

California High-Speed Rail Authority

Palmdale to Burbank Project Section

Draft Environmental Impact Report/
Environmental Impact Statement

Appendix 3.7-C Supplemental Analysis of
Tunneling Effects on Biological Resources

August 2022



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

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APPENDIX 3.7-C: SUPPLEMENTAL ANALYSIS OF TUNNELING EFFECTS ON BIOLOGICAL RESOURCES

1 INTRODUCTION

This technical appendix describes the methods used to identify groundwater dependent species that could be potentially affected if tunnel construction in the Palmdale to Burbank Project Section of the California High Speed Rail (HSR) results in a reduction in groundwater levels. These species are dependent on resources typically referred to as Groundwater Dependent Ecosystems (GDEs), as defined further below. This appendix outlines the methods used to identify species that are known to be or that may be groundwater dependent, and to assess potential impacts through the application of habitat suitability models developed for the project section in coordination with the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and U.S. Forest Service. A description of the species habitat suitability modeling methods is included in Section 3.7 and presented in the Biological and Aquatic Resources Technical Report and its supplemental report (Authority 2020a, 2020b). Therefore, those methods are not repeated or discussed here. This supplemental analysis did not identify any additional species not previously modeled for habitat suitability. Consequently, no additional species habitat suitability models were developed as part of this assessment.

2 METHODS

The hydrology evaluation in Section 3.8 determined that hydrologic impacts from tunnel construction would occur within 1 mile of the centerline of the tunnels and would have a higher potential for effects in identified Moderate- and High- risk areas where the tunnels would encounter faults and high groundwater pressures (Figures 1a, 1b, 2a, 2b, 3a, 3b, 4, 5, 6a, 6b in Attachment A). These risk areas were used in Section 3.7 to determine potential effects of tunneling on biological resources (specifically, habitat suitability models were run to calculate number of acres of suitable habitat that could be affected). Areas outside of Moderate- and High-risk areas, but within 1 mile of the centerline, were identified as No-/Low- risk areas because effects in those areas are unlikely to occur. For the No-/Low- risk areas, the analysis notes whether suitable habitat for a species occurs, but the acres were not quantified.

The following sections describe the resource study area (RSA) for this assessment, how GDEs and associated biological resources are defined and identified, and the extent of biological and aquatic resources potentially affected.

2.1 Tunnel Construction Resource Study Area

A tunnel construction RSA was determined based on the hydrology evaluation set forth in Section 3.8 and is defined as the area within 1 mile of the centerline of each Build Alternative (i.e., a 2-mile-wide RSA centered on the centerline). Each figure in Attachment A illustrates the Build Alternative alignments and the tunnel construction RSA. The tunnel construction RSA extends from Soledad Canyon on the north to the Santa Clarita and San Fernando Valleys on the west, Tujunga Wash (i.e., Tujunga Valley) on the south, and Big Tujunga Canyon to the east. Potential effects on GDEs within the tunnel construction RSA were evaluated as described further below.

2.2 Definition of Groundwater Dependent Ecosystems

A key component of the analysis of potential effects on GDEs (and associated biological resources) is how such resources are defined. Numerous, but generally similar, definitions of GDEs exist and are used in the literature. More recently, Eamus et al. (2006) proposed three simple primary classes of GDEs: 1) aquifer and cave ecosystems, 2) all ecosystems dependent on the surface expression of groundwater, and 3) all ecosystems dependent on the subsurface presence of groundwater. Howard and Merrifield (2010) defined GDEs as “terrestrial, aquatic, and coastal ecosystems that require access to, replenishment or benefit from, or otherwise rely on subsurface stores of water to function or persist.” The U.S. Forest Service (2012) has defined GDEs in recent guidance as “ecosystems that are supported by groundwater, which include

springs and seeps, cave and karst systems, phreatophytic¹ ecosystems, and in many cases, rivers, wetlands, and lakes.” GDEs were also defined in 2014 under the Sustainable Groundwater Management Act as “ecological communities of species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface.” (23 CCR § 351(m)). Eamus et al (2016) recently published additional work further discussing the classification of GDEs. From the literature described above, the California High Speed Rail Authority (Authority) defined GDEs for the purposes of this assessment as ecosystems requiring the surface expression of groundwater (e.g., springs, wetlands) or a species or species assemblage dependent upon sub-surface availability of groundwater within the rooting depth of vegetation (e.g., woodlands, riparian habitats) (Eamus et al. 2016).

Identifying the location of GDEs is often difficult and time consuming; however, Eamus et al. (2016) provided a summary description of various techniques and methods for identifying the locations of GDEs in a landscape. These methods range from inferential methods (e.g., whether or not a stream/river flows all year, despite long periods of low or no rainfall), to geochemical indication (e.g., the use of isotopic analysis of water samples), to geomorphological indicators (e.g., soils that indicate groundwater dependence) to determine GDEs (Eamus et al. 2016). The Authority considered the various methods described and selected the use of biotic assemblages (e.g., the presence of unique aquatic and wetland plant species or unique assemblages which are known or suspected to be groundwater dependent) as a feasible method, considering the data available for the RSA. The discussions below provide additional information regarding how each of the types of biological resources within the RSA were evaluated in this context.

2.3 Determination of Groundwater Dependent Species and Resources

2.3.1 Vegetation Communities

Vegetation communities (identified for the purposes of Section 3.7 and as used in this analysis based on the California Wildlife Habitat Classification Scheme [CWHR]²) occurring in the tunnel construction RSA were evaluated to determine if they are groundwater dependent (Attachment B, Table B-1). Vegetation communities were considered to be groundwater dependent, or potentially groundwater dependent, if the dominant or codominant plant species in the communities were known to be phreatophytes. The primary source of information used to assess whether a particular dominant species was a phreatophyte was the plant rooting depth database (Groundwater Resource Hub 2021). Any species identified in the database as a documented California phreatophyte was assumed to be groundwater dependent.

For vegetation communities determined to be groundwater dependent in Table B-1, the amount of each community within Moderate- and High-risk areas was calculated.

2.3.2 Special-Status Plant Species

Special-status plant species with the potential to occur in the tunnel construction RSA (i.e., those species with modeled suitable habitat in the area) were evaluated to determine if they are groundwater dependent (Attachment B, Table B-2). Plant species were considered to be groundwater dependent, or potentially groundwater dependent, if they require wetland, aquatic, or riparian conditions to grow and persist, or to complete a growing season (for annual species). The primary source of information used to assess whether a particular plant was groundwater dependent was the California Native Plant Society’s Inventory of Rare Plants (CNPS 2021), unless otherwise noted in Table B-2. Any species identified in the inventory as occurring in wetland, aquatic, or riparian habitat was assumed to be groundwater dependent.

¹ Phreatophytic plants were defined by Robinson (1958) and prior researchers as “plants that depend for their water supply upon ground water that lies within reach of their roots.”

² The California Wildlife Habitat Relationships System classification scheme is not a comprehensive vegetation classification scheme for California’s terrestrial vegetation types; however, dominant or codominant plant species assemblages are reported for each type, allowing an assessment of groundwater dependence associated with each type.

For all plant species determined to be groundwater dependent in Table B-2, the habitat suitability models developed for the project section were overlaid with the tunnel construction RSA and Moderate- and High-risk areas to determine the amount of modeled suitable habitat that could be adversely affected for each species.

2.3.3 Special-Status Plant Communities

Special-status plant communities (i.e., a more detailed subset of overall vegetation communities) within the tunnel construction RSA (as identified by the California Natural Diversity Database Rarity Rankings as described in Section 3.7) were evaluated to determine if they are groundwater dependent (Table B-3). Special-status plant communities were considered to be groundwater dependent if the dominant species are known to occur in wetlands and/or they are known to be phreatophytes. The primary source of information used to assess whether a particular dominant species was a phreatophyte was the plant rooting depth database (Groundwater Resource Hub 2021). Any species identified in the database as a documented phreatophyte was assumed to be groundwater dependent.

For all special-status plant communities determined to be groundwater dependent in Table B-3, any corresponding CWHR types associated with those special-status plant communities were overlaid with the tunnel construction RSA and Moderate- and High-risk areas to determine the amount of each CWHR type that could be adversely affected.

2.3.4 Special-Status Wildlife Species

Special-status fish and wildlife species with the potential to occur in the tunnel construction RSA were evaluated to determine if they are groundwater dependent (Attachment B, Table B-4). Fish and wildlife species were considered to be groundwater dependent, if they require wetland, aquatic, or riparian conditions to exist and complete a significant part or portion of their life cycle. The primary source of information used to assess whether a particular wildlife species could occur in wetland, aquatic, or riparian conditions was California Department of Fish and Wildlife's California Wildlife Habitat Relationship (CDFW 2014), unless otherwise noted in Table B-4.

For all fish and wildlife species determined to be groundwater dependent in Table B-4, the habitat suitability models developed for the Palmdale to Burbank Project Section (see Section 3.7.5.5) were overlaid with the tunnel construction RSA and Moderate- and High-risk areas to determine the amount of modeled suitable habitat that could be adversely affected for each species. For species solely dependent on aquatic habitats, all modeled suitable habitat within the Moderate- and High-risk areas was quantified and considered to be potentially affected. For species with both aquatic and upland life cycle requirements, areas of aquatic and riparian habitat were quantified and considered to be potentially affected.

3 RESULTS

As described above, biological resources potentially or known to be groundwater dependent were overlaid with Moderate- and High-risk areas to determine the extent of those resources potentially affected.

3.1.1 Vegetation Communities

The analysis described above documents that six general vegetation communities within the RSA meet the criteria described above and should be considered groundwater dependent. Of the vegetation communities considered groundwater dependent, all six overlap with No/Low-, Moderate- or High-risk areas (Attachment C, Table C-1). Table C-1 presents the acreages of vegetation communities that were identified as being dependent on groundwater and that occur within Moderate- or High-risk areas. Table C-1 also identifies whether or not vegetation communities occur in No-/Low-risk areas.

3.1.2 Special-Status Plant Species

The analysis described above documents that 15 special-status plant species occur in wetland, aquatic, or riparian habitat types in the RSA and therefore should be considered groundwater

dependent. Of the species considered groundwater dependent, 13 have modeled suitable habitat that overlaps with the Moderate- or High-risk areas (Attachment C, Table C-2). Table C-2 presents the acreages of modeled suitable habitat that occurs within Moderate- or High-risk areas for species identified as being dependent on groundwater. Table C-2 also identifies whether or not they occur in No-/Low-risk areas.

3.1.3 Special-Status Plant Communities

The analysis documents that seven special-status plant communities have the potential to occur in the RSA and six of them meet criteria to be considered groundwater dependent. Attachment C, Table C-3, presents the acreages of habitat types that may support special-status plant communities identified as dependent on groundwater within Moderate- or High-risk areas. Table C-3 also identifies whether or not they occur in No-/Low-risk areas.

3.1.4 Special-Status Wildlife Species

The analysis documents that 27 special-status wildlife species may occur in groundwater dependent habitats and that they require those habitats to exist and complete a significant part or portion of their life cycle. Attachment C, Tables C-4 through C-8 present the acreages of habitat for groundwater dependent special-status wildlife species within Moderate- or High-risk areas. Tables C-4 through C-8 also identifies whether or not they occur in No-/Low-risk areas.

4 REFERENCES CITED

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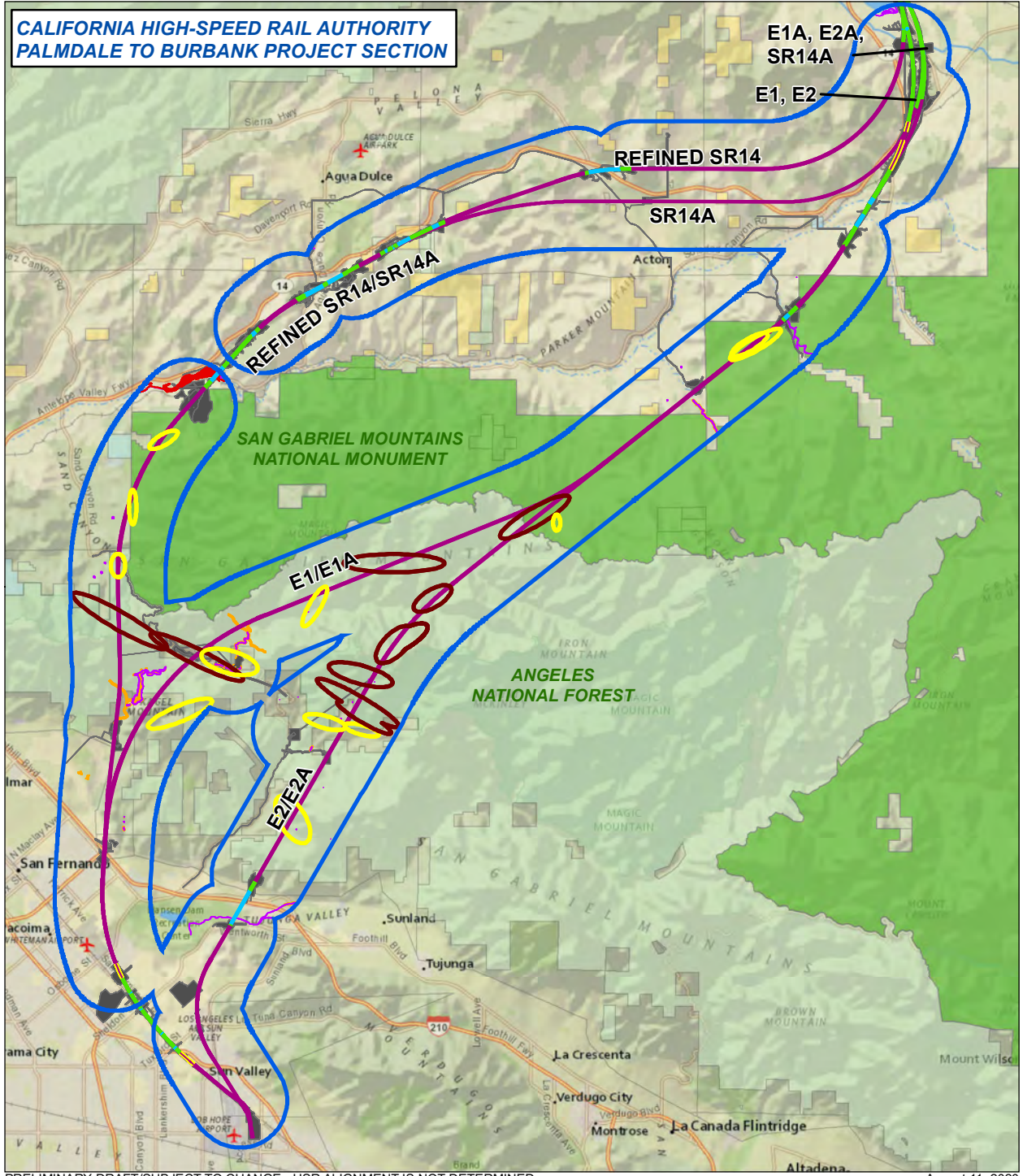
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ATTACHMENT A. FIGURES

