BIOLOGICAL RESOURCES TECHNICAL REPORT

CRITICAL HABITATS AND THREATENED AND ENDANGERED SPECIES

Brightline West Cajon Pass High-Speed Rail Project

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Prepared for
Federal Railroad Administration

Prepared by
HNTB

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Abbreviations and Acronyms

ADT	average daily traffic
ARRIVE	Advanced Regional Rail Integrated Vision – East
BLM	US Bureau of Land Management
BMP	best management practice
BGEPA	Bald and Golden Eagle Protection Act
CAL FIRE	California Department of Forestry and Fire Protection
CalSTA	California State Transportation Agency
Caltrans	California Department of Transportation
CALVEG	Classification and Assessment with LANDSAT of Visible Ecological Groupings
CGP	Construction General Permit
CHP	California Highway Patrol
CNDDB	California Natural Diversity Database
CWHR	California Wildlife Habitat Relationship System
dB_{Lmax}	Maximum sound level during a sound monitoring event
dBA	A-weighted decibel(s)
EIR	Final Environmental Impact Report
ESA	federal Endangered Species Act
FRA	Federal Railroad Administration
GHG	greenhouse gas
GIS	geographic information systems
HCP	Habitat Conservation Plan
HOV	high-occupancy vehicle
HSR	high-speed rail
I-	Interstate
IPaC	Information for Planning and Consultation
L_{eq}	Equivalent continuous sound level
LOD	limit of disturbance
LOS	level of service
MBTA	Migratory Bird Treaty Act
MOU	memorandum of understanding
mph	miles per hour
NAAQS	National Ambient Air Quality Standards
NRCS	Natural Resources Conservation Service

Project	Cajon Pass High-Speed Rail Project
SBCFCD	San Bernardino County Flood Control District
SBCTA	San Bernardino County Transportation Authority
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SR	State Route
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
TCP	Traditional Cultural Properties
substation	traction power substation
TWPC	Temporary Water Pollution Control
U.S.C.	United States Code
USDA	US Department of Agriculture
USDOT	US Department of Transportation
USFS	US Department of Agriculture, Forest Service
USFWS	US Fish and Wildlife Service
VHT	vehicle hours traveled
VMT	vehicle miles traveled

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1. Executive Summary

DesertXpress Enterprises, LLC (doing business as "Brightline West") proposes to construct and operate a passenger high-speed rail system capable of speeds up to 180 miles per hour (mph) covering 47.9 miles between Victor Valley and Rancho Cucamonga, California. The Brightline West Cajon Pass High-speed Rail ("Proposed Action" or "Project") would be constructed and operated under a lease agreement with the California Department of Transportation (Caltrans) for the use of the Interstate 15 (I-15) right-of-way. Additional agreements between Brightline West and Caltrans will include right-of-way use; design and construction oversight; reimbursement; landscape and restoration following construction; and operations and maintenance.

The Proposed Action includes construction of two passenger stations, a traction power substation, and alterations of existing transportation infrastructure, including expansion of existing I-15 lane areas at the outer edges of the existing roadway to enable rail to travel in the I-15 median.

1.1. Affected Environment

1.1.1. 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. § 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, the Federal Railroad Administration (FRA) is the lead federal agency responsible for consultation with USFWS to ensure that 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 on which are found those physical or biological features essential to the conservation of the species and 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 but a determination has been made that such areas are essential for the conservation of the species.*

  Implementation of ESA Section 7 (a)(2), which requires FRA to consult with USFWS, includes analyses of impacts on designated critical habitat, analyses of impacts on listed species, and analyses of indirect and cumulative impacts on listed species.

  - **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.

- **Bald and Golden Eagle Protection Act (BGEPA; 16 U.S.C. § 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 include 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 22.3).*

  - **Executive Orders 13112 and 13751, National Invasive Species**: Executive Orders 13112 and 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 Executive Orders require that the National Environmental Policy Act 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.

1.1.2. Methodology

This Biological Resources Technical Report prepared for the Project was based on literature and database reviews, compilation of available information including maps, and an analysis of potential direct and indirect effects on ESA-listed species and designated critical habitats.

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 2022d)
- Information for Planning and Consultation (IPaC; USFWS 2022a) – 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

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 were reviewed for this report. No field surveys or other field studies were performed for this analysis. Supplemental field studies are planned to occur as part of preconstruction activities.

1.1.3. Study Area

The study area for the quantitative impact analysis was defined as the limit of direct ground disturbance, including permanent impacts, and temporary disturbance that may occur during construction. Indirect potential effects were evaluated qualitatively. Limits of direct ground disturbance were mapped using the preliminary engineering design plans of June 2022 (design plans). Maps in **Appendix A** show the limits of ground disturbance.

Approximately 2,900 acres are within the limits of ground disturbance for the Project alignment. The study area included the existing I-15 in the Project area, along with areas adjacent to the existing highway within Caltrans right-of-way.

1.1.3.1. Habitat Conservation Plan Areas and Conservation Land

Habitat Conservation Plans (HCPs) have been produced for areas covering the study area or adjacent to the study area.

The northern extent of the rail alignment in Section 1, High Desert, lies within the West Mojave Plan planning area. The West Mojave Plan focuses on conservation of desert tortoise and Mohave (sic) ground squirrel, along with sensitive plants and animals that occur in the associated natural communities.

The Western Riverside County Multiple Species Habitat Conservation Plan (Riverside County 2004) covers 1.26 million acres in western Riverside County, with the nearest extent lying approximately 5 miles south of the Project.

1.1.4. Wildlife Habitats

From north to south, the study area begins in the arid Mojave Desert (High Desert), crosses a mountain range (San Gabriel Mountains), and travels into the marine-influenced, Mediterranean climate of the Los Angeles basin. The route has high biotic, climatic, and

geographic diversity. The study area comprises various wildlife habitat types that allow for habitat connectivity and wildlife movement. **Table 1** lists wildlife habitat types mapped in the study area.

Given the prevalence of transportation infrastructure, Urban habitat (including areas of developed and impervious surfaces) was the most common habitat type in the study area.

Table 1. Area of Wildlife Habitat within the Limits of Disturbance, Including Temporary and Permanent Disturbance and all Project Elements

Wildlife Habitat Type	Habitat Code[a]	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**

a. California Wildlife Habitat Relationship (CWHR) codes are used on maps in Appendix A.

1.1.5. ESA-Listed Species

Two plant species, six wildlife species, one ESA candidate species, and three USFWS-designated critical habitat areas were identified to occur in the Project area. Formal consultation between FRA and the USFWS is underway regarding ESA-listed species and designated critical habitats. A Biological Assessment is in preparation to analyze the effect on ESA-listed species and designated critical habitats. Preliminary effects determinations have been made based on analysis presented in the Biological Assessment and these are provided in the tables presented

in the sections below. The determinations have not been reviewed or approved by USFWS at the time of writing.

1.1.5.1. Plants

Native plant communities occur along the Project alignment throughout the study area. The *Biological Resources Technical Report* describes specific locations of plant communities mapped as wildlife habitats located within the study area.

Table 2 lists the ESA-listed plant species that were identified using information from the Official List from USFWS (2022). Santa Ana River woolly-star and slender-horned spineflower occur within the study area. Suitable habitat for the woolly-star is present within Cajon Canyon and Lytle Creek (Buck-Diaz and Evans 2011) in the study area. Populations of slender-horned spineflower are known from the Lytle Creek, Cajon Canyon, and Cajon Wash areas in the project area (USFWS 2010).

Table 2. ESA-Listed Plant Species Potentially Present in the Study Area and Effects Determinations

Species Name	Federal Status	Suitable Habitat Likely Present	Effects Determination
Plants			
Braunton's milk-vetch (*Astragalus brauntonii*)	Endangered	No	No Effect
San Diego ambrosia (*Ambrosia pumila*)	Endangered	No	No Effect
Santa Ana River woolly-star (*Eriastrum densifolium* ssp. *sanctorum*)	Endangered	Yes	May Affect, Likely to Adversely Affect
Slender-horned spineflower (*Dodecahema leptoceras*)	Endangered	Yes	May Affect, Likely to Adversely Affect

Source: USFWS 2022d

1.1.5.2. Wildlife

Table 3 lists the ESA-listed wildlife potentially present in the study area (USFWS 2022d). Arroyo (southwestern) toad, coastal California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo, San Bernardino Merriam's kangaroo rat, and desert tortoise likely occur within the study area. **Table 3** provides an effects determination for each species.

In the project vicinity, one population of arroyo toad had been identified along Cajon Canyon on the west side of I-15 on the San Bernardino National Forest (CNDDB 2022). Arroyo toad has likely been extirpated from the Mojave River crossing vicinity.

Table 3. ESA-Listed Wildlife Species with Potential to Occur in the Study Area and Effects Determination

Species Name	Federal Status	Suitable Habitat Likely Present	Effects Determination
Amphibians			
Arroyo (southwestern) toad (*Anaxyrus californicus*)	Endangered	Yes	May Affect, Likely to Adversely Affect
Mountain yellow-legged frog (*Rana muscosa*)	Endangered	No	No Effect
Birds			
California condor (*Gymnogyps californianus*)	Endangered	No	No Effect
Coastal California gnatcatcher (*Polioptila californica californica*)	Threatened	Yes	May Affect, Not Likely to Adversely Affect
Least Bell's vireo (*Vireo bellii pusillus*)	Endangered	Yes	May Affect, Not Likely to Adversely Affect
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Endangered	Yes	May Affect, Not Likely to Adversely Affect
Western yellow-billed cuckoo (*Coccyzus americanus*)	Threatened	Yes	May Affect, Not Likely to Adversely Affect
Fish			
Mohave tui chub (*Gila bicolor* ssp. *mohavensis*)	Endangered	No	No Effect
Santa Ana sucker (*Catostamus santaanae*)	Endangered	No	No Effect
Insects			
Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*)	Endangered	No	No Effect
Mammals			
San Bernardino Merriam's kangaroo rat (*Dipodomys merriami parvus)*	Endangered	Yes	May Affect, Likely to Adversely Affect
Reptiles			
Desert tortoise (*Gopherus agassizii*)	**Threatened**	**Yes**	**May Affect, Not Likely to Adversely Affect**

Source: USFWS 2022d

Suitable habitat for the coastal California gnatcatcher is present within the Riversidean alluvial fan sage scrub and other plant communities that occur at Cajon Wash and Lytle Creek (Buck-

Diaz and Evans 2011). The bird has been documented adjacent to I-15 around Lytle Creek and in northeastern Rancho Cucamonga (CNDDB 2022).

Past observations of paired least Bell's vireos and nests suggest nesting activity has occurred in the project vicinity along the Mojave River, from the Mojave Narrows Regional Park to Bell Mountain Wash near Victorville (USFWS 1994a); this reach includes the Mojave River crossing by the Proposed Action. Recent sightings of the birds have occurred along the Mojave River, just north of the I-15 crossing (CNDDB 2022).

Suitable habitat for the southwestern willow flycatcher may be present, and the species has been spotted multiple times throughout Cajon Canyon (CNDDB 2022). Riparian habitat in the Mojave River also provides suitable habitat and is designated as critical habitat for this species.

The potential range for yellow-billed cuckoo includes the entire study area, although species presence is anticipated only at the Mojave River crossing, with recent sightings reported in this vicinity (USFWS 2022b). Riparian vegetation present along the Mojave River corridor includes patches of cottonwood-willow riparian forest potentially suitable for this species for stopovers during migration and possibly nesting.

Suitable habitat for San Bernardino Merriam's kangaroo rat in Cajon Canyon and Lytle Creek may exist within the study area. The CNDDB reports multiple sightings of the kangaroo rat around Etiwanda Creek Wash and San Sevaine Canyon Wash west of the project area, and at Cajon Canyon in the vicinity of the study area. Suitable habitat is also present at the I-15/I-10 interchange where the alignment crosses Cajon Wash (CNDDB 2022). Suitable habitat for the desert tortoise may exist in the study area along Section 1, High Desert, and Section 2, Cajon Pass.

The monarch butterfly, a candidate species, is widespread and is known to occur in many locations in San Bernardino County. Migrating monarchs would pass through the study area to and from inland areas and to and from overwintering sites along the California coast.

1.1.6. Designated Critical Habitat

Arroyo toad, southwestern willow flycatcher, and San Bernardino Merriam's kangaroo rat critical habitat occur within the study area (USFWS 2022d; **Table 4**). Maps in **Appendix A** illustrate the locations of the designated critical habitats.

Table 4. USFWS-Designated Critical Habitat in the Study Area and Effects Determination

Species Name	Federal Status	Location in Study Area	Effects Determination
Critical Habitat			
Arroyo (southwestern) toad critical habitat	Designated	Cajon Canyon	May Affect, Likely to Adversely Affect
Southwestern willow flycatcher critical habitat	Designated	Mojave River	May Affect, Likely to Adversely Affect

San Bernardino Merriam's kangaroo rat critical habitat	Designated	Lytle Creek and Cajon Wash	May Affect, Likely to Adversely Affect

Source: USFWS 2022a and 2022d

Arroyo toad critical habitat is mapped along Cajon Canyon adjacent to the I-15 corridor, from northwest of I-215/I-15 interchange to the I-15/SR 138 junction.

The study area intersects with San Bernardino Merriam's kangaroo rat designated critical habitat within Lytle Creek and Cajon Wash, from northeast of the I-15/SR 210 interchange to northwest of the I-15/I-215 interchange.

Southwestern willow flycatcher critical habitat is mapped at the Mojave River where the I-15 corridor crosses the Mojave River.

1.1.7. Bald and Golden Eagles and Migratory Birds

Migratory birds pass through the Project region 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. Habitats with cover and water sources are critical stop-over points for migrating birds. In the Project vicinity, 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 region and may use the Project vicinity. 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 (USFWS 2022a) and are of concern throughout their range. Birds of conservation concern potentially in the study area 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*).

1.1.8. Conservation Areas Within the Study Area Vicinity

Seven conservation areas occur within 1 mile of the study area (**Table 5**). Locations of conservation areas are shown in **Figure 1**. 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 5. Summary of Conservation Areas Within 1 Mile of the Study Area

In Vicinity of Study Area Project Section	Parcel Name	Administrator	Area (acres)
1 – High Desert	Wildlands Conservancy	The Wildlands Conservancy	96

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

Table 6 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.

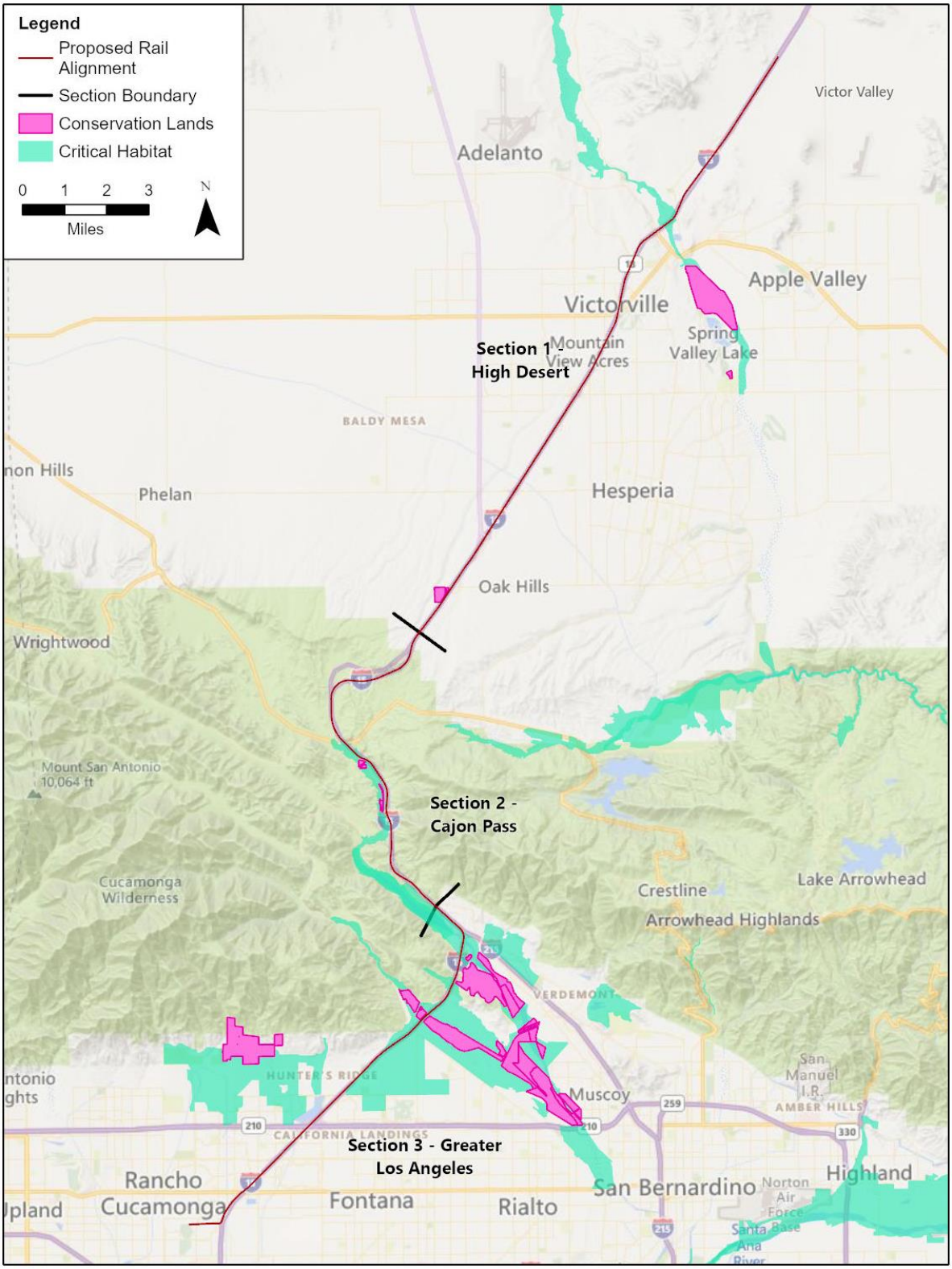

Figure 1. Conservation Lands and Designated Critical Habitat in the Project Vicinity

Table 6. 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**

1.1.9. Habitat Connectivity and Wildlife Movement

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 or they 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. 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 2**). 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.

Barriers to wildlife movement occur where development has fragmented habitat or otherwise results in effects that cause wildlife to avoid an area. A 2012 study evaluated linkages between wildlife habitat locations in the Mojave Desert portion of the study area (Penrod et al. 2012) CDFW in conjunction with federal partners has identified barriers to priority movement along highway corridors. One priority barrier to wildlife crossing has been identified in the study area - Barrier ID W060 I-15 at Cajon Pass, where approximately 2.7 miles of highway between Cajon Junction and Baldy Mesa Road on I-15 lack suitable wildlife crossings for mule deer, mountain lion, bear, and bighorn sheep (CDFW 2020).

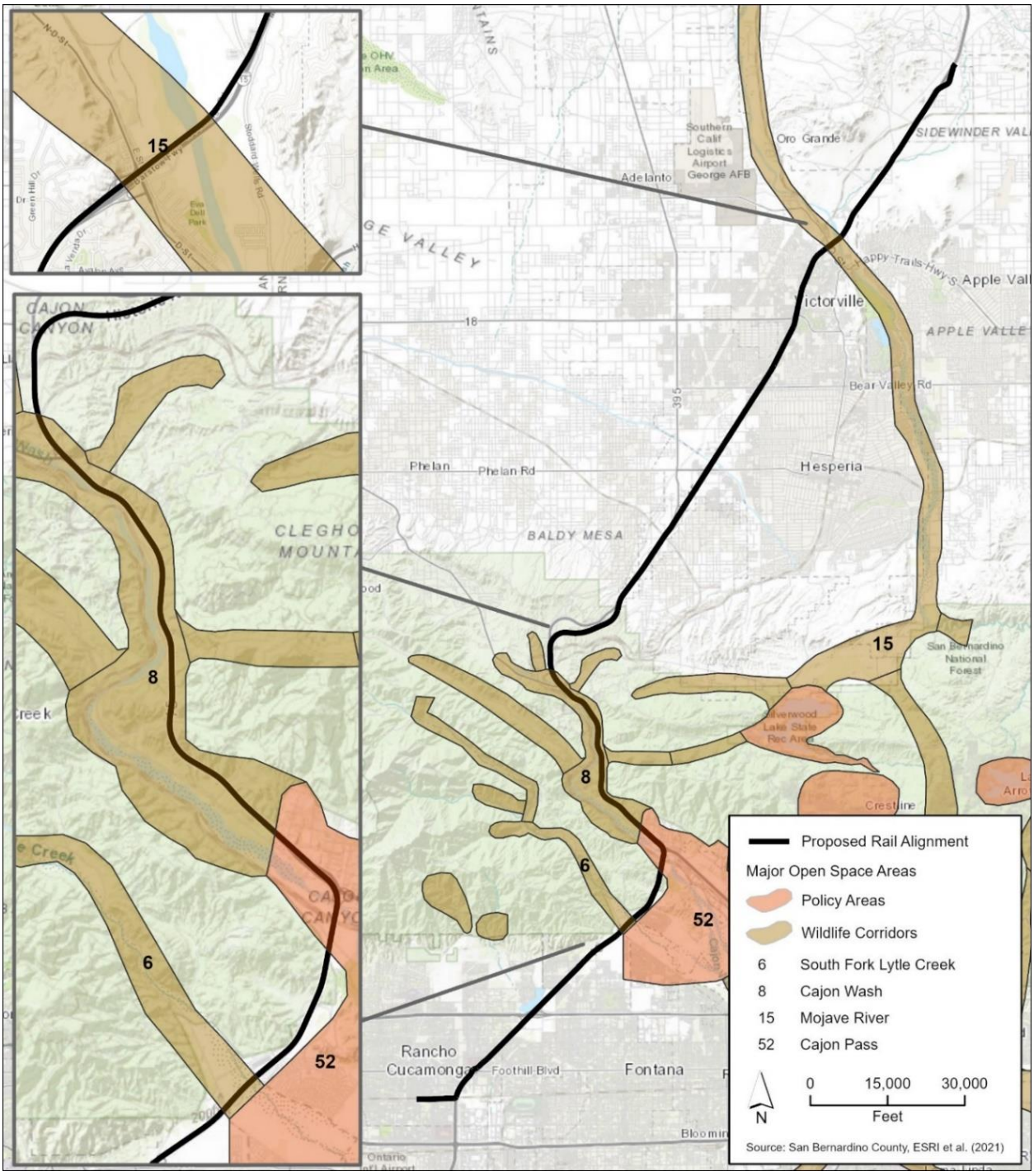

Figure 2. Wildlife Corridors in the Project Area, as Mapped by San Bernardino County

1.1.10. Background Noise

Background noise in the study area is principally generated by existing traffic along I-15. Additional noise is generated at locations of the alignment that are aligned with the two Class 1 rail alignments, including three BNSF tracks and one Union Pacific Railroad track.

