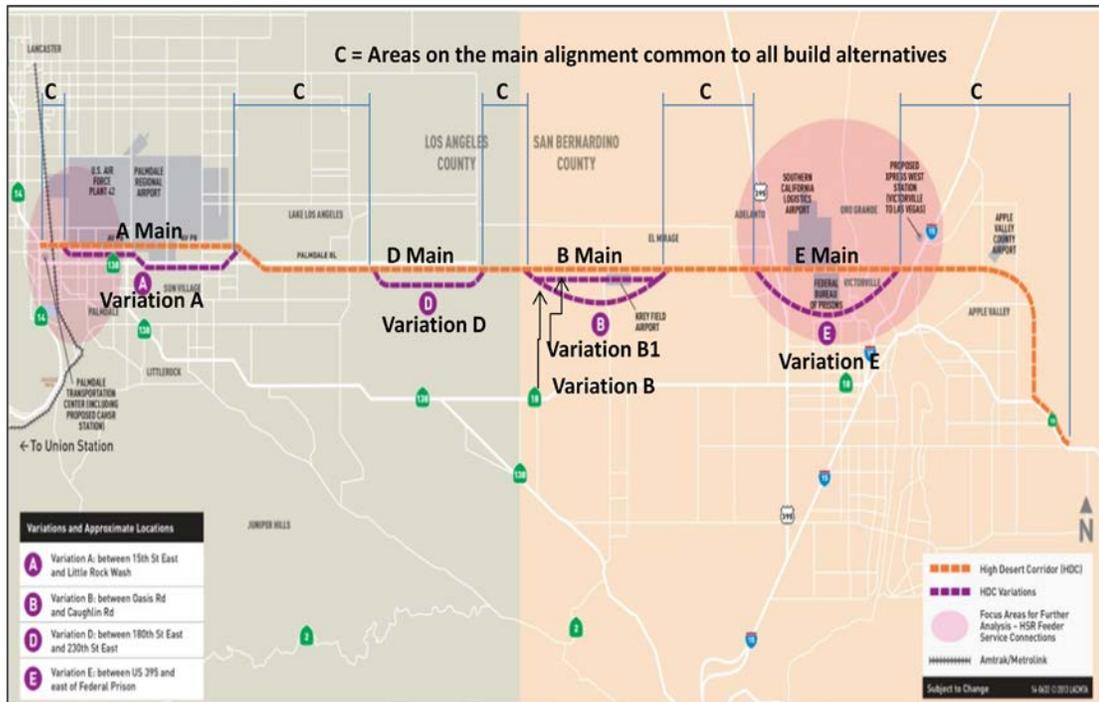


3.3 Biological Environment

This section describes impacts to various biological resources as a result of the HDC Project implementation including natural communities, wetlands and other waters, plant species, animal species, threatened and endangered species, and invasive species. Figure 3.3-1 presents the notation of the alignment and variation sections along the HDC within the biological study area (BSA) used in describing the impacts on various biological resources throughout this section.

Figure 3.3-1 Alignment Key Map for Biological Study Area



3.3.1 Natural Communities

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act (FESA) are discussed below in Section 3.3.5, Threatened and Endangered Species. Wetlands and other waters are discussed below in Section 3.3.2.

Affected Environment

Information regarding natural communities was obtained from the *Natural Environment Study* (September, 2014). The biological study area (BSA) encompasses

approximately 9,037 acres, including 32 different plant communities and 6 habitat types. It is generally 500 feet in width over most of the 63-mile alignment, with a few exceptions at interchanges, intersections with on-/off-ramps, where the rail line and highway separate, and in a few areas where the roadway narrows.

Plant communities were classified consistent with "A Manual of California Vegetation" (Sawyer et al. 2009) and "List of Vegetation Alliances and Associations" (CDFG 2010). At times, specific areas did not conveniently fall within a described series, alliance, or association within these references; therefore, plant communities were assigned based on descriptions provided in these references.