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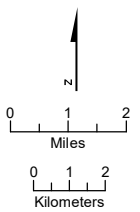
**CALIFORNIA HIGH-SPEED RAIL AUTHORITY
PALMDALE TO BURBANK PROJECT SECTION**



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August 11, 2020

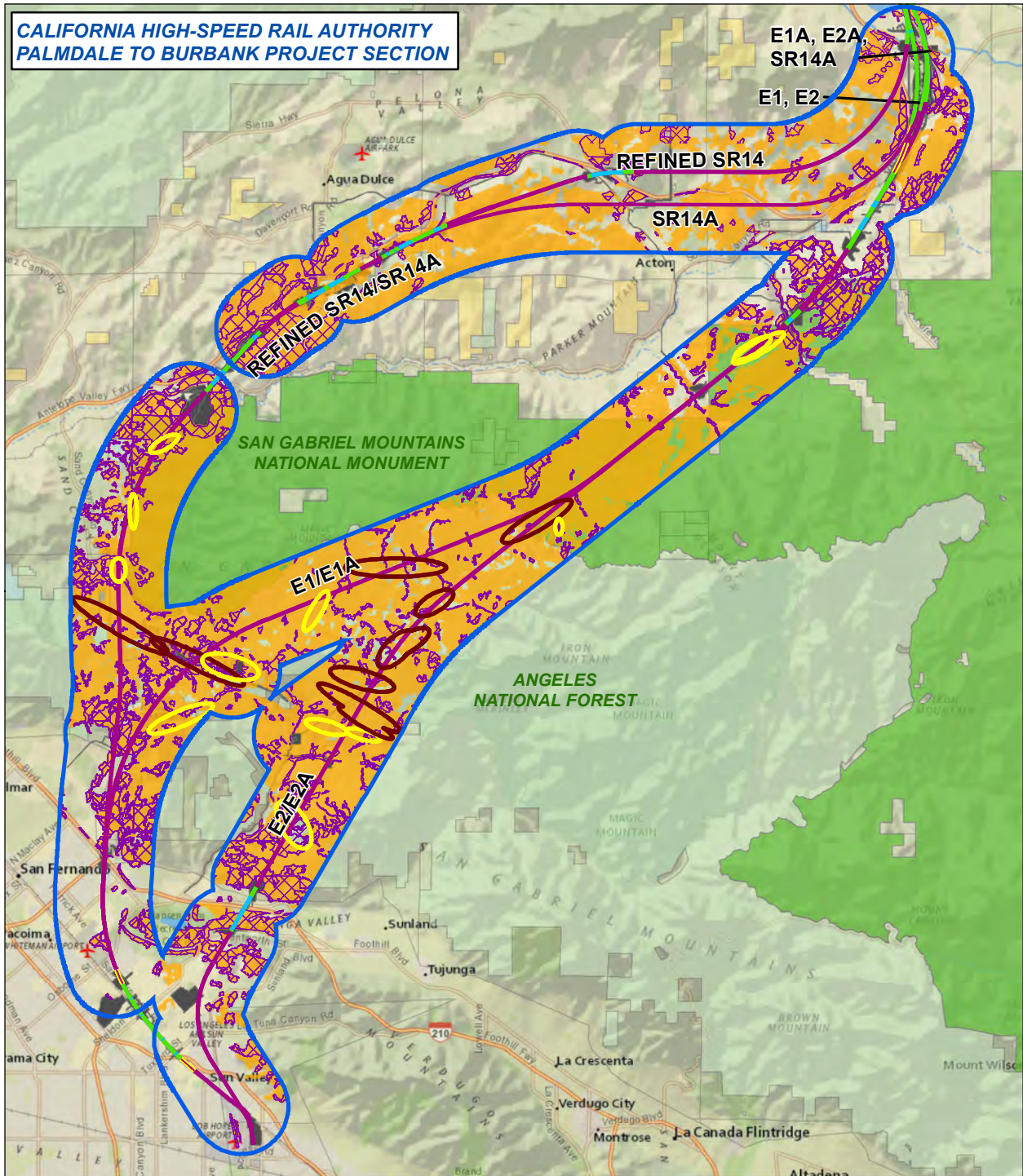
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|------------------------------|---|-----------------------------|
| HSR Alignment Profile | Jurisdiction | Amphibians |
| At Grade | Bureau of Land Management | Arroyo Toad |
| Viaduct | US Forest Service | California Red-legged Frog |
| Retained Cut/Trench | State | Mountain Yellow-legged Frog |
| Tunnel | Private | |
| Tunneling RSA | San Gabriel Mountains National Monument | |
| Risk Areas | | |
| High | | |
| Moderate | | |

Figure 1a
Listed Amphibian Impacts

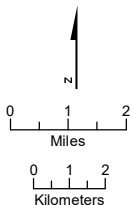
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PALMDALE TO BURBANK PROJECT SECTION**



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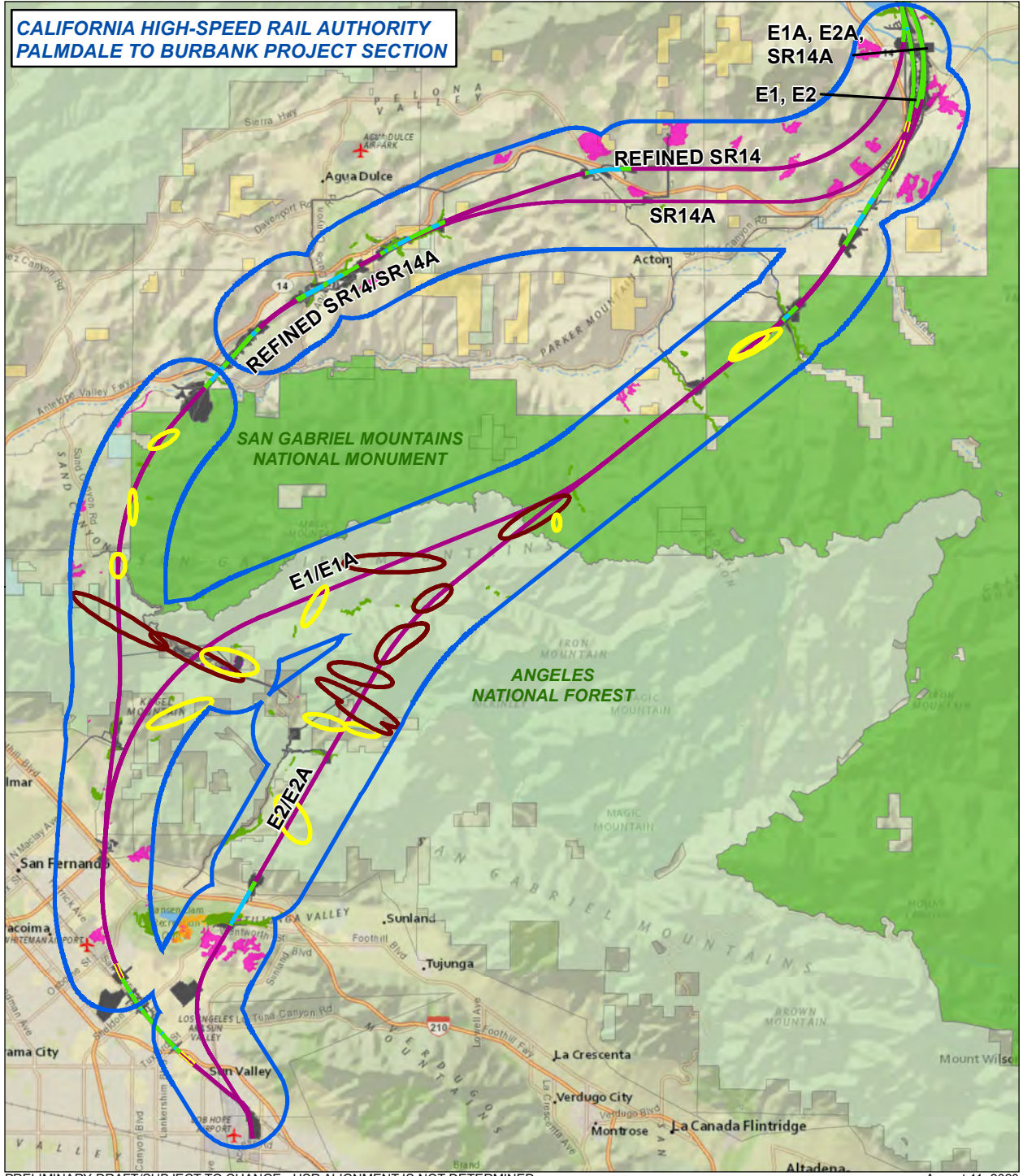
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|------------------------------|---|-------------------|
| HSR Alignment Profile | Jurisdiction | Amphibians |
| At Grade | Bureau of Land Management | Coast Range Newt |
| Viaduct | US Forest Service | Western Spadefoot |
| Retained Cut/Trench | State | |
| Tunnel | Private | |
| Tunneling RSA | San Gabriel Mountains National Monument | |
| Risk Areas | | |
| High | | |
| Moderate | | |

Figure 1b
Non-Listed Amphibian Impacts

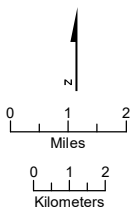
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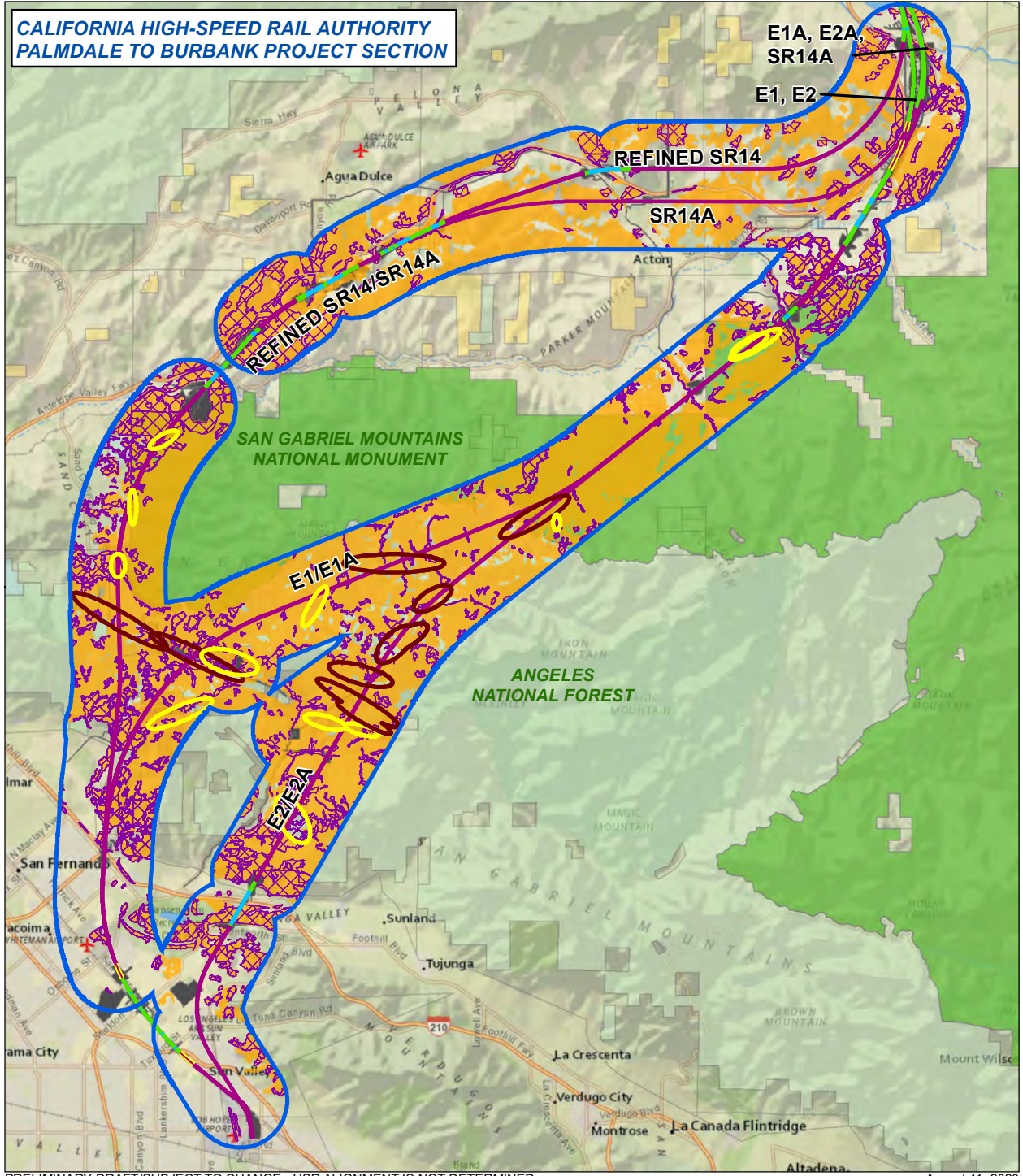
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HSR Alignment Profile	Jurisdiction	Birds
— At Grade	 Bureau of Land Management	 Least Bell's Vireo
— Viaduct	 US Forest Service	 Southwest Willow Flycatcher
— Retained Cut/Trench	 State	 Tricolored Blackbird
— Tunnel	 Private	 Yellow-billed Cuckoo
 Tunneling RSA	 San Gabriel Mountains National Monument	
 High Risk Areas		
 Moderate Risk Areas		