A generalized estimate for existing traffic noise was determined to be approximately 72 A-weighted decibels (dBA) of equivalent continuous sound (Leq) in air 50 feet from the outer edge of the highway (SCAG, SANBAG, and Caltrans 2005). Existing ambient noise levels in the Project area were measured in October and November 2021 by the Project in urban noise sensitive areas where human receptors would be present (Cross-spectrum Acoustics 2022). Equivalent continuous sound (Leq) ranged from 54.5 to 76.7 BA, including for both short-term (1-hour) and long-term (24-hour) monitoring adjacent to I15. Noise levels adjacent to the highway in Cajon Pass would include noise from truck climbing and descending lanes on the 6 percent grade and noise levels could be slightly higher in this location than those recorded in the urban areas.

1.1.11. Santa Ana Winds

Down-slope, dry, high-wind events, known as Santa Ana winds, with sustained winds in excess of 40 miles per hour funnel through Cajon Pass seasonally, and sometimes at extreme forces, such as 74 miles per hour or greater. In addition to Cajon Canyon, North Fontana in the vicinity of I-15 and the Lytle Creek area are known to be affected by these extreme force wind events. The Old Fire, which burned a wide area across Cajon Pass, including the project area, was associated with a Santa Ana wind event.

1.1.12. Hydrologic Features

Hydrologic features crossed by the Project include river, stream, and wash systems. These include Bell Mountain Wash, Oro Grande Wash, the Mojave River, Cajon Creek, Crowder Canyon Wash, Cleghorn Wash, Lytle Creek, Cajon Wash, Hawker-Crawford Channel, San Sevaine Channel, East Etiwanda Creek Channel and Day Creek Channel and several small unnamed drainage features. The San Bernardino County Flood Control District (SBCFCD) maintains the Mojave River reach, the Oro Grande Wash, Hawker-Crawford Channel, San Sevaine Channel, East Etiwanda Creek Channel. and Day Creek Channel in the project vicinity. The California Aqueduct is crossed by the Project and was mapped as Lacustrine habitat type.

1.2. Environmental Consequences and Mitigation

1.2.1. No Build Alternative

The No Build Alternative would 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 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 on ESA-listed species and their habitats or on designated critical habitat because no activities or construction would occur.

1.2.2. Construction of Build Alternative

Construction of the railway may modify wildlife habitat directly and indirectly by affecting 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 effects are discussed in further detail below. The Rancho Cucamonga and Hesperia passenger stations would be constructed in already urban environments. Construction of passenger stations would not have direct effects on wildlife habitats, sensitive species, or critical habitats.

1.2.2.1. Wildlife Habitats

Many areas within the Caltrans right-of-way have been previously altered from suitable habitats by disturbance. The Caltrans right-of-way was generally mapped 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 (see **Appendix A**). The Project would 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 would result in temporary and permanent impacts on wildlife habitat. **Appendix A** provides maps of habitat types along the study area, showing areas of temporary and permanent impacts on habitat types.

Project construction would temporarily affect approximately 419 acres of native vegetation habitat not classified as Urban (**Table 7**). 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 permanently alter the habitat type to annual grassland.

Table 7. Temporary Impacts on Wildlife Habitat Types in All Project Sections

CWHR Wildlife Habitat Type	Habitat Code[a]	Temporary Impact Area (acres)
Alkali Desert Scrub	ASC	3.93
Annual Grassland	AGS	16.47
Barren	BAR	3.98
Chamise-Redshank Chaparral, Mixed Chaparral	CRC, MCH	3.19
Coastal Scrub	CSC	15.14
Desert Riparian	DRI	9.04
Desert Scrub	DSC	167.55
Desert Scrub, Desert Wash	DSC, DSW	1.38
Desert Wash	DSW	43.59
Eucalyptus	EUC	0.04
Joshua Tree	JST	0.35
Juniper	JUN	1.94
Mixed Chaparral	MCH	128.14
Riverine	RIV	14.38
Sagebrush	SGB	8.08
Urban	URB	1,786.51
Valley Foothill Riparian	VRI	1.94
Total		**2,205.50**

a. CWHR codes are used on maps in Appendix A.

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 would result in temporary impacts on various habitat types (see **Table 7**).

The time needed to recover Desert Riparian and Riverine habitat structure may be long and temporary impacts can be considered permanent impacts as a result; this would result in 22 acres of additional permanent impacts on these sensitive habitats. Desert Scrub, Desert Wash, Joshua Tree and Juniper habitats are also slow to recover following disturbance, and restoration is very difficult. Temporary impacts of approximately 215 acres may be considered permanent where recovery would be long-term or impossible.

1.2.2.2. 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 8 shows the ESA-listed plant species that would be affected by construction of the Project; see **Table 3** for preliminary effects determinations.

Table 8. ESA-Listed Plant Species Likely to be Affected 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

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 as a result of 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 vehicles.

Invasive, non-native plant species can displace native plant populations and reduce wildlife habitat quality. Control of invasive species should be identified as an essential element of construction practices, which would mitigate the risk of facilitating invasive species establishment.

Construction activities such as vegetation clearing and excavation would 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.

Construction activities may affect sensitive wildlife including Arroyo toad, desert tortoise, least Bell's vireo, southwestern-willow flycatcher, coastal California gnatcatcher, and San Bernardino Merriam's kangaroo rat. **Table 9** shows ESA-listed wildlife species likely to be affected by Project construction; see **Table 3** for effect determinations. These effects would be considered adverse for arroyo toad, least Bell's vireo, southwestern-willow flycatcher, and San Bernardino Merriam's kangaroo rat and would require consultation with USFWS.

Table 9. ESA-Listed Wildlife Species Likely to 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	Desert Riparian, Riverine, Valley Foothill Riparian
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 californica*	Threatened	Annual grassland, coastal scrub

San Bernardino Merriam's kangaroo rat and desert tortoise are assumed to be present in areas of suitable habitat. Desert tortoise is unlikely to occur within the project's limits of disturbance due to prior habitat deterioration associated with a transportation corridor (USFWS 2022c).

. Construction-related activities could result in injury or mortality to animals present if construction equipment crushed or trapped them in their burrows or removed foraging habitat or habitat linkages.

Construction-related effects on native vegetation communities would 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.

Indirect mortality could result from a decrease in the suitability and stability of burrows. Reduced movement in and across the study area would 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.

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.

Construction activities such as vegetation clearing and excavation would expose soils and could result in increased wind erosion, creating construction-generated dust.

1.2.2.3. Effects on 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, however 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.

1.2.2.4. 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 would permanently affect 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 would 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 would be

limited to areas where suitable habitat is assumed to exist at the Mojave River, Cajon Canyon, Lytle Creek, and Cajon Wash. Temporary effects during construction would also occur in these areas. These effects would be considered adverse and would require a 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. 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.

1.2.2.5. 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 would develop rail within the I-15 median for most of the alignment the transportation corridor would be widened where rail would be developed adjacent to the side of existing I-15 (side-running), and where highway lanes or ramp locations would be altered (multiple locations). As such, the Project would result in additional constraints on wildlife movement by reinforcing the lack of safe passage locations across landscapes.

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.

1.2.2.6. 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 best management practices (BMPs) that address erosion and sediment control and monitoring those BMPs would further reduce potential effects on hydrology during construction.

1.2.3. Operation of Build Alternative

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

1.2.3.1. 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** provides maps of habitat types in the study area, showing areas of permanent impact on habitat types along the alignment. As stated, many areas within the Caltrans right-of-way have been altered from natural vegetation community composition by previous disturbance and on-going disturbance; these areas are generally mapped as Urban habitats. The Build Alternative would retain these types of developed and disturbed surfaces, resulting in no change to the quality or function of the Urban habitat types.

As shown in **Table 10**, Approximately 64 acres of native vegetation habitat types would 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 would be to Desert Scrub (37 acres). Where Desert Scrub is suitable, desert tortoise may be present.

Table 10. Permanent Impacts on Wildlife Habitat, by Habitat Types

CWHR Wildlife Habitat Type	Habitat Code	Permanent Impact Area (acres)
Alkali Desert Scrub	ASC	0.54
Annual Grassland	AGS	2.40
Barren	BAR	0.63
Coastal Scrub	CSC	0.18
Desert Riparian	DRI	0.95
Desert Scrub	DSC	36.62
Desert Wash	DSW	0.60
Juniper	JUN	0.88
Mixed Chaparral	MCH	6.45
Riverine	RIV	0.73
Sagebrush	SGB	13.58
Total		**63.93**

1.2.3.2. ESA-Listed Plant and Wildlife Species

Table 11 shows the ESA-listed plant species that would be affected 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 would construct new powerlines on

catenary structures to provide traction power to power trains in a known high wind area. The project design would include automatic power shutoff and other safety features that would work to cut power and prevent powerline failures from becoming ignition sources.

Landscaping and maintenance in the corridor during operation would be focused on avoiding invasive seed dispersal, controlling existing invasive populations, and restoring areas with native vegetation following invasive species removals.

Table 11. 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

Table 12 shows the ESA-listed wildlife species potentially affected by Project operations. The Project would add trains traveling up to 140 mph to the I-15 corridor, which would increase the likelihood of animal strikes along the corridor, particularly in areas where wildlife is abundant. As a result, the Project would likely directly increase mortality of individuals of special status species. For all at-grade portions of the alignment, exclusion fencing would be constructed parallel to the rail line for safety. However, this safety step also serves to trap animals that may have gained access to the highway and/or 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 12. ESA-Listed Wildlife Species which May be Affected 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 occidentalis*	Threatened	Desert riparian, valley foothill riparian
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 californica*	Threatened	Coastal scrub, annual grassland, mixed chaparral

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, such as desert tortoise.

During operations subsidized predation can be avoided through planned 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 would mitigate the potential indirect effect of human subsidized predation. Identified perching and nesting locations would be modified to make them no longer suitable.

Even though the existing highway generates considerable noise, operation of the railway was not shown to increase noise levels above the existing highway noise along the alignment (Cross-Spectrum Acoustics 2022). For median-running rail, operational noise would generally occur within the extent of the existing developed highway. No noise modeling was performed for wildlife receptors, however, wherever noise sensitive species are present in the corridor, these species could 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.

1.2.3.3. Designated Critical Habitat

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

Operation of the railway was shown to not increase noise levels above the existing highway noise along the alignment (Cross-Spectrum Acoustics 2022).For median-running rail, operational noise would generally occur within the extent of the existing developed highway. .

The portions of the project which align within the existing highway median are not expected to contribute to potential fire starts due to the hardened surfaces and location of the rail within the median of the existing highway. The Project would construct new powerlines on catenary structures to provide traction power to power trains in a known high wind area. The project design would include automatic power shutoff and other safety features that would work to cut power and prevent powerline failures from becoming ignition sources.

1.2.3.4. Effects on 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 HSR could result in mortality through collisions. Collisions could occur to any wildlife in the path of the train and would be of concern for ESA-listed species and 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 would attract birds resting while attempting to cross the highway, thus increasing the number of birds within striking distance, or if the highway itself would reduce the likelihood of perching on rail infrastructure. Based on the 2017 study, it appears bird strike mortalities are likely; however, 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.

1.2.3.5. Habitat Connectivity and Wildlife Movement

Linear transportation corridors are known to limit wildlife movement by blocking safe passage across landscapes. I-15 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 would widen this existing linear transportation corridor at those portions that would lie outside the I-15 median, and in locations where the highway lanes would be widened to accommodate median-running rail. Widening the transportation corridor would reinforce the blockage of wildlife movement in areas where no suitable crossing was present. Fencing of the median for HSR safety would further reinforce the corridor to crossing and would make I-15 impossible for terrestrial species to cross safely.

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

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 would 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.

1.2.4. Cumulative Effects

The Project, in combination with other past, present, and reasonably foreseeable future actions, would 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 would potentially facilitate development pressure in the Apple Valley planning area (City 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 would 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 would result in loss of habitat supporting common and ESA-listed wildlife species.

The town of Apple Valley is developing a multispecies HCP to guide development at a landscape level for the Apple Valley planning area in the vicinity of the project terminus. However, there does not appear to be 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).

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 would be required to comply with the action plan and implementation plan developed under the conservation program, thus mitigating some cumulative effects.

Implementation and development of conservation and mitigation approaches could reduce cumulative effects on habitats and plant and animal species. Preserving and conserving wildlife habitats and other biological resources would help to reduce cumulative effects on biological resources.

1.2.5. Avoidance, Minimization, and Mitigation Measures

As stated, FRA and USFWS are required to consult under Section 7 of the ESA. Final mitigation and compensation strategies would be determined during the consultation and will be documented by USFWS through a Biological Opinion along with an Incidental Take Permit for ESA-listed species. The applicant would also coordinate with FRA for appropriate mitigation strategies under the MBTA and the BGEPA and Executive Orders 13112 and 13751.

Compensation for minimized unavoidable impacts could be provided as onsite restoration and/or creation, offsite restoration, acquisition of mitigation credits, acquisition and protection of conservation lands, or a combination of these methods.

Practicable measures to avoid impacts on threatened and endangered species and their critical habitats, such as those described below, would be implemented by the Project. In areas where unavoidable impacts may occur, efforts would be made to minimize those impacts. Following implementation of avoidance and minimization measures, the Proposed Action would employ compensation measures to offset any unavoidable, minimized, impacts that occur.

The following are mitigation measures for the Proposed Action. . General measures are followed by additional measures for specific species.

A detailed *Habitat Restoration Plan* discussing the details of soil and vegetation restoration to be implemented following temporary construction disturbance at specific areas, along with a detailed *a Translocate Plans for San Bernardino Kangaroo Rat* are provided under separate cover.

1.2.5.1. General Measures

GM-1. ***Areas of Concern During Construction***

Biologists shall be 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, western yellow-billed cuckoo, least Bell's vireo, 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 the Applicant and its contractors may choose to utilize resource monitors/biological monitors at their discretion in these areas to ensure environmental compliance.

GM-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 as follows:

- Area 1. Mojave River
- Area 2. Cajon Wash
- Area 3. Lytle Creek

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 13 summarizes the closure dates for the three Avian Avoidance Exclusion Areas.

Table 13. 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

GM-3. **Conduct Mandatory Environmental Awareness Training Program**

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

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

GM-4. **Plan for and Conduct Biological Monitoring during Construction**

At least 60 days prior to the start of Project-related ground disturbance that would 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) shall be developed for approval by USFWS.

The Plan shall 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 all 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 shall be implemented during construction to ensure compliance with environmental commitments and will focus on commitments under the ESA.

GM-5. **Reporting**

No more than 120 days after the completion of construction, the biologist(s) shall 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 all 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.

GM-6. **Photographs**

Pre- and post-construction photographs shall be taken to document habitat conditions and alterations within the limits of disturbance during construction activities. Photographs will be dated, their locations recorded, and will be stored in a manner that will allow access for reporting purposes.

GM-7. **Designated Work Areas**

In areas adjacent to sensitive resources, the contractor shall 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 shall 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, shall inspect the visible demarcation and shall help ensure that construction equipment, vehicles, and associated activities remain within designated construction work areas.

GM-8. **Noxious Weed Management During Construction**

A noxious weed survey shall be performed prior to ground-disturbing activities. During and following construction, the contractor shall avoid the introduction or spread of noxious weeds by performing weekly inspections and weed removal/control.

GM-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) shall 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 shall be contacted.

GM-10. **Preserve Biological Material**

The contractor and Applicant shall 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.

GM-11. **Prepare and Implement a Temporary Erosion and Sediment Control Plan**

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

GM-12. **Implement Spill Prevention, Control, and Countermeasures Plan**

The contractor shall 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, shall be managed and the risk reduced. If a spill occurs, cleanup, containment, and response measures shall 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).

GM-13. **No Storage of Construction Equipment or Materials within the 100-Year Floodplain**

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

GM-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.

GM-15. **Fugitive Dust Control Plan**

The contractor shall 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 shall 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.

GM-16. **Prevent Erosion and Sedimentation**

Applicant shall employ permanent stabilization measures upon completion of construction along washes and in other areas of potential erosion.

GM-17. **Minimize Impacts on Water Availability**

Water will be obtained 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.

GM-18. **Drainage Systems Design**

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

GM-19. **Nesting Sites**

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

GM-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 to meet water quality objectives.

GM-21. **Construction Noise and Vibration Control Measures**

The contractor shall 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.

GM-22. **Implement Litter-Control Program**

The contractor shall 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.

GM-23. **Implement Housekeeping to Deter Opportunist Predators**

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.

GM-24. **Prohibited Items and Feeding of Wildlife**

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

GM-25. **Maintain Existing Wildlife Crossings**

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

GM-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) following standard protocols (Halterman et al. 2015; Sogge et al. 2010; USFWS 2001) at locations of potentially suitable habitat within the temporary and permanent limits of disturbance (LOD) shall be conducted prior to the start of construction. Surveys by biologists that meet USFWS's minimum qualifications (USFWS 2019) for the presence of suitable habitat for coastal scrub nesting avian species (coastal California gnatcatcher) at locations of potentially suitable habitat shall be

conducted prior to the start of construction. Coordination with USFWS is required on the result of the surveys.

GM-27. **Native Plant Community Restoration Plans**

The Applicant shall develop and implement Restoration Plans to restore areas of native vegetation that are temporarily disturbed by construction. Within Caltrans right-of-way, restoration shall 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) shall 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

GM-28. **Stockpile Native Topsoil for Reuse in Restoration**

The contractor shall stockpile and protect removed native topsoil and shall use the stockpiled topsoil in restoration and landscaped areas. Areas from where topsoil is recovered shall be free from invasive plant species.

GM-29. **Irrigation**

In consultation with the Caltrans District Landscape Architect, permanent or temporary irrigation systems to supply water to replacement landscape plantings shall be developed and implemented.

GM-30. **Minimize Negative Effects of Nighttime Operational Lighting**

Nighttime lighting at passenger stations and along the rail alignment shall 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 shall incorporate light and glare screening measures—for example, use downward-cast lighting—and shall use motion sensor lighting, where appropriate.

GM-31. **Remove Track-Killed Animals**

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

GM-32. **Remove Common Raven Nests**

The applicant shall 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, actions will be taken 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.

GM-33. **Operations of Passenger Stations**

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

GM-34. **Invasive Plant Species Control During Operations**

Following the completion of construction activities, the Applicant shall 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 shall be monitored:

- Monthly from January through June for two growing seasons following construction

Control may consist of manual or herbicide control methods. Note that herbicide use in riparian areas and waters of the state is regulated. Herbicide use may be curtailed or avoided in desert tortoise habitat areas.

1.2.5.2. Arroyo Toad

AT-1. Arroyo Toad Preconstruction Surveys

Surveys for the presence of suitable habitat for arroyo toad will be conducted by qualified biologists prior to the start of construction. 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.

1.2.5.3. [illegible]

SBKR-1. San Bernardino Kangaroo Rat Restricted Work Areas

In collaboration with USFWS and prior to the start of any ground disturbance, the biologist shall identify areas within the construction temporary and permanent limits of disturbance (LOD) that may support San Bernardino Merriam's kangaroo rat. These areas shall be called "SBKR restricted work areas." and most likely located along the Project alignment between the vicinity of Hall Ranch Road to the vicinity of Summit Avenue and include Cajon Wash. 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 shall occur to identify and refine the geographical boundary of the SBKR restricted work areas.

SBKR-2. Conduct San Bernardino Merriam's Kangaroo Rat Preconstruction Surveys

The contractor or Applicant shall 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 shall occur prior to implementation of any surveys for San Bernardino Merriam's kangaroo rat. Surveyors shall obtain ESA Section 10(a) permits, as necessary. Areas to be surveyed and results of surveys will be coordinated with USFWS.

SBKR-3. 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) shall:

- 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.

SBKR-4. 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 shall be installed 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.

SBKR-5. Preconstruction Trapping

Prior to ground disturbance, the Biologist(s) shall conduct preconstruction trapping of San Bernardino Kangaroo rats 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.

SBKR-6. Trapped San Bernardino Merriam's Kangaroo Rat Housing and Release

The biologist(s) shall 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.

1.2.5.4. Desert Tortoise

DT-1. 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 USFWS shall be notified immediately.

In any situation where a desert tortoise places itself in danger (e.g., it enters a work area), immediate action will be undertaken protect the animal and the USFWS will be contacted for additional guidance. Work in the vicinity that could injure or kill the animal will immediately cease. The animal will be observed until it is moved with USFWS approval from harm's way.

