WATER QUALITY TECHNICAL REPORT

Brightline West Cajon Pass High-Speed Rail Project

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Prepared for
Federal Railroad Administration

Prepared by
HTNB

Contents

Figures

Abbreviations and Acronyms

BMP	best management practice
CalSTA	California State Transportation Agency
Caltrans	California Department of Transportation
CFR	Code of Federal Regulations
CGP	Construction General Permit
CWA	Clean Water Act
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
GHG	greenhouse gas
HOV	high-occupancy vehicle
HSR	High-Speed Rail
I-	Interstate
mph	miles per hour
MOU	memorandum of understanding
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NWIS	National Water Information System
Project	Cajon Pass High-Speed Rail Project
RWQCB	Regional Water Quality Control Board
SBCTA	San Bernardino County Transportation Authority
SPCC	Spill Prevention, Control, and Countermeasures
SR-	State Route
STB	Surface Transportation Board
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
TDS	total dissolved solids
TPSS	traction power substation
USGS	U.S. Geological Survey
VHT	vehicle hours traveled
VMT	vehicle miles traveled

1. Executive Summary

This section summarizes the direct, indirect, and cumulative impacts from the No Build Alternative and from construction and operation of the Build Alternative. Once approved, this section will be transferred verbatim to the relevant sections of Chapter 3.0, Affected Environment, and Chapter 4.0, Environmental Consequences of the Environmental Assessment.

1.1. Affected Environment

The following Federal regulations, policies, and plans were reviewed to estimate potential project-related effects on water quality:

- Clean Water Act (CWA)
- CWA Section 404 Permits for Fill Placement in Waters and Wetlands
- CWA Section 402 National Pollutant Discharge Elimination System (NPDES) Permits for Discharge to Surface Waters
- CWA Section 303(d) List of Impaired Waterbodies
- CWA Section 401 Water Quality Certification
- Water Quality Control Plan for the Lahontan Region (Lahontan Basin Plan)

As described in the *Water Quality Technical Report*, the Project study area includes one perennial stream, the Mojave River, located in the Bell Mountain Wash-Mojave watershed and Burkhardt Lake-Mojave River subwatershed. Additionally the Project study area 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. Evaluation and assessment of the jurisdictional determination of these drainages in the study area are in progress; if they are under United States Army Corps of Engineers (USACE) jurisdiction they will be regulated as waters of the United States. The study area does not contain any essential fish habitat designated by the National Marine Fisheries Service.

State and Federal water quality criteria are developed for the protection of aquatic and human health. Within the study area, four water features including the Mojave River, Cajon Wash/Creek, Lytle Creek, and Day Creek, were evaluated for compliance with the Clean Water Act (CWA) Section 3030(d) criteria for “impaired waters”. The Mojave River is the only 303(d) listed water feature in the study area, listed for exceedances in dissolved oxygen, fluoride, total dissolved solids (TDS), sulfates, manganese, and sodium allowances (SWRCB 2018). In addition, surface water within the many water features that cross the study area tends to be high in TDS, with some locations displacing elevated concentrations of boron and nitrates (USGS 2020).

1.2. Environmental Consequences and Mitigation

1.2.1. Methodology

This analysis was based on desktop survey to identify protected waters, essential fish habitat, and drinking water resources in the study area. Analysts also collected and reviewed available information on water resources from federal and state regulatory agencies, including the Environmental Protection Agency (EPA), USACE, Caltrans, and the California State Water Resources Control Board. Preliminary design and drainage plans for the Project were then reviewed to assess potential effects on water resources.

1.2.2. No Build Alternative

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

1.2.3. Construction of Build Alternative

Construction activities involving soil disturbance, excavation, cutting/filling, stockpiling, and grading activities could result in increased erosion and sedimentation of surface waters. Stormwater runoff from temporary construction areas, 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.

1.2.3.1. Railway

The Project would construct bridges which would 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. However, 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.

No construction work is proposed within Day Creek and East Etiwanda Creek as the proposed bridges for the Project would 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.

A variety of best management practices (BMPs) and other methods would be implemented to limit the potential for runoff from temporary stockpiles of excavated and construction materials, and from temporary construction areas, to enter and affect nearby drainages and waterbodies. BMPs will be developed as part of the Caltrans Stormwater Data Report and Caltrans Water Quality Assessment Report and will be included in the Stormwater Pollution Prevention Plan (SWPPP) prepared for the Project. The Project would implement other plans to reduce effects to water quality, including a Spill Prevention, Control, and Countermeasure (SPCC) plan and Temporary Erosion and Sediment Control (TESC) Plan. Implementation of these standard BMPs would avoid or minimize any impacts to water quality.

1.2.3.2. Hesperia Station and Rancho Cucamonga Station

Construction of the proposed Hesperia and Rancho Cucamonga stations would not involve crossing or excavation of any streams or washes (i.e., ephemeral, intermittent, or perennial drainages). A variety of BMPs such as the use of silt fences, sediment traps, or sandbag dikes would be implemented to limit the potential for runoff from temporary stockpiles of excavated materials and from temporary construction areas to enter and affect nearby drainages. Implementation of these standard BMPs would avoid or minimize any impacts to water quality.

1.2.4. Operation of Build Alternative

1.2.4.1. Railway

The Project would increase the number of impervious surfaces and thus the amount of stormwater runoff and nonpoint-source pollution in some areas, such as along the I-15 where the pavement would 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. Because of this alteration, drainage flow spread will be designed to meet California Department of Transportation (Caltrans) requirements.

Stormwater treatment will be designed in accordance with the Stormwater Quality Handbook: Caltrans Project Planning Design Guide (PPDG), which may include infiltration trenches and bioretention basins. Implementation of the plans and BMPs developed for the Project would minimize operation effects on water quality.

1.2.4.2. Hesperia Station and Rancho Cucamonga Station

The Hesperia station would add to the amount of impervious surface in the study area, increasing the quantity of stormwater runoff while the Rancho Cucamonga station would be constructed in an urbanized area that is already highly developed with impervious surfaces. Stormwater runoff from the Hesperia station roof and paved surfaces would contain pollutants deposited from vehicles and maintenance activities. For both the Hesperia station and the Rancho Cucamonga station, stormwater runoff treatment will comply with state and local regulations, which would minimize operations effects on water quality from stations.

1.2.5. Avoidance, Minimization, and Mitigation Measures

The following mitigation measures would 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.

1.2.5.1. 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). 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 would allow the Project to limit the extent of water quality monitoring needed during construction phases.

Mitigation Measure WQ-2: The project sponsor will comply with the existing Caltrans statewide National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP), which would require the property owner to file a Notice of Intent to discharge stormwater and to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP). Implementing the requirements in the NPDES CGP will reduce or eliminate construction-related water quality effects. The project sponsor 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 effects on water quality are minimized.