Figure 2a
Listed Bird Impacts

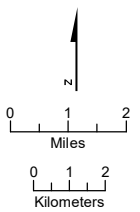
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PALMDALE TO BURBANK PROJECT SECTION**



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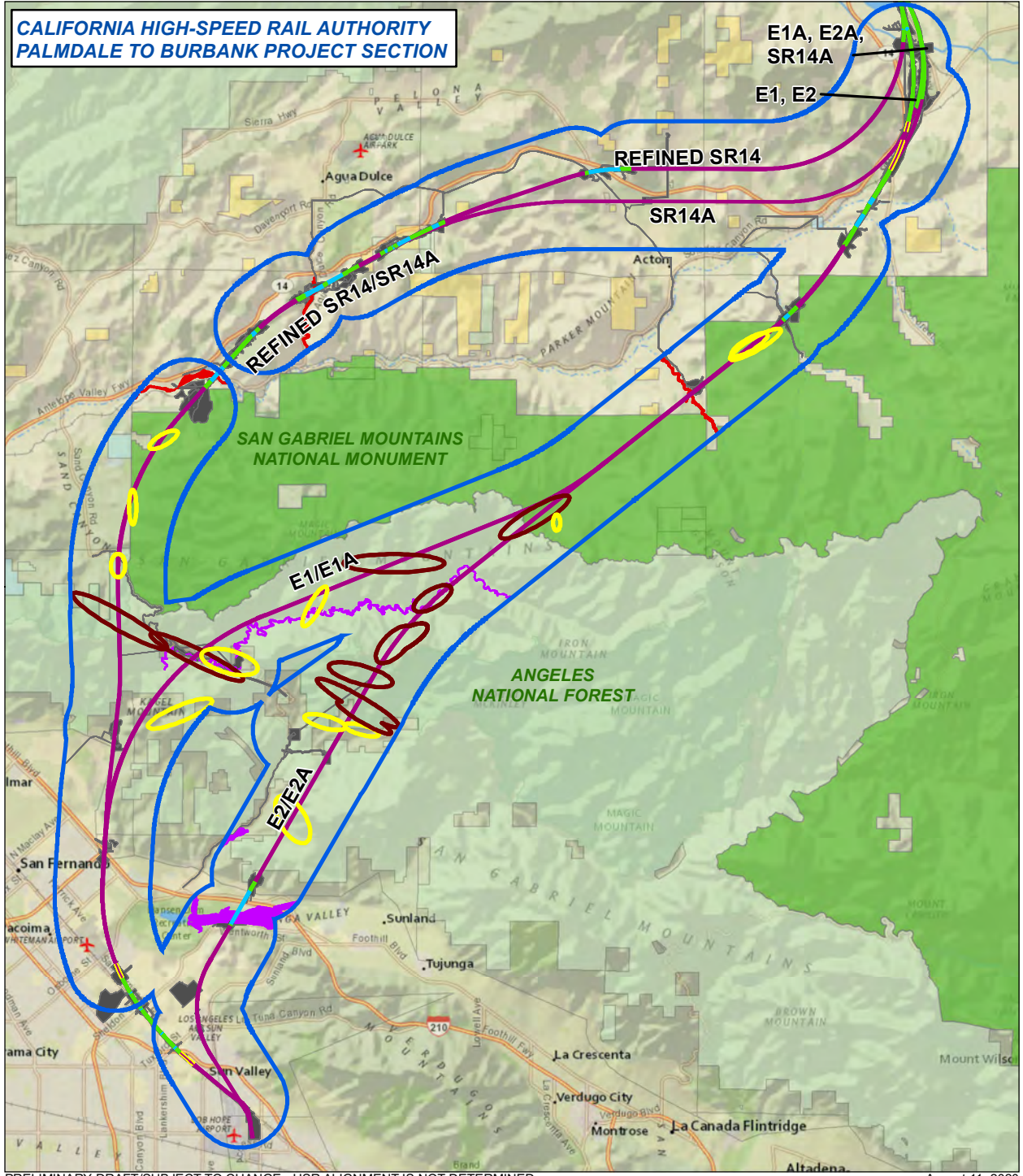
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|------------------------------|---|-------------------|
| HSR Alignment Profile | Jurisdiction | Amphibians |
| At Grade | Bureau of Land Management | Coast Range Newt |
| Viaduct | US Forest Service | Western Spadefoot |
| Retained Cut/Trench | State | |
| Tunnel | Private | |
| Tunneling RSA | San Gabriel Mountains National Monument | |
| Risk Areas | | |
| High | | |
| Moderate | | |

Figure 1b
Non-Listed Amphibian Impacts

**CALIFORNIA HIGH-SPEED RAIL AUTHORITY
PALMDALE TO BURBANK PROJECT SECTION**

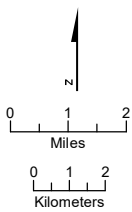


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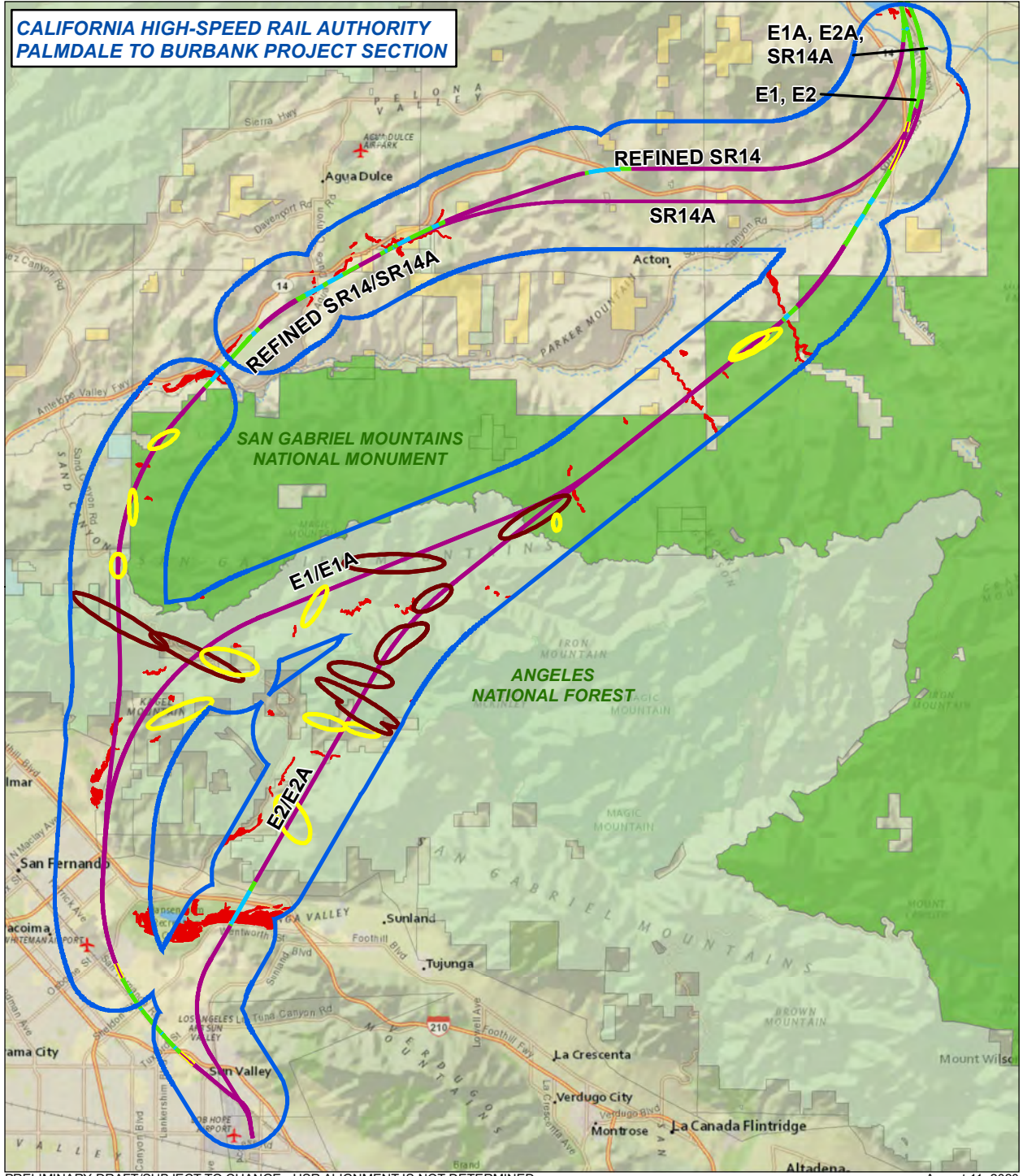
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HSR Alignment Profile	Jurisdiction	Fish
— At Grade	 Bureau of Land Management	— Santa Ana Sucker
— Viaduct	 US Forest Service	— Unarmored Threespine Stickleback
— Retained Cut/Trench	 State	
— Tunnel	 Private	
 Tunneling RSA	 San Gabriel Mountains National Monument	
 High Risk Area		
 Moderate Risk Area		

Figure 3a
Listed Fish Impacts

**CALIFORNIA HIGH-SPEED RAIL AUTHORITY
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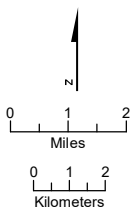


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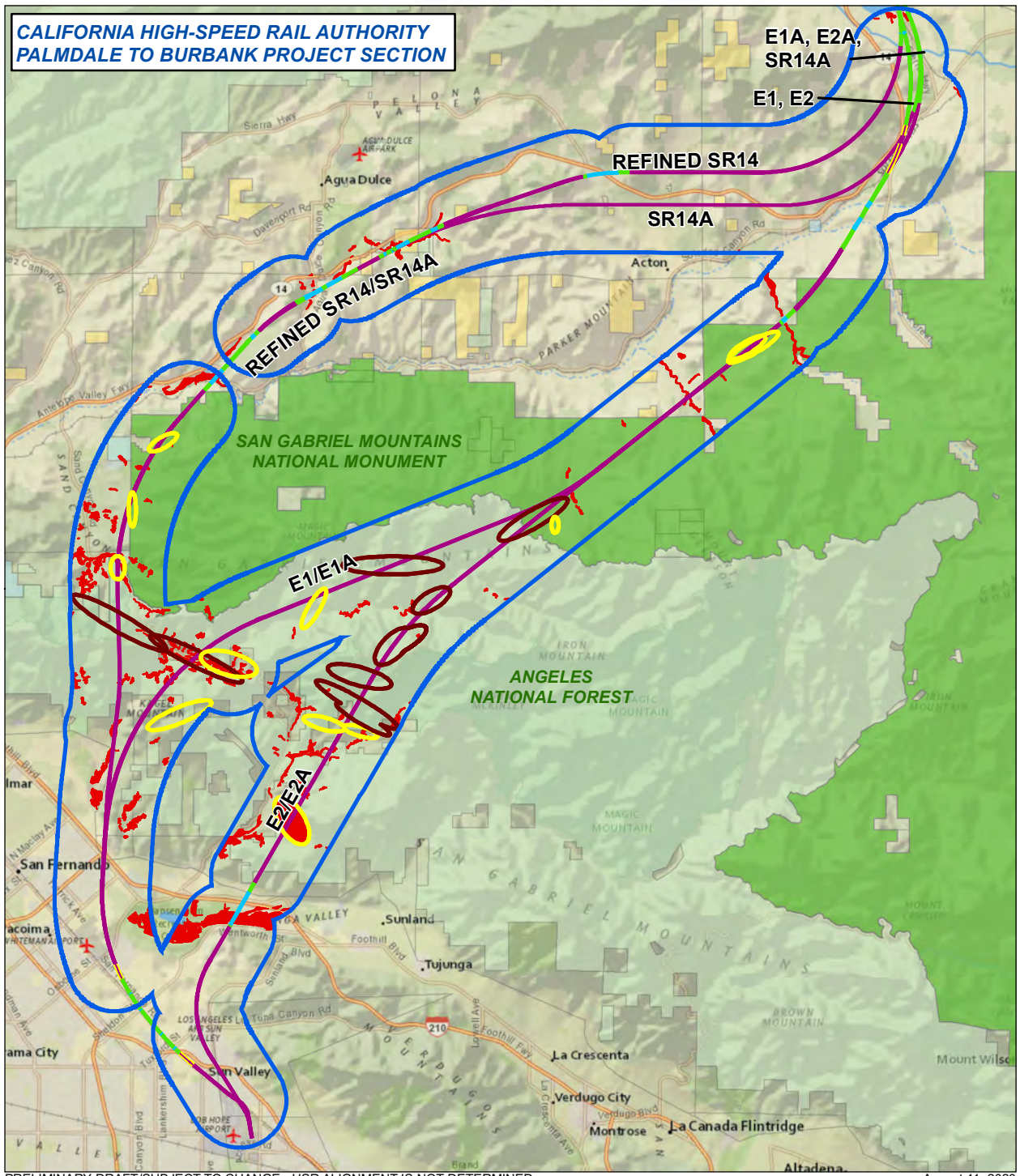
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HSR Alignment Profile	Jurisdiction	Fish
— At Grade	 Bureau of Land Management	■ Arroyo Chub and Santa Ana Speckled Dace
— Viaduct	 US Forest Service	
— Retained Cut/Trench	 State	
— Tunnel	 Private	
 Tunneling RSA	 San Gabriel Mountains National Monument	
 High Risk Areas		
 Moderate Risk Areas		