DT-2. Design and Install Suitable Culverts

Where culverts are used, the Applicant shall 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, the Applicant, with approval from USFWS, may forego these specifications if they are incompatible with the existing culverts.

DT-3. Refer to USFWS Regarding Desert Tortoise

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

DT-4. Provide Rock-Slope Protections

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

1.2.5.5. ESA-Listed Plant Species Protection

P-1. ESA-Listed Plants Preconstruction Surveys

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

P-2. Protect ESA-Listed Plant Populations

Prior to initiating ground-disturbing activities, temporary construction fencing shall be placed around all ESA-listed plant species that occur within the temporary construction areas to demarcate locations. When ESA-listed plants are observed within temporary construction areas, avoidance and minimization measures shall be applied. Exclusionary areas shall 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 shall be monitored during and following construction to avoid adverse effects.

P-3. Avoid Known Special-Status Plant Populations

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

1.2.5.6. Monarch Butterfly

MB-1. 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.

1.2.5.7. Nesting Migratory Birds

MBTA-1. 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 vegetation disturbance during construction would be scheduled to avoid migratory bird nesting season, from February 15 to September 30, to avoid take under the MBTA.

2. Introduction

DesertXpress Enterprises, LLC (dba "Brightline West") proposes to construct and operate the Cajon Pass High-Speed Rail Project (Project), a 49-mile train system capable of speeds up to 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 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 constructed 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 be powered by overhead electric catenary and 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 to Las Vegas High-Speed Passenger Rail (HSR) Project would provide the primary maintenance functions, although layover tracks are anticipated at the Rancho Cucamonga station, and which could include light maintenance capability, such as interior cleaning and daily inspection (FRA 2020).

Trains are expected to operate daily on 45-minute headways between Victor Valley and Rancho Cucamonga. The trip between Victor Valley and Rancho Cucamonga would be approximately 35 minutes. Service would 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.

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 would secure additional agreements with Caltrans 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.

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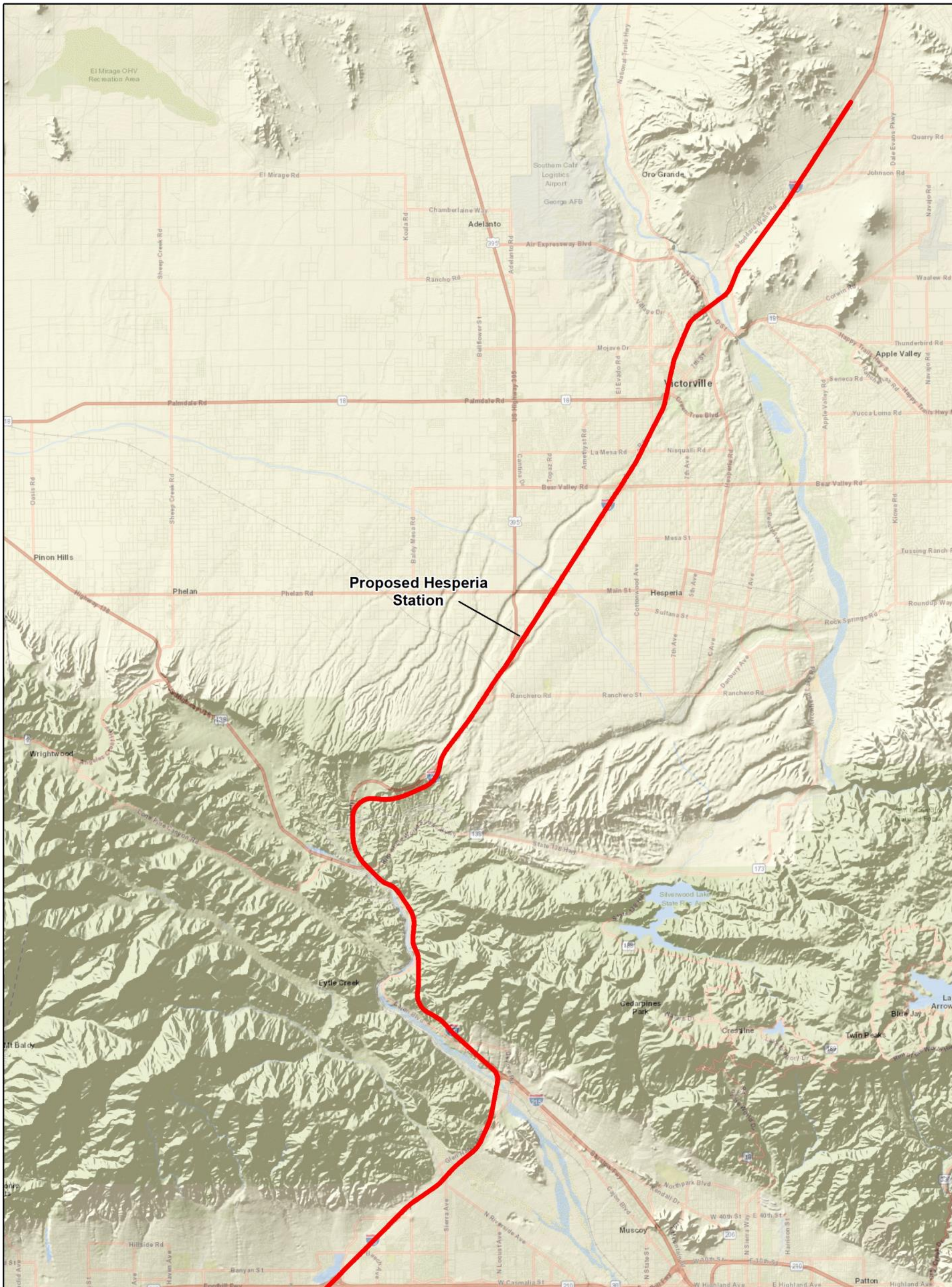
3. Project Description

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 140 mph between Victor Valley and Rancho Cucamonga, California. 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 station in Victor Valley would be constructed as part of a separate project (FRA 2020). 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


Proposed Hesperia Station
El Mirage Rd
Oro Grande
Adelanto
Palmdale Rd
Apple Valley
Bear Valley Rd
Pinon Hills
Phelan
Main St
Hesperia
Wrightwood
Lytle Creek
Cedarpines Park
Twin Peaks
Muscoy

3.

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 highway. 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 for Project users would be approximately 30 percent faster during normal conditions and at least twice as fast 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

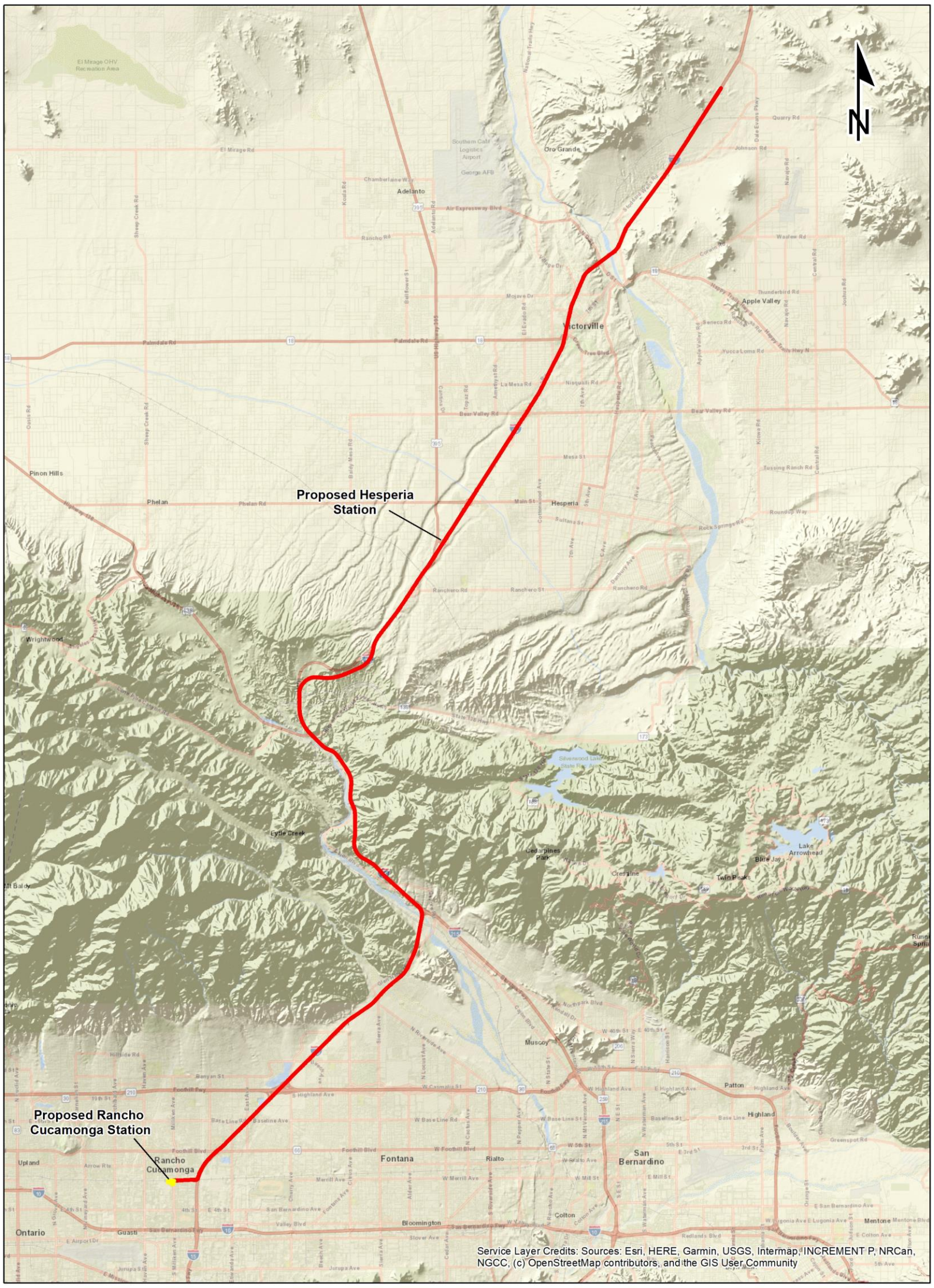
Operation of the Project would increase the capacity of I-15 as a multi-modal transportation corridor in Southern California. This increase in capacity would benefit highway operations by providing an alternative to automobile travel that would reduce travel time. This shift of people from automobile 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 highway system leading into the I-15 from points west, east, and south, including I-10, State Route (SR) 210, I-215 and SR 60 have similar delays and capacity constraints. The Project would address this demand by providing a transportation alternative to vehicle travel, and it would 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. Project Area and Vicinity

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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 caused by 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 would also decrease—some by more than 10 mph—in the PM 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 in the range of 31 to 38 percent from 2014 to 2045. The Project 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. Because the express lane project is increasing capacity by adding express lanes, the traffic volumes are projected to increase by an additional 27 percent. The Project 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 Fourth 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 would 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 proposed Hesperia Station would provide convenient

connections between High Desert communities and the more urbanized San Bernardino Valley and Metropolitan Los Angeles. 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.

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 *en route* 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 proposed HSR station in Rancho Cucamonga, located about 45 miles east of Downtown Los Angeles, would provide more direct access to the densely populated centers in Southern California for both drivers and Metrolink riders; 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 location of the proposed Rancho Cucamonga station.

The proposed station in Rancho Cucamonga, with a Metrolink connection to Los Angeles, would 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 Highway 395 (US-395) and I-15, so it would serve commuters to Greater Los Angeles from the major corridors in the Victor Valley.

The Project would 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 would facilitate transit connections and would 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 and connect to the BLW station at Victor Valley for a connection to Las Vegas. 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 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 on the San Gabriel Subdivision which serves 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. 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 near the Project's proposed 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.

SCAG's Connect SoCal Goods Movement Technical Report identifies I-15 as part of the US 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. The Federal Highway Administration has previously invested $200 million in improvements to the I15/I-215 interchange at the southern end of the Cajon Pass because of the corridor's significance as a major truck and trade route.

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. The 2015 Interregional Transportation Strategic Plan (Caltrans 2015) identifies I-15 as a high priority corridor, among six nationally identified "Corridors of the Future," and 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 would 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 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 is one of the safest forms of travel.

The California Office of Traffic Safety 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 Cajon 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 VMT, well above the alliance's performance goal of 0.003 fatalities per million. By connecting the Victor Valley to Rancho Cucamonga, the Project would allow more travelers to stay off segments of I-15.

3.4. Alternatives

3.5. 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 of the I-15 highway between Victor Valley and Rancho Cucamonga except at the approach to the proposed Rancho Cucamonga station. The rail alignment would be predominately at grade (the same elevation as the existing highway), with select segments of the alignment on aerial structures or in a trench to allow for grade separations 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 mile 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 three sections. Sections were developed to reflect 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 I-15/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

3.5.1. 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.[1] 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 Section 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 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 I-15/Joshua Street 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 highway, and station parking would be on the north side of Joshua Street. Parking would 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 Joshua Street bridge would be reconstructed at a higher elevation, requiring 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. The Project design includes adequate parking areas to accommodate parking demand.

Design Elements

Section 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, 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

3.5.2. Section 2 – Cajon Pass

Beginning at the I-15/Oak Hill Road interchange and 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 for approximately 12 miles. The rail alignment throughout Section 2 would be entirely single-track.

The Project would require replacement 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

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 highway and minor realignment of ramps at the I-15/SR 138 interchange.

Design Elements

Section 2 of the Project includes the following design elements.

- Bridges/Viaducts: None
- 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

3.5.3. 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 highway, including the Devore interchange viaduct, curving to the southwest parallel to highway. The rail alignment would require I-15 highway and interchange ramp modifications at SR 210, Beech Avenue, Duncan Canyon Road, 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 I-15 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 to exiting the highway 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; it 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

Section 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 highway and interchange ramp modifications at SR 210, Beach 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 share parking structure for vehicles, and a bus plaza

3.5.4. Construction

The area of construction throughout the alignment would be long and narrow, hewing closely to the alignment centerline. Localized exceptions would occur for construction of the paralleling substation at the SCE Boulder Dam–San Bernardino transmission lines and for the proposed Hesperia station.

"Temporary works" for construction would include laydown/staging areas, i.e., illuminated, enclosed, secured, stabilized, graded yards that would serve as a base for construction operations for a particular part of the Project. The footprints of staging areas would vary according to the space available, but they would provide sufficient space for unloading, storage, sorting, and distribution of concrete and other building materials, equipment, and large components required for a particular construction segment or structure. Each staging area would typically include a superintendent's office, portable toilets, employee vehicle surface parking, space for truck loading and unloading, and heavy equipment storage. At construction areas for bridges, the staging areas would have storage space for steel and timber falsework used in supporting overhead concrete construction.

3.6. No Build Alternative

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

4. Federal Regulations

The following federal regulations provide protection of biological resources, including sensitive, threatened, and endangered species and designated critical habitats:

- Federal Endangered Species Act of 1973 (ESA; 16 U.S.C. § 1531–1543), as amended
- Migratory Bird Treaty Act of 1918 (MBTA; 16 U.S.C. Part 703 -712), as amended
- Bald and Golden Eagle Protection Act (BGEPA; 16 U.S.C. § 668-668c)

In addition, Executive Orders 13112 and 13751, National Invasive Species, provide regulatory directives.

4.1.1. Federal Endangered Species Act

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 consultation with USFWS to ensure that 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 on which are found those physical or biological features essential to the conservation of the species and 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 but a determination has been made that such areas are essential for the conservation of the species.*

Implementation of ESA Section 7 (a)(2), which requires FRA to consult with USFWS, includes analyses of impacts on designated critical habitat, analyses of impacts on listed species, and analyses of indirect and cumulative impacts on listed species.

"Incidental take" is defined as take of listed species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by a Federal agency or applicant (50 CFR Section 402.02). "Take" is defined as, to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct (ESA Section 3 (19)), while "harm" is further defined by USFWS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. "Harass" is defined by USFWS as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR § 17.3).

HCPs generated under Section 10(a)(1)(B) of the ESA provide signatory parties with conservation tools, such as management of habitat, and mitigation approaches to compensate for species and habitat impacts.

4.1.2. Migratory Bird Treaty Act of 1918

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. The list was updated by the USFWS in 2020 (USFWS 2020).

4.1.3. Bald and Golden Eagle Protection Act

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 include 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 22.3).*

4.1.4. Executive Orders 13112 and 13751, National Invasive Species

Executive Orders 13112 and 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 Executive Orders require that the National Environmental Policy Act 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.

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5. Methodology

This *Biological Resources Technical Report* was developed based on:

- Literature and database reviews
- Compilation of available information including maps
- Analysis of potential direct and indirect effects on ESA-listed species and their habitats

Construction noise, which may indirectly impact species and could extend beyond the direct impact footprint, was also evaluated.

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 the main topics of this report. No field surveys or other field studies were performed for this analysis.

5.1. Study Area

The study area for the quantitative analysis of effects on biological resources was defined as the area of potential direct impacts--including permanent impacts and temporary impacts which may occur during construction. Indirect potential effects were evaluated qualitatively. **Appendix A** provides maps showing the limits of disturbance that define the study area.

5.1.1. Permanent Limit of Disturbance

The permanent limit of disturbance (permanent LOD) includes the area where rail operations and routine maintenance would occur. The permanent LOD includes the area of railbed and catenary structures, as well as the full width of area cleared, cut, or filled. The permanent LOD includes areas of existing I-15 that would be modified (widened, raised, relocated) to accommodate median-running rail. Also included in the permanent LOD are the area of new passenger stations, parking areas, access ways, fence lines, traction power substations, and relocations of local roadways and highway ramps, and relocation of existing electrical towers. The permanent LOD was mapped based on the 30 percent engineering design for the Proposed Action.

5.1.2. Temporary Limit of Disturbance

The temporary limit of disturbance (temporary LOD) indicates the area likely to be disturbed during construction, including areas of temporary clearing and grading or fill, temporary access roads, material laydown, staging, and logistics areas. The temporary LOD was mapped to include the width of the entire Caltrans right-of-way.

The duration of temporary construction disturbance at any one location was assumed to be one year from start of disturbance to restoration.

5.2. Existing Information

Data related to ESA-listed species that may occur in the study area were accessed through the IPaC website (USFWS 2022a) as provided by USFWS.

The California Natural Diversity Database (CNDDB 2022) was used to access mapped information on plant and animal species. Locations of designated critical habitat that may occur within the study area was sources from USFWS IPaC Website (2022). The CNDDB provides the most up-to-date geographic information systems (GIS) information on ESA-listed species.

Information from other available biological studies which had occurred in the vicinity included:

- *I-15/I-215 Interchange Improvement project* (Caltrans 2011) evaluated areas on the north side of I-15 in the vicinity of Cajon Wash crossing in San Bernardino County.
- *I-15/New Fontana Maintenance Facility* (Caltrans 2019) project studied an area along I-15 in Fontana.

For each of these studies, descriptions of the executed surveys and resulting data were reviewed for relevance to the Project.

5.3. Wildlife Habitats and Species Information

The California Wildlife Habitat Relationship (CWHR) System (CDFW 2021a) is a plant community classification system that provides detailed information on wildlife habitat types and their spatial distribution in the project area. The core of the CWHR System is a database that relates species to each of the habitats that support them. The classification system provides maps and contains life history, geographic range, and management information for California's amphibians, reptiles, birds, and mammals.

Because of the wide geographic area of the Project, two separate source maps were utilized initially:

- Mapped wildlife habitat information for Section 1, High Desert, was sourced from *Mojave Desert Renewable Energy Conservation Plan* vegetation GIS layer. The layer provides a fine-scale vegetation map of the western Mojave Desert that provides detailed information identifying high quality habitat and rare communities (Menke, et al. 2013; Conservation Biology Institute, 2022). The product follows the National Vegetation Classification Standard (USNVC 2021), and the mapped information was subsequently cross-referenced to CWHR System by the Mojave Desert Renewable Energy Conservation Plan. Information from the CWHR system was extracted and used.
- Mapped wildlife habitat information for Section 2, Cajon Pass, and Section 3, Greater Los Angeles, was mapped from the South Coast polygon of a CALVEG (Classification and Assessment with LANDSAT of Visible Ecological Groupings) GIS product (USFS 2020). The CALVEG classification system was initially used for vegetation typing and the information subsequently cross-walked to the CWHR System by the originators. Information from the CWHR system was extracted and used.

Plant species names are generally in compliance with those used by Jepson eFlora (Jepson Flora Project 2022). Sensitive species information was collected from USFWS Information for Planning and Consultation (IPaC; USFWS 2022a). Migratory bird information was collected from the Avian Knowledge Network (AKN 2022), including information on known occurrence and phenology. Additional information was collected from available databases such as eBird (eBird 2022) and iNaturalist (iNaturalist 2022).

Both original vegetation data layers follow the California Department of Fish and Wildlife (CDFW) Vegetation Classification and Mapping Program (VegCAMP). The vegetation classification complied with Federal Geographic Data Committee standards and National Vegetation Classification Standards. The mapping and classification for both products included survey and classification work.

The data were cleaned up to correct gaps and overlaps in areas where the two vegetation polygons met in the vicinity of Cajon Summit. The overlaps were accommodated with two codes ("overlaps" and "null"). Overlaps were resolved visually using aerial photography. Null polygons were dropped. Less than 10 acres were identified as Null for the entire study area.