Mitigation Measure WQ-3: Implementation of the SWPPP, developed by the contractor, as described in Mitigation Measure WQ-2 will 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 effects.

Mitigation Measure WQ-4: The project sponsor 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, cleanup, containment, and response measures in the SPCC Plan will be implemented by the project sponsor. The project sponsor will immediately notify the Caltrans Resident Engineer, Caltrans Construction Stormwater Coordinator, and the California Regional Water Quality Control board if a spill occurs. The project sponsor 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, the project sponsor will locate temporary construction areas to avoid key water features, such as the Mojave River, Cajon Wash, and California Aqueduct, and will avoid other water resources, where possible. The project sponsor and 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. The project sponsor will not develop new groundwater wells or surface impoundments without Federal and state approval, as appropriate and legally required.

1.2.5.2. Operation

Mitigation Measure WQ-7: To protect water quality, permanent water quality treatment devices will be installed by the contractor 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, the project sponsor 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 freeway, 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.

2. Introduction

DesertXpress Enterprises, LLC (dba "Brightline West") proposes to construct and operate the Cajon Pass High-Speed Rail Project, a 49-mile train system capable of speeds up to 180 miles per hour (mph) between Victor Valley, California and Rancho Cucamonga, California (Project). The Project includes two new railway stations—one in Hesperia, and one in Rancho Cucamonga. The connecting station in Victor Valley would be constructed as part of a separate project that was evaluated in the DesertXpress Final Environmental Impact Statement (Final EIS; FRA 2011).

The Project would be powered by overhead electric catenary within the Interstate 15 (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 would require construction of one new traction power substation (TPSS) in the Hesperia area. The maintenance facility that was evaluated with the Brightline West Victor Valley High-Speed Rail Passenger Project will provide the primary maintenance functions, although 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 high-speed rail (HSR) and commuter rail systems.

The Project would be constructed and operated 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. For the last mile of the project from I-15 to the Rancho Cucamonga Station, there will be Agreements with the City of Rancho Cucamonga and the San Bernardino County Transportation Authority (SBCTA) for land rights, construction, operations and maintenance.

3. Project Description

3.1. Background

Early project coordination for HSR service from Victor Valley to Rancho Cucamonga began in 2020, with Brightline West meeting with the San Bernardino County Transportation Authority (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 building HSR within the I-15 right-of-way between Victor Valley and Rancho Cucamonga. A separate MOU was executed in September 2020 between Brightline West and the Southern California Regional Rail Authority, which operates Metrolink, for connection to the existing Metrolink station in Rancho Cucamonga. Additionally, the California State Transportation Agency (CalSTA), Caltrans, the California High-Speed Rail Authority, and Brightline West have executed an MOU regarding the Project. The MOU reflects both the regional and statewide interest and value in the Project,

including interconnectivity opportunities, and outlines how the parties will work together to advance their shared interest in the success of the Project.

3.2. Project Area

The Project would construct and operate the Cajon Pass High-Speed Rail Project, a 49-mile train system capable of speeds up to approximately 140 mph between Victor Valley, California and Rancho Cucamonga, California (Project). The Project includes two new railway stations; one in Hesperia, and one in Rancho Cucamonga, and will connect to another Brightline West station in Victor Valley. The proposed rail alignment would be located within the median of the I-15 freeway between Victor Valley and Rancho Cucamonga except for the last mile approaching the proposed Rancho Cucamonga station. The Project area is depicted in Figure 1.