Figure 3b
Non-Listed Fish Impacts

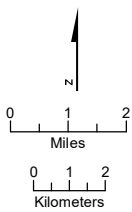


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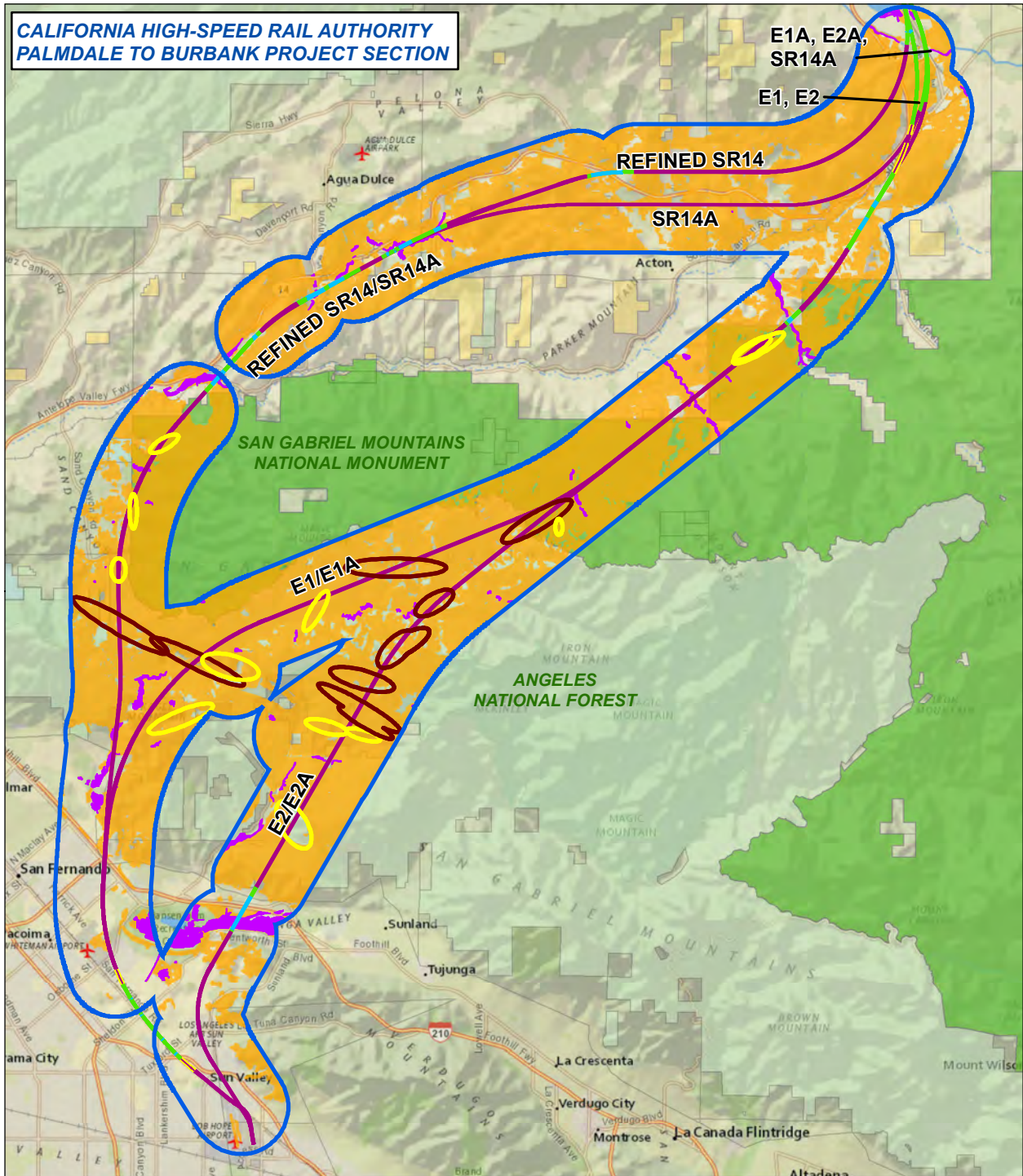
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HSR Alignment Profile	Jurisdiction	Mammals
— At Grade	 Bureau of Land Management	 Ringtail
— Viaduct	 US Forest Service	
— Retained Cut/Trench	 State	
— Tunnel	 Private	
 Tunneling RSA	 San Gabriel Mountains National Monument	
 High Risk Areas		
 Moderate Risk Areas		

Figure 4
Non-Listed Mammal Impacts

**CALIFORNIA HIGH-SPEED RAIL AUTHORITY
PALMDALE TO BURBANK PROJECT SECTION**

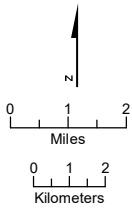


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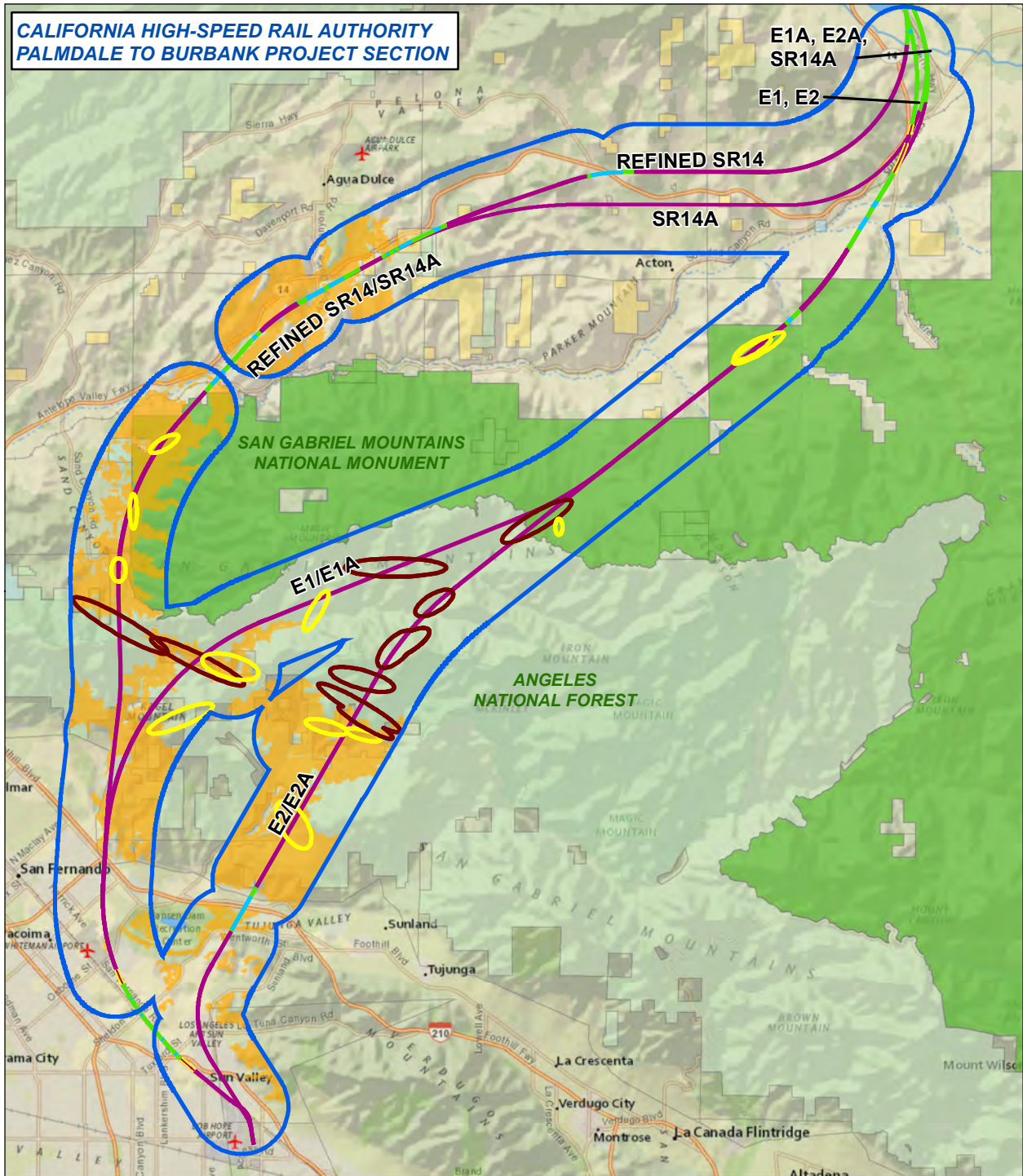
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|--|--|---|
| <p>HSR Alignment Profile</p> <ul style="list-style-type: none"> — At Grade — Viaduct — Retained Cut/Trench — Tunnel Tunneling RSA <p>Risk Areas</p> <ul style="list-style-type: none"> High Moderate | <p>Jurisdiction</p> <ul style="list-style-type: none"> Bureau of Land Management US Forest Service State Private San Gabriel Mountains National Monument | <p>Reptiles</p> <ul style="list-style-type: none"> South Coast Garter Snake and Two-striped Garter Snake Western Pond Turtle |
|--|--|---|

Figure 5
Non-Listed Reptile Impacts

**CALIFORNIA HIGH-SPEED RAIL AUTHORITY
PALMDALE TO BURBANK PROJECT SECTION**

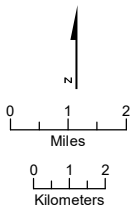


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August 12, 2020

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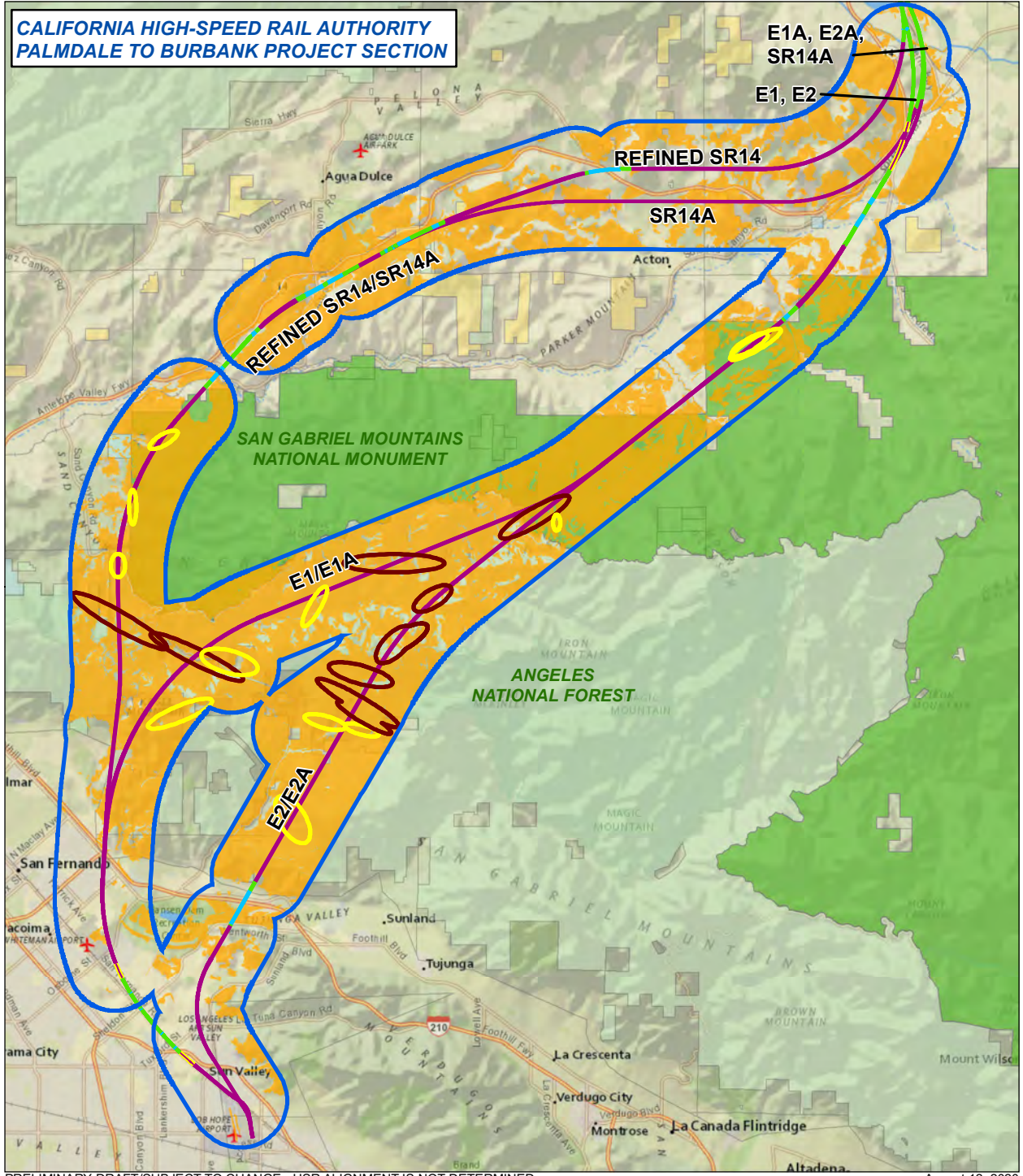
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HSR Alignment Profile	Jurisdiction	Listed Plant Species
— At Grade	 Bureau of Land Management	 Nevin's Barbary
— Viaduct	 US Forest Service	
— Retained Cut/Trench	 State	
— Tunnel	 Private	
 Tunneling RSA	 San Gabriel Mountains National Monument	
 High Risk Area		
 Moderate Risk Area		

Figure 6a
Listed Plants Impacts

**CALIFORNIA HIGH-SPEED RAIL AUTHORITY
PALMDALE TO BURBANK PROJECT SECTION**

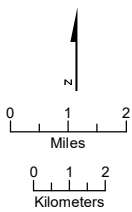


PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED

August 12, 2020

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- | HSR Alignment Profile | Jurisdiction | Non-listed Plant Species Habitat |
|---|---|--|
| — At Grade | Bureau of Land Management | Non-listed Plant Species Habitat |
| — Viaduct | US Forest Service | |
| — Retained Cut/Trench | State | |
| — Tunnel | Private | |
| Tunneling RSA | San Gabriel Mountains National Monument | |
| High Risk Areas | | |
| Moderate Risk Areas | | |

Figure 6b
Non-Listed Plants Impacts

ATTACHMENT B. EVALUATION OF GROUNDWATER DEPENDENT RESOURCES

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Table B-1. Vegetation Communities within the Refined SR14, SR14A, E1, E1A, E2, and E2A Resource Study Areas