Following evaluation of the wildlife habitat map, it was determined that some areas had been developed since the time of the initial mapping exercise for both data sources. Many polygons were identified as one of the vegetated habitats but, upon comparison with recent aerial photography, they were determined to have been partially or entirely developed. To resolve this issue, a more contemporary urban raster overlay (called "2020 CDL") was used to overlay the wildlife habitat map. The 2020 CDL urban information was sourced from the USDA National Agricultural Statistics Service (NASS) Cropland Data Layer (CDL) and is a raster, geo-referenced, crop-specific land cover data layer (USDA NASS 2022) that provides additional information. NASS produced the 2020 CDL using satellite imagery from several satellite systems and collected during a single growing season. Land covers were determined by applying heads-up digitizing techniques using a base of true-color and color infrared, 2010, 2014, or 2016, 1-meter National Agricultural Imagery Program imagery in conjunction with ancillary data and imagery sources. Map polygons were assessed for vegetation type, percent cover, exotics, development disturbance, and other attributes. The minimum mapping unit (MMU) was 10 acres; exceptions were made for wetlands and certain wash types (which were mapped to a 1- or 5-acre MMU) and areas characterized as land use polygons (which were mapped to a 2.5-acre MMU).

The resulting 2020 CDL has a ground resolution of 30 meters. The 30-meter raster cells were used to overlay 2020 CDL's urban classifications onto the habitat map, identifying all areas that mapped as Urban in 2020, even if they were mapped as other vegetated habitats in either of the two original sources habitat maps. Other areas where vegetation codes were updated with the 2020 CDL had their new Urban code, but also maintained their original vegetation code within the database to refer back to the previous vegetation coding and its transition to urban. In this way, changes from vegetated habitats to developed areas from the time of the initial source map creation was captured in the study area. This created a more contemporary map and assisted in avoiding over-estimation of habitat areas in the study area.

Historic information on Wildlife occurrences was obtained primarily from CNDDB (2022), and from the Information for Planning and Consultation website (IPaC) for avian species (USFWS 2022a).

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.

5.4. Habitat Impact Area Analysis

Mapped wildlife habitats were used to identify potential suitable habitats for ESA-listed and candidate plant and wildlife species. For analysis of existing conditions and impact area, areas were calculated using California State Plane (NAD 1983 [2011] State Plane California V FIPS 0405, in U.S. feet) to generate data tables and associated information breakdowns. Data were processed and verified within the GIS software based upon the California State Plan coordinate system.

Design specifications, proposed construction methods, mitigation measures, and operational protocols for the Project were reviewed and evaluated to estimate how construction and operation might qualitatively impact habitats, sensitive species, and designated critical habitats.

Focused presence/absence surveys have not been performed to confirm species presence within the study area. Suitable habitat is assumed to be present, but the conditions of mapped wildlife habitat has not been evaluated.

6. Affected Environment

The affected environment is described in three sections, corresponding with the Project sections described in Section 3.1. Starting from the northeast, just south of the Victor Valley passenger station in the town of Apple Valley and moving southwest to Rancho Cucamonga, the three sections are:

- **Section 1 – High Desert** starts immediately south of the Victor Valley passenger station (this station is proposed under a separate project) and continues south and southwest along I-15 to the I-15/Oak Hill Road interchange in Hesperia.
- **Section 2 – Cajon Pass** from the I-15/Oak Hill Road interchange, then continues south and west along I-15, through the Cajon Pass, to the I-15/Kenwood Avenue interchange in Devore.
- **Section 3 – Greater Los Angeles** from the I-15/Kenwood Avenue interchange and continues southwest along I-15 through Fontana to Rancho Cucamonga, then turns due west in an existing railway corridor to the existing Metrolink station in Rancho Cucamonga.

The proposed rail alignment (north to south) begins in the arid Mojave Desert (High Desert), crosses a mountain range (San Gabriel Mountains), and travels into the marine-influenced, Mediterranean climate of the Los Angeles Basin. The route has high biotic, climatic, and geographic diversity. As stated, the entire proposed rail alignment is within Caltrans Right of way for I-15.

The existing highway affects wildlife habitat conditions throughout. Disturbance adjacent to the existing highway includes tire and engine noise, trash, dust, and routine maintenance. Occasionally vehicles directly affect adjacent habitat areas due to accidents or other events that result in vehicles leaving the highway.

The following subsections provide a short summary of the biotic characteristics of each section of the study area.

6.1. Section 1 – High Desert

Section 1 travels approximately 20 miles across the western extent of the Mojave Desert ecoregion. The Mojave Desert is known for its aridity and high biodiversity. Starting at elevation of approximately 3,200 feet (World Geodetic System 1984 [WGS84] datum), Section 1 rises to reach 4,040 feet in elevation at the Oak Hill Road/I-15 interchange at the southern end of Section 1. The landscape in Section 1 is characterized by flat to rolling landforms crossed by paved and unpaved roads connecting low-density urban and commercial developments within stretches of undeveloped desert vegetation.

Section 1 crosses the Mojave River, which serves as a key wildlife corridor for the region and has designated critical habitat for southwestern willow flycatcher. Critical habitat is designed by USFWS under the ESA and provides essential habitat. Additional information about critical habitat and species is provided in Sections 6.9 and 6.10.

Section 1 crosses the urban areas of Victorville and Hesperia, which are densely developed. Only small patches of native plant communities and wildlife habitat remain. Native plant communities along the alignment of Section 1 (from north to south) exist at the following locations:

- Locations of temporary construction areas, including the Blanchard Road vicinity in Hesperia
- Mojave River crossing in Victorville
- Oro Grande Wash crossing
- Nisqualli Road interchange
- Joshua Street crossing
- US 395 interchange
- Oak Hill Road interchange

Public open space in the project vicinity includes the Mojave Narrows Regional Park. Mojave Narrows Regional Park lies just south of the Project on the Mojave River in Victorville. Public access enables frequent bird watching at this location. Due to the park's proximity to the Project and ability of public access for bird and wildlife watching, information collected at the park would be relevant to the project area.

Approximately 80 bird species observed have been observed in a single day, and over 250 species recorded (eBird 2022) at the Mojave Narrows Regional Park. The Park contains open water and extensive riparian habitat dominated by cottonwood-willow forest. The area is important to migratory and resident bird species and known to host summer tanager, yellow-breasted chat, yellow warbler, blue grosbeak, Bell's vireo, and vermilion flycatcher. ESA-listed least Bell's vireo and western yellow-billed cuckoo may also use this habitat. Bald eagles were observed year-round, in all years, with golden eagle less frequently observed (eBird 2022). Managed by San Bernardino County for recreation, the park reports 1,500 species of watchable wildlife (San Bernardino County 2022).

Hydrologic features crossed by the Proposed Action include river, stream, and wash systems. In Section 1, High Desert, these include Bell Mountain Wash, Oro Grande Wash, and the Mojave River and several small unnamed drainage features. The San Bernardino County Flood Control District (SBCFCD) maintains the Mojave River reach and the Oro Grande Wash in the project vicinity. The California Aqueduct is crossed by Section 1 and was mapped as Lacustrine habitat type.

Designated critical habitat for southwest willow flycatcher is present at the Mojave River crossing.

6.2. Section 2 – Cajon Pass

Section 2 is approximately 12 miles long and traverses the Cajon Summit area of the San Gabriel Mountains. The Cajon Pass section travels across a largely natural landscape characterized by mountainous terrain and rock outcroppings that flank Cajon Canyon. This area provides a major

transportation gateway, a major utility corridor, managed recreation opportunities, and key wildlife habitat linkages between the San Bernardino Valley of the Los Angeles Basin and the High Desert Penrod et al. 2012) . No major residential, industrial, or commercial developments occur along Section 2.

Section 2, Cajon Pass, would be developed within Caltrans right-of-way which is located on federal land and managed by the US Department of Agriculture, Forest Service (USFS), San Bernardino National Forest, Front County District.

The proposed rail alignment initially travels alongside the northbound lanes of I-15 where the northbound and southbound interstate lanes are separated by approximately 0.5 mile. The proposed rail alignment ascends to approximately 4,260 feet (WGS84) at Cajon Summit. Past the summit, Section 2 travels in the median of I-15 and largely parallels Cajon Canyon, in an east-west segment initially, then turning south. From the Summit, the alignment descends approximately 2,000 feet.

Major hydrologic features include Cajon Creek in Cajon Canyon. Approximately six major drainages tributary to Cajon Creek would be crossed by the project alignment, including Crowder Canyon Wash and Cleghorn Wash.

The Grand Prix and Old Fires of 2003, along with the 2016 Blue Cut fire, burned vegetation and infrastructure along most of Section 2, affecting vegetation and wildlife habitats (CAL FIRE 2021a).

Designated critical habitat for arroyo toad is present in Cajon Canyon adjacent to the alignment.

6.3. Section 3 – Greater Los Angeles

Section 3 leaves the mountains and enters the San Bernardino Valley, which forms the northwestern most extent of the Greater Los Angeles basin . At the mouth of Cajon Canyon, the project alignment turns west where I-15 meets I-215. The alignment runs in the median of the highway crossing the broad alluvial washes of Cajon Wash and Lytle Creek, then skirts the base of the San Gabriel Mountain foothills in the town of Fontana, then turns south to travel into Rancho Cucamonga.

Section 3 runs in the I-15 median, except near the terminus, where the alignment crosses over southbound I-15 and runs beside southbound lanes just prior to turning west and into a railway corridor, and to the new Rancho Cucamonga passenger station .

Over 60 percent of Section 3 is within urbanized areas. However, several important locations with existing vegetation and possible suitable habitat are in Section 3; they include the following:

- Cajon Wash crossing
- Lytle Creek crossing

In Section 3, major hydrologic features crossed include Lytle Creek and Cajon Creek at Cajon Wash. The SBCFCD has several flood-control features the Project would cross including groins and levees crossing Caltrans right-of-way. The Project would cross major engineered drainage

channels including Hawker-Crawford Channel, San Sevaine Channel, East Etiwanda Creek Channel and Day Creek Channel owned and maintained by SBCFCD (SBCFCD 2022).

Designated critical habitat for San Bernardino Kangaroo Rat is present in Cajon Wash and Lytle Creek.

Glen Helen Regional Park lies just south of the Project. Managed by San Bernardino County, the park provides a wide variety of recreational uses, including a large amphitheater and a raceway. The Project would not directly impact this area; however, because the park is near the project area, information on birds and wildlife observed at the park was relevant. Records from more than 50 years of bird watching at the park were compiled in a database of observations (ebird 2022). A high diversity of habitats and bird species are present, with over 241 avian species observed (eBird 2022). Migratory bird species use the park and surroundings, with an especially large diversity in the fall and spring months (San Bernardino Valley Audubon Society 2021). Bald and golden eagles have been infrequently observed here recently.

6.4. Existing Habitat Conservation Plan Areas and Conservation Lands

Habitat Conservation Plans (HCPs) have been produced for areas covering the study area or adjacent to the study area.

The West Mojave Habitat Conservation and Use Plan (West Mojave Plan; BLM 2004) was developed with the Bureau of Land Management as the lead agency and with Caltrans as a cooperating agency. The northern extent of the rail alignment in Section 1, High Desert, lies within the West Mojave Plan planning area. The West Mojave Plan focuses on conservation of desert tortoise and Mohave (sic) ground squirrel, along with sensitive plants and animals that occur in the associated natural communities. The West Mojave Plan amends the earlier *Desert Conservation Area Plan* and was developed following federal ESA requirements providing criteria for issue of ESA Section 10(a) permits for take of endangered species for a period of 30 years from time of approval.

The Western Riverside County Multiple Species Habitat Conservation Plan (Riverside County 2004) covers 1.26 million acres in western Riverside County, with the nearest extent lying approximately 5 miles south of the Proposed Action. The HCP includes portions of the San Bernardino Mountains and many of the habitats and species present in the Project's study area.

Seven conservation areas occur within 1 mile of the study area (**Table 1**). Locations of conservation areas are shown on **Figure 1**. 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 (see Figure 1).

6.5. Wildlife Habitats

The study area comprises approximately 2,900 acres along the entire length of the project alignment. Table 14 lists the mapped habitat types in the study area and provides areas of each habitat type in each project section. Wildlife habitats in the study area are mapped in **Appendix A.** Short summaries of the habitat types mapped in the study area are provided below. The wildlife habitat type descriptions were extracted from *A Guide to the Wildlife*

Habitats of California (CDFG 1988), with additional plant information from CalFlora (CalFlora 2021) and Calscape (CNPS 2021).

Table 14. Mapped Habitat Types within the Study Area, by California Wildlife Habitat Type

CWHR Wildlife Habitat Type	Habitat Code[a]	Section 1 High Desert (acres)	Section 2 Cajon Pass (acres)	Section 3 Greater Los Angeles (acres)	Total Area (acres)
Alkali Desert Scrub	ASC	4.46	–	–	4.46
Annual Grassland	AGS	4.99	–	13.89	18.88
Barren	BAR	0.16	0.63	3.78	4.57
Chamise-Redshank Chaparral, Mixed Chaparral	CRC, MCH	–	3.19	–	3.19
Coastal Scrub	CSC	–	5.87	9.45	15.31
Desert Riparian	DRI	9.14	0.85	–	9.99
Desert Scrub	DSC	114.10	90.07	–	204.17
Desert Scrub, Desert Wash	DSC	–	1.38	–	1.38
Desert Wash	DSW, DSW	–	0.18	43.99	44.16
Eucalyptus	EUC	–	–	0.04	0.04
Joshua Tree	JST	0.35	–	–	0.35
Juniper	Jun	2.82	–	–	2.82
Mixed Chaparral	MCH	0.56	93.92	40.11	134.59
Riverine	RIV	2.55	–	12.42	14.98
Sagebrush	SGB	22.02	–	–	22.02
Valley Foothill Riparian	VRI	0.46	–	1.48	1.94
Total		**161.62**	**196.32**	**125.12**	**483.09**

a. CWHR Codes are shown on the Appendix A maps and provided here for reference.

6.5.1. Alkali Desert Scrub

Alkali Desert Scrub include habitats on dry lakebeds, dry riverbeds, and dry shorelines in desert settings. Approximately 5.5 acres of Alkali Desert Scrub are within the study area along Section 1, High Desert. The habitat features shrubs and, sometimes, succulent plants, all of which are tolerant of dry and salty soils. Common shrub species include allscale (*Atriplex polycarpa*), brittlebush (*Encelia farinosa*), and desert holly (*Atriplex hymenelytra*). Salt-tolerant forbs and grasses may also be present, especially as winter annuals. Trees are absent.

Characteristic animal species include the Mohave [sic] ground squirrel (*Xerospermophilus mohavensis*), zebra-tailed lizard (*Callisaurus draconoides*), and long-nosed leopard lizard (*Gambelia wislizenii*).

6.5.2. Annual Grassland

Annual grassland habitats are characterized as having dramatic vegetation coverage differences from season to season, with lush, early-year, green growth as a response to winter rains followed by dry, brown, cured vegetation during the dry season. During drought years, vegetation is dry or absent throughout the year. Approximately 19 acres of the study area are mapped as annual grassland, with about 14 acres mapped along Section 3, Greater Los Angeles.

In most locations, this community is dominated by introduced grass species mostly of Mediterranean origin and includes cheatgrass (*Bromus tectorum*), soft brome (*Bromus hordeaceus*), slender wild oats (*Avena barbara*), and wild oats (*Avena fatua*). The non-native grasses are more fire-adapted than non-native species. Many animals use Annual Grassland for foraging, especially when the area is adjacent to other structural habitat elements such as cliffs, aquatic areas, shrub areas, or other nearby areas suitable for perching and cover. Mammals typically found in this habitat include the black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), badger (*Mustelidae mephitidae*), and coyote (*Canis latrans*). This habitat provides foraging habitat for a wide variety of birds, including raptors and other migratory birds.

6.5.3. Chamise-Redshank Chaparral, Mixed Chaparral

Chamise-Redshank Chaparral and Mixed Chaparral is a heterogeneous mix of two habitat types at scales below the mapping resolutions. Chamise-Redshank Chaparral habitat is a dense habitat where shrubs with stiff, overlapping, interwoven branches are so dense that there is no herbaceous vegetation below the shrub canopy. Chamise (*Adenostoma fasciculatum*) and or redshank (*Adenostoma sparsifolium*) may comprise the entire community. Distinguishing Chamise-Redshank Chaparral from Mixed Chaparral and Coastal Scrub is determined by percent cover of chamise and redshank and other shrub species. Less than 4 acre is mapped along Section 2, Cajon Pass.

6.5.4. Coastal Scrub and Riversidean Alluvial Fan Sage Scrub

In southern California, the typical community components of Coastal Scrub include a large variety of soft stemmed shrubs, such as California sagebrush (*Artemisia californica*) and California buckwheat (*Eriogonum fasciculatum*). In this habitat, shrubs may drop their leaves during the dry months (drought deciduous), and, generally, plant density and structure allow enough light to support an herbaceous understory.

“Coastal sage scrub” is an equivalent designation for Coastal Scrub habitat in Southern California and, further within the study area, a very specific vascular plant association, called “Riversidean Alluvial Fan Sage Scrub” has been recognized (White and Padley 1997). Riversidean Alluvial Fan Sage Scrub habitat is a distinct and rare plant community found on

alluvial fans at the foothills of the San Gabriel Mountains. In the project area, this includes Lytle Creek and Cajon Wash areas.

Riversidean Alluvial Fan Sage Scrub plant communities consist of a specific subset of plants within Coastal Scrub habitat types that are distinctly different mix of plants from Coastal Scrub habitat type elsewhere in California.

Plant species present in the Riversidean Alluvial Fan Sage Scrub plant community include California sagebrush (*Artemisia californica*), white sage (*Salvia apiana*), various buckwheat species (*Eriogonum* spp.), golden yarrow (*Eriophyllum confertiflorum*), and coastal pricklypear (*Opuntia littoralis*). Scale-broom (also known as California broomsage; *Lepidospartum squamatum*) is an indicator species for the Riversidean Alluvial Fan Sage Scrub association.

The habitat is known to support several ESA-listed species, including coastal California gnatcatcher (*Polioptila californica californica*), San Bernardino Merriam's kangaroo rat (*Dipodomys merriami parvus*), slender-horned spineflower (*Dodecahema leptoceras*), and Santa Ana River woolly-star (*Eriastrum densifolium ssp. sanctorum*). Designated critical habitat for San Bernardino Merriam's kangaroo rat is mapped on alluvial fan landforms supporting, or potentially supporting, Riversidean Alluvial Fan Sage Scrub.

The plant community is found throughout the northern portions of the City of Fortuna and Rialto and in unincorporated San Bernardino County in the vicinity of I-15. Thus, while a relatively small area of approximately 15 acres is mapped along Section 3, Greater Los Angeles, at Cajon Creek and Lytle Creek, the vegetation and habitat elements in the study area is of high importance.

6.5.5. Desert Riparian

Desert Riparian is characterized as dense groves of low, shrubby trees that may also include areas of woodlands composed of small- to medium-sized trees, all of which are adjacent to water. Along the Mojave River, willows (*Salix exigua* and *Salix laevigata*) form the riparian shrub community, while Fremont cottonwood (*Populus fremontii*) and Arizona ash trees (*Fraxinus velutina*) create an overstory. This habitat type is rare within the region and is associated with several endangered species. In the study area, approximately 10 acres of Desert Riparian habitat are included, with most of this area located at the Mojave River crossing in Section 1, High Desert.

6.5.6. Desert Scrub

Desert Scrub habitat is characterized by widely spaced shrubs with low levels of canopy cover and, depending on elevation, season, and disturbance, has either diverse herbaceous growth between shrubs or low plant coverage with nearly bare earth between shrubs. Creosote bush (*Larrea tridentata*) is the characteristic shrub present. Approximately 204 acres in the study area are mapped as Desert Scrub, occurring in Sections 1 and 2.

The primary resident wildlife species that use Desert Scrub habitat include reptiles and rodents; however, many species use this habitat for foraging. The protected desert tortoise (*Gopherus agassizii*) is dependent on this habitat. Other species typical of Desert Scrub habitat include black-throated sparrow (*Amphispiza bilineata*), sage sparrow (*Amphispiza bellii*), desert kit fox

(*Vulpes macrostis arsipus*), various pocket mice and kangaroo rats, Mohave ground squirrel, and a variety of lizards and snakes, such as side-blotched lizard (*Uta stansburiana*), basin whiptail (*Aspidoscelis tigris tigris*), and Mohave Desert sidewinder (*Crotolus cerastes cerastes*). Common raven (*Corvus corax*) are generalist predators and their numbers have recently increased in this habitat and adjacent urbanizing areas (Boarman 2003 and Boarman et al. 2006).

6.5.7. Desert Wash

Desert washes flow intermittently, usually only following heavy precipitation. Desert Wash habitat occurs where vegetation is present in desert washes. Some desert washes are not naturally vegetated and, thus, would be mapped as Barren habitat. The vegetation community consists of plants adapted to intermittent presence of surface water. The plant community is often taller and denser than surrounding desert habitats, thereby providing vertical structure and cover. Native plant species include desert pearl (*Ambrosia salsoa*), threadleaf ragwort (*Senecio flaccidus*), and four-winged saltbush (*Atriplex canescens*). In some locations, washes are colonized by invasive tamarisk (*Tamarix chinensis*) or Russian olive shrubs (*Elaeagnus angustifolia*).

In Desert Wash habitat, the occasional presence of surface water along with dense shrubs provide cover and breeding habitat for many species that forage in the adjacent desert habitats. Approximately 44 acres are mapped in the study area, nearly all of it along Section 3, Greater Los Angeles, in Cajon Wash.

6.5.8. Eucalyptus

Eucalyptus habitats are dominated by non-native eucalyptus plants. Depending on which eucalyptus species are present, this habitat includes trees or shrubs, such as red gum (*Eucalyptus camaldulensis*). This non-native habitat provides limited support for wildlife. Approximately 0.4 acre is mapped along Section 3 adjacent to I-15 in Rancho Cucamonga.