Plant communities or habitat types present within the BSA include agriculture, allscale scrub alliance, allscale scrub/creosote bush scrub alliance, allscale series/rubber rabbitbrush series; big sagebrush alliance, bulrush-cattail series, California buckwheat scrub alliance, cheesebush scrub alliance, creosote bush scrub alliance, creosote bush-white burr sage scrub, developed, disturbed, disturbed allscale scrub alliance, disturbed creosote bush scrub alliance, disturbed creosote bush-white bursage scrub, disturbed Joshua tree woodland alliance, disturbed rubber rabbitbrush scrub alliance, disturbed salt grass flats alliance, disturbed white bursage scrub alliance, fiddleneck field, fourwing saltbush scrub alliance, fourwing saltbush series/rubber rabbitbrush series, Fremont cottonwood forest alliance, Joshua tree woodland alliance, mixed willow series, Mojave yucca scrub alliance, non-native grasslands, ornamental, Parry's rabbitbrush scrub alliance, red brome grasslands, rock outcropping, rubber rabbitbrush scrub alliance, saltgrass flats alliance, sandbar willow thickets, scalebroom scrub alliance, unvegetated wash, white bursage scrub alliance, and winterfat scrubland. Each habitat type is described in Section 3.1.2 of the Natural Environment Study. The total acres of each natural community are included in Table 3.3.1-1.

The predominant plant communities observed were creosote-bush scrub, saltbush scrub, and non-native grassland. Riparian scrub and riparian woodland also occur, primarily in the Mojave River area.

Wildlife was found to use the natural drainages as movement corridors throughout the project site. Wildlife movement corridors are linkages of natural habitat between larger areas that are not contiguous or otherwise connected. The purpose of these linkages is to provide seasonal travel routes or connecting important resources, which would prevent the isolation of populations. Isolation of populations can have a negative effect on genetics of the individual population and possibly the species as a whole, and it places the isolated population at risk of eventual elimination.

The proposed project site is located within a large contiguous open space area of the Mojave Desert with the east and west ends of the site within developed areas. As such there are no regional corridors linking two or more non-contiguous area of natural habitat within the project site rather the site is located within a larger contiguous open space. A large regional movement corridor located to the east of the

proposed project site was identified and is depicted in Appendix G Wildlife Corridor Evaluations of the NES.

Table 3.3.1-1 Natural Communities and Habitat Types in the BSA

Natural Community / Habitat Type	Existing (acres)	Natural Community / Habitat Type	Existing (acres)
Agriculture	200	Allscale scrub alliance	346
Allscale scrub/ creosote bush scrub alliance	18	Allscale series/rubber rabbitbrush series	76
Big sagebrush alliance	23	Bulrush-cattail series,	1.55
California buckwheat scrub alliance	6	Cheesebush scrub alliance	74
Creosote bush scrub alliance	2981	Creosote bush-white burr sage scrub	329
Developed	1073	Disturbed	527
Disturbed allscale scrub alliance	654	Disturbed creosote bush scrub alliance	393
Disturbed creosote bush-white bursage scrub	101	Disturbed Joshua tree woodland alliance	71
Disturbed rubber rabbitbrush scrub alliance	323	Disturbed salt grass flats alliance	2
Disturbed white bursage scrub alliance	23	Fiddleneck field	42
Fourwing saltbush scrub alliance	176	Fourwing saltbush series/rubber rabbitbrush series	54
Fremont cottonwood forest alliance	22	Joshua tree woodland alliance	653
Mixed willow series	2.4	Mojave yucca scrub alliance	106
Non-native grasslands	246	Ornamental	3
Parry's rabbitbrush scrub alliance	3	Red brome grasslands	9
Rock outcropping	30	Rubber rabbitbrush scrub alliance	351
Saltgrass flats alliance	10	Sandbar willow thickets	4
Scalebroom scrub alliance	25	Unvegetated wash	52
White bursage scrub alliance	4	Winterfat scrubland	24

Source: *Natural Environment Study, 2014.*

The Mojave River and its associated habitats, Big Rock Wash, Littlerock Wash, and several other larger drainages provide for wildlife movement and connectivity between large open spaces to the north and to the south of the proposed project site. Numerous smaller drainages along the proposed HDC also provide for local movement of wildlife within the open space immediately surrounding the proposed project site. In addition, large expanses of creosote bush scrub within the region allow relatively unrestricted movement of various species of wildlife, such as gray fox, kit fox, coyote, American badger, and bobcat.

Environmental Consequences

No Build Alternative

Because no ground disturbance would occur under the No Build Alternative, there would be no impacts on natural communities or wildlife movement corridors.