Vegetation Types (CWHR)	Dominant or Codominant Species	Groundwater Dependent ¹
Tree-Dominated Habitats		
Coastal oak woodland (COW)	Coast live oak (<i>Quercus agrifolia</i>).	Yes. Coast live oak is listed as a California phreatophyte.
Juniper (JUN)	California juniper (<i>Juniperus californica</i>) is dominant or codominant with Tucker oak (<i>Quercus john-tuckeri</i>). Joshua tree (<i>Yucca brevifolia</i>) may be present at low cover, and there is often a shrub layer composed of Mojave Desert California buckwheat (<i>Eriogonum fasciculatum</i> var. <i>polifolium</i>), Nevada ephedra (<i>Ephedra nevadensis</i>), and other shrub species.	No. Dominant or codominant species are not listed as California phreatophytes. Associated shrub species are also not listed as phreatophytes.
Montane hardwood-conifer (MHC) ²	Bigcone Douglas fir (<i>Pseudotsuga macrocarpa</i>) is dominant or codominant with canyon live oak (<i>Quercus chrysolepis</i>) and coast live oak. The shrub layer is open and consists of hoar leaf ceanothus (<i>Ceanothus crassifolius</i>), scrub oak (<i>Quercus</i> sp.), chamise (<i>Adenostoma fasciculatum</i>), big-berry manzanita (<i>Arctostaphylos glauca</i>), and other shrubs.	Yes. Although bigcone Douglas fir is not a phreatophyte, several of the codominant trees and associated shrub species are listed as phreatophytes.
Valley foothill riparian (VRI)	Fremont cottonwood (<i>Populus fremontii</i>) is dominant or codominant with California sycamore (<i>Platanus racemosa</i>), Goodding's black willow (<i>Salix gooddingii</i>), and arroyo willow (<i>Salix lasiolepis</i>). The shrub layer is open to dense and includes mule fat (<i>Baccharis salicifolia</i>), blue elderberry (<i>Sambucus nigra</i> ssp. <i>Caerulea</i>), tarragon (<i>Artemisia dracuncululus</i>), and poison oak (<i>Toxicodendron diversilobum</i>).	Yes. Cottonwood is listed as a California phreatophyte, and a majority of the codominant and associated shrub species are phreatophytes.
Shrub-Dominated Habitats		
Chamise-redshank chaparral (CRC)	Chamise-redshank chaparral tends to occur on xeric, south-facing slopes with ceanothus (<i>Ceanothus</i> sp.), manzanita (<i>Arctostaphylos</i> sp.), scrub oak (<i>Quercus</i> sp.), and laurel sumac (<i>Malosma laurina</i>).	No. Chamise is listed as a phreatophyte in some locations, but not within a study conducted in the San Gabriel mountains (Hellmers et al. 1955). No other dominant or codominant species are listed as phreatophytes.
Coastal scrub (CSC)	California buckwheat is dominant or codominant in the cismontane stands with coastal sagebrush (<i>Artemisia californica</i>) and deerweed (<i>Acmispon glaber</i>). Transmontane stands include white bur sage, big sagebrush, creosote, and bladder sage (<i>Scutellaria mexicana</i>). Emergent trees may be present at low cover, including California juniper and Joshua tree.	No. Dominant and codominant species are not listed as phreatophytes.

Vegetation Types (CWHR)	Dominant or Codominant Species	Groundwater Dependent ¹
Desert scrub (DSC)	Rubber rabbitbrush (<i>Ericameria nauseosa</i>) or Creosote bush is generally dominant, with white bur sage, allscale saltbush (<i>Atriplex polycarpa</i>), Nevada ephedra, Anderson's desert-thorn (<i>Lycium andersonii</i>), and other desert shrub species.	No. Rubber rabbitbrush is listed as a phreatophyte; however, no other dominant or codominant species are phreatophytes. Overall, the community does not appear to be dominated by phreatophytes or codominated by a significant number of phreatophytes to be considered groundwater dependent.
Desert wash (DSW)	Desert wash is an open riparian shrubland up to 4 feet tall that occupies washes and drainages. Scalebroom (<i>Lepidospartum squamatum</i>) is dominant or codominant with mule fat, big sagebrush, and/or rubber rabbitbrush.	Yes. Scalebroom and several of the codominant species are phreatophytes.
Sagebrush (SGB)	Big sagebrush (<i>Artemisia tridentata</i>) is dominant in the shrub layer or codominant along with allscale saltbush, rubber rabbitbrush, and Mojave Desert California buckwheat or other low shrub species.	No. Big sagebrush is listed as a phreatophyte primarily on the basis of one study at a location in Washington (Klepper et al. 1985); however, review of this study does not indicate the species is described in the study as a phreatophyte. Allscale is also listed as a phreatophyte; however, no reference supporting the determination is provided in the Groundwater Resource Hub. Rubber rabbitbrush is listed as a phreatophyte (in part based on Klepper et al. 1985). Overall, the community does not appear to be dominated by phreatophytes or codominated by a significant number of phreatophytes to be considered groundwater dependent.
Mixed chaparral (MCH) ²	Tucker oak is dominant or codominant with California juniper, California buckwheat, interior goldenbush (<i>Ericameria linearifolia</i>), rubber rabbitbrush, and other shrub species.	No. The majority of dominant and codominant species are not listed as phreatophytes. Rubber rabbitbrush is listed as a phreatophyte (in part based on Klepper et al. 1985); however, overall the community does not appear to be dominated or codominated by a significant number of phreatophytes to be considered groundwater dependent.
Montane chaparral (MCP)	Characteristic species include hoaryleaf ceanothus (<i>Ceanothus crassifolius</i>), Eastwood manzanita (<i>Arctostaphylos glandulosa</i> ssp. <i>Glandulosa</i>), big-berry manzanita (<i>Arctostaphylos glauca</i>), mountain mahogany (<i>Cercocarpus betuloides</i>), chamise, and scrub oak (<i>Quercus</i> sp.). Occasional associates include canyon live oak and bigcone Douglas fir.	No. Hoaryleaf ceanothus is listed as a phreatophyte based on Hellmers et al (1955); however, the cited paper does not support this determination. Additionally, other dominant and codominant species are not listed as phreatophytes.

Vegetation Types (CWHR)	Dominant or Codominant Species	Groundwater Dependent ¹
Herbaceous Habitats		
Annual grassland (AGS)	Nonnative forbs, black mustard (<i>Brassica nigra</i>), Saharan mustard (<i>Brassica tournefortii</i>), short pod mustard (<i>Hirschfeldia incana</i>), Russian thistle (<i>Salsola tragus</i>), tall tumbleweed mustards (<i>Sisymbrium spp.</i>), and annual grasses such as bromes (<i>Bromus spp.</i>), oats (<i>Avena spp.</i>), schismus (<i>Schismus spp.</i>), and mouse barley (<i>Hordeum murinum</i>) are typically dominant or codominant.	No. None of the species are listed as phreatophytes.
Other Land Cover Types		
Barren (BAR)	Barren habitat is defined by the absence of vegetation.	Not applicable.
Deciduous orchard/vineyard (DOR/VIN)	DOR/VIN represents agricultural land used for growing fruit or nut trees or vine crops.	Not applicable.
Lacustrine (LAC)	LAC habitats are areas of open water and include freshwater ponds, lakes, and canals that are inundated by natural or artificial means.	Yes. All aquatic types are considered potentially groundwater dependent.
Riverine (RIV)	RIV habitat consists of or intermittent or continually running water rivers and streams.	Yes. All aquatic types are considered potentially groundwater dependent.
Urban (URB)	Not applicable.	Not applicable.

Source: Authority, 2020a and 2020b

¹ The source for determining if a species is a phreatophyte was the Groundwater Resource Hub (2021) unless otherwise noted.

Table B-2. Special-Status Plants within the Refined SR14, SR14A, E1, E1A, and E2, and E2A Resource Study Areas

Common Name	Scientific Name	Protection Status ¹			Associated CWHR Vegetation Community ² Description of Known Habitat within RSA (FESA-Listed Species)	Groundwater Dependent ³
		Federal	State	CRPR		
FESA-Listed Special-Status Plants						
Braunton's milk-vetch	<i>Astragalus brauntonii</i>	FE/FSS	--	1B.1	Between the Pacific Crest Trail and Vulcan Mine (Refined SR14/SR14A), within ANF along the SR 14/Little Tujunga Canyon Road interchange (Refined SR14/SR14A/E1/E1A) and Gold Creek Road (E2/E2A), between Pacoima Dam and the I-210/SR 118 interchange (Refined SR14/SR14A/E1/E1A), on either side of the Big Tujunga Wash crossing (E2/E2A), and within the Boulevard Mine (Refined SR14/SR14A/E1/E1A) and CalMat Mine (E2/E2A) disposal sites	No. Occurs in chaparral, coastal scrub, and valley and foothill grassland habitats not known to be groundwater dependent.
Nevin's barberry	<i>Berberis nevinii</i>	FE/FSS	--	1B.1	Near Escondido Canyon Road north of SR 14 (Refined SR14), between Big Springs Road and Vulcan Mine (Refined SR14/SR14A), within ANF along Little Tujunga Canyon Road (all six Build Alternatives) and Gold Creek Road (E2/E2A), between Pacoima Dam and the I-210/SR 118 interchange (Refined SR14/SR14A/E1/E1A), and within the Boulevard Mine (Refined SR14/SR14A/E1/E1A) and CalMat Mine disposal sites (E2/E2A).	Yes. Occurs in riparian habitats.
Slender-horned spineflower	<i>Dodecahema leptoceras</i>	FE/FSS	--	1B.1	Between the Pacific Crest Trail and the I-210/SR 118 interchange (Refined SR14/SR14A/E1/E1A), within the ANF along Little Tujunga Canyon Road (E1/E1A/E2/E2A) and Gold Creek Road (E2/E2A), and within the Big Tujunga Wash area (E2/E2A).	No. Occurs in chaparral, cismontane woodland, and coastal scrub, habitats not known to be groundwater dependent.
Non-FESA-Listed Special-Status Plants						
California androsace	<i>Androsace elongata</i> <i>ssp. Acuta</i>	--	--	4.2	CRC, MCH, COW, MHC, CSC, JUN, AGS	No. Occurs in a variety of habitat types but not known to occur in wetlands.

Common Name	Scientific Name	Protection Status ¹			Associated CWHR Vegetation Community ² Description of Known Habitat within RSA (FESA-Listed Species)	Groundwater Dependent ³
		Federal	State	CRPR		
California satintail	<i>Imperata brevifolia</i>	--	--	2B.1	CRC, MCH, CSC, DSW, DSC, VRI	Yes. Occurs in meadows and seeps (often alkali) as well as riparian scrub habitats.
California spineflower	<i>Mucronea californica</i>	--	--	4.2	CRC, MCH, COW, CSC, AGS	No. Occurs in a variety of habitat types but not known to occur in wetlands.
California saw-grass	<i>Cladium californicum</i>	--	--	2B.2	VRI	Yes. Occurs in meadows and seeps, and marshes and swamps.
Chaparral ragwort	<i>Senecio aphanactis</i>	--	--	2B.2	CSC, CRC, MCH, VRI	No. Occurs in chaparral, cismontane woodland, and coastal scrub, habitats not known to be groundwater dependent.
Chickweed starry puncturebract	<i>Sidotheca caryophylloides</i>	FSS	--	4.3	MCH	No. Occurs in lower montane coniferous forest habitat, which is not known to be groundwater dependent.
Clokey's cryptantha	<i>Cryptantha clokeyi</i>	BLMS	--	1B.2	DSC.	No. Occurs in Mojavean desert scrub, which is not known to be groundwater dependent.
Club-haired mariposa lily	<i>Calochortus clavatus</i> <i>var. clavatus</i>	--	--	4.3	CRC, MCH, CSC, COW, MHC, AGS	No. Occurs in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland habitats, which are not known to be groundwater dependent.
Davidson's bush-mallow	<i>Malacothamnus davidsonii</i>	--	--	1B.2	CRC, MCH, COW, CSC, VRI	Yes. Occurs in riparian habitats.
Fragrant pitcher sage	<i>Lepechinia fragrans</i>	--	--	4.2	CRC, MCH	No. Occurs in chaparral habitats, which are not known to be groundwater dependent.
Forest camp sandwort	<i>Eremogone macradenia</i> <i>var. arcuifolia</i>	FSS	--	--	MCH	No. Occurs in chaparral, cismontane woodland and coast scrub habitats, which are not known to be groundwater dependent.
Greata's aster	<i>Symphotrichium greatae</i>	BLMS	--	1B.3	MHC, CRC, MCH, COW, VRI	Yes. Occurs in riparian woodland habitats (mesic microhabitats).
Lemon lily	<i>Lilium parryi</i>	--	--	1B.2	COW, MHC, VRI	Yes. Occurs in meadows and seeps and riparian forest.

Common Name	Scientific Name	Protection Status ¹			Associated CWHR Vegetation Community ² Description of Known Habitat within RSA (FESA-Listed Species)	Groundwater Dependent ³
		Federal	State	CRPR		
Lemon's syntrichopappus	<i>Syntrichopappus lemmonii</i>	--	--	4.3	CRC, MCH, JST, JUN	No. Occurs in chaparral, Joshua tree woodland, and pinyon and juniper woodlands, which are not known to be groundwater dependent.
Mason's neststraw	<i>Stylocline masonii</i>	--	--	1B.1	JUN	No. Occurs in chenopod scrub and pinyon and juniper woodland habitats, which are not known to be groundwater dependent.
Mesa horkelia	<i>Horkelia cuneata</i> var. <i>puberula</i>	--	--	1B.1	MCH, COW, MHC, CSC	No. Occurs in chaparral, cismontane woodland, and coastal scrub habitats, which are not known to be groundwater dependent.
Mojave paintbrush	<i>Castilleja plagiotoma</i>	--	--	4.3	SGB, MHC, JST, JUN	No. Occurs in a variety of habitats that are not known to be groundwater dependent.
Mt. Gleason's paintbrush	<i>Castilleja gleasonii</i>	--	--	1B.2	CRC, MCH, MHC, JUN	No. Occurs in chaparral, lower montane coniferous forest, and pinyon and juniper woodland, which are not known to be groundwater dependent.
Ocellated lily	<i>Lilium humboldtii</i> ssp. <i>Ocellatum</i>	--	--	4.2	CRC, MCH, COW, MHC, CSC, VRI	Yes. Occurs in riparian woodland habitats.
Palmer's mariposa lily	<i>Calochortus palermi</i> var. <i>palmeri</i>	--	--	1B.2	VRI	Yes. Occurs in meadows and seep habitats.
Parry's spineflower	<i>Chorizanthe parryi</i> var. <i>parryi</i>	--	--	1B.1	CRC, MCH, CSC, COW, MHC, AGS	No. Occurs in a variety of habitat types but is not known to occur in wetlands.
Peirson's morning-glory	<i>Calystegia peirsonii</i>	--	--	4.2	CRC, MCH, COW, MHC, CSC, AGS	No. Occurs in a variety of habitat types but is not known to occur in wetlands.
Piute Mountains navarretia	<i>Navarretia setiloba</i>	BLMS	--	1B.1	COW, JUN, AGS	No. Occurs in cismontane woodland, pinyon and juniper woodland, and valley and foothills grassland habitats, which are not known to be groundwater dependent.
Plummer's mariposa lily	<i>Calochortus plummerae</i>	--	--	4.2	CRC, MCH, MHC	No. Occurs in a variety of habitat types but is not known to occur in wetlands.