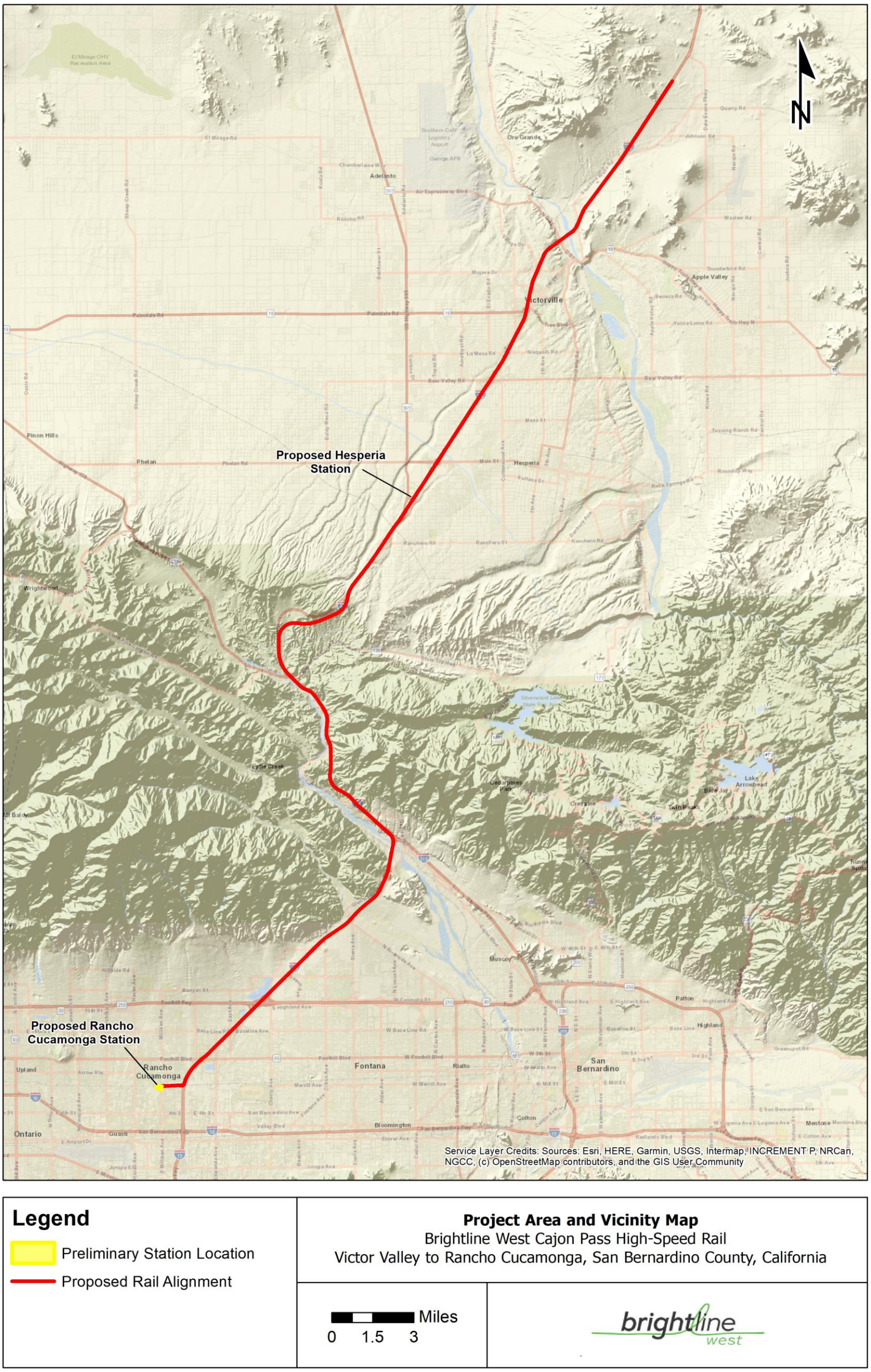

Figure 1. Project Location Map

3.3. Purpose of and Need for the Project

3.3.1. 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 would provide a convenient, efficient, and environmentally sustainable alternative to automobile travel on the highly congested I-15 freeway. The Project would add capacity to the overall transportation system by introducing a new HSR service from Victor Valley to Rancho Cucamonga. The Project would reduce travel time, improve reliability, and increase the mobility options for travel between metropolitan regions. Travel time from Victor Valley to Rancho Cucamonga as a result of the Project, would be reduced by half compared to driving during normal conditions and substantially more during congestion peak periods. The Project would reduce automobile vehicle miles traveled (VMT) resulting in a corresponding reduction in greenhouse gas emissions (GHG) and air quality emissions.

3.3.1.1. Multi-Modal Use of the I-15 Corridor

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

3.3.2. Need

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

Travel demand analysis completed on behalf of the Project in 2020 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 Cajon Pass segment of the I-15, which is capacity constrained. Further, the freeway system leading into the I-15 from points west, east, and south, including the I-10, State Route 210 (SR-210), Interstate 215 (I-215) and State Route 60 (SR-60) have similar delays and capacity constraints. This Project would address this demand, by providing a transportation alternative to vehicle travel and allow access to the Brightline West service from the Greater Los Angeles and the Riverside-San Bernardino-Ontario Metropolitan areas as well as points beyond with a connection to the Metrolink system in Rancho Cucamonga.

The Project would also support Federal and state policies focused on climate change and the need to reduce VMT and associated GHG emissions.

3.3.2.1. Capacity Constraints

I-15 through the Cajon Pass is one of the most congested segments of I-15, with no alternative routes that provide comparable direct road travel capability because of the mountainous topography. Through the Cajon Pass, I-15 supports daily workforce commuters, recreational

travel, and regional and interstate freight and goods movement. 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 would no longer need to drive through the most congested parts of the corridor in the 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 Apple Valley in the AM peak period, and travel speeds on most segments will also decrease—some by more than 10 mph—in the PM peak period (SCAG, 2020). Based on the Project Report (PR) 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 in the range of 31 to 38 percent from 2014 to 2045. The report states the existing level of service (LOS) is acceptable in most locations but that 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 would improve conditions in the general purpose lanes in many segments, it would cause the segment between the I-10 and 4th street to worsen in the PM peak hour (both directions). In the AM peak hour the segment between Arrow Route and Fourth Street would 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 U.S. Department of Transportation's (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 the Cajon Pass as a truck bottleneck, with over 15,000 annual vehicle hours of delay.

As documented above, given the attractiveness of the Origins and Destinations, the transportation Capacity Constraints on I-15 as described in current and predicted average daily traffic and LOS limit reasonable highway access between Rancho Cucamonga, Hesperia, and Victor Valley.

3.3.2.2. Travel Demand

The anticipated substantial increases in population, housing, and employment in San Bernardino County will result in greater demand for transportation facilities and services including increased travel demand that will result in congestion on roadways if capacity does not keep up with the demand. The Project stations in the High Desert will provide convenient connections between High Desert communities and the more urbanized San Bernardino Valley and Metropolitan LA. The High Desert provides lower cost housing options for Southern California residents, while the Rancho Cucamonga/Ontario area around Ontario International Airport has become a significant employment center.

The Southern California Association of Governments (SCAG) forecasts, in its 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), that the population of San Bernardino County will grow to 2,815,000 by 2045, a 29 percent increase from the US Census Bureau's 2018 population estimate of 2,180,085, and that the number of households will grow to 875,000, a 39 percent increase over the 2018 household estimate of 630,633 (US 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 US Census Bureau's estimate of 617,828 in 2018.

While the proposed Victor Valley station site would be located at the convergence of all the highways enroute to Las Vegas for Southern California travelers, the Rancho Cucamonga station would be closer to major population centers in Southern California. Compared to the Victor Valley station, the HSR station in Rancho Cucamonga, located in Greater Los Angeles provides more direct access to the densely populated centers in Southern California for both drivers and Metrolink rider; 87 percent of the 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 Rancho Cucamonga station location.

The proposed station in Rancho Cucamonga, with an express rail 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 would be at the convergence of US-395 and I-15, so it would serve commuters to Greater Los Angeles from the major corridors in the Victor Valley.

The Project also supports 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 would facilitate transit connections and allow residents of the Greater Los Angeles and the Riverside-San Bernardino-Ontario Metropolitan areas to travel exclusively by mass transit and passenger rail to and from the high desert of San Bernardino. Southern California residents could take the Los Angeles Metro rail, regional bus systems, Amtrak, or Metrolink to Los Angeles Union Station to connect via the Metrolink San Bernardino Line to the Rancho Cucamonga station. 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 would 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 formation of areas that are walkable and that provide mobility options in the region. The Project would further the goals of the ARRIVE Corridor plan, increasing the activity centers that can be accessed by Southern California's rail

network. The Metrolink Southern California Optimized Rail Expansion program also includes capital improvements within the Metrolink corridor that would 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.

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. In 2017, SCAG and SBCTA amended the Transportation Improvement Program to include an expansion of the Hesperia Park & Ride area at Joshua Street from 188 spaces to nearly 400 spaces. The Joshua Street Park & Ride is next to the proposed Project station in Hesperia. 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 as a major interstate highway corridor that provides access to the interior of the United States, for goods arriving at the ports of the Los Angeles region and ranks it among the highest truck volume corridors in the Western United States. Caltrans' 2015 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 State Route 58. By providing passenger rail capacity in the corridor, the Project will help maintain freeway capacity for truck freight use by removing passenger vehicles from the roadway network.

3.3.2.3. Safety

Alternatives to automobile travel would provide improved safety conditions on the I-15 corridor with diversion of vehicle trips to HSR. On a national level, comparing miles traveled via commercial aircraft, train, and automobiles on highways, auto travel on highways has by far the highest rate of passenger fatalities per mile traveled. 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. High-speed rail is one of the safest forms of travel.

