS to develop and implement an MOU that will promote the conservation of migratory bird populations.

[21] Preliminary effects determinations have been made based on analysis presented in the Biological Assessment for this EA. These determinations will be reviewed by USFWS though formal consultation.

- **Bald and Golden Eagle Protection Act (BGEPA; 16 U.S.C. Section 668-668c)**: The Bald and Golden Eagle Protection Act (BGEPA) prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions. Under the BGEPA, it is a violation to "…take, possess, sell, purchase, barter, offer to sell, transport, export or import, at any time or in any manner, any bald eagle commonly known as the American eagle, or golden eagle, alive or dead, or any part, nest, or egg, thereof…." Under the BGEPA "take" is defined as to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, and disturb. "Disturb" is further defined as follows:

  > *to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior*. (50 CFR 22.6).

- **Executive Orders 13112 and 13751, National Invasive Species**: EO 13112 and EO 13751, Invasive Species, direct all Federal Agencies to prevent and control introductions of invasive nonnative species, and to not authorize or carry out actions that are likely to cause or promote invasive species. Federal Agencies should minimize the economic, ecological, and human health impacts caused by invasive species infestations. The EOs require that NEPA process include determinations of the likelihood of introducing or spreading invasive species as well as a description of measures being taken to minimize their potential harm.

4.5.2 Study Area

The study area is defined as the LOD, which represents the geographic boundary where Project-related activities could directly impact biological resources. This area includes the limit of direct ground disturbance, including permanent impacts, and temporary disturbance that may occur during construction, based on preliminary engineering design plans. Maps in Appendix A of the Critical Habitat and Threatened and Endangered Species Technical Report (Attachment F) show the LOD. An approximately 0.5-mile buffer around the LOD was used to evaluate indirect impacts of the Project. Within this buffer, special attention was paid to the previously-mapped wildlife and plant habitats described in Sections 4.3 and 4.4 of the Critical Habitat and Threatened and Endangered Species Technical Report (Attachment F).

4.5.3 Methodology

In preparing its analysis, FRA conducted literature and database reviews, compiled of available information including maps, and analyzed potential direct impacts on ESA-listed species and designated critical habitats. This qualitative analysis considers the potential direct and indirect biological impacts of the Project on the communities within San Bernardino County, and the cities of Victorville, Hesperia, Rancho Cucamonga, and Fontana.

The following available environmental documentation was utilized to assess the likelihood of plants, animals, and suitable habitat presence in the study area:

- Official List of Species and Critical Habitats (USFWS 2022)

- Information for Planning and Consultation (IPaC; USFWS 2022) – Data regarding ESA-listed species and locations of designated critical habitat
- The California Natural Diversity Database (CNDDB 2022) –Mapped information on plant and animal species locations
- California Wildlife Habitat Relationship (CWHR) System –System that provides information on wildlife habitat types

Spatial distribution of wildlife habitat types was obtained from two available mapped sources:

- Wildlife habitats mapped by the Desert Renewable Energy Conservation plan (Menke et al. 2013) covering Section 1 and Section 2
- Wildlife habitats mapped by South Coast polygon from CALVEG (USFS 2020) covering Section 2 and Section 3

In accordance with Federal requirements, State-protected sensitive, threatened, or endangered species or State-protected sensitive habitats were not evaluated for this Federal interstate transportation project. No local agency information regarding sensitive plants or animal species was reviewed for this report. No field surveys or other field studies were performed for this analysis. Supplemental field studies will occur as part of pre-construction activities to evaluate the condition of mapped wildlife habitat.

Conservation areas were identified based on a review of the California Conservation Easement Database (CCED), San Bernardino County parcel information, other maps, and information provided by others. The CCED database provides information on easements held by trusts, non-profit organizations, local jurisdictions, and State and national government agencies (CALANDS 2022). Polygons of identified conservation areas were transferred to a single GIS layer and overlaid on wildlife habitat base maps for analysis.

4.5.4 Affected Environment

The affected environment includes wildlife and plant habitats shown in Table 30 through Table 33. For a full narrative description of wildlife and plants present in the affected environment, refer to Section 5 of the Critical Habitats and Threatened and Endangered Species Technical Report (Attachment F). Herbs, grasses, shrubs, trees and wildlife species that may contribute to essential practices of local Federally Recognized Tribes are present in the affected environment. Table 16 and Table 17 in the Critical Habitats and Threatened and Endangered Species Technical Report (Attachment F) provide a sample of the plants and wildlife, respectively, and are listed by the wildlife habitat type in which they may occur.

Table 30. Area of Wildlife Habitat

Wildlife Habitat Type	Habitat Code	Total Area (acres)
Alkali Desert Scrub	ASC	4.46
Annual Grassland	AGS	18.88
Barren	BAR	4.57
Chamise-Redshank Chaparral, Mixed Chaparral	CRC, MCH	3.19
Coastal Scrub	CSC	15.31
Desert Riparian	DRI	9.99
Desert Scrub	DSC	204.17
Desert Scrub, Desert Wash	DSW, DSW	1.38
Desert Wash	DSW	44.16
Joshua Tree	JST	0.35
Juniper	JUN	2.82
Mixed Chaparral	MCH	134.59
Riverine	RIV	14.98
Sagebrush	SGB	22.02
Urban	URB	2,415.81
Valley Foothill Riparian	VRI	1.94
Total		**2,899.81**

Source: USFWS 2022

Table 31. ESA-Listed Plant Species Potentially Present

Species Name	Federal Status	Suitable Habitat Likely Present
Plants		
Santa Ana River woolly-star (*Eriastrum densifolium* ssp. *Sanctorum*)	Endangered	Yes
Slender-horned spineflower (*Dodecahema leptoceras*)	Endangered	Yes

Source: USFWS 2022

Table 32. ESA-Listed Wildlife Species Potentially Present

Species Name	Federal Status	Suitable Habitat Likely Present
Amphibians		
Arroyo (southwestern) toad (*Anaxyrus californicus*)	Endangered	Yes
Birds		
Coastal California gnatcatcher (*Polioptila californica californica*)	Threatened	Yes
Least Bell's vireo (*Vireo bellii pusillus*)	Endangered	Yes
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Endangered	Yes
Western yellow-billed cuckoo (*Coccyzus americanus*)	Threatened	Yes
Mammals		
San Bernardino Merriam's kangaroo rat (*Dipodomys merriami parvus)*	Endangered	Yes
Reptiles		
Desert tortoise (*Gopherus agassizii*)	Threatened	Yes

Source: USFWS 2022

Table 33. USFWS-Designated Critical Habitat Present

Species Name	Federal Status	Location in Study Area
Critical Habitat		
Arroyo (southwestern) toad critical habitat	Designated	Cajon Canyon
Southwestern willow flycatcher critical habitat	Designated	Mojave River
San Bernardino Merriam's kangaroo rat critical habitat	Designated	Lytle Creek and Cajon Wash

Source: USFWS 2022

4.5.4.1 Bald and Golden Eagles and Migratory Birds

Migratory birds pass through the affected environment in fall and spring along the Pacific Flyway. The Pacific Flyway migratory corridor extends from Alaska to the southern tip of South America and includes the entire width of California. Appendix B of the Critical Habitat and Threatened and Endangered Species Technical Report (Attachment F) provides a list of the

migratory birds known to use the affected environment and provides information that indicates when these species are likely to be present and their nesting season (AKN 2022). Habitats with cover and water sources are critical stop-over points for migrating birds. In the affected environment, the riparian habitats of the Mojave River, Cajon Canyon, Cajon Wash, and Lytle Creek provide a vital link for migratory birds.

Bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) are large raptors present in the affected environment. Breeding adult pairs, non-breeding juveniles, and subadult eagles may occur as residents and as transient migrants.

Migratory birds of conservation concern warrant special attention and are of concern throughout their range. Birds of conservation concern within the affected environment include the following: Allen's hummingbird (*Selasphorus sasin*), black-chinned sparrow (*Spisella atrogularis*), California thrasher (*Toxostoma redivivum*), Cassin's finch (*Carpodacus cassinii*), Clark's grebe (*Aechmophorus clarkii*), common yellowthroat (*Geothlypis trichas sinuosa*), Costa's hummingbird (*Calypte costae*), Lawrence's goldfinch (*Carduelis lawrencei*), long-eared owl (*Asio otus*), Nuttall's woodpecker (*Picoides nuttallii*), oak titmouse (*Baeolophus inornatus*), olive-sided flycatcher, (*Contopus cooperis*), rufous-winged sparrow (*Aimophilia carpalis*), tricolored blackbird (*Aeglaius tricolor*), and wrentit (*Chamaea fasicata*). Appendix B of the Critical Habitats and Threatened and Endangered Species Technical Report (Attachment F) provides information on migratory birds and indicates when the above migratory species are likely to be present in the affected environment each year.

4.5.4.2 Conservation Areas

Seven conservation areas occur within 1 mile of the study area (Table 34). Locations of conservation areas are shown in Figure 8. In total, conservation areas cover approximately 1,000 acres in the vicinity of the Project. None of these areas overlap with Caltrans right-of-way. Some of the conservation areas are also within designated critical habitat.

Table 35 summarizes wildlife habitat types present at each conservation area within 1 mile of the study area. Most conservation-area parcels listed in the table include a least a small portion, if not more, of Urban wildlife habitat.

Table 34. Summary of Conservation Areas Within 1 Mile of the Study Area

In Vicinity of Study Area	Parcel Name	Administrator	Area (acres)
1 – High Desert	Wildlands Conservancy	The Wildlands Conservancy	96
2 – Cajon Pass	Kane Ranch	Rivers and Lands Conservancy	27
2 – Cajon Pass	Cajon Canyon 1	San Manuel Band of Indians	26
2 – Cajon Pass	Cajon Canyon 2	The Wildlands Conservancy	4
3 – Greater Los Angeles	Lytle Creek	CDFW Owned and Operated Lands	63
3 – Greater Los Angeles	Glen Helen Regional Park	San Bernardino County	399
3 – Greater Los Angeles	Lytle Creek Ranch Development Proposed Conservation Area	Lytle Creek Ranch Development	394

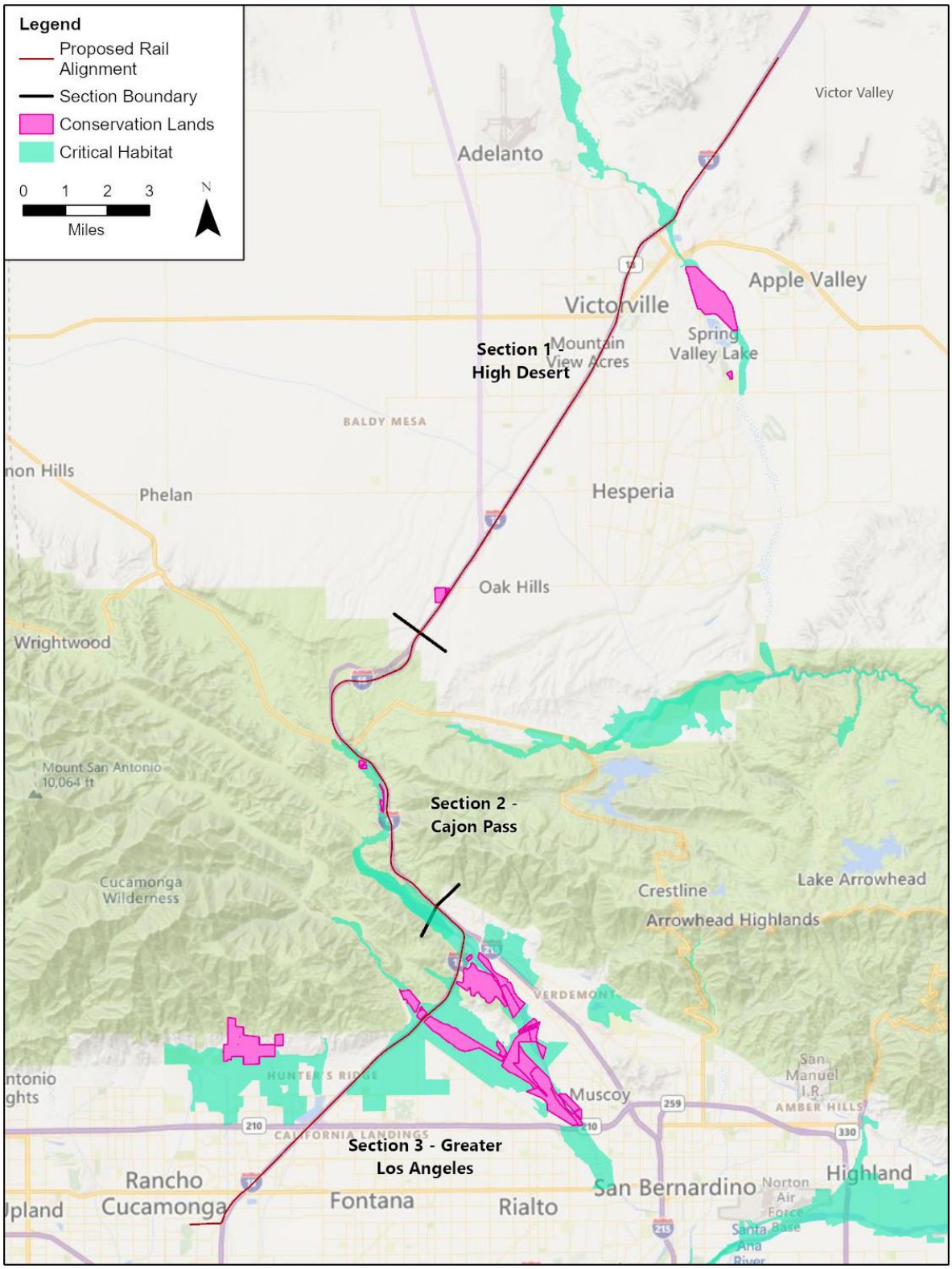
In Vicinity of Study Area	Parcel Name	Administrator	Area (acres)
Total area within 1 mile of study area proposed for or under conservation			**1,009**

Source: HNTB 2022

Table 35. Wildlife Habitat Types Present in Conservation Areas Within 1 Mile of the Study Area

Habitat Type	Area Within Conservation Areas (acres)						
	Lytle Creek Ranch	Kane Ranch	Glen Helen County Park	Lytle Creek Ranch (proposed)	San Manuel Band of Indians	The Wildlands Conservancy	Total
Annual Grassland			7.5	0.2			7.7
Barren	0.0		4.3	33.9			38.2
Desert Riparian		7.7			1.8		9.5
Desert Scrub		6.5			4.4	19.4	30.3
Desert Wash	57.8		13.8	165.4			236.9
Joshua Tree						9.5	9.5
Juniper						14.7	14.7
Lacustrine			6.3				6.3
Mixed Chaparral		1.1	201.9	4.4	8.8	33.8	249.9
Riverine	1.2		0.5	161.0			162.7
Urban	4.1	11.7	164.8	16.2	10.1	23.0	229.9
Valley Foothill Riparian				6.8			6.8
Total	**63.0**	**27.0**	**399.1**	**387.9**	**25.0**	**100.3**	**1,002.5**

Source: HNTB 2022



Source: HNTB 2022

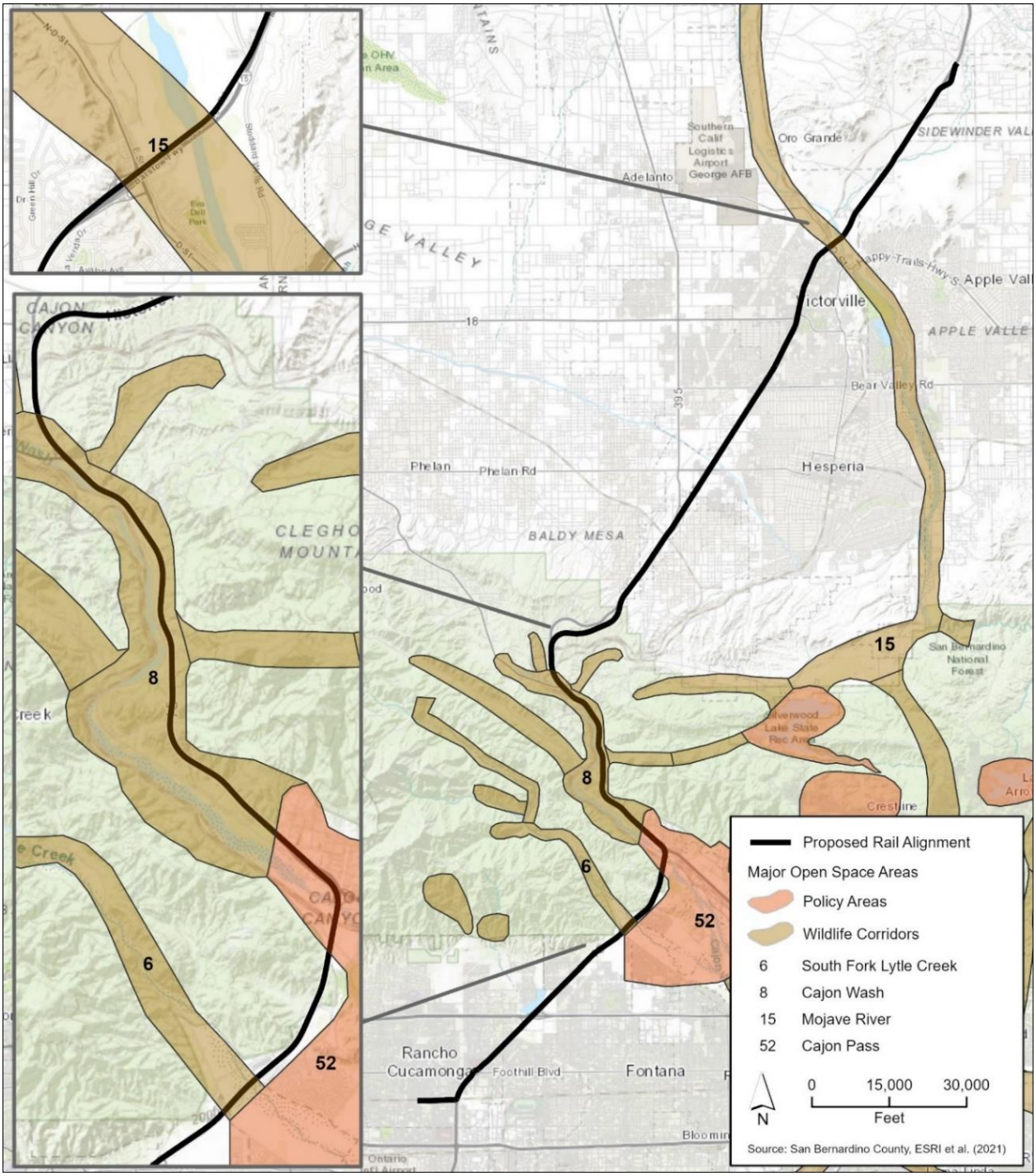
Figure 8. Critical Habitat and Conservation Lands in the Affected Environment

4.5.4.3 Habitat Connectivity and Wildlife Movement

FRA identified several wildlife corridors within the affected environment. Corridors where wildlife move between larger habitat patches are generally referred to as habitat linkages or wildlife movement corridors. They allow for short-term movements, long-term dispersal, or one time emigration. Wildlife movement corridors allow species to travel through a landscape and may serve as core habitat for some species. The existing I-15 highway corridor is a barrier to wildlife movement except in locations where existing culverts or bridge structures enable wildlife movement. The California Department of Fish and Wildlife (CDFW) has also designated the I-15 corridor through Cajon Pass as a Priority Barrier to Habitat Connectivity (CDFW, 2020). A wildlife movement corridor occurs along Cajon Canyon, linking the San Bernardino Valley and the Mojave Desert (generally north-south direction). I-15 is within and parallels this corridor. Wildlife crossing east-to-west in the mountains through Cajon Canyon must cross I-15 and four active freight rail lines. The Mojave River is a known wildlife corridor and I-15 crosses above the river corridor.

San Bernardino County mapped major wildlife corridors and wildlife focused policy areas, including the location of the north-south wildlife corridors through Cajon Canyon (Figure 9). Policy areas on the figure indicate locations where San Bernardino County wildlife management policies have been applied due to the presence of Federally designated critical habitat and assumed presences of sensitive species.

Wildlife corridors allow for short-term movements, long-term dispersal, or one time emigration. Wildlife movement corridors allow species to travel through a landscape, or they may serve as core habitat for some species. Wildlife corridors are critical to allowing safe travel for large mammals and predator species that travel large distances to find mates enabling genetic diversity essential to maintaining species which are widely-spread.



Source: HNTB 2022

Figure 9. Wildlife Corridors in the Project Area, as Mapped by San Bernardino County

4.5.5 Environmental Consequences

This section addresses impacts from the Project on biological resources. Potential impacts to species can include: long-term or permanent loss of species; impacts to special status species (e.g., species proposed for listing, migratory birds, bald and golden eagles) or their habitats; substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations; or impacts on a species' reproductive success rates, natural mortality rates, non-natural mortality (e.g., road kills and hunting), or ability to sustain the minimum population levels required for population maintenance. Measures will be incorporated into the Project to avoid, minimize, or mitigate potential adverse impacts. These measures are discussed in detail in Section 4.5.6.

4.5.5.1 No Build Alternative

The No Build Alternative will involve no action to create a passenger HSR system in the median and immediately alongside I-15 between Victor Valley and Rancho Cucamonga. The existing I-15 corridor will remain operational without improving the major points of congestion or transportation capacity deficiencies along the highway. The No Build Alternative will not result in temporary or permanent impacts on ESA-listed species and their habitats or on designated critical habitat because no activities or construction will occur.

4.5.5.2 Construction of Build Alternative

Construction of the railway may modify wildlife habitat directly and indirectly by impacting habitats, vegetation and soils from construction-generated dust, noise, hydrologic modifications, facilitation of invasive species, and changes in habitat elements that increase or decrease populations of predators or prey species. These impacts are discussed in further detail below. The Rancho Cucamonga and Hesperia passenger stations will be constructed in already disturbed urban environments where species and critical habitat is not likely to be present. As a result, construction of passenger stations will not have impacts on wildlife habitats, sensitive species, or critical habitats.

Wildlife Habitats

Many areas within the Caltrans right-of-way are already altered from suitable habitats and are therefore classified as Urban habitat. This habitat type consists almost entirely of developed areas such as highway, ramps, and other disturbed and unvegetated areas adjacent to I-15 (refer to Appendix A of the Threatened and Endangered Species Technical Report [Attachment F]). The Project will retain these types of developed and disturbed surfaces, resulting in no change to the quality or function of the Urban habitat type.

Construction of the Project will result in temporary and permanent impacts on wildlife habitat. Appendix A of the Threatened and Endangered Species Technical Report (Attachment F) provides maps of habitat types along the study area, showing areas of temporary and permanent impacts on habitat types.

Project construction will temporarily impact approximately 419 acres of native vegetation habitat not classified as Urban, as shown in Table 36. Construction staging and stockpiling, temporary ground disturbance (e.g., grading), and operation of heavy machinery may directly remove vegetation, smother it, or compact the soils such that vegetation can no longer persist

in the short-term. Changes in vegetation may result in temporary loss of wildlife habitat or degradation of habitat functions. For some habitat types, temporary impacts on soil and vegetation can permanently alter the habitat type to annual grassland.

Areas immediately adjacent to highways are routinely affected by tire and engine noise, trash, and maintenance activities. Occasionally road accidents travel into the adjacent landscape. These effects may result in changes in habitat structure and vegetation composition which can reduce habitat suitability for wildlife. Construction of the Project will result in temporary impacts on various habitat types.

Table 36. Temporary Impacts on Wildlife Habitat Types all Sections

CWHR Wildlife Habitat Type	Temporary Impact Area (acres)
Alkali Desert Scrub	3.93
Annual Grassland	16.47
Barren	3.98
Chamise-Redshank Chaparral, Mixed Chaparral	3.19
Coastal Scrub	15.14
Desert Riparian	9.04
Desert Scrub	167.55
Desert Scrub, Desert Wash	1.38
Desert Wash	43.59
Eucalyptus	0.04
Joshua Tree	0.35
Juniper	1.94
Mixed Chaparral	128.14
Riverine	14.38
Sagebrush	8.08
Urban	1,786.51
Valley Foothill Riparian	1.94
Total	**2,205.50**

Source: HNTB 2022

The time needed to recover Desert Riparian and Riverine habitat structure may be long and temporary impacts to these habitat types are considered permanent impacts for the purposes of this analysis. Therefore, an additional 22 acres of permanent impacts will occur on these sensitive habitats. Desert Scrub, Desert Wash, Joshua Tree and Juniper habitats are also slow to

recover following disturbance, and restoration is difficult. Temporary impacts of approximately 215 acres may be considered permanent where recovery will be long-term or impossible.

ESA-Listed Plant and Wildlife Species

Construction activities may affect slender-horned spineflower and Santa Ana River woolly-star. Impacts on these could occur if populations are within the limits of construction. Table 37 shows the ESA-listed plant species that will be affected by construction of the Project. Implementation of Mitigation Measures BIO-1, BIO-2, BIO-3, BIO-4, BIO-15, BIO-43, BIO-44, and BIO-45 will avoid, minimize, and mitigate adverse impacts to ESA-listed plant and wildlife species.

Table 37. ESA-Listed Plant Species Which May be Impacted by Project Construction

Common Name	Scientific Name	Status Under ESA	Habitat Types Present in Study Area
Slender-horned spineflower	*Dodecahema leptoceras*	Endangered	Annual grassland, coastal scrub, mixed chaparral
Santa Ana River woolly-star	*Eriastrum densifolium* ssp. *sanctorum*	Endangered	Coastal scrub

Source: HNTB 2022

Construction activities could introduce or spread invasive plant species to areas with native vegetative communities. Ground disturbing activities and operation of construction equipment could result in seed dispersal from soil movement. Changes in desert soil crust due to construction vehicles could loosen soils and facilitate seed dispersal. Weed species are adapted to soil disturbance and the abundant seeds are known to be readily transported to new locations by construction vehicles. The Project Sponsor will develop and implement Restoration Plans to restore areas of native vegetation that are temporarily disturbed by construction (Mitigation Measure BIO-27).

Invasive, non-native plant species can displace native plant populations and reduce wildlife habitat quality. Control of invasive species will be identified as an essential element of construction practices, which will mitigate the risk of facilitating invasive species establishment (Mitigation Measure BIO-27).

Construction activities such as vegetation clearing and excavation will expose soils and could result in increased wind erosion, creating construction-generated dust. Dust can affect vegetation over an area wider than the Project footprint and can negatively affect plant physiology and productivity. Impacts to individual plants that may contribute to essential practices such as traditional medicine could occur as a result of construction activities related to ground disturbance, such as clearing, grading, excavation, and filling, where these plants are present. The contractor will prepare and implement a Temporary Erosion and Sediment Control Plan, and Fugitive Dust Control Plan (Mitigation Measures BIO-11 and BIO-15).

Construction activities may impact sensitive wildlife including Arroyo toad, least Bell's vireo, southwestern-willow flycatcher, coastal California gnatcatcher, western yellow-billed cuckoo, and San Bernardino Merriam's kangaroo rat. Table 38 shows ESA-listed wildlife species likely to

be affected by Project construction. These effects are not considered significant at this time and will require consultation with USFWS to determine final findings of significance.

Pile-driving for bridge construction, if needed, could create additional noise impacts to avian species, migratory birds, and eagles as noise propagates in all directions including upward. Examples of noise effects on wildlife include startling, limiting an individual's ability to locate prey or habitat, reducing effectiveness of intraspecies communication, masking the presence of predators, and causing adults to abandon nests or burrows. Any work near or in water that creates noise could affect riparian and riverine habitats.

Construction activities such as vegetation clearing and excavation will expose soils and could result in increased wind erosion, creating construction-generated dust. Dust can negatively affect sensitive wildlife through ingestion of dust-laden vegetation. The contractor will develop and implement a Fugitive Dust Control Plan (Mitigation Measure BIO-15) to reduce impacts from fugitive dust.

Table 38. ESA-Listed Wildlife Species Which May be Affected by Project Construction

Common Name	Scientific Name	Status Under ESA	Habitat Types Present in Study Area
Arroyo (southwestern) toad	*Anaxyrus californicus*	Endangered	Annual grassland, coastal scrub, mixed chaparral, valley riparian
Least Bell's vireo	*Vireo bellii pusillus*	Endangered	Desert riparian, valley riparian, desert wash
Southwestern willow flycatcher	*Empidonax traillii extimus*	Endangered	Valley riparian, desert wash
Western yellow-billed cuckoo	*Coccyzus americanus*	Threatened	Valley riparian, desert riparian, riverine
Desert tortoise	*Gopherus agassizii*	Threatened	Annual grassland, desert scrub, juniper, Joshua tree
San Bernardino Merriam's kangaroo rat	*Dipodomys merriami parvus*	Endangered	Coastal scrub
Coastal California gnatcatcher	*Polioptila californica*	Threatened	Annual grassland, coastal scrub

Source: HNTB 2022

Several special-status wildlife species are assumed to be present in areas of suitable habitat (refer to Table 32). Construction-related activities could result in injury or mortality to these species if construction equipment crushed or trapped them in their burrows or removed foraging habitat or habitat linkages. The following mitigation measures will be implemented to avoid, minimize, and mitigate adverse impacts to the San Bernardino Merriam's kangaroo rat and its habitat: Mitigation Measures BIO-1, BIO-9, BIO-26, and BIO-32 through BIO-37. Mitigation Measures BIO-38 through BIO-42 will be implemented to reduce potential effects to desert tortoise.

Construction-related impacts on native vegetation communities will negatively affect foraging and nesting habitat for protected animal species. Construction activities (e.g., grubbing, grading, excavation, and driving off-road) could cause direct mortality of individuals of ESA-listed species, as heavy equipment could crush smaller animals. Mitigation Measures BIO-9, BIO-19, BIO-37, BIO-38, BIO-39, BIO-41, BIO-42, and BIO-47 will be implemented to avoid, minimize, and mitigate adverse impacts to foraging and nesting habitats.

Indirect mortality could result from a decrease in the suitability and stability of burrows. Reduced movement in and across the study area will affect foraging and breeding and dispersal of these species. Construction activities could destroy active nests, burrows, or young if construction occurs during a species' nesting or rearing season—potentially reducing the distribution of genetic material and resulting in long-term effects.

The presence of construction crews may attract and subsidize foraging generalist species, such as ravens and coyotes, and in turn, may temporarily increase predation on species present in the study area. Ravens and coyotes are known to prey on juvenile mammals, reptiles, amphibians, and birds, and increased predator densities could result in increased mortality of individuals. To mitigate subsidized predation, operational standards will be planned and implemented to maintain railway and stations free of food and habitat elements that facilitate opportunist predators (Mitigation Measures BIO-22, BIO-23, and BIO-27).

Construction noise could temporarily affect ESA-listed wildlife, such as limiting an individual's ability to locate prey or habitat, causing physical damage to the individual's auditory system, and causing adults to abandon nests or burrows. Increased noise effects wildlife by startling, reduced effectiveness of intraspecies communication, and masking the presence of predators.

Pile-driving for bridge construction could create additional areas of auditory effects, including to avian species, migratory birds, and eagles as noise propagates in all directions including upward. Any work near or in water that creates noise could affect riparian and riverine habitats. The contractor will prepare a detailed Noise Control Plan, comply with local regulations, and employ noise control measures to reduce noise from construction (Mitigation Measures NOI-1, NOI-2, and BIO-21).

Effects to Migratory Birds and Eagles

Cajon Pass is a known migratory flyway and Project construction impacts may increase noise, causing migratory species protected under the MBTA to avoid the area. Construction could disturb the nesting and foraging of migratory birds. Construction activities (e.g., clearing, grading, excavation, pile driving, and loss of habitat elements such as cover) could affect migratory birds.

Construction activities may disturb nesting eagles if nests are present within the affected area. Noise and construction activities may cause eagles to avoid foraging in the area. Golden eagles have been reported foraging in Cajon Canyon, but nesting sites are not known to be present. Noise and construction activities may cause raptors to avoid the area.

If construction occurs during the breeding season (generally between March 1 and September 15), nesting migratory birds could be disturbed by construction activities and related noise. Cajon Pass and the Mojave River provide key habitat areas during migration for resting. Construction could disturb the nesting and foraging of migratory birds. Project

construction impacts may increase noise, causing migratory species to avoid these key areas. Construction activities (e.g., clearing, grading, excavation, pile driving) and loss of habitat elements such as cover could affect migratory birds. As a result, birds may abandon nests, causing subsequent loss of eggs or young at active nests.

Construction effects on migratory birds can be mitigated by implementation of timing that prohibits disturbance to vegetation during the nesting season and by overall reductions to disturbance through avoidance of disruptive activities (Mitigation Measures BIO-2 and BIO-47).

Designated Critical Habitat

Critical habitat for arroyo toad, southwestern willow flycatcher, and San Bernardino Merriam's kangaroo rat could be directly affected by construction activities.

Construction will have permanent and temporary effects to designated critical habitat for the arroyo toad, San Bernardino Merriam's kangaroo rat and southwestern willow flycatcher by converting habitat to transportation use and during construction activities.

Rail line infrastructure will replace existing designated critical habitat for San Bernardino Merriam's kangaroo rat, southwestern willow flycatcher, and arroyo toad with transportation use, thereby resulting in the permanent loss of the habitat. The effects on the species will be limited to areas where they occur at the Mojave River, Cajon Canyon, Lytle Creek, and Cajon Wash. Temporary effects during construction will also occur in these areas and will require formal consultation with USFWS.

Any work near or in water could affect Riparian and Riverine habitat types directly, through hydrologic disruption or through decreased water quality by increased erosion and sedimentation. The contractor will prepare and implement a Temporary Erosion and Sediment Control Plan (Mitigation Measure BIO-11). Changes in hydrology can alter vegetation causing shade reduction and loss of organic input. Blockages or changes to drainage patterns may result in effects on sensitive wildlife habitats and associated wildlife species. Existing stormwater systems will be designed or redesigned to accommodate runoff from impervious surfaces. Drainage facilities will detain flows and will not contribute to additional flows in rivers, streams, and washes (Mitigation Measures BIO-16 and BIO-18).

Habitat Connectivity and Wildlife Movement

Linear transportation corridors such as I-15, are known to limit wildlife movement by blocking safe passage across landscapes. While the Project will develop rail within the I-15 median for most of the alignment the transportation corridor will be widened where rail will be developed adjacent to the side of the existing I-15 (side-running), and where highway lanes or ramp locations will be altered (multiple locations). As such, the Project will result in additional constraints on wildlife movement by reinforcing the lack of safe passage locations across landscapes. New culverts, bridges, and viaducts will align with any existing structures on I-15 to maintain a continuous wildlife crossing corridor (Mitigation Measure BIO-25).

Construction and operational noise could indirectly affect wildlife movement. Increased noise effects on wildlife could include startling, reducing effectiveness of intraspecies communication, and masking the presence of predators. Some wildlife species may alter their use or movement patterns during construction phases and then re-establish pre-project movement patterns and functions once temporary construction effects elapse. Construction

activities that would prevent wildlife from moving through the area are anticipated to occur over approximately 18 months in any single location.

Conservation Areas

Direct permanent effects on conservation areas are not anticipated to occur. The Project will be constructed within the existing Caltrans right-of-way, where no conservation areas are present. Construction activities would not result in permanent changes to access to conservation areas. Construction would not affect quality or quantity of plant resources available for essential practices in conservation areas.

Temporary indirect effects may occur to conservation areas that are near enough to be affected by construction noise. Pile-driving noise may affect wildlife in those areas. Construction noise could result in wildlife avoiding the area for the duration of construction, which would potentially reduce the availability of wildlife resources for essential practices on conservation lands. Pile-driving could occur over 12 to 18 months in any location where required for construction. Mitigation Measures NOI-1, NOI-2, and BIO-21 would be enforced to reduce construction noise and vibration.

Hydrologic Changes

Any construction work near or in water could affect Riparian and Riverine habitat types through hydrologic disruption or through decreased water quality by increased erosion and sedimentation. Blockages or changes to drainage patterns may result in effects on wildlife habitats and associated wildlife species.

Hydrologic changes can be reduced by minimizing the construction footprint in and near waterways. Implementing BMPs that address erosion and sediment control and monitoring those BMPs will further reduce potential effects on hydrology during construction (Mitigation Measures BIO-11 and BIO-16).

4.5.5.3 Operation of Build Alternative

Project operation may directly affect ESA-listed wildlife species, migratory birds, and critical habitats. The Hesperia and Rancho Cucamonga stations will operate in developed, urban environments. Operational effects of the passenger stations will not have direct effects on wildlife habitats, ESA-listed species, or critical habitats. Operation of the stations will have no effect on migratory birds or eagles. Indirect effects of station operations, such as subsidized predation are possible.

Wildlife Habitat

Ongoing operations and maintenance activities can directly or indirectly affect wildlife habitats that support sensitive species. Effects on ESA-listed plants could include mortality from incidental trampling or crushing caused by activities related to the maintenance of the rail.

The Project may result in permanent impacts on vegetation communities that serve as wildlife habitat. Appendix A of the Threatened and Endangered Species Technical Report (Attachment F) provides maps of habitat types in the study area, showing areas of permanent impact on habitat types along the alignment.

As shown in Table 39, approximately 64 acres of native vegetation habitat types will be permanently converted to transportation uses by the Project. Permanent impacts occur in a wide variety of habitat types; most of the area of permanent impact will be to Desert Scrub (37 acres). Where Desert Scrub is suitable, desert tortoise may be present.

Table 39. Permanent Impacts to Habitat Types

CWHR Wildlife Habitat Type	Permanent Impact Area (acres)
Alkali Desert Scrub	0.54
Annual Grassland	2.40
Barren	0.63
Coastal Scrub	0.18
Desert Riparian	0.95
Desert Scrub	36.62
Desert Wash	0.60
Juniper	0.88
Mixed Chaparral	6.45
Riverine	0.73
Sagebrush	13.58
Total	63.93

Source: HNTB 2022

ESA-Listed Plant and Wildlife Species

Table 40 shows the ESA-listed plant species that will be impacted by the Project. Creation of new ignition sources by the Project could result in indirect effects on biological resources through increased frequency of wildland fire. The Project will include new powerlines on catenary structures to provide traction power to power trains in a known high wind area. The Project design will include automatic power shutoff and other safety features that will work to cut power and prevent powerline failures from becoming ignition sources.

Landscaping and maintenance in the corridor during operation will be focused on avoiding invasive seed dispersal, controlling existing invasive populations, and restoring areas with native vegetation following invasive species removals (Mitigation Measure BIO-27).

Table 40. ESA-Listed Plant Species Likely to be Affected by Project Operation

Common Name	Scientific Name	Status Under ESA	Suitable Habitat Present in Study Area
Slender-horned spineflower	*Dodecahema leptoceras*	Endangered	Annual grassland, mixed chaparral, coastal scrub
Santa Ana River woolly-star	*Eriastrum densifolium* ssp. *sanctorum*	Endangered	coastal scrub

Source: HNTB 2022

Table 41 shows the ESA-listed wildlife species likely to be impacted by Project operation. The Project will add trains traveling up to 140 mph through the I-15 corridor, which will increase the likelihood of animal strikes along the corridor, particularly in areas where wildlife is abundant. As a result, the Project could directly increase mortality of individuals of special status species. For all at-grade portions of the alignment, exclusion fencing will be constructed parallel to the rail line for safety. This safety step also serves to trap animals that may have gained access to the rail corridor, potentially increasing the risk of wildlife strikes. By converting the highway median from a natural surface to impervious surface, the Project may remove access to resting habitat for wildlife attempting to cross I-15 and the Project corridor possibly causing increased wildlife mortality.