Common Name	Scientific Name	Protection Status ¹			Associated CWHR Vegetation Community ² Description of Known Habitat within RSA (FESA-Listed Species)	Groundwater Dependent ³
		Federal	State	CRPR		
Pygmy poppy	<i>Canbya candida</i>	--	--	4.2	JST, DSC, SGB, JUN	No. Occurs in Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland habitats, which are not known to be groundwater dependent.
Rigid fringe-pod	<i>Thysanocarpus rigidus</i>	--	--	1B.2	JUN	No. Occurs in pinyon and juniper habitats, which are not known to be groundwater dependent.
Robbins' nemacladus	<i>Nemacladus secundifloris</i> var. <i>robbinsii</i>	--	--	1B.2	CRC, MCH, AGS	No. Occurs in chaparral and valley and foothills grassland habitats, which are not known to be groundwater dependent.
Robinson's pepper-grass	<i>Lepidium virginicum</i> var. <i>robinsonii</i>	--	--	4.3	CRC, MCH, CSC	No. Occurs in closed-cone coniferous forest, chaparral, and lower montane coniferous forest habitats, which are not known to be groundwater dependent.
Rock monardella	<i>Monardella saxicola</i>	FSS	--	4.2	CRC, MCH, MHC	No. Occurs in chaparral and valley and foothills grassland habitats, which are not known to be groundwater dependent.
Sagebrush loeflingia	<i>Loeflingia squarrosa</i> var. <i>artemisiarum</i>	BLMS	--	2B.2	DSC	No. Occurs in desert dunes, great basin scrub, and Sonoran desert scrub in sandy habitats, which are not known to be groundwater dependent.
Salt spring checkerbloom	<i>Sidalcea neomexicana</i>	FSS	--	2B.2	CRC, MCH, CSC, MHC, DSC	Yes. Occurs in alkaline or mesic areas in a variety of habitats.
San Bernardino aster	<i>Symphotrichum defoliatum</i>	BLMS/ FSS	--	1B.2	COW, MHC, CSC, AGS	Yes. Occurs in meadows and seeps, and marshes and swamps.
San Fernando Valley spineflower	<i>Chorizanthe parryi</i> var. <i>Fernandina</i>	FSS	SE	1B.1	CSC, AGS	No. Occurs in coastal scrub and valley and foothill grassland habitats, which are not known to be groundwater dependent.
San Gabriel bedstraw	<i>Galium grande</i>	BLMS/ FSS	--	1B.2	CRC, MCH, COW, MHC	No. Occurs in a variety of habitat types but is not known to occur in wetlands.

Common Name	Scientific Name	Protection Status ¹			Associated CWHR Vegetation Community ² Description of Known Habitat within RSA (FESA-Listed Species)	Groundwater Dependent ³
		Federal	State	CRPR		
San Gabriel manzanita	<i>Arctostaphylos glandulosa</i> ssp. <i>Gabrielensis</i>	FSS	--	1B.2	CRC, MCH	No. Occurs in rocky chaparral habitats, which are not known to be groundwater dependent.
Short-joint beavertail	<i>Opuntia basilaris</i> var. <i>brachyclada</i>	BLMS/ FSS	--	1B.2	CRC, MCH, DSC, JST, JUN	No. Occurs in a variety of habitat types but is not known to occur in wetlands.
Slender mariposa lily	<i>Calochortus clavatus</i> var. <i>gracilis</i>	FSS	--	1B.2	CRC, MCH, CSC, AGS	No. Occurs in chaparral, coastal scrub, and valley and foothill grassland habitats, which are not known to be groundwater dependent.
Sonoran maiden fern	<i>Thelypteris puberula</i> var. <i>sonorensis</i>	FSS	--	2B.2	LAC	Yes. Occurs in meadows and seeps (seeps, streams).
Southern California black walnut	<i>Juglans californica</i>	FSS	--	4.2	CRC, MCH, COW, MHC, CSC	Yes. Occurs in riparian habitats.
Southern tarplant	<i>Centromadia parryi</i> ssp. <i>australis</i>	--	--	1B.1	CRC, MCH, COW, MHC, CSC	Yes. Occurs in marshes and swamps, vernal mesic valley and foothill grasslands, and vernal pools.
Urn-flowered alumroot	<i>Heuchera caespitosa</i>	FSS	--	4.3	MRI, CSC, MHC	Yes. Occur in riparian forest.
White rabbit-tobacco	<i>Pseudognaphalium leucocephalum</i>	--	--	2B.2	CRC, MCH, COW, CSC, VRI	Yes. Occurs in riparian habitats.

Source: Authority, 2020a and 2020b

¹ Status Code

0.1 – Seriously threatened in California (over 80% of occurrences threatened); 0.2 – Moderately threatened in California (20-80% of occurrences threatened); 0.3 – Not very threatened in California (<20% of occurrences threatened); 1A = Presumed extinct in California; 1B = Rare, Threatened, or Endangered in California and elsewhere; 2B = Rare, Threatened, or Endangered in California, but more common elsewhere; 3 = A review list of plants about which more information is needed; BLMS = Bureau of Land Management sensitive; CRPR Status = California Rare Plant Rank; FE = federally endangered; FSS = U.S. Forest Service sensitive

² California Wildlife Habitat Relationships Code

AGS = annual grassland; BAR = barren; COW = coastal oak woodland; CRC = chamise-redshank chaparral; CSC = coastal scrub; DSC = desert scrub; DSW = desert wash; JST = Joshua tree; JUN = juniper; LAC = lacustrine; MCH = mixed chaparral; MHC = montane hardwood-conifer; MRI = montane riparian; SGB = sagebrush; VRI = valley foothill riparian

³ A "groundwater dependent species" is defined as a species requiring the surface expression of groundwater (e.g., springs, wetlands) or a species dependent upon sub-surface availability of groundwater within the rooting depth of vegetation (e.g., woodlands, riparian habitats) (Eamus et. al. 2016). Under this definition, species were considered to be groundwater dependent if they require aquatic or riparian conditions to exist and complete a significant part or portion of their life cycle. For plants, any species identified as occurring in mesic, wetland, riparian, or similar conditions in the California Native Plant Society Inventory of Rare and Endangered Plants of California (CNPS 2021) was assumed to be groundwater dependent.

RSA = resource study area; SR = state route

Table B-3. Special-Status Plant Communities within the Refined SR14, SR14A, E1, E1A, and E2, and E2A Resource Study Areas

Common Name	Scientific Name	CNDDB Rarity Ranking ¹	Associated CWHR Vegetation Community ²	Groundwater Dependent ⁵
Scalebroom scrub	<i>Lepidospartum squamatum</i>	S1 and S3 ³	DSW	Yes. Scalebroom is a California phreatophyte.
California sycamore woodlands	<i>Platanus racemosa</i>	S1 and S3 ³	VRI	Yes. California sycamore occurs in riparian habitats and is a California phreatophyte.
Fremont cottonwood forest	<i>Populus fremontii</i>	S3	VRI	Yes. Fremont cottonwood occurs in riparian habitats and is a California phreatophyte.
Bigcone Douglas fir forest	<i>Pseudotsuga macrocarpa</i>	S3	MHC	No. Bigcone Douglas fir is not known to be a phreatophyte.
Coastal Oak woodland	<i>Quercus agrifolia</i>	S4 ⁴	COW	Yes. Coast live oak is known to have very deep roots and is a California phreatophyte.
Black willow thickets	<i>Salix gooddingii</i>	S3	VRI	Yes. Black willow occurs in riparian habitats and is a California phreatophyte.

Source: Authority, 2020a and 2020b

¹ There are no special-status plant communities within the Refined SR14, E1, and E2 special-status plant RSAs that are ranked as S2 or S5.

² California Wildlife Habitat Relationships (CWHR) Codes: COW = coastal oak woodland; MHC = montane hardwood-conifer; DSW = desert wash; VRI = valley foothill riparian; JST = Joshua tree

³ This community has a rarity ranking of S3, although some associations are S1.

⁴ Although Coastal Oak Woodland has an S4 rarity ranking, it is subject to preservation requirements of Section 22.56.2060 of the County of Los Angeles Oak Ordinance (see Section 3.7.4.10).

CNDDB = California Natural Diversity Database

⁵ A "groundwater dependent community" is defined as a community requiring the surface expression of groundwater (e.g., springs, wetlands) or a community dependent upon sub-surface availability of groundwater within the rooting depth of vegetation (e.g., woodlands, riparian habitats) (Eamus et. al. 2016). For plant communities, any community identified as occurring in mesic, wetland, riparian, or similar conditions, known to have deep roots which can intercept groundwater (i.e., oaks) and/or listed as a California phreatophyte (Groundwater Resource Hub 2021) was assumed to be groundwater dependent.

Table B-4. Special-Status Wildlife within the Refined SR14, SR14A, E1, E1A, and E2, and E2A Resource Study Areas

Common Name	Scientific Name	Protection Status ¹		Known Habitat within RSA (FESA-Listed Species) or Associated CWHR Vegetation Community ² (Non-FESA-Listed Species)	Groundwater Dependence ³
		Federal	State		
Amphibians					
Arroyo toad ⁴	<i>Anaxyrus californicus</i>	FE	SSC	Soledad Canyon (Refined SR14/SR14A) and Arrastre Canyon (E1/E1A/E2/E2A).	Yes. Inhabit stream terraces and in channel margins. Require shallow water for breeding (USFWS 2014). May be dependent on groundwater to the extent habitats are fed by groundwater sources.
California red-legged frog ⁴	<i>Rana draytonii</i>	FT	SSC	Una Lake (all six Build Alternatives), Soledad Canyon (Refined SR14/SR14A), Arrastre Canyon (E1/E1A/E2/E2A), within the ANF (all six Build Alternatives), and Big Tujunga Wash (E2/E2A). The California Red-legged Frog Habitat Assessment and Protocol Survey (Authority 2017b) determined California red-legged frogs are unlikely to occur at these areas due lack of known populations, lack of observed individuals, and the scarcity of suitable breeding habitat. However, the E1, E1A, E2, and E2A Build Alternative alignments would cross Arrastre Canyon Creek and Aliso Canyon Creek downstream from known populations of California red-legged frog and species presence has therefore been assumed in these downstream areas.	Yes. Inhabit permanent water sources. May be dependent on groundwater to the extent that permanent pools are fed by groundwater.
Coast range newt	<i>Taricha torosa</i>	--	SSC	MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, MRI, VRI.	Yes. Inhabit permanent streams for breeding and predominately lay eggs in pools. May be dependent on groundwater to the extent that permanent pools are fed by groundwater.
Southern mountain yellow-legged frog ^{3,4}	<i>Rana muscosa</i>	FE	SE	Within ANF (all six Build Alternatives), north of the I 220/SR 118 interchange (Refined SR14/SR14A/E1/E1A), and north of the Big Tujunga Wash (E2/E2A).	Yes. Inhabit permanent streams. May be dependent on groundwater to the extent that permanent pools are fed by groundwater.

Common Name	Scientific Name	Protection Status ¹		Known Habitat within RSA (FESA-Listed Species) or Associated CWHV Vegetation Community ² (Non-FESA-Listed Species)	Groundwater Dependence ³
		Federal	State		
Western spadefoot	<i>Spea hammondi</i>	BLMS	SSC	DOR/VIN, CSC, MHC, COW, DSW, DSC, AGS, MRI, VRI.	Yes, potentially. Inhabit stream and channel margins. Require shallow water for breeding. May be dependent on groundwater to the extent that their habitats are fed by groundwater sources.
Birds					
American peregrine falcon	<i>Falco peregrinus anatum</i>	Delisted	Delisted /FP	BAR, DOR/VIN, CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JST, JUN, MRI, VRI, LAC, URB.	No. Although peregrine falcons may forage within riparian or other habitats that may be dependent on groundwater, they are not exclusively limited to these habitats and have abundant habitat and range within the project area.
Bald eagle	<i>Haliaeetus leucocephalus</i>	Delisted/ FSS/ BGEPA/ BLMS	SE/FP	LAC, VRI.	No. Although bald eagles may perch in riparian trees, they nest generally in larger pine trees and forage in larger lakes.
California condor ⁴	<i>Gymnogyps californianus</i>	FE	SE/FP	Throughout Tehachapi and Southern California Mountains and foothill regions of the RSA. Foraging habitat is prevalent throughout the Refined SR14, SR14A, E1, E1A, E2, and E2A RSAs. Known to roost, forage, and loiter north of San Fernando within ANF. The Build Alternative footprint is a very small percentage of the species range. There is a lack of suitable nesting and roosting habitat proximal to the Build Alternative alignments.	No. Although condors may forage within riparian or other habitats that may be dependent on groundwater, they are not exclusively limited to these habitats and have abundant habitat and range within the project area.
Coastal California gnatcatcher ⁴	<i>Poliioptila californica</i>	FT	SSC	Between Agua Dulce Canyon Road and the I-210/SR 118 interchange (Refined SR14/SR14A/E1/E1A), and within the urbanized areas of the cities of Los Angeles and Burbank (all six Build Alternatives).	No. The specific habitat requirements for this species are not dependent on groundwater.