The California Office of Traffic Safety (OTS) ranks San Bernardino County 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 in the 12 miles of the Cajon Pass, although the Pass accounts 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 vehicle miles traveled, well above the alliance's performance goal of 0.003. Segments immediately north were even more deadly (I-15 Mobility Alliance, 2015). By connecting the Victor Valley to Rancho Cucamonga, the Project will allow more travelers to stay off the most dangerous segments of I-15.

3.4. Project Elements

3.4.1. Build Alternative

The Build Alternative (i.e., the Project) consists of a proposed HSR passenger railway with associated infrastructure, including two proposed passenger stations. Nearly all of the Project would be built within the I-15 right-of-way. Near the proposed southern terminus station in Rancho Cucamonga, approximately 1 mile of the rail alignment would be in city street, railroad, or utility rights-of-way.

The proposed rail alignment would be located within the median of the I-15 freeway between Victor Valley and Rancho Cucamonga except at the approach to the proposed Rancho Cucamonga station. The rail alignment would 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 4 BNSF and 3 UP railroad crossings) and to provide a safe incline for train operation. The rail alignment would be predominantly single-track, with limited double-track segments in Victor Valley (2.6 miles, including 0.9 miles constructed as part of the DesertXpress High-Speed Passenger Train Project), Hesperia (5.5 miles), and Rancho Cucamonga (2 miles). This would allow for 45-minute headways in the opening year between Victor Valley and Rancho Cucamonga and with additional infrastructure, 22.5-minute headways after year 11. These headways, along with the ability to couple trains (double passenger capacity), would 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. They include:

- **Section 1:** High Desert - From the Victor Valley Passenger 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

3.4.1.1. Section 1 – High Desert

The proposed rail alignment would connect to the DesertXpress High Speed Train alignment approximately one mile south of the Victor Valley station in Apple Valley. The Victor Valley station was proposed by the DesertXpress High Speed Train Project (DesertXpress Project) and approved in 2011 and modified by the re-evaluation in 2020. From this point, the alignment

would continue south within the I-15 median. The rail alignment throughout Section 1 would be predominantly single track; however, the rail alignment would 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 would include a new structure over the existing CEMEX railroad bridge. Based on future discussion with CEMEX, the existing railroad bridge may be reconstructed as part of the DesertXpress project, in which case the alignment would run at-grade in the median under the railroad bridge.

Brightline West will build a new Southbound on ramp and bridge at South Stoddard Wells Rd. to replace similar existing facilities further south. This in-turn requires 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 would be widened to accommodate the rail line. The alignment would then continue at grade in the I 15 median with minor roadway widenings for the remainder of Segment 1. This portion of the alignment would 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 substation TPSS would be constructed to support the Project along I-15, between Mesa Street and Mojave Street. The area is currently largely undeveloped other than existing overhead power lines and utility access.

Hesperia Station

Section 1 includes a new passenger station in Hesperia, at the Joshua Street/I-15 interchange. This station would serve daily travelers between the High Desert of San Bernardino County and the Los Angeles Basin. This would be a limited service for select southbound AM and northbound PM weekday on selected Brightline train coaches. The northbound on-ramp to Joshua Street would be realigned closer to the freeway, and station parking would be on the north side of Joshua Street. Station 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 would be replaced. The Project design includes adequate parking areas to accommodate parking demand. The Joshua Street bridge would be reconstructed at a higher elevation, requiring the raising of the I-15 ramps and Mariposa Road. The passenger platform would 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. This in-line station would be located at the southern end of the double track segment in Hesperia.

Design Elements

- Reconstructions/Interchange Modifications: Widening portions of the I 15 freeway 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, US-395, Ranchero Road, Oak Hill Road, and Joshua Street

- New Substation: Construction of a new 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

3.4.1.2. Section 2 – Cajon Pass

Beginning at the I-15/Oak Hill Road interchange traveling south, the alignment would 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 the I-15 runs through the San Bernardino National Forest (approximately 12 miles). The rail alignment throughout Section 2 will be entirely single-track. The Project would require relocation of California Highway Patrol (CHP) emergency crossovers where the new guideway would block existing crossovers. Four new crossovers would 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) OHV 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 would remain at grade throughout Segment 2.

Where I-15 northbound and southbound lanes reconnect at the foot of the Cajon Pass, the rail alignment would be within the I-15 median. This would require widening portions of the I-15 freeway and minor realignment of ramps at the I-15/State Route 138 (SR-138) interchange.

Design Elements

- Bridges/Viaducts: None
- Reconstructions/Interchange Modifications: Widening portions of the I-15 freeway including several miles of retained fill, and realignment of ramps at the I-15/ SR-138 interchange
- Other facilities: CHP emergency crossovers

3.4.1.3. Section 3 – Greater Los Angeles

Beginning at the Kenwood Avenue interchange, the proposed rail alignment would continue at grade in the I-15 median. At the I-15/I-215 interchange, the alignment would 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 would require I-15 freeway and interchange ramp modifications at SR-210, Beech Avenue, Duncan Canyon Road, Sierra Avenue, and Glen Helen Parkway.

The rail alignment would transition to an aerial alignment and elevate over the I-15 southbound lanes south of Church Street and cross at Foothill Boulevard. It would continue along the west side of the I-15 freeway on an elevated alignment to enter the San Gabriel Subdivision and Eighth Street corridor. The alignment would transition onto an aerial structure and would 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 would maintain a single-track configuration prior existing the freeway median south of Church Street, where it would 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 would 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 would 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

- 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, Beach Avenue, Duncan Canyon Road, and Glen Helen Parkway
- Station: The proposed Project includes the construction of a 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 share parking structure for vehicles, and a bus plaza

3.5. Construction

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

For proposed new and reconstructed overpasses and bridges, construction activities would include clearing, grubbing, demolition of existing structures, excavation and drilling for 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 would occur on Caltrans right-of-way. Some, for the rail stations and power stations, would occur on public property owned by the City of Rancho Cucamonga, SBCTA, or State of California. Temporary construction areas, or TCAs, are properties that would be temporarily utilized for construction staging and storage. The Project would require TCAs along the alignment between Victor Valley and Rancho Cucamonga.

Construction activities on Caltrans right-of-way would comply with the State Construction General Permit (CGP). The CGP and the Caltrans Storm Water Management Plan both require BMPs to be incorporated during all phases of construction to prevent contaminated stormwater runoff, a major contributor to water quality degradation. A SWPPP, which will include placement of temporary water pollution control BMPs throughout the project site, will be required prior to commencement and during construction.