Table 41. ESA-Listed Wildlife Species Which May be Impacted by Project Operation

Common Name	Scientific Name	Status Under ESA	Habitats Present in Study Area
Arroyo (southwestern) toad	*Anaxyrus californicus*	Endangered	Annual grassland, coastal scrub, chemise-redshank, mixed chaparral, valley riparian
Least Bell's vireo	*Vireo bellii pusillus*	Endangered	Desert riparian, valley riparian, desert wash
Southwestern willow flycatcher	*Empidonax traillii extimus*	Endangered	Valley riparian, desert riparian
Western yellow-billed cuckoo	*Coccyzus americanus*	Threatened	Valley riparian, desert riparian, riverine
Desert tortoise	*Gopherus agassizii*	Threatened	Annual grassland, desert scrub, desert wash, juniper, Joshua tree
San Bernardino Merriam's kangaroo rat	*Dipodomys merriami parvus*	Endangered	Coastal scrub
Coastal California gnatcatcher	*Polioptila californica*	Threatened	Coastal scrub, annual grassland, mixed chaparral

Source: HNTB 2022

During operations, subsidized predation could occur due to human activities that may inadvertently provide food and/or shelter to generalist predators. The Project's catenary system could add perch locations that may be used by avian predators for nesting, such as ravens, which may support population increases and thus increase predation of special status species. Train strikes of avian and terrestrial species could increase supply of carrion to generalist predators and result in supporting larger populations. Increased predator numbers may add predation pressure to ESA-listed species in the area.

During operations subsidized predation would be avoided through design that has avoided or eliminated perches and potential nesting sites for generalist predators. Maintenance of the railway and passenger stations, including keeping trash picked up and implementing strong, wind-proof, covered trash collection areas is important to reduce subsidized predation. A regular maintenance program that identifies, implements, and reinforces good housekeeping will mitigate the potential indirect effect of human subsidized predation. Identified perching and nesting locations will be modified to make them no longer suitable (Mitigation Measure BIO-23).

As discussed above in Section 4.2.3, due to the existing noise environment, changes to existing noise levels during project operation are not anticipated to be significant, as noise from the train is anticipated to dissipate over 200 feet. No noise modeling was performed for wildlife receptors. Wherever noise sensitive species are present in the corridor, these species will be expected to alter behavior due to the additional operational noise from trains. Sensitive species may startle at passing train noise or completely avoid the area if the noise added by trains exceeds tolerance thresholds. Noise avoidance results in reduced habitat suitability and/or habitat area for species and may reduce the ability to migrate.

Combined with the effects of future development, effects of the Project may further reduce the suitability of remaining habitat to support listed species San Bernardino Merriam's kangaroo rat, coastal California gnatcatcher, slender-horned spineflower, and Santa Ana River woolly-star in the vicinity of Section 3, Greater Los Angeles. In this area, the North Fontana Conservation Program has identified conservation actions that work to protect and mitigate development on Riversidean Alluvial Fan Sage Scrub thereby providing support to these ESA listed species and associated habitats. Future development in the North Fontana area will be required to comply with the action plan and implementation plan developed under the conservation program, thus mitigating some cumulative effects.

Designated Critical Habitat

Operation of the rail line will occur adjacent to designated critical habitat for arroyo toad, San Bernardino Merriam's kangaroo rat, and southwestern willow flycatcher. Operation of the rail line will not directly affect adjacent designated critical habitat; indirect effects are possible.

As discussed above, changes to existing noise levels during project operation are not anticipated to be significant, as noise from the train is anticipated to dissipate over 200 feet. No noise modeling was performed for wildlife receptors and sensitive species may startle at passing train noise or completely avoid the area if the noise added by trains exceeds tolerance thresholds. Noise avoidance results in reduced habitat suitability and/or habitat area for species and may reduce the ability to migrate.

As discussed above, creation of new ignition sources by the Project could result in indirect effects on designated critical habitat through increased frequency of wildland fire. New powerlines on catenary structures in a known high wind area could inadvertently spark wildland fires in designated critical habitat. Portions of the Project that align within the existing highway median are not expected to contribute to potential fires. The Project design will include automatic power shutoff and other safety features that will work to cut power and prevent powerline failures from becoming ignition sources.

Effects to Migratory Birds

Operational effects on migratory birds could be direct if avian species use new structures in the rail corridor for nesting or foraging and bird strikes occur. Indirect impacts may occur to migratory birds in areas adjacent to the corridor due to increased noise, causing migratory species to avoid these areas. As stated, an increase in noise though train operations may result in exceedance of noise tolerance thresholds, birds may avoid adjacent areas causing a reduction in suitable nesting areas.

Operation of the HSR could result in mortality through collisions. Collisions could occur to any wildlife in the path of the train and will be of concern for migratory birds. A study recording bird-high-speed train collisions demonstrated an average mortality rate of 60 birds per kilometer (about 96 birds per mile) per year for all bird species when operation frequency was 53 trains per day (García de la Morena 2017). The study also showed that approximately 38 percent of bird crossings were of birds resting on some element of the infrastructure moments prior to arrival of the train. The study was based on filming and only included daylight hours, so an estimate of strikes during nighttime was not made. For the Project, it is not known if the location of proposed rail infrastructure in the highway median will attract birds resting while attempting to cross the highway, thus increasing the number of birds within striking distance, or if the highway itself will reduce the likelihood of perching on rail infrastructure. Based on the 2017 study, it appears bird strike mortalities are likely, but the number of strikes may differ significantly in magnitude from the study due to the different environmental, infrastructure, and operating conditions of the Project from the study's conditions.

Habitat Connectivity and Wildlife Movement

Linear transportation corridors are known to limit wildlife movement by blocking safe passage across landscapes. The I-15 corridor is an existing barrier to local and regional wildlife movement across the landscape throughout the proposed project alignment. The barrier is hazardous and somewhat pervious as wildlife are known to successfully cross at times.

Because the rail line is aligned with I-15, the Project will widen this existing linear transportation corridor at those portions that will lie outside the I-15 median, and in locations where the highway lanes will be widened to accommodate median-running rail. Widening the transportation corridor will reinforce the blockage of wildlife movement in areas where no suitable crossing was present. Fencing of the median for HSR safety will further reinforce the corridor to crossing and will make I-15 impossible for terrestrial species to cross safely.

Project design includes lengthening the existing I-15 culverts in the same locations, which will allow culverts to continue to function as wildlife crossings, if the additional length did not preclude this.

Operation of the Project would produce a new noise source at existing wildlife crossings. The existing environment is already noisy because of highway traffic and heavy rail operations, and it is not known if the additional intermittent noise of passing high-speed trains during operations would cause wildlife to avoid using the existing underpass or culvert crossings.

Maintenance activities are expected to be dispersed over time and location and are not expected to be of an intensity or duration to result in substantial impacts on wildlife movement or habitat use. Landscaping maintenance will be focused on avoiding invasive seed dispersal, controlling existing invasive plant populations where present, and restoring areas with native vegetation to reduce potential impacts of invasive species to wildlife and native plant communities.

Conservation Areas

Project operation would not change access to resources in conservation areas for essential practices to indigenous communities. Operation of HSR in the I-15 corridor would have no direct effects on conservation areas.

Operational noise would be present, but, throughout the median-running alignment, operational noise is assumed to be subsumed into the existing highway noise and, thus, would not affect noise levels at any conservation area within 1 mile of the Project.

4.5.5.4 Cumulative Impacts

The Project, in combination with other past, present, and reasonably foreseeable future actions, will convert undeveloped areas to developed ones, resulting in habitat loss, additional fragmentation in some locations, and potentially associated loss of common and special status plant and animal species.

The Project will potentially facilitate development pressure in the Apple Valley planning area (Town of Apple Valley) and the Desert Planning area (City of Victorville) surrounding the final 5 miles of the alignment and project terminus, where demand for commuter and recreational access to HSR transportation will increase as result of a new transportation element provided by the Project. The Apple Valley and Desert planning areas are currently largely undeveloped, and their development will result in loss of habitat supporting common and special status plants and animal species.

The town of Apple Valley is developing a multispecies Habitat Conservation Plans to guide development at a landscape level for the Apple Valley planning area in the vicinity of the project terminus. There is not currently a parallel planning effort for the Desert planning area of Victorville. Planning elements could be identified to mitigate cumulative effects, for example, by identifying conservation areas and protecting viable habitat linkages (Apple Valley 2022).

Implementation and development of conservation and mitigation approaches will reduce cumulative effects on habitats and plant and animal species. Preserving and conserving wildlife habitats and other biological resources will help to reduce cumulative effects on biological resources. Therefore, the Project would not considerably contribute to the cumulative impact.

4.5.6 Avoidance, Minimization, and Mitigation Measures

FRA will determine the final mitigation and compensation strategies[22] during the consultation with USFWS and will document those strategies in a Biological Opinion along with an Incidental Take Permit for ESA-listed species.

Brightline West will implement practicable measures to avoid and minimize impacts on threatened and endangered species and their critical habitats, such as those described below.[23] The general measures are followed by additional measures for specific species. These avoidance and minimization measures may be refined through formal consultation with USFWS and will be documented in a Biological Opinion.

Brightline West will implement more detailed *Habitat Restoration Plan(s)* discussing the details of soil and vegetation restoration following temporary construction disturbance at specific areas, along with a detailed *Capture and Translocate Plans for San Bernardino Kangaroo Rat* are provided under separate cover.

4.5.6.1 General Measures

Mitigation Measure BIO-1: Areas of Concern During Construction

Brightline West will ensure that biologists are present for construction activities along the following portions of the Project alignment:

- Mojave Desert vicinity: From the northern-most Project extent, continuing south to the I-15 Bridge over D/E Street in Victorville
  - Focusing on protection of southwestern willow flycatcher, monarch butterfly, least Bell's vireo, western yellow-billed cuckoo, and critical habitat for southwestern willow flycatcher.
- Cajon Canyon and Cajon Summit vicinity: From I-15 at Oak Hill Road to I-15 at Hall Ranch Road
  - Focusing on protection of southwestern willow flycatcher, least Bell's vireo, monarch butterfly, arroyo toad, and critical habitat for arroyo toad.
- Cajon Wash and Lytle Creek vicinity: From I-15 at Hall Ranch Road to I-15 at Summit Avenue
  - Focusing on protection of San Bernardino Merriam's kangaroo rat, coastal California gnatcatcher, ESA-listed plants, monarch butterfly, and critical habitat for San Bernardino Merriam's kangaroo rat.

Note that monarch butterfly, a candidate species for listing under ESA, may be present in any portion of the project area during nine months of the year.

No biologist is required during construction along portions of the alignment not listed above—for example, in urban areas of Rancho Cucamonga, Hesperia, and Victorville—although

[22] Compensation for minimized unavoidable impacts could include onsite restoration and/or creation, offsite restoration, acquisition of mitigation credits, acquisition and protection of conservation lands, or a combination of these methods.

[23] The following proposed mitigation measures for the Project were adapted and modified as appropriate from the *Revised Measures for Biological Opinion on DesertXpress High-Speed Train Project, Victorville, California to Las Vegas, Nevada* (USFWS 2021). General measures applicable to the entire Project.

Brightline West and its contractors may choose to utilize resource monitors/biological monitors at their discretion in these areas to ensure environmental compliance.

Mitigation Measure BIO-2: Avian Avoidance – Exclusion Areas and Timing

Certain types of construction activities are not to be commenced during bird breeding season at three separate locations along the alignment. The types of construction activities regulated are pile driving and ground disturbance (defined below). This avoidance mitigation measure does not apply to other construction activities or other locations.

Three separate locations of Avian Avoidance Exclusion Areas are shown on figures in Appendix A and are as follows:

- Area 1. Mojave River (Figure A-1)
- Area 2. Cajon Wash (Figure A-2)
- Area 3. Lytle Creek (Figure A-3)

Pile driving and ground disturbance activities are prohibited in the Avian Avoidance Exclusion Areas during closure dates, unless the work is initiated prior to the start of the closure period.

Project-related ground disturbance is defined as:

- Vegetation removal, including clearing and grubbing of vegetation,
- Site preparation including grading and establishment of construction access, or
- Grading, earth moving, stockpiling materials, excavation, and filling activities.

Table 42 summarizes the closure dates for the three Avian Avoidance Exclusion Areas.

Table 42. Avian Avoidance Exclusion Areas and Closure Dates

Location	Closure Dates	
	From	To
Area 1. Mojave River Crossing	March 15	September 30
Area 2. Cajon Wash	February 15	September 30
Area 3. Lytle Creek	February 15	September 30

USFWS has verified bird nesting dates, which are summarized for reference in Table 43.

Table 43. ESA-Listed Bird Species' Nesting Dates (information provided for reference)

Species	Breeding Habitat Used	Nesting Dates	Closure Dates		
			Cajon Wash	Lytle Creek	Mojave River
Coastal California gnatcatcher (*Polioptila californica californica*)	Coastal sage scrub and adjacent areas of chapparal, grassland, and riparian vegetation	February 15 to August 30[1]	Yes	Yes	No

Species	Breeding Habitat Used	Nesting Dates	Closure Dates		
			Cajon Wash	Lytle Creek	Mojave River
Least Bell's vireo (*Vireo bellii pusillus*)	Desert Riparian, Riverine, Valley Foothill Riparian	March 15 to September 30[2]	Yes	Yes	Yes
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Desert Riparian, Riverine, Valley Foothill Riparian	May 1 to September 1[3]	No	No	Yes
Western yellow-billed cuckoo (*Coccyzus americanus*)	Desert Riparian, Riverine, Valley Foothill Riparian	June 1 to September 1[4]	No	No	Yes

Notes:

1. USFWS. 2019. Section 7 Consultation on FEMA Disaster, Mitigation, and Preparedness Programs in Imperial, Inyo, Kern, Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties, California. File Number: FWS-CFWO-16B0293-18F1358. May 31.
2. USFWS. 1998. Draft Recovery Plan for the least Bell's vireo. U.S. Fish and Wildlife Service, Portland, Oregon.
3. USFWS. 2002. Southwestern Willow Flycatcher Recovery Plan, Appendices A through O. Albuquerque, New Mexico.
4. Laymon, S.A. 1998. Yellow-billed Cuckoo (Coccyzus americanus). In The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California. California Partners in Flight. Accessed August 2, 2022. http://www.prbo.org/calpif/htmldocs/species/riparian/yellow-billed_cuckoo.htm.

Mitigation Measure BIO-3:Conduct Mandatory Environmental Awareness Training Program

All Project staff, including Brightline West, contractors, operators, consultants, field personnel, and subcontractors, will attend a mandatory environmental awareness training program. The program will be developed and presented by knowledgeable biologists.

The curriculum will cover the following, at a minimum:

- Awareness information for each ESA-listed species potentially present and designated critical habitats in the project area
- The legal protection for each ESA-listed species, critical habitats, and the definition of "take" for listed species
- Measures to protect ESA-listed species during construction
- Review of the Project's environmental commitments, restoration steps, and mitigation requirements
- Explanation of the reasoning behind the restrictions on the construction, where restrictions exist
- Importance of avoiding ground-disturbing activities outside the designated work areas, closing construction gates, and visually surveying designated work zones prior to moving equipment
- Requirements for ground and general areas inspection prior to moving vehicles and equipment
- Explanation of the problem of generalist predators, such as common ravens (*Corvus corax*)

- Explanation of the importance of keeping construction areas free from trash and litter and avoiding subsidizing generalist predators
- Penalties for violation of Federal and State environmental laws

Training will be documented, including names of trainees and dates of completion. All trained workers will be given an identifying sticker to be worn on site.

Mitigation Measure BIO-4:Plan for and Conduct Biological Monitoring during Construction

At least 60 days prior to the start of Project-related ground disturbance that will occur within 200 feet of any occupied ESA-listed habitat or within any suitable habitat within designated critical habitat area, a written Biological Monitoring Plan (Plan) will be developed by Brightline West for approval by USFWS.

The Plan will discuss the type, locations, and timing of physical disturbance: (1) within 400 feet of any occupied ESA-listed species habitat, or (2) within suitable habitat within designated critical habitat areas.

The Plan will identify appropriate monitoring and reporting needs, including responsibilities, timing, and monitoring activities, and will identify coordination requirements, safety requirements, and communications, including points of contact. The Plan will be implemented during construction to ensure compliance with environmental commitments and will focus on commitments under the ESA.

Mitigation Measure BIO-5:Reporting

No more than 120 days after the completion of construction, the Biologist(s) will prepare a monitoring, restoration, and mitigation report for submission to USFWS for any construction areas: (1) within 400 feet of any occupied ESA-listed species habitat, or (2) within suitable habitat within designated critical habitat areas. The report will include the results of construction monitoring, photographs, and the type and locations of installed mitigation and restoration measures.

Mitigation Measure BIO-6:Photographs

The Biologist(s) will take pre- and post-construction photographs to document habitat conditions and alterations within the LOD during construction activities. Photographs will be dated, their locations recorded, and will be stored in a manner that will allow access for reporting purposes.

Mitigation Measure BIO-7:Designated Work Areas

In areas adjacent to sensitive resources, the contractor will restrict all work to designated work areas through the use of visible demarcation.

The following are locations of sensitive resources:

- Mojave Desert vicinity: From the northern-most Project extent, continuing south to the I 15 Bridge over D/E Street in Victorville
- Cajon Canyon and Cajon Summit vicinity: From I 15 at Oak Hill Road to I 15 at Hall Ranch Road
- Cajon Wash and Lytle Creek vicinity: From I-15 at Hall Ranch Road to I-15 at Summit Avenue

The contractor will avoid any unauthorized disturbance of native vegetation and sensitive resources outside the designated work area. Remnant habitat and existing stands of native vegetation will be identified and protected wherever possible.

During construction, the biologist, or their representative, will inspect the visible demarcation and shall help ensure that construction equipment, vehicles, and associated activities remain within designated construction work areas.

Mitigation Measure BIO-8:Noxious Weed Management During Construction

The contractor will perform a noxious weed survey prior to ground-disturbing activities. During and following construction, the contractor will avoid the introduction or spread of noxious weeds by performing weekly inspections and weed removal/control.

Mitigation Measure BIO-9:Avoid Injury to Wildlife

Supplies, equipment, and/or construction excavations where wildlife could hide (e.g., materials stockpiles, equipment in staging areas, and under vehicles) will be inspected by all construction crew members prior to moving or working on or with them to avoid killing or injuring wildlife. If wildlife is detected, the Biologist will be contacted.

Mitigation Measure BIO-10: Preserve Biological Material

The contractor and Brightline West will preserve any dead biological material encountered related to endangered species in the best possible state for later analysis. Preservation may include chilling and general protection from disturbance.

Mitigation Measure BIO-11: Prepare and Implement a Temporary Erosion and Sediment Control Plan

The contractor will prepare and implement a Temporary Erosion and Sediment Control Plan that identifies BMPs best suited for site conditions. The plan will meet applicable Caltrans standards.

Mitigation Measure BIO-12: Implement Spill Prevention, Control, and Countermeasures Plan

The contractor will develop and implement a Spill Prevention, Control, and Countermeasures Plan for construction activities. The potential for chemical spills or releases of contaminants, including any non-stormwater discharge to drainage channels, will be managed and the risk reduced. If a spill occurs, cleanup, containment, and response measures will be implemented. Any accidental spills will be immediately contained and reported to the California Office of Emergency Services (1-800-852-7650) and the National Response Center (1-800-424-8802).

Mitigation Measure BIO-13: No Storage of Construction Equipment or Materials within the 100-Year Floodplain

The contractor will not store construction equipment, chemicals, fuels, or lubricants within the 100-year floodplain of any water feature.

Mitigation Measure BIO-14: Equipment Maintenance and Refueling only in Designated Areas

All equipment maintenance and dispensing of fuel, oil, coolant, or any other such activities will be restricted to the designated staging areas outside of the Mojave River floodplain, Cajon

Wash, and Lytle Creek to prevent the release of hazardous substances into these sensitive areas.

Mitigation Measure BIO-15: Fugitive Dust Control Plan

The contractor will develop and implement a Fugitive Dust Control Plan that includes, at a minimum, the following:

- Reduce nonessential earth-moving activity under high-wind conditions when visible dusting occurs from surfaces due to wind erosion.
- Water will be used for stabilization of surfaces for fugitive dust control within 400 feet of areas occupied by ESA-listed species, or within suitable habitat within designated critical habitat areas.
- Periodic watering for short-term stabilization of disturbed surface area.
- Prevent track-out onto paved surfaces and clean up any tracked materials immediately.
- Stabilize graded site surfaces upon completion of grading when subsequent development is delayed or expected to be delayed more than 30 days, except when such a delay is due to precipitation that dampens the disturbed surface sufficiently to eliminate visible fugitive dust emissions.

Mitigation Measure BIO-16: Prevent Erosion and Sedimentation

The Project Sponsor will employ permanent stabilization measures upon completion of construction along washes and in other areas of potential erosion.

Mitigation Measure BIO-17: Minimize Impacts on Water Availability

The contractor will obtain water from existing commercially available water sources during construction. No new groundwater wells or surface water impoundments will be developed without Federal, State, and local permits as appropriate and legally required.

Mitigation Measure BIO-18: Drainage Systems Design

Existing stormwater systems will be designed or redesigned by Brightline West to accommodate runoff from impervious surfaces. Drainage facilities will detain flows and will not contribute to additional flows in rivers, streams, and washes.

Mitigation Measure BIO-19: Nesting Sites

All new utility lines and ancillary structures associated with the Project will be designed by Brightline West in a manner that will reduce the likelihood of nesting, especially by common ravens.

Mitigation Measure BIO-20: Incorporate Site-Specific Permanent Water Quality Treatment Devices

Permanent water quality treatment devices that comply with State and local requirements, as applicable, will be installed by the contractor to meet water quality objectives.

Mitigation Measure BIO-21: Construction Noise and Vibration Control Measures

The contractor will employ noise control measures to reduce noise from construction including:

- Use equipment with enclosed engines and/or high-performance mufflers.
- Locate stationary construction equipment as far as possible from noise-sensitive sites.
- Construct noise barriers, such as temporary walls or piles of excavated material, between noisy activities and noise-sensitive receivers.
- Route truck traffic along roadways that will cause the least disturbance to species.
- Avoid impact pile driving wherever possible. Use drilled piles or sonic/vibratory pile driver wherever possible. If impact pile drivers must be used near noise-sensitive receptors, implement a slow start and limit activity to daylight hours.

Mitigation Measure BIO-22: Implement Litter-Control Program

The contractor will implement a litter-control program during construction to avoid subsidizing (feeding) generalized scavengers, such as common ravens. The program will include:

- Use of covered, common-raven-proof trash receptacles
- Daily removal of trash from the trash receptacles
- Daily site inspections
- Proper disposal of trash in a designated solid waste disposal facility

Precautions will also be taken to prevent trash from blowing out of construction vehicles.

Mitigation Measure BIO-23: Implement Housekeeping to Deter Opportunist Predators

To mitigate subsidized predation, operational standards will be planned and implemented by Brightline West to maintain railway and stations free of food and habitat elements that facilitate opportunist predators.

Mitigation Measure BIO-24: Prohibited Items and Feeding of Wildlife

Feeding of wildlife will not be allowed. No pets or firearms will be allowed in the construction area.

Mitigation Measure BIO-25: Maintain Existing Wildlife Crossings

New culverts, bridges, and viaducts will align with any existing I-15 structures to maintain a continuous wildlife crossing corridor. Where the alignment of new culvert, bridges, or viaduct will deviate from alignment with existing I-15 structures, Brightline West will design and install appropriately sized crossing structures at appropriate intervals to allow for terrestrial wildlife to pass under the proposed alignment.

Mitigation Measure BIO-26: Avian Species Preconstruction Surveys

Surveys for the presence of suitable habitat for nesting avian species (least Bell's vireo, western yellow-billed cuckoo, and southwestern willow flycatcher) at locations of potentially suitable habitat within the temporary and permanent limits of disturbance (LOD) shall be conducted by the biologist prior to the start of construction. Surveys for the presence of suitable habitat for coastal scrub nesting avian species (coastal California gnatcatcher) at locations of potentially suitable habitat shall be conducted by the biologist prior to the start of construction. Coordination with USFWS is required on the result of the surveys.

Mitigation Measure BIO-27: Native Plant Community Restoration Plans

Brightline West will develop and implement Restoration Plans to restore areas of native vegetation that are temporarily disturbed by construction. Within Caltrans right-of-way, restoration will follow Caltrans requirements. Within Caltrans right-of-way that is also within designated critical habitat, restoration will include habitat structure consideration of each species. Initiation of restoration will occur within one year of the completion of construction at any location along the alignment, during the appropriate seasonal window. Replanting will not be delayed.

The Restoration Plan(s) will address:

- Restoration of site topography to preconstruction contours
- Soils amendments and ameliorate soil compaction
- Soil stabilization by compost, mulch, erosion blankets, or other as appropriate
- Irrigation

In consultation with the Caltrans District Landscape Architect, Brightline West will develop and implement permanent or temporary irrigation systems to supply water to replacement landscape plantings.

- Minimize Negative Effects of Nighttime Operational Lighting

Nighttime lighting at passenger stations and along the rail alignment will incorporate minimized light intensity, duration, and distribution and will utilize wildlife- and insect-sensitive spectrum lighting to reduce the negative effects of artificial nighttime lighting to sensitive species. Passenger stations will incorporate light and glare screening measures—for example, use downward-cast lighting—and will use motion sensor lighting, where appropriate.

- Remove Track-Killed Animals

Brightline West will promptly remove all track-killed animals along the operating rail line to reduce significant effects associated with food subsidies to generalist predators, such as common ravens.

- Remove Common Raven Nests

Brightline West will annually monitor catenary and ancillary structures, power poles, auxiliary buildings, passenger stations, and parking areas to identify and remove common raven nests outside of the nesting season. Once raven nesting sites are identified, Brightline West will take actions to block the site from raven reuse. In coordination with USFWS, adaptive management may be undertaken if the initial measures are unsuccessful to remove common raven nests.

- Operations of Passenger Stations

To mitigate potential subsidized predation, Brightline West will plan and implement operational standards for maintaining railway and passenger stations to not support generalist predators. Stations and other operations areas will always be free of food sources and will eliminate habitat support elements that facilitate opportunist predators.

- Invasive Plant Species Control During Operations

- Following the completion of construction activities, Brightline West will develop an Invasive Plant Species Monitoring and Control Plan for review and approval by USFWS. Invasive plant species in the temporary disturbed areas and operational areas will be monitored: Monthly from January through June for two growing seasons following construction

4.5.6.2 Arroyo Toad

Mitigation Measure BIO-28: Arroyo Toad Preconstruction Surveys

Prior to the start of construction, USFWS-approved Biologists will conduct surveys for the presence of suitable habitat for arroyo toad. Coordination with USFWS prior to implementation of any survey is required.

Presence/absence surveys will be conducted at all locations identified to have suitable habitat prior to the start of construction. Depending upon survey findings, additional protective measures during construction may be required.

Survey procedures will be consistent with survey protocols for arroyo toad (USFWS 1999a). To be reasonably confident that arroyo toads are not present at a site, at least six (6) surveys must be conducted with at least 7 days between surveys. Surveys will be conducted during the breeding season, which generally occurs from March 15 through July 1. Extreme weather conditions can cause variations in the breeding season; these conditions should be fully considered when developing a schedule of surveys.

4.5.6.3 Coastal California Gnatcatcher

Mitigation Measure BIO-29: Coastal California Gnatcatcher Preconstruction Surveys

Surveys for the presence of suitable habitat for coastal California gnatcatcher will be conducted by biologists prior to the start of construction by biologists that meet USFWS's minimum qualifications (USFWS 2019). Coordination with USFWS prior to implementation of any survey is required. Preconstruction surveyors will obtain ESA Section 10(a) permits, as necessary.

Prior to the start of construction, presence/absence surveys following standard protocols (USFWS 1997) will be conducted by biologists at all locations identified to have suitable coastal scrub habitat. Depending upon survey findings, additional protective measures implemented during construction (e.g., nest monitoring) may be required in the vicinity of coastal California gnatcatchers.

4.5.6.4 Least Bell's Vireo

Mitigation Measure BIO-30: Least Bell's Vireo Preconstruction Surveys

Prior to the start of construction, biologists will conduct surveys for the presence of suitable habitat for least Bell's vireo. Coordination with USFWS prior to implementation of any survey is required.

Presence/absence surveys will be conducted at all locations identified to have suitable habitat prior to the start of construction following standard protocols (USFWS 2001). Under normal circumstances, all riparian areas and any other potential vireo habitats should be surveyed at least eight times during the period from April 10 to July 31. Depending upon survey findings, additional protective measures during construction may be required (e.g., additional nest monitoring).

4.5.6.5 Southwestern Willow Flycatcher

Mitigation Measure BIO-31: Southwestern Willow Flycatcher Preconstruction Surveys

Surveys for the presence of suitable habitat for southwestern willow flycatcher will be conducted by biologists prior to the start of construction. Coordination with USFWS will occur prior to implementation of any survey.

Surveys will be implemented consistent with the U.S. Geological Survey's protocol for the southwestern willow flycatcher suitable habitat determinations (Sogge et al. 2010). Presence/absence surveys will be conducted at all locations identified to have suitable habitat prior to the start of construction. Surveyors will obtain ESA Section 10(a), permits, as necessary.

All riparian areas and any other potential southwestern willow flycatcher habitats should be surveyed over five periods during the time from May 15 to July 17. Depending upon survey findings, additional protective measures during construction may be required.

4.5.6.6 San Bernardino Merriam's Kangaroo Rat

Mitigation Measure BIO-32: San Bernardino Kangaroo Rat Restricted Work Areas

In collaboration with USFWS and prior to the start of any ground disturbance, the biologist will identify areas within the construction temporary and permanent LOD that may support San Bernardino Merriam's kangaroo rat. These areas will be called "SBKR restricted work areas" and would most likely be located along the Project alignment between the vicinity of Hall Ranch Road to the vicinity of Summit Avenue and include Cajon Wash, Lytle Creek, and terraces adjacent to these features. Areas of existing infrastructure and areas lying between I 15 highway lanes (median) in these vicinities would not be included in restricted work areas. Coordination with and approval by USFWS will occur to identify and refine the geographical boundary of the SBKR restricted work areas.

Mitigation Measure BIO-33: Conduct San Bernardino Merriam's Kangaroo Rat Preconstruction Surveys

The contractor or Brightline West will implement surveys for San Bernardino Merriam's kangaroo rat prior to initiation of ground-disturbing activities in the SBKR restricted work areas. Coordination with USFWS will occur prior to implementation of any surveys for San Bernardino Merriam's kangaroo rat. Surveyors will obtain ESA Section 10(a) permits, as necessary. Areas to be surveyed and results of surveys will be coordinated with USFWS.

Mitigation Measure BIO-34: Construction Monitoring and Reporting Requirements for SBKR Restricted Work Areas

For the duration of construction work within the SBKR restricted work area, the biologist(s) will:

- Review the previous week's construction activities and the upcoming week's construction activities to determine if there are areas that need additional inspection, fencing, or monitoring.
- Inspect the San Bernardino Merriam's kangaroo rat barrier fencing daily during active ground disturbance.

- Inspect San Bernardino Merriam's kangaroo rat barrier fencing weekly during any pause in construction of greater than 1 week.
- Search the construction footprint for any kangaroo rat sign early in the morning and prior to any ground-disturbing activities.
- Contact USFWS immediately if kangaroo rat sign is detected inside the barrier fencing.
- Provide a weekly written report of construction monitoring activities and findings to USFWS within 4 business days following the end of each week during ground-disturbing construction within the SBKR restricted work area.

Mitigation Measure BIO-35: San Bernardino Merriam's Kangaroo Rat Capture and Release Plans

The biologist will develop and implement San Bernardino Merriam's kangaroo rat Translocation Plans for USFWS review. All Translocation Plans shall be submitted to, and approved by, USFWS. USFWS shall have 30 days to review the SBKR Translocation Plans. SBKR Translocation Plans shall provide procedures and protocols to follow when SBKR are relocated from the restricted work areas.

SBKR Translocation plans shall include, but are not limited to:

- Clearance procedures for construction areas
- Relocation procedures
- Procedures for determining the health of the species
- Receiving areas
- Methods that would be used to manage and protect receiving areas
- Monitoring for short- and long-term success of the relocated species

Mitigation Measure BIO-36: Install and Maintain San Bernardino Merriam's Kangaroo Rat Barrier Fencing

Within any portion of the SBKR restricted work area and prior to initiating ground-disturbing activities, San Bernardino Merriam's kangaroo rat barrier fencing will be installed by the contractor between the construction activities and the surrounding area.

- San Bernardino Merriam's kangaroo rat barrier fencing will be constructed. San Bernardino Merriam's kangaroo rats can be excluded with fencing suitable for effective small mammal exclusion that uses anti-climb technology 30 to 36 inches high above ground with the bottom buried at least 12 inches deep with a 6-inch apron lying at 12 inches deep at a right angle.
- No gaps greater than 0.5 inch will be allowed.
- The biologist or the biologist's representative will be present when the fence is installed to ensure that no burrows or burrow entrances are covered by the apron of the barrier fence.
- The construction monitor will check the temporary barrier fencing at the close of each workday to ensure it is in place and properly maintained.

- Fence gaps greater than 0.5 inch will be repaired within 24 hours of detection.

Mitigation Measure BIO-37: Preconstruction Trapping

Prior to ground disturbance, the biologist(s) will conduct preconstruction trapping of SBKR inside exclusion fenced areas. Trapping will be conducted at each location until no San Bernardino Merriam's kangaroo rats are trapped for two consecutive nights. Initial trapping is required to be performed on the evening of the first day on which the barrier fence installation is complete.

Trapped San Bernardino Merriam's Kangaroo Rat Housing and Release

The biologist(s) will house and release all captured San Bernardino Merriam's kangaroo rats as soon as possible following trapping. The captured San Bernardino Merriam's kangaroo rats will be housed in suitable facilities until the released. The protocol for housing trapped San Bernardino Merriam's kangaroo rats will follow the holding/animal care requirements. Captured San Bernardino Merriam's kangaroo rats will be translocated by soft-release into appropriate receiving habitat.

4.5.6.7 Desert Tortoise

Mitigation Measure BIO-38: Desert Tortoise Potential or Actual Presence and Response

Desert tortoise is not likely to occur within the construction area; thus, preconstruction surveys are not required at this time. If desert tortoise sign, burrows, or individuals are determined to be, or possibly be, present in areas of ground disturbance, then Brightline West or their contractor will notify USFWS immediately.

In any situation where a desert tortoise places itself in danger (e.g., it enters a work area), Brightline West will take immediate action to protect the animal and contact USFWS for additional guidance. The construction contractor will immediately cease work in the vicinity that could injure or kill the animal. Brightline West will observe the animal until it is moved with USFWS approval from harm's way.

Mitigation Measure BIO-39: Design and Install Suitable Culverts

Where culverts are used, Brightline West will design and install desert tortoise-suitable culverts. Box culverts must be at least 3 feet on a side, and pipe culverts must be at least 3 feet in diameter. Box culverts are recommended over pipe culverts because desert tortoises are less likely to use box culverts as burrows. If a new culvert is to be tied to an existing culvert under I-15, Brightline West, with approval from USFWS, may forego these specifications if they are incompatible with the existing culverts.

Mitigation Measure BIO-40: Notification of Desert Tortoise Injury or Death

The contactor and or Brightline West will notify the Project's point of contact at the Carlsbad Office of USFWS by telephone or electronic mail within 3 days of desert tortoise injury or death. The notification must include the date, time, and location of the carcass; a photograph; cause of death, if known; and any other pertinent information. The circumstances surrounding the incident will be reviewed with USFWS to determine whether additional protective measures are required for the Project. Project activities may continue during the review, provided that the proposed protective measures have been, and continue to be, fully implemented.

Mitigation Measure BIO-41: Refer to USFWS Regarding Desert Tortoise

Construction crew members will refer all issues regarding the desert tortoise to the USFWS.

Mitigation Measure BIO-42: Provide Rock-Slope Protections

Placement and construction of rock-slope protections will require the interstitial spaces within rock-slope protection to be filled with substrate to prevent trapping of desert tortoises.

4.5.6.8 ESA-Listed Plant Species Protection

Mitigation Measure BIO-43: Listed Plants Preconstruction Surveys

Qualified botanists will conduct preconstruction surveys within suitable habitat for ESA-listed plant species prior to any ground disturbing activities.

Mitigation Measure BIO-44: Protect ESA-Listed Plant Populations

Prior to initiating ground-disturbing activities, the contractor will place temporary construction fencing around all ESA-listed plant species that occur within the TCAs. When ESA-listed plants are observed within TCAs, avoidance and minimization measures will be applied by Brightline West. Exclusionary areas will be signed for avoidance by construction equipment and personnel. Depending on the proximity of the ESA-listed plant populations to the construction work area, the plant populations will be monitored by Brightline West during and following construction to avoid significant effects.

Mitigation Measure BIO-45: Avoid Known Special-Status Plant Populations

To the extent possible, the Project will completely avoid areas with ESA-listed plant populations by designing viaduct piers outside such areas.

4.5.6.9 Monarch Butterfly

Mitigation Measure BIO-46: Provide and Support Pollinator and Nectary Sources

Pollinator plants and milkweed species supporting monarch butterflies must be included in plans for restoration and landscape areas.

4.5.6.10 Nesting Migratory Birds

Mitigation Measure BIO-47: Coordinate Construction Timing to protect Migratory Birds

In areas of suitable nesting habitats at the Mojave River, Lytle Creek, Cajon Wash, Cajon Canyon, and Cajon Summit, initial ground and vegetation disturbance during construction will be scheduled to avoid migratory bird nesting season, from March 1 to July 15, to avoid take under the MBTA. Appendix B of the Threatened and Endangered Species Technical Report (Attachment F) provides detailed information on which species and when migratory birds species will be present.

4.6 Energy Resources

An evaluation of energy resources provides a consideration of a project's use of energy supplies (such as coal for electricity; natural gas for transportation; and fuel for construction vehicles). Use of energy supplies might result from construction, operation, and/or maintenance of the Project.

4.6.1 Regulatory Setting

Executive Order 13693

EO 13693, "Planning for Federal Sustainability in the Next Decade," was signed March 19, 2015. EO 13693 introduces new requirements and expands upon requirements established by EO 13514, EO 13423, the Energy Policy Act of 2005 (EPAct 2005), and the Energy Independence and Security Act (EISA) of 2007. Some goals of EO 13693 include GHG emission reduction and reporting, energy conservation and renewable energy increases, and sustainable employee commuting and workplace travel, amongst others.

Executive Order 14052

EO 14052, "Implementation of the Infrastructure Investment and Jobs Act," was signed November 15, 2021. EO 14052 includes rebuilding America's roads, bridges, and rails. Goals of the policy include building infrastructure that is resilient and that helps combat the crisis of climate change and effectively coordinating with State, local, Tribal, and territorial governments in implementing these critical investments.

Victorville General Plan

The Victorville General Plan includes a number of policies and programmatic measures intended to ensure efficient energy use, including the following:

- Policy 7.2.2: Support energy conservation by using low-emission non-fossil fuel reliant vehicles through Implementation Measure 7.2.2.1 and Implementation Measure 7.2.2.2. Implementation Measure 7.2.2.1 proposes to convert all City owned vehicles to low-emission non-fossil fuel vehicles and continue to update City fleets to meet new and better low-emission technologies. Implementation Measure 7.2.2.2 proposes to require drought tolerant landscaping in all City public developments, including buildings, parks and street right-of-way.

Hesperia General Plan

The Conservation Element of the Hesperia General Plan provides decision makers and City staff a guide to set policy that sets the foundation for preservation of natural resources and promotes the environmental integrity of the City of Hesperia. The Conservation Element includes the following goals relevant to the Project:

- Goal CN-6: Provide programs and incentives to encourage residents, businesses, and developers to reduce consumption and efficiently use energy resources. Goal CN-6 is part of the Conservation Element of Hesperia's General Plan and will be applied through a variety of implementation policies. Some implementation policies include encouraging the use of green building standards, incentives for energy efficient projects, and exploring additional methods of reducing waste.

- Goal CN-7: Develop, promote, and implement policies to reduce and limit GHG emissions. Goal CN-7 is part of the Conservation Element of Hesperia's General Plan and will be applied through a variety of implementation policies. Some implementation policies include implementation of a climate action plan, preservation of air quality and land resources, and promotion of energy conservation.