6.5.9. Joshua Tree

Joshua Tree (*Yucca brevifolia*) habitat supports widely scattered Joshua trees in open shrublands with low broad-leaved evergreen and deciduous shrubs and limited herbaceous understory. Other plants present with Joshua trees include California juniper (*Juniperus californica*), Mojave yucca (*Yucca schidigera*), big sagebrush (*Artemisia tridentata tridentata*), Nevada ephedra (*Ephedra nevadaensis*), California buckwheat, Cooper's goldenbush (*Ericameria cooperi*), burrobush (*Ambrosia dumosa*), Anderson's thornbush (*Lycium andersonii*), Cooper's box thorn (*Lycium cooperi*), spiny desert olive (*Menodora spinescens*), and beavertail cactus (*Opuntia basilaris*). Joshua Tree habitat is generally located on the periphery of the Mojave Desert.

Because Joshua trees grow tall within an otherwise shrubby habitat, they are critical to habitat function, providing perches and nesting sites. Common animal species include ladder-backed woodpecker (*Dryobates scalaris*), cactus wren (*Campylorhynchus brunneicapillus*), Scott's oriole

(*Icterus parisorum*), and desert spiny lizard (*Sceloporus magister*). Approximately 0.4 acre of this habitat is mapped in the study area in Section 1, High Desert, in the Hesperia vicinity.

6.5.10. Juniper

Juniper habitats are characterized as woodlands with open to dense aggregations small trees or shrubs. Utah juniper (*Juniperus utahensis*), California juniper (*Juniperus californica*), and Tucker oak (*Quercus john-tuckeri*) are the most common plant species, with other associated shrubs and herbaceous plants.

Dusky chipmunk (*Tamias obscurus davisii*) and common ravens are common in this habitat. The acreage covered by juniper woodlands tends to increase under fire suppression and subsequently decreases immediately following wildfire. Approximately 3 acres of Juniper habitat is mapped along Section 1, High Desert, in the Hesperia vicinity.

6.5.11. Mixed Chapparal

Mixed Chapparal habitat consists of woody, stiff-stemmed, thick-leaved, mainly evergreen shrubs. Plant diversity is generally high, with many different species of woody shrubs possibly present.

This habitat is wildfire-adapted as long as wildfires return at natural frequencies, but it can be damaged by intense wildfire following long periods of fire suppression, or too frequent fires. Approximately 134 acres of Mixed Chapparal are mapped in the study area. Mixed Chapparal occurs along all three project sections with most area split between Section 2, Cajon Pass, and Section 3, Greater Los Angeles.

Plant species include scrub oak (*Quercus dumosa*), coyote brush (*Bacharis pilularis*), and several species of chamise (*Adenostoma* spp.), ceanothus (*Ceanothus* spp.), and manzanita (*Arctostapylos* spp.). Commonly associated shrubs include birchleaf mountain mahogany (*Cercocarpus betuloides*), silk-tassel (*Garrya flavescens*), poison-oak (*Toxicodendron diversilobum*), coffeeberry (*Frangula californica*), hollyleaf cherry (*Prunus ilicifolia*), and California fremontia (*Fremontia californica*).

No wildlife is restricted to just Mixed Chapparal, with species using Mixed Chapparal habitats also present in adjacent habitats. Common bird species that use shrub habitats include western scrub-jay (*Aphelocoma californica*), California towhee (*Melozone crissalis*), and various hummingbirds, and sparrows. A variety of animals including wood rats (*Neotoma fuscipes macrotis*) and brush rabbits (*Sylvilagus bachmani*) use this shrub habitat for cover.

6.5.12. Riverine

Riverine habitat is mapped as areas of streams and rivers with intermittent or continually running water. Approximately 15 acres of Riverine habitat have been identified in the study area and occur across all three project sections. Most of this habitat is located in either the Mojave River or Cajon Canyon. Riverine habitat is generally rare in this xeric environment.

Open water provides habitat for a broad variety of wildlife and is essential for some species such as river otters (*Lontra canadensis*), beaver (*Castor canadensis*), as well as multiple species of shorebirds and waterfowl.

6.5.13. Sagebrush

Approximately 22 acres of Sagebrush habitat occur along Section 1, High Desert. This habitat is typified by almost pure stands of big sagebrush (*Artemisia tridentata* ssp. *tridentata*) with a general low plant diversity relative to other shrub habitats. Shrub density is variable by location and disturbance regime and can range from sparsely distributed to closely spaced shrubs.

Common wildlife in Sagebrush habitat includes jackrabbits (*Lepus californicus*), cottontail rabbits (*Sylvilagus* spp.), ground squirrels, least chipmunk (*Neotamias minimus*), kangaroo rats (*Dipodomys* spp.), wood rats, pocket mice (*Perognathus longimembris*), deer mice (*Peromyscus maniculatus*), grasshopper mice (*Onychomys torridus*), sagebrush vole (*Lemmiscus curtatus*), and desert bighorn sheep (*Ovis canadensis nelsoni*). Birds of the sagebrush habitat include chukar (*Alectoris chukar*), black-billed magpie (*Pica hudsonia*), gray flycatcher (*Empidonax wrightii*), pinyon jay (*Gymnorhinus cyanocephalus*), sage thrasher (*Oreoscoptes montanus*), and several sparrows (multiple genera), and hawks (multiple genera).

6.5.14. Valley Foothill Riparian

Valley Foothill Riparian is one of two forested habitats along the Project alignment and is generally rare within the region. The habitat is restricted to stream and river valley floodplains bordered by alluvial fans and slightly dissected terraces at lower foothills, generally with gently sloping topography. Approximately 2 acres of Valley Foothill Riparian habitat is mapped in the study area occurring in Sections 1 and 3 and associated with Cajon Canyon and the Mojave River.

Tree species present are usually broad-leafed and winter deciduous. While relatively limited in area, linear riparian habitats that traverse through various landscapes serve as key wildlife linkages and migratory and dispersal corridors. Cottonwood (*Populus* spp.) and California sycamore (*Platanus racemosa*) are dominant tree species, with white alder (*Alnus rhombifolia*) and boxelder (*Acer negundo*) as subdominant trees. Wild grape (*Vitis californica*), wild rose (*Rosa californica*), and willows (*Salix* spp.) are often present and important to create a multi-layered vegetation canopy. With the presence of trees and water along with high plant diversity with overstory and understory layers, this habitat supports an abundance of wildlife for foraging and breeding.

6.5.15. Urban and Barren Habitat Types

Approximately 2,415 acres, across all three project sections, were mapped as Urban. The Urban habitat type is typically dominated by development and impervious surfaces, such as roadways, buildings, parking areas. Vegetation, when present, consists mainly of ornamental and non-native species. Planted tree groves, lawns, gardens, shrub cover, and street-side plantings occur in this habitat and generally this habitat is actively maintained.

Barren habitat type is defined as having less than 10 percent tree and shrub cover and less than 2 percent vegetation cover from other plants. The habitat includes rock, gravel, and bare soil areas. In the study area, some areas may be classified as Barren if vegetation is widely spaced or absent, such as in washes. Approximately 4.57 acres are mapped as Barren in the study area.

In Urban areas, animal species present are those that can successfully utilize small habitat areas and are generally tolerant of disturbances, including human presence, noise, lighting, and other urban characteristics. These species include racoon (*Procyon lotor*), skunk (*Mephitis* spp.), squirrels (*Sciurus* spp.), American robin (*Turdus migratorius*), American crow (*Corvus brachyrhynchos*), jays (multiple genera), raven, various other small mammals, and coyotes.

6.6. Habitat Connectivity and Wildlife Movement

Corridors where wildlife move between larger habitat patches are generally referred to as habitat linkages or wildlife movement corridors. Wildlife movement corridors present include the Mojave River, Oro Grande Wash, Lytle Creek, and Cajon Wash. A key east-west wildlife corridor occurs along Cajon Canyon linking the San Bernardino Valley of the Los Angeles Basin and the Mojave Desert (generally north-south). The mountain area also serves as a generally east-west corridor crossing Cajon Canyon.

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 2**). 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 ESA-listed 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 and enabling genetic diversity essential to maintaining widely-spread species.

Barriers to wildlife movement occur where development has fragmented habitat or otherwise results in effects that cause wildlife to avoid an area. A 2012 study evaluated linkages between wildlife habitat locations in the Mojave Desert portion of the study area (Penrod et al. 2012) CDFW in conjunction with federal partners has identified barriers to priority movement along highway corridors. One priority barrier to wildlife crossing has been identified in the study area - Barrier ID W060 I-15 at Cajon Pass, where approximately 2.7 miles of highway between Cajon Junction and Baldy Mesa Road on I-15 lack suitable wildlife crossings for mule deer, mountain lion, bear, and bighorn sheep (CDFW 2020).

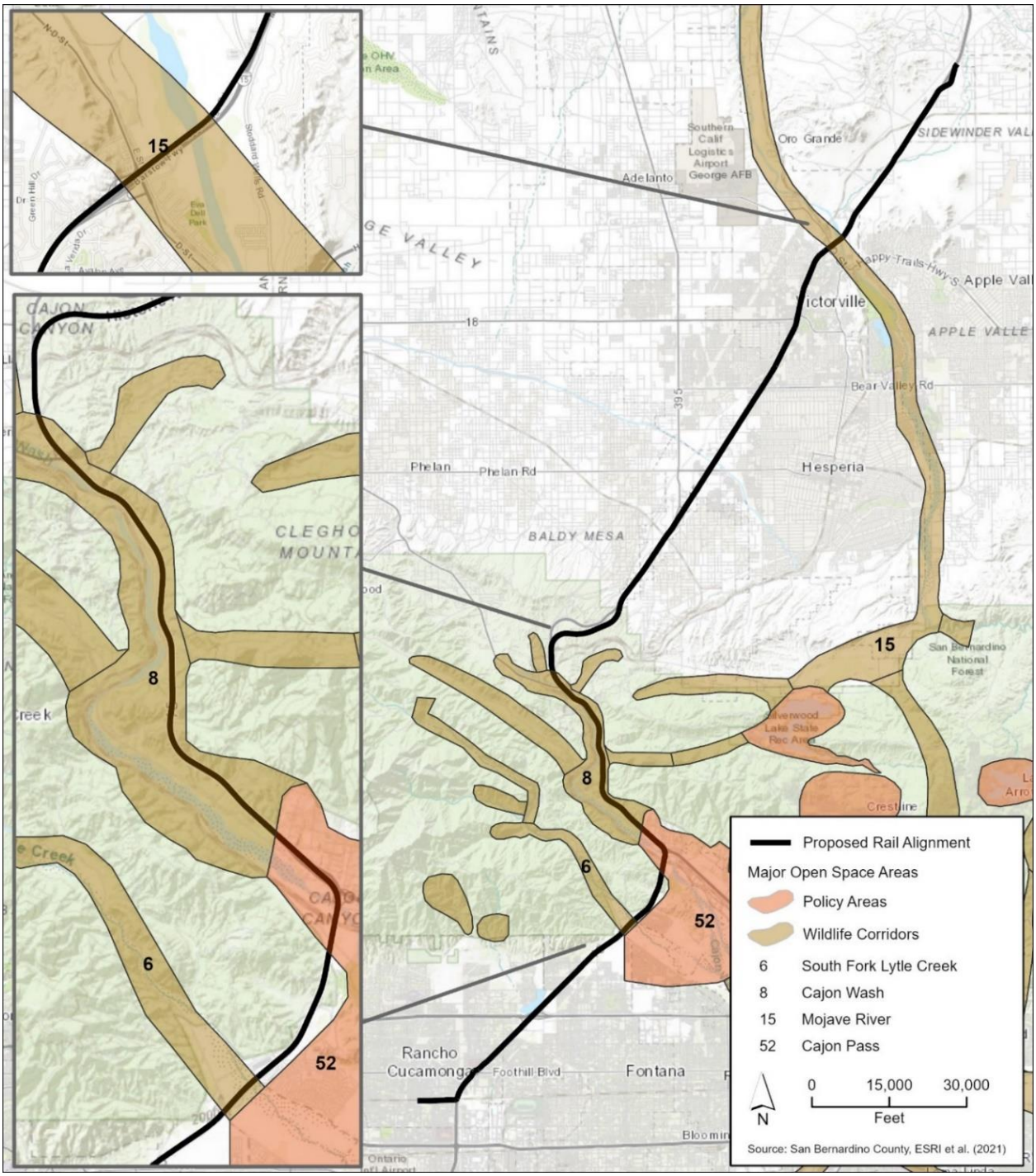

Figure 4. Wildlife Corridors in the Project Area, as Mapped by San Bernardino County.

6.7. Migratory Birds

Migratory birds pass through the Project region in fall and spring along the Pacific Flyway. This migratory corridor extends from Alaska to the southern tip of South America and includes the

entire width of California. Approximately 19 migratory species are likely to be present in the study area each year (AKN 2022).

Birds of conservation concern warrant special attention (USFWS 2022a) and are of concern throughout their range. Birds of conservation concern 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*).

Habitat patches with cover and water sources are critical stopover points for migrating birds. In the study area, the riparian habitats of the Mojave River provide a vital link for migratory birds. Just upriver from the study area, the Mojave Narrows Regional Park in Victorville provides important habitat for resident and migratory birds. Migratory birds may also use riparian areas in Cajon Canyon, Cajon Wash, and Lytle Creek.

6.8. Bald and Golden Eagles

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

Bald eagles establish a territory and nest in the vicinity of open water. Bald eagles are monogamous and may mate for life. In the Project area, known territories occur near the Mojave River and south of the project area at the Santa Ana River (CNDDB 2022). Bald eagle prey on a number of species, but fish and smaller waterfowl are the primary prey in most areas. A well-known breeding bald eagle pair use area around Big Bear Lake in the San Bernardino Mountains, approximately 25 miles south of the project area.

Golden eagles are one of the largest, fastest, and nimblest raptors in North America and can live up to 30 years in the wild. Their range includes the entire Project area where they tend to be present year-round in established territories. They use open habitats, including juniper, grasslands, desert scrub and washes, valley and foothill riparian areas, and open areas created by wildfire on rolling foothills, canyons, and mountainous landscapes.

Golden eagles are monogamous and may mate for life, building large nests which they tend to reuse. Nests are built on cliff-walled canyons, occasionally in large trees in open areas, and they are known to sometimes build nests on electrical transmission and wind turbine towers. Golden eagles hunt rodents, rabbits, ground squirrels, and prairie dogs, and are known to opportunistically consume dead livestock and other carrion. The Apple Valley area has a known occupied territory reported in 2011 (CNDBB 2021), but more recent data regarding occupation was not identified. Golden eagles have been recently observed in the Cajon Canyon area and at Glen Helen Regional Park (eBird 2022).

Threats to these large raptors include habitat loss, secondary assimilation of rodenticides and insecticides, recreation, road strikes, electrocution, and wind turbine strikes.

6.9. ESA-Listed and Candidate Species in the Study Area

Table 15 lists the ESA-listed and candidate plant and animal species that were identified in the study area (USFWS 2022a and 2022b).

Table 15. ESA-Listed Species that May Occur in the Project Area

Species Name	Federal Status	Suitable Habitat Likely Present
Flowering Plants		
Braunton's milk-vetch (*Astragalus brauntonii*)	Endangered	No
San Diego ambrosia (*Ambrosia pumila*)	Endangered	No
Santa Ana River woolly-star (*Eriastrum densifolium* ssp. *sanctorum*)	Endangered	Yes
Slender-horned spineflower (*Dodecahema leptoceras*)	Endangered	Yes
Amphibians		
Arroyo (southwestern) toad (*Anaxyrus californicus*)	Endangered	Yes
Mountain yellow-legged frog (*Rana muscosa*)	Endangered	No
Birds		
California condor (*Gymnogyps californianus*)	Endangered	No
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 occidentalis)*	Threatened	Yes
Fish		
Mohave tui chub (*Gila bicolor* ssp. *mohavensis*)	Endangered	No
Santa Ana sucker (*Catostamus santaanae*)	Threatened	No
Insects		
Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*)	Endangered	No
Monarch butterfly (*Danaus plexippus*)	Candidate for listing	Yes
Mammals		
San Bernardino Merriam's kangaroo rat (*Dipodomys merriami parvus*)	Endangered	Yes

Species Name	Federal Status	Suitable Habitat Likely Present
Reptiles		
Desert tortoise (*Gopherus agassizii*)	Threatened	Yes

Sources: USFWS 2022d and 2022b

6.9.1. ESA-Listed Plant Species

6.9.1.1. Braunton's Milkvetch (Endangered)

Braunton's milkvetch (*Astragalus brauntonii*) is a perennial native herb that was listed as endangered in 1997 (USFWS 1997). The species is endemic to California, where it grows in coastal prairie grasslands, coastal sage scrub, and chaparral plant communities of the Los Angeles Basin. It appears to be restricted to calcareous soils. When it was listed in 1999, approximately 3,000 individual plants were known, and none was in the vicinity of the study area (USFWS 1999). According to Calflora, the species was documented in the San Gabriel Mountains in San Bernardino County in 2018, but not within 15 miles of the Project (Calflora 2021).

6.9.1.2. San Diego Ambrosia (Endangered)

The San Diego ambrosia (*Ambrosia pumila*) was listed as endangered in 2002 due to degradation of habitat (USFWS 2002a). The species is a perennial herb endemic to southern California. It occurs in a variety of habitats, including upland clay slopes, sparse grasslands, marginal wetlands, and alkali playas. The species flowers from May through October. The species has not been observed in San Bernardino County (Calflora 2021).

6.9.1.3. Santa Ana River Woolly-Star (Endangered)

The Santa Ana River woolly-star (*Eriastrum densifolium* ssp. *sanctorum*) was listed as endangered in 1987 (USFWS 1987; CNDDB 2022). The Santa Ana River woolly-star is a perennial herb found in Riverside and San Bernardino Counties; it formerly extended into Orange County. Generally, the Santa Ana River woolly-star grows on sandy to gravelly soils at elevations ranging from 450 feet to 2,000 feet above mean sea level. The plant typically blooms from June through August.

The Western Riverside County Multispecies HCP (USFWS 2003) and the Upper Santa Ana River Wash HCP (ICF 2020) address Santa Ana River woolly-star conservation. While both HCPs address geographic areas south of the project vicinity, the HCPs provided information on suitable habitat characteristics and conservation approaches.

Suitable habitat for the woolly-star is present within Cajon Canyon and Lytle Creek (Buck-Diaz and Evans 2011) in the study area. No Santa Ana River woolly-star plants were found during surveys associated with Caltrans' I-15/I-215 Interchange Improvement project (Caltrans 2011) or at the I-15/New Fontana Maintenance Facility area (Caltrans 2019).

6.9.1.4. Slender-Horned Spineflower (Endangered)

The slender-horned spineflower (*Dodecahema leptoceras*) was listed as endangered in 1987 (USFWS 1987; CNDDB 2022). The slender-horned spineflower is an endemic annual plant in the buckwheat family that occurs in foothills of the San Gabriel Ranges of Los Angeles, San Bernardino, and Riverside Counties from 600 to 2,225 feet in elevation (Calflora 2021). The plant blooms from April to June on silt soils typical of alluvial fans and on higher benches within the alluvial fan areas subject to only rare flood events (USFWS 2010). The plant occurs among a broad array of associated plants (trees, shrubs and herbs) without a single associated indicator species or community type (Allen 1996).

Populations are known from the Lytle Creek, Cajon Canyon, and Cajon Wash areas in the project area (USFWS 2010). No slender-horned spineflower plants were found during surveys associated the I-15/I-215 Interchange Improvement project (Caltrans 2011) or the I-15 New Fontana Maintenance Facility (Caltrans 2019).

6.9.2. ESA-Listed Animal Species

6.9.2.1. Arroyo (Southwestern) Toad (Endangered)

The arroyo (southwestern) toad was listed as an endangered species in 1994 (USFWS 1994b). The arroyo toad is a small toad restricted to rivers and streams that have persistent water along with shallow, gravelly pools adjacent to sandy terraces. Breeding occurs from late March until mid-June.

Arroyo toads were historically found along many drainages in southern California from San Luis Obispo County to San Diego County, but now they survive as small, isolated populations within the headwaters of a few of those drainages (USFWS 2011). In the project vicinity, one population of arroyo toad had been identified as recently as 2007 along the in the Cajon Wash on the west side of I-15 on the San Bernardino National Forest (CNDDB 2022). A second population had been identified at the Mojave River at Victorville which may have been extirpated with no detections in more than 30 years (USFWS 2014).

6.9.2.2. Mountain Yellow-Legged Frog (Endangered)

The mountain yellow-legged frog was listed as endangered in 2002 (USFWS 2002b). The species is highly aquatic and is rarely found away from water. The frog hibernates and emerges shortly after the snow melts to forage and breed. The current range of the species includes the Angeles National Forest northwest of the I-15 corridor (USFWS 2022a). The frog is highly unlikely to be in the project vicinity because there is no perennial water.

6.9.2.3. California Condor (Endangered)

The California condor was listed as endangered in 1967 (USFWS 1967) due to loss of habitat, impairment of reproduction from pesticide use, and direct mortality from shooting and egg collecting. The condor's current mapped range includes northern Rancho Cucamonga and Cajon Canyon where I-15 traverses along the eastern canyon edge and crosses over Cajon Wash (USFWS 2022a). A condor's full range can be a 30-kilometer radius from its nesting site.

The California condor feeds on the carcasses of a variety of animals, including domestic cattle, sheep, horses, and squirrels. Condors require open terrain to forage because they need a long runway for approach and takeoff. While they formerly foraged along coastal shorelines and rivers, current foraging areas are almost entirely privately-owned ranch lands (Tesky 1994).