Build Alternatives

The build alternatives would result in temporary and permanent impacts to all natural communities due to roadway development and the development of existing and to be acquired right-of-way (ROW). Tables 3.3.1-2 and 3.3.1-3 quantify the amount of permanent and temporary impacts to vegetation communities and habitat types present within the variations for the highway only, and highway and rail alternatives. For the purpose of avoiding redundancy, when discussing project impacts, it should be noted that the Freeway/Expressway Alternative, Freeway/Tollway Alternative, Freeway/Expressway Alternative with the HSR Feeder Service, and the Freeway/Tollway Alternative with the HSR Feeder Service (see Figure 3.3-1 Alignment Key Map for Biological Study Area) are discussed collectively because the impacts amount to the same in main alignment/common areas; however, it is the variations and options that differ in impacts to plant communities, and thus they are each broken down and discussed.

Assuming the loss of estimated acreage for each of the plant communities, these are a relatively low amount when considering the amount of undisturbed habitat within the region and especially within the overall Mojave Desert, with the possible exception of creosote bush scrub. Revegetation of the slopes after construction would further reduce these impacts. Although creosote bush scrub is not designated as a special-status plant community, the amount of impacts to this community is substantial compared to the region from which it would be impacted. Because of the amount of impact to creosote scrub habitat, similar habitat should be acquired and protected in perpetuity.

Joshua Tree Woodland

A total of 653 acres of Joshua tree woodland and 71 acres of disturbed Joshua Tree woodland occurs within the project limits. It is estimated that there are 3,300 to 3,630 Joshua trees within the limits of impact. Impacts for all variations and options would be low after mitigation is implemented.

Freeway/Expressway and Freeway/Tollway Alternatives

Main Alignment/Common Areas

Approximately 240 acres of this plant community exist within the main alignment/common areas. Through implementation of the above avoidance and minimization measures, and replanting efforts, impacts to this plant community will be reduced.

Table 3.3.1-2 Impacts to Vegetation Communities for Variations of Highway Only Alternatives (in acres)

	Main Alignment/ Common Areas		Variation A Main Alignment		Variation A Alignment		Variation D Main Alignment		Variation D Alignment		Variation B Main Alignment		Variation B Alignment		Variation B1 Alignment		Variation E Main Alignment		Variation E Alignment	
	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact
Agriculture	65.878	92.802	0.711	3.292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Allscale scrub Alliance	136.166	122.643	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13.877	10.648	12.153	23.389
Allscale scrub Alliance/Creosote bush scrub Alliance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.424	3.131	2.443	0.868
Allscale series/Rubber rabbitbrush series	6.923	4.056	21.873	10.273	18.591	10.186	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Big sagebrush Alliance	4.887	6.123	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bulrush-Cattail series	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.454	0.671
California buckwheat scrub Alliance	0.123	5.460	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cheesebush scrub Alliance	13.071	15.407	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Creosote bush scrub Alliance	284.481	417.535	-	-	-	-	109.776	144.018	93.396	137.195	86.529	113.425	205.380	317.473	147.297	230.856	74.391	94.034	40.549	47.314
Creosote bush-white bursage scrub series	-	-	-	-	-	-	15.671	22.071	41.207	65.803	28.504	36.190	3.596	7.180	1.658	8.223	0.040	0.014	26.503	36.264
Developed	166.183	112.021	28.213	22.894	23.335	26.409	9.222	7.709	4.641	3.465	13.228	19.641	5.106	7.923	26.160	37.427	53.601	26.924	33.125	27.875
Disturbed	104.438	146.868	13.540	4.201	12.199	6.196	3.266	4.166	5.234	8.509	24.441	33.066	7.873	12.127	8.544	10.269	6.697	7.819	7.967	9.283
Disturbed Allscale scrub Alliance	648.327	4.253	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.326	0.302	-	-
Disturbed Creosote bush scrub Alliance	11.425	17.349	-	-	-	-	-	-	-	-	104.268	137.633	3.274	4.193	18.642	32.286	0.186	0.144	19.940	18.217
Disturbed Creosote bush-white bursage scrub series	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.073	0.014	37.591	54.823
Disturbed Joshua tree woodland Alliance	-	-	12.154	17.648	13.084	20.538	-	-	-	-	-	-	-	-	-	-	6.899	6.361	-	0.015
Disturbed Rubber rabbitbrush scrub Alliance	30.175	45.197	44.080	62.091	40.765	62.344	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Disturbed Salt grass flats Alliance	0.983	0.797	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Disturbed White bursage scrub Alliance	0.645	-	-	-	-	-	-	-	-	-	10.077	9.256	9.527	11.971	10.086	10.382	-	-	-	-
Fiddleneck field	13.501	19.313	-	-	-	-	-	-	0.839	0.857	-	-	-	-	-	-	-	-	-	-
Fourwing saltbush scrub Alliance	48.686	71.903	-	-	-	-	1.869	2.579	1.224	3.243	-	-	-	-	-	-	4.764	2.746	0.246	0.186
Fourwing saltbush series/Rubber rabbitbrush series	10.045	18.799	-	-	5.547	3.795	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fremont cottonwood forest Alliance	3.776	5.862	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.094	2.170	0.235	0.499
Joshua tree woodland Alliance	106.706	133.561	75.693	47.523	61.662	63.615	-	-	-	-	0.116	0.173	5.123	3.649	0.115	0.177	14.923	16.751	19.167	28.127
Mixed willow series	-	0.410	-	-	0.840	1.148	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mojave yucca scrub Alliance	21.276	18.247	-	-	-	-	-	-	-	-	-	-	3.565	6.282	-	-	15.212	12.701	11.629	9.909
Non-native grassland	14.689	12.785	-	-	-	-	-	-	-	-	-	-	-	-	28.113	47.425	27.326	12.614	8.507	20.537
Ornamental	0.110	0.091	0.950	0.391	0.342	0.146	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parry's rabbitbrush scrub Alliance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.678	2.098	-	-
Red brome grasslands	4.768	2.235	-	-	-	-	0.268	0.186	1.096	0.186	-	-	-	-	-	-	-	-	-	-