Rancho Cucamonga General Plan

The Project is included in the Rancho Cucamonga General Plan, Mobility and Access chapter as part of the solution to providing for safe, enjoyable, and healthy accessibility within the city. The overall mobility needs discussed in the General Plan includes connecting residents to their employers, connecting residents to destinations within the city, and connecting the rest of the Inland Empire to Rancho Cucamonga.

San Bernardino County General Plan Renewable Energy and Conservation Element

The San Bernardino County General Plan is a collection of planning tools intended to guide future decisions, investments, and improvements throughout the county. In doing so, the General Plan aims to increase renewable energy use throughout the County, including the transportation sector.

4.6.2 Study Area

The energy study area includes the LOD depicted in Figure 1 because that is where energy will be used for this Project. The study area includes the cities of Victorville, Hesperia, and Rancho Cucamonga.

The energy study area consists of both State and local energy networks and, where relevant, energy that is bought and sold across state lines. In San Bernardino County in particular, available renewable resources include biomass fuels, wind, and solar energy. Most of the existing renewable energy production in the County occurs at large facilities that supply energy to the statewide power grid for consumption throughout California and beyond (San Bernardino County, 2016).

4.6.3 Methodology

FRA conducted a qualitative analysis to consider the potential direct and indirect impacts of the Project on energy consumption within San Bernardino County, and the cities of Victorville, Hesperia, and Rancho Cucamonga. Impacts on energy consumption were analyzed by assessing existing and projected energy consumption within the study area and comparing projected Project energy consumption with baseline and forecasted conditions. Information to support this analysis comes from the Air Quality Technical Report and Greenhouse Gas (Attachment B) and desktop survey of publicly available statewide and local energy use information.

4.6.4 Affected Environment

The affected environment includes both State and local energy networks and, where relevant, energy that is bought and sold across state lines. San Bernardino County and Southern California Edison (SCE) provide electricity to the study area.

Existing Transportation Energy Consumption

Transportation accounts for a major portion of California's overall energy consumption. In 2019, California fuel consumption for transportation ranged between 21.3 and 23.7 billion gallons per year, or between 58.2 and 64.8 million gallons per day (California Energy Commission, 2021).

San Bernardino currently produces approximately 9,047,735 megawatts of electricity per hour (MWh) per year, 2,800,954 of which come from renewable sources (Reese, 2022). According to the California Energy Commission, electricity consumption in the transportation sector is projected to increase to 12,000 gigawatt-hours (GWh) by 2030, a six-fold increase from approximately 2,200 GWh in 2017, mainly due to the growth of light-duty plug-in electric vehicles and increasing electrification in other transportation sectors (e.g., high-speed rail) (California Energy Commission, 2021).

According to the California Energy Commission, consumption of flex fuel (i.e., gasoline blended with ethanol or methanol fuel) is expected to increase to roughly 74 million gasoline gallons equivalent (GGE) by 2030, from roughly 21 million GGE in 2017. Consumption of hydrogen in the transportation sector is expected to increase to approximately 45 million GGE by 2030 from less than 1 million GGE in 2015 (California Energy Commission, 2021). More information regarding transportation energy consumption can be found in the Air Quality and Greenhouse Gas Technical Report (Attachment B).

4.6.5 Environmental Consequences

Impacts to energy resources include whether the Project would have the potential to cause demand to exceed available or future supplies of these resources.

4.6.5.1 No Build Alternative

The No Build Alternative will involve no action to create a passenger HSR system in the median of the I-15 highway between Victor Valley and Rancho Cucamonga. The existing I-15 corridor will remain operational without improving major points of congestion or transportation capacity deficiencies along the highway. The No Build Alternative will not result in construction activities or impacts; therefore, no direct temporary or permanent impacts related to energy resources will occur. Energy will continue to be consumed at similar rates but will gradually decrease over time due to State and Federal mandates regarding renewable energy and passenger vehicle fuel efficiency standards. This may be counterbalanced by projected increases in travel demand along the corridor over time. Refer to Section 4.12.5.1 for more information regarding No Build travel demand.

4.6.5.2 Build Alternative

Construction of Build Alternative

Energy consumption during construction of the Project will be largely associated with the use of petroleum to power construction equipment such as trucks and heavy machinery. These resources are generally non-renewable, but the construction methods and construction duration for the Project will be comparable to other similar projects. Construction of the Project will require electricity consumption to power some construction equipment. This energy consumption will be temporary, and this increase in consumption is not expected to exceed the

available supply as San Bernardino currently produces approximately 9,047,735 MWh/year (Reese, 2022). Therefore, the Build Alternative's construction impacts to energy resources are not anticipated to be significant.

Operation of Build Alternative

Once operational, the Project will be consistent with the local plans and policies regarding energy use outlined in Section 4.6.1. The main energy source for operation will be electricity to power the HSR trains. As detailed in the Air Quality and Greenhouse Gas Technical Report (Attachment B), the Project will require approximately 318,499 MWh/year of electricity to power the trains by 2045. While an increase in electricity will occur as a result of the Project, there is an adequate supply of electricity made available to power the Project as San Bernardino currently produces approximately 9,047,735 MWh/year (Reese, 2022). Additionally, this increase in electricity consumption will be partially offset by the overall reduction in fossil fuel consumption associated with Project-related VMT reduction, as discussed in Section 4.12.5. Therefore, operation of the Build Alternative will not have an impact on energy resources.

4.6.5.3 Cumulative Impacts

Construction of the Project, in combination with other past, present, and reasonably foreseeable future actions would result in temporary increases in energy demand. During construction activities, energy would be consumed in the production and transportation of construction materials and the operation and maintenance of construction equipment (indirect energy consumption). Energy used for construction is a one-time, nonrecoverable energy cost. Given the indirect nature of construction-related energy consumption, the cumulative energy needs would not require significant additional capacity nor significantly increase peak- or base-period demands for electricity from the electrical grid system.

With adherence to standard practices for the provision and relocation of utilities, direct utility conflicts from the construction of the Project, in combination with other reasonably foreseeable development in the region, would avoid cumulative impacts during construction, and would not result in a cumulative impact.

Operation of the Project, in combination with past, present, and reasonably foreseeable future projects, would not outpace the provision of energy resources and would reduce statewide long-distance city-to-city motor vehicle travel. Therefore, operation of the Project in combination with past, present, and foreseeable future actions would not result in a cumulative impact.

4.6.6 Avoidance, Minimization, and Mitigation Measures

No avoidance, minimization, or mitigation measures will be required for energy resources during construction or operation of the Project.

4.7 Aesthetic and Design Quality

Aesthetic and design quality deals broadly with the extent to which the Project would either: 1) produce light emissions that create annoyance or interfere with activities; or 2) contrast with, or detract from, the visual resources and/or the visual character of the existing environment. The presence of new infrastructure like overhead catenary wires, HSR trains, viaducts, and

stations are examples of facilities with the potential to create visual impacts. These impacts can include impacts to visual resources utilized by Federally-recognized Tribes. Visual impacts can be difficult to define and assess because they involve subjectivity.

The following analysis is based on the Visual Quality Technical Report prepared by HNTB, which is included as Attachment G to this EA.

4.7.1 Regulatory Setting

Consideration of potential impacts on the existing visual environment is informed by Federal rules and policies. The rules and policies focus on preserving visual quality, minimizing conflicts, improving aesthetic character, and mitigating adverse impacts. Some Federal regulations and policies that affect the visual impact analysis are listed below.

- Section 4(f) of the Department of Transportation Act of 1966 (23 U.S.C. 138 and 49 U.S.C. 303). The act became law on October 15, 1966. It is aimed to preserve the natural beauty of the countryside, public park and recreation lands, wildlife and waterfowl refuges, and historic sites.
- Federal Highway Administration (FHWA) Guidelines for the Visual Impact Assessment for Highway Projects (FHWA 2015, 1988).
- Bureau of Land Management (BLM) Manual H-8410-1 – *Visual Resource Inventory* (BLM 1986a).

In addition to these Federal regulations, visual analysis was informed by ongoing coordination with local Federally-Recognized Tribes.

4.7.2 Study Area

The Project will be built almost entirely within the Caltrans right-of-way for I-15. The study area for aesthetic and visual impacts is equivalent to the study Area of Potential Effects (APE) for cultural resources (refer to Section 4.11.2), because of the close connection between impacts on visual quality and impacts on historic properties; the visual setting of a historic property is often an important part of its historic integrity. The study area also includes culturally significant viewsheds identified through consultation with Federally-Recognized Tribes. These viewsheds are important visual elements of the traditional cultural environment.

4.7.3 Methodology

This qualitative analysis considers the potential direct and indirect visual impacts of the Project on the communities within San Bernardino County, and the cities of Victorville, Hesperia, Rancho Cucamonga, and Fontana. The methods used for this analysis incorporate key aspects of Section 4(f) of the Department of Transportation Act and of the visual guidance provided by BLM (1984, 1986a, 1986b) and FHWA (1988, 2015). Because Cajon Pass is an area of important cultural viewsheds that are tied to Native American tribal histories and educational traditions, FRA also incorporated ongoing consultation with local Federally-Recognized Tribes as part of the visual impact methodology.

The visual quality assessment of the Project considers: 1) views from the proposed railway and stations, and 2) publicly accessible viewpoints toward those Project elements. The available viewsheds from any given viewpoint depend on the surrounding topography and existing level

of development. Visual impacts of the Project were assessed by combining the severity of visual resource changes with anticipated sensitivity to visual changes. In general, intrusions into areas of high vividness, intactness, and/or unity will be considered adverse impacts, depending on the length of time a particular area is visible. Vividness, intactness, and unity are typically rated numerically and are considered together to determine overall visual quality. For the purposes of this assessment, the scale was simplified to three general levels of visual quality: low, average, and high.

The analysis team selected multiple key observation points (KOPs), based on BLM and FHWA guidance, for visual representation in this report. The KOPs were selected to represent different sections of the Project; to capture views from population centers and other areas with high concentrations of public views; and to highlight visual changes in areas of visual sensitivity identified by analysts through field surveys and outreach with local stakeholders and Tribes. For example, specific culturally important views of Coyote's Nose and Mormon Rocks were identified through close tribal coordination and consultation. These are included as KOP 7, 8, 9, and 13, and are referred to as "tribally-significant KOPs." The selection of KOPs also considered the public accessibility of the viewpoint, angle of observation, number of viewers, duration of time the Project is in view, relative bulk and scale of the structures, light conditions, and viewer groups that have high potential to be affected by the Project considering the viewers' visibility and sensitivity. Figure 10 shows the location of all 17 KOPs that were evaluated.

To compare views from KOPs before and after the Project is built, the team photographed existing views, then prepared visual simulations that depict the relative scale and extent of the Project from the available viewshed. Visual simulations were developed by superimposing building volumes onto photographs of the existing views using three-dimensional modeling and post-production techniques. These simulations do not incorporate specific design elements, which are not known at this time. Refer to Attachment G to this EA for figures showing the existing conditions and visual simulations at each KOP.

The team compared the KOP photographs and visual simulations to evaluate the potential changes to color, line, form, and texture of the viewshed. Potential visual impacts were determined by assessing changes to the visual resources and predicting viewer responses to those changes. Specifically, the team evaluated changes in vividness (the extent to which a landscape is memorable and associated with distinctive contrasting, and diverse visual elements), intactness (the extent to which a landscape is free from non-typical visual intrusions), and unity (the extent to which all visual elements combine to form a coherent, harmonious visual pattern). Where two out of these three elements of visual quality would be reduced by the Project for a given KOP, an impact to that KOP was said to occur.

4.7.4 Affected Environment

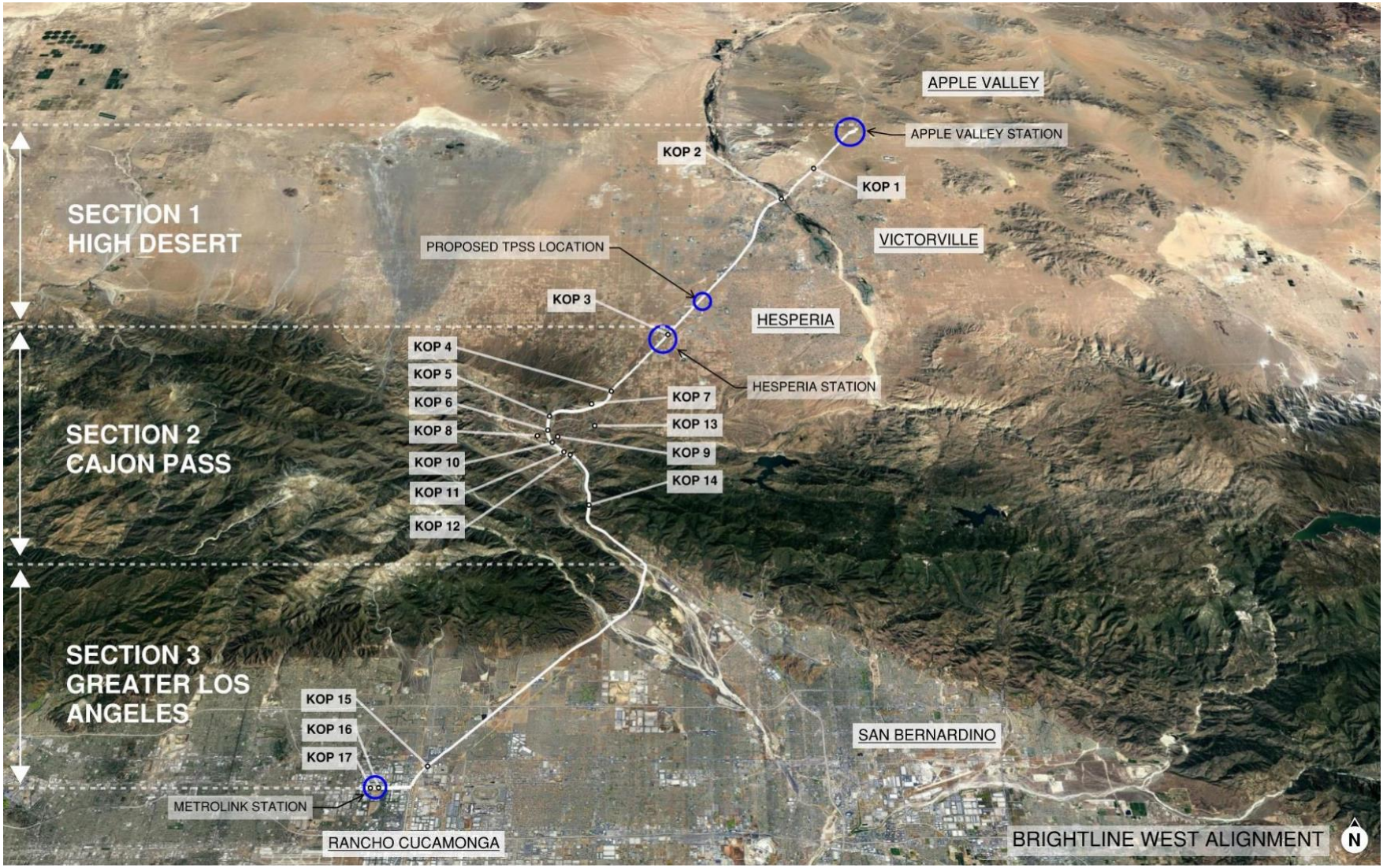
For this visual assessment, the affected environment is divided into three distinct sections based upon the landscape character of each.

Section 1 (High Desert) consists of a desert landscape with rolling terrain and desert vegetation separated by waterways and washes with associated riparian vegetation. The desert vegetation and colors of the soil and rocks provide unity and are important elements of the existing visual quality. Views of the distant mountains, which are snowcapped much of the time, the Mojave River, and variations in vegetation along the route add to the visual vividness in the study area.

The major viewer groups identified in Section 1 include motorists along the I-15 highway, bicyclists and pedestrians along frontage roads, and local Federally-Recognized Tribes. Overall visual quality for these viewers is relatively average to high because of the lack of visually intrusive, tall, vertical elements in the landscape, except in commercial areas and urban centers such as Victorville.

Section 2 (Cajon Pass) where the corridor transitions from the high desert into the mountainous passageway between the desert environment of Section 1 and the urban, built environment character of Section 3 (Greater Los Angeles). Section 2 is in the San Bernardino National Forest and mostly consists of mountainous topography with unique high desert vegetation and rock formations. The primary viewer groups identified in Section 2 include motorists traveling along the I-15 highway, bicyclists and pedestrians along frontage roads, recreational users at trailheads, and local Federally-Recognized Tribes. Overall visual quality tends to be average for these viewers because of the built elements in the landscape.

Section 3 begins in San Bernardino and ends in Rancho Cucamonga. It primarily consists of an urban, built environment with dense residential, commercial, and industrial development. The major viewer groups in Section 3 include motorists traveling along I-15, residential neighborhoods, patrons at nearby civic shopping centers, pedestrians and bicyclists traveling along frontage roads, and local Federally-Recognized Tribes. Overall visual quality for the anticipated primary viewer groups tends to be average or low.



Source: HNTB 2022

Figure 10. Locations of Key Observation Points

4.7.5 Environmental Consequences

4.7.5.1 No Build Alternative

The No Build Alternative will not develop a passenger HSR system along the I-15 highway between Victor Valley and Rancho Cucamonga. The existing I-15 corridor will remain operational, and the major points of congestion and transportation capacity deficiencies along the freeway will remain.

The No Build Alternative will not result in temporary impacts on visual quality because no construction will occur. In the long term, views of heavy traffic on parts of the freeway will be longer in duration because traffic congestion is expected to worsen without implementation of the Project. Longer periods of congestion will impact views for travelers on the freeway as well as those of people viewing the freeway.

4.7.5.2 Build Alternative

Temporary Construction Effects

Construction of the Project including railway, stations, and ancillary facilities will involve the use of heavy equipment, stockpiling of soils and materials, and other visual signs of construction. Construction will involve site preparation, foundation work, framing, structural construction, and finishing work. Changes in visual quality from construction will result from implementation of standard industry practices, including the use of temporary lighting, fences, barriers, stockpiling of materials, and the use of heavy equipment, and will result in temporary visual disturbances to natural visual resources, including unique landforms, views to distant mountains, and landscapes that have distinctive vegetation. Cultural resources identified in the study area (described in Section 4.11.2) would be sufficiently distant from construction activities such that no visual construction-period impacts are anticipated. No construction impacts to tribally-significant KOPs (KOP 7, 8, 9, and 13) were identified. Changes to visual quality will be limited through implementation of the avoidance and minimization measures summarized in Section 4.7.6.

Operation of Build Alternative

Railway

Motorists, bicyclists, pedestrians, recreational hikers, and members of local Federally-Recognized Tribes traveling along I-15, residential neighborhoods, trails, frontage roads will be the primary viewers of the railway in non-urbanized areas of the alignment. Near elevated segments of the railway such as bridges and elevated retaining walls, Project elements such as barriers, fences, bridges, piers, catenary poles and wires, and passing trains will detract from the visual quality of views from the freeway toward the undeveloped desert landscape with low vegetation, rolling hills, and distant views of the mountains. Most of the railway alignment will be at grade in the median of I-15 and will be flanked on both sides by freeway lanes and vehicular traffic. In this setting, the Project will be consistent with the existing transportation corridor and will cause minimal changes in visual quality.

Along a portion of the alignment through the desert north of the Mojave River, the viewsheds are designated by BLM as Class II and Class IV lands in the distance. The intent for lands

designated as Class II by BLM is to retain the existing character of the landscape, allowing for only low level of change to the characteristic landscape. The intent for Class IV-designated lands is to provide for management activities that require major modifications of the existing character of the landscape, and the level of change to the characteristic landscape can be high. Project elements will contrast in form and could contrast in color and texture with the natural desert environment and landforms. Because the Project would be located within an existing transportation corridor, overall changes to the existing visual environment would be minimal.

The Project will introduce new built elements to viewsheds in the study area, changing the views, and in certain cases, decreasing visual quality. Areas where new built elements have the potential to decrease visual quality include: where the rail structures are elevated and cross over the freeway, changing the views for motorists on I-15; where the rail structure is elevated and located parallel to the freeway, blocking or changing the viewshed to the distant mountains from vehicles along I-15; and in areas that are publicly accessible where the rail structures will alter the landscape character.

Visual quality changes at all 17 KOPs are summarized in Table 44.

Table 44. Summary of Visual Quality Changes at KOPs

Key Observation Point	Condition	Visual Quality Rank			
		Vividness	Intactness	Unity	Overall
Section 1					
KOP-1 Victor Valley	Existing	Average	**Average**	Average	Average
	Build Alternative	Average	**Low**	Average	Average
KOP-2 Victorville	Existing	Average	Average	Average	Average
	Build Alternative	Average	Average	Average	Average
Section 2					
KOP-3 Hesperia	Existing	Average	Average	Low	Average
	Build Alternative	Average	Average	Low	Average
KOP-4 Cajon Pass/San Bernardino NF	Existing	Average	Average	**Average**	Average
	Build Alternative	Average	Average	**Low**	Average
KOP-5 Cajon Pass/ San Bernardino NF	Existing	Average	Average	**Average**	Average
	Build Alternative	Average	Average	**Low**	Average
KOP-6 Cajon Pass/ San Bernardino NF	Existing	**High**	Average	**High**	**High**
	Build Alternative	**Average**	Average	**Average**	**Average**
KOP-7 Cajon Pass/ San Bernardino NF	Existing	High	Average	Average	Average
	Build Alternative	High	Average	Average	Average
KOP-8 Cajon Pass/ San Bernardino NF	Existing	High	Average	Average	Average
	Build Alternative	High	Average	Average	Average
KOP-9	Existing	High	Average	Average	Average

Key Observation Point	Condition	Visual Quality Rank			
		Vividness	Intactness	Unity	Overall
Cajon Pass/ San Bernardino NF	Build Alternative	High	Average	Average	Average
KOP-10 Cajon Pass/ San Bernardino NF	Existing	Average	Average	Average	Average
	Build Alternative	Average	Average	Average	Average
KOP-11 Cajon Pass/ San Bernardino NF	Existing	Average	Low	Average	Average
	Build Alternative	Average	Low	Average	Average
KOP-12 Cajon Pass/ San Bernardino NF	Existing	Average	**Average**	Average	Average
	Build Alternative	Average	**Low**	Average	Average
KOP-13 Cajon Pass/ San Bernardino NF	Existing	Average	Average	Average	Average
	Build Alternative	Average	Average	Average	Average
KOP-14 Cajon Pass/ San Bernardino NF	Existing	**High**	Average	Average	Average
	Build Alternative	**Average**	Average	Average	Average
Section 3					
KOP-15 Rancho Cucamonga	Existing	Average	Average	**Average**	Average
	Build Alternative	Average	Average	**Low**	Average
KOP-16 Rancho Cucamonga	Existing	**High**	Average	Average	Average
	Build Alternative	**Average**	Average	Average	Average
KOP-17 Rancho Cucamonga	Existing	Low	**Average**	Low	Low
	Build Alternative	Low	**Low**	Average	Low

Source: HNTB 2022
Notes:
NF = National Forest
Bold text indicates a drop in visual quality rank in regard to vividness, intactness, and unity. A drop in visual quality rank for two or more constitutes a drop in overall visual quality and represents an adverse impact.

As demonstrated in Table 44, the Project would only have a negative impact on visual quality at KOP 6, which contains views of the surrounding San Gabriel and San Bernardino Mountains, and the SCE Boulder Dam–San Bernardino transmission lines. This KOP is discussed under its own subheading below. No impacts to the remaining 16 KOPs, including the tribally-significant KOPs 7, 8, 9, and 13, were identified.

Key Observation Point 6, Cajon Pass/San Bernardino National Forest

Figure 11 represents the view from KOP-6. It shows a view of a motorist traveling northbound on I-15, looking north toward the split of northbound and southbound I-15 as it climbs toward the summit of Cajon Pass. The view is vast of the surrounding San Gabriel and San Bernardino Mountains, and the SCE Boulder Dam–San Bernardino transmission lines are clearly visible in the middle ground.

As illustrated in the visual simulation (bottom image in Figure 11), the Project would add several transportation-related elements to the view. The Project would construct a raised

access road on the east side of the I-15, an elevated railway with retaining walls in the I15 median, and a new overpass structure to support CHP and emergency vehicle access between the northbound and southbound lanes of the I-15. As a result, the Project would affect and partially block views of the mountains and rolling terrain. The effects would reduce the vividness to average due to the contrasting elements to the vast landscape. The intactness would remain average due to the integration of the Project into an existing transportation network. The unity of the view would be reduced to low due to the lack of visual coherence and compositional harmony of the landscape. The visual quality rank would reduce to average, and the Project would result in a visual impact at KOP6.

Existing Condition, KOP-6

Rating	
Vividness:	High
Intactness:	Average
Unity:	High
Visual Quality:	High

Visual Simulation, Build Alternative, KOP-6

Rating	
Vividness:	Average
Intactness:	Average
Unity:	Low
Visual Quality:	Average

Figure 11. Key Observation Point 6, Cajon Pass/San Bernardino National Forest

Hesperia Station

Motorists traveling on I-15 will be the primary viewers of the Hesperia station and associated infrastructure. Although the station platform will be in the median of I-15 and at the freeway grade, retaining walls, barriers, vertical circulation structures for passengers to access the station platform (e.g., elevator towers, stairways, and overhead canopies), will be visible components. The vertical passenger circulation elements and existing bridge will partially obstruct views to distant mountains and the desert environment. The additional built elements and obstruction of views represent moderate reductions in visual quality. Because motorists will typically be moving at freeway speeds, the visual changes will be experienced for a short duration for each motorist, limiting the degree of impacts for viewer groups, including motorists on I-15. In addition, the avoidance and minimization measures included in the Project will increase the station's compatibility with the existing visual environment.

Rancho Cucamonga Station

The Rancho Cucamonga station will be elevated on a structure with large retaining walls. The elevated station and railway, with catenary poles and wires, will detract from partial views from nearby office buildings of the distant San Gabriel Mountains. The station also will minimally affect views from ground-level viewing locations, such as the existing Metrolink parking lot. The elevated railway structure will create a visual sense of enclosure and will create shadows on the parking lot. The avoidance and minimization measures included in the Project will increase the station's compatibility with the existing visual environment.

Ancillary Facilities

Ancillary facilities associated with the Project, such as the traction power substation, will be generally consistent in visual character with the infrastructure normally seen along major highways such as I-15.

The Project will implement avoidance and minimization measures, as summarized in Section 4.7.6, to maximize the Project's visual compatibility with the existing visual environment. Overall, the Project would add new visual elements to the landscape that would generally be consistent with the existing transportation corridor and would not substantially alter the existing visual quality of the natural environment.

4.7.5.3 Cumulative Impacts

Construction of the Project in combination with other past, present, and reasonably foreseeable future actions, could temporarily degrade visual and aesthetic resources associated from construction activities such as demolition, vegetation removal, establishment of construction staging areas, and construction lighting. With adherence to standard practices including dust control measures and visual screening, visual impacts from construction of the Project, in combination with other reasonably foreseeable development in the study area, would minimize cumulative impacts during construction. Therefore, construction of the Project, in combination with cumulative projects, would not result in a cumulative impact.

Overall, the visual character of the study area would continue to change with the development and expansion of urban and suburban development. Operation of the Project, in combination with past, present, and reasonably foreseeable future projects, would increase urban character

and reduce desert landscape in the study area, and could detract from visual quality of existing views. In more developed areas along the alignment, including Rancho Cucamonga, many proposed Project features, including buildings, rail alignments, transmission poles, and power lines, are already present and visible in existing views. Adherence to the avoidance and minimization measures included in the Project would increase the railway and Hesperia and Rancho Cucamonga stations compatibility with the existing environment, minimizing cumulative impacts during construction. Therefore, operation of the Project, in combination with cumulative projects, would not result in cumulative visual impacts.

4.7.6 Avoidance, Minimization, and Mitigation Measures

As explained in Section 4.7.5.2, the Build Alternative will generally be consistent with the existing visual environment. The following industry standards and BMPs will be incorporated by Brightline West into the Project to minimize changes to the visual environment and to maximize the Project's compatibility with the existing visual environment.

Construction

Construction management as an industry standard practice will help to maintain an orderly sequence of construction and to properly contain, stockpile, and store materials and equipment that may impose on views temporarily.

It is anticipated that construction crews will work at night. Any night construction lighting will be directed toward the work zone to minimize light spillover onto adjacent properties, to reduce glare for freeway motorists, and to prevent visible lighting overflow into the natural dark sky of the desert at night. Construction lighting will be screened from viewers with fencing, barriers, glare shields, and landscaping.

Measures will be implemented by the contractor to control dust at construction areas, including staging areas for visibility and temporary access routes.

Visual screening, such as fences, will be erected along construction and staging areas as appropriate. Landscaping and native vegetation that is cleared for TCAs (including staging and access) will be replaced. Disturbed areas within Caltrans right-of-way will be regraded to soften their contours and will be replanted as directed by Caltrans and within six months of the completion of construction.

Operation

Railway

Brightline West will design rail features, including bridge pillars/columns, raised tracks, trains, catenary structures, crash barriers, retaining walls, abutments, fencing, and embankments to blend with or represent the surrounding desert or urban environment. Features will be created or stained in muted desert colors. Bright colors and highly reflective materials will be avoided, as feasible. Project elements defined in the design process will include visual elements that contribute to a sense of place and a memorable experience for motorists, pedestrians, and rail passengers. Concrete will be embossed with patterns, where appropriate, that are indicative of the surrounding environment and that create a visual link between the railway features and their surroundings, and will be similar in character to recent nearby freeway projects.

Hesperia Station

The proposed Hesperia station and associated elements will be developed with architecture that complements the surrounding landscape character with flowing lines, form, and muted colors. The surface parking lot for the station will be surrounded with native landscaping that softens its appearance and helps it blend into its surroundings. The landscaping will include drought-resistant desert plants, rock, and stone. Pedestrian elements such as pathways, structures, and signage will be developed to pedestrian scale and will use patterns, colors, and symbols that represent and complement the desert landscape. Lighting will be designed to provide an adequate sense of safety for the station users, but consideration will also be given to minimize glare and obstruction of views and to support dark sky regulations through glare-screening measures, downward-cast lighting, motion sensors, and plantings that will assist with glare reduction.

Rancho Cucamonga Station

The proposed Rancho Cucamonga station and associated elements will be developed with architecture that complements the surrounding urban landscape character with flowing lines, form, and muted colors. The station and it associated surface parking lot will be landscaped with ornamental and native vegetation to soften the appearance of structures and hard surfaces. The landscaping will include drought-tolerant trees, shrubs, and groundcovers, as well as rock and stone. Pedestrian elements such as pathways, structures, and signage will be developed to pedestrian scale and will incorporate patterns, colors, and symbols that represent and complement the surrounding landscape. As at the Hesperia station, lighting for the Rancho Cucamonga station will be designed to provide an adequate sense of safety for station users, and to minimize glare, obstruction of views, and distractions and to support dark sky regulations.

4.8 Land Use and Community Facilities

Land use is the classification of activities occurring at a given location whether the land is in a natural state or has been modified or developed. Land uses are often identified by general plans, management plans, consultation with Federally-Recognized Tribes, and land use policies that determine the type and extent of land use allowable in specific areas and protect specially designated or environmentally sensitive areas. Ordinances (e.g., zoning) regulate the types of activities determined to be acceptable within the identified land uses. In addition to the impacts of noise on land use compatibility, other potential impacts may also affect land use compatibility (e.g., disruption of communities, relocation, induced socioeconomic impacts, and land uses protected under Section 4(f) of the USDOT Act).

4.8.1 Regulatory Setting

FRA guidance for the preparation of EAs advises that State, local, and regional land use plans be discussed and considered in land use analyses.

4.8.1.1 Federal Land Policy and Management Act

The Federal Land Policy and Management Act regulates how the BLM manages land under its jurisdiction. The act mandates public lands be retained in Federal ownership and declares that BLM will manage the public lands for predetermined uses and values.

4.8.1.2 Local General and Specific Plans

Hesperia General Plan

The Hesperia General Plan, adopted in 2010, serves as a foundation for long-range planning land use decisions. The General Plan includes goals and policies related to land use, transportation, population growth and distribution, development, open space, resource preservation and utilization, air and water quality, noise impacts, safety issues and other related physical, social, and economic development factors. The Project would align with goals developed in the Hesperia General Plan, that focus on developing safe, and convenient transportation systems throughout the city to accommodate rail infrastructure that will meet current and future development requirements within the planning area.

Oak Hill Community Plan

The Oak Hill Community Plan was adopted by the City of Hesperia on April 3, 2022. Oak Hill is one of several unincorporated communities within the Victor Valley region of San Bernardino County. Oak Hills encompasses approximately 28 square miles within a transitional area between the foothills of the San Bernardino Mountains to the south and the Mojave Desert to the north and is bordered by the City of Hesperia to the east. The Plan's goals and policies address the protection of natural resources and rural character. The Project would align with the Oak Hill Community Plan's to increase circulation with San Bernardino County and surrounding areas.

Main Street & Freeway Corridor Specific Plan (City of Hesperia)

The *Main Street & Freeway Corridor Specific Plan* was adopted by the City of Hesperia in 2008. The Main Street corridor extends from I Avenue on the east to about a mile west of the interchange at I-15, which extends between the northern and southern city limits. The Specific Plan area is almost 80 percent vacant or underdeveloped. The Main Street & Freeway Corridor Specific Plan serves as a guideline for decision making and provides direction for the future of the specific plan area. Goals of the Plan include redevelopment that focuses on infill development, creation of jobs, and enhanced circulation including highest level access to multi-modal transportation options, and increased freeway access to I-15. The Main Street & Freeway Corridor Specific Plan notes the potential for population growth within the specific plan area, which would require support for tourism oriented job growth along I-15. Therefore, the Project would be aligned with the Main Street & Freeway Corridor Specific Plan.

Rancho Cucamonga General Plan

The Rancho Cucamonga City Council adopted the Rancho Cucamonga General Plan update on December 15, 2021. The plan includes policies aimed at expanding transportation options that reduce automobile dependence. The Rancho Cucamonga General Plan cites the Project as a proposed connection to assist the city in becoming the regional transportation hub of the Inland Empire.

Empire Lakes Specific Plan (City of Rancho Cucamonga)

The Empire Lakes Specific Plan, adopted in 1994 and revised in 2016, is a specific plan for a planned 160-acre residential, office, and retail land use project adjacent to the west side of the Rancho Cucamonga Metrolink station. The Empire Lakes plan area is located within the Rancho

Cucamonga city limits, north of 4th Street (which forms the City of Rancho Cucamonga's southern boundary with the City of Ontario), west of Milliken Avenue, east of Cleveland Avenue, and south of 8th Street and the BNSF/Metrolink rail line. The Empire Lakes Specific Plan identifies, in detail, the overall development concept of the mixed-use development and includes discussions of circulation and access. The plan prioritizes the improvement of economic vitality.

4.8.2 Study Area

The study area for land use and community facilities comprises a 150-foot buffer around the proposed alignment and a 0.25-mile buffer surrounding the permanent station areas in Hesperia and Rancho Cucamonga.

4.8.3 Methodology

This qualitative analysis considers the potential direct and indirect land use and community facility impacts of the Project on the communities within San Bernardino County, and the cities of Victorville, Hesperia, Rancho Cucamonga, and Fontana. Within the study area, FRA identified various land use designations based on general plans and zoning maps discussed in 4.8.1.2. To evaluate potential impacts to land use, FRA then compared the temporary and permanent Project footprint against the planned and existing land uses in the study area to determine whether non-transportation uses will be converted to transportation use either directly (because the area will be acquired by the Project) or indirectly (because the existing land use will be incompatible with the nearby or adjacent HSR use). Impacts to land use may occur through the conversion of existing land uses to transportation use, or the creation of uses that are inconsistent with land use plans or zoning ordinances.

As the new rail alignment will be constructed almost entirely within the existing Caltrans right-of-way, land use changes from the alignment are not anticipated.[24] Rather, FRA focused its analysis on the areas surrounding the two proposed stations and other facilities such as traction power facilities, which will be adjacent to existing and planned development in the study area.

Consultation with Federally-Recognized Tribes

Through consultation with Federally-Recognized Tribes, FRA sought information regarding current and historical uses of tribal ancestral and lands and cultural landscapes throughout the study area. Tribes described the cultural and religious significance of setting and features of the landscape. Though not a typical land use designation, FRA considered how the Project's impacts to land use would impact the cultural landscape and setting.

4.8.4 Affected Environment

The affected environment includes both direct and indirect effects on local land use patterns. Throughout most of the alignment, development adjacent to the existing I-15 corridor is limited, especially north of Victorville and near Hesperia. In locations where development occurs within the 150-foot buffer, the main existing uses are residences, gas stations,

[24] The proposed rail alignment is located within the median of the I-15 highway between Victor Valley and Rancho Cucamonga, except for the last mile approaching the proposed Rancho Cucamonga station. The last mile of the Project, from I-15 to the Rancho Cucamonga Station, will be constructed following agreements with the City of Rancho Cucamonga and the SBCTA.

restaurants, and automotive-related businesses centered on freeway interchanges. No community facilities have been identified within the study area.

For purposes of this analysis, FRA assumed the traditional cultural landscape described by Tribes is within the affected environment.

Hesperia Station Area

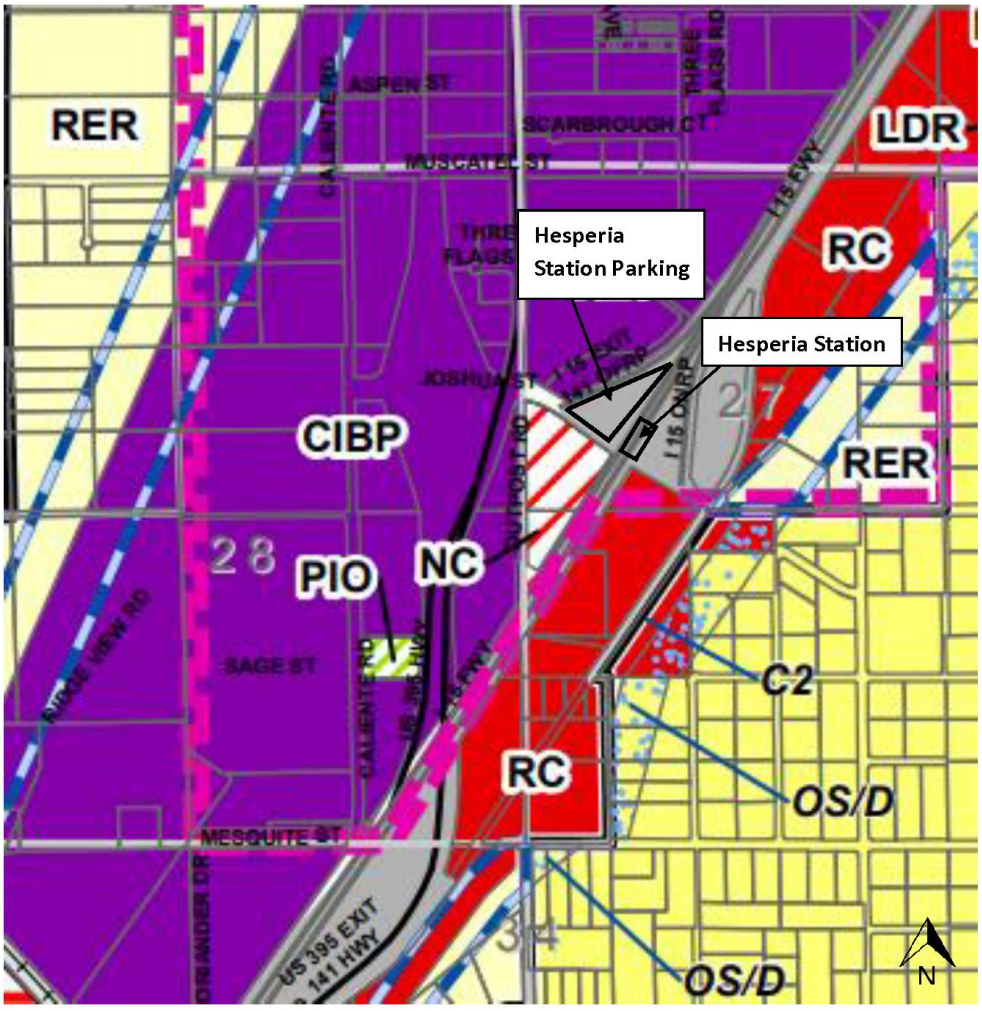
The area within a 0.25-mile radius of the proposed station in Hesperia is governed by the Hesperia General Plan and the Oak Hill Community Plan. Figure 12 shows the land use context surrounding the proposed Hesperia station.