The condor is protected under several HCPs covering geographic areas from Bakersfield, California, approximately 150 miles northwest of Rancho Cucamonga and the Project.

Condors could be present in the study area and nesting throughout the year. However, given condors' proclivity for steep cliffs and open ranch land, there is a low likelihood that they would be nesting or foraging within or near the I-15 corridor.

6.9.2.4. Coastal California Gnatcatcher (Threatened)

The USFWS listed the coastal California gnatcatcher as a threatened species in 1993 due to loss of habitat (USFWS 1993a). The coastal California gnatcatcher is a small, drab, insectivorous songbird endemic to the mountains of southern California. The bird is typically found in stands of coastal scrub, where it breeds between mid-February and the end of August with peak activity from mid-March to mid-May (USFWS 2019). During the non-breeding season, it may forage in chaparral habitats (USFWS 2007). The bird's diet consists of leafhoppers, beetles, bugs, and spiders.

Suitable habitat for the gnatcatcher is present within the Riversidean Alluvial Fan Sage Scrub habitats that occur within Cajon Canyon and Lytle Creek (Buck-Diaz and Evans 2011). The species is known to utilize adjacent habitat types that occur in the vicinity of Coastal Scrub for foraging and other activities. The species has been documented adjacent to I-15 around Lytle Creek and in northeastern Rancho Cucamonga (CNDDB 2022).

6.9.2.5. Least Bell's Vireo (Endangered)

The least Bell's vireo (*Vireo bellii pusillus*) was listed as an endangered species in May 1986 (USFWS 1986).

The bird prefers primarily riparian habitat with dense vegetation cover within 6 feet of the ground and a dense, stratified canopy. Least Bell's vireo typically breeds from late March through mid-September.

Past observations of paired least Bell's vireos and nests suggest nesting activity has occurred in the project vicinity along the Mojave River, from the Mojave Narrows Regional Park to Bell Mountain Wash near Victorville (USFWS 1994a). Recent sightings of the birds have occurred along the Mojave River, just north of the I-15 crossing (CNDDB 2022).

6.9.2.6. Southwestern Willow Flycatcher (Endangered)

The southwestern willow flycatcher was added to the federal endangered species list in March 1995 (USFWS 1995). The southwestern willow flycatcher breeds in dense riparian shrub communities where surface water is present, including at rivers, wetlands, and reservoirs.

Suitable habitat for the southwestern willow flycatcher may be present, and the species has been spotted multiple times throughout Cajon Canyon (CNDDB 2022). Riparian habitat in the Mojave River provides suitable habitat.

The Town of Apple Valley Multispecies HCP and the Desert Renewable Energy Conservation Plan both address conservation approaches for this species in the vicinity of the project area (Apple Valley 2022).

6.9.2.7. Western Yellow-Billed Cuckoo (Threatened)

The Western Distinct Population Segment (DPS) of yellow-billed cuckoo was listed as a threatened species in 2014 (USFWS 2014b). The Western DPS is a distinct population that occurs west of the Rocky Mountains. The western yellow-billed cuckoo is currently found only in the southern part of its breeding range in California, Nevada, Arizona, New Mexico, and parts of Mexico (USFWS 2021).

The majority of the Mojave River is characterized by sub-surface flow, but in the vicinity of the study area, a 15-mile river reach is present where shallow subsurface and some surface flow support riparian cottonwood-willow forest that provides suitable habitat features for the western yellow-billed cuckoo. The species was documented as present in early July 2017 and was reported to have been observed in 2020 at the Palisades Ranch conservation property approximately 11 miles downstream of the Proposed Action on the Mojave River (Estacio 2020).

6.9.2.8. Mohave Tui Chub (Endangered)

The Mohave Tui chub (*Gila bicolor* ssp. *mohavensis*) is the only fish native to the Mojave River and was listed as endangered in 1970 (USFWS 1970). Damming of the river's headwaters and the introduction of non-native arroyo chub led to its decline (CDFW 2021b). The lack of surface water and degradation of riverine habitats have removed the fish from many locations. Formerly, the fish utilized deep pools and slough areas throughout the Mojave River. Currently, the fish is known to occur only in three locations, none of which occur within 60 to 90 miles of the study area (CDFW 2021b).

6.9.2.9. Santa Ana Sucker (Endangered)

The Santa Ana sucker was listed as threatened in 2000 (USFWS 2000). Its current range includes the Santa Ana River approximately 15 miles southeast of Rancho Cucamonga and outside of the project area (USFWS 2013b).

6.9.2.10. Delhi Sands Flower-Loving Fly (Endangered)

The Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*) was listed as endangered in 1993 and is the first and only fly to be listed under the ESA (USFWS 1993b). The fly uses the Delhi Sands, a fine sandy soil. The soil formed on sandy floodplains, alluvial fans, and terraces in San Bernardino and Riverside Counties (USDA NRCS 2022). The fly's current range includes the southern part of Rancho Cucamonga just outside of the Project's southern extent (USFWS 2022a). However, the area of the I-15 corridor is unlikely to support the fly's habitat because no Delhi Sands are mapped in the vicinity of the Project (USDA NRCS 2022).

6.9.2.11. Monarch Butterfly (Candidate)

The monarch butterfly is a candidate under consideration for listing under the ESA since petitioning in 2014. Western monarch populations have been in steep decline over the last 20 years (USFWS 2020). The western monarch migrates long distances to overwintering sites, some of which are located near the California coastline both northwest and west of the project area. The monarch is widespread and is known to occur in San Bernardino County. Migrating monarchs would pass through the study area to and from inland areas, to and to and from overwintering sites along the coast. Along the migratory pathway, areas of water sources have been shown to be important stopping locations (USFWS 2020).

The I-15 corridor is unlikely to provide extensive support to the monarch because no known areas of milkweed (*Asclepias* spp.) obligate host plants are present, nectar sources and open water areas are limited, and the Project area does not provide overwintering habitat (USFWS 2022a).

6.9.2.12. San Bernardino Merriam's Kangaroo Rat (Endangered)

San Bernardino Merriam's kangaroo rat was listed as endangered in 1998 (USFWS 1998) due to loss and fragmentation of habitat. Its historical range is from the San Bernardino Valley west to the Menifee Valley in Riverside County within coastal sage scrub habitat that forms on alluvial fans. The kangaroo rat is often found where it digs shallow burrows in sandy soils. It breeds from January through November with peak breeding in late June. The kangaroo rat does not need to drink water and feeds on a variety of seeds. San Bernardino Merriam's kangaroo rat has been documented using areas heavily disturbed by humans, including non-native grasslands, margins of orchards, and out-of-use vineyards.

Suitable habitat in Cajon Canyon and Lytle Creek may exist within the study area. The CNDDB reports multiple sightings of the kangaroo rat around Etiwanda Creek Wash and San Sevaine Canyon Wash west of the project area, and at Cajon Canyon in the vicinity of the study area. Suitable habitat is also present at the I-15/I-10 interchange where the alignment crosses Cajon Wash (CNDBB 2022).

6.9.2.13. Desert Tortoise (Threatened)

The desert tortoise was listed as threatened in 1990 due to a decline in population and threat of habitat destruction (USFWS 1994c). The tortoise can generally live in a variety of habitats in the Mojave and Sonoran Deserts, from sparse desert scrub to Joshua tree habitats, and in washes, dunes, and occasionally rocky slopes. The desert tortoise prefers to eat herbaceous perennial plants, annual wildflowers, and native grasses. The tortoise digs earthen burrows near desert shrubs or near rocks. Burrows are essential to tortoise survival.

Suitable habitat for the desert tortoise may exist in the study area along Section 1, High Desert, and Section 2, Cajon Pass.

6.9.2.14. Desert Bighorn Sheep – Clarification

Desert bighorn sheep (*Ovis canadensis nelsoni*) have several subpopulations. One subpopulation is present in the San Gabriel Mountains and is not protected under the ESA. A

second subpopulation, called Peninsular bighorn sheep (Peninsular Distinct Population Unit) is listed as endangered under the ESA and is not in the vicinity of the Project.

The natural range of all desert bighorn sheep includes the San Gabriel Mountains (CDFW 2020; Holl and Bleich 2009; Krausman 2017). Existing populations of desert bighorn sheep in the San Gabriel Mountains number about 300 animals and are distributed in four ewe groups (subgroups). The subgroup of desert bighorn sheep (Cucamonga) nearest to the study area uses winter and spring ranges at elevations from approximately 3,200 to 6,200 feet in the Angeles National Forest; the nearest area is about 5 miles west of the study area (Epps et al. 2004; Holl and Bleich 2009; Abella et al. 2011).

The ESA-listed Peninsular Distinct Population Unit of desert bighorn sheep occurs in San Diego, Riverside, and Imperial Counties. The range of Peninsular bighorn sheep does not extend into the study area.

Thus, there are no ESA-listed subpopulations of bighorn sheep likely to be present in the study area.

6.10. Designated Critical Habitats

The proposed rail alignment crosses designated critical habitat for arroyo toad, San Bernardino Merriam's kangaroo rat, and southwestern willow flycatcher (**Table 16**).

Table 16. ESA-Listed Species, Suitable Habitat, and Designated Critical Habitat that May Occur in the Project Area.

Designated Critical Habitat	Location in Study Area
Arroyo (southwestern) toad (*Anaxyrus californicus*)	Cajon Canyon
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Mojave River
San Bernardino Merriam's kangaroo rat (*Dipodomys merriami parvus*)	Cajon Wash and Lytle Creek

6.10.1.1. Arroyo (Southwestern) Toad Critical Habitat

Designated critical habitat (USFWS 2011) for arroyo toad includes a mosaic of habitats that provide for breeding, egg and tadpole development in aquatic sites, juvenile and subadult maturation, foraging, sheltering in upland terraces, and migration and dispersal corridors between the habitats. Because arroyo toad may travel up to 1 mile between aquatic and upland habitats, migration corridors are important. Arroyo toad critical habitat is mapped Cajon Canyon, from the I-15/SR 138 junction to northwest of the I-215/I-15 interchange (shown in **Appendix A**).

Mapped wildlife habitat types include Valley Foothill Riparian, Desert Scrub, Riverine and Mixed Chaparral. Portions of existing I-15 are within the designated critical habitat in Cajon Canyon. Existing threats are moderate and primarily result from recreational activities, development, and alterations in hydrology.

6.10.1.2. San Bernardino Merriam's Kangaroo Rat Critical Habitat

Designated critical habitat (USFWS 2002c) for San Bernardino Merriam's kangaroo rat occurs within the project area in Cajon Canyon, Cajon Wash, Lytle Creek, and area in North Fontana. Vegetation associations for the kangaroo rat includes pioneer and intermediate Riversidean Alluvial Fan Sage Scrub habitats where shelter and patches of suitable soils for burrowing are present. Existing threats are moderate and primarily result from recreational activities, development, and alterations in hydrology (USFWS 2002c).

6.10.1.3. Southwestern Willow Flycatcher Critical Habitat

Southern willow flycatcher critical habitat (USFWS 2013a) is mapped at the Mojave River where the I-15 corridor crosses the waterway. Territories for southwestern willow flycatcher would occur within Desert Riparian, Riverine, and Valley Foothill Riparian habitat types. These are areas dominated by native plant species with only minor amounts of invasive plant species present, although non-native tamarisk (*Tamarix* sp.) is known to provide some habitat elements. Threats to the critical habitat include habitat destruction from development and riparian vegetation die-back because of drought.

6.10.1.4. Other Designated Critical Habitat Locations not in the Project Study Area

Several other species have designated critical habitat which lies outside of the study area and would not be affected by project construction or operation.

These include:

- Mountain yellow-legged frog (*Rana muscosa*). The nearest designated critical habitat is north of Rancho Cucamonga, in perennial waterways in the Angeles National Forest, (USFWS 2006) and outside the study area.
- Coastal California gnatcatcher. The nearest critical habitat is in the Jurupa Hills, approximately 5 miles southwest of the southern-most extent of the study area.
- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*). The nearest designated critical habitat to the study area is approximately 130 miles away at the South Fork Kern River (USFWS 2021).
- California condor (*Gymnogyps californianus*). The nearest critical habitat is at specific locations within the Los Padres and Sequoia National Forests more than 100 miles northwest of the study area (USFWS 1976).
- Desert bighorn sheep (*Ovis canadensis*). As stated above, the Peninsular subpopulation of desert bighorn sheep (*Ovis canadensis nelsoni*) is listed as endangered. The nearest critical habitat for the Peninsular desert bighorn sheep is located in Riverside and Imperial Counties, south of the study area (USFWS 2009). Critical habitat for this subpopulation does not extend north into San Bernardino County in the project area. No desert bighorn sheep critical habitat is present in the study area.

6.11. Background Noise

Background noise in the study area is principally generated by existing traffic along I-15. Generally, loudness associated with highways increases with higher numbers of trucks, overall traffic volume, and vehicle speed. Topography and atmospheric conditions also determine distance and direction of propagation of noise (FHWA 2011).

According to the *I-15 Comprehensive Corridor Study* (SCAG, SANBAG, and Caltrans 2005), the average daily traffic on I-15 at SR 138 in the Cajon Pass area was between 110,000 and 120,000 vehicles in 2005 and had been increasing about 2 percent a year over the 10 years previous. Up to double the traffic volume was projected for 2025. I-15 is the primary freight corridor between Los Angeles and all states to the north and east; thus, truck traffic comprises up to 14 percent of the vehicles. Average traffic speed is highly variable through the corridor with slow uphill sections (35 to 55 mph) along the up to 6 percent grade in the 5 miles leading to Cajon Summit, at congested interchanges, and during heavy traffic. High-end highway speeds (70 to 80 mph) are normal in the flatter and less congested portions of the Project, mainly north of Victorville.

Existing noise levels in the Project area were measured in October and November 2021 in urban noise sensitive areas where human receptors would be present (Cross-spectrum Acoustics 2022). Equivalent continuous sound (L_{eq}) ranged from 54.5 to 76.7 BA, including both short-term (1-hour) and long-term (24-hour) monitoring. None of the measurements was taken in Section 2, Cajon Pass, or in undeveloped areas adjacent to the highway. Noise levels adjacent to the highway in Cajon Pass would include climbing and descending lanes on the 6 percent grade and could be slightly higher than those recorded in the urban areas due to additional engine noise.

6.12. Santa Ana Winds

Down-slope, dry, high wind events, known as Santa Ana winds, with sustained winds in excess of 40 miles per hour funnel through Cajon Pass seasonally, and sometimes at extreme forces, such as 74 miles per hour or greater. North Fontana in the vicinity of I-15 and Lytle Creek is known to be affected by these extreme force wind events. The Old Fire, which burned a wide area across Cajon Pass including the project area, was associated with a Santa Ana wind event.

6.13. Biological Resources Relevant to Tribes

Government-to-government consultation has been undertaken by FRA and tribal entities that may be affected by the Project. Approximately eight indigenous communities historically occupied the region in which the Project is proposed. 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. Essential practices such as hunting, fishing, trapping, and gathering provide food and raw materials (Berkes 1999). Stewardship of plant-wildlife connections beyond those covered by the federal ESA, MBTA, and BGEPA provides longevity of culturally important habitats, native plants, and wildlife.

Traditional cultural properties that are also biological resources may be present along the project alignment, but they have not been identified. Therefore, impacts of the Project on identified traditional cultural properties are not known.

Among the multiple people indigenous to the Los Angeles Basin, San Gabriel Mountains, and western Mojave Desert, a wide range of plant species are harvested for multiple purposes, including basket weaving, art, food, medicine, and ceremonial/religious uses (Dunbar-Ortiz 2014; Parlee and Berkes 2006; Hammett 2000; Stevens 2003). Several plant species used for food and materials have been managed for thousands of years by native groups using specific gathering techniques to maximize both harvest and sustainability (Parlee and Berkes 2006). Herbs, grasses, shrubs, and trees that may contribute to these traditional practices are present in the project vicinity . In **Table 17**, a sample of these plants are listed by the wildlife habitat type in which they may occur.

Table 17. Plants Possibly Present in the Study Area that May Contribute to Essential Practices and Traditional Cultural Practices

Wildlife Habitat Type in the Study Area	Plant Scientific Name (Genus)	Common Name of Plant Within the Genus Likely Present in the Study Area (Common Name)
Joshua Tree		
	Yucca	Joshua tree
	Diplacus	Rock monkeyflower
	Eriodictyon	Narrow-leaved yerba santa
	Eriogonum	Daisy
	Opuntia	Prickly pear
Chaparral		
	Hesperoyucca	Chaparral yucca
	Arctostaphylos	Manzanita
	Ceanothus	Hairy ceanothus
	Diplacus	Rock monkey
	Eriodictyon	Yerba santa
	Eriogonum	California buckwheat
	Malosma	Laurel sumac
	Muhlenbergia	Scratchgrass
	Opuntia	Beavertail, prickly pear
	Quercus	Scrub oak
	Rhus	Sugarbush

	Prunus	Hollyleaf cherry
	Sambucus	Blue elderberry
	Tricostema	Wooly bluecurls
Coastal Sage Scrub		
	Dipterostemon	Wild hyacinth
	Hesperoyucca	Chaparral yucca
	Artemisia	Wild tarragon
	Salvia	California sagebrush
	Chlorogalum	Soap lily
	Diplacus	Bush monkey flower
	Eriogonum	California buckwheat
	Helianthus	Hairy-leaved sunflower
	Opuntia	Prickly pear
	Sambucus	Blue elderberry
	Salvia	Sage (black, sacred, and chia)
	Pinus	One-needle pine
Riparian and Riverine		
	Salix	Willows
	Plantanus	Western sycamore
	Anemopsis	Yerba mansa
	Juncus	Rush (long-leaved, basket)
	Juglans	Southern California black walnut
	Diplacus	Scarlet monkeyflower
	Populus	Fremont cottonwood
Pinon-Juniper		
	Pinus	One-needle pine
	Juniperus	California juniper
	Ceanothus	Buckbrush

Wildlife species that may contribute to essential practices occur in one or more wildlife habitat types present in the project vicinity and include large and small mammals in addition to

multiple reptiles, amphibians, and birds. A sample of these species are listed in **Table 18**. Large mammals and predators are generally restricted to areas with large habitat areas, such as within the San Bernardino National Forest in Section 2, Cajon Pass. Coyote, racoon, and some squirrels have adapted to urban habitats and are present throughout the urban portions of the project vicinity.

Table 18. Wildlife Species Present in Project Vicinity that May Contribute to Essential Practices of Indigenous Communities

Common Name	Scientific Name: Genus and Species or Family
Mountain lion	*Puma concolor*
Black bear	*Ursus americanus*
Bobcat	*Lynx rufus*
Coyote	*Canis latrans*
Mule deer	*Odocoileus hemionus*
California ground squirrel	*Otospermophilus beecheyi*
Desert cottontail	*Sylvilagus audubonii*
Brush rabbit	*Sylvilagus bachmani*
Black-tailed jackrabbit	*Lepus californicus*
California quail	*Callipepla californica*
Falcons, hawks, and owls	Falconidae, Accipitridae, Strigidae, and Tytonidae
Songbirds (perching birds)	Passeriformes
Hummingbirds	Trochilidae
Roadrunner	*Geococcyx californianus*
San Diego gopher snake	*Pituophis catenifer annectens*
Red-racer coachwhip snake	*Coluber flagellum*
California king snake	*Lampropeltis californiae*
California striped racer snake	*Coluber lateralis lateralis*
San Bernardino ring-necked snake	*Diadophis punctatus modestus*
South coast garter snake	*Thamnophis sirtalis*
Southern pacific rattlesnake	*Crotalus oreganus helleri*
Woodland alligator lizard	*Elgaria multicarinata webbii*
Great basin fence lizard	*Sceloporus occidentailis longipes*
Western red-tailed skink	*Plestiodon gilberti rubricaudatus*

Common Name	Scientific Name: Genus and Species or Family
California horned lizard	*Phrynosoma coronatum*
Blainville's horned lizard	*Phrynosoma blainvillii*
California toad	*Anaxyrus boreas halophilus*
Western spadefoot	*Spea hammondii*

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7. Environmental Consequences and Mitigation

This section describes potential effects related to project construction and operation. It also describes potential avoidance, minimization, and mitigation measures.

7.1. Construction Effects

Impacts associated with construction would occur in the temporary and permanent LOD. Construction effects also may indirectly affect areas through generation of fugitive dust, construction noise, or lighting at night. The following is organized by the location of construction.

7.1.1. Railway

The Project could permanently remove areas of wildlife habitat that are potentially suitable for ESA-listed species. Construction of the Project may modify wildlife habitat directly and indirectly by affecting habitats, vegetation, and soils, and 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. Construction would place ESA-listed species at risk of direct mortality, could result in burrow and nesting habitat loss, and would reinforce existing barriers to wildlife movement. Areas of habitat would be directly impacted temporarily by construction, including designated critical habitat for San Bernardino Merriam's kangaroo rat, arroyo toad, and southwestern willow flycatcher. **Appendix A** provides maps of habitat types along with the limits of disturbance showing areas of temporary impact on habitat types along the alignment during construction. The maps also show areas of designated critical habitat.

7.1.1.1. Vegetation Disturbance

Construction staging and stockpiling, 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- or long-term. Changes in vegetation may result in loss of wildlife habitat or degradation of habitat functions. Impacts to individual plants that may contribute to essential practices could occur as a result of construction activities related to ground disturbance, such as clearing, grading, excavation, and filling, where these plants are present.

Effects due to vegetation disturbance could be mitigated by timing construction activities to avoid nesting season and by restoration of areas temporarily disturbed during construction.