Table 3.3.1-2 Impacts to Vegetation Communities for Variations of Highway Only Alternatives (in acres)

	Main Alignment/ Common Areas		Variation A Main Alignment		Variation A Alignment		Variation D Main Alignment		Variation D Alignment		Variation B Main Alignment		Variation B Alignment		Variation B1 Alignment		Variation E Main Alignment		Variation E Alignment	
	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact
Rock outcropping	0.931	4.178	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.049	1.522	1.272	1.805
Rubber rabbitbrush scrub Alliance	29.822	54.924	35.001	33.438	28.890	37.462	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Salt grass flats Alliance	6.200	3.519	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sandbar willow thickets Alliance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.261	0.138	0.775	0.538
Scale broom scrub Alliance	3.010	1.001	8.122	2.920	8.122	2.920	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unvegetated wash	0.779	0.690	-	-	-	-	15.685	25.039	0.240	0.125	-	-	-	-	-	-	0.198	0.160	0.274	0.221
White bursage scrub Alliance	0.002	0.070	-	-	-	-	-	-	-	-	-	-	-	0.649	-	-	0.554	0.457	-	-
Winterfat scrubland Alliance	-	-	-	-	-	-	-	-	-	-	-	-	-	9.031	11.406	-	-	-	-	-

Table 3.3.1-3 Impacts to Vegetation Communities for Variations of Highway and Rail Alternative (in acres)