Some bridge construction work would involve work within the streambed. Placement of columns needed for those bridge spans may involve phased construction with BMPs, such as flow diversion around work areas, to protect the stream during construction. Staging, equipment storage, and stockpiling would occur outside the floodplain. The final construction plans would include the BMPs for grading, erosion control, and flow diversion that are necessary to reduce erosion and sedimentation. Such BMPs would be selected to control erosion and sediment removal and would represent the best available technology that is economically achievable. Standard erosion control measures, such as management, structural, and vegetative controls, would be implemented for all construction activities that expose soil. BMPs to be implemented may include, but would not be limited to, the following:

- BMPs that would apply to construction of bridge columns within the streambed will include the development of an approved dewatering, water diversion, and monitoring plan. The monitoring plan will follow the procedures laid out by the regional water board permits. Monitoring must occur prior to the start of in-water work, and testing must take place up stream and down stream from the in-water work location.
    - BMPs may include sheet piles, aqua barriers, cofferdams, filter fabric or turbidity curtains.
- Temporary erosion control measure BMPs that would apply to construction of the stations and the rail (such as silt fences, straw wattles, silt/sediment basins and traps, check dams, geofabric, mulch or duff, and sandbag berms) for erosion control from disturbed areas
- Incorporation of BMPs in Temporary Water Pollution Control (TWPC) Plans that will be included in the SWPPP
- The SWPPP and SPCC plans will be on site and available within construction staging areas.
- Temporary erosion control measure BMPs that would apply to staging areas include silt fences, stabilized construction entrances, geofabric and/or plastic sheeting.
- Continuous training will be included for field staff during daily and weekly field stand-downs.
- Regular inspection and maintenance of BMPs shown in the TWPCs

Construction BMPs specifically for rail installation would also include:

- Erosion control material consisting of silt fences along the outside limits of construction on both sides of the disturbance corridor for track construction

- Clearing the construction area of brush and vegetation
- Stripping any topsoil and transporting it to stockpile (outside the limits of any floodplain) where it will be covered with a protective layer impervious to water for protection from rainfall
- Stockpile management procedures and practices are designed to reduce or eliminate air and storm water pollution from stockpiles of soil, and paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate subbase or pre-mixed aggregate, asphalt binder (so called "cold mix" asphalt) and pressure treated wood.
- Excavation and fill for culvert extensions using good quality material for fill and transporting poor quality material to stockpile
- Using stabilized construction entrances and exits along the project site (outside the limit of floodplains) to minimize deposition of tire dust and associated contaminants off of the track site
- Placement of diversion BMPs around the area where construction activities are occurring in a floodplain, such as at proposed bridge columns and abutments
- Storing construction equipment or materials outside the limits of influence of the 100-year floodplain so as to avoid redirecting 100-year flood flows that could cause structural damage or pose a safety risk to workers.

In addition to the BMPs listed above, the Project would restore disturbed areas after construction to pre-construction conditions.

4. Methodology

4.1. Relevant Regulations, Plans, and Policies

The following Federal regulations, policies, and plans were reviewed to estimate potential project-related effects on water quality:

- Clean Water Act (CWA)
- CWA Section 404 Permits for Fill Placement in Waters and Wetlands
- CWA Section 402 National Pollutant Discharge Elimination System (NPDES) Permits for Discharge to Surface Waters
- CWA Section 303(d) List of Impaired Waterbodies
- CWA Section 401 Water Quality Certification
- Water Quality Control Plan for the Lahontan Region (Lahontan Basin Plan)

4.2. Study Area

The study area used to identify water resources and potential effects of the Project is the maximum extent of the Project footprint and associated project elements. The study area includes four watersheds: Bell Mountain Wash – Mojave River, Lytle Creek, Middle Santa Ana River, and Chino Creek (Caltrans 2022).

4.3. Methods Used

A preliminary desktop analysis was conducted to identify protected waters, essential fish habitat, and drinking water resources in the study area. Available information on water resources from federal and state regulatory agencies, including the Environmental Protection Agency (EPA), USACE, Caltrans, and the California State Water Resources Control Board, was collected and reviewed. Preliminary design and drainage plans for the Project were then reviewed to assess potential effects on water resources. The potential effects on water quality described in this report were estimated based on preliminary engineering design for the Project and online databases that may not be updated frequently.

5. Affected Environment

5.1. Water Resources

The study area includes one perennial stream (Mojave River), which is in the Bell Mountain Wash-Mojave River watershed and Burkhardt Lake-Mojave River subwatershed (Caltrans 2022). The Mojave River is the largest hydrological feature in the study area. The Lahontan Basin Plan (Lahontan RWQCB 2019b) designates portions of the Mojave River within the study area for the following beneficial uses: Municipal and Domestic Supply, Agricultural Supply, Groundwater Recharge, Freshwater Replenishment, Water Contact Recreation, Noncontact Water Recreation, Commercial and Sport Fishing, Warm Freshwater Habitat, Cold Freshwater Habitat, Wildlife Habitat, Water Quality Enhancement, Flood Peak Attenuation/Flood Water Storage, Biological Habitats of Special Significance, and Rare, Threatened, or Endangered Species. The study area does not contain any essential fish habitat designated by the National Marine Fisheries Service.

Biologists identified 48 ephemeral or intermittent drainage features in the study area. Most of the drainages are unnamed. The larger 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. Evaluation and assessment of USACE jurisdiction over these drainages as well as some ditches is in progress. If they are under USACE jurisdiction they will be regulated as Waters of the United States. The remaining drainage features identified in the study area are ephemeral or human-made ditches. Typical characteristics of the drainage features are summarized below.

- Ephemeral washes typical of dryland fluvial systems, flowing only during storm events and remaining dry for most of the year, exhibiting no hydric soil indicators, and lacking riparian wetland vegetation
- Earthen and concrete-lined, human-made ditches that receive surface flows from an up-gradient aquatic resource and convey those flows to a down-gradient aquatic resource (Day Channel and East Etiwanda Creek)

5.2. Drinking Water and Groundwater

The study area is serviced by the Cucamonga Valley Water District, San Gabriel Valley Water District, West San Bernardino County Water District, West Valley Water District, San Gabriel Valley Water Company, San Bernardino Valley Municipal Water District, Hesperia Water District, and Victorville Water District (CDWR 2019). Water for those districts primarily comes from groundwater, which varies with topography, geologic conditions, and seasonally, and extends from approximately 223 to 231 feet below surface elevation in the Victorville area to approximately 492 to 768 feet below surface elevation in the Rancho Cucamonga area (USGS 2019). Soils in the study area are categorized as well drained, somewhat excessively drained, and excessively drained, all of which carry high hydraulic conductivity (USDA 2019). Groundwater within the study area is contained within the Upper Santa Ana Valley-Cucamonga Basin, Chino Basin, Rialto-Colton Basin, San Bernardino Basin, Cajon Basin, and Upper Mojave River Valley Basin.