Common Name	Scientific Name	Protection Status ¹		Known Habitat within RSA (FESA-Listed Species) or Associated CWHR Vegetation Community ² (Non-FESA-Listed Species)	Groundwater Dependence ³
		Federal	State		
Golden eagle	<i>Aquila chrysaetos</i>	BGEPA/ BLMS	FP	BAR, DOR/MIN, CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JST, JUN, LAC, MRI, VRI.	No. Although golden eagles may forage within riparian or other habitats that may be dependent on groundwater, they are not exclusively limited to these habitats and have abundant habitat and range within the project area.
Gray vireo	<i>Vireo vicinior</i>	BCC/FS S/BLMS	SSC	CRC, MCH, MCP, CSC, JST, JUN.	No. Although gray vireos may forage or nest within riparian or other habitats that may be dependent on groundwater, they are not exclusively limited to these habitats and have abundant habitat and range within the project area.
Least Bell's vireo ⁴	<i>Vireo bellii pusillus</i>	FT	SE	Near Lake Palmdale (all six Build Alternatives), between Big Springs Road and 0.75 mile east of Agua Dulce Canyon Road (Refined SR14), between 0.75 mile east of Agua Dulce Canyon Road and Vulcan Mine (Refined SR14/SR14A), south of the Pacoima Dam (Refined SR14/SR14A), within Aliso and Arrastre Canyons (E1/E1A/E2/E2A), along Crown Valley Road (E1/E1A), within ANF along Gold Creek Road (E2/E2A) and Little Tujunga Canyon Road, and within the Big Tujunga Wash (E2/E2A).	Yes. Least Bell's vireos inhabit and rely upon riparian woodlands that may be dependent on groundwater during summer and fall months.
Least bittern	<i>Ixobrychus exilis</i>	--	SSC	LAC, VRI.	Yes. Least bitterns inhabit permanent streams and wetlands. May be dependent on groundwater to the extent that permanent water sources are fed by groundwater.
Loggerhead shrike	<i>Lanius ludovicianus</i>	BCC	SSC	DOR/MIN, CRC, MCH, MCP, SGB, CSC, DSW, DSC, AGS, LAC, MRI, VRI.	No. The specific habitat requirements for this species are not dependent on groundwater.
Northern harrier	<i>Circus cyaneus</i>	--	SSC	AGS, LAC.	Yes. Northern harriers nest in patches of dense vegetation in habitats, including wet meadows, weedy borders of rivers and streams, and annual grasslands. Dense vegetation may be dependent on groundwater sources during summer and fall months and during droughts.

Common Name	Scientific Name	Protection Status ¹		Known Habitat within RSA (FESA-Listed Species) or Associated CWHR Vegetation Community ² (Non-FESA-Listed Species)	Groundwater Dependence ³
		Federal	State		
Southwestern willow flycatcher ⁴	<i>Empidon traillii extimus</i>	FE	SE	Near Lake Palmdale (Refined SR14/SR14A/E1/E1A/E2/E2A), between the proposed SR 14 overcrossing and 0.75 mile east of Agua Duce Canyon Road (Refined SR14), between 0.75 mile east of Agua Dulce Canyon Road and Vulcan Mine (Refined SR14/SR14A), south of Pacoima Dam (Refined SR14/SR14A), within Aliso and Arrastre Canyons (E1/E1A/E2/E2A), within ANF along Gold Creek Road (E2/E2A) and Little Tujunga Canyon Road (E2/E2A), and within the Big Tujunga Wash (E2/E2A).	Yes. Southwestern willow flycatcher inhabit riparian woodlands that may be dependent on groundwater.
Swainson's hawk ⁴	<i>Buteo swainsoni</i>	BLMS	ST	Along Sierra Highway in Palmdale (all six Build Alternatives), at the proposed Refined SR14 alignment crossing of the SR 14 freeway (Refined SR14), at the proposed Santa Clara River crossing (Refined SR14/SR14A), north of the I-210/SR 118 interchange (Refined SR14/SR14A/E1/E1A), throughout the San Fernando Valley (Refined SR14/SR14A/E1/E1A), along Angeles Forest Highway south of the SR 14/Sierra Highway intersection (E1/E1A/E2/E2A), within ANF along Soledad Canyon Road (E1/E1A/E2/E2A), near the Big Tujunga Wash (E2/E2A), and along Little Tujunga Canyon Road (E2/E2A).	No. The specific habitat requirements for this species are not dependent on groundwater.
Tricolored blackbird	<i>Agelaius tricolor</i>	BCC/ BLMS	ST	Near Lake Palmdale (all six Build Alternatives) and within CalMat Mine (E2/E2A).	Yes. Colonies of tricolored blackbirds may breed in freshwater marshes and lakes that could be dependent on groundwater.
Western burrowing owl	<i>Athene cunicularia</i>	BCC/ BLMS	SSC	DOR/VIN, CRC, MCH, MCP, SGB, CSC, DSW, DSC, AGS, JST, JUN.	No. The specific habitat requirements for this species are not dependent on groundwater.

Common Name	Scientific Name	Protection Status ¹		Known Habitat within RSA (FESA-Listed Species) or Associated CWHR Vegetation Community ² (Non-FESA-Listed Species)	Groundwater Dependence ³
		Federal	State		
White-tailed kite	<i>Elanus leucurus</i>	BLMS	FP	DOR/VIN, DSW, AGS, MRI, VRI.	No. Although white-tailed kites may forage within riparian or other habitats that may be dependent on groundwater, they are not exclusively limited to these habitats and have abundant habitat and range within the project area.
Western yellow-billed cuckoo ⁴	<i>Coccyzus americanus occidentalis</i>	FE/BLMS	SE	Between the SR 14 overcrossing and 0.75 mile east of Agua Dulce Canyon Road (Refined SR14), between 0.75 mile east of Agua Dulce Canyon Road and Vulcan Mine (Refined SR14), south of Pacoima Dam (Refined SR14/SR14A), within the ANF along Little Tujunga Canyon Road (Refined SR14/SR14A/E1/E1A), and within the Big Tujunga Wash (E2/E2A).	Yes. Western yellow-billed cuckoos inhabit riparian woodlands that may be dependent on groundwater.
Yellow-breasted chat	<i>Icteria virens</i>	--	SSC	DSW, MRI, VRI.	Yes. Yellow-breasted chats inhabit riparian woodlands that may be dependent on groundwater.
Yellow-headed blackbird	<i>Xanthocephalus</i>	--	SSC	LAC, VRI.	Yes. Yellow-headed blackbirds breed almost exclusively in marshes with tall emergent vegetation.
Yellow warbler	<i>Dendroica petechia brewsteri</i>	BCC	SSC	DSW, MRI, VRI.	Yes. Yellow warblers inhabit riparian woodlands that may be dependent on groundwater.
Fish					
Arroyo chub	<i>Gila orcuttii</i>	FSS	SSC	DSW, MRI, VRI.	Yes
Santa Ana speckled dace	<i>Rhinichthys osculus</i>	FSS	SSC	DSW, MRI, VRI.	Yes
Santa Ana sucker ⁴	<i>Catostomus santaanae</i>	FT	--	Within ANF along Pacoima Wash (Refined SR14/SR14A/E1/E1A) and along Little Tujunga Canyon Road (E2/E2A), and within the Big Tujunga Wash (E2/E2A).	Yes

Common Name	Scientific Name	Protection Status ¹		Known Habitat within RSA (FESA-Listed Species) or Associated CWHR Vegetation Community ² (Non-FESA-Listed Species)	Groundwater Dependence ³
		Federal	State		
Unarmored threespine stickleback ⁴	<i>Gasterosteus aculeatus williamsoni</i>	FE	SE/FP	Along Agua Dulce Canyon Road (Refined SR14/SR14A), within Soledad Canyon (Refined SR14), and within Arrastre Canyon (E1/E1A/E2/E2A).	Yes
Invertebrates					
San Emigdio blue butterfly	<i>Plebulina emigdionis</i>	FSS	--	DSW, DSC, JST, JUN	No. The specific habitat requirements for this species are not dependent on groundwater.
San Gabriel Mountains elfin butterfly	<i>Callophrys mossii hidakupa</i>	FSS	--	CRC, MCH, MCP, MHC ⁴	No. The specific habitat requirements for this species are not dependent on groundwater.
Vernal pool fairy shrimp ³	<i>Branchinecta lynchi</i>	FT	--	AGS	No. This species is dependent on rainwater filling vernal pools, seasonal wetlands, and ditches.
Mammals					
American badger	<i>Taxidea taxus</i>	--	SSC	BAR, CRC, MCH, MCP, SGB, CSC, COW, DSW, DSC, AGS, JST, JUN.	No. The specific habitat requirements for this species are not dependent on groundwater.
Fringed myotis	<i>Myotis thysanodes</i>	BLMS/ FSS	--	MHC, JUN	Yes. This species is dependent on groundwater because it relies on open water for foraging and drinking purposes.
Mohave ground squirrel	<i>Xerospermophilus mohavensis</i>	BLMS	ST	DSW, DSC, JST	No. The specific habitat requirements for this species are not dependent on groundwater.
Mountain lion	<i>Puma concolor</i>	--	CE	CRC, MCH, MCP, SGB, CSC, COW, DSW, AGS, JST, JUN, MRI, VRI.	No. Though mountain lions may occur within riparian or other habitats that may be dependent on groundwater, they are not exclusively limited to these habitats.
Pallid bat	<i>Antrozous pallidus</i>	FSS/BL MS	SSC	BAR, DOR/VIN, CRC, MCH, MCP, SGB, CSC, COW, DSW, DSC, AGS, JST, JUN, MRI, VRI, URB.	No. The specific habitat requirements for this species are not dependent on groundwater.

Common Name	Scientific Name	Protection Status ¹		Known Habitat within RSA (FESA-Listed Species) or Associated CWHV Vegetation Community ² (Non-FESA-Listed Species)	Groundwater Dependence ³
		Federal	State		
Ringtail	<i>Bassariscus astutus</i>	--	FP	COW, DSW, MRI, VRI.	Yes. In southern California, ringtails occur mainly in riparian woodlands that may be dependent on groundwater.
San Diego black-tailed jackrabbit	<i>Lepus californicus bennettii</i>	--	SSC	BAR, DOR/VIN, CRC, MCH, MCP, SGB, CSC, COW, DSW, DSC, AGS, JST, JUN.	No. The specific habitat requirements for this species are not dependent on groundwater.
San Diego desert woodrat	<i>Neotoma lepida intermedia</i>	--	SSC	BAR, CRC, MCH, MCP, SGB, CSC, COW, DSW, DSC, AGS, JST, JUN.	No. The specific habitat requirements for this species are not dependent on groundwater.
Southern grasshopper mouse	<i>Onychomys torridus ramona</i>	--	SSC	BAR, CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JST, JUN, MRI, VRI.	No. The specific habitat requirements for this species are not dependent on groundwater.
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FSS/BLMS	SSC	BAR, DOR/VIN, CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JST, JUN, VRI, URB.	No. The specific habitat requirements for this species are not dependent on groundwater.
Western mastiff bat	<i>Eumops perotis californicus</i>	BLMS	SSC	BAR, DOR/VIN, CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JST, JUN, VRI, URB.	No. The specific habitat requirements for this species are not dependent on groundwater.
Western red bat	<i>Lasiurus blossevillii</i>	--	SSC	BAR, CSC, MHC, MRI, VRI.	Yes. This species is dependent on groundwater because it relies on open water for foraging and drinking purposes.
Western yellow bat	<i>Lasiurus xanthinus</i>	--	SSC	BAR, CSC, MHC, MRI, VRI.	Yes. This species is dependent on groundwater because it relies on riparian habitats for roosting, foraging, and drinking purposes.
Yuma myotis	<i>Myotis yumanensis</i>	BLMS	--	MCP, COW, JUN, MHC, MRI, VRI	Yes. This species is dependent on groundwater because it relies on open water for foraging and drinking purposes.
Reptiles					
Blainville's horned lizard	<i>Phrynosoma blainvillii</i>	BLMS	SSC	DOR/VIN, CRC, MHC, MCH, MCP, SGB, CSC, COW, DSW, DSC, AGS, JST, JUN, MRI, VRI.	No. The specific habitat requirements for this species are not dependent on groundwater.

Common Name	Scientific Name	Protection Status ¹		Known Habitat within RSA (FESA-Listed Species) or Associated CWHR Vegetation Community ² (Non-FESA-Listed Species)	Groundwater Dependence ³
		Federal	State		
California glossy snake	<i>Arizona elegans occidentalis</i>	--	SSC	DOR/VIN, CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JST, JUN, LAC, MRI, VRI.	No. The specific habitat requirements for this species are not dependent on groundwater.
California legless lizard	<i>Anniella pulchra</i>	FSS	SSC	CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JST, JUN, LAC, MRI, VRI.	No. The specific habitat requirements for this species are not dependent on groundwater.
Coast patch-nosed snake	<i>Salvadora hexalepis virgulata</i>	--	SSC	BAR, DOR/VIN, CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JST, JUN, LAC, MRI, VRI	No. The specific habitat requirements for this species are not dependent on groundwater.
Coastal rosy boa	<i>Lichanura trivirgata roseofusca</i>	FSS	--	CSC, DSC, JUN, CRC, MCH, AGS, DOR, VIN, COW, VRI.	No. Though coastal rosy boas occur are common in riparian forests, they are not dependent on them and can be found in drier habitats such as chaparral and mixed conifer woodland.
Coastal whiptail	<i>Aspidoscelis tigris stejnegeri</i>	--	SSC	DOR/VIN, CRC, MCH, MCP, SGB, CSC, MHC, COW, DSW, DSC, AGS, JST, JUN, LAC, MRI, VRI.	No. The specific habitat requirements for this species are not dependent on groundwater.
Desert tortoise ⁴	<i>Gopherus agassizii</i>	FT	ST	Between Avenue M and the California Aqueduct (all six Build Alternatives).	No. The specific habitat requirements for this species are not dependent on groundwater.
San Bernardino mountain kingsnake	<i>Lampropeltis zonata parvirubra</i>	FSS	--	CRC, MCH, MCP, JUN, MHC, MRI, VRI	Yes. Found in and along rocks or boulders near streams, lake shores, or wet meadows.
San Bernardino ringneck snake	<i>Diadophis punctatus modestus</i>	FSS	--	CRC, MCH, MCP, SGB, AGS, JUN, MHC, MRI, VRI	No. Though San Bernardino ringneck snakes prefer moist habitats, they are not dependent on them and can be found in drier habitats such as chaparral and mixed conifer woodland.
South coast garter snake	<i>Thamnophis sirtalis</i>	--	SSC	DSW, LAC, MRI, VRI.	Yes. Found in and along the edges of permanent streams, rivers, and lakes.
Two-striped garter snake	<i>Thamnophis hammondi</i>	FSS/ BLMS	SSC	DSW, LAC, MRI, VRI.	Yes. Found in and along the edges of permanent streams, rivers, and lakes.