7.1.1.2. Construction Noise

Construction noise could temporarily affect special status wildlife. Noise impacts are typically indirect, although individuals can be directly affected if noise causes physical damage to an individual's auditory system. 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.

Sound attenuates with distance from the source and construction noise impacts would occur where project-generated construction noise levels were above traffic noise levels. The loudest construction noise is generated when pile drivers (95 dBA for the maximum peak [dB_{Lmax}]) or vibratory hammers (85 dB_{Lmax}) are used. It is estimated that such levels of construction noise would attenuate to background levels at 5,200 feet over hard ground or ground with sparse vegetation. Pile-driving for bridge construction, if needed, would create noise impacts on avian, terrestrial and aquatic species as noise propagates in all directions including upward and through water.

Noise effects may be mitigated by implementing various noise reduction strategies during construction. Timing activities to occur when ESA-listed species are least likely to be present is commonly implemented.

7.1.1.3. Fugitive Dust

Construction activities such as vegetation clearing and excavation would expose soils and could result in increased wind erosion, creating construction-generated fugitive dust. Fugitive dust can also result from demolition of existing structures. Fugitive dust can affect vegetation over an area wider than the project footprint. Generation and deposition can negatively affect plant physiology and may affect plant productivity. Fugitive dust can directly affect some species, as well as indirectly negatively affect wildlife through ingestion of dust-laden vegetation.

Mitigation of fugitive dust during construction generally relies on reducing soil disturbance to the minimum amount possible; covering open soil areas when not being worked; and strategic use of dust suppression, such as watering for all activities.

7.1.1.4. 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 would further reduce potential effects on hydrology during construction.

7.1.1.5. Invasive Species Facilitation

Construction activities could introduce or spread invasive plant species to areas with native vegetative communities. Ground disturbing activities and operation of construction equipment could disperse seed of invasive plants as a result of soil movement. Changes in desert soil crust due to tracking and cracking by construction vehicles could loosen soils and facilitate seed dispersal via wind-blown soil. Weed species are adapted to soil disturbance and the abundant seeds are known to be readily transported by vehicles.

Invasive, non-native plant species can displace native plant populations and reduce wildlife habitat quality. Control of invasive species should be identified as an essential element of construction practices, which would mitigate the risk of facilitating invasive species establishment.

7.1.1.6. Human Subsidized Predation

Human "subsidized predation" refers to human activities that alter resource availability to foraging generalist wildlife species and as a result, increase predator populations above levels that would occur without the human activity. The unnatural overabundance of predators is attributed to increased availability, for example, of perching sites, nesting sites, food, and water. Roadkill along transportation corridors and trash are generally the main sources of subsidized food sources for generalist predators.

The presence of construction crews may unintentionally subsidize foraging generalist species, such as ravens, coyotes, racoons, and fox, and in turn, may temporarily increase predation on native species present in the study area. In Section 1, High Desert, raven populations have dramatically increased in recent years, at least in part due to human activities providing food, along with nest sites and perches. Generalist predators are known to prey on juvenile mammals, reptiles, amphibians, and migratory and resident birds, and increased predator densities could result in increased mortality of individuals. During construction, implementing a program that clearly prohibits activities that create food sources would mitigate this potential impact.

The construction phase of the Project may modify wildlife habitat directly and indirectly. Wildlife habitat within the study area would experience direct temporary or permanent impacts related to construction of the railway. Although the duration of construction-related impacts is temporary, habitats may be permanently altered if they are unable to return to a preconstruction condition.

7.1.1.7. Wildlife Habitats

The analysis of impacts on mapped habitat areas demonstrated temporary impacts on habitat types in the study area during construction. Temporary impacts during construction would affect approximately 419 acres of wildlife habitat. **Appendix A** provides maps showing areas of temporary impact on habitat types along the in the study area.

Section 1 – High Desert

In Section 1, High Desert, several locations of Caltrans Right-of-way currently retain native vegetation; these are located within the limits of disturbance and would be affected by the Project. **Table 19** provides a summary of temporary impact areas for Section 1, High Desert.

Annual Grasslands habitat is mainly vegetated with non-native grass species and other invasive forbs. This habitat type often typifies areas of previously disturbed vegetation and is frequently mapped adjacent to I-15 in the more developed settings of the alignment. While these areas may have been disturbed from native habitat conditions, Annual Grasslands habitat type provides some level of habitat function and thus impacts on these areas were evaluated.

Table 19. Section 1, High Desert, Temporary Impacts on Wildlife Habitat Types

CWHR Wildlife Habitat Type	Habitat Code[a]	Temporary Impact Area (acres)
Alkali Desert Scrub	ASC	3.93
Annual Grassland	AGS	2.63
Barren	BAR	0.16
Desert Riparian	DRI	8.19
Desert Scrub	DSC	85.70
Joshua Tree	JST	0.35
Juniper	JUN	1.94
Mixed Chaparral	MCH	0.56
Riverine	RIV	1.82
Sagebrush	SGB	8.08
Valley Foothill Riparian	VRI	0.46
Total for Section 1 – High Desert		**113.81**

a. CWHR codes are shown on the Appendix A maps.

Riverine habitat type at the Mojave River crossing is estimated to be impacted temporarily during construction (1.8 acres). Associated floodplains at the Mojave River crossing support Desert Riparian habitat and approximately 8 acres of temporary impact during construction would potentially occur. Desert Riparian habitat in this location is associated with ESA-listed species: southwestern willow flycatcher, least Bell's vireo, and arroyo toad. The length of time to restore Desert Riparian and Riverine habitat structure following disturbance is estimated to be 5 to 7 years, and temporary impacts might be considered permanent impacts as a result.

Joshua Tree habitat in the vicinity of the California Aqueduct crossing in Hesperia would be temporarily impacted (0.35 acre) by construction. This habitat is limited in extent due to the urban surroundings, however this location is associated with surface water, which is very limited in the study area. Desert Scrub, Juniper, and Joshua Tree habitat types are known to support desert tortoise. Desert Scrub, Joshua Tree, and Juniper habitats are slow to recover following disturbance, and restoration is very difficult. Temporary impacts of approximately 88 acres may be considered permanent if recovery would be long-term or impossible following disturbance to these wildlife habitats.

Section 2 – Cajon Pass

Table 20 summarizes temporary impact areas for Section 2, Cajon Pass. Similar to Section 1, desert tortoise habitat (Desert Scrub) potentially would be impacted. Approximately 83 acres of temporary impact on Desert Scrub may be considered long-term or permanent. Temporary impacts on mixed chaparral would total approximately 88 acres. Mixed Chaparral hosts a

diversity of avian and terrestrial wildlife that utilize it for forage and cover and during movements to adjacent areas for breeding.

Table 20. Section 2, Cajon Pass, Temporary Impacts on Wildlife Habitat Types

CWHR Wildlife Habitat Type	Habitat Code[a]	Temporary Impact Area (acres)
Chamise-Redshank, Mixed Chaparral	CRC, MCH	3.19
Coastal Scrub	CSC	5.72
Desert Riparian	DRI	0.85
Desert Scrub, Desert Wash	DSC, DSW	1.38
Desert Scrub	DSC	81.85
Desert Wash	DSW	0.17
Mixed Chaparral	MCH	87.76
Total for Section 2 – Cajon Pass		**180.91**

a. CWHR codes are shown on the Appendix A maps.

Section 3 – Greater Los Angeles

Approximately 124.19 acres across Section 3, Greater Los Angeles, would be affected by project construction. As shown in **Table 21**, construction would temporarily affect large areas of Desert Wash (43.40 acres), Mixed Chaparral (39.82 acres), and Annual Grassland (13.84 acres) habitat types. Temporary direct impacts would also affect Coastal Scrub habitat (9.41 acres) and Riverine and Valley Foothill Riparian in Cajon Wash and Lytle Creek (13.9 acres). Cajon Wash and Lytle Creek support ESA-listed San Bernardino Merriam's kangaroo rat, Santa Ana River woolly-star, and slender-horned spineflower. The area is also designated critical habitat for San Bernardino Merriam's kangaroo rat.

Table 21. Section 3, Greater Los Angeles, Temporary Impacts on Wildlife Habitat Types

CWHR Wildlife Habitat Type	Habitat Code[a]	Temporary Impact Area (acres)
Annual Grassland	AGS	13.68
Barren	BAR	3.78
Coastal Scrub	CSC	9.41
Desert Wash	DSW	43.40
Mixed Chaparral	MCH	39.82
Riverine	RIV	12.42
Valley Foothill Riparian	VRI	1.48
Total for Section 3 – Greater Los Angeles		**124.19**

a. CWHR codes are shown on the Appendix A maps.

7.1.1.8. ESA-Listed Species

Suitable habitat for ESA-listed species is assumed to be present within the study area. Focused presence/absence surveys have not been performed to confirm presence of ESA-listed species within the study area. Preconstruction surveys are planned, and project mitigation measures would be further identified to reduce the extent and/or magnitude of impacts for the Project.

Section 1 – High Desert

Project construction around and over the Mojave River in Section 1, High Desert, may affect desert tortoise, southwestern willow flycatcher, western yellow-billed cuckoo, and least Bell's vireo (**Table 22**). Critical habitat for southwestern willow flycatcher mapped in the vicinity of the Mojave River could be directly affected by construction activities.

Table 22. ESA-Listed Species Potentially Affected in Section 1, High Desert

Common Name	Scientific Name	Status Under ESA	Effects Determination
Least Bell's vireo	*Vireo bellii pusillus*	Endangered	May Affect, Not Likely to Adversely Affect
Southwestern willow flycatcher	*Empidonax traillii extimus*	Endangered	May Affect, Not Likely to Adversely Affect
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	Threatened	May Affect, Not Likely to Adversely Affect
Desert tortoise	*Gopherus agassizii*	Threatened	May Affect, Not Likely to Adversely Affect

Construction activities (e.g., grubbing, grading, excavation, and driving off-road) could cause direct mortality of individuals of special status species, as heavy equipment could crush smaller

animals. Construction activities could destroy active nests, burrows, or young, if construction occurs during a species' nesting or rearing season—potentially reducing species numbers and distribution of genetic material and resulting in long-term effects. Indirect mortality could result from a decrease in the suitability and stability of burrows for desert tortoise.

Riverine habitat type at the Mojave River crossing was estimated to be impacted temporarily during construction (1.8 acres). Associated floodplains at the Mojave River crossing support Desert Riparian habitat; approximately 8 acres of temporary impact during construction would potentially occur in those floodplains. Desert Riparian habitat at the Mojave River crossing is associated with three ESA-listed species: southwestern willow flycatcher, least Bell's vireo, western yellow-billed cuckoo, and arroyo toad. Riparian habitats often support plants, such as rush and cattail, used for essential practices by indigenous people, and these areas may be disturbed during construction. The length of time to restore Desert Riparian and Riverine habitat structure following disturbance is estimated to be 5 to 7 years, and temporary impacts might be considered permanent impacts as a result.

Preconstruction presence/absence protocols surveys would be used to confirm suitable habitat and if needed presence of southwestern willow flycatcher, western yellow-billed cuckoo, and least Bell's vireo. Several project mitigation measures would reduce the likelihood of effects, including avoiding vegetation disturbance during the nesting season and restoration of vegetated areas temporarily disturbed during construction.

Section 2 – Cajon Pass

In Section 2, Cajon Pass, construction activities may affect southwestern willow flycatcher, desert tortoise, least Bell's vireo, and arroyo toad (**Table 23**).

Table 23. ESA-Listed Species Potentially Affected in Section 2, Cajon Pass

Common Name	Scientific Name	Status Under ESA	Preliminary Effects Analysis
Arroyo (southwestern) toad	*Anaxyrus californicus*	Endangered	May Affect, Likely to Adversely Affect
Least Bell's vireo	*Vireo bellii pusillus*	Endangered	May Affect, Likely to Adversely Affect
Southwestern willow flycatcher	*Empidonax traillii extimus*	Endangered	May Affect, Likely to Adversely Affect
Desert tortoise	*Gopherus agassizii*	Threatened	May Affect, Not Likely to Adversely Affect

Construction impacts in Section 2, Cajon Pass, would be similar in nature to those described above for Section 1, High Desert. Due to its nature, location, and duration, construction would likely adversely affect arroyo toad. Critical habitat for arroyo toad in the vicinity of Cajon Canyon would be directly affected by construction activities, which could potentially be an adverse effect.

Preconstruction surveys of habitat suitability and if needed presence/absence protocols surveys would be used to confirm presence of southwestern willow flycatcher, least Bell's vireo, and arroyo toad in Section 2.

Section 3 – Greater Los Angeles

Work over and around Cajon Wash in Section 3, Greater Los Angeles, may affect San Bernardino Merriam's kangaroo rat, slender-horned spineflower, and Santa Ana River woolly-star (Table 24). Interchange ramp modifications south of Cajon Wash may affect least Bell's vireo, coastal California gnatcatcher, arroyo toad, and San Bernardino Merriam's kangaroo rat.

Table 24. ESA-Listed Species Potentially Affected in Section 3, Greater Los Angeles

Common Name	Scientific Name	Status Under ESA	Preliminary Effects Determination
San Bernardino Merriam's kangaroo rat	*Dipodomys merriami parvus*	Endangered	May Affect, Likely to Adversely Affect
Arroyo (southwestern) toad	*Anaxyrus californicus*	Endangered	May Affect, Likely to Adversely Affect
Slender-horned spineflower	*Dodecahema leptoceras*	Endangered	May Affect, Likely to Adversely Affect
Santa Ana River woolly-star	*Eriastrum densifolium* ssp. *sanctorum*	Endangered	May Affect, Likely to Adversely Affect
Least Bell's vireo	*Vireo bellii pusillus*	Endangered	May Affect, Likely to Adversely Affect
Coastal California gnatcatcher	*Polioptila californica californica*	Threatened	May Affect, Not Likely to Adversely Affect

San Bernardino Merriam's kangaroo rat is assumed to be present in the study area in suitable habitat. Construction-related activities could result in injury or mortality to individuals of the species if construction equipment crushed or trapped them in their burrows or removed foraging habitat or habitat linkages.

Development in areas surrounding the Project have previously altered the historic fluvial flow patterns and scouring regimes of Lytle Creek and Cajon Wash, disrupting the natural flood regime in the area. As a result, critical habitat functions have been disrupted to some extent.

The most recent observations of slender-horned spineflower very near the study area occurred at Lytle Creek in 1994. No recent observations were listed in the database (CNDDB 2022, CNPS 2022).

Rare plant surveys in alluvial fan areas that would be crossed by the Project and that may support slender-horned spineflower and Santa Ana River woolly-star would confirm if the

species are present. If presence is confirmed, actions to prevent disturbance could be implemented.

Populations of Santa Ana River woolly-star and coastal California gnatcatcher have been observed in the vicinity of the study area. Construction-related activities could result in injury or mortality to individuals of these species if individuals were within the limits of construction. Fugitive dust from construction could negatively affect woolly-star or slender-horned spineflower in or near the construction area. Construction noise may disturb gnatcatcher individuals in or near the construction areas.

Trapping surveys for San Bernardino Merriam's kangaroo rat prior to construction would be needed to confirm presence or absence of this species in the Project area. Rare plant surveys for slender-horned spineflower and Santa Ana River woolly-star, as well as presence/absence protocols surveys, may be implemented prior to construction to confirm presence ESA-listed species.

7.1.1.9. Critical Habitats

As stated, construction would occur within designated critical habitat for arroyo toad, San Bernardino Merriam's kangaroo rat and southwestern willow flycatcher. Construction activities would likely adversely affect these three critical habitat areas due to the location and duration of the disturbance. Preconstruction field evaluations would verify if essential physical and biological features are present to support these species, and how these elements would be impacted by the Project.

7.1.1.10. Effects on Bald and Golden Eagles

As stated, golden eagles have been reported foraging in Cajon Canyon and seen near the Mojave River and Glen Helen Regional Park, but active nesting sites are not known to be present in the near vicinity (CNDDB 2022; eBird 2022). Bald eagles are known to forage at Glen Helen Regional Park in the project vicinity (eBird 2022), and thus are inferred to forage within the project area due to proximity.

Construction activities may disturb nesting bald and golden eagles, if nests or foraging birds are present within the study area. Noise and construction activities may cause eagles to avoid foraging in the area.

7.1.1.11. Effects on Migratory Birds

Trees, shrubs, and cacti present in the various habitat types in the study area provide suitable nesting and resting habitat for migratory birds. If construction occurs during the migration or breeding season, 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 may temporarily 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 would be mitigated by implementation of timing that prohibits disturbance to vegetation during nesting season and avoidance of the initiation of ground disturbance or pile driving during the nesting season.

7.1.1.12. Wildlife Corridors

Indirect impacts on wildlife movement could occur where railway construction temporarily blocks existing wildlife migration corridor underpass(es). Construction activities that would prevent wildlife from moving through the area are anticipated to occur over approximately 18 months in any single location.

7.1.1.13. Conservation Areas

Direct permanent effects on conservation areas are not anticipated to occur. The Project would 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.

7.1.2. Hesperia Station

Construction of the Hesperia station would occur in an urban environment. Limited areas of urban wildlife habitat currently occur in the vicinity of the proposed station. The passenger loading platform would be in the I-15 median, however the station supporting facilities and parking area would be developed on lands that have been previously disturbed by development. No suitable habitat for any ESA-listed species occurs in the location of the station or vicinity. No designated critical habitats are in the vicinity of the station and no ESA-listed species have been reported to occur in the vicinity. Therefore, construction would not have direct or indirect effects on wildlife habitats, ESA-listed species, or critical habitat.

7.1.3. Rancho Cucamonga Station

The Rancho Cucamonga station would be constructed in an existing urban environment. Limited areas of urban wildlife habitat currently occur in the vicinity of the proposed station. There are no suitable habitats for any listed species at the station location. Given the nature of the site as an existing rail corridor and commuter rail station and its parking area and the lack of suitable habitat, listed species are unlikely to be present at this site. Therefore, construction would not have direct effects on wildlife habitats ESA-listed species or designated critical habitats.

7.2. Operational Effects

Based on this preliminary evaluation, the Project operations would affect wildlife habitats. .The Project would convert habitat within the project footprint transportation use and would likely remove areas of habitat suitable for ESA-listed species. Rail operations could result in bird strikes, which could include ESA-listed bird species, migratory birds, and raptors and protected eagles.

7.2.1. Railway

7.2.1.1. Noise Effects

Operation of the railway in the highway median was shown to not increase noise levels above the existing highway noise along the alignment (Cross-Spectrum Acoustics 2022). For median-running rail, operational noise would generally occur within the extent of the existing developed highway. No noise modeling was performed for wildlife receptors. However, sensitive species may startle at passing train noise.. San Bernardino Merriam's kangaroo rats communicate by foot-drumming, arroyo toads call to attract mates, and avian species have nesting territories that males defend with songs; any of these species could be directly affected by HSR noise that masks or alters the effectiveness of these communication modes. Noise avoidance results in reduced habitat suitability and/or habitat area for species and may reduce the ability to migrate.

7.2.1.2. Change in Ignition Sources

Powerline failure, often due to high winds, has been demonstrated across California to be instrumental in providing ignition sources to wildfires, which would indirectly affect biological resources. The Project would construct new powerlines on catenary structures to provide traction power to power trains in a known high wind area. Changes in wildlife frequency or intensity can alter wildlife habitats through changes in species composition or alterations in structures and may result in loss of suitable habitat.

The project design would include automatic power shutoff and other safety features that would work to cut power and prevent powerline failures from becoming ignition sources. Median running rail would be isolated from ignition sources by adjacent freeway infrastructure. With these measures, the Project would be unlikely to provide ignition sources to wildfires.

7.2.1.3. Wildlife Corridors

Linear transportation corridors are known to limit wildlife movement by blocking safe passage across landscapes. I-15 is an existing barrier to local and regional wildlife movement across the landscape throughout the proposed project alignment. Because the rail line is aligned with I-15, the Project would widen this existing linear transportation corridor in locations where the highway lanes would be widened to accommodate median-running rail. This would reinforce the blockage of wildlife movement in areas where no suitable over or under crossing was present.

Operation of HSR would produce a new noise source at existing wildlife crossings. For median-running rail, operational noise would generally occur within the extent of the existing developed highway. 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.

Impacts on wildlife movement could be mitigated by well-placed and well-designed wildlife crossings that, coupled with fencing, would allow for safe passage and landscape connectivity for terrestrial wildlife. Both underpass and overpass wildlife crossings are often needed to create wildlife corridors for the diversity of wildlife species. The Project would be largely median running and would install new bridges and culvert crossings in-line with those already existing on I-15, no new exclusive wildlife crossings are planned by the Project.

7.2.1.4. Invasive Species Effects

Operational landscaping and maintenance in the study area following construction would be focused on avoiding invasive seed dispersal, controlling existing invasive plant populations, and restoring areas with native vegetation to reduce potential impacts of invasive species to wildlife and native plant communities.

7.2.1.5. Wildlife Strikes

Trains traveling up to 140 mph through the I-15 corridor would increase the likelihood of avian strikes along the corridor, particularly in areas where birds are abundant. 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 Proposed Action, it is not known if the location of proposed rail infrastructure in the highway median would attract birds resting while attempting to cross the highway, thus increasing the number of birds within striking distance, or if the highway itself would reduce the likelihood of perching on rail infrastructure. Based on the 2017 study, it appears bird strike mortalities are likely; however, the number of strikes may differ significantly in magnitude from the study due to the different environmental, infrastructure, and operating conditions of the Proposed Action from the study's conditions.