Rancho Cucamonga Station Area

Currently, the Rancho Cucamonga Metrolink Station serves the San Bernardino Line commuter rail, which connects downtown Los Angeles through the San Gabriel Valley and the Inland Empire to San Bernardino. The station accommodates an average ridership of 1,110 users per day.[25] Additionally, the existing station offers connections for buses via the Omnitrans Route #81.

Development within a 0.25-mile radius of the proposed station in Rancho Cucamonga is governed by the Rancho Cucamonga General Plan and the Empire Lakes Specific Plan. This area is divided by the existing Metrolink tracks, which run east-west in this location. The proposed station site is designated as City Center by the Rancho Cucamonga General Plan. Figure 13 shows the land use context surrounding the proposed Rancho Cucamonga station site.

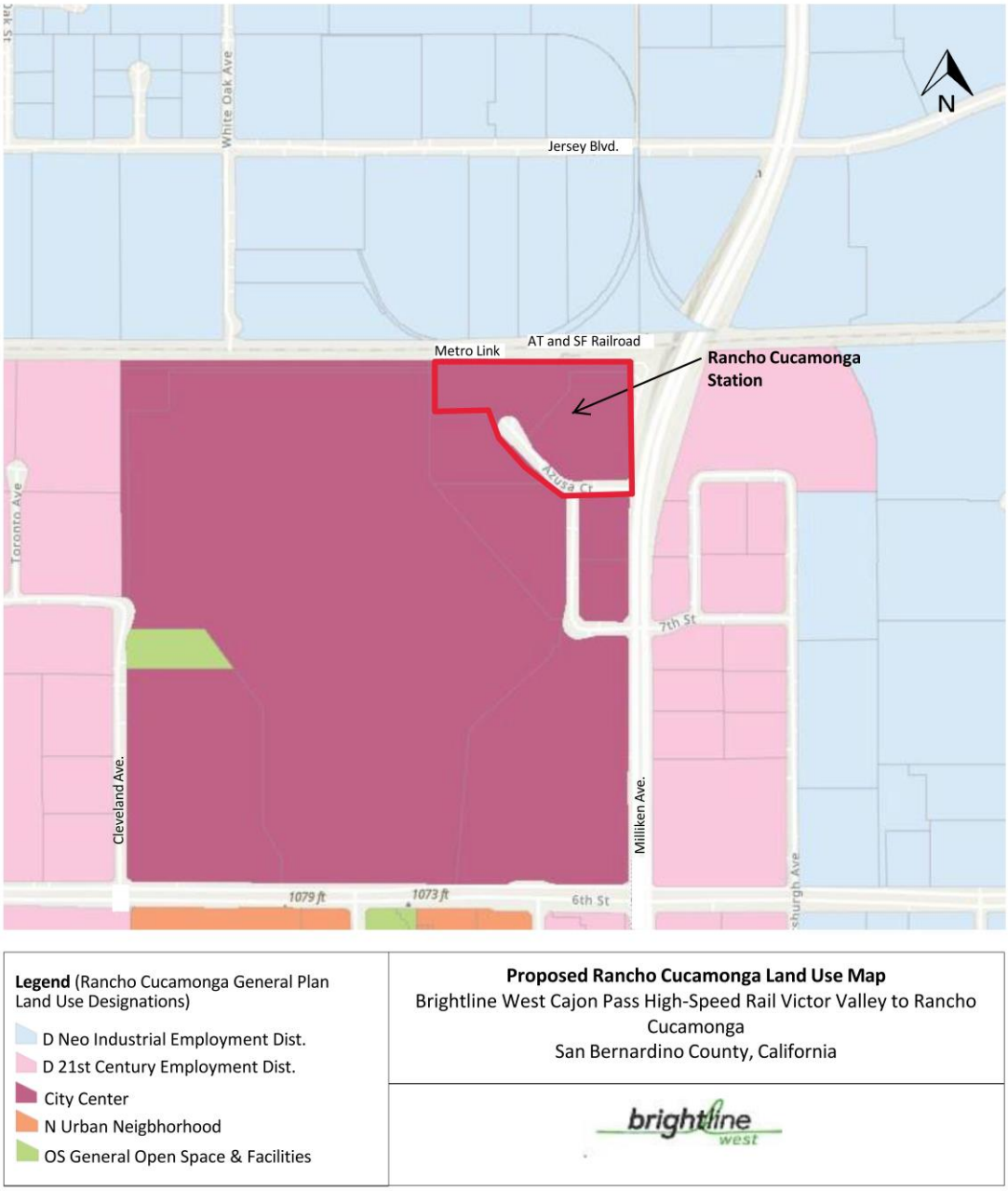
[25] RJM Design Group. Available here: https://rjmdesigngroup.com/rancho-cucamonga-metrolink-station/#:~:text=With%20two%20platforms%20serving%20two,ten%20stations%20in%20weekly%20ridership. Accessed: June 2022.



Legend (Hesperia General Plan Land Use Designations)	**Proposed Hesperia Station Land Use Map** Brightline West Cajon Pass High-Speed Rail Victor Valley to Rancho Cucamonga, San Bernardino County, California
RER - Rural Estate Residential RC - Regional Commercial CIBP - Com/Ind Business Park NC - Neighborhood Commercial Open Space/Development LDR - Low Density Residential Oak Hills Community Plan	brightline west

Source: City of Hesperia 2020

Figure 12. Proposed Hesperia Station Land Use Map



Source: City of Rancho Cucamonga 2022

Figure 13. Proposed Rancho Cucamonga Land Use Map

4.8.5 Environmental Consequences

This section evaluates the potential for the Project to result in impacts on existing land use, including temporary or permanent effects that may directly or indirectly result in land use impacts, impacts to community facilities, and impacts to tribal ancestral lands. Impacts to land use may occur when land is converted for a transportation use.

4.8.5.1 No Build Alternative

The No Build Alternative will involve no action to create a passenger HSR system in the median of the I-15 highway between Victor Valley and Rancho Cucamonga. The existing I-15 corridor will remain operational without improving major points of congestion or transportation capacity deficiencies along the highway. The No Build Alternative will not directly result in construction activities or impacts; therefore, no direct temporary or permanent impacts from the Project to land use, community facilities, or tribal ancestral land will occur. Under the No Build Alternative, all future development within the study area is assumed to be consistent with existing general plan land use designations and local zoning ordinances.

4.8.5.2 Build Alternative

Construction of Build Alternative

Construction of the Project will not require the acquisition, use, or change of any residential or commercial land uses. Construction of the Project will primarily occur within the existing Caltrans right-of-way, and is compatible with existing land use patterns, which currently account for a transportation use within the right-of-way (i.e., the I-15 highway). Because the Project will be constructed within an existing transportation corridor and will not require acquisition of land within established communities, no established communities will be divided by the Project. Additionally, the proposed stations will be consistent with existing land use patterns. Temporary staging areas are predicted to be within the existing Caltrans right-of-way, but construction staging areas are unknown at this time. Because work will occur primarily within the existing Caltrans right-of-way, temporary construction easements are unlikely.

Access to I-15 and local roads will be maintained or in some cases improved; the Project will require some interchange reconstruction, and where applicable on- and off-ramps may be rebuilt to provide better access to local roadways. Interchange reconstruction within the City of Hesperia will occur at I-15 interchanges, within Caltrans right-of-way, between the Stoddard Wells Road southbound on- and off- ramp and Ranchero Road. Reconstruction and I-15 freeway and interchange ramp modifications will also occur within the Caltrans right-of-way within the City of Rancho Cucamonga at SR-210, Beech Avenue, Duncan Canyon Road, and Glen Helen Parkway. Because interchange reconstruction will take place within the Caltrans right-of-way along the I-15, which is an existing transportation corridor, reconstruction will not require the conversion of land planned for non-transportation uses.

In the City of Rancho Cucamonga, a traction power substation will be located next to I-15 on City-owned property, designated in the Victoria Community Plan as “Regional Related Office/Commercial.” Within this designation, “public utility exchange and substations” are a permitted use subject to a Conditional Use Permit. A traction power paralleling station in Hesperia will be sited within the Caltrans right-of-way between the northbound and southbound lanes of I-15 in an area currently used for loading sand into dump trucks during

snowy weather, just north of the San Bernardino National Forest. The Hesperia Main Street and Freeway Corridor Specific Plan (Hesperia 2020) provides for general commercial land uses east of the freeway and designates the land west of the freeway as rural, which allows for a combination of residential, animal keeping, and other uses, including public utilities. Therefore, these substations will be consistent with existing land use patterns.

Both the Rancho Cucamonga and Hesperia stations will include parking. In Hesperia, Brightline West will construct a new parking lot within the Caltrans right-of-way on the north side of Joshua Street, adjacent to the existing Pilot Travel Center parking lot. The area is currently undeveloped and no existing uses will be displaced. Brightline West will also construct a new parking structure at the Rancho Cucamonga station, which will replace an existing surface parking lot serving the Rancho Cucamonga Metrolink station. This replacement of existing parking with new parking is consistent with existing land use patterns.

Through consultation with Federally-Recognized Tribes, FRA has also identified ancestral tribal lands throughout the land use study area. The Tribes have shared concerns that construction-period dust may migrate into Tribal Reservation and fee-owned lands outside of the land use and community facility study area due to high winds, thereby creating a temporary inconsistency between the Project and existing tribal land uses. Dust control plans will be developed to minimize construction-period dust, as detailed in Section 4.1, Air Quality and Greenhouse Gas.

FRA also understands other Federally-Recognized Tribes may be concerned about construction-period noise and its potential to temporarily disturb the cultural setting of adjacent areas. As discussed in Section 4.2, Noise and Vibration, construction noise will be minimized to the extent possible, and will occur in the larger noise context of the existing highway. In addition, as the Project will be co-located with the existing I-15 highway, and construction would occur within the Caltrans right-of-way, significant changes to the cultural setting are not anticipated.

Operation of Build Alternative

Operation of the Project will add a new mode of travel to an existing transportation corridor and will not directly or indirectly change local land use designations or impact the ability for existing development to continue functioning as it does under existing conditions. Operation of the Project may have the indirect effect of stimulating growth in the vicinity of the proposed station areas as allowed by local government land use plans, policies, and regulations. Combined with strong real estate market conditions, improved transit service deployment is anticipated in the vicinity of both planned stations. Operation of the Project will not cause indirect land use changes by geographically dividing or isolating residents or businesses within the affected environment. Therefore, during operations of the Project, no impacts to land use patterns will occur.

The Federally-Recognized Tribes have expressed concerns of the cumulative effect of adding a new mode of transportation to the existing corridor, which crosses through ancestral lands, and the impact this may have on access to surrounding areas where there are existing public lands the Tribes use for religious or cultural purposes. The Project will maintain existing access to surrounding areas by preserving intersections and interchanges with local roadways that currently cross the I-15 corridor. In addition, the Project's design minimizes changes to the overall setting as it is co-located in the existing highway.

4.8.5.3 Cumulative Impacts

Construction of the Project in combination with other past, present, and reasonably foreseeable future actions within the project area could result in temporary and permanent conversion of land uses. However, development will likely be completed in compliance with local zoning and land uses plans and would not result in cumulative impacts on land use. Therefore, construction of the Project in combination with past, present, and reasonably foreseeable future actions would not result in a cumulative impact.

Operation of the Project and other transportation projects could result in effects on adjacent land uses, such as induced wind, noise, and visual changes. Therefore, these changes would not result in land use conflicts that would change land use patterns in combination with other past, present, and reasonably foreseeable future actions.

4.8.6 Avoidance, Minimization, and Mitigation Measures

No avoidance, minimization, or mitigation measures will be required to reduce impacts on land use resources during construction or operation of the Project.

4.9 Socioeconomic Environment

Socioeconomics is an umbrella term used to describe aspects of a project that are either social or economic in nature. A socioeconomic analysis evaluates how elements of the human environment such as population, employment, housing, and public services might be impacted by the Project. Such impacts may include jobs created by construction and/or operation of the Project, displacement of businesses or residences, and loss of community cohesion. Environmental Justice is discussed in Section 4.16.

4.9.1 Regulatory Setting

Americans with Disabilities Act (42 U.S.C. Sections 12101–12213)

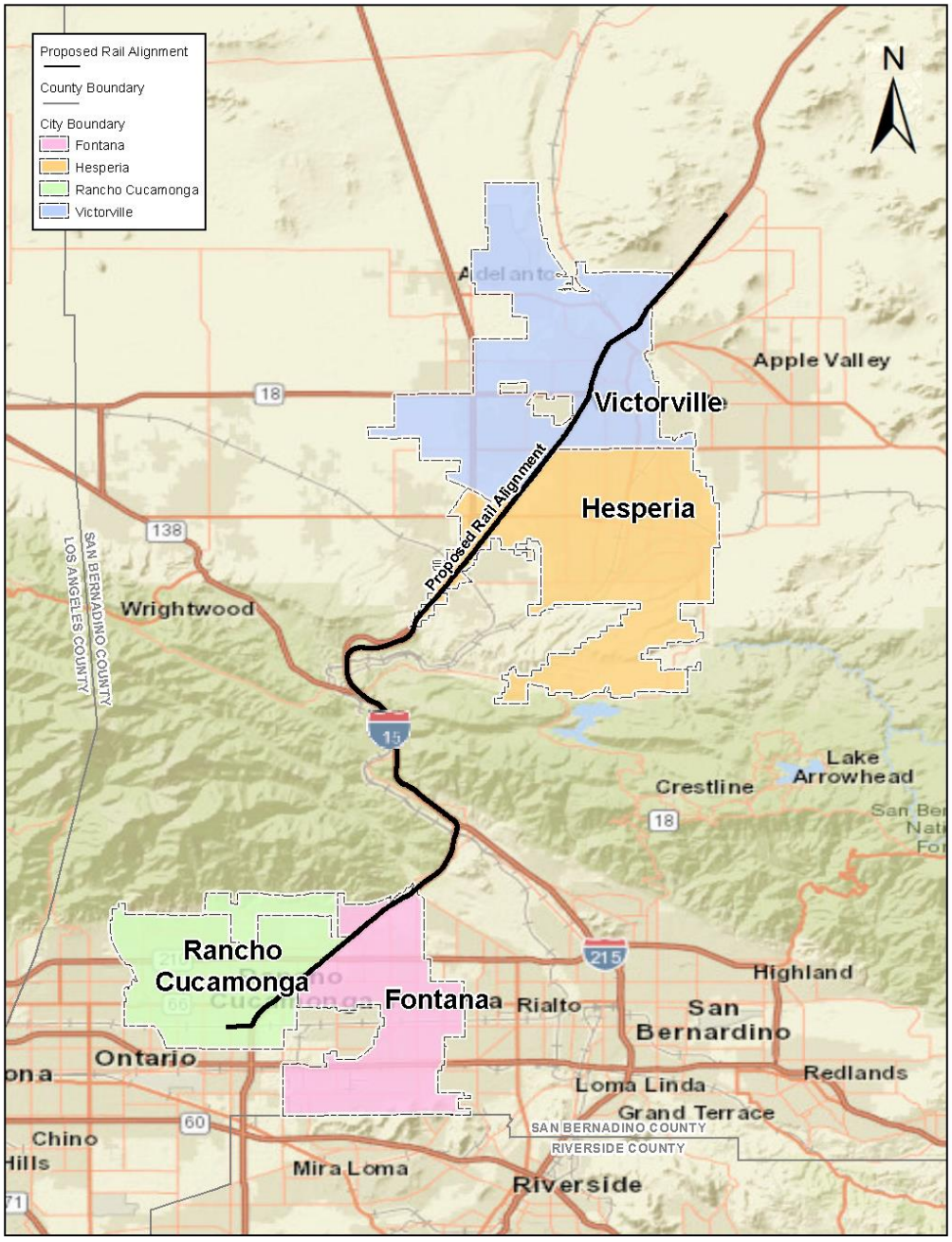
The Americans with Disabilities Act prohibits discrimination against persons with disabilities and requires equal opportunity in employment, state and local government services, public accommodations, commercial facilities, and transportation.

4.9.2 Study Area

The socioeconomic study area is defined as San Bernardino County. Within the socioeconomic study area, special consideration is given to the following four cities, in which physical elements of the Project would be located:

- Victorville
- Hesperia
- Rancho Cucamonga
- Fontana

Figure 14 depicts the geographic boundaries of these cities.



Source: Brightline West 2022

Figure 14. Socioeconomic Study Area

4.9.3 Methodology

Socioeconomic impacts such as job creation will have broad economic implications outside of the immediate Project footprint. This qualitative analysis considers the potential direct and indirect socioeconomic impacts of the Project on the communities within San Bernardino County, and the cities of Victorville, Hesperia, Rancho Cucamonga, and Fontana. Impacts were determined using employment and ridership projections prepared for the Project and placing these projections in the context of the local socioeconomic setting and recent trends.

4.9.4 Affected Environment

San Bernardino County is located in Southern California and is bordered by Los Angeles and Kern counties to the west, Inyo County to the north, Riverside County to the south, and the Nevada and Arizona borders to the east. The county is home to many parks and open space preserves including the Mojave National Preserve, San Bernardino National Forest, and portions of Death Valley and Joshua Tree National Parks. This is the main reason the population density is relatively low at approximately 100 people per square mile. Most of the population resides in the southwestern corner of the county near Los Angeles and Riverside. Of the cities in the study area, Rancho Cucamonga has the highest median household income. Rancho Cucamonga and Fontana share the lowest unemployment rate and housing vacancy rates. This reflects both cities' status as urban centers with abundant employment opportunities. By contrast, Hesperia and Victorville are both more suburban and offer lower cost housing options, as reflected by their lower population densities and median household incomes.

SCAG forecasts in its 2020-2045 RTP/SCS that the population of San Bernardino County will grow to 2,815,000 by 2045, a 29 percent increase from the U.S. Census Bureau's 2018 population estimate of 2,180,100, and that the number of households will grow to 875,000, a 39 percent increase over the 2018 household estimate of 630,600 (U.S. Census Bureau 2020). Additionally, the 2020-2045 RTP/SCS forecasts employment in San Bernardino County will increase to 1,064,000 by 2045, a 72 percent increase from the U.S. Census Bureau's estimate of 617,800 in 2018.

Table 45 provides an overview of economic data within the study area from the 2019 American Community Survey.[26]

[26] Complete 2020 Census data and related estimates for 2021 and 2022 (i.e., 2020 American Community Survey 1-year and 5-year estimates) are unavailable due to the impacts of the COVID-19 pandemic on data collection. Therefore, 2019 estimates represent the best available data.

Table 45. Demographics and Economic Data (2019)

County/City	Population	Population Density (people per square mile)	Unemployment Rate	Median Income (Household)	Housing Vacancy
San Bernardino County	2,180,100	100	8%	$67,900	12%
Victorville	122,400	1,700	12%	$60,400	5%
Hesperia	95,800	1,300	10%	$50,300	7%
Rancho Cucamonga	177,600	4,400	4%	$92,800	4%
Fontana	210,761	4,838	4%	$75,681	3%

Source: American Community Survey 5-year Estimates, 2015-2019
Notes: Population, population density, and median household income rounded to the nearest hundred. Unemployment rate and housing vacancy rounded to the nearest whole number.

Also included in the affected environment are Federally-Recognized Tribes, including the Chemehuevi Indian Tribe of the Chemehuevi Reservation, Colorado River Indian Tribes of the Colorado River Indian Reservation, Yuhaaviatam of San Manuel Nation, Soboba Band of Luiseño Indians, Timbisha Shoshone Tribe, and Twenty-Nine Palms Band of Mission Indians.

4.9.5 Environmental Consequences

This section evaluates the potential for the Project to induce substantial economic growth in an area, either directly or indirectly (e.g., through establishing projects in an undeveloped area), disrupt or divide the physical arrangement of an established community, cause extensive relocation when sufficient replacement housing is unavailable, or cause extensive relocation of community businesses that would cause severe economic hardship for affected communities.

4.9.5.1 No Build Alternative

The No Build Alternative will involve no action to create a passenger HSR system in the median of the I-15 highway between Victor Valley and Rancho Cucamonga. The existing I-15 corridor will remain operational without improving major points of congestion or transportation capacity deficiencies along the highway. The No Build Alternative will not directly result in any socioeconomic changes within the socioeconomic study area.

4.9.5.2 Build Alternative

Construction of the Build Alternative

Construction of the Project will result in temporary socioeconomic changes within the study area. Construction of the Project will generate approximately 40,000 temporary construction jobs of the course of the 3 to 4 year construction period, which may employ local workers. Similarly, local businesses such as restaurants, gas stations, and hardware stores may benefit from the presence of construction workers during the construction period.

The Project is not expected to disrupt the local housing markets during construction or operation, as the Project will be constructed in areas with generally low population density, except for Rancho Cucamonga. Because the Rancho Cucamonga station is already a local

transportation hub and is surrounded by urban development, the addition of the Project is not anticipated to substantially change land use development patterns or housing prices in the station area. The Project is designed to meet existing demand for transportation along the I-15 corridor and future demand projected independent of the Project. Therefore, the Project is not anticipated to attract substantial new development or create demand for new housing beyond what is already accounted for in local and regional plans.

Additionally, community cohesion will not be negatively impacted by the Project, as the Project will be largely within an existing transportation corridor. Given this, operation of the Project will not geographically divide nor isolate residents or businesses within the study area. There will be no right-of-way acquisition nor relocations of residential or commercial properties. Therefore, the Project's operation will not encroach upon residential property nor disrupt access to education and childcare facilities, community centers, or places of worship. Additionally, the Project is not anticipated to have a substantial impact on public facilities in the study area.

Construction of the Project could result in demand for new construction-related employment, but is not anticipated to result in a large temporary influx of people living in the study area due to construction of the Project. Because construction jobs are anticipated to be filled by regional workers, the population within the study area would not be expected to increase during construction beyond the forecasted growth. Additional employment opportunities could occur due to increase connectivity between Rancho Cucamonga and Victorville.

The Federally-Recognized Tribes have expressed concerns of the cumulative effect of adding a new mode of transportation to the existing corridor, which crosses through ancestral lands, and the impact this may have on population growth. The Project is not anticipated to attract substantial new development or create demand for new housing beyond what is already accounted for in local and regional plans. For further discussion of Federally-Recognized Tribe concerns refer to Section 4.11.

Operation of the Build Alternative

Operation of the Project will result in potential beneficial socioeconomic effects to resources identified within the study area. Operation of the Project will generate approximately 250 jobs beginning in 2025 (the opening year), due to employment opportunities via Brightline West. These jobs will include both station employees and on-train employees. The total number of employees is expected to grow as service expands. Given the station locations in Hesperia and Rancho Cucamonga, employees are expected to be Southern California residents, and frequent users of the I-15 transportation corridor. Operation of the Project may also generate jobs around station areas where local businesses may benefit from increased foot traffic. These new jobs will represent a socioeconomic benefit of the Project.

In addition, communities in Rancho Cucamonga and Hesperia where new stations will be added will likely benefit from the new mode of transportation and increased access to Las Vegas and Southern California. Additionally, the Project will add a transportation alternative for work commute trips along the corridor, including reduced travel times and improved air quality for those living in areas close to I-15 as people shift from automobiles to high-speed train (refer to Section 4.1).

4.9.5.3 Cumulative Impact

The Project, in combination with other past, present, and reasonably foreseeable future actions, will convert undeveloped areas to developed ones, which could result in localized community impacts as well as regional and local economic impacts during construction and operation.

Construction activities associated with current and future projects would temporarily disrupt communities by introducing annoyances such as noise, dust, traffic, light, and glare. Construction of such projects, if constructed simultaneously with the Project, could cause temporary increases in traffic, changes in traffic patterns and access to community facilities, and construction-related noise and dust. Construction activities associated with these projects could hinder access and interaction among neighborhoods because of increased congestion, detours, and lane or road closures. However, construction activities would be temporary in nature.

However, the project area is largely undeveloped and would not displace any residential communities or require replacement housing or facilities. Therefore, operation of the Project, in combination with cumulative projects, would not result in a cumulative impact.

4.9.6 Avoidance, Minimization, and Mitigation Measures

No avoidance, minimization, or mitigation measures will be required to reduce impacts on socioeconomic resources during construction or operation of the Project.

4.10 Hazardous Materials

Hazardous materials,[27] solid waste, and pollution prevention as an impact category includes an evaluation of a multitude of scenarios. Projects can create waste streams with potential for the wastes to impact environmental resources and waste handling and disposal facilities that would likely receive the wastes. Additionally, hazardous materials that can be used during operation of a project and require applicable pollution prevention procedures. Further, when undergoing a project there is the potential to encounter existing hazardous materials at contaminated sites during operation and decommissioning of a project; and the potential to interfere with any ongoing remediation of existing contaminated sites at the proposed project site or in the immediate vicinity of a project site.

The following analysis is based on the Hazardous Materials Technical Report prepared by FRA, which is included as Attachment H to this EA.

[27] Hazardous materials are substances that may pose a reasonable risk to human health, property, or the environment. Hazardous waste, as defined by the EPA, is any waste material – solid, liquid, or gaseous – that "because of its quantity, concentration, or physical, chemical or infectious characteristic may cause or significantly contribute to an increase in mortality, serious irreversible illness, or incapacitating reversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed." Analysis for Section 4.10, Hazardous Materials, was based upon information in the Hazardous Materials Technical Report (Attachment H).

4.10.1 Regulatory Setting

Federal Requirements

The primary Federal laws regulating hazardous materials and wastes are the Resource Conservation and Recovery Act (RCRA) of 1976 and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980. RCRA provides for "cradle to grave" regulation of hazardous wastes. The purpose of CERCLA is to clean up contaminated sites so that public health and welfare are not compromised. Other relevant Federal laws include:

- Community Environmental Response Facilitation Act of 1992 (42 U.S.C. Section 9620). The Act was put in place to amend the CERCLA of 1980 and requires the Federal Government, before termination of Federal activities on any real property owned by the Government, to identify real property where no hazardous substance was stored, released, or disposed of.
- Clean Water Act (33 U.S.C. Section 1251). The Clean Water Act establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.
- Clean Air Act (42 U.S.C. Section 85) and the 1990 amendments. The Clean Air Act defines EPA's responsibilities for protecting and improving the nation's air quality and the stratospheric ozone layer. The last major change in the law, the Clean Air Act Amendments of 1990, was enacted by Congress in 1990.
- Safe Drinking Water Act (42 U.S.C. Section 300). The Safe Drinking Water Act (SDWA) protects the quality of drinking water in the U.S. This law focuses on all waters actually or potentially designed for drinking use, from above ground or underground sources.
- Occupational Safety and Health Act (OSHA; 29 U.S.C. Section 15). An act to assure safe and healthful working conditions; by authorizing enforcement of the standards developed under the Act; by assisting and encouraging the States in their efforts to assure safe and healthful working conditions; by providing for research, information, education, and training in the field of occupational safety and health; and for other purposes.
- Executive Order 12088, Federal Compliance with Pollution Control (43 FR 477047, 3 CFR, 1978 Comp., p 243). The head of each Executive agency is responsible for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to Federal facilities and activities under the control of the agency.
- U.S. Environmental Protection Agency's (U.S. EPA) Standards and Practices for All Appropriate Inquiries (40 CFR Part 312). "All appropriate inquiries" is a process of evaluating a property's environmental conditions and assessing potential liability for any contamination. All appropriate inquiries must be conducted to obtain certain protections from liability under CERCLA.

4.10.1.1 State, Regional, and Local Requirements

California Office of the State Fire Marshal

The California Office of the State Fire Marshal (OSFM) is responsible for ensuring the implementation of the California Fire Code Hazardous Materials Management Plan (HMMP)

and Hazardous Materials Inventory Statement. The plan which provides vital facility chemical and emergency response information to regulators, first responders, and the public with respect to community-right-to-know laws and emergency response preparedness. Construction project plans must be submitted to the OSFM for review electronically using the California Environmental Reporting System.

Mojave Desert Air Quality Management District and South Coast Air Quality Management District

The Mojave Desert Air Quality Management District (AQMD) and South Coast AQMD are regional governing authorities that have primary responsibility for controlling air pollution from stationary sources. The AQMDs implement air quality programs required by State and Federal mandates, enforce rules and regulations based on air pollution laws, and educate businesses and residents about their role in protecting air quality and the risks of air pollution. The AQMDs typically require that all equipment with the potential to emit air pollutants (including air toxics and hazardous air pollutants) have a valid AQMD permit prior to commencing construction and/or operation, but they specifically exclude railroads from requiring such permits. As a result, the Project does not require this permit.

San Bernardino County Fire Department, Hazardous Materials Division

San Bernardino County Fire Department manages six hazardous material and hazardous waste programs. They include the Hazardous Materials Business Plan, Hazardous Waste and Onsite Treatment, Aboveground Petroleum Storage, Underground Storage Tank Program, California Accidental Release Program, and OSFM's HMMP and Hazardous Materials Inventory Statement. The San Bernardino County Fire Department's Hazardous Materials Division collaborates on emergency plans with local county jurisdictions.

Regional Water Quality Control Boards

The Lahontan Regional Water Quality Control Board (RWQCB) and Santa Ana RWQCB oversee surface water and groundwater within the study area. The RWQCBs' stormwater programs permit discharges of pollutants in stormwater runoff to Waters of the United States under the NPDES. A general permit approach is used to reduce pollutants by requiring specified control measures.

4.10.2 Study Area

The study area includes the Project footprint for the entire 49-mile corridor between Victor Valley and Rancho Cucamonga and a 1/8-mile radius immediately surrounding the Project footprint. In some areas, a 1-mile buffer around the Project centerline was used to identify sources of contamination outside of the study area that may have resulted in leakage of hazardous materials into soils or groundwater within the study area.

4.10.3 Methodology

This qualitative analysis considers the potential direct and indirect hazardous impacts of the Project on the communities within San Bernardino County, and the cities of Victorville, Hesperia, Rancho Cucamonga, and Fontana. A Hazardous Materials Technical Report (Attachment H) was prepared to evaluate the potential for ground-disturbing activities and the use of hazardous materials during Project construction and operation to impact human health

within the study area. The technical report included a hazardous materials database search from Environmental Data Resources, Inc (EDR) (EDR 2020; included as Appendix A to the Hazardous Materials Technical Report [Attachment H]) and a desktop survey of the study area using EPA's website, Cleanups in my Community (U.S. EPA 2021) to identify locations where contamination exists or may exist within the study area. EDR's comprehensive and continually updated database includes over 2,000 Federal, State, tribal, local, and proprietary sources. The Cleanups in my Community website (U.S. EPA 2021) identifies ongoing hazardous waste cleanup locations, which are more likely to include known hazardous materials than areas where cleanup has not started.

Analysts used the following qualitative ranking system to categorize hazardous materials sites identified by the sources described above according to potential risk to human health.

- **High** – Assigned to property in the study area with known or probable contamination.
- **Moderate** – Potential or suspected contamination.
- **Low** –Assigned to property where use or storage of hazardous materials occurs, but the property has no significant violations, known releases, or evidence of inadequate chemical-handling procedures.

After ranking identified sites, analysts overlaid the Project LOD on a map of the identified sites to determine whether Project construction or operation would result in exposure to hazardous materials.

4.10.4 Affected Environment

The affected environment includes 19 known hazardous materials sites, and 14 leaking underground storage tanks (LUST) sites, within the Project footprint and 394 hazardous material sites within 1/8-mile of the footprint (i.e., the study area).[28] There are 349 unique sites within 1/8-mile of the footprint (refer to Figure 15). For more information regarding the sites within the study area, see the Hazardous Materials Technical Report prepared by FRA, which is included as Attachment H to this EA.

4.10.5 Environmental Consequences

Impacts from hazardous materials could include disturbances of identified hazardous materials sites and using hazardous materials, either of which may result in impacts on human health, soil disturbances, and encountering previously unidentified hazardous materials along the Project footprint.

4.10.5.1 No Build Alternative

The No Build Alternative will involve no action to create a passenger HSR system in the median and immediately alongside the I-15 highway between Victor Valley and Rancho Cucamonga. The existing I-15 corridor will remain operational without improving major points of congestion or transportation capacity deficiencies along the highway. The No Build Alternative will not result in temporary or permanent impacts related to hazardous wastes and materials, as no

[28] Some of the hazardous materials sites are found in more than one database or appear as more than one type of environmental record. For example, a rental facility in Victorville is included in 7 of the EDR-searched databases and environmental records. This one location is counted as 7 separate sites in the EDR report.

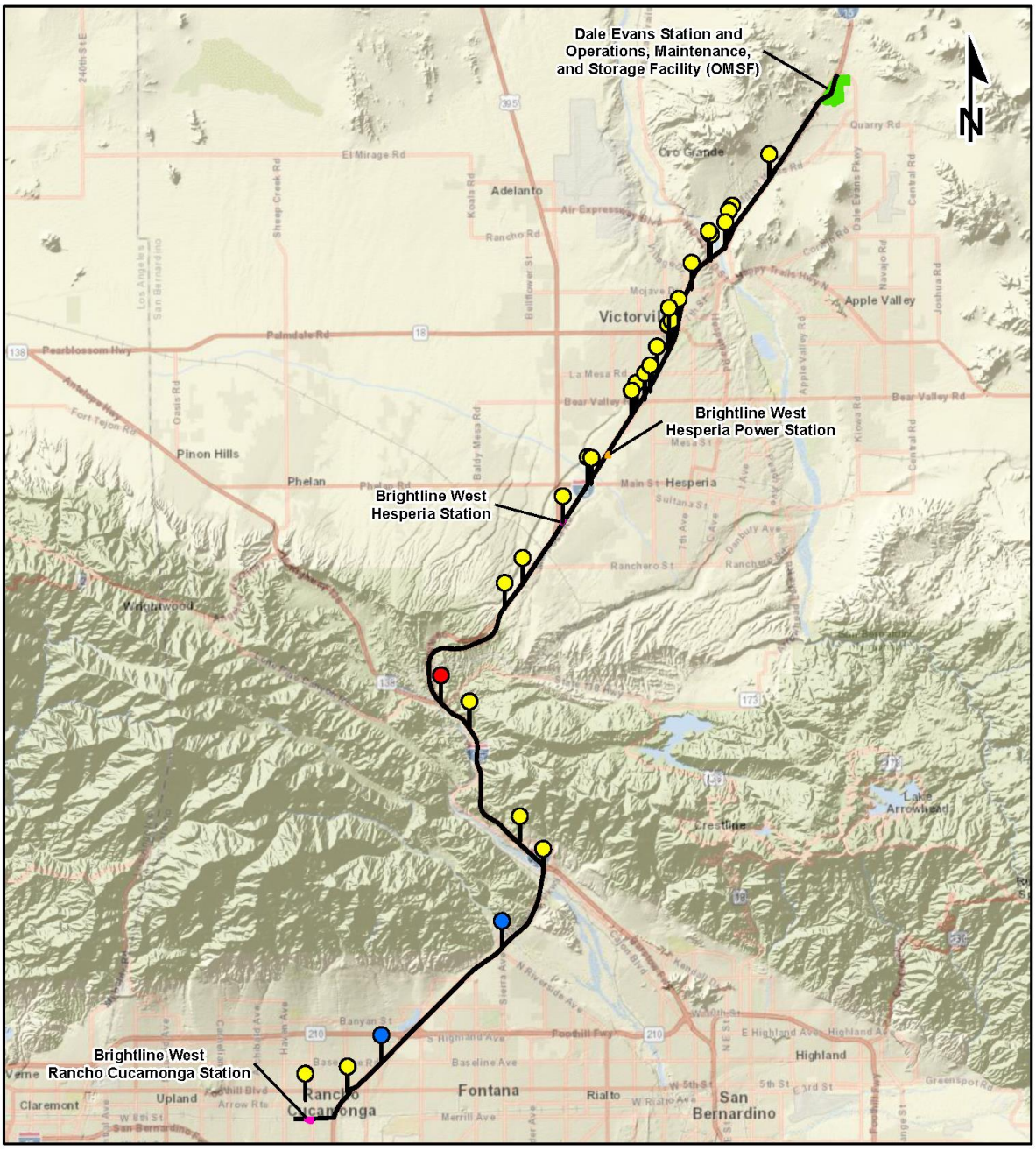
activities or construction will occur near hazardous material sites. The hazardous wastes and materials at existing sites will continue to occur but could gradually decrease over time due to State and Federal mandates regarding cleanup efforts.

4.10.5.2 Build Alternative

Construction of the Build Alternative

Construction of the Project may result in the release of hazardous materials within the study area through disturbance of identified hazardous materials sites and using hazardous materials, either of which may result in impacts on human health. Project construction may require demolition and/or removal of buildings near the Rancho Cucamonga station and other structures such as existing highway overpass/underpasses and bridges, soil disturbance, and removal of existing paving.

Of the 19 hazardous materials sites identified within the Project footprint and 14 LUST sites identified within 1/8-mile of the Project footprint, one site was classified as having a “High” likelihood that hazardous materials may be present in soil or groundwater. This is the site of the SR-138 Widening project at the intersection of SR-138 and I-15. Additionally, three sites were classified as “Moderate.” These are located along I-15 at Sierra Avenue, between I-210 and Base Line Road, and at 8886 Vincent Avenue in Rancho Cucamonga. All other identified sites were determined to have a low potential for the presence of hazardous materials.



Source: HNTB 2022

Figure 15. Potential Hazardous Material Locations Map

Project construction activities such as demolition and/or removal of buildings near the Rancho Cucamonga station, other structures such as existing highway overpass/underpasses and bridges, soil disturbance, removal of existing paving, and roadway widening along I-15 could encounter hazardous materials, especially at the sites identified above. Within the transportation corridor, common contaminates and hazardous materials such as herbicides, petroleum hydrocarbons, aerially deposited lead, and other metals may also be found in soils or groundwater. There is also the potential to encounter previously unidentified hazardous materials along the Project footprint. The degree of impact from a release or spill of hazardous materials depends on the proximity of the spill to densely populated and environmentally sensitive areas.

Hazardous materials used during the construction period to operate and maintain equipment during construction could result in the release of hazardous materials within the study area. Such materials may include petroleum products such as gasoline, diesel fuel, and hydraulic fluid; lubricating oils and solvents; cleansers; and other substances. Exposure to such materials through accident conditions, spills, or mishandling could affect the health of construction workers and people living or working near the construction zone.

The potential for effects from construction activities will be minimized through the development and implementation of BMPs and mitigation measures and a required Hazardous HMMP, as discussed in Section 4.10.6.

4.10.5.3 Operation of Build Alternative

Operation of the Project, including maintenance, will involve the routine use and storage of materials such as lubricants, solvents, paint, compressed gas, and waste products. The Rancho Cucamonga station, Hesperia station, and Victor Valley station are expected to use limited quantities of these materials for routine operation and maintenance activities. Exposure to such materials through accident conditions, spills, or mishandling could impact the health of workers and potentially people near the station sites. Operations of the Project will have a low risk of creating potential accident conditions that could result in a large hazardous materials release, as the trains will not transport hazardous materials and will not risk collision with other vehicles handling hazardous materials.

Overall, construction and operation of the Project may result in potential spills or release of hazardous materials. With implementation of Mitigation Measure HAZ-1 and Mitigation Measure HAZ-2, the Project will not create a hazard to the public or the environment resulting from spills or releases of hazardous materials, or reasonably foreseeable upset and conditions that involve the release of hazardous materials.

4.10.5.4 Cumulative Impacts

Construction of the Project, along with past, present, and reasonably foreseeable future projects, could temporarily increase the regional generation, use, storage, transport, and disposal of hazardous materials such as petroleum products, diesel fuels, wielding materials, lubricants, paints and solvents, and cement products. The potential increase could contribute incrementally to the regional transportation, use, storage, and disposal of hazardous materials. While hazardous materials handling may increase during construction, compliance with Federal,

State, and local regulations related to transport, handling, and disposal of hazardous waste would reduce the potential for significant cumulative effects. Therefore, construction of the Project in combination with other past, present, and reasonably foreseeable future actions would not result in a cumulative impact.