Common Name	Scientific Name	Protection Status ¹		Known Habitat within RSA (FESA-Listed Species) or Associated CWHR Vegetation Community ² (Non-FESA-Listed Species)	Groundwater Dependence ³
		Federal	State		
Western pond turtle	<i>Actinemys marmorata</i>	FSS/ BLMS	SSC	MCH, MCP, SGB, CSC, MHC, COW, AGS, JST, JUN, LAC, MRI, VRI.	Yes. Require permanent water source.

Source: Authority, 2020a and 2020b

¹Status Codes

BCC = USFWS Birds of Conservation Concern; BGEPA = Bald and Golden Eagle Protection Act; BLMS = BLM sensitive; CT = CDFW candidate for state threatened status; FE = federally endangered; FP = CDFW fully protected species; FSS = U.S. Forest Service sensitive; FT = federally threatened; SE = state endangered; SSC = CDFW California species of special concern; ST = state threatened;

²California Wildlife Habitat Relationships Codes

AGS = annual grassland; BAR = barren; COW =coastal oak woodland; CRC = chamise-redshank chaparral; CSC = coastal scrub; DOR/VIN = deciduous orchard/vineyard; DSC = desert scrub; DSW = desert wash; JST = Joshua tree; JUN = juniper; LAC = lacustrine; MCH = mixed chaparral; MCP = montane chaparral; MHC = montane hardwood-conifer; MRI = montane riparian; SGB = sagebrush; URB = urban; VRI = valley foothill riparian

³For the purposes of this analysis, a “groundwater dependent species” is defined as a species requiring the surface expression of groundwater (e.g., springs, wetlands) or a species or vegetation community dependent upon sub-surface availability of groundwater within the rooting depth of vegetation (e.g., woodlands, riparian habitats) (Eamus et. al. 2016). Under this definition, species were considered to be groundwater dependent if they require aquatic or riparian conditions to exist and complete a significant part or portion of their life cycle. For wildlife, any species meeting these conditions in the California Department of Fish and Wildlife California Wildlife Habitat Relationship System (CDFW 2014) were assumed to be groundwater dependent.

⁴ Calflora (2021)

ATTACHMENT C. AREAS OF MODELED SUITABLE HABITAT FOR GROUNDWATER DEPENDENT RESOURCES WITHIN LOW, MODERATE- AND HIGH-RISK AREAS

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Table C-1. Potential Impacts on Vegetation Communities from Groundwater Depletion

Vegetation Types (CWHR) ¹	Refined SR14/SR14A					E1/E1A					E2/E2A				
	High		Moderate		Low	High		Moderate		Low	High		Moderate		Low
	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N
Desert wash	0	0	0	0	Y	0	0	0	0	Y	0	0	0	0	Y
Coastal oak woodland	10	0	16	0	Y	0	0	61	0	Y	5	0	2	0	Y
Lacustrine	0	0	0	0	Y	0	0	0	0	Y	0	0	0	0	N
Montane hardwood-conifer ²	47	0	0	0	Y	42	0	15	0	Y	130	45	4	100	Y
Montane riparian	0	0	0	0	N	0	0	0	0	Y	0	0	0	0	Y
Valley foothill riparian	0	0	0	0	Y	0	0	0	0	Y	2	0	0	0	Y

¹ Vegetation classification uses California Wildlife Habitat Relationship types. Excludes the "Riverine" type, which is described and quantified separately within aquatic resources.

² Montane Hardwood-Conifer and Montane Hardwood types are combined.

High = Acres of mapped vegetation types that overlap with the areas identified as High-risk.

Moderate = Acres of mapped vegetation types that overlap that overlap with the areas identified as Moderate-risk.

Low = Presence or absence of mapped vegetation types that overlap with the areas identified as Low risk.

ANF = Angeles National Forest; SGMNM =San Gabriel Mountains National Monument

Table C-2. Potential Impacts on Special-Status Plant Habitat from Groundwater Depletion

Species	Refined SR14/SR14A					E1/ E1A					E2/ E2A				
	High		Moderate		Low	High		Moderate		Low	High		Moderate		Low
	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Y/N	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N
FESA Listed Special Status Plants															
Nevin's barberry	70	0	198	63	Y	0	0	415	0	Y	33	0	101	0	Y
Non FESA Listed Special-Status Plants															
California satintail	259	0	182	68	Y	361	0	1113	6	Y	1145	16	168	39	Y
California saw-grass	0	0	0	0	Y	0	0	0	0	Y	0	0	0	0	Y
Davidson's bushmallow	269	0	198	63	Y	361	0	1447	3	Y	1149	16	167	37	Y
Greata's aster	301	0	145	49	Y	360	0	1395	4	Y	1116	17	171	39	Y
Lemon lily	46	0	16	0	Y	10	0	357	0	Y	23	13	6	70	Y
Ocellated lily	305	0	198	63	Y	371	0	1447	3	Y	1166	16	172	39	Y
Palmer's Mariposa lily	291	0	129	55	Y	360	0	1038	5	Y	1109	17	169	39	Y
Salt Spring checkerbloom	295	0	182	68	Y	371	0	1113	6	Y	1159	16	173	40	Y
San Bernardino aster	49	0	69	77	Y	21	0	409	0	Y	71	4	7	59	Y
Sonoran maiden fern	0	0	0	0	Y	0	0	0	0	Y	0	0	0	0	Y
Southern California black walnut	305	0	198	63	Y	371	0	1447	3	Y	1164	16	172	39	Y
Southern tarplant	0	0	0	0	Y	0	0	0	0	Y	2	0	0	0	Y

Species	Refined SR14/SR14A					E1/ E1A					E2/ E2A				
	High		Moderate		Low	High		Moderate		Low	High		Moderate		Low
	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Y/N	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N
Urn-flowered alumroot	39	0	53	100	Y	21	0	52	0	Y	66	5	6	80	Y
White rabbit-tobacco	269	0	198	63	Y	361	0	1447	3	Y	1149	16	167	37	Y

High = Acres of modeled habitat for a particular species that overlap with the areas identified as High-risk.
 Moderate = Acres of modeled habitat for a particular species that overlap with the areas identified as Moderate-risk.
 Low = Presence or absence of mapped vegetation types that overlap with the areas identified as Low-risk.
 ANF = Angeles National Forest; SGMNM =San Gabriel Mountains National Monument

Table C-3. Potential Impacts on Special-Status Plant Communities from Groundwater Depletion¹

Habitat Types (Special-Status Plant Community) ²	Refined SR14/SR14A					E1/E1A					E2/E2A				
	High		Moderate		Low	High		Moderate		Low	High		Moderate		Low
	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N
Desert wash (scalebroom scrub)	0	0	0	0	Y	0	0	0	0	Y	0	0	0	0	Y
Coastal oak woodland (coastal oak woodland)	10	0	16	0	Y	0	0	61	0	Y	5	0	2	0	Y
Freshwater emergent wetland	0	0	0	0	Y	0	0	0	0	N	0	0	0	0	Y
Lacustrine	0	0	0	0	Y	0	0	0	0	Y	0	0	0	0	Y
Montane hardwood-conifer (bigcone Douglas fir forest)	47	0	0	0	Y	42	0	15	0	Y	130	45	4	100	Y
Montane riparian (Fremont cottonwood forest, California sycamore woodlands)	0	0	0	0	Y	0	0	0	0	Y	0	0	0	0	Y

Habitat Types (Special-Status Plant Community) ²	Refined SR14/SR14A					E1/E1A					E2/E2A				
	High		Moderate		Low	High		Moderate		Low	High		Moderate		Low
	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N
Valley foothill riparian (black willow thickets)	0	0	0	0	Y	0	0	0	0	Y	2	0	0	0	Y

¹ Note that mapping of special-status plant communities is not available and therefore the total acres of all vegetation communities potentially supporting these communities is provided.

² Special-status plant communities which may occur in the overall habitat types are provided.

High = Acres of mapped habitats potentially supporting special-status plant communities that overlap with the areas identified as High-risk.

Moderate = Acres of mapped habitats potentially supporting special-status plant communities that overlap that overlap with the areas identified as Moderate-risk.

Low = Presence or absence of mapped vegetation types that overlap with the areas identified as Low-risk.

ANF = Angeles National Forest; SGMNM =San Gabriel Mountains National Monument

Table C-4. Potential Impacts on Special-Status Amphibian Habitat from Groundwater Depletion

Species	Refined SR14/SR14A					E1/E1A					E2/E2A				
	High		Moderate		Low	High		Moderate		Low	High		Moderate		Low
	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N
FESA Listed Special Status Amphibians															
Arroyo toad	0	0	0	0	Y	0	0	0	0	N	0	0	0	0	N
California red-legged frog	0	0	0	0	Y	0	0	1	0	Y	0	0	0	0	Y
Southern mountain yellow-legged frog	0	0	0	0	Y	0	0	7	0	Y	0	0	0	0	Y
Non FESA Listed Special-Status Amphibians															
Coast Range newt	324	0	127	98	Y	324	0	822	9	Y	960	19	113	62	Y
Western spadefoot	49	0	69	77	Y	21	0	136	170	Y	74	4	10	71	Y

High = Acres of modeled habitat for a particular species that overlap with the areas identified as High-risk.
 Moderate = Acres of modeled habitat for a particular species that overlap with the areas identified as Moderate-risk.
 Low = Presence or absence of mapped vegetation types that overlap with the areas identified as Low-risk.
 ANF = Angeles National Forest; SGMNM = San Gabriel Mountains National Monument

Table C-5. Potential Impacts on Special-Status Bird Habitat from Groundwater Depletion

Species	Refined SR14/SR14A					E1/E1A					E2/E2A				
	High		Moderate		Low	High		Moderate		Low	High		Moderate		Low
	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N
FESA Listed Special Status Birds															
Least Bell's vireo	0	0	0	0	Y	0	0	0	0	Y	2	0	0	0	Y
Southwestern willow flycatcher	0	0	0	0	Y	0	0	0	0	Y	2	0	0	0	Y
Tricolored blackbird	0	0	0	0	Y	0	0	0	0	Y	0	0	0	0	Y
Western yellow-billed cuckoo	0	0	0	0	Y	0	0	0	0	Y	0	0	0	0	Y
Non FESA Listed Special-Status Birds															
Northern harrier	0	0	0	0	Y	0	0	0	0	Y	0	0	0	0	Y
Yellow warbler	0	0	0	0	Y	0	0	0	0	Y	2	0	0	0	Y
Yellow-headed blackbird	0	0	0	0	Y	0	0	0	0	N	0	0	0	0	N

High = Acres of modeled habitat for a particular species that overlap with the areas identified as High-risk.

Moderate = Acres of modeled habitat for a particular species that overlap with the areas identified as Moderate-risk

Low=Presence or absence of mapped vegetation types that overlap with the areas identified as Low-risk.

ANF = Angeles National Forest.; SGMNM = San Gabriel Mountains National Monument

Table C-6. Potential Impacts on Special-Status Fish Habitat from Groundwater Depletion

Species	Refined SR14/SR14A					E1/E1A					E2/E2A				
	High		Moderate		Low	High		Moderate		Low	High		Moderate		Low
	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N
FESA Listed Special Status Fish															
Santa Ana sucker	0	0	0	0	Y	0	0	0	0	Y	0	0	0	0	Y
Unarmored threespine stickleback	0	0	0	0	Y	0	0	0	0	Y	0	0	0	0	Y
Non FESA Listed Special-Status Fish															
Arroyo chub	0	0	0	0	Y	0	0	0	0	Y	2	0	0	0	Y
Santa Ana speckled dace	0	0	0	0	Y	0	0	0	0	Y	2	0	0	0	Y

High = Acres of modeled habitat for a particular species that overlap with the areas identified as High-risk.
 Moderate = Acres of modeled habitat for a particular species that overlap with the areas identified as Moderate-risk.
 Low = Presence or absence of mapped vegetation types that overlap with the areas identified as Low-risk.
 ANF = Angeles National Forest; SGMNM = San Gabriel Mountains National Monument

Table C-7. Potential Impacts on Special-Status Mammal Habitat from Groundwater Depletion

Species	Refined SR14/SR14A					E1/E1A					E2/E2A				
	High		Moderate		Low	High		Moderate		Low	High		Moderate		Low
	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N
FESA Listed Special Status Mammals¹															
N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Non FESA Listed Special-Status Mammals															
Ringtail	10	0	16	0	Y	0	0	357	0	Y	7	0	2	0	Y

¹No FESA Listed special-status mammal species were identified as having potential habitat with the High or Moderate-risk areas.

High = Acres of modeled habitat for a particular species that overlap with the areas identified as High-risk.

Moderate = Acres of modeled habitat for a particular species that overlap with the areas identified as Moderate-risk.

Low = Presence or absence of mapped vegetation types that overlap with the areas identified as Low-risk.

ANF = Angeles National Forest; SGMNM = San Gabriel Mountains National Monument

Table C-8. Potential Impacts on Special-Status Reptile Habitat from Groundwater Depletion

Species	Refined SR14/SR14A					E1/E1A					E2/E2A				
	High		Moderate		Low	High		Moderate		Low	High		Moderate		Low
	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Total ANF Lands (acres)	SGMNM Lands in ANF (%)	Y/N
FESA Listed Special Status Reptiles¹															
N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Non FESA Listed Special-Status Reptiles															
South coast garter snake	0	0	0	0	Y	0	0	0	0	Y	2	0	0	0	Y
Two-striped garter snake	0	0	0	0	Y	0	0	0	0	Y	2	0	0	0	Y
Western pond turtle	290	0	198	63	Y	324	0	1484	6	Y	1142	16	215	51	Y

¹ No FESA Listed special-status reptile species were identified as having potential habitat with the High- or Moderate-risk areas.
 High = Acres of modeled habitat for a particular species that overlap with the areas identified as High-risk.
 Moderate = Acres of modeled habitat for a particular species that overlap with the areas identified as Moderate-risk.
 Low = Presence or absence of mapped vegetation types that overlap with the areas identified as Low-risk.
 ANF = Angeles National Forest; SGMNM = San Gabriel Mountains National Monument