For all at-grade portions of the alignment, exclusion fencing would be constructed parallel to the rail line for safety to terrestrial wildlife. However, this safety step could also inadvertently trap wildlife that may have gained access to the rail corridor, potentially increasing the risk of wildlife strikes. Operation of HSR could result in terrestrial wildlife mortality through collisions. Collisions could occur to any wildlife that gain access to the path of the train, or to wildlife that attempt to cross the corridor, entering the highway but are not able to cross the rail alignment due to the high-speed rail fencing at the median. By converting the I-15 median from natural

substrate, the Project may remove access to "rest" habitat for wildlife attempting to cross I-15 and the project corridor possibly causing increased wildlife mortality.

7.2.1.6. Human Subsidized Predation

During project operations, human subsidized predation could occur due to 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, such as ravens, which may increase predation of special status species.

Train strikes of avian and terrestrial species could increase supply of carrion to generalist predators and support larger populations. Increased predators may add predation pressure to prey species in the area, such as desert tortoise.

During operations, maintenance of the railway alignment to reduce subsidies (e.g., trash pickup, removal of mortalities, fence maintenance, and maintaining bird exclusion from using catenary) and at passenger stations (e.g., trash collection) will be important. Implementing strong, wind-proof, covered trash collection areas, will be important to reduce subsidized predation at passenger stations. A regular maintenance program that identifies, implements, and reinforces good housekeeping would mitigate the potential indirect effect of human subsidized predation. During operations, any identified perching and nesting locations would be modified to make them no longer suitable (bird exclusion).

7.2.1.7. Permanent Effects on Wildlife Habitats

The analysis of impacts on mapped habitat areas demonstrated permanent impacts on habitat types in the study area. **Appendix A** provides maps of habitat types along with the limits of disturbance showing areas of permanent impact on habitat types along the alignment.

As stated, many areas within the Caltrans right-of-way have been altered from natural vegetation community composition by previous disturbance; these areas are generally mapped as Urban habitats (see **Appendix A**). The Build Alternative would retain these types of developed and disturbed surfaces, resulting in no change to the quality or function of the Urban habitat type.

Approximately 64 acres of wildlife habitat types would be permanently converted to transportation uses by the Project. Effects on wildlife habitats are further described in more detail in the following.

Section 1 – High Desert

In Section 1, High Desert, several locations of Caltrans right-of-way retain native vegetation, these are located within the permanent LOD and would be permanently removed by the Project.

Table 25 summarizes the permanent impact area, by CWHR habitat type for Section 1.

Table 25. Section 1, High Desert, Areas of Permanent Impacts on Wildlife Habitat Types

CWHR Wildlife Habitat Type	Habitat Code[a]	Permanent Impact Area (acres)
Alkali Desert Scrub	ASC	0.54
Annual Grassland	AGS	2.36
Desert Riparian	DRI	0.94
Desert Scrub	DSC	28.41
Juniper	JUN	0.88
Riverine	RIV	0.73
Sagebrush	SGB	13.58
Total for Section 1 – High Desert		**47.80**

a. CWHR codes are shown on the Appendix A maps.

Estimated direct permanent impacts on wildlife habitat in Section 1, High Desert, total approximately 48 acres, with most of the permanent impact on Desert Scrub habitat. Desert Scrub and Juniper habitat types are also known to support desert tortoise and the area of habitat reduction for these two habitats is estimated to be approximately 30 acres. Areas of Sagebrush habitat would be permanently reduced by approximately 14 acres. Sagebrush in the area supports a variety of wildlife species. Riverine and Desert Riparian habitat types at the Mojave River crossing are estimated to be impacted by permanent impacts of approximately 1.7 acres. The Mojave River area is known to support ESA-listed wildlife including southwestern willow flycatcher, least Bell's vireo, western yellow-billed cuckoo, and arroyo toad and is mapped as designated critical habitat for southwestern willow flycatcher. Monarch butterflies use riparian areas for nectaring due the diversity of plants that may be in bloom at any time, and may use riparian area for breeding, if milkweed host plants are present.

Section 2 – Cajon Pass

Table 26 summarizes permanent impacts for Section 2, Cajon Pass. Estimated direct permanent impacts on wildlife habitat total approximately 15 acres, with most of the permanent impact on Desert Scrub habitat (8.22 acres). Desert Scrub supports desert tortoise and, when Desert Scrub occurs adjacent to suitable riparian habitat, may support adult and immature arroyo toads for burrowing and foraging. Areas of Mixed Chaparral habitat would be permanently reduced by approximately 6 acres. No wildlife are known to obligately use Mixed Chaparral, but a wide variety of wildlife use Mixed Chaparral for cover, forage, and travel to adjacent habitats.

Table 26. Section 2, Cajon Pass, Areas of Permanent Impacts on Wildlife Habitat Types

CWHR Wildlife Habitat Type	Habitat Code[a]	Permanent Impact Area (acres)
Barren	BAR	0.63

Coastal Scrub	CSC	0.15
Desert Scrub	DSC	8.22
Mixed Chaparral	MCH	6.16
Total for Section 2 – Cajon Pass		**15.17**

a. CWHR codes are shown on the Appendix A maps.

Section 3 – Greater Los Angeles

Estimated direct permanent impacts on wildlife habitat in Section 3, Greater Los Angeles, total approximately 1 acre, with most of the permanent impact on Desert Wash habitat (0.59 acre). Desert Wash habitat supports San Bernardino Merriam's kangaroo rat, coastal California gnatcatcher, Santa Ana River woolly-star, and slender-horned spineflower in this location. The area is also mapped as designated critical habitat for San Bernardino Merriam's kangaroo rat.

Areas of Mixed Chaparral habitat would be permanently reduced by approximately 0.3 acre. **Table 27** provides a summary of impact areas for Section 3, Greater Los Angeles.

Table 27. Section 3, Greater Los Angeles, Areas of Permanent Impacts on Wildlife Habitat Types

CWHR Wildlife Habitat Type	Habitat Code[a]	Permanent Impact Area (acres)
Annual Grassland	AGS	0.05
Coastal Scrub	CSC	0.03
Desert Wash	DSW	0.59
Mixed Chaparral	MCH	0.29
Total for Section 3 – Greater Los Angeles		**0.96**

a. CWHR codes are shown on the Appendix A maps.

7.2.1.8. Critical Habitats and ESA-Listed Species

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

Indirect effects such as train noise and human-subsidized predation effects would occur to any wildlife adjacent to the rail line or utilizing designated critical habitat adjacent to the rail line during operations. Wildlife strikes of avian species by trains during operations is possible and could result in loss of protected animals. Protected avian species that could be lost due to strikes include coastal California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher.

7.2.1.9. Effects on 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. HSR avian mortalities haves been studied recently, and strikes were demonstrated to occur (García de la Morena 2017). Migratory birds could be present during operations and would be subject to strikes by operating trains if they crossed or utilized the rail corridor. 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 a result of train noise, birds may avoid adjacent areas causing a reduction in suitable nesting areas.

7.2.1.10. Effects on Bald and Golden Eagles

Operational effects on raptors would be similar to effects on migratory birds. If raptors were to use new structures for nesting resulting in increased risk of strikes or if increased supply of carrion supply in the rail corridor attracted raptors, then raptor mortality could increase. In contrast to increased presence of raptors, operational train noise may cause raptors to avoid the rail line and the adjacent area.

7.2.1.11. Effects on 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.

7.2.2. Hesperia Station

Because the Hesperia station would operate in a largely urban environment, operational effects of the passenger station would not directly affect wildlife habitats, ESA-listed species, or critical habitats because noise and other human-influenced activities already occur in this area. Operation of the station would have no effect on migratory birds or eagles. Station operation may indirectly affect native wildlife and vegetation by facilitating invasive species and supporting human subsidized predation.

7.2.3. Rancho Cucamonga Station

The Rancho Cucamonga station would operate in a developed, urban environment. Operational effects of the passenger station would not directly affect wildlife habitats, ESA-listed species, or critical habitats because noise and other human-influenced activities already occur in this area. Operation of the station would have no effect on migratory birds or eagles. Indirect effects of station operation, such as human subsidized predation, may occur.

7.3. Cumulative Effects

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

The Project would potentially facilitate development pressure in the Apple Valley planning area (City 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 would 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 would result in loss of habitat supporting common and special status plants and animal species.

The town of Apple Valley is developing a multispecies HCP to guide development at a landscape level for the Apple Valley planning area in the vicinity of the project terminus. However, there does not appear to be 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).

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 and Riversidean Sage Scrub habitats, thereby providing support to these wildlife habitats and associated species. Future development would be required to comply with the action plan and implementation plan developed under the conservation program, thus mitigating some cumulative effects.

Implementation and development of conservation and mitigation approaches could reduce cumulative effects on habitats and plant and animal species. Preserving and conserving wildlife habitats and other biological resources that may be affected by future development would help to reduce cumulative effects on biological resources.

7.4. Impact Avoidance and Minimization Measures

Practicable measures to avoid impacts on threatened and endangered species and their critical habitats, such as those described below, will be implemented by the Project. In areas where unavoidable impacts may occur, efforts will be made to minimize those impacts. Following implementation of avoidance and minimization measures, the Proposed Action will employ compensation measures to offset any unavoidable impacts that occur.

The following are proposed mitigation measures for the Proposed Action. The general measures are followed by additional measures for specific species.

More detailed *Habitat Restoration Plan* discussing soil and vegetation restoration following temporary construction disturbance at specific areas, and detailed *Translocate Plans for San Bernardino Kangaroo Rat* are provided under separate cover.

7.4.1. General Measures

GM-1. **Areas of Concern During Construction**

Biologists shall be 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 the Applicant and its contractors may choose to utilize resource monitors/biological monitors at their discretion in these areas to ensure environmental compliance.

GM-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 as follows:

- Area 1. Mojave River
- Area 2. Cajon Wash
- Area 3. Lytle Creek

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 28 summarizes the closure dates for the three Avian Avoidance Exclusion Areas.

Table 28. 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

GM-3. **Conduct Mandatory Environmental Awareness Training Program**

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

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

GM-4. **Plan for and Conduct Biological Monitoring during Construction**

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

The Plan shall 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 shall be implemented during construction to ensure compliance with environmental commitments and will focus on commitments under the ESA.

GM-5. **Reporting**

No more than 90 days after the completion of construction, the biologist(s) shall 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.

GM-6. **Photographs**

Pre- and post-construction photographs shall be taken to document habitat conditions and alterations within the limits of disturbance during construction activities. Photographs will be dated, their locations recorded, and will be stored in a manner that will allow access for reporting purposes.

GM-7. **Designated Work Areas**

In areas adjacent to sensitive resources, the contractor shall 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 shall 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, shall inspect visible demarcation and shall help ensure that construction equipment, vehicles, and associated activities remain within designated construction work areas.

GM-8. **Noxious Weed Management During Construction**

A noxious weed survey shall be performed prior to ground-disturbing activities. During and following construction, the contractor shall avoid the introduction or spread of noxious weeds by performing weekly inspections and weed removal/control.

GM-9. **Avoid Injury to Wildlife**

Supplies, equipment, and/or construction excavations where wildlife such San Bernardino Merriam's kangaroo rat, and/or other wildlife could hide (e.g., materials stockpiles, equipment in staging areas, and under vehicles) shall 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 shall be contacted.

GM-10. **Preserve Biological Material**

The contractor and Applicant shall 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. USFWS will provide instruction regarding the final disposition of the carcass(es).

GM-11. **Prepare and Implement a Temporary Erosion and Sediment Control Plan**

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

GM-12. **Implement Spill Prevention, Control, and Countermeasures Plan**

The contractor shall 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, shall be managed and the risk reduced. If a spill occurs, cleanup, containment, and response measures shall 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).

GM-13. **No Storage of Construction Equipment or Materials within the 100-Year Floodplain**

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

GM-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.

GM-15. **Fugitive Dust Control Plan**

The contractor shall 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 shall 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 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.

GM-16. **Prevent Erosion and Sedimentation**

Applicant shall employ permanent stabilization measures upon completion of construction along washes and in other areas of potential erosion.

GM-17. **Minimize Impacts on Water Availability**

Water will be obtained 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.

GM-18. **Drainage Systems Design**

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

GM-19. **Avoid Providing Nesting Sites for Opportunist Predators**

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

GM-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 to meet water quality objectives.

GM-21. **Construction Noise and Vibration Control Measures**

The contractor shall 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.

GM-22. **Implement Litter-Control Program**

The contractor shall 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.

GM-23. **Implement Housekeeping to Deter Opportunist Predators**

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.

GM-24. **Prohibited Items and Feeding of Wildlife**

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

GM-25. **Maintain Existing Wildlife Crossings**

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

GM-26. **Avian Species Preconstruction Surveys**

Prior to the start of vegetation or ground disturbing activities, field 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 biologists that meet USFWS's minimum qualifications (Halterman et al. 2015; Sogge et al. 2010; USFWS 1997, 2019 and 2001). 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 prior to the start of construction by biologists that meet USFWS's minimum qualifications (USFWS 2019). Coordination with USFWS prior to implementation and on the results of any survey is required.

GM-27. **Stockpile Native Topsoil for Reuse in Restoration**

The contractor shall stockpile and protect removed native topsoil and shall use the stockpiled topsoil in restoration and landscaped areas. Areas from where topsoil is recovered shall be free from invasive plant species.

GM-28. **Irrigation**

In consultation with the Caltrans District Landscape Architect, permanent or temporary irrigation systems to supply water to replacement landscape plantings shall be developed and implemented.

GM-29. **Minimize Negative Effects of Nighttime Operational Lighting**

Nighttime lighting at passenger stations and along the rail alignment shall 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 shall incorporate light and glare screening measures—for example, use downward-cast lighting—and shall use motion sensor lighting, where appropriate.

GM-30. **Remove Track-Killed Animals**

The Applicant will promptly remove all track-killed animals along the operating rail line to reduce adverse effects associated with food subsidies to opportunist predators, such as common ravens.

GM-31. **Remove Common Raven Nests**

The applicant shall 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, actions will be taken 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.

GM-32. **Operations of Passenger Stations**

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

GM-33. **Invasive Plant Species Control During Operations**

Following the completion of construction activities, the Applicant shall 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 shall be monitored:

- Monthly from January through June for two growing seasons following construction

Control may consist of manual or herbicide control methods. Note that herbicide use in riparian areas and waters of the state is regulated. Herbicide use may be curtailed or avoided in desert tortoise habitat areas.

7.4.2. Arroyo (Southwestern) Toad

AT-1. Arroyo Toad Preconstruction Surveys

Surveys for the presence of suitable habitat for arroyo toad will be conducted by qualified biologists prior to the start of construction. 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.

7.4.3. San Bernardino Merriam's Kangaroo Rat

SBKR-1. San Bernardino Kangaroo Rat Restricted Work Areas

In collaboration with USFWS and prior to the start of any ground disturbance, the biologist shall identify areas within the construction temporary and permanent limits of disturbance (LOD) that may support San Bernardino Merriam's kangaroo rat. These areas shall be called "SBKR restricted work areas." They 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 a USFWS shall occur to identify and refine the geographical boundary of the SBKR restricted work areas.

SBKR-2. San Bernardino Merriam's Kangaroo Rat Preconstruction Surveys

The contractor or Applicant shall 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 shall occur prior to implementation of any surveys for San Bernardino Merriam's kangaroo rat. Surveyors shall obtain ESA Section 10(a) permits, as necessary. Areas to be surveyed and results of surveys will be coordinated with USFWS.

SBKR-3. 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) shall:

- 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.

SBKR-5. 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 shall be installed 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 and 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.

SBKR-6. Preconstruction Trapping

Prior to ground disturbance, the biologist(s) shall conduct preconstruction trapping 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.

SBKR-7. Trapped San Bernardino Merriam's Kangaroo Rat Housing and Release

The biologist(s) shall 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 holding/animal care requirements. Captured San Bernardino Merriam's kangaroo rats will be translocated by soft-release into appropriate receiving habitat.

7.4.4. Desert Tortoise

DT-1. 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 USFWS shall be notified immediately.

In any situation where a desert tortoise places itself in danger (e.g., it enters a work area), immediate action will be undertaken protect the animal and the USFWS will be contacted for additional guidance. Work in the vicinity that could injure or kill the animal will immediately cease. The animal will be observed until it is moved with USFWS approval from harm's way.

DT-2 Design and Install Suitable Culverts

Where culverts are used, the Applicant shall 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, the Applicant, with approval from USFWS, may forego these specifications if they are incompatible with the existing culverts.

DT-3. Notification of Desert Tortoise Injury or Death

The contactor and or Applicant shall 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.

DT-6. Refer to USFWS Regarding Desert Tortoise

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

DT-7. Provide Rock-Slope Protections

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

7.4.5. ESA-Listed Plant Species Protection

P-1. ESA-listed Plants Preconstruction Surveys

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

P-2. Protect ESA-listed Plant Populations

Prior to initiating ground-disturbing or vegetation disturbing activities, temporary construction fencing shall be placed around all ESA-listed plant species that occur within the temporary construction areas. When ESA-listed plants are observed within temporary construction areas, avoidance and minimization measures shall be applied. Exclusionary areas shall 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 shall be monitored during and following construction to avoid adverse effects.

P-3. Avoid Known Special-Status Plant Populations

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

7.4.6. Monarch Butterfly

MB-1. 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.

7.4.7. Nesting Migratory Birds

MBTA-1. Coordinate Construction Timing to protect Migratory Birds

In areas of suitable nesting habitats for any migratory bird species at the Mojave River, Lytle Creek, Cajon Wash, Cajon Canyon, and Cajon Summit, initial ground and vegetation disturbance during construction would be scheduled to avoid migratory bird nesting, which range from March 1 to approximately July 15, to avoid take under the MBTA. Specific locations of suitable habitat and the timing for species likely to be present at each location shall be determined by the biologist and coordinated with construction activities prior to any vegetation or ground disturbing construction.

7.5. Proposed Compensation for Unavoidable Impacts

Compensation would be provided by the Project for any minimized, unavoidable impacts on protected species, critical habitat, migratory birds, or eagles.

Compensation for unavoidable impacts could be provided as onsite restoration/creation, offsite restoration, or acquisition of mitigation credits, acquisition of conservation land, or a combination of methods.

Caltrans completed an advance mitigation study in 2020 for their Mojave Desert operating area to identify opportunities to use conservation banks, mitigation banks, HCPs, natural community

conservation plans, in-lieu fee programs, or mitigation credit agreements to compensate for project impacts (Caltrans 2020). While the study evaluated only Caltrans-led projects, the study analyzed Caltrans projects on the I-15 corridor. Therefore, the study is geographically relevant to habitats and species for the Project and provides information on potential mitigation possibly available to the Project.

Mitigation goals for projects in the Caltrans right-of-way include (Caltrans 2020):

- Conserve and expand existing desert tortoise habitat (WILD-1)
- Preserve, enhance, and increase connectivity between blocks of desert tortoise habitat (WILD-2)
- Support resiliency of the landscape to climate change (WILD-3)
- Decrease desert tortoise mortality (WILD-4)
- Provide multi-species benefits (WILD-5)

Caltrans' *Advance Mitigation Study* (2020) showed that, while there were limited mitigation opportunities, several new opportunities were in development in 2020. The Town of Apple Valley multispecies HCP was in process, and it, along with the existing West Mojave HCP, may apply to transportation-related activities to meet mitigation obligations.

In addition, the Mojave Desert Tortoise Umbrella Conservation Bank, Cajon Creek Habitat Conservation Management Area, and the Lytle Creek Conservation Bank (in process) could potentially provide mitigation credits to the Project.

Two resource conservation investment strategies are under development with service areas for mitigation credit agreements possibly overlapping the Project. In particular, the San Bernardino County Regional Conservation Investment Strategy (SBC et al. 2018) provides for compensation to 13 general vegetation communities, along with focal species, and the needed landscape and habitat features that supports them. Once Regional Conservation Investment Strategies are approved by CDFW, any entity may develop projects that result in advance mitigation credits that may be transferred to compensate other projects.

The City of Fontana has developed the North Fontana Conservation Plan (Fontana 2016) to assist in protection of San Bernardino Merriam's kangaroo rat, coastal California gnatcatcher, slender-horned spineflower, and Santa Ana River woolly-star for areas that are to be developed. The conservation plan has proposed a 5:1 mitigation ratio for compensation of impacts on areas occupied by these ESA-listed species. This provides an indication of a potential mitigation ratio that could be used for compensation for the Project.

The Cajon Creek Conservation Bank (Vulcan 2017) protects more than 1,300 acres of Riversidean Alluvial Fan Sage Scrub located in Cajon Wash and Lytle Creek and makes mitigation credits available for purchase to compensate for unavoidable impacts. Mitigation credits may be available to the Project if a need is identified.

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8. Consultation with USFWS

Based on analysis, adverse effects are likely to ESA-listed San Bernardino Merriam's kangaroo rat, arroyo toad, slender-horned spineflower, and Santa Ana River woolly-star. The Project is also likely to adversely affect biological and physical factors in designated critical habitats for southwestern willow flycatcher, arroyo toad, and San Bernardino Merriam's kangaroo rat.

At the time of this writing, FRA is conducting formal consultation with USFWS under Section 7 of the ESA. FRA will also coordinate with USFWS to identify acceptable strategies under the MBTA and the BGEPA for the Project.

During formal consultation, USFWS will review the effects determination presented in the Project's Biological Assessment, determine if clarification or additional information is needed, and determine if USFWS agrees with the effects determinations for each species and critical habitats. USFWS will develop a Biological Opinion If appropriate, USFWS will prepare an Incidental Take Statement, which would identify species, numbers of individuals, and timing of possible take by the Project USFWS will also identify conditions that would trigger re-opening of the consultation—for example, if changes in project construction methods, such as the addition of blasting, or changes in species listings from candidate to proposed or listed were to occur.

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Appendix A
Temporary and Permanent Wildlife Habitat Impacts Maps