While hazardous materials handling may increase during construction, compliance with regulations would prevent potential cumulative effects. In the context of the short-term and intermittent use of hazardous materials and generation of hazardous waste from construction. Regulatory compliance would require the Project and other development to comply with standards for the storage, use, and handling of hazardous materials during construction and operation of the Project to avoid spill or release of such materials. Therefore, operation of the Project in combination with other past, present, and reasonably foreseeable future actions would not result in a cumulative impact.

4.10.6 Avoidance, Minimization, and Mitigation Measures

4.10.6.1 Mitigation Measure HAZ-1: Preparation of an HMMP prior to application for construction permits

- Brightline West will prepare a HMMP prior to application for permits for demolition, grading, or construction, as required by the State of California. The HMMP will be utilized during all phases of construction and will address UST decommissioning, field screening, materials testing methods, mitigation and contaminant management requirements, and health and safety requirements.
- Prior to any construction activities, an accurate contact list will be developed by Brightline West that includes telephone numbers for regulatory agencies, Health and Safety personnel, the National Response Center, and cleanup contractors with whom there is a pre-established agreement for response. The list will also include all appropriate Federal, State, and local agencies that must be contacted when a discharge or discovery occurs. These agencies may include:
    - Lahontan and Santa Ana RWQCBs
    - Department of Toxic Substances Control
    - City toxics management divisions
    - San Bernardino County Department of Environmental Health
- The OSFM will also require preparation and implementation of a HMMP for the Project. Project operation will require safe handling, use, storage, and disposal of hazardous materials in accordance with the HMMP.
- Disturbed soil will be monitored for visual evidence of contamination (staining or discoloration). Soil will be monitored for the presence of volatile organic compounds using appropriate field instruments. If the monitoring procedures indicate the possible presence of contaminated soil, a plan will be implemented that identifies procedures for segregation, sampling, and chemical analysis of the soil. Contaminated soil will be profiled for disposal and will be transported with appropriate hazardous or non-hazardous waste manifests by a

properly certified hazardous material hauler to a State-certified disposal or recycling facility licensed to accept and treat the type of waste indicated by the profiling process.

- In the event that construction activities or soil removal processes generate any contaminated groundwater that must be disposed of outside of the dewatering/NPDES process, the groundwater will be profiled, manifested, hauled, and disposed of in the same manner.
- Construction contractor(s) will have a well-developed hazardous material program in place and will use non-hazardous substances in routine construction and maintenance activities when available. Construction contractors will dispose of all hazardous or solid wastes and debris encountered or generated during construction and demolition activities.
- The construction contractor will maintain copies of the required Safety Data Sheets for each hazardous chemical and will ensure that the copies are readily accessible during each work shift.

4.10.6.2 Mitigation Measure HAZ-2: Preparation of an HMMP prior to application for operation permits

Brightline West will prepare a HMMP prior to application for permits, as required by the State of California. The operational HMMP will be updated by Brightline West and will address UST decommissioning, field screening, materials testing methods, mitigation and contaminant management requirements, and health and safety requirements.

4.11 Cultural Resources

Cultural resources encompass a range of sites, properties, and physical resources relating to human activities, society, and cultural institutions. Such resources include past and present expressions of human culture and history in the physical environment, such as prehistoric and historic archaeological sites, structures, objects, and districts that are considered important to a culture or community. Cultural resources also include aspects of the physical environment, namely natural features and biota that are a part of traditional ways of life and practices and are associated with community values and institutions.

Concurrently with the preparation of this EA, FRA initiated consultation under Section 106 of the NHPA, including efforts to identify, evaluate, and assess effects to historic properties that could be impacted by the Project. FRA is the Lead Federal agency for compliance with Section 106 of the NHPA for this undertaking (i.e., the Project). The following preliminary analysis is based on those efforts. As of October 2022, reports documenting the inventory and evaluation efforts are under review with the California State Historic Preservation Officer (SHPO) and Consulting Parties, including Federally-Recognized Tribes. Compliance with Section 106 of the NHPA and the findings detailed in those reports and summarized in this EA will be documented as part of the Final EA.

4.11.1 Regulatory Setting

Pursuant to Section 106 of the NHPA of 1966, as amended (54 U.S.C. Section 306108) (Section 106) and its implementing regulations (36 CFR Part 800), Federal agencies are required to take

into account the effects of their undertakings on historic properties[29]. The Section 106 process involves consultation with the State Historic Preservation Officer (SHPO) and other consulting parties, including Federally-Recognized Native American Tribes that attach religious or cultural significance to historic properties that may be affected by the undertaking. Consistent with Section 106, FRA defines the APE, which is the geographic area where historic properties could be affected. FRA then identifies properties within the APE and makes determinations as to whether those properties are eligible for inclusion in the National Register of Historic Places (NRHP). FRA then assesses whether the undertaking would result in adverse effects to NRHP-eligible properties, and resolves adverse effects. This process is done in consultation with SHPO and the consulting parties.

FRA is the Lead Federal agency for compliance with Section 106 of the NHPA for this undertaking.

4.11.2 Study Area

The study area for cultural resources consists of the APE for historic properties, which is defined in consultation with SHPO and the consulting parties through the Section 106 process. The APE is based on preliminary design plans and is the geographic area or areas within which an undertaking may affect historic properties. Such effects may include, physical destruction, auditory, vibratory, and visual intrusion.[30] The APE was developed in consultation with the SHPO, and Consulting Parties, including Federally-Recognized Tribes and other Cooperating Agencies.

The APE is shown in Figure 16 and is defined in Table 46.

Table 46. APE Delineation Values

Project Component	Final APE Delineation
APE (alignment, highway improvements only, interchange modifications)	Project LOD: • For the 49 miles of alignment within Caltrans I-15 right-of-way, FRA expanded the LOD based on the known construction and operations footprint from the 30% design plans plus an additional 100 foot buffer not to exceed the I-15 right-of-way. • In the Cajon Pass, where the I-15 right-of-way is excessively wide, FRA expanded the LOD 100 foot from the edge of existing pavement. • For the approximate 1-mile of alignment from the I-15 to the Rancho Cucamonga station, the LOD is within an existing public, rail, and utility right-of-way.
Urban Alignment	One tax lot adjacent to LOD, 200 feet minimum
Rural	1,500 feet either side of LOD

[29] A historic property, as defined in the NHPA, is any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the NRHP. Eligibility criteria for listing a property in the NRHP are found at 36 CFR Part 60.

[30] For more information regarding the noise and vibration effects from the Project, refer to Section 4.2, Noise and Vibration. For more information regarding the visual effects from the Project, refer to Section 4.7, Aesthetic and Design Quality.

Project Component	Final APE Delineation
Vertical Height of Project Components	65 feet above current grade
Areas of Religious or Cultural Significance to Tribes	1,500 feet either side of LOD
Known sites of Religious or Cultural Significance to Tribes	Generally, if a known archaeological site is bisected by or immediately adjacent to the final APE, the APE was expanded to include the entire historic property.

Source: HNTB 2022

The APE includes the footprint of the proposed Project alignment, facilities, and ancillary features[31] and extends beyond the Project's footprint to account for noise, vibratory and visual effects. FRA defined a conservative APE to encompass potential minor shifts in alignments as the design advances.

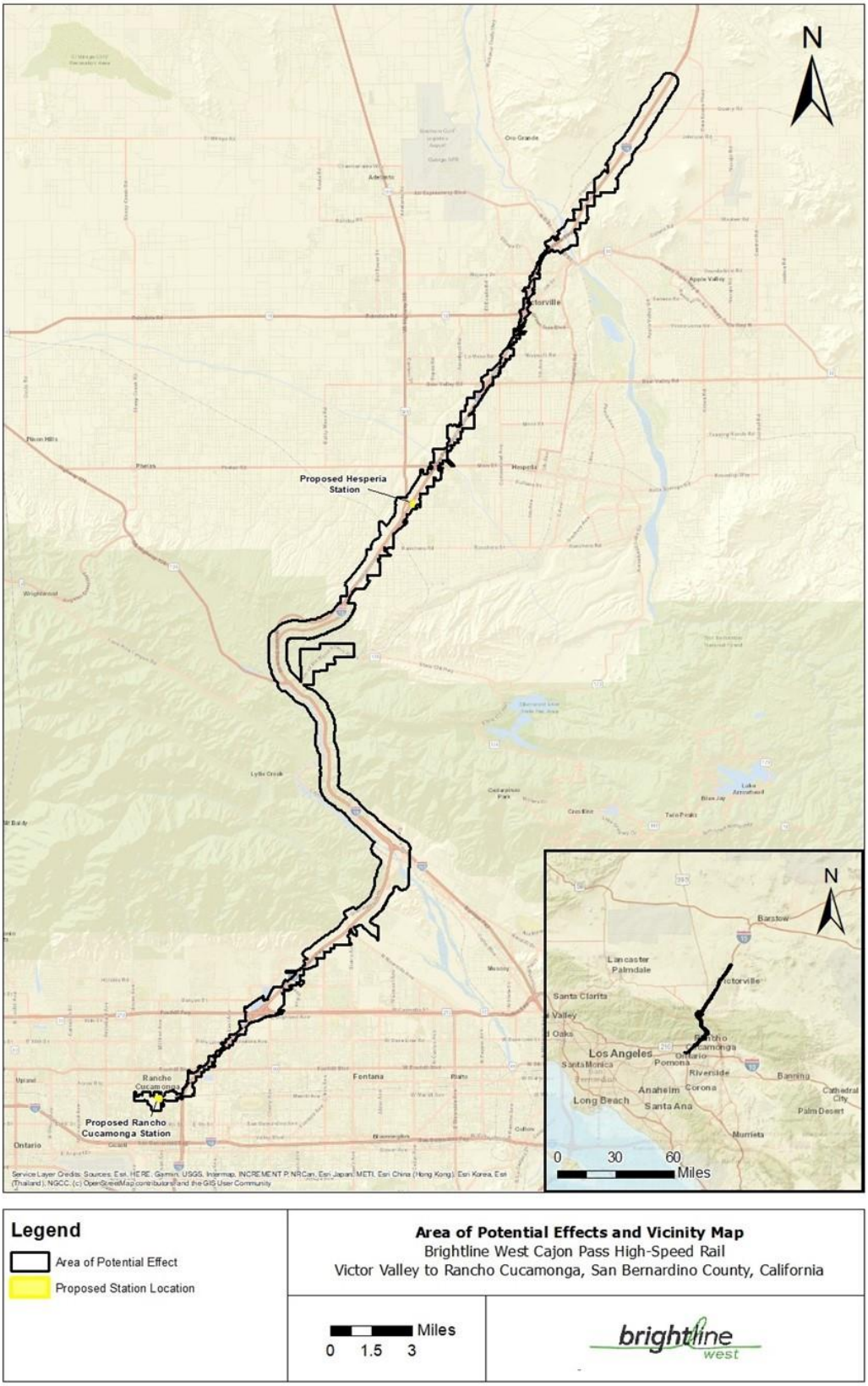
4.11.3 Methodology

To identify historic properties within the APE, FRA conducted desktop research, field surveys, and sought information from Tribes.[32] The methodology used to identify built and archaeological historic properties within the APE is based on best practices in the survey and inventory of historic properties, established in National Register Bulletin 24: Guidelines for Local Surveys: A Basis for Preservation Planning. The survey and inventory of historic properties were performed in accordance with established survey methods. FRA invited eight Tribes to participate in monitoring of the archaeological inventory and all field surveys were conducted with at least one tribal monitor present. Desktop research consisted of a records review of available reports and documents on file with the California Historical Resources Information System (CHRIS), a search of the State's Built Environment Resource Database, and information obtained from Consulting Parties and Tribes. The qualitative analysis considers the potential direct and indirect cultural resources impacts of the Project on the communities within San Bernardino County, and the cities of Victorville, Hesperia, Rancho Cucamonga, and Fontana.

Based on data from the CHRIS, FRA confirmed whether any resources within the APE were previously determined to be NRHP eligible. Based on survey and inventory of cultural resources conducted by HNTB and Dudek in 2021 and 2022, FRA made preliminary determinations of eligibility for the other resources identified in the APE as previously unevaluated or newly-identified. As part of the Section 106 process, FRA will consult on formal determinations of eligibility for historic properties identified within the APE and seek concurrence from the SHPO on these determinations.

[31] Facilities consist of station locations; substations and electrical infrastructure; and operations, maintenance, and service facilities. Ancillary features include temporary construction easements, staging areas, and roadway reconstruction locations.

[32] As part of the ongoing Section 106 consultation, FRA will provide consulting parties with a formal review of the inventory and seek comment on FRA's identification effort.



Source: HNTB 2022

Figure 16. Area of Potential Effects and Vicinity Map

To analyze effects to historic properties, FRA considered how properties could be affected by the Project. This included evaluating the physical effects of construction and operation, as well as effects from noise, vibration, and visual intrusions from the Project.[33] FRA then considered how effects from the Project may alter, directly or indirectly, the characteristics of a historic property that qualify it for inclusion in the NRHP in a manner that will diminish the integrity of the property's location, design, setting, workmanship, materials, feeling, or association. FRA also considered how effects from the undertaking, when considered cumulatively, could affect historic properties.

In addition to considerations under NHPA, Tribes expressed concerns with impacts to the broader cultural setting. The Cajon Pass and High Desert are areas of religious and cultural significance for several Tribes whose ancestors have occupied and traversed the region since time immemorial. expressed alterations to the landscape can affect the traditional cultural setting in ways that may only be perceptible to the tribal community. In response to these concerns, FRA prepared a qualitative discussion regarding changes to the cultural setting resulting from the Project.[34]

4.11.4 Affected Environment

The affected environment for cultural resources consists of potentially eligible and NRHP-eligible historic properties within the APE. In addition, the broader cultural landscape, as defined by Federally-Recognized Tribes in this area, is also considered within the affected environment.

4.11.4.1 Previous and Newly Identified NRHP-Eligible Built Environment Historic Properties Within the APE

Within the APE, FRA identified 64 previously identified and newly identified built environment properties that meet the definition of an NRHP-eligible historic property. Of the 64 previously recorded, historic-age, built environment resources surveyed by analysts, 13 properties that are either partially or entirely within the Project's APE are considered eligible for listing in the NRHP; one of those 13 properties is already listed (P36010316 SCE) Kramer to Victorville 115 kilovolt [kV] Transmission Line). The 13 properties consist of four sets of power transmission lines, the Atchison, Topeka & Santa Fe (AT&SF) Railroad, one railroad-related bridge, two culverts, the California Aqueduct (East Branch), National Old Trails Highway/Route 66, one residence, and a cement plant. The 12 properties previously determined to be eligible for the NRHP and located within the APE are listed in Table 47.

[33] For more information regarding the noise and vibration effects from the project, refer to Section 4.2, Noise and Vibration. For more information regarding the visual effects from the project, refer to Section 4.7, Aesthetic and Design Quality.

[34] FRA received information from Tribes regarding several resource areas discussed in this EA. For more information, refer to Section 4.2, Noise and Vibration; Section 4.7, Aesthetic and Design Quality; Section 4.8, Land Use and Community Facilities; Section 4.9, Socioeconomic Environment; and Section 4.16, Environmental Justice.

Table 47. Previously Identified NRHP-Eligible Historic Properties Within the APE

Primary Number	Resource Name and Address (as applicable)	Location	Year Built	NRHP Status	NRHP Criteria
P-36-008857	SCE Lugo-Mira Loma No. 1 500 kV Transmission Line	N/A	1968–1969	Eligible	A
P-36-010315	SCE Boulder Dam–San Bernardino 132 kV Hoover Dam Transmission Line[a]	N/A	1930–1937	Eligible	A, C
P-36-007694	Los Angeles Department of Water and Power (LADWP) Boulder Dam–Los Angeles Transmission Lines	N/A	1933–1940	Eligible	A, C
P-36-010316	SCE Kramer –Victorville Transmission Lines	N/A	1933–1940	Listed	A, C
P-36-006793	AT&SF Railroad	N/A	ca. 1915	Eligible	A,C
P-36-007295	AT&SF Railroad Bridge over Baldy Mesa Road	N/A	1931	Eligible	A,C
P-36-012319	BNSF Railroad Culvert BNSF-4	N/A	1930	Eligible	A
P-36-022664	WSA PF 08 Culvert	N/A	1932	Eligible	A
P-36-021351	California Aqueduct East Branch	N/A	ca. 1960s	Eligible	A, C
P-36-002910	National Old Trails Highway; also Route 66	N/A	ca. 1920–1970	Eligible	A
P-36-014997	Cour-Tilden House	Rancho Cucamonga	ca. 1914	Eligible	C
P-36-006318	Southwestern Portland Cement Company, Victorville Plant	Victorville	1916	Eligible	A
Pending	United States Postal Service, Etiwanda Station, Rancho Cucamonga, 7615 Etiwanda Ave, Rancho Cucamonga, CA 91739	Rancho Cucamonga	ca. 1960-1966	Eligible	C

Source: HNTB 2022

Of the 394 newly-recorded historic-age, built environment resources dating to 1973 or before that were encountered during field surveys, FRA has preliminarily determined one eligible for the NRHP: the United States Postal Service, Etiwanda Station, located in Rancho Cucamonga, built ca. 1960-1966, and determined eligible under National Register of Historic Places Criterion C. The remaining 393 newly-recorded built environment resources are considered not eligible for listing in the NRHP.

United States Postal Service, Etiwanda Station, Rancho Cucamonga

The Etiwanda Post Office, located at 7615 Etiwanda Avenue, is a 2,798 square-foot, Mid-Century Modern style building, clad in square cinder blocks. Character defining features include a front-gabled roof, with wide overhanging eaves and exposed decorative beams, a glass entryway, following the peak of the roof, and undulating square vertical cinder blocks. While now closed, the post office sign and flagpole still stand, but the lettering has since been removed. The post office building, constructed between 1960 and 1966, is first seen on the 1966 aerial photograph and is first recorded on the 1966 Gausti (1:24,000) topographic map.

The Etiwanda Post Office appears NRHP-eligible under Criterion C as a good example of a mid-century modern public building. It retains integrity of location, design, materials, workmanship, feeling, and association.

4.11.4.2 Previous and Newly Identified NRHP-Eligible Archaeological Resources Within the APE

Through archaeological inventory and Tribal consultation, FRA has formally determined that 23 archaeological resources within the APE are eligible for NRHP listing while an additional 56 archaeological resources in the APE are assumed to be eligible for the purposes of this Project only; all are presented in Table 48. Eligible archaeological resources include lithic scatters, temporary campsites, historically-documented village locations, historic period refuse deposits and home sites, railroad debris, water-conveyance systems, one prehistoric archaeological district, and one landform of tribal cultural significance. Of the 23 formal determinations by FRA, 19 are contributing elements to the Crowder Canyon Archaeological District (P-36-029772) which itself has been listed previously, two are historically-documented Native American settlements, and one is a culturally significant landform.

Table 48. Identified NRHP-Eligible Archaeological Resources within the APE

SITE	Site Type	Individual NRHP Status	Individual NRHP Criteria	Contributing NRHP Status	Contributing NRHP Criteria	Contributing Archaeological District
P-36-000113 Historic component	HPRD/ Foundations	Assumed Eligible	N/A	N/A	N/A	N/A
P-36-000114 Historic component	HPRD/ Homestead	Assumed Eligible	N/A	N/A	N/A	N/A
P-36-000122 Historic component	HPRD	Assumed Eligible	D	N/A	N/A	N/A
P-36-000421 Historic component	Water Conveyance	Assumed Eligible	D	N/A	N/A	N/A
P-36-000425 Historic component	HPRD	Previously Determined Eligible, Criterion A, D	A, D	N/A	N/A	N/A
P-36-004275	Toll Road	Assumed Eligible	N/A	N/A	N/A	N/A
P-36-003803	HPRD/ Homestead	Assumed Eligible	D	N/A	N/A	N/A
P-36-006318	HPRD	Assumed Eligible	N/A	N/A	N/A	N/A
P-36-006701	Mining	Assumed Eligible	D	N/A	N/A	N/A
P-36-007095	HPRD	Assumed Eligible	N/A	N/A	N/A	N/A
P-36-007294	Railroad Debris	Assumed Eligible	D	N/A	N/A	N/A

SITE	Site Type	Individual NRHP Status	Individual NRHP Criteria	Contributing NRHP Status	Contributing NRHP Criteria	Contributing Archaeological District
P-36-007761	HPRD	Assumed Eligible	D	N/A	N/A	N/A
P-36-008128	HPRD/ Landscaping	Assumed Eligible	D	N/A	N/A	N/A
P-36-008129	HPRD	Assumed Eligible	D	N/A	N/A	N/A
P-36-008130	HPRD	Assumed Eligible	D	N/A	N/A	N/A
P-36-008131	HPRD	Assumed Eligible	D	N/A	N/A	N/A
P-36-008133	Water Conveyance	Assumed Eligible	D	N/A	N/A	N/A
P-36-009566	HPRD	Assumed Eligible	D	N/A	N/A	N/A
P-36-010920	HPRD	Assumed Eligible	N/A	N/A	N/A	N/A
P-36-011425	HPRD/ Foundations	Assumed Eligible	D	N/A	N/A	N/A
P-36-011678	Homestead	Assumed Eligible	N/A	N/A	N/A	N/A
P-36-012056	HPRD/ Foundations	Assumed Eligible	D	N/A	N/A	N/A
P-36-012650	Mining	Assumed Eligible	N/A	N/A	N/A	N/A
P-36-012651	Mining	Assumed Eligible	N/A	N/A	N/A	N/A
P-36-012655	Power Lines	Assumed Eligible	N/A	N/A	N/A	N/A
P-36-012657	HPRD	Assumed Eligible	N/A	N/A	N/A	N/A
P-36-012739	Foundations	Assumed Eligible	D	N/A	N/A	N/A

SITE	Site Type	Individual NRHP Status	Individual NRHP Criteria	Contributing NRHP Status	Contributing NRHP Criteria	Contributing Archaeological District
P-36-012838	HPRD/ Foundations/ Features	Assumed Eligible	D	N/A	N/A	N/A
P-36-013300	HPRD	Assumed Eligible	D	N/A	N/A	N/A
P-36-013881	Railroad Debris	Assumed Eligible	D	N/A	N/A	N/A
P-36-014507	HPRD	Assumed Eligible	N/A	N/A	N/A	N/A
P-36-014508	HPRD	Assumed Eligible	D	N/A	N/A	N/A
P-36-018058	Historic Camp	Eligible, Criterion A, D	A, D	N/A	N/A	N/A
P-36-020173	Farm	Assumed Eligible	N/A	N/A	N/A	N/A
P-36-020969	HPRD	Assumed Eligible	D	N/A	N/A	N/A
P-36-021286	HPRD	Assumed Eligible	D	N/A	N/A	N/A
P-36-021287	HPRD	Assumed Eligible	D	N/A	N/A	N/A
P-36-021288	HPRD	Assumed Eligible	D	N/A	N/A	N/A
P-36-021300	HPRD	Assumed Eligible	D	N/A	N/A	N/A
P-36-021556	HPRD	Assumed Eligible	D	N/A	N/A	N/A
P-36-021557	Water Conveyance	Assumed Eligible	D	N/A	N/A	N/A
P-36-021565	HPRD	Assumed Eligible	D	N/A	N/A	N/A
P-36-022663	HPRD	Assumed Eligible	N/A	N/A	N/A	N/A
P-36-023468	HPRD	Assumed Eligible	D	N/A	N/A	N/A
P-36-023470	HPRD	Assumed Eligible	D	N/A	N/A	N/A
P-36-024573	Road	Assumed Eligible	D	N/A	N/A	N/A

SITE	Site Type	Individual NRHP Status	Individual NRHP Criteria	Contributing NRHP Status	Contributing NRHP Criteria	Contributing Archaeological District
P-36-024574	Railroad debris	Assumed Eligible	D	N/A	N/A	N/A
P-36-024579	Road	Assumed Eligible	D	N/A	N/A	N/A
P-36-024580	Road	Assumed Eligible	D	N/A	N/A	N/A
P-36-027084	Foundations	Assumed Eligible	D	N/A	N/A	N/A
P-36-027085	Water Conveyance	Assumed Eligible	D	N/A	N/A	N/A
P-36-032877	HPRD	Assumed Eligible	D	N/A	N/A	N/A
Crowder Canyon Archaeological District (P-36-029772)	Prehistoric Archaeological District	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	N/A	N/A	Crowder Canyon Archaeological District
P-36-000113	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District
P-36-000114	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District
P-36-000115	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District
P-36-000122	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District

SITE	Site Type	Individual NRHP Status	Individual NRHP Criteria	Contributing NRHP Status	Contributing NRHP Criteria	Contributing Archaeological District
P-36-000421	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District
P-36-000713	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District
P-36-003770	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District
P-36-003771	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District
P-36-003772	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District
P-36-003773	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District
P-36-003774	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District
P-36-003775	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District
P-36-005821	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District

SITE	Site Type	Individual NRHP Status	Individual NRHP Criteria	Contributing NRHP Status	Contributing NRHP Criteria	Contributing Archaeological District
P-36-005822	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District
P-36-005824	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District
P-36-005825	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District
P-36-008858	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District
P-36-031655	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District
P-36-032880	Prehistoric	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	Contributor	A, D	Crowder Canyon Archaeological District
P-36-000425 prehistoric component	Habitation	Previously Determined Eligible, Criterion D; Determined Eligible Criterion A by FRA	A, D	N/A	N/A	N/A
P-36-001397	Bedrock Milling	Assumed Eligible	D	N/A	N/A	N/A
P-36-002207	Lithic Scatter	Assumed Eligible	D	N/A	N/A	N/A
P-36-002208	Lithic Scatter	Assumed Eligible	D	N/A	N/A	N/A
P-36-002302	Stone Feature	Assumed Eligible	D	N/A	N/A	N/A

SITE	Site Type	Individual NRHP Status	Individual NRHP Criteria	Contributing NRHP Status	Contributing NRHP Criteria	Contributing Archaeological District
P-36-003680	Lithic Scatter/ Bedrock Milling	Assumed Eligible	D	N/A	N/A	N/A
P-36-004265	Lithic Scatter/ Thermal Feature	Assumed Eligible	D	N/A	N/A	N/A
P-36-005063	Lithic Scatter	Assumed Eligible	D	N/A	N/A	N/A
P-36-006315	Lithic Scatter	Assumed Eligible	D	N/A	N/A	N/A
P-36-013882	Thermal Feature	Assumed Eligible	D	N/A	N/A	N/A
P-36-033607	Bedrock Milling	Assumed Eligible	D	N/A	N/A	N/A
BW22-MH-001 (Coyote's Nose)	Cultural Landform	Eligible	A	N/A	N/A	N/A

Source: Dudek 2022

4.11.4.3 Traditional Cultural Landscape

The identification and evaluation of properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization may be considered traditional cultural properties (or places) (TCPs), as described in the National Register Bulletin (NRB) 38, *Guidelines for Evaluating and Documenting Traditional Cultural Properties* (NPS 1992). NRB 38 is designed to supplement NRB 15 and is intended to aid in determining whether properties thought to have traditional cultural or religious significance meet one or more of the NRHP significance criteria and are therefore eligible for inclusion in the NRHP. The term "Traditional Cultural Landscape" (TCL) is currently used to describe an evolving concept for historic preservation regulation and practice as of 2013. In 2011, the Advisory Council on Historic Preservation issued a Native American Traditional Cultural Landscapes Action Plan with the intent of raising awareness for "large scale historic properties of religious and cultural significance to Indian tribes or Native Hawaiian organizations (NHOs)" and ensuring that such resources "are considered early in land management and project planning decisions" (ACHP 2011). More recently, the ACHP issued additional guidance (Native American Traditional Cultural Landscapes and the Section 106 Review Process: Questions and Answers) for consideration of TCLs in the context of applying Section 106 (ACHP 2012). The ACHP further states that, "Traditional cultural landscapes are considered by the NRHP to be a type of significance rather than a property type". Therefore, of the 79 archaeological resources listed above, Tribal Values indicated that two (Crowder Canyon Archaeological District and Coyote's Nose), convey the TCL type of significance. Impacts to these resources are discussed further in Section 4.7, Aesthetic and Design Quality.

4.11.5 Environmental Consequences

Construction and operation of the Project will generate physical ground disturbance, noise, vibration and visual intrusions within the study area. Due to the location of historic properties in proximity to project activities, impacts or effects to historic properties are unlikely to occur.[35] The overall setting of the cultural landscape within the affected environment will experience both short-term and long-term changes, but because the Project will be co-located within the existing transportation corridor, changes to the setting are not anticipated to be significant.

4.11.5.1 No Build Alternative

The No Build Alternative will involve no action to create a passenger HSR system in the median of the I-15 highway between Victor Valley and Rancho Cucamonga. The existing I-15 corridor will remain operational. The No Build Alternative will not result in construction activities or operation of a new HSR system; therefore, no impacts to cultural resources will occur.

4.11.5.2 Construction of the Build Alternative

Construction activities will occur within the defined Project footprint, and will occur primarily within the I-15 median or within the existing Caltrans right-of-way. This area is a significantly disturbed transportation corridor, which has been disturbed by construction activities and ongoing transportation use associated with the I-15 highway. FRA did not identify any built

[35] FRA will prepare a formal finding of effect determination for historic properties within the APE as part of the ongoing Section 106 process and seek concurrence by SHPO on this determination.

environment or archaeological historic properties within the APE where ground-disturbing activities will occur that would be adversely affected; therefore, construction of the Project would likely not result in physical damage to any historic properties. Additionally, resources identified in the APE but beyond the Project footprint (described above in Section 4.11.4) would be sufficiently distant from construction activities that no noise or vibration construction-period impacts are anticipated.

Construction of the Project will result in short-term noise impacts to resources in the affected environment. Under the scenario shown in Section 4.2.5.2, construction noise impacts will be limited because most construction will take place in the median of the I-15 corridor, distant from most sensitive receptors. Increases in noise has the potential to impact the cultural setting by disrupting cultural practices and other activities that may occur within the broader cultural landscape. Since construction activities will occur within the Caltrans right-of-way, adjacent to or in the I-15 highway median, it is unlikely the Project will cause significant disruptions due to noise. Construction noise will be minimized to the extent possible and will occur in the larger noise context of the existing highway. Project construction would not diminish the NRHP eligibility for any resources as a result of noise or vibration such that it would no longer convey significance.

4.11.5.3 Operation of the Build Alternative

Archaeological and Tribal Cultural Resources

Operation of the Build Alternative will occur only within the defined Project footprint, which is entirely within an existing transportation corridor and co-located with the I-15 highway. FRA did not identify any archaeological resources or tribal cultural resources in the area within the APE where permanent Project features would be located. As a result, the Project will not result in the physical destruction of any such resources.

As discussed above in Section 4.2.3, due to the existing noise environment, changes to existing noise levels during project operation will not be significant, as noise from the train is anticipated to dissipate over 200 feet. In other words, at a distance of 200 feet or farther from the Project centerline, noise generated by the Project would not be loud enough to result in an impact. FRA did not identify any archaeological resources or tribal cultural resources within 200 feet of the rail alignment. Furthermore, FRA is not aware of any traditional practices that would occur within this distance. The Project's slight increase in noise around the project area would not impact archaeological or tribal cultural resources' contribution to the broad patterns of history or impact information important in prehistory or history. As a result, there would be no operational noise impact on archaeological or tribal cultural resources.

The Project will be located within an existing transportation corridor and will be at or slightly above the existing grade of the I-15 highway. In most locations, the most visible element of the Project will be the overhead catenary poles and wire. Therefore, FRA does not anticipate visual intrusions that would impact the resources' contribution to the broad patterns of history, impact information important in prehistory or history, or otherwise diminish qualities that contribute to NRHP eligibility. In consultation with the consulting parties, FRA will prepare a formal finding of effect determination and seek concurrence from the SHPO as part of the ongoing Section 106 consultation process.

Historic Built Environment Resources

Table 49 summarizes FRA's preliminary impact assessment for the 12 historic built environment resources identified within the APE. As with archaeological and tribal cultural resources, FRA will prepare a formal finding of effect determination and seek concurrence from SHPO as part of the ongoing Section 106 consultation.

Table 49. Potential Effects to Built Environment Historic Properties Within the APE

Primary Number	Name and Address (as Applicable)	City	Year Built	Impact Assessment	NRHP Criteria
Pending	United States Postal Service, Etiwanda Station, Rancho Cucamonga, 7615 Etiwanda Ave, Rancho Cucamonga, CA 91739	Rancho Cucamonga	ca. 1960-1966	This resource is 300 feet west of the I-15 corridor in Section 3 of the Project. The rail alignment would be elevated along the west side of I 15 and would be visible from the rear of the post office building. Introducing the elevated rail alignment to the setting would not diminish the setting such that it would no longer be able to convey its significance. The existing setting includes an active transportation corridor (I-15); the Project would not introduce any incompatible visual or audible element to the setting as changes to existing noise levels during project operation are not anticipated to be significant and anticipated to dissipate beyond 200 feet for a noisy/busy suburban environment.	C
P-36-008857	Southern California Edison (SCE) Lugo-Mira Loma No. 1 500 kV Transmission Line	N/A	1968-1969	This linear resource crosses overhead within the study area in multiple locations in Segments 2 and 3 of the Project. Given the length of this resource (over 100 miles) and the relatively narrow segments of the resource that cross overhead within the study area, setting impacts would be minimal-moderate level.	A, C
P-36-010315	Southern California Edison (SCE) Boulder Dam–San Bernardino 132 kV Hoover Dam Transmission Line[a]	N/A	1930–1937	This resource crosses the APE for a distance of approximately 6,000 feet near the I-15/Stoddard Wells Road interchange (Segment 1) and for a distance of approximately 2,500 feet in Hesperia (Segment 1). Project construction would cause temporary noise and vibration. Given the total length of this resource (over 200 miles long), and the relatively short distance that the resources crosses into the study area, impacts would be minimal. Construction impacts would be temporary in nature, and construction activities would avoid the overhead utilities (there are multiple corridors at this location). The utilities are not considered sensitive receivers for the purposes of noise impacts.	A, C
P-36-007694	Los Angeles Department of Water and Power (LADWP) Boulder Dam to	N/A	1933–1940	There would be minor permanent visual and setting impacts given that the Project would be visible in views to and from this resource, but the resource would not be physically impacted. Noise and vibration	A, C

Primary Number	Name and Address (as Applicable)	City	Year Built	Impact Assessment	NRHP Criteria
	Los Angeles Transmission Lines[a]			impacts during construction would be minimal, given that this is not a noise-sensitive land use type.	
P-36-010316	Southern California Edison (SCE) Kramer – Victorville Transmission Lines[a]	N/A	1933-1940	This linear resource crosses overhead within the APE at one location in Hesperia (Segment 1) for a distance of 2,000 feet. Given the length of this resource (approximately 100 miles), impacts to its setting would be minimal. There will be no physical impacts.	A, C
P-36-006793	Atchison, Topeka & Santa Fe (AT&SF) Railroad	N/A	ca. 1915	The Project would add new crossings over the historic property at multiple locations but within the footprint of I-15, so the incremental increase in visual impacts is expected to be minimal. The existing BNSF rail corridor is not considered a sensitive receptor for noise or vibration impacts.	A, C
P-36-007295	Railroad Bridge over Baldy Mesa Road	N/A	1931	This railroad bridge is located 1,000 feet east of I-15 between Cajon Junction and Alray, in Segment 2 of the Project. This resource is east of the southbound lanes of I 15, and the proposed rail alignment is in the median, at grade, at this location. Introducing a railroad-related visual element in the vicinity of this bridge is unlikely to affect this resource; no impacts are anticipated.	A, C
P-36-012319	BNSF Railroad Culvert BNSF-4	N/A	1930	This historic culvert is approximately 1,000 feet east of the northbound I-15 travel lanes in Segment 2 (median-running alignment in Cajon Pass). Given its current use as a BNSF railroad structure, located 1,000 feet away from the proposed Project, no noise or vibration impacts are anticipated. There will be no physical impacts.	C
P-36-022664	WSA PF 08 Culvert	N/A	1932	This historic culvert crosses under I-15 in Segment 2 of the Project. No impacts to this resource are anticipated.	A
P-36-002910	National Old Trails Highway; also Route 66	N/A	ca. 1920–1970	The Project would not introduce an incompatible visual or audible element to the setting because an active transportation corridor already exists in the resource's immediate setting. The Project would cross the historic property at multiple locations where the resource lacks integrity. The Project would not physically alter the segment of the resource that retains integrity, as it is not located on I-15 right-of-	A

Primary Number	Name and Address (as Applicable)	City	Year Built	Impact Assessment	NRHP Criteria
				way. No noise or vibration impacts are anticipated, as the historic resource is greater than 200 feet from the median-running alignment.	
P-36-021351	California Aqueduct East Branch	N/A	ca. 1960s	The Project would add a bridge spanning the aqueduct; the bridge would be adjacent to existing I-15 bridges. Given the overall length of the aqueduct (over 200 miles long), and the short bridge span between the I-15 bridges (median alignment), the operational impact would be minimal.	A, C
P-36-014997	Cour-Tilden House	Rancho Cucamonga	ca. 1914	This residence is 300 feet west of the I-15 corridor at the periphery of the study area, in Section 3 of the Project. The rail alignment would be elevated on the west side of I-15 and would be visible and audible from the rear of the residence. Introducing the elevated rail alignment (Project) to the setting of this historic residence would not diminish the integrity of the historic resource such that it would no longer be able to convey its significance, as the existing setting already includes an active elevated transportation corridor (I-15).	C
P-36-006318	Southwestern Portland Cement Company, Victorville Plant	Victorville	1916	This resource is 1/3 mile west of I-15 in Section 1 of the Project. The rail alignment would be elevated on a bridge on the west side of the Mojave River, adjacent to the I-15 bridges crossing the Mojave River. No physical or noise impacts are anticipated at this distance, but the Project would have a minor impact on the resource's visual setting.	A

Source: HNTB 2022

4.11.5.4 Traditional Cultural Landscape

FRA considered whether construction and operation of the Project would affect the cultural setting within the study area. The setting includes both tangible and intangible elements, which are of religious and cultural significance to Tribes. Overall, near to and from the viewpoint of archaeological historic properties, construction of the Project would not significantly alter the setting and feel of the existing environment, which has been extensively modified through construction of I-15 and other roadways, rest stops, and service areas associated with the freeway, as well as other infrastructure, such as overhead powerlines. While some noise, vibratory, and visual impacts would occur either from the introduction of new infrastructure components or HSR operations, these would be minimal given that the Project would be located within an existing transportation corridor that has been a part of the visual landscape for over 50 years. As a result, the Project would not significantly alter the existing cultural setting. FRA recognizes that the cultural setting may convey significance that is not able to be perceived by non-traditional users. Therefore, FRA will consider, in consultation with Tribes, whether mitigation is appropriate to address changes in setting.

4.11.5.5 Cumulative Impacts

Impacts on cultural resources tend to be specific to the context of the resource and to the aspects which contribute to a property's eligibility for listing in the National Register of Historic Places. Implementation of past, present, and foreseeably future actions can result in cumulative effects on individual historic properties or landscapes. However, as noted above, FRA did not identify any built environment or archaeological historic properties within the APE where ground-disturbing activities will occur that would be adversely affected; therefore, construction of the Project would likely not result in physical damage to any historic properties. Therefore, construction of the Project, in combination with other cumulative projects, would not result in cumulative impacts on built environment or archaeological historic properties.

Although the Project and cumulative projects could result in increased noise and vibration at cultural resources, a quiet setting is not a character-defining feature of impacted resources. Therefore, operation of the Project, in combination with other past, present, and reasonably foreseeable future projects would not result in cumulative cultural resource impacts.

4.11.6 Avoidance Minimization and Mitigation Measures

As no adverse effects or impacts have been identified, no avoidance, minimization, or mitigation measures will be required to reduce impacts on cultural resources during construction or operation of the Project.