Drinking water is also imported via the California State Water Project through the East Branch of the California Aqueduct via Lake Silverwood. While Lake Silverwood is outside the study area, the project alignment would cross the California Aqueduct. There are no designated sole source aquifers within the study area.

5.3. Regional Surface Water Quality

Regional surface water quality is largely affected by surrounding land uses, with both point-source and nonpoint-source discharges contributing contaminants to surface waters. The Project is located across urban, agricultural, rural, and undeveloped desert areas. Areas that accumulate pollutants and/or contribute to contaminated stormwater runoff in urban areas, such as Victorville and Rancho Cucamonga, include parking lots and streets, rooftops, exposed earth at construction sites, and landscaped areas. Contaminants in urban runoff include sediment, hydrocarbons, metals, pesticides, bacteria, and trash (SWRCB 2015). Runoff from agricultural areas is characterized by constituents such as fertilizers, herbicides, and pesticides, and often contains bacteria, high nutrient content, and dissolved solids (USGS 2020).

Water flowing into waterways during the dry season may consist entirely of nonpoint-source runoff. This is particularly the case in portions of the study area in urban and agricultural areas. During the wet season, stormwater discharge conveys precipitation from areas of saturation or impervious surfaces to low-lying collection areas and drainages (FRA 2011). “First flush” storm events (where pollutants that have accumulated and concentrated throughout the dry season are flushed with little dilution by the initial storm event of the season) are thought to have the largest adverse effect on receiving waters. The effects of nonpoint-source pollutants on aquatic systems are many and varied. Polluted runoff can result in adverse effects on aquatic ecosystems, public use, human health from groundwater and surface water contamination, damage to and destruction of wildlife habitat, decline in fisheries, and loss of recreational opportunities. Small soil particles washed into streams can smother spawning grounds and marsh habitat. Suspended particulates can restrict light penetration into water and limit photosynthesis of aquatic plants. Metals and petroleum hydrocarbons washed off from roadways and parking lots, and fertilizers, pesticides, and herbicides from landscaped areas, may cause toxic responses in aquatic life or contaminate possible water supply sources such as reservoirs or aquifers.

In general, surface water within the many washes that cross the study area tends to be high in total dissolved solids (TDS) with some locations displaying elevated concentrations of boron and nitrates (USGS 2020). TDS, boron, and nitrates occur naturally and are typically captured and transported in stormwater.

TDS values in wash water tend to increase in the downstream direction. Water quality impairments occur when one or more constituents is elevated above a state or Federal water quality criterion. State and Federal water quality criteria are developed for the protection of aquatic and human health. Within the study area, the California State Water Resources Control Board has evaluated four water features (Mojave River, Cajon Wash/Creek, Lytle Creek, and Day Creek) for compliance with the CWA Section 303(d) criteria for “impaired waters.” Mojave River was determined to be the only 303(d) listed water in the study area; it is listed for

exceeding dissolved oxygen, fluoride, TDS, sulfates, manganese, and sodium allowances (SWRCB 2018).

5.4. Regional Climate

The Project is located in an arid desert region with average monthly temperatures between 30- and 90-degrees Fahrenheit (°F). Rancho Cucamonga and Hesperia are characterized by hot, arid summers and long, cool winters. Rancho Cucamonga receives more precipitation than Hesperia, with an average annual rainfall accumulation of 11.0 inches, compared to Hesperia's 3.8 inches (NOAA 2021). Precipitation in the region is limited, which influences the region's hydrology.

6. Environmental Consequences and Mitigation

6.1. Proposed Action

6.1.1. Construction Effects

6.1.1.1. Railway

During site grading and other construction activities for the Project, areas of bare soil would likely be exposed to erosive forces, such as wind and stormwater. Construction activities involving soil disturbance, excavation, cutting/filling, stockpiling, and grading activities could result in increased erosion and sedimentation of surface waters. Stormwater runoff from temporary construction areas, including staging areas and access roads, could contain sediment and other contaminants, such as metals, hydrocarbons, and TDS, and could carry contaminants to drainages and/or groundwater. The likelihood of stormwater contamination increases with "first-flush" events. In addition, hazardous materials associated with construction equipment could adversely affect the water quality if they are spilled or stored improperly.

Approved plans, methods, and BMPs used during construction would greatly reduce and/or prevent contaminated stormwater runoff, a major contributor to the degradation of water quality. The Project would comply with the existing Caltrans statewide National Pollutant Discharge Elimination System (NPDES) construction general permit. BMPs will be developed as part of the Caltrans Stormwater Data Report and Caltrans Water Quality Assessment Report and will be included in the SWPPP for the Project. An SPCC Plan will be developed and implemented to prevent spills and to protect water quality in the event of a hazardous material spill. More information is provided in Section 3.5, Construction.

The Project would include construction of bridges over the Mojave River (and the associated wetland), Day Creek, East Etiwanda Creek, Lytle Creek, Cajon Wash/Creek, Debris Cone Creek, Cleghorn Creek, Brush Creek, and Bell Mountain Wash. Construction of at least six bridges over the Bell Mountain Wash, Mojave River, Brush Creek, Cleghorn Creek, Cajon Wash/Creek and Lytle Creek, would involve work in the ordinary high water mark (OHWM). These drainages are all ephemeral, apart from the Mojave River, which is perennial. 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 would allow water to flow around the construction area and reduce potential for construction material to reach the waterway during a storm event. Construction in those drainages could provide a direct path for construction-related contaminants to enter surface waters. However,

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 storms or heavy rain events if a leak or spill of fuel, lubricant, or other similar materials were to occur within or near the drainage.

The proposed bridges over Debris Cone Creek, Day Creek, and East Etiwanda Creek would fully span the channels of those features, that is, bridge piers would not be placed in the channels. No construction work is proposed in the channels of Debris Cone Creek, Day Creek, and East Etiwanda Creek. Oro Grande Wash is culverted at the proposed project crossing, so no construction work is expected at this crossing. No construction impacts are expected for these crossings. No construction impacts are expected at the California Aqueduct.

For smaller drainage features, the flow of water would be conveyed by either extending existing piping or constructing a culvert structure. The Project would not obstruct or alter the existing drainage flows throughout the study area and is not expected to alter the functions of the existing aquatic resources.

Construction in areas of high groundwater could require dewatering with subsequent discharge to surface waters, which could result in the release of sediment or other contaminants to surface waters. In addition, construction of bridge supports could require excavation and dewatering from a sheet-pile cofferdam, which could provide a direct path for construction-related contaminants to reach the groundwater table. While piling depth for bridges has yet to be determined, groundwater depth will be carefully considered to minimize the potential for effects on groundwater. Additionally, the Project will implement BMPs, and the project sponsor will coordinate directly with applicable agencies to minimize potential effects on water quality.

Railway construction would use temporary construction areas, such as staging areas and access roads, and would use temporary stockpiles of excavated material and construction materials. A variety of BMPs and other methods would be implemented to limit the potential for runoff from stockpiles and temporary construction areas to enter and affect nearby drainages and waterbodies.

Because the Project would implement and update multiple required plans (e.g., SPCC plan, SWPPP, and TESC plan) and methods to limit and control runoff and to avoid water quality impacts during construction, the Project would be unlikely to degrade water quality.

6.1.1.2. Hesperia Station

Construction of the Hesperia Station would not involve crossing or excavation of any streams or washes (i.e., ephemeral, intermittent, or perennial drainages). Station construction would use temporary construction areas, such as staging areas and access roads, and would use temporary stockpiles of excavated material and construction materials. A variety of BMPs and control measures would be implemented to limit the potential for runoff from stockpiles and temporary construction areas to enter and affect nearby drainages. Therefore, station construction would be unlikely to degrade water quality.

6.1.1.3. Rancho Cucamonga Station

Construction of the Rancho Cucamonga Station would not involve crossing or excavation of any streams or washes. Station construction would use temporary construction areas, such as

staging areas and access roads, and would use temporary stockpiles of excavated material and construction materials. A variety of BMPs and control measures would be implemented to limit the potential for runoff from stockpiles and temporary construction areas to enter and affect nearby drainages. Therefore, station construction would be unlikely to degrade water quality.

6.1.2. Operation Effects

6.1.2.1. Railway

Because rail operations will be electrically powered, the Project is expected to contribute minimal pollutant deposits along the railway. Occasional maintenance activities may deposit pollutants along the alignment such as motor oil or transmission fluids.

Most of the rail alignment would be in the I-15 median, which is paved, so the railway would not increase the amount of impervious surface in the median. In some areas, the Project would remove pavement in the median and replace it with a pervious, ballasted guideway, resulting in a localized decrease in impervious area. In Sections 1 and 2 of the Project, portions of the I-15 freeway alignment would be shifted outward to accommodate the railway. Minor widening of the freeway pavement would occur. Increased impervious area contributes to increased stormwater runoff and nonpoint-source water pollution. Stormwater treatment would be designed in accordance with the Caltrans PPDG and the NPDES permit that will be obtained by the Project. Treatment may include infiltration trenches and bioretention basins. Overall, the net increase in impervious area in the study area would be insignificant in comparison to the area of the drainage basins that cross the study area. Additionally, because soils in the study area have high hydraulic conductivity, stormwater is unlikely to build up in the soils (USDA 2019). The implementation of plans and BMPs developed for the Project would minimize operation effects on water quality.

Where the rail alignment would be in the I15 median, the freeway shoulder may be reconstructed to drain away from the median. Because the existing drainage pattern of the inside shoulder would be altered, drainage will be checked for flow spread that meets Caltrans requirements. In subsequent phases of project design, a study will be done to determine if it would be more advantageous to maintain the existing drainage pattern (inside shoulders draining toward the median) by constructing inlets and pipes to convey runoff to the cross-culverts. Where the alignment would run alongside I-15 (Victorville and Cajon Pass), new concrete barriers would be constructed to protect the railway from freeway traffic. Because the barriers would disrupt existing drainage patterns, onsite inlets and pipes would convey stormwater to existing cross-culverts. Caltrans and the Lahontan Regional Water Quality Control Board would review the proposed drainage patterns to determine that they would accommodate any modifications and/or additions proposed by the Project. Project construction would not begin until after Caltrans approves the final drainage design and stormwater treatment design.

6.1.2.2. Hesperia Station

The Hesperia station would add to the amount of impervious surface in the study area, thereby increasing the quantity of stormwater runoff. Stormwater runoff from the station roof and paved surfaces, such as sidewalks and parking areas, would contain pollutants deposited from vehicles and maintenance activities. Stormwater runoff treatment will comply with state and local regulations and may include tree planter boxes and bioretention basins.

6.1.2.3. Rancho Cucamonga Station

The Rancho Cucamonga station would be constructed in an urbanized area that is already highly developed with impervious surfaces. The station is not expected to increase the quantity of stormwater runoff in the study area. Stormwater runoff treatment will comply with state and local regulations and may include tree planter boxes and bioretention basins.

6.1.3. Cumulative Effects

Erosion and sedimentation resulting from Project construction activities could temporarily affect water quality in streams and waterbodies and would contribute to cumulative effects of erosion in the study area. Erosion likely occurs in areas of bare ground in the study area. Cumulative effects would be greater if other projects in or near the study area are under construction during the same time period as the Project. All construction projects would be required to comply with applicable Federal, state, and local permit conditions as well as all erosion, sedimentation, stormwater pollution, and water quality plans/protections during construction. Therefore, cumulative effects of erosion and sedimentation are likely to be insignificant.

Although the proposed railway and most of its associated facilities would be built on developed sites or within existing paved rights-of-way, the Project could contribute to the cumulative increase in impervious surface area and associated stormwater runoff related to development in and near the study area. Local jurisdictions have noted potential development and redevelopment surrounding the proposed station areas, which would also contribute to the cumulative increase in impervious surfaces (Victorville 2008). However, new development and redevelopment are expected to bring existing pollution-generating impervious surfaces up to current standards for stormwater quantity control and stormwater quality treatment. Improvements in stormwater runoff control and water quality would likely occur over time and would result in a net benefit for water quality in the study area. No adverse effect on water quality would be expected from the Project.

6.2. Avoidance, Minimization, and/or Mitigation Measures

The following avoidance, minimization, and mitigation measures would be implemented as part of the Project. Additional or modified mitigation measures may be proposed as project design progresses.

6.2.1. Construction

WQ-1: Implement Construction-Related Best Management Practices

The Project sponsor and contractor will coordinate with Caltrans and the Lahontan Regional Water Quality Control Board at regularly scheduled meetings before and during construction. The points of contact (POCs) will be the Project sponsor representative and the contractor manager. The project sponsor and contractor will provide project management, under the supervision of Caltrans and the Lahontan Regional Water Quality Control Board. The contractor will be responsible for developing and maintaining the SWPPP, SPCC, and Dewatering Plan in coordination with the agencies and entities identified above.