4.12 Transportation

Proposed HSR projects have the potential to reduce transportation costs, reduce GHG emissions, relieve highway and air traffic congestion, and spur economic development in large and small communities. It is important to evaluate the impacts of a proposed HSR project to the existing and future transportation system, as well as identify how a transportation project improves mobility, at both the local and regional level, compared to the No Build Alternative. This section describes the details regarding the transportation analysis from implementation of the Project, including to local intersections, local transit, regional rail, active transportation,

parking, freeway mainlines, and VMT. The following analysis is based on the Transportation Technical Report prepared by HNTB, which is included as Attachment I to this EA.

4.12.1 Regulatory Setting

The following Federal, State, and local regulations, policies, and plans were reviewed to evaluate potential project-related impacts on transportation:

- **Traffic Safety Bulletin 20-02-R1 Interim Local Development Intergovernmental Review Safety Review (LDIGR) Practitioners Guidance (Caltrans 2020):** This guidance is for practitioners and consultants conducting safety reviews for proposed projects affecting the State Highway System.
- **San Bernardino County Congestion Management Program (CMP):** This program prescribes a uniform approach for the analysis of traffic impacts for jurisdictions within the county.
- **City of Rancho Cucamonga Traffic Impact Analysis Guidelines**: These guidelines describe the elements required for preparing traffic impact analyses consistent with the San Bernardino County CMP.
- **City of Hesperia General Plan:** Circulation Element Implementation Policy CI-2.1 establishes the city's level of service (LOS) standard as LOS D for most roadway segments and intersections. Consistent with the CMP, this policy also states that LOS E is acceptable during peak hours at freeway interchanges and on Bear Valley Road, Main Street/Phelan Road, and US 395.

4.12.2 Study Area

The transportation analysis examines the potential effects of the Project on traffic patterns, VMT, parking, regional rail service, public transit service, and active transportation. The study area for each mode of transportation has been determined by where effects to each mode or metric might occur along parallel travel routes and in station areas as the result of the provision of new service, or near physical improvements where transportation facilities might be modified.

The traffic analysis evaluates the I-15 highway mainline as well as the local roadway and ramp intersections serving the proposed station sites in Rancho Cucamonga and Hesperia. The station areas around the Brightline West High-Speed Passenger Train Project between Victor Valley and Las Vegas are not included in the study area.

The study area for the intersection analysis includes 16 intersections around the Hesperia and Rancho Cucamonga stations. The study area for transit and regional rail includes routes, stations, and stops with a direct interface with project stations or that provide a parallel service to the Project, including any bus services and rail stations that stop at or within walking distance (0.25 mile) of the proposed Hesperia or Rancho Cucamonga stations or that use the I-15 corridor. The study area for active transportation includes roadways and paths with direct access to the station sites. The study area for freeway mainline operations is the I-15 right-of-way between the cities of Victorville and Rancho Cucamonga in California. The study area for VMT is the I-15 highway between Rancho Cucamonga and Las Vegas.

4.12.3 Methodology

This qualitative analysis considers the potential direct and indirect transportation impacts of the Project on the communities within San Bernardino County, and the cities of Victorville, Hesperia, Rancho Cucamonga, and Fontana. This analysis evaluates existing conditions, Project 2025 Opening Year No Build and Build conditions, and 2045 Horizon Year No Build and Build conditions. Existing traffic volumes are based on traffic counts conducted in August 2020, except for the intersection of US-395/Joshua Street, which was counted in October 2019. The counts were conducted for four peak periods: weekday AM (6:00 to 9:00 a.m.), weekday PM (4:00 to 6:00 p.m.), Friday PM (4:00 to 6:00 p.m.), and Sunday PM (4:00 to 6:00 p.m.). The year 2045 traffic No Build forecasts were derived using data from a variety of sources, including the SBCTA travel demand forecasting model and planning documents related to proposed improvements to I-15, including the I-15 Express Lanes project.

Train station vehicular trip generation was derived from station-specific ridership and employee projections prepared for Brightline West. Ridership projections were developed separately for commuters traveling between Hesperia and Rancho Cucamonga and for leisure and business passengers traveling between Las Vegas and Rancho Cucamonga. Ridership data was provided for the Hesperia and Rancho Cucamonga stations by year of operation, day of the week, time of day (peak hours), and direction (i.e., boardings [departures] and alightings [arrivals]).

The peak weekday, Friday, and Sunday hourly ridership projections were used to estimate peak hour vehicular trip generation and take into account passengers arriving in, or departing from, Rancho Cucamonga via the Metrolink San Bernardino line.

For a full description of the methods used to evaluate transportation impacts, refer to Section 4.3 of the Transportation Technical Report (Attachment I).

4.12.4 Affected Environment

The affected environment includes the following:

- Local intersections
- Local transit
- Regional rail
- Active transportation
- Parking
- Freeway mainline
- Vehicle miles traveled

4.12.4.1 Local Intersections

The affected environment for the intersection analysis includes 16 intersections around the proposed Hesperia and Rancho Cucamonga stations. Four existing intersections in the vicinity of the proposed Hesperia station and 12 existing intersections in the vicinity of the proposed Rancho Cucamonga station were analyzed. Currently, none of the 16 intersections operate at unacceptable LOS standards (LOS E or LOS F) during the AM (morning) and PM (afternoon) peak traffic hours for weekdays and weekends.

4.12.4.2 Local Transit

The affected environment for local transit includes routes, stations, and stops with a direct interface with project stations or that provide a parallel service to the Project. These include any bus services that stop at or within walking distance (0.25 mile) of the proposed Hesperia or Rancho Cucamonga stations or that use the I-15 corridor. Local transit within the study area is primarily provided by the Victor Valley Transit Authority (VVTA) and Omnitrans. Although VVTA has two bus routes (Route 15 and Route 25) that pass the Hesperia station site, there are no established bus stops in the Hesperia station vicinity. The proposed Rancho Cucamonga station is currently served by one bus route, Omnitrans Route 82. Additionally, the planned West Valley Connector project will provide frequent bus service to the Rancho Cucamonga Metrolink station and increase bus capacity at the station, and throughout the Omnitrans system. Planned headways are 10 minutes during the peak commute period and 15 minutes off peak, Monday through Friday. Weekend service may be provided subject to the availability of operating funds. Phase 1 of the West Valley Connector project, including stops at the Rancho Cucamonga Metrolink station and 20 other locations over a 19-mile route, is planned to begin service in 2023 with an opening year daily ridership forecast of 5,800 passengers (SBCTA 2020). Phase 2, serving an additional 12 locations and extending the route to a total of 35 miles, is expected to open in 2040, with a daily ridership forecast of 10,170 passengers. The "Resort" master-planned community will construct a new residential community west of the Rancho Cucamonga station, extending south from the Metrolink corridor across 6th Street to 4th Street. Since most of the traffic to the Rancho Cucamonga station will be regional traffic, and 6th Street does not have connections to either I-10 or I-15, traffic accessing the station from the west is expected to use either I-10 or 4th Street and then Milliken Avenue. For this reason, no analysis is included for this new potential connection or associated intersections.

4.12.4.3 Regional Rail

The affected environment for regional rail includes routes, stations, and stops with a direct interface with project stations or that provide a parallel service to the Project. These include any rail services that stop at or within walking distance (0.25 mile) of the proposed Hesperia or Rancho Cucamonga stations or that use the I-15 corridor. There is no existing regional rail service at the proposed Hesperia station site. The Southern California Regional Rail Authority (SCRRA or Metrolink) operates commuter rail service along the San Gabriel Subdivision between Los Angeles Union Station and downtown San Bernardino, which includes a stop at the Rancho Cucamonga station. As of April 2022, 36 commuter rail trains, 18 in each direction, stop at the Rancho Cucamonga station between 4:08 AM and 10:52 PM on weekdays. On Saturdays and Sundays, Metrolink runs eight trains in each direction between 7:04 AM and 10:52 PM on the San Bernardino Line.

Additionally, the Southern California Optimized Rail Expansion (SCORE) program is intended to increase speeds, reliability, and capacity on Metrolink lines, including on the San Gabriel Subdivision that serves the Rancho Cucamonga station. The SCORE program also includes capital improvements within the Metrolink corridor that will improve service to Rancho Cucamonga, including the Marengo Siding Extension, El Monte Siding Extension/Tyler and Cogswell Grade Crossing Improvements, Rancho Siding Extension, and Lone Hill to White Double Track. These projects are anticipated to be complete by 2025 (SCRRA 2022b). With

these and other improvements, the California State Rail Plan envisions half-hourly all-day service between Los Angeles and San Bernardino commencing in 2028 (Caltrans 2018).

The SBCTA is currently constructing the Redlands Passenger Rail (Arrow) Project and is expected to enter service in 2022 (SBCTA 2021). Arrow, which will be operated by Metrolink, will provide Diesel Multiple Unit service to five stations along a 9-mile route extending east from downtown San Bernardino to Redlands. Trains will operate every 30 minutes during peak periods and every 60 minutes during off-peak periods, with weekday and weekend service planned to operate between 5:00 PM and 10:00 PM. In addition, a Metrolink locomotive-hauled coach will be used to provide weekday express service between Redlands and Los Angeles.

SBCTA is conducting environmental review of the "Tunnel to ONT" project, a roughly 4-mile planned transit corridor connecting the Rancho Cucamonga Metrolink station and Ontario International Airport (ONT). Expected to be completed by 2025, the Project will use autonomous vehicles to shuttle passengers through a tunnel beneath Milliken Avenue and Airport Drive. At the Rancho Cucamonga station, autonomous electric vehicles will enter the tunnel through a ramp located adjacent to the existing Metrolink station. When completed, the "Tunnel to ONT" project will provide air travelers convenient connections to the Metrolink rail network and to Brightline West service to the High Desert of San Bernardino County.

4.12.4.4 Active Transportation

The affected environment for active transportation includes roadways and paths with direct access to the Hesperia and Rancho Cucamonga station sites. The proposed Hesperia station site is currently exclusively auto-oriented, with a Caltrans park and ride to allow commuters to form carpools and truck stop west of I-15 and vacant land to the east. Neither Joshua Street nor US-395, its nearest cross street, have sidewalks. The Rancho Cucamonga station is accessed from Milliken Avenue which has sidewalks and dedicated bicycle lanes in both directions. The SBCTA and the Southern California Association of Governments (SCAG) prepared the ARRIVE Corridor plan, which provides a vision for a mixed-use, transit-oriented community with pedestrian friendly streets at the Rancho Cucamonga station (SBCTA and SCAG 2015).

The "Resort" master-planned community will construct a new residential community, including local-serving retail, west of the Rancho Cucamonga station, extending south from the Metrolink corridor across 6th Street to 4th Street. An internal north-south roadway ("The Vine") is planned to include protected bicycle lanes and a 16-foot "pedestrian realm" on each side. The Vine will provide bicycle and pedestrian connectivity to the station via 7th Street and Azusa Court.

4.12.4.5 Parking

Near the Hesperia station, an existing park and ride lot exists at the southwest corner of US-395 and Joshua Street to allow commuters to form carpools. A separate project, as of January 2022, is expanding the capacity of the lot from approximately 200 spaces to approximately 400 spaces. The existing parking capacity of the Metrolink station in Rancho Cucamonga is 960 spaces.

4.12.4.6 Freeway Mainline

The affected environment for freeway mainline operations is the I-15 right-of-way between the cities of Victorville and Rancho Cucamonga in California. The I-15 corridor traverses San

Bernardino County from the Riverside County line south of the project limits to the Nevada state line. Within the project limits, I-15 generally has four travel lanes in each direction south of US-395 in Hesperia and three travel lanes in each direction north of US-395. Auxiliary lanes and merge lanes are provided at major interchanges. Currently the Cajon Pass on I-15 supports daily workforce commuters, recreational travel, and regional and interstate freight and goods movement; it is one of the most congested freeway segments along I-15.

4.12.4.7 Vehicle Miles Traveled

The Project will affect VMT on I-15 within the project limits between Rancho Cucamonga and Victor Valley, as well as between Victor Valley and Las Vegas, because most HSR passengers between Rancho Cucamonga and Victor Valley will otherwise drive the entire distance between Rancho Cucamonga and Las Vegas. In 2019, the total annual VMT on I-15 within the project limits was approximately 3.3 billion miles.

4.12.5 Environmental Consequences

4.12.5.1 No Build Alternative

The No Build Alternative will involve no action to create a passenger HSR system in the median and immediately alongside the I-15 highway between Victor Valley and Rancho Cucamonga.

Traffic volumes for the 16 intersections were collected for the 2025 No Build and 2045 No Build conditions. As shown in Table 50, all four study intersections near the Hesperia station are projected to operate at acceptable LOS conditions (LOS D or better) during the peak periods under the 2025 No Build conditions, and two of the four study intersections are projected to operate at unacceptable LOS conditions (LOS F) in 2045 for the peak periods. At the Rancho Cucamonga station, three intersections will operate at unacceptable LOS during the 2025 No Build conditions, and three intersections will operate at unacceptable LOS under the 2045 No Build conditions, as shown in Table 51.

Table 50. Hesperia Station No Build Intersection Level of Service

(No.) Intersection	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[1]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
2025 No Build									
(1) US-395/ Joshua Street	Signal	14.2	B	11.8	B	35.6	D	14.2	B
(2) Joshua Street/ I-15 SB ramp	OWSC	9.9	A	9.4	A	9.6	A	9.5	A
(3) Joshua Street/ I-15 NB ramp	OWSC	8.3	A	7.9	A	8.3	A	8.1	A
(4) Joshua Street/ Mariposa Road	OWSC	10.4	B	9.9	A	10.2	B	10.0	B

(No.) Intersection	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[1]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
2045 No Build									
(1) US-395/ Joshua Street	Signal	21.6	C	43.0	D	234.9[2]	**F[2]**	46.3	D
(2) Joshua Street/ I-15 SB ramp	OWSC	10.0	B	14.5	B	16.2	C	17.5	C
(3) Joshua Street/I-15 NB ramp	OWSC	8.0	A	9.1	A	10.2	B	9.1	A
(4) Joshua Street/ Mariposa Road	OWSC	12.6	B	113.2[2]	**F[2]**	132.7[2]	**F[2]**	86.5[2]	**F[2]**

Source: HNTB 2022
Notes: [1] Control delay in seconds per vehicle
[2]and bolded text indicate the intersection operates at unacceptable LOS E or LOS F
NB = northbound
OWSC = one-way stop-controlled
SB = southbound

Table 51. Rancho Cucamonga Station No Build Intersection Level of Service

(No.) Intersection	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[1]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
2025 No Build									
(5) Milliken Avenue/ SR-210 WB ramps	Signal	14.0	B	9.5	A	9.8	A	9.7	A
(6) Milliken Avenue/ SR-210 EB ramps	Signal	8.9	A	9.5	A	17.6	B	14.2	B
(7) Milliken Avenue/ Foothill Boulevard	Signal	14.1	B	75.4[2]	**E[2]**	40.7	D	33.6	C

(No.) Intersection	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[1]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(8) Milliken Avenue/ Azusa Court	OWSC	11.6	B	12.5	B	13.2	B	11.7	B
(9) Milliken Avenue/ 7th Street	Signal	8.7	A	9.4	A	10.4	B	7.7	A
(10) Milliken Avenue/ 4th Street	Signal	26.5	C	80.8[2]	**F[2]**	55.5[2]	**E[2]**	26.7	C
(11) Milliken Avenue/ I-10 WB ramps	Signal	48.5	D	46.9	D	60.7[2]	**E[2]**	52.4	D
(12) Milliken Avenue/ I-10 EB ramps	Signal	24.9	C	26.3	C	34.2	C	24.0	C
(13) Foothill Boulevard/ I-15 SB ramps	Signal	23.6	C	11.4	B	25.9	C	13.9	B
(14) Foothill Boulevard/ I-15 NB ramps	Signal	17.8	B	19.3	B	11.4	B	23.8	C
(15) 4th Street/ I-15 SB ramps	Signal	30.1	C	30.3	C	28.2	C	35.4	D
(16) 4th Street/ I-15 NB ramps	Signal	47.6	D	27.2	C	32.6	C	38.1	D
2045 No Build									
(5) Milliken Avenue/ SR-210 WB ramps	Signal	12.2	B	8.9	A	12.8	B	9.3	A
(6) Milliken Avenue/ SR-210 EB ramps	Signal	11.3	B	11.0	B	28.7	C	14.8	B
(7) Milliken Avenue/ Foothill Boulevard	Signal	16.0	B	63.5[2]	**E[2]**	63.8[2]	**E[2]**	59.4[2]	**E[2]**

(No.) Intersection	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[1]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(8) Milliken Avenue/ Azusa Court	OWSC	12.1	B	12.7	B	13.2	B	11.6	B
(9) Milliken Avenue/ 7th Street	Signal	16.9	B	12.0	B	13.8	B	9.4	A
(10) Milliken Avenue/ 4th Street	Signal	40.6	D	112.4[2]	**F[2]**	208.2[2]	**F[2]**	216.9[2]	**F[2]**
(11) Milliken Avenue/I-10 WB ramps	Signal	44.1	D	77.1[2]	**E[2]**	118.3[2]	**F[2]**	54.8	D
(12) Milliken Avenue/ I-10 EB ramps	Signal	17.3	B	19.4	B	23.6	C	19.2	B
(13) Foothill Boulevard/ I-15 SB ramps	Signal	17.8	B	17.6	B	25.0	C	10.4	B
(14) Foothill Boulevard/ I-15 NB ramps	Signal	8.0	A	46.1	D	5.6	A	24.6	C
(15) 4th Street/ I-15 SB ramps	Signal	35.3	D	29.5	C	30.8	C	42.2	D
(16) 4th Street/ I-15 NB ramps	Signal	44.6	D	27.4	C	33.2	C	38.6	D

Source: HNTB 2022
Notes:[1] Control delay in seconds per vehicle
[2] and bold text indicate the intersection operates at unacceptable LOS E or LOS F
EB = eastbound, SR = State Route, WB = westbound

All turning movements are projected to generate queues that can be accommodated within the available lane storage except for the southbound right turn movement at the I-15 southbound ramps/Foothill Boulevard during the weekday AM/PM and Friday PM peak hours. Although the storage is exceeded for this single turning movement, the queueing spillback is projected to be accommodated in the upstream adjacent lane on the off-ramp and well within off-ramp storage without extending onto the southbound I-15 mainline lanes.

Local transit, regional rail, active transportation, and parking services will continue to operate as described under existing conditions. Demand for these services will likely increase in line with SCAG forecasts (29 percent increase by 2045), but with implementation of the West Valley

Connector project, ARRIVE Corridor plan, and SCORE program, will have adequate capacity to serve the station sites. Traffic volumes on the I-15 mainline will continue to increase by an estimated 31 to 38 percent by 2045, increasing bottle necks and travel times.

4.12.5.2 Operation of Build Alternative

Local Intersections

Traffic volumes for the 16 intersections were collected for the 2025 Opening Year and 2045 Horizon Year conditions. As shown in Table 52, all of the study intersections in Hesperia are projected to operate at LOS D or better during 2025 Opening Year and, and two of the four study intersections are projected to operate at unacceptable LOS F in the 2045 Horizon Year for the peak periods. The addition of project traffic to the Hesperia station intersections in the 2045 Horizon Year will not cause intersections to degrade from an acceptable LOS D in the 2045 No Build conditions to a LOS E or LOS F in the weekday and weekend peak hour Build conditions.

Table 52. Hesperia Station Intersection Level of Service

(No.) Intersection	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[1]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
2025 Opening Year									
(1) US-395/ Joshua Street	Signal	15.2	B	13.7	B	37.6	D	14.2	B
(2) Joshua Street/ I-15 SB ramp	OWSC	10.6	B	10.0	B	10.1	B	9.7	A
(3) Joshua Street/ I-15 NB ramp	OWSC	8.5	A	8.1	A	8.4	A	8.1	A
(4) Joshua Street/ Mariposa Road	OWSC	11.1	B	10.4	B	10.6	B	10.1	B
2045 Horizon Year									
(1) US-395/ Joshua Street	Signal	27.5	C	50.5	D	239.4[2]	**F[2]**	52.5	D
(2) Joshua Street/ I-15 SB ramp	OWSC	12.3	B	18.8	C	22.2	C	18.5	C
(3) Joshua Street/ I-15 NB ramp	OWSC	8.8	A	9.7	A	11.0	B	9.2	A
(4) Joshua Street/ Mariposa Road	OWSC	15.8	C	276.4[2]	**F[2]**	259.2[2]	**F[2]**	113.0[2]	**F[2]**

Source: HNTB 2022
Notes: [1] Control delay in seconds per vehicle
[2] and bold text indicates the intersection operates at unacceptable LOS E or LOS F

At the Rancho Cucamonga station, three intersections will operate at unacceptable LOS during the 2025 Opening Year conditions during the peak periods, as shown in Table 53. The Project will contribute traffic to three intersections that are projected to operate at LOS E or LOS F during the No Project 2025 conditions, but will not cause intersections to degrade from an acceptable LOS D in the 2025 No Build conditions to a LOS E or LOS F in the peak periods. In the 2045 Horizon Year, four intersections will operate at unacceptable LOS. The Project will contribute traffic to three intersections that are projected to operate at LOS E or LOS F during the 2045 No Project conditions and will also degrade the LOS at the Milliken Avenue/7th Street Intersection from LOS D or better to an unacceptable LOS E or F compared to the 2045 No Build scenario. The potential for effects from project operation will be minimized through the development and implementation of BMPs and mitigation measures, as discussed in Section 4.12.6, Avoidance, Minimization, and Mitigation Measures.

Table 53. Rancho Cucamonga Station Intersection Level of Service

(No.) Intersection	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[1]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
2025 Opening Year									
(5) Milliken Avenue/ SR-210 WB ramps	Signal	14.4	B	9.8	A	10.1	B	9.9	A
(6) Milliken Avenue/ SR-210 EB ramps	Signal	9.0	A	9.7	A	20.4	C	14.6	B
(7) Milliken Avenue/ Foothill Boulevard	Signal	14.2	B	78.2[2]	**E[2]**	44.6	D	38.8	D
(8) Milliken Avenue/ Azusa Court	OWSC	12.5	B	13.6	B	14.9	B	12.7	B
(9) Milliken Avenue/7th Street	Signal	12.8	B	23.5	C	24.7	C	15.6	B
(10) Milliken Avenue/ 4th Street	Signal	26.2	C	79.8[2]	**E[2]**	56.4[2]	**E[2]**	31.9	C
(11) Milliken Avenue/ I-10 WB ramps	Signal	46.4	D	48.1	D	59.7[2]	**E[2]**	54.7	D
(12) Milliken Avenue/ I-10 EB ramps	Signal	24.8	C	27.3	C	36.3	D	24.4	C
(13) Foothill Boulevard/ I-15 SB ramps	Signal	23.7	C	12.0	B	29.3	C	14.4	B
(14) Foothill Boulevard/ I-15 NB ramps	Signal	17.8	B	19.4	B	11.4	B	23.8	C
(15) 4th Street/ I-15 SB ramps	Signal	37.9	D	30.5	C	28.3	C	38.6	D

(No.) Intersection	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[1]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(16) 4th Street/ I-15 NB ramps	Signal	52.0	D	29.4	C	32.6	C	38.1	D
2045 Horizon Year									
(5) Milliken Avenue/ SR-210 WB ramps	Signal	12.7	B	9.4	A	13.6	B	9.9	A
(6) Milliken Avenue/ SR-210 EB ramps	Signal	11.5	B	12.4	B	29.0	C	15.6	B
(7) Milliken Avenue/Foothill Boulevard	Signal	16.8	B	72.1[2]	**E[2]**	66.0[2]	**E[2]**	62.9[2]	**E[2]**
(8) Milliken Avenue/Azusa Court	OWSC	14.6	B	15.2	C	17.8	C	15.4	C
(9) Milliken Avenue/7th Street	Signal	42.8	D	130.0[2]	**F[2]**	137.7[2]	**F[2]**	106.4[2]	**F[2]**
(10) Milliken Avenue/4th Street	Signal	41.5	D	118.1[2]	**F[2]**	212.1[2]	**F[2]**	203.5[2]	**F[2]**
(11) Milliken Avenue/I-10 WB ramps	Signal	44.8	D	75.9[2]	**E[2]**	152.6[2]	**F[2]**	52.1	D
(12) Milliken Avenue/I-10 EB ramps	Signal	17.5	B	21.3	C	34.9	C	21.2	C
(13) Foothill Boulevard/ I-15 SB ramps	Signal	18.0	B	20.1	C	32.1	C	11.3	B
(14) Foothill Boulevard/ I-15 NB ramps	Signal	8.0	A	46.3	D	5.6	A	24.7	C
(15) 4th Street/I-15 SB ramps	Signal	40.6	D	29.4	C	33.1	C	42.4	D

(No.) Intersection	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[1]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(16) 4th Street/I-15 NB ramps	Signal	51.2	D	27.5	C	33.3	C	38.7	D

Source: HNTB 2022
Notes: a Control delay in seconds per vehicle; * and bold text indicates the intersection operates at unacceptable LOS E or LOS F

Ramp queues are projected to fit within off-ramp storage without extending onto mainline lanes in both the 2025 Opening Year and 2045 Horizon Year. One queuing impact was identified at the I-15 southbound ramps/Foothill Boulevard intersection, affecting the southbound right turning movement. The vehicle queue length will exceed the available storage, but the queueing spillback is projected to be accommodated on the off-ramp in the upstream adjacent lane and will not impact mainline operation.

Local Transit

Operation of the Project is anticipated to increase demand for local transit at the Hesperia station. As VVTA Routes 15 and 25 currently pass the station site, a stop could be added at the station with minimal impact to the operation of these routes. VVTA buses will have adequate capacity to serve the additional passengers for both the 2025 Opening Year and 2045 Horizon Year. Because both Routes 15 and 25 operate at approximately 2-hour headways and along different routes, the hourly volume of passengers desiring to depart the station via bus will likely exceed the available bus capacity during any single hour.

Operation of the Project will increase transit ridership at the Rancho Cucamonga station. The Project will increase demand for public bus transit on Sundays. The West Valley Connector project is planned to serve the station with frequent service (4-6 buses per hour) and will increase bus capacity at the Rancho Cucamonga station and throughout the Omnitrans system. With the introduction of the West Valley Connector project, Omnitrans will have adequate capacity to serve the station in both the 2025 Opening Year and 2045 Horizon Year.

Regional Rail

No existing regional rail service exists at the proposed Hesperia station site. Therefore, effects on regional rail are not anticipated at this location for the 2025 Opening Year and 2045 Horizon Year.

Operation of the Project will increase weekend demand for existing rail service at the Rancho Cucamonga station, including Metrolink's San Bernardino Line. The SCORE program proposes multiple improvements to the Metrolink San Bernardino Line, including 12 projects to increase capacity so that trains can run half-hourly all-day service between Los Angeles and San Bernardino.

Active Transportation

As the Project is almost entirely in existing highway rights-of-way not intended for bicycle or pedestrian use, it is not anticipated to negatively affect active transportation near the Hesperia or Rancho Cucamonga stations in either the 2025 Opening Year or 2045 Horizon Year.

Parking

A new parking facility, in addition to the existing Caltrans park and ride lot, is proposed for the Hesperia station on the south side of Joshua Street and will provide 360 parking spaces. Based on ridership estimates and travel patterns, the number of parking spaces planned at this station will be able to accommodate the highest demand for the 2025 Opening Year. In the 2045 Horizon Year, the parking facility will not have adequate parking spaces to meet demand.

At the Rancho Cucamonga station, a new 4,100-space parking structure is proposed at the existing Metrolink station. The parking structure will replace approximately two thirds of the existing surface parking that serves Metrolink passengers. Of the 4,100 parking spaces, 650 spaces will be reserved for Metrolink passengers, based on an agreement with SBCTA reflecting Metrolink's expected future parking demand at this station. All vehicles entering the parking structure will be required to have either a Metrolink or a Brightline West permit. Metrolink passengers will continue to purchase permits at the station or online. Brightline West passengers will purchase parking permits at the same time as they purchase their train tickets. Brightline West parking permits are anticipated to be electronic, either displayed on a smartphone or enforced by license plate recognition once the vehicle is inside the parking structure. Access to the parking structure will remain from Azusa Court. Based on ridership estimates, parking at the Rancho Cucamonga station will have adequate parking available in the 2025 Opening Year but will exceed the amount of planned spaces at the station in the 2045 Horizon Year.

The potential for effects to parking from project operation will be minimized through the development and implementation of BMPs and mitigation measures, as discussed in Section 4.12.6, Avoidance, Minimization, and Mitigation Measures.

Freeway Mainline

Implementation of the Project will reduce demand on the I-15 mainline by diverting vehicle travel to rail travel. The Project will remove up to 166 vehicles in the peak direction along I-15 during the highest peak hour in the 2025 Opening Year scenario. In the 2045 Horizon Year, the Project will remove up to 452 vehicles in the peak direction along I-15 during the highest peak hour. Therefore, the Project will have a beneficial effect on the mainline corridor during the 2025 Opening Year and 2045 Horizon Year.

Vehicle Miles Traveled

The Project will result in a net reduction in annual VMT both within the project limits and between Victor Valley and Las Vegas. It is also assumed that vehicle travel to and from airports will be replaced by an equivalent amount of vehicle travel to and from rail stations. Approximately 15.3 percent of riders will be diverted from air travel. Their VMT has not been included in this calculation as they will not account for any VMT reduction. The Project's effect on VMT is closely tied to that of the Victor Valley to Las Vegas project because many passengers using the Project's service will continue on to Las Vegas. The projects together will result in a

net annual reduction in VMT of approximately 358 million miles in the 2025 Opening Year and 731 million miles in the 2045 Horizon Year. The Project alone will result in an annual net VMT reduction of 93 million miles in the 2025 Opening Year and an annual net reduction of 186 million miles in the 2045 Horizon Year.

4.12.5.3 Cumulative Impacts

Major regional transportation projects within the project area includes the I--15 Interchange Reconstruction, the I-15 Pavement Rehab project, and the Project. Other transportation projects within the study area include local improvements to provide more efficient auto, transit, bicycle, and pedestrian circulation. Implementation of these projects throughout the project area could alleviate traffic congestion, improve circulation, and provide new regional access routes.

Construction of the Project, in combination with other past, present, and reasonably foreseeable future projects could result in a cumulative transportation impact if cumulative projects are located near the project and have construction schedules that overlap that of the Project. Temporary impacts, such as road closures and construction-related trips, would impact automotive and nonvehicular circulation and access. However, upon completion of construction activities, all local transit, regional rail, active transportation, and parking services will continue to operate as described under existing conditions.

Overall, operation of the Project in combination with other cumulative transportation projects would improve long-term circulation and accessibility within the project area. Additionally, operation of the Project in combination with other cumulative transportation project would result in a net reduction of VMT in the project area by diverting intercity trips from road trips to other modes of transportation (i.e., rail). This would benefit regional transportation and traffic operations within the project area by helping to maintain or potentially improve operation conditions of regional roadways.

4.12.6 Avoidance, Minimization, and Mitigation Measures

No avoidance, minimization, or mitigation measures will be required to reduce impacts on local transit, regional transportation, active transportation, freeway mainline operations, or VMT. The following avoidance and mitigation measures will minimize traffic impacts on local intersections and parking during project operation.

4.12.6.1 Local Intersections

The Project will not result in any significant impacts on the Hesperia and Rancho Cucamonga study area intersections under 2025 Opening Year conditions.

During project design, Brightline West will coordinate with SBCTA, Caltrans, Rancho Cucamonga, and Hesperia to incorporate intersection improvements to lessen or avoid impacts under the 2045 Horizon Year to the extent feasible, including optimizing signal timing to reflect changes in traffic flows in station areas.

The analysis identified one intersection that will be impacted by the Project, the intersection of Milliken Avenue/7th Street. Brightline West will implement both of the following measures to eliminate the impact at the intersection:

- Modify the intersection of Milliken Avenue/Azusa Court (located about 680 feet north of 7th Street) to permit left turns into Azusa Court from northbound Milliken Avenue. This will require modification of the existing 14-foot-wide, raised median to include an uncontrolled permissive left-turn lane, approximately 150 feet long, plus a 90-foot-long transition. A 35 percent diversion of left turns to Milliken Avenue/Azusa Court from Milliken Avenue/7th Street is projected for balanced traffic operations at both ingress intersections.
- Complete a focused engineering study to assess the intersection geometrics and ensure a safe ingress to the proposed station via the Milliken Avenue/Azusa Court.

Project Fair Share Contribution Under 2045 Horizon Year Build Conditions

The Project will comply with the San Bernardino County CMP policies to make fair-share contributions to regional traffic improvements identified in the latest Nexus Study (2018). The Project's fair-share contribution may be offset by the value of improvements that the Project will make at locations at which it is only partially responsible for the increased delay.

4.12.6.2 Local Transit

The effect on local transit at the Hesperia station could be mitigated by adding a transit stop at the Hesperia station to be served by Routes 15 and 25 with minimal effect on the operation of these routes and by increasing service on these routes or operating additional routes during hours of peak demand. Therefore, Brightline West will coordinate with the VVTA and SBCTA to best serve the needs of transit users at the Hesperia station without significantly affecting other transit services. Such coordination will include a focus on increasing weekday peak period service at the Hesperia station.

Brightline West will coordinate with SBCTA and Omnitrans to provide sufficient bus service to serve Brightline West passengers at the Rancho Cucamonga station on Sundays.

In addition, Brightline West will coordinate with Omnitrans to monitor load factors and the number of Brightline West passengers on Omnitrans buses serving the Rancho Cucamonga station. If necessary, Brightline West will coordinate with Omnitrans to provide additional Omnitrans service during the applicable time periods.

4.12.6.3 Regional Rail

As no regional rail service is proposed at the Hesperia station site, effects on regional rail are not anticipated at this location.

At the Rancho Cucamonga station, the Project will have an impact on passengers utilizing regional rail on Sunday, when there is a 5-hour period in the late afternoon/early evening with only one train in each direction. Brightline West will coordinate with SBCTA and SCRRA to provide additional Metrolink service sufficient to serve Brightline West passengers on Sundays.

In addition, Brightline West will coordinate with SCRRA to monitor load factors and the number of Brightline West passengers on Metrolink trains serving the Rancho Cucamonga station on weekdays, Saturdays, and Sundays. If necessary, Brightline West will coordinate with SCRRA to provide additional Metrolink service during the applicable time periods.

4.12.6.4 Parking

As ridership and parking demand increase, the initial parking supply will not be sufficient to satisfy anticipated demand at either the Hesperia or Rancho Cucamonga stations.

Hesperia Station

Commencing with the opening of the Project, Brightline West will monitor parking occupancy (occupied spaces as a share of total spaces) at the Hesperia station with sufficient detail to identify the hour during which the peak occupancy occurs each day and the percentage of parking spaces occupied during that hour. Brightline West will implement a parking demand management plan that includes one or more of the following elements:

- Providing discounted fares for Brightline West passengers who arrive at the station by bus.
- Directly subsidizing transit operators to provide reduced transit fares for Brightline West passengers.
- Directly subsidizing bus transit operators to provide additional transit service to the station during the peak arrival and departure times of Brightline West passengers.
- Working with the City of Hesperia to institute a neighborhood parking protection plan for existing or future neighborhoods near the station, including parking policies such as a residential permit parking program and/or time limits to encourage turnover.
- Constructing additional parking facilities or expanding existing parking facilities.
- Providing commuter service between the Victor Valley station and Rancho Cucamonga to provide an additional location to serve passengers from the area.

If any element of the parking demand management plan requires environmental review, Brightline West will implement other elements sufficient to manage the parking demand until the environmental review has been completed.

If, after implementation of the parking demand management plan, additional parking needs are still necessary, Brightline West will implement additional parking demand management measures from the list above.

Rancho Cucamonga Station

Commencing with the opening of the Project and annually thereafter, Brightline West will prepare a parking demand management plan that includes that following:

- Monitoring parking occupancy (occupied spaces as a share of total spaces) at the Rancho Cucamonga station with sufficient detail to identify the hour during which the peak occupancy occurs each day and the percentage of parking spaces occupied by vehicles with Metrolink and Brightline West parking permits during that hour.
- Forecasts of parking demand for the next five years.
- Measures that Brightline West will implement to accommodate anticipated parking demand, which may include one or more of the following elements:
    - Providing discounted fares for Brightline West passengers who arrive at the station by rail or bus transit

- Directly subsidizing SCRRA or bus transit operators to provide reduced transit fares for Brightline West passengers
- Directly subsidizing bus transit operators to provide additional transit service to the station during the peak weekday arrival and departure times of Brightline West passengers.
- Directly subsiding SCRRA or bus transit operators to provide additional transit service to the station on Sunday afternoons, as the lack of Sunday service to return home may discourage passengers from using transit to access the station on other days
- Providing off-site parking at existing underutilized parking facilities within 5 miles of the station, including a free shuttle for passengers who park at an off-site parking facility, and identifying any additional off-site parking facilities that are anticipated to be required within the next five years based on ridership forecasts
- Implementing a differential charge for on-site and off-site parking to match the demand for each type of parking to the supply.
- Working with the City of Rancho Cucamonga to institute a neighborhood parking protection plan for existing or future neighborhoods near the stations, including parking polices such as a residential permit parking program and/or time limits to encourage turnover
- Expanding existing parking facilities or constructing additional parking facilities on City-owned property adjacent to the station

If any element of the parking demand management plan requires environmental review, Brightline West will implement other elements sufficient to manage the parking demand until the environmental review has been completed.

If, after implementation of the parking demand management plan, additional parking needs are still necessary, Brightline West will implement additional parking demand management measures from the list above.

4.12.6.5 Vehicle Miles Traveled

The Project will have a beneficial impact (reduction) on VMT. Therefore, no mitigation measures are required.

4.13 Water Quality

Water resources are vital to society and water quality is important in providing safe drinking water and in supporting recreation, transportation and commerce, industry, agriculture, and aquatic ecosystems. This section provides an assessment of temporary and permanent impacts to water quality from construction, operation, and maintenance activities associated with the Project. This includes the Project's potential to result in nonpoint-source pollution, and water quality impacts on stormwater runoff and nearby drainages.

The following analysis is based on the Water Quality Technical Report prepared by HNTB, which is included as Attachment J to this EA.

4.13.1 Regulatory Setting

The following Federal and local regulations, policies, and plans were reviewed in considering potential impacts to water quality:

- CWA Section 404 Permits for Fill Placement in Waters and Wetlands: Under CWA Section 404, the USACE and USEPA regulate the discharge of dredged or fill material into WOTUS. Project sponsors must obtain a permit from USACE for proposed discharges of dredged or fill materials into waters over which USACE has jurisdiction.
- CWA Section 402 National Pollutant Discharge Elimination System (NPDES) Permits for Discharge to Surface Waters: Under CWA Section 402, the NPDES program regulates all point-source discharges, including but not limited to construction-related runoff discharges to surface waters and some post-development discharges. In California, Project Sponsors must obtain an NPDES permit from the SWRCB.
- CWA Section 303(d) List of Impaired Waterbodies: CWA Section 303(d) requires each state to develop a list of impaired surface waters that do not meet or that the State expects would not meet State water quality standards as defined by that section. It also requires each state to develop total maximum daily loads (TMDL) of pollutants for impaired waterbodies.
- CWA Section 401 Water Quality Certification: Under CWA Section 401, applicants for a Federal license or permit to conduct activities that may result in a discharge into WOTUS must obtain certification that the discharge would not violate water quality standards, including water quality objectives and beneficial uses. The SWRCB issues the Section 401 certification for the Project.
- Water Quality Control Plan for the Lahontan Region (Lahontan Basin Plan): The Lahontan Basin Plan is the basis for the Lahontan Regional Water Quality Control Board's regulatory program. It sets forth water quality standards for the surface and ground waters of the Lahontan Region, which include both designated beneficial uses of water and the qualitative and numerical objectives which must be maintained or attained to protect those uses.
- Santa Ana River Basin Plan: The Santa Ana River Basin Plan includes the water quality standards (water quality objectives, beneficial uses, and anti-degradation policy) for the Region, regionally important water quality management and improvement initiatives, policies, and practices for implementing water quality standards, and implementation plans.

4.13.2 Study Area

The study area used to identify water resources and potential effects is the LOD, which includes proposed railway and related infrastructure, such as the rail stations and power stations, as well as construction areas and temporary staging areas. The study area comprises four watersheds: Bell Mountain Wash – Mojave River, Lytle Creek, Middle Santa Ana River, and Chino Creek (Caltrans 2022).

4.13.3 Methodology

This qualitative analysis considers the potential direct and indirect water quality impacts of the Project on the communities within San Bernardino County, and the cities of Victorville,

Hesperia, Rancho Cucamonga, and Fontana. FRA identified protected waters, essential fish habitat, and drinking water resources within the study area using a desktop survey. In addition, FRA reviewed available information on water resources from Federal and State regulatory agencies, including the EPA, USACE, Caltrans, and the California State Water Resources Control Board. FRA then compared the Project's preliminary design and drainage plans against identified water resources to assess potential impacts. The evaluation of the Project's impacts on water quality considered those Project components that could emit pollutants that will affect the perennial stream and drainage features identified above, during construction and operations. Such structures include bridges, TCAs, and the proposed stations.

Evaluation and assessment of the jurisdictional determination of drainages in the study area are in progress through coordination between FRA and the USACE. If USACE determines these waters are jurisdictional, they will be regulated as Waters of the United States, subject to the CWA and applicable permitting requirements.

4.13.4 Affected Environment

The affected environment includes one perennial stream, the Mojave River, located in the Bell Mountain Wash-Mojave watershed and Burkhardt Lake-Mojave River sub-watershed. The Mojave River is listed as a CWA Section 303(d) listed water feature, meaning it is characterized as an "impaired water." It is listed for exceedances in dissolved oxygen, fluoride, total dissolved solids (TDS), sulfates, manganese, and sodium allowances (SWRCB 2018). In addition, surface water within several of the water features that cross the study area tend to be high in TDS, with some locations displaying elevated concentrations of boron and nitrates (USGS 2020).

Additionally, the affected environment includes 48 ephemeral or intermittent drainage features. The larger drainage features include Day Channel, East Etiwanda Creek, Lytle Creek Wash, Cajon Wash, Oro Grande Wash, Bell Mountain Wash, Cleghorn Creek, Debris Cone Creek, and Brush Creek. FRA did not identify any essential fish habitat designated by the National Marine Fisheries Service in the affected environment.

4.13.5 Environmental Consequences

This section evaluates the potential for temporary and permanent impacts to water quality from construction, operation, and maintenance activities associated with the Project. The impacts evaluated include the Project's potential to result in nonpoint-source pollution, and water quality impacts on stormwater runoff and nearby drainages.

4.13.5.1 No Build Alternative

Under the No Build Alternative construction of an HSR system will not occur. In this scenario, temporary or permanent impacts to water quality from construction and operation of an HSR system in proximity to waterbodies will not occur. Impacts to water resources will generally stay at the current levels, as described in Section 4.13.4.

4.13.5.2 Construction of Build Alternative

Construction of the Build Alternative will result in impacts to water quality, from activities involving soil disturbance, excavation, cutting/filling, stockpiling, and grading activities could

result in increased erosion and sedimentation of surface waters. Stormwater runoff from TCAs, including staging areas and access roads, could contain sediment and other contaminants, such as metals, hydrocarbons, and TDS, and could carry contaminants to drainages, groundwater, and impaired water bodies.

Railway

Construction of the rail alignment will require the construction of bridges, which will involve work within the ordinary high-water mark over several drainages, including Bell Mountain Wash, Mojave River, Brush Creek, Cleghorn Creek, Debris Cone Creek, Cajon Wash/Creek, and Lytle Creek. Because the drainages are typically dry and the climate is arid, the potential for in-water work is relatively low. Construction-related contaminants could be transported to a drainage during heavy rain events if a leak or spill were to occur within or near the drainage, which could substantially alter water quality depending on the contaminants released.

No construction work is proposed within Day Creek and East Etiwanda Creek as the proposed bridges for the Project will fully span the channels of these features. Additionally, no construction work is proposed within Oro Grande Wash since the feature is culverted at the proposed Project crossing.

The potential for impacts to water quality from project construction will be minimized through the development and implementation of BMPs and mitigation measures, as discussed in Section 4.13.6.

Hesperia Station and Rancho Cucamonga Station

Construction of the proposed Hesperia and Rancho Cucamonga stations will not involve crossing or excavation of any streams or washes (i.e., ephemeral, intermittent, or perennial drainages).

Station construction would use TCAs, such as staging areas and access roads, and would require temporary stockpiles of excavated material and construction materials. A variety of BMPs and mitigation measures, as discussed in Section 4.13.6, will be implemented to limit the potential for runoff from temporary stockpiles of excavated materials and from TCAs to enter and affect nearby drainages. Implementation of these mitigation measures and standard BMPs will further avoid or minimize any impacts to water quality.

4.13.5.3 Operation of Build Alternative

Railway

Project trains will increase the amount of the pollutants associated with rail operations. Specifically, dust generated by braking will be continuously generated and released by trains. Brake dust consists of particulate metals (primarily iron), but may also include copper, silicon, calcium, manganese, chromium, and barium. The primary locations where brake dust will be generated are areas where the trains must reduce their travel speed, such as approaches to stations, turns, and elevation changes (primarily descents). Long stretches of flat terrain with a straight rail alignment will generate less brake dust than other areas.

Brake dust that could be discharged into surface waterbodies is not anticipated to be sufficient to substantially alter water quality because the electric trains will use regenerative braking

technology to reduce brake pad wear and the amount of potential metal particles deposited within the track right-of-way.

Operation of the Project will increase the amount of impervious surface and thus the amount of stormwater runoff and nonpoint-source pollution in some areas, such as along I-15 where the pavement will be widened to place rails in the median. Additionally, within the I-15 median, the Project may require the freeway shoulder to be reconstructed to drain away from the median, which may increase the amount of runoff generated, thereby altering existing drainage patterns and waterbody capacity. Significant increases in runoff could impact water quality in nearby drainage features.

Due to the potential for impacts to water quality and drainage patterns from the Project, a variety of BMPs and mitigation measures will be implemented to protect water quality, and to limit the potential for alterations to existing drainage patterns which will be designed to meet Caltrans requirements (refer to Section 4.13.6). The Project will further minimize water quality impacts from brake dust to the maximum extent practicable using best available technology. Implementation of the plans and BMPs developed for the Project will minimize operation impacts on water quality.

Hesperia Station and Rancho Cucamonga Station

The Hesperia station will increase the amount of impervious surface within the study area, which will increase the quantity of stormwater runoff. The Rancho Cucamonga station will be constructed in an urbanized area that is already highly developed, and will not result in an increase in the amount of impervious surface. Stormwater runoff from the Hesperia and Rancho Cucamonga station rooftops and paved surfaces will contain pollutants deposited from vehicles and maintenance activities which will result in water quality impacts to nearby drainage features.

A variety of BMPs and mitigation measures, as discussed in Section 4.13.6,will be implemented to limit the potential for the Project stations to affect water quality from stormwater runoff. Implementation of these mitigation measures and standard BMPs will minimize any impacts to water quality.

4.13.5.4 Cumulative Impacts

Construction and operation of the Project in combination with other past, present, and reasonably foreseeable future actions, may affect surface and groundwater resources within the regional watersheds and groundwater basins, increase stormwater runoff speed and rates, and decrease groundwater recharge. Implementation and development of BMPs will reduce cumulative effects on floodplains. The implementation of avoidance and minimization measures will minimize or avoid the Project's contribution to cumulative effects on water quality and stormwater runoff. Therefore, construction and operation of the Project, in combination with cumulative projects, would not result in a cumulative impact on water quality.

4.13.6 Avoidance, Minimization, and Mitigation Measures

The following mitigation measures will be applicable to the Project to minimize contamination in nearby drainages, stormwater runoff, and nonpoint-source pollution during both construction and operation and maintenance activities.

4.13.6.1 Construction

Mitigation Measure WQ-1: Construction activities will begin with the installation of erosion control BMPs outlined in the Caltrans Construction Site BMPs Manual (Caltrans 2017) by the contractor. In the final construction plans, the contractor will specify BMPs for grading and erosion control that are necessary to reduce erosion and sedimentation. Those BMPs will be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable. Standard erosion control measures, such as management, and structural and vegetative controls, will be implemented for all construction activities that expose soil. A phased approach may be used during the installation of the permanent erosion and sediment control measures, which will allow the Project to limit the extent of water quality monitoring needed during construction phases.

Mitigation Measure WQ-2: Brightline West will comply with the statewide National Pollutant Discharge Elimination System (NPDES) CGP, which will require the property owner to file a Notice of Intent to discharge stormwater and to prepare and implement a SWPPP. Implementing the requirements in the NPDES CGP will reduce or eliminate construction-related water quality impacts. Brightline West will ensure that construction activities comply with the conditions in the CGP, which will require preparation of a SWPPP by the contractor, implementation of BMPs identified in the SWPPP, and monitoring to ensure that impacts on water quality are minimized.

Mitigation Measure WQ-3: The SWPPP, as described in Mitigation Measure WQ-2, will be implemented by the contractor to reduce the likelihood that stormwater will carry any spilled contaminants to water channels. Implementation of the SWPPP along with the following mitigation measures will reduce construction-related impacts.

Mitigation Measure WQ-4: Brightline West will develop a Spill Prevention, Control, and Countermeasures (SPCC) plan to prevent accidental releases of chemicals that are stored on site and measures to use in the case of a spill. The BMPs described in the SPCC Plan will apply to construction activities and operation activities. The contractor will implement appropriate hazardous material management practices identified in the SPCC Plan to reduce the potential for chemical spills or release of contaminants, including any non-stormwater discharge to drainage channels. If a spill occurs, Brightline West will implement cleanup, containment, and response measures outlined in the SPCC Plan. Brightline West will immediately notify the Caltrans Resident Engineer, Caltrans Construction Stormwater Coordinator, and the California Regional Water Quality Control board if a spill occurs. Brightline West will ensure that the phone numbers and emergency contact information of the appropriate parties are up to date at all times.

Mitigation Measure WQ-5: During project design, Brightline West will locate TCAs to avoid key water features, such as the Mojave River, Cajon Wash, and California Aqueduct, and will avoid

other water resources, where possible. Brightline West and the contractor will look to use existing paved areas as staging areas, to minimize disturbed soil and groundwater disturbance.

Mitigation Measure WQ-6: During project construction, the contractor will obtain water from existing, commercially available water sources. Brightline West will not develop new groundwater wells or surface impoundments without Federal and State approval, as appropriate and legally required.

4.13.6.2 Operation

Mitigation Measure WQ-7: To protect water quality, the contractor will install permanent water quality treatment devices in accordance with the NPDES permit obtained for the Project. Examples of water quality BMPs may include vegetated swales, traction sand traps, or settling basins to help remove sediments and nutrients. Such BMPs will be sized properly and designed by a registered professional engineer and will not allow untreated stormwater runoff to reach the Mojave River, the California Aqueduct, or any washes along the alignment.

Mitigation Measure WQ-8: Where necessary, Brightline West will redesign and resize the existing drainage features to accommodate the potential increase in runoff along the rail alignment. The rail alignment will connect with and mirror the existing culverts along the I-15 highway, where possible.

To determine the adequate size of drainage facilities, the total increase in impervious surface of the final design of the facilities will be included in a Rational Method (a way of calculating flow intensity) calculation to determine the increase in peak storm discharges resulting from the Project. The 100-year, 24-hour storm event will be used to determine the appropriate size of drainage facilities needed for the Project. Stormwater treatment will be designed in accordance with the Caltrans PPDG.

4.14 Safety

This section provides details on system safety and safety risk issues related to construction and operation of the Project, including the measures and regulations in place that will be implemented to keep employees, passengers and the public safe from HSR-related functions. This analysis evaluates construction safety hazards and the potential for the Project to increase wildfire risks during construction activities, emergency service provider access, operational safety of the trains including safety of the trains operating at high-speed within the highway corridor, and the potential for wildfire risks from infrastructure associated with the Project.

4.14.1 Regulatory Setting

The following Federal regulations, and State policies and plans were reviewed in considering potential impacts to safety:

4.14.1.1 Federal Railroad Administration – System Safety Program (49 CFR Part 270)

This regulatory program requires commuter and intercity passenger railroads to develop and implement a System Safety Program (SSP) to improve the safety of their operations. An SSP is a structured program with proactive processes and procedures, developed and implemented by railroad operators to identify and mitigate or eliminate hazards, with the goal of reducing the number and rate of railroad accidents, incidents, injuries, and fatalities.

4.14.1.2 Federal Railroad Administration—Passenger Equipment Safety Standards; Standards for Alternative Compliance and High-Speed Trainsets (49 CFR Parts 229, 231, 236, and 238)

In 2018, FRA amended its passenger equipment safety standards using a performance-based approach to adopt new and modified requirements governing the construction of conventional and high-speed passenger rail equipment. This rule adds a new tier of passenger equipment safety standards (Tier III) to facilitate the safe implementation of nationwide, interoperable high-speed passenger rail service at speeds up to 220 mph.

4.14.1.3 National Fire Protection Association Standard 130

National Fire Protection Association (NFPA) Standard 130, "Safety Standard for Fixed Guideway Transit and Passenger Rail Systems," specifies the latest fire protection and life safety requirements for underground, surface, and elevated fixed-guideway transit and passenger rail systems.

4.14.1.4 California Public Utilities Commission —General Order No. 164-E Rules and Regulations Governing State Safety Oversight of Rail Fixed Guideway Systems and Federal Transit Administration Rail Fixed Guideway Systems State Safety Oversight (49 CFR Part 674)

California Public Utilities Commission (CPUC) General Order 164-E and 49 CFR Part 674 require CPUC, as a designated State safety oversight agency, to review each rail transit agency's system safety and security program at a minimum of once every three years. The purpose of these triennial reviews is to verify compliance and evaluate the effectiveness of each rail transit agency's System Safety Program Plan (SSPP) and a Security and Emergency Preparedness Plan (SEPP) to assess the level of compliance with CPUC General Order 164-E and other CPUC safety and security requirements (CPUC 2018).

4.14.1.5 California Department of Forestry and Fire Protection – Strategic Fire Plan for California

The Strategic Fire Plan for California (CAL FIRE 2018) provides the State's roadmap for reducing the risk of wildfire. Part of this plan identifies and assesses community assets at risk of wildfire damage. CAL FIRE generated a list of California communities at risk for wildfire and created fire hazard severity zones (FHSZ).

4.14.2 Study Area

The study area is defined as a 0.5-mile buffer around the Project footprint, where impacts from construction and operations could affect emergency services and community safety. Where appropriate, a broader area is described including the County and State to accurately contextualize safety issues.

4.14.3 Methodology

Since no HSR system currently operates in the United States, the evaluation of safety and security operations impacts is based on (1) international HSR operating experience, and (2) existing conditions compared with the design and operations features of the Project. Safety issues addressed include future rail system operations, such as train travel (including travel within the I-15 highway median), and response by emergency service providers in the case of an emergency situation. This qualitative analysis considers the potential direct and indirect

safety impacts of the Project on the communities within San Bernardino County, and the cities of Victorville, Hesperia, Rancho Cucamonga, and Fontana.

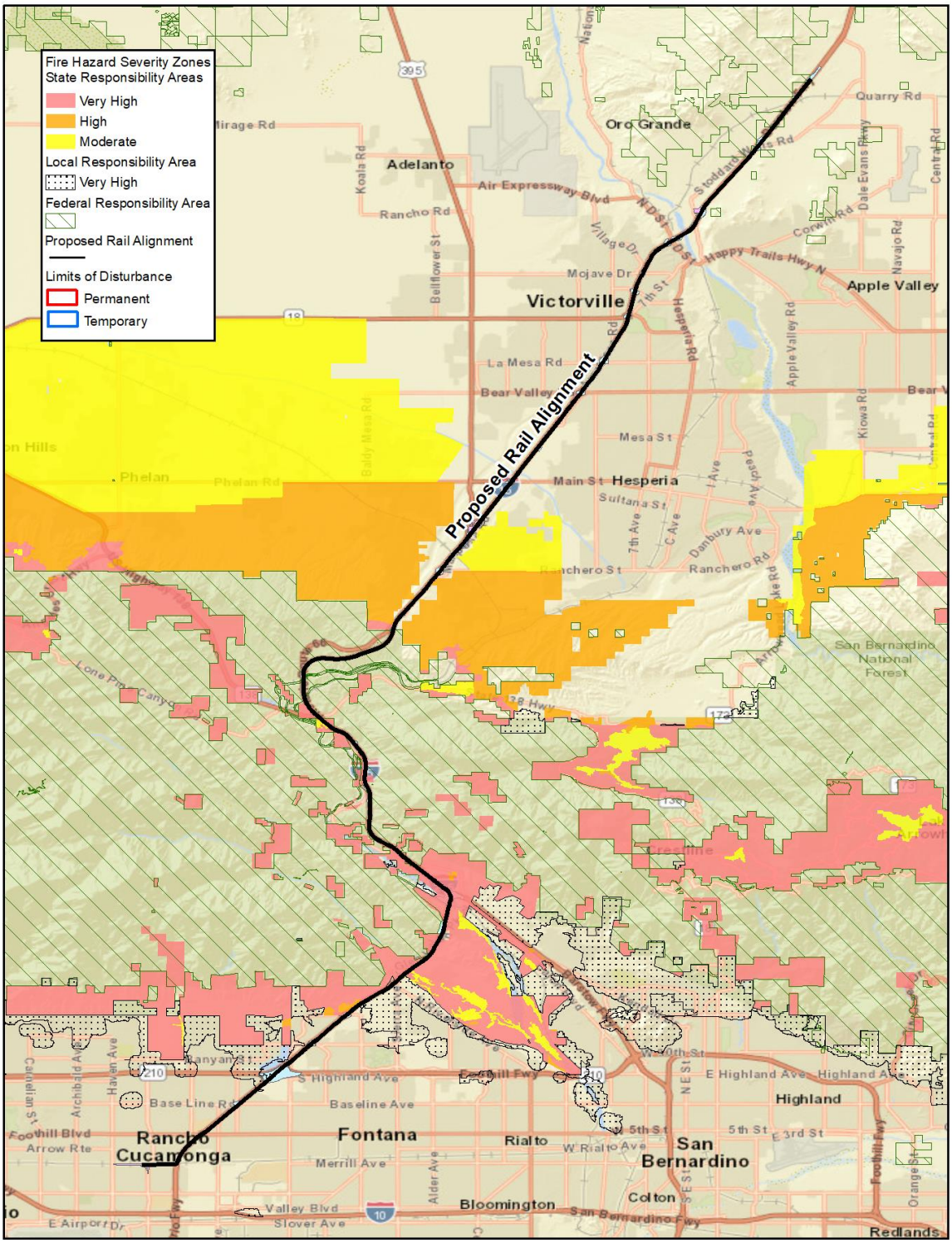
For the evaluation of wildfire hazards, FRA reviewed FHSZ maps for State and local responsibility areas to determine where wildfire hazards exist throughout the study area. Using an overlay of the Project footprint, analysts evaluated the potential for Project construction and operation to increase fire risks in these areas.

4.14.4 Affected Environment

The affected environment includes the I-15 highway[36] and associated roadways, and a variety of mixed-use development in Rancho Cucamonga and the High Desert area. The affected environment also includes several emergency facilities that provide police, fire, and emergency services within the study area.

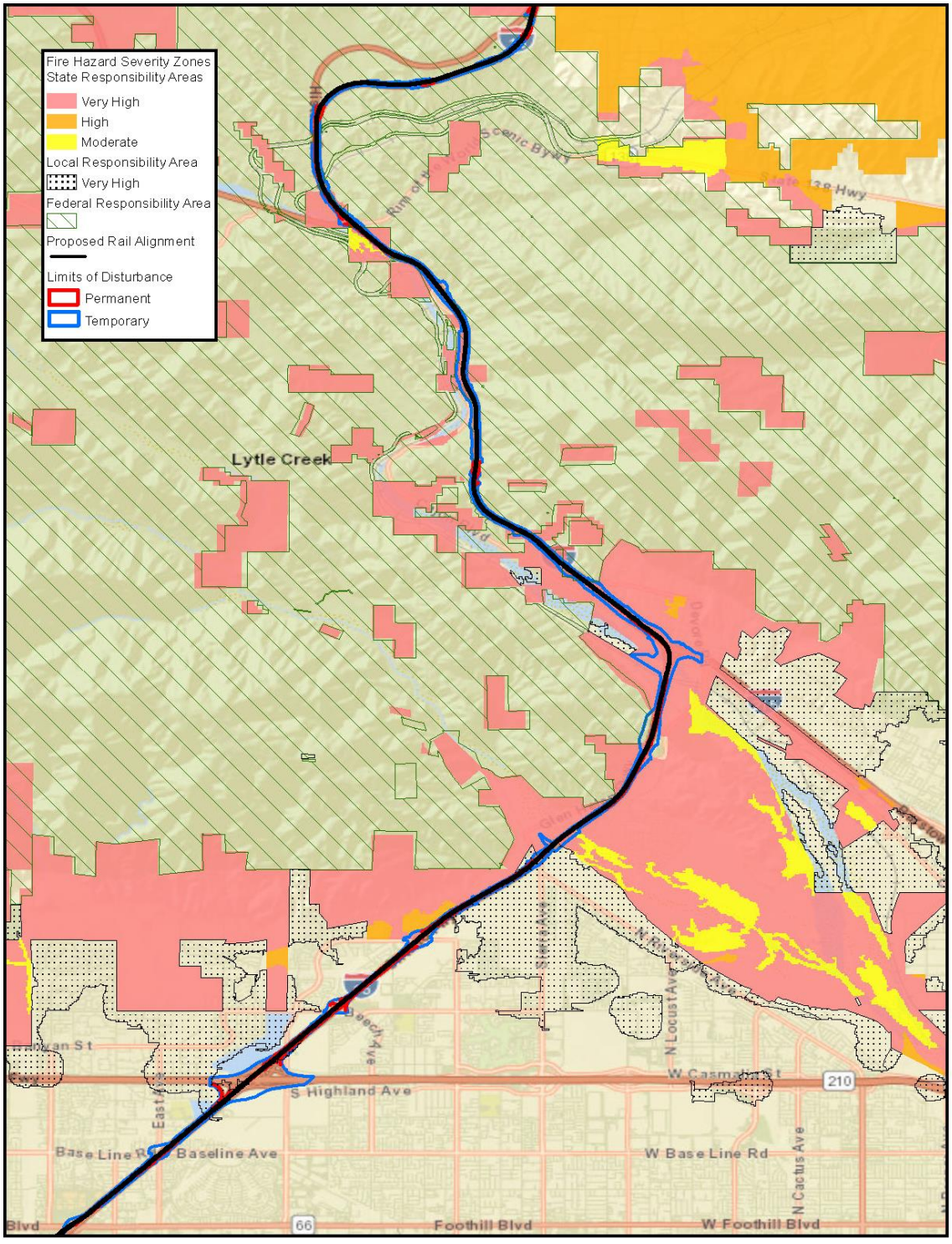
The affected environment includes several California Department of Forestry and Fire Protection (CAL FIRE) designated Fire Hazard Severity Zones, as depicted in Figure 17 below. The northern portion encompasses Federal Responsibility Areas north of Victorville. In addition, the affected environment includes the San Bernardino National Forest in the Cajon Pass. Within the San Bernardino National Forest, the study area includes both Federal Responsibility Areas and Very High SRAs, as depicted in Figure 18. South of the San Bernardino National Forest in the northern portions of Fontana and Rancho Cucamonga the study area encompasses several Local Responsibility Areas (LRAs). South of Victorville and Hesperia through Cajon Pass are Moderate and High State Responsibility Areas (SRAs). Figure 19 and Figure 20 depict USFS wildfire hazard potential within Federal Responsibility Areas, including within San Bernardino National Forest.

[36] As described in Section 2.3.7, Safety, the California Office of Traffic Safety ranks San Bernardino County 16th worst out of 58 counties for total fatal and injury automobile crashes in 2018 (the most recent year of data available). According to the University of California, Berkeley, and SafeTREC's Transportation Injury Mapping System, there were 819 collisions with one or more deaths or injuries along I-15 in San Bernardino County in 2019. Of these, nearly one quarter (199) occurred in the 12 miles of the Cajon Pass, although the Cajon Pass accounts for only 6.5 percent of the length of I-15 in the county.



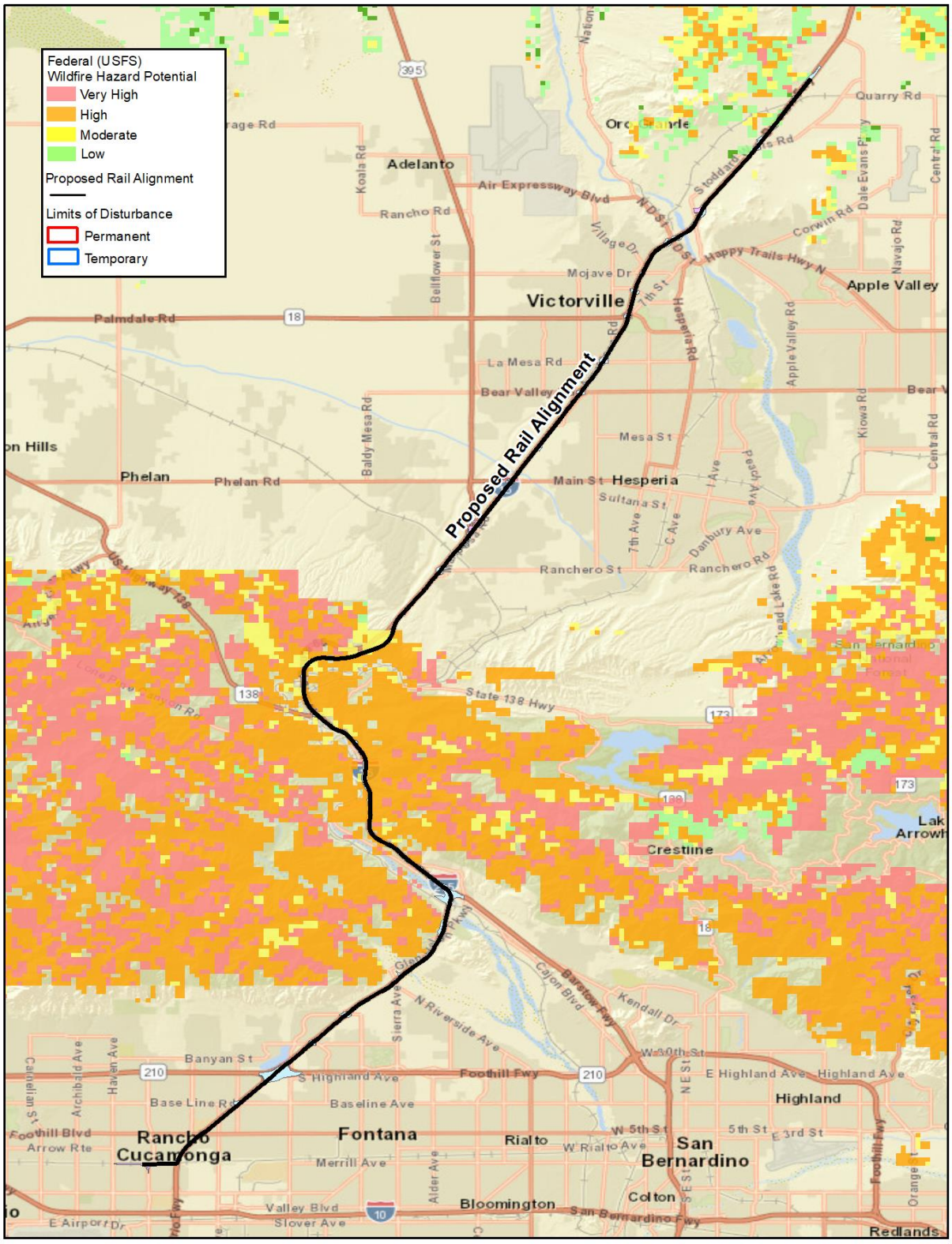
Source: Brightline West 2022, CalFire FRAP 2022, 2019, 2007, National Geographic 2022

Figure 17. Fire Hazard Severity Zone Locations



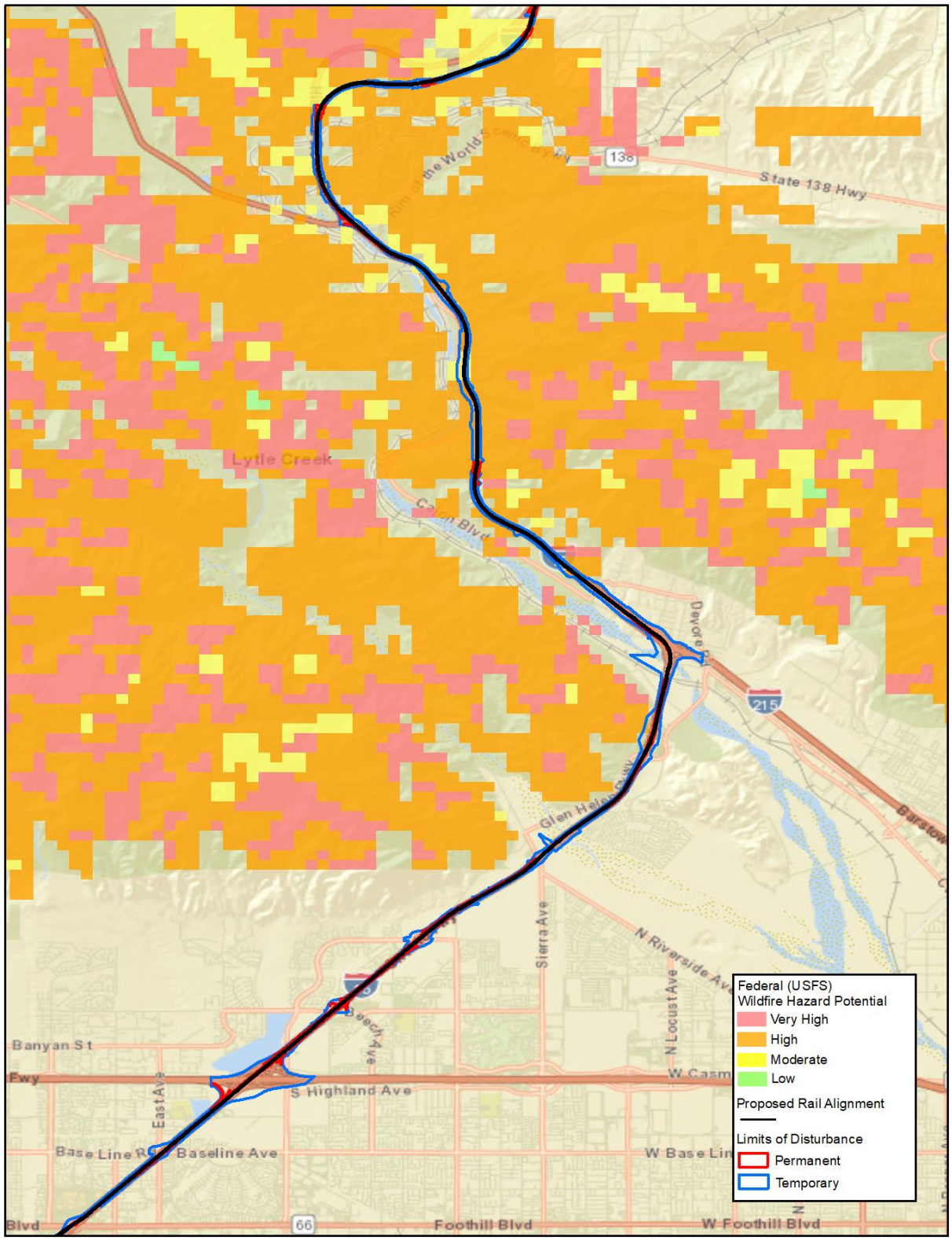
Source: Brightline West 2022, CalFire FRAP 2022, 2019, 2007, National Geographic 2022

Figure 18. Fire Hazard Severity Zone Locations – San Bernardino National Forest



Source: Brightline West 2022, CalFire FRAP 2022, 2019, 2007, National Geographic 2022

Figure 19. Federal Wildfire Hazard Potential



Source: Brightline West 2022, CalFire FRAP 2022, 2019, 2007, National Geographic 2022

Figure 20. Federal Wildfire Hazard Potential – San Bernardino National Forest

4.14.5 Environmental Consequences

This section evaluates construction safety hazards, the potential for the Project to increase wildfire risks during construction activities, emergency service provider access, operational safety of the trains, safety of the trains operating at high-speed within the highway corridor, and the potential for wildfire risks from infrastructure associated with the Project.

4.14.5.1 No Build Alternative

The No Build Alternative will involve no action to create a passenger HSR system in the median of the I-15 highway between Victor Valley and Rancho Cucamonga. The existing I-15 corridor will remain operational without improving major points of congestion or transportation capacity deficiencies along the highway. Thus, it is anticipated that the No Build Alternative will result in a similar continuation of annual injuries and deaths from automobile crashes along this transportation corridor.

4.14.5.2 Construction of the Build Alternative

Construction Safety

Construction of the Project will require clearing, grading, excavation, placing fill, stockpiling materials, construction of elevated bridges south of Church Street and cross at Foothill Boulevard in Rancho Cucamonga, construction of stations, substations, and installation of electrical systems. These construction activities will involve heavy equipment on site, earthwork, and other major construction activities, including the transportation of overweight and oversized materials. Throughout construction, workers and nearby community members could be exposed to hazards, which could affect human health or present to safety from construction site hazards and accidents, associated with construction site equipment and activities.

Wildfire Risk

The Project will traverse State FHSZs and Federal very high fire hazard zones throughout rural portions of the study area, as depicted in Figure 17 through Figure 20. Project construction could temporarily increase fire risks in the FHSZs due to the storage and use of flammable or combustible materials, operation of vehicles and heavy machinery, or other factors resulting from increased human activity. The type of activities needed to construct the Project are similar to other transportation projects within the area and will not introduce unique wildfire hazards. In California, approximately 10 to 15 percent of wildfires occur naturally, and 85 to 90 percent of wildfires are caused by human activities and negligence (such as unattended campfires, use of fireworks, and arson), in contrast to planned construction activities (Frontline Wildfire Defense, 2022). Project right-of-way and facility vegetation control programs will conform to CAL FIRE guidelines for defensible space to reduce fire hazards. The proposed passenger stations and power substation will not be located within FHSZs, and other ancillary features including electrical infrastructure will be co-located near existing infrastructure of a similar nature and located in disturbed areas where possible, in order to minimize wildfire risks.

4.14.5.3 Operation of the Build Alternative

Emergency Access

The Project will not require permanent road closures that could disrupt emergency vehicle access. As a result, there are no anticipated impacts to emergency service providers performance and response and no new or expanded emergency service facilities will be required.

Emergency service providers will have access to the Hesperia and Rancho Cucamonga station buildings in the case of an emergency situation. The project alignment will operate within an access-controlled right-of-way. Emergency service providers (medical, fire, and police) could need to access this right-of-way in the event of an accident or other emergency. The Project will require replacement of CHP emergency crossovers in Segment 2 where the new guideway will block existing crossovers. Four new crossovers will be placed to take advantage of existing CHP access between the separated I-15 alignments in the locations outlined in Section 2.4.3.

Operational Safety

Safety-related events from Project operations include train derailment, and collisions with other trains traversing the alignment or vehicles traveling along the I-15 highway. Based on international HSR system operations, the most hazardous events resulting from HSR accidents are derailments.

As described in Section 2.3.7, planned ETCS signaling systems will be implemented as part of the Project design. This Cab Signaling type system includes speed and safety information provided to the driver in real-time using in-cab displays and provides for all the major safety provisions of the US FRA regulations and international HSR specifications, including: speed control for derailment protection, collision avoidance using location-based movement authority, continual train tracking using train vacancy provision, and worker protection during maintenance. The implementation of effective planning and safety design considerations into the Project will minimize impacts on safety from collisions and derailments that could expose passengers, employees, motorists along the I-15 highway, and the public to risks of accidents.

Overall, the safety and reliability of the Project will be achieved by the application of proven technical standards commensurate with the desired level of performance. Given its complex and high-speed operating environment, a high-speed railway must be developed from the beginning as a system, integrating elements to work together in a safe, efficient, and reliable manner. As a result, the Project's technical standards will address and integrate an overall set of guiding principles or system requirements consistent with American, European, and Asian systems to provide for the safety, security, and reliability aspects of the Project. Design criteria will address FRA safety standards, and industry safety standards and requirements.

Wildfire Risks

Wildfires can disrupt transportation, communications, power and gas services, and water supply, and lead to a deterioration of air quality, and loss of property, crops, resources, animals and people. If damaged, electrical facilities associated with the Project could create sparking or arcing, which could increase fire risks. The Project will pass through FHSZs with a high risk of wildfire as shown Figure 17 and Figure 18. The Hesperia and Rancho Cucamonga stations and power substation in Segment 1 will not be located within FHSZs. The proposed location of the

rail alignment and overhead catenary wire system within the existing I-15 median will reduce the likelihood that the Project could ignite wildfires, as the electrical infrastructure used to power the train sets will be generally isolated from brush or other natural materials by the I-15 travel lanes.

Trains will not transport flammable materials that could introduce fire risk, and passengers on trains will only pass through and will not occupy FHSZs for an extended period. If there were active wildfires across the Project alignment, service between Victor Valley and Rancho Cucamonga will be suspended to minimize risks to train passengers. Furthermore, project design will include fire warning and suppression systems, such as sprinklers, as well as emergency exits and notification systems, consistent with the requirements of the NFPA Safety Code and Standard for Fixed Guideway Transit and Passenger Rail Systems and the California Building Standards Code.

4.14.5.4 Cumulative Impacts

Construction of the Project, along with other cumulative projects, would expand existing public transportation options and would require several thousand construction workers per year, which could increase the demand for other emergency response services in the Project region for the short-term. The Project and other cumulative projects would be required to follow strict Cal-OSHA and other safety practices. Although construction and permanent presence of HSR infrastructure could exacerbate wildfire hazards, Project facilities would not be located within FHSZs, and will be collocated with existing infrastructure of a similar nature and would be located in disturbed areas to reduce wildfire risks. Furthermore, the Authority will develop and incorporate fire- and life-safety programs into the design and construction of the Build Alternative. The Project would therefore neither exacerbate fire risk nor result in temporary or ongoing wildfire impacts on the environment.

The Project would not result in the need for out-of-direction travel or new routes for emergency services. The cumulative setting would also likely reduce traffic volumes on I-15 as some long-distance travelers would use the Project instead of driving. Further, the Project would construct new CHP emergency crossovers along Segment 2, which would be beneficial for emergency service response times in those areas.

Under cumulative conditions, increased population and human presence in FHSZs would contribute incrementally to wildfire risks throughout the study area. Similarly, maintenance of Project facilities could marginally exacerbate wildfire risks by increasing human activity in relatively rural or undeveloped areas. Ancillary facilities would be collocated with existing infrastructure of a similar nature and located outside of designated FHSZs to reduce wildfire risks. Collocation would ensure that both human use and occupancy of undeveloped, fire-prone areas would not substantially increase because of the Project. Furthermore, HSR trains would be fully electric and would not carry large quantities of flammable or combustible freight. Therefore, construction and operation of the Project, in combination with cumulative projects, would not result in a cumulative impact on safety.

4.14.6 Avoidance, Minimization, and Mitigation Measures

4.14.6.1 Construction

Brightline West will implement construction safety requirements during construction, per regulatory requirements described in Section 4.14.5.2, including Cal OSHA Construction Safety Orders and CPUC General Order No. 176. Adherence to these regulatory requirements will minimize construction site hazards and accidents.

4.14.6.2 Operations

Brightline West will develop and implement the Project SSP as required under 49 CFR 270, and Tier III passenger equipment safety standards required under 49 CFR Parts 229, 231, 236, and 238. Implementation of the Project SSP will minimize operational safety hazards.

The Project includes an electrified train system that will conform to current safety standards, which include NFPA Standard 130, and will be regularly maintained to prevent loose or live electrical wires that could potentially spark wildfires.