Construction activities will begin with the installation of erosion control BMPs. 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. BMPs to be implemented may include, but are not limited to, the following:

- Silt fences
- Staked straw wattles
- Silt/sediment basins and traps
- Check dams
- Geofabric
- Sandbag dikes
- Temporary revegetation or other ground cover

Grass or other native vegetative cover will be established on the construction site as soon as possible after disturbance. To avoid the spread or introduction of invasive species, non-native seeds or vegetation will not be used. Erosion in disturbed areas will be controlled by grading and BMPs so that direct routes for conveying runoff to drainage channels are eliminated.

The general contractors and subcontractors conducting the work will construct or implement, regularly inspect, and maintain the BMPs in the construction plans. Regular inspection will be at a minimum once a week and the inspections will abide by the Caltrans Rain Event Action Plan (REAP). Pre-storm inspections will occur when there is a 50 percent or greater chance of forecasted precipitation of 0.1 inch or more in a 24-hour period and post-storm inspections will occur. Typical construction methods, sequencing, and BMPs for rail installation in the study area are summarized below:

- Install erosion control material consisting of silt fences along the outside limits of construction
- Clear the construction area of brush and vegetation
- Strip any topsoil and transport it to stockpile for use in the restoration of temporary project disturbances
- Excavate material as required to extend any culvert and construct railway, using good quality material as fill, and transport poor quality material to stockpiles
- Place quality fill material to establish the subgrade
- Install the sub-ballast on the subgrade, composed of crushed rock that has sufficient strength to withstand settling from loads
- Place standard rail ties, made of wood or concrete, on the sub-ballast, then place the rail on the ties and anchor the rail to the ties
- Bring in ballast and dump ballast rock between and along the sides of the track
- Use a tamper to raise the track and tamp the ballast beneath the ties

WQ-2: Comply with the Caltrans NPDES Construction General Permit

The project sponsor will comply with the existing Caltrans statewide NPDES CGP, which would 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 construction-related water quality effects. The project sponsor will ensure that construction activities comply with the conditions in the CGP, which will require preparation of a SWPPP, implementation of BMPs identified in the SWPPP, and monitoring to ensure that effects on water quality are minimized.

WQ-3: Implement Stormwater Pollution Prevention Plan

Implementation of the SWPPP described above, will be the responsibility of the contractor as described in WQ-1 above, and will 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 effects.

WQ-4: Implement Spill Prevention, Control, and Countermeasures Plan

The project sponsor will develop a 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 releases of contaminants, including any non-stormwater discharge to drainage channels. If a spill occurs, cleanup, containment, and response measures in the SPCC Plan will be implemented by the project sponsor. The Federal reportable spill quantity for petroleum products, as defined in the U.S. Environmental Protection Agency's Code of Federal Regulations (40 CFR 110) is any oil spill that: (1) violates applicable water quality standards, (2) causes a film or sheen upon or discoloration of the water surface or adjoining shoreline, or (3) causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

If a spill is reportable, a superintendent will notify appropriate agencies and the contractor will need to take action to contact any other appropriate safety and clean-up crews to ensure the SPCC Plan is followed. A written description of reportable releases will be submitted to the appropriate agencies and will include a description of the release, including the type of material and 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 and control future releases. The release will be documented on a spill report form. The project sponsor will immediately notify the Caltrans Resident Engineer, Caltrans Construction Stormwater Coordinator, and the California Regional Water Quality Control board if a spill occurs. The project sponsor will ensure that the phone numbers and emergency contact information of the appropriate parties are up to date at all times.

WQ-5: Minimize Impacts of Temporary Construction Areas on Water Resources

During project design, the project sponsor will locate temporary construction areas to avoid key water features, such as the Mojave River, Cajon Wash, and California Aqueduct, and will avoid other water resources, where possible. The project sponsor and contractor will look to use existing paved areas as staging areas, to minimize disturbed soil and groundwater disturbance.

WQ-6: Minimize Impacts on Water Availability

During project construction, the contractor will obtain water from existing, commercially available, water sources. The project sponsor will not develop new groundwater wells or surface impoundments without Federal and state approval, as appropriate and legally required.

6.2.2. Operation

WQ-7: Incorporate Site-Specific Permanent Water Quality Treatment Devices

To protect water quality, permanent water quality treatment devices will be installed by the contractor 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.

WQ-8: Proper Design of Station and TPSS Facility Drainage Systems

Most of the rail segments would not result in a large amount of impervious surface that could concentrate and redirect stormwater flow, causing onsite erosion. Where necessary, the project sponsor 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 freeway, where possible.

However, the stations and TPSS would have parking lots that could concentrate and redirect stormwater flows. 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. Drainage facilities will need to retain flows and not contribute to additional flows in the Mojave River or other streams and washes, such that post-project stormwater flow will not exceed pre-project flow rates. This could be achieved with several detention basins. In addition, drainage facilities will be sized accordingly to handle design flow.

7. References

California Wetlands Monitoring Workgroup. 2020. EcoAtlas, California Aquatic Resource Inventory. https://www.ecoatlas.org. Accessed July 26, 2020.

Caltrans. 2017. Construction Site Best Management Practices (BMP) Manual. https://dot.ca.gov/-/media/dot-media/programs/construction/documents/environmental-compliance/csbmp-may-2017-final.pdf. Accessed December 3, 2021.

Caltrans. 2022. Caltrans Water Quality Planning Tool. http://svctenvims.dot.ca.gov/wqpt/wqpt.aspx. Accessed January 21, 2022.

CDWR (California Department of Water Resources). 2019. California Groundwater Basin Boundary Assessment Tool. www.gis.water.ca.gov/app/bbat. Accessed August 22, 2020.

FRA (U.S. Department of Transportation, Federal Railroad Administration). 2011. *DesertXpress High-Speed Passenger Train Final Environmental Impact Statement and 4(f) Evaluation.* March 8.

Lahontan RWQCB. 2019. *Water Quality Control Plan for the Lahontan Region North and South Basins.* October 29.

NOAA (National Oceanic and Atmospheric Administration). 2021. Applied Climate Information System (ACIS). http://agacis.rcc-acis.org/. Accessed November 5, 2021.

SWRCB (State Water Resources Control Board). 2018. *Final Staff Report of the 2018 California Integrated Report Clean Water Act Sections 303(d) and 305(b)*. Accessed November 18, 2021.

USDA (U.S. Department of Agriculture). 2019. Gridded National Soil Survey Geographic Database. https://nrcs.app.box.com/v/soils. Accessed August 25, 2020.

USGS (U.S. Geological Survey). 2019. USGS Groundwater Watch, California Active Water Level Network. https://groundwaterwatch.usgs.gov/StateMap. Accessed August 22, 2020.

USGS. 2020. National Water Information System: Web Interface, USGS Groundwater Data for California. https://waterdata.usgs.gov/ca/nwis/gw/. Accessed August 21, 2020.

Victorville, City of. 2008. *City of Victorville General Plan 2030*. October 21.