4.15 Geology, Soils, Seismicity, and Paleontological Resources

Geology, soils, and seismicity often determine the design criteria for passenger rail improvements. This section discusses the impacts associated with geology, soils, and seismicity associated with construction and operation of the Project, including impacts associated with fault rupture, ground shaking, and ground fissures. The following analysis for geology, soils, and seismicity is based on the Preliminary Geotechnical Report prepared by HNTB and included as Attachment K of this EA.

Furthermore, paleontological resources are the remains or traces of plants and animals that are preserved in earth's crust that are older than approximately 5,500 years, per the 2010 Society of Vertebrate Paleontology (SVP) guidelines (SVP 2010). The analysis for paleontological resources is based on the Paleontological Resources Inventory Memo prepared by Dudek and included as Attachment L of this EA.

4.15.1 Regulatory Setting

4.15.1.1 The following Federal and State statutes and regulations were reviewed in considering impacts associated with geology, soils, and seismicity. Federal

Materials Act

The Materials Acts provides for the disposal of mining materials from public lands of the United States. Under this Act, some common minerals, such as sand and gravel, are subject to sale.

4.15.1.2 State

Alquist-Priolo Earthquake Fault Zoning Act (California Public Resources Code [Cal. Public Res. Code], Sections 2621 et seq.)

This act provides policies and criteria to assist cities, counties, and State of California agencies in the exercise of their responsibilities to prohibit the location of developments and structures for human occupancy across the trace of active faults. The act also requires site specific studies by

licensed professionals for some types of proposed construction within delineated earthquake fault zones.

Seismic Hazards Mapping Act (Cal. Public Res. Code, Sections 2690–2699.6)

This act requires that site-specific hazards investigations be conducted by licensed professionals within the zones of required investigation. The licensed professionals will identify and evaluate seismic hazards and formulate mitigation measures prior to permitting most developments designed for human occupancy.

Surface Mining and Reclamation Act (Cal. Public Res. Code, Sections 2710 et seq.)

The Surface Mining and Reclamation Act was enacted to ensure a continual supply of mineral resources while minimizing the impacts of surface mining on public health, property, and the environment. The act also assigns specific responsibilities to local jurisdictions for permitting and oversight of mineral resources extraction activities and establishes policies for the reclamation of mined lands.

The Surface Mining and Reclamation Act also requires the State Geologist to prepare a geological inventory of select mineral commodities and assign appropriate mineral resource zones (MRZ) as described below:

- MRZ-1—Adequate information indicates that no significant mineral deposits are present or likely to be present
- MRZ-2—Adequate information indicates that significant mineral deposits are present or likely to be present
- MRZ-3—Significance of mineral deposits cannot be determined from the available data
- MRZ-4—Insufficient data exists to assign any other MRZ classification

Upon completion of the inventory report, the State Mining and Geology Board may designate deposits that are of regional or statewide significance. The purpose of such designations is to identify deposits that are potentially available from a land use perspective and are of prime importance in meeting future needs of the region.

California Code of Regulations (CCR) Department of Industrial Relations, Chapter 4 Division of Industrial Safety, Subchapter 20, Articles 1-15

The CCR has specific orders requiring enforcement during construction of tunnels related to the safety of workers and protection of the project environment. These orders are related to tunnel classifications (i.e., presence of gas), safety precautions, protective equipment, emergency plan and precaution, rescue procedures, ventilation and air quality, and ground control (i.e., subsidence).

California Building Standards Code (Cal. Public Res. Code, Title 24)

The California Building Standards Code governs the design and construction of buildings, associated facilities, and equipment. It applies to buildings in California.

Oil and Gas Conservation (Cal. Public Res. Code, Sections 3000–3473)

The Division of Oil Gas and Geothermal Resources within the Department of Conservation oversees the drilling, operations, maintenance, and plugging and abandonment of oil, natural

gas, and geothermal wells. The division's regulatory program emphasizes the wise development of oil, natural gas, and geothermal resources in the State through sound engineering practices that protect the environment, prevent pollution, and ensure public safety.

California Public Resources Code

The Cal. Public Resources Code protects paleontological resources in specific contexts. In particular, Cal. Public Res. Code Section 5097.5 prohibits "knowing and willful" excavation, removal, destruction, injury, and defacement of any paleontological feature on public lands without express authorization from the agency with jurisdiction. Violation of this prohibition is a misdemeanor and is subject to fine and/or imprisonment (Cal. Public Res. Code Section 5097.5(c)), and persons convicted of such a violation may be required to provide restitution (Cal. Public Res. Code Section 5097.5(d)(1)). Additionally, Cal. Public Res. Code Section 30244 requires "reasonable mitigation measures" to address impacts on paleontological resources identified by the State Historic Preservation Officer.

California Administrative Code (California Code of Regulations, Title Sections 4307–4309)

The sections of the California Administrative Code relating to the State Division of Beaches and Parks afford protection to geologic features and "paleontological materials," but also assigns the director of the State park system the authority to issue permits for activities that may result in damage to such resources, if the activities are for State park purposes and are in the interest of the State park system.

Geologic Hazard Abatement Districts (Cal. Public Res. Code, Division 17, Sections 26500–26654)

The Beverly Act of 1979 (Senate Bill 1195) established Geologic Hazard Abatement Districts (GHAD) and allowed local residents to collectively mitigate geological hazards that pose a threat to their properties. GHADs may be formed for the following purposes: prevention, mitigation, abatement, or control of a geologic hazard; and mitigation or abatement of structural hazards that are partly or wholly caused by geologic hazards. Cal. Public Res. Code defines a geologic hazard as "an actual or threatened landslide, land subsidence, soil erosion, earthquake, fault movement, or any other natural or unnatural movement of land or earth."

4.15.2 Study Area

The geological study area includes the project footprint for the entire 49-mile corridor between Victor Valley and Rancho Cucamonga and the three geomorphic provinces described in Section 4.15.4 below.

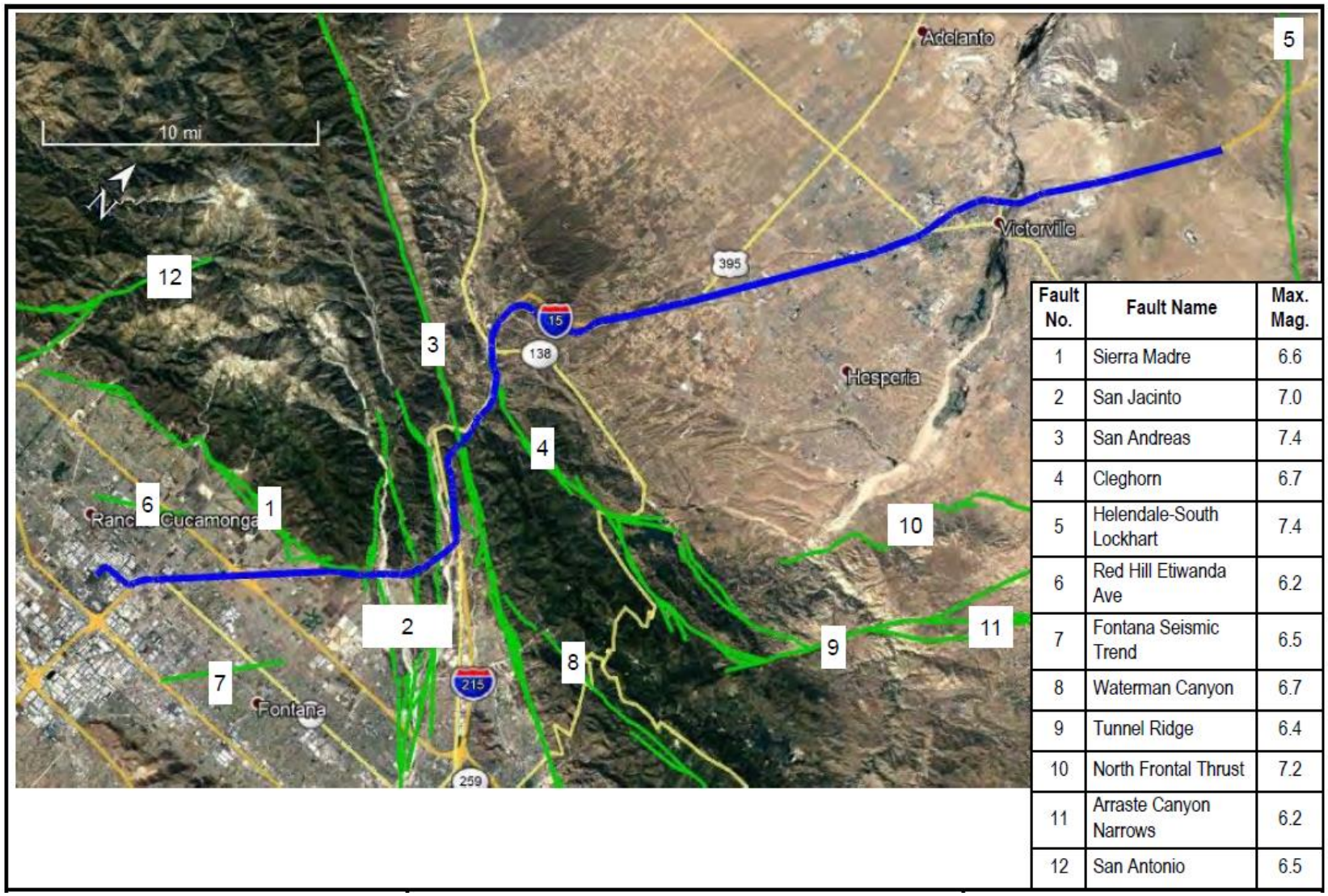
4.15.3 Methodology

This qualitative analysis considers the potential direct and indirect geological and soil impacts of the Project on the communities within San Bernardino County, and the cities of Victorville, Hesperia, Rancho Cucamonga, and Fontana. A Preliminary Geotechnical Report was prepared to provide preliminary geotechnical information for the project alignment and to assist the structural designers in the preliminary phase of the Project. A site-specific geotechnical investigation will be performed for these bridges during the final design phase; therefore, the preliminary recommendations require verification when additional site-specific information becomes available.

The geotechnical scope of work included: (1) reviewing available geotechnical/geologic information including reports, published geologic maps, and seismic hazard reports, (2) reviewing as-built plans of nearby existing bridges, (3) reviewing preliminary structure exhibits prepared by the structural designers; and (4) assessing the foundation types for the proposed bridge structures.

4.15.4 Affected Environment

The affected environment includes the three geomorphic provinces depicted in Figure 21. California's geomorphic provinces are naturally defined geologic regions that display a distinct landscape or landform. From the southern terminus in Rancho Cucamonga, the study area begins in the northern portion of the Peninsular Ranges Province. The Peninsular Ranges Province is composed of aged alluvial fan sediments consisting of unconsolidated to slightly consolidated sand with granitic gravel, cobbles, and boulders which becomes more coarse-grained as it approaches the base of the San Gabriel Mountain. Near the juncture of the Sierra Madre and San Jacinto faults, the study area transitions to the mountainous terrain of the Transverse Ranges Province. The Transverse Ranges Province includes the faulted boundary between the Pacific and North American tectonic plates, and the descent into the Mojave Desert. Within the Transverse Ranges, the study area includes the San Jacinto, San Andreas, and Cleghorn fault zones. Descending from Traverse Ranges Province, the study area transitions to the Mojave Desert Province about 12 miles southwest of Victorville from Oak Hill Road to the project terminus in Apple Valley. The Mojave Desert Province is characterized by isolated mountain ranges, separated by expanses of desert plains, and broad playas. From north to south, the study area includes the following active and potentially active faults: the Sierra Madre, the San Jacinto, the San Andreas, and the Cleghorn Faults.



Fault No.	Fault Name	Max. Mag.
1	Sierra Madre	6.6
2	San Jacinto	7.0
3	San Andreas	7.4
4	Cleghorn	6.7
5	Helendale-South Lockhart	7.4
6	Red Hill Etiwanda Ave	6.2
7	Fontana Seismic Trend	6.5
8	Waterman Canyon	6.7
9	Tunnel Ridge	6.4
10	North Frontal Thrust	7.2
11	Arraste Canyon Narrows	6.2
12	San Antonio	6.5

Source: Earth Mechanics, Inc. 2020

Figure 21. Overview of Regional Quaternary Faults

4.15.5 Environmental Consequences

Impacts to geology and soils resources include whether the Project would have the potential to cause soil-related impacts such as surface fault rupture, liquefaction, settlement, corrosive or expansive soils, landslides, or ground fissures.

4.15.5.1 No Build Alternative

The No Build Alternative will involve no action to create a passenger high-speed rail (HSR) system in the median and immediately alongside the I-15 highway between Victor Valley and Rancho Cucamonga. The existing I-15 corridor will remain operational without improving major points of congestion or transportation capacity deficiencies along the highway. The No Build Alternative will not result in temporary or permanent impacts related to geological resources, as no activities or construction will occur near geologic resources.

4.15.5.2 Construction of Build Alternative

The Project will include construction of 49 miles of single and double rail track that travels along the I-15 highway and crosses existing bridges. The rail alignment will travel parallel to and within I-15 freeway corridor and adjacent to the bent supports of the existing bridges. Several existing structures will also be replaced as part of the overall Project.

Pile driving may be required for the construction of some of the proposed bridge structures; site specific analysis during final design will be required to determine whether less impactful methods may be used. Pile installation conditions for each structure will be highly variable due to the different geologic conditions at each bridge site. Difficult pile driving conditions, including shallow bedrock, cementation, or the presence of significant oversized materials (thick gravel layers, cobbles, or boulders), may exist at some locations. Soil related impacts such as surface fault ruptures from liquefaction, settlement, corrosive or expansive soils, or landslides are more likely to occur during the operational phase of the Project rather than during construction (refer to Section 4.15.5.3 for operational impact discussion). Construction of the Project may result in impacts related to ground fissures, but implementation of Mitigation Measure GEO-1 will minimize the impacts associated with ground fissures should pile drive be required.

4.15.5.3 Operation of Build Alternative

The study area Is located in seismically active southern California and is subject to shaking from both local and distant earthquakes. Seismic activity could result in impacts related to surface fault rupture, ground shaking, and liquefaction. The project alignment spans across a region of complex active faults. The project alignment crosses or comes within 1,000 feet of four major faults: the Sierra Madre, the San Jacinto, the San Andreas, and the Cleghorn faults. Figure 21 shows the location of the faults in relation to the Project.

The San Andreas fault zone is a right-lateral Holocene-active fault and is zoned in accordance with the Alquist-Priolo Act. The fault can produce a 7.9 magnitude earthquake. The alignment crosses a secondary strand of the fault (the Peters faut) at Kenwood Avenue and the main fault at Oakie Flats. A previous Caltrans fault rupture evaluation found that the inferred fault strand is more than 15,000 years old and dismissed likelihood of surface rupture at the bridge. Within the Peninsular Ranges geomorphic province, the alignment comes within 1,000 feet of the

Sierra Madre fault. The alignment does not cross the fault but is located south and oriented subparallel to the fault. The alignment crosses the San Jacinto, San Andreas, and Cleghorn faults within the Transverse Ranges geomorphic province. The San Jacinto fault zone is a right-lateral Holocene-active fault with multiple strands and is zoned in accordance with the Alquist-Priolo Act. The fault can produce a 7.7 magnitude earthquake. The width of the fault zone extends approximately 2.7 miles and includes the Lytle Creek, San Jacinto, and Glen Helen fault strands. Bridges less than 1,000 feet from fault crossings include Sierra Avenue, Lytle Creek, Glen Helen Parkway, and Glen Helen Road. The Southern Cleghorn section of the Cleghorn fault crosses the alignment at an oblique angle. It is a left-lateral fault and is dated as late Quaternary (less than 130,000 years old) in age by the USGS, while the Caltrans fault database dates it as Holocene active. It is not an Alquist-Priolo-zoned fault. The fault can produce a 6.7 magnitude earthquake. Bridges less than 1,000 feet from the fault crossing include Cleghorn Road and Brush Creek.

In accordance with Caltrans Memo To Designers 20-10 (Caltrans, 2013), the track alignment does have structures which fall within an Alquist-Priolo Earthquakes Fault Zone or within 1,000 feet of an unzoned fault that is Holocene or younger in age; therefore, further fault studies will be necessary. Though seismic activity from the Sierra Madre, the San Jacinto, and Cleghorn faults could result in impacts related to surface fault rupture, ground shaking, and liquefaction, avoidance, minimization, and mitigation measures listed in Section 4.15.6 will reduce operational impacts related to surface fault rupture.

4.15.5.4 Cumulative Impacts

Construction and operation of the Project in combination with other past, present, and reasonably foreseeable future actions within the project area would not result in temporary and permanent geologic and soils effect because these conditions are site specific.

4.15.6 Avoidance, Minimization, and Mitigation Measures

Mitigation measures have been developed to address and reduce geologic and soils related impacts. The following measures will be implemented as part of the Project. The contractor will implement construction measures while Brightline West will implement operation measures.

4.15.6.1 Construction

Mitigation Measure GEO-1: To further evaluate the potential for ground fissures, a qualified geologist will conduct surface reconnaissance and prepare an evaluation during the design phase of the project. This evaluation will include visual observation of the earth units, manmade features and geomorphology, and review of geologic maps to evaluate the surface conditions relative to project features. Recommendations of the evaluation will be incorporated into final design and construction plans.

4.15.6.2 Operation

Mitigation Measure GEO-2: A qualified geologist will perform a site specific, detailed evaluation, which includes surface reconnaissance and subsurface assessment. Recommendations of this evaluation will be incorporated in final design documents. This evaluation will be performed prior to construction so that, in the event a fault-rupture hazard exists, the recommendations of the geologist can be implemented in the final project design.

Mitigation Measure GEO-3: A qualified geologist will perform a site-specific evaluation of the potential ground shaking hazard. The evaluation will be performed during design development and prior to construction so that appropriate structural design and mitigation techniques can be incorporated into the design of the project. Evaluation techniques will include drilling of exploratory borings, laboratory testing of soils, computer software analysis to develop seismic design parameters for use by the project structural engineer. Recommendations of this evaluation that avoid or minimize impacts related to seismic ground shaking will be incorporated into final design documents. Structural elements of the rail system will be designed to resist or accommodate appropriate site-specific ground motions and to conform to the current seismic design standards. Implementation of an earthquake early warning system will also be included as part of the project.

Mitigation Measure GEO-4: A qualified geotechnical engineer will perform a site-specific evaluation of the potential liquefaction hazard during design development and prior to construction. This evaluation will assess the liquefaction and dynamic settlement characteristics of the on-site soils and will include drilling of exploratory borings, evaluation of groundwater depths, and laboratory testing of soils. Recommendations of this evaluation that avoid or minimize impacts related to liquefaction will be incorporated into final design documents.

Mitigation Measure GEO-5: During the design phase of the project, a qualified geologist will perform site-specific geotechnical evaluations to assess the settlement potential of the on-site natural soils and undocumented fill. Surface reconnaissance and subsurface evaluation will be performed which addresses the potential settlement hazards. The evaluations will include drilling of exploratory borings and laboratory testing of soils, in addition to surface reconnaissance to evaluate site conditions. Recommendations of the geotechnical evaluation will be implemented prior to design and construction.

Mitigation Measure GEO-6: Brightline West will employ a qualified geologist to perform subsurface evaluation prior to design and construction. Evaluation of corrosive soil potential will be accomplished by testing and analysis of soils at design depths. Laboratory tests will be conducted on the soils prior to construction and the results will be reviewed by a qualified corrosion engineer. The qualified corrosion engineer will prepare an improvement plan which will include corrosion protection measures suitable to the project elements. The improvement plan will include corrosivity tests to evaluate the corrosivity of the subsurface soils. Recommendations of the improvement plan will be implemented prior to design and construction.

Mitigation Measure GEO-7: During the project design a qualified geologist will perform, a site-specific subsurface evaluation, including laboratory testing, to evaluate the extent of which expansive soils are present along the alignment. Where expansive soil conditions are found and will be detrimental to proposed improvements, measures recommended by the geologist will be implemented in project design

Mitigation Measure GEO-8: To further evaluate the potential for landslides and surficial slope failures along the proposed segments, a qualified geotechnical engineer will perform a surface reconnaissance and subsurface evaluation during project design. Surface reconnaissance will include visual observation of the earth units and geomorphology and review of geologic maps to evaluate the condition of slopes relative to the alignment. Subsurface exploration will be

performed as recommended by the qualified geotechnical engineer to evaluate the potential for landslides and surficial slope failures. If necessary, subsurface evaluation will include the excavation and detailed logging of exploratory trenches, test pits and/or borings as recommended by the qualified geotechnical engineer. Slope stability computer analyses will be performed to address the stability of slopes where recommended by the qualified geotechnical engineer. Measures recommended in the evaluation will be implemented prior to project design and construction.

4.16 Environmental Justice

Environmental Justice (EJ) in terms of transportation projects can be defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, from the early stages of transportation planning and investment decision making through construction, operations, and maintenance. The analysis of EJ must address, to the extent practicable and permitted by law, the disproportionately high and adverse human health or environmental effects of transportation projects' programs, policies, and activities on minority populations and low-income populations. EJ is an important consideration for transportation projects because of the potential effects on the quality of life of individuals and groups living and working within the study area.

The following analysis is based on the Environmental Justice Technical Memorandum prepared by FRA and included as Attachment M of this EA.

4.16.1 Regulatory Setting

As described above, EJ is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations or policies. Meaningful Involvement means that people have an opportunity to participate in decisions about activities that may affect their environment and/or health; the public's contribution can influence the regulatory agency's decision; their concerns will be considered in the decision-making process; and the decision makers seek out and facilitate the involvement of those potentially affected.

EO 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" directs each Federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental impacts of its programs, policies, and activities on minority populations and low-income populations." Subsequent orders at the Federal level, including USDOT Order 5610.2C, Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, have reinforced the directives outlined in EO 12898. CEQ also developed guidelines (CEQ 1997) to assist Federal agencies in incorporating the goals of EO 12898 into the NEPA process.

In January 2021, President Biden issued EO 14008 "Tackling the Climate Crisis at Home and Abroad", a comprehensive Justice Department "environmental justice enforcement strategy" to

provide timely remedies for systemic environmental violations, and stronger enforcement by EPA of "environmental violations with disproportionate impact on underserved communities."

4.16.2 Study Area

The study area for EJ comprises a 1,000-foot buffer around the permanent project footprint, as well as each of the U.S. Census tracts that intersect the buffer area.

Figure 22 below shows the distribution of minority and low-income populations for Census tracts that are part of the study area. The Project study area comprises a total of 24 Census tracts.

4.16.3 Methodology

This qualitative analysis considers the potential direct and indirect environmental justice impacts of the Project on the communities within San Bernardino County, and the cities of Victorville, Hesperia, Rancho Cucamonga, and Fontana. This EJ analysis utilizes 2019 American Community Survey (ACS) 5-Year Estimates to evaluate Census tracts in the study area and determine the presence of EJ populations. 2019 ACS data is the most recent Census data available, since complete 2020 data is unavailable due to the impacts of the COVID-19 pandemic on data collection. The following criteria were used in assessing whether populations within the EJ study area qualify as substantial minority and/or low-income populations (i.e., EJ populations).

4.16.3.1 Minority Populations

For the purposes of this EJ analysis, the term "minority" includes the following racial and ethnic groups: Black or African American, American Indian or Alaska Native, Native Hawaiian or other Pacific Islander, Asian, and Hispanic or Latino.

Based on the CEQ guidance for identifying substantial minority populations (CEQ 1997), analysts compared the percent minority population of each Census tract in the study area to the reference population of San Bernardino County. The minority population of San Bernardino County is approximately 71.5 percent (U.S. Census Bureau, 2020). Therefore, Census tracts with populations exceeding 71.5 percent minority are identified as minority EJ populations for the purposes of this EJ analysis.

4.16.3.2 Low-Income Populations

The term "low-income" includes households with incomes at or below the poverty threshold established by the Department of Health and Human Services poverty guidelines (HHS 2021). The criteria for determining poverty level vary with household composition and size and are applied nationally, without regard to the local cost of living. For a four-person household with two related children in 2019 (the latest year for which corresponding ACS data is available), the poverty threshold was $25,926. In 2019, 13.3 percent of households in San Bernardino County were below this threshold (U.S. Census Bureau 2020). Therefore, for the purposes of this EJ analysis, any Census tract with a poverty percentage greater than 13.3 percent are identified as a low-income EJ populations.

4.16.3.3 Methodology for Identifying Disproportionately High and Adverse Impacts

USDOT Order 5610.2C defines a "disproportionately high and adverse impact on minority and/or low-income populations" as an adverse impact that is predominantly borne by a minority population and/or a low-income population, or will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse impact that will be suffered by the nonminority population and/or non-low-income population (USDOT 2021).

Analysts reviewed and evaluated the following resource topics for their potential to result in adverse impacts on nearby communities, including EJ communities, within the study area:

- Air Quality
- Water Quality
- Noise and Vibration
- Floodplains
- Visual Quality
- Land Use and Community Facilities
- Socioeconomic Environment
- Hazardous Materials
- Cultural Resources
- Traffic and Transportation

If any adverse impacts were identified, then further analysis would have taken place to determine (1) whether the impacts would primarily occur in EJ populations based on geography, or (2) whether the impacts that would be experienced by EJ populations would be appreciably more severe or greater in magnitude than the effects that will be suffered by non-EJ populations. Adverse impacts meeting either of these criteria would have been preliminarily concluded to be a disproportionately high and adverse impact toward EJ populations. However, no adverse impacts were identified for any of the relevant resource topics. Therefore, no further analysis was conducted on the potential to impact low-income and/or minority populations.

In preparing this analysis, FRA consulted with Federally-Recognized Tribes, as there are several tribal ancestral lands within study area. Tribes expressed concerns that continued development in this area has historically impacted the tribal community and that the cultural landscape and setting has been uniquely affected by this development. Although these impacts are difficult to quantify, FRA qualitatively evaluated impacts to the cultural landscape through an EJ lens to determine whether the Project would disproportionately and adversely impact tribal communities.

4.16.4 Affected Environment

As shown in Figure 22, a total of 11 Census tracts in the study area are EJ communities based on minority percentage. The majority of these minority populations are located along Section 2 and Section 3 of the project alignment through Cajon Pass as well as the Greater Los Angeles Area and Rancho Cucamonga. Additionally, a total of 11 Census tracts in the study area are EJ populations based on low-income percentage. The majority of these are located along Section 1 and Section 2 of the alignment through the High Desert area and Cajon Pass.

For purposes of this analysis, FRA also assumed presence of traditional cultural landscapes within the affected environment.

4.16.5 Environmental Consequences

This section describes the environmental consequences of the Build Alternatives in topic areas relevant to this EJ analysis (see Section 4.16.3, for the list of resource topics evaluated). Refer to the following technical memorandums prepared for the Project for further discussion of construction and operations impacts, as well as avoidance, minimization, and mitigation measures that will be implemented to minimize Project impacts.

4.16.5.1 No Build Alternative

The No Build Alternative will not cause disproportionately high and permanent adverse impacts on EJ populations because the Project would not be constructed.

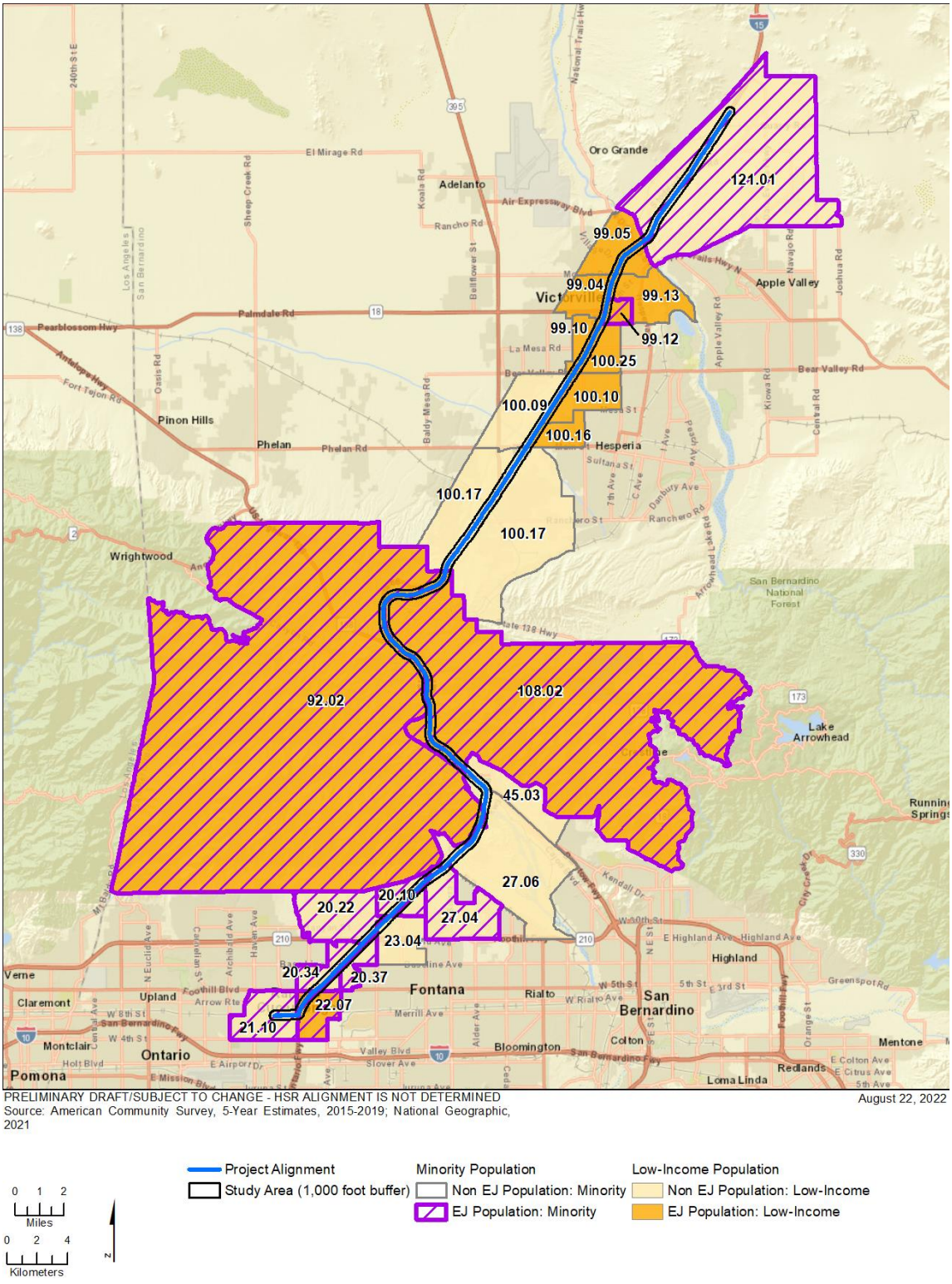
In the No Build Alternative, there will be no HSR connection between Victor Valley, California, and Rancho Cucamonga, California. Beneficial effects from the Project on EJ communities and non-EJ communities as described below will not occur, including those related to regional air quality, socioeconomics (employment and economic benefits), and traffic and transportation (freeway operations and VMT).

4.16.5.2 Construction of the Build Alternative

Project construction will have the potential to affect nearby communities within the study area, including EJ communities. With the development and implementation of resource-specific BMPs and avoidance, minimization, and mitigation measures, there will be no adverse construction impacts on nearby communities (refer to Section 6.1.1 of Attachment M for further discussion of resource-specific BMPs and avoidance, minimization, and mitigation measures).

During consultation, Federally-Recognized Tribes shared concerns that construction-period dust may migrate into Tribal Reservation and fee-owned lands outside of the project study area, due to high winds. Dust control plans will be developed to minimize construction-period dust, as

detailed in Section 4.1. The Tribes also expressed concerns about construction-period noise and its potential to temporarily disturb the cultural setting of adjacent areas. Construction noise will be minimized to the extent possible, and will occur in the larger noise context of the existing highway. The Project will be co-located within the existing I-15 highway and will be constructed in the Caltrans right-of-way. Though there may be short-term impacts associated with construction activities, such as noise and visual intrusions, these impacts would not be adverse. In addition, construction of the Project is not anticipated to affect access to areas where cultural and religious activities may occur.



Source: American Community Survey, 5-year estimates, 2015-2019

Figure 22. Environmental Justice Study Area

Since there will be no adverse construction impacts, construction of the Project will not result in any disproportionately high and adverse impacts on EJ populations, including tribal communities.

4.16.5.3 Operation of the Build Alternative

Project operations will have the potential to affect nearby communities within the study area, including EJ communities. With the development and implementation of resource-specific BMPs and avoidance, minimization, and mitigation measures, there will be no adverse operation impacts on nearby communities. Since there will be no adverse operation impacts, operation of the Project will not result in any disproportionately high and adverse impacts on EJ populations.

Operation of the Project is expected to reduce regional emissions of all CAPs and TACs when compared to existing and future No Build baselines by providing a zero-emission alternative to automobile and air transportation modes. The Project will reduce demand on the I-15 mainline by diverting vehicle travel to rail travel and will result in a net reduction in annual VMT within the Project limits. Therefore, the Project will have a beneficial effect on both regional air quality and freeway mainline operations and VMT for nearby communities, including EJ communities.

Federally-Recognized Tribes have shared concerns that during Project operation, air quality could be affected by increased risk of wildfire. FRA has determined based on the Project type and location that the Project will not create or exacerbate existing wildfire risk. The Tribes have also expressed interest in the potential off-site emissions from electrical generation needed to support the Project. Several Tribes raised similar concerns regarding the cumulative impact of adding an additional mode of transportation to the existing corridor, which crosses through ancestral lands, and the impacts this may have on access to surrounding areas if/where there are existing public lands used for religious or cultural purposes. The Project will maintain existing access to surrounding areas where it exists; existing access is primarily by automobile. FRA did not identify any long-term risks to human health impact from Project operation that may adversely affect EJ populations and tribal communities.

Noise from Project operations may affect tribal resources in those places where the resource is used for ceremonial or other tribal activities and where human occupation could occur. Noise from train operations dissipates over distance. At approximately 200 feet, the noise increase from train operations will not result in an impact based on FRA noise criteria for non-residential land uses. At this distance and beyond, the train noise in relation to existing noise levels is not anticipated to cause annoyance. FRA has not identified any tribal resources within 200 feet of the rail line. As such, noise from Project operations is not anticipated to adversely affect tribal communities using the landscape for cultural or religious activities.

The Project will bring social benefits to the region by improving access to jobs, reducing travel times, and reducing traffic congestion. Combined with anticipated sales tax revenues from project spending on operation and maintenance of the Hesperia station and Rancho Cucamonga station, the Project will represent an economic benefit for the region.

4.16.5.4 Cumulative Impacts

Under the cumulative condition, ongoing urban development is expected to continue within the study area. Such planned projects would include residential, commercial, industrial,

recreational, and transportation facilities. Construction of cumulative projects could result in temporary and permanent disruptions to minority and/or low-income populations during temporary construction activities. If the incremental effects of multiple projects were to combine to create disproportionate and adverse effects on low-income populations and minority populations in specific communities, this would be considered a cumulative effect on EJ populations under NEPA. However, these projects will be distributed throughout San Bernardino County, which has 13.3 percent low-income populations and 71.5 percent minority populations (EJ populations) (U.S. Census Bureau 2020). Furthermore, a number of these projects would create additional, permanent jobs in the area and would set aside land for future industrial and commercial development, which could increase the economic opportunities available to the EJ populations.

Development of planned projects would likely include the implementation of various forms of mitigation to avoid or minimize temporary and permanent cumulative effects on the population as a whole in the study area. Remaining effects would be distributed throughout the region and would occur based on the construction timelines of the planned projects under the cumulative condition.

In addition, the Project would result in local and regional benefits to the low-income populations and minority populations that constitute a large percentage of the region. These benefits would include improvements in mobility within the region, regional air quality improvements, and new employment opportunities during construction and operations.

4.16.6 Avoidance, Minimization, and Mitigation Measures

The Project will not cause disproportionately high and adverse impacts on EJ populations. Therefore, no additional mitigation measures were developed beyond those already described for other resources, including Air Quality, Water Quality, Noise and Vibration, Floodplains, Visual Quality, Land Use and Community Facilities, Socioeconomic Environment, Hazardous Materials, Cultural Resources, and Traffic and Transportation.

FRA will conduct EJ-specific outreach to affected communities pursuant to EO 12898 as part of FRA's decision-making process prior to release of the final EA, following public review. The purpose of these outreach activities will be to inform local community members of the Project and its status, and to provide opportunities by which minority and/or low-income communities can effectively take part in the planning process for the Project.

FRA is continuing to consult with the Yuhaaviatam Tribe in their role as a NEPA cooperating agency and as a Section 106 consulting party to discuss EJ concerns (refer to Section 4.16.5.2 and Section 4.16.5.3 above).

5 Public and Agency Coordination

5.1 Public Coordination

Public meetings and outreach efforts have been coordinated with local committees, community groups, elected officials, and local government entities to provide details on the Project and to discuss impacts to the community. As part of this process, two virtual public meetings will be held during public circulation of this EA on Saturday, November 12 and Tuesday November 15.

Details regarding these meetings including time and log in information can be found at: https://railroads.dot.gov/environment/environmental-reviews/brightline-west-cajon-pass-high-speed-rail-project.

The public will be informed of the release of this EA via a press release to media outlets, social media, and outreach to elected officials and community groups.

5.2 Agency Coordination

As identified in the CEQ regulations for the implementation of NEPA (40 CFR Section 1501.6), Cooperating Agencies are those Federal government and regulatory agencies with jurisdiction by law (e.g., with permitting or land transfer authority) or special expertise with respect to any environmental impact or resource involved in an environmental review or alternative study. Cooperating Agencies assist in the identification of any issues regarding potential natural, social, or economic impacts, and have been invited to provide input on technical analyses and the NEPA EA.

FRA sent letters of invitation on October 22, 2021, to agencies with jurisdictional authority over the Project to participate as Cooperating Agencies during the Project's environmental review process. FRA sent letters of invitation on March 11, 2022, to Tribes with special expertise in resources of cultural and religious significance that may be within the Project's study area. The following agencies have accepted an invitation to act as Cooperating Agencies for this Project.

- U.S. Army Corps of Engineers, Los Angeles District
- Federal Highway Administration, California Division
- Surface Transportation Board
- California Department of Transportation (Caltrans)
- Yuhaaviatam of San Manuel Nation

Cooperating Agencies may adopt the NEPA document without recirculation after an independent review and once the Cooperating Agency has concluded that its comments and suggestions have been satisfied. Cooperating Agency responsibilities may include:

- Providing comments, responses, studies, or methodologies on those areas within the agency's jurisdiction;
- Addressing environmental issues of concern to a particular agency;
- Identifying, as early as practicable, any issues of concern regarding the Project's potential environmental or socioeconomic impacts;
- Participating in coordination meetings, study team meetings, and joint field reviews as appropriate and to the extent agency resources allow; and
- Reviewing and commenting on environmental documentation.

Other agencies and organizations not listed above may be identified through the public involvement process. For example, an agency may have information on a particular resource within the study area. Meetings with these agencies and organizations may occur to discuss

topical information as necessary. Their role in the Project development process is expected to be informational in nature. Responsibilities may include:

- Providing input on environmental issues of concern; and
- Identifying, as early as practicable, any issues of concern regarding the Project's potential environmental or socioeconomic impacts.

FRA hosts monthly Federal/State Interagency Meetings for agencies that have jurisdiction over resources specific to the Project. Attendees at the Interagency Meetings include the following:

- Federal Highway Administration, California Division;
- Surface Transportation Board;
- U.S. Army Corps of Engineers, Los Angeles District;
- California Department of Transportation, District 8; and
- U.S. Fish and Wildlife Service.

FRA will continue to hold monthly Interagency Meetings throughout the NEPA process.

FRA held a cooperating agency kick-off call with the Yuhaaviatam of San Manuel Nation on March 26, 2022, and continued coordination with the tribe to obtain and understand natural and cultural resources which may be impacted by the Project.

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