	Main Alignment/ Common Areas		Variation D Main Alignment		Variation D		Variation B Main Alignment		Variation B		Variation B1		Variation E Main Alignment		Variation E		Rail Option 1		Rail Option 7	
	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact
Agriculture	21.426	11.275	76.961	68.436	77.889	69.638	-	-	-	-	-	-	-	-	8.316	-	4.991	-	4.991	-
Allscale scrub Alliance	139.188	107.144	4.369	1.921	4.286	1.983	-	-	-	-	-	-	17.241	9.106	14.653	27.359	-	-	-	-
Allscale scrub Alliance/Creosote bush scrub Alliance	-	-	-	-	-	-	-	-	-	-	-	-	4.996	1.397	2.810	0.835	-	-	-	-
Allscale series/Rubber rabbitbrush series	41.963	24.455	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.522	-	1.522	-
Big sagebrush Alliance	4.930	4.778	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.868	-	3.396	-
Bulrush-Cattail series	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.454	0.348	-	-	-	-
California buckwheat scrub Alliance	0.123	5.460	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cheesebush scrub Alliance	31.511	17.648	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.124	-	1.124	-
Creosote bush scrub Alliance	389.837	329.541	199.456	109.630	171.770	106.545	129.516	93.336	317.908	235.280	230.566	185.902	183.745	130.189	171.660	73.102	25.487	-	25.487	-
Creosote bush-white bursage scrub series	-	-	27.298	11.111	69.018	52.077	45.965	21.464	7.305	10.849	5.392	6.237	0.182	0.008	44.880	30.600	2.928	-	2.928	-
Developed	196.023	108.337	37.318	13.417	34.675	13.840	19.295	20.147	10.676	4.884	42.478	23.617	72.939	24.045	66.139	31.819	107.624	-	65.818	-
Disturbed	144.118	101.669	33.898	24.040	41.929	31.310	35.405	26.621	9.481	4.881	13.161	7.013	14.873	16.369	13.051	7.020	11.905	-	12.009	-
Disturbed Allscale scrub Alliance	648.404	4.176	-	-	-	-	-	-	-	-	-	-	0.075	0.040	0.606	-	-	-	-	-
Disturbed Creosote bush scrub Alliance	10.463	13.598	-	-	-	-	156.707	96.365	4.365	0.581	34.725	19.872	0.004	0.673	34.744	17.321	2.272	-	2.272	-
Disturbed Creosote bush-white bursage scrub series	-	-	-	-	-	-	-	-	-	-	-	-	0.029	0.025	52.103	47.929	-	-	-	-
Disturbed Joshua tree woodland Alliance	21.853	10.655	-	-	-	-	-	-	-	-	-	-	8.899	4.360	-	-	0.958	-	0.958	-

Table 3.3.1-3 Impacts to Vegetation Communities for Variations of Highway and Rail Alternative (in acres)

	Main Alignment/ Common Areas		Variation D Main Alignment		Variation D		Variation B Main Alignment		Variation B		Variation B1		Variation E Main Alignment		Variation E		Rail Option 1		Rail Option 7	
	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact	Perm. Impact	Temp. Impact
Disturbed Rubber rabbitbrush scrub Alliance	102.431	102.060	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38.599	-	30.395	-
Disturbed Salt grass flats Alliance	1.006	0.775	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Disturbed White bursage scrub Alliance	-	-	-	-	-	-	14.753	5.365	13.342	7.440	14.326	6.792	-	-	-	-	-	-	-	-
Fiddleneck field	23.265	11.191	-	-	0.523	1.173	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fourwing saltbush scrub Alliance	60.542	53.590	3.096	2.043	3.483	2.138	-	-	-	-	-	-	8.830	2.515	1.532	0.126	2.990	-	2.990	-
Fourwing saltbush series/Rubber rabbitbrush series	14.437	12.728	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fremont cottonwood forest Alliance	6.210	4.220	-	-	-	-	-	-	-	-	-	-	3.526	1.372	2.947	0.300	1.021	-	1.021	-
Joshua tree woodland Alliance	249.967	155.087	-	-	-	-	1.246	0.860	7.177	3.880	1.246	0.861	37.067	16.961	43.424	23.878	8.561	-	8.561	-
Mixed willow series	-	0.410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mojave yucca scrub Alliance	15.879	9.184	-	-	-	-	-	-	5.850	3.971	-	-	33.490	18.242	20.247	12.870	-	-	-	-
Non-native grassland	15.724	9.694	-	-	-	-	-	-	-	-	43.258	42.666	39.299	21.173	14.270	21.761	0.921	-	0.921	-
Ornamental	1.464	0.655	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.560	-	0.263	-
Parry's rabbitbrush scrub Alliance	-	-	-	-	-	-	-	-	-	-	-	-	2.711	0.301	-	-	-	-	-	-
Red brome grasslands	-	-	4.778	1.099	5.251	2.073	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rock outcropping	11.500	3.501	-	-	-	-	-	-	-	-	-	-	4.571	0.931	1.272	1.269	-	-	-	-
Rubber rabbitbrush scrub Alliance	95.513	83.355	-	-	0.001	-	-	-	-	-	-	-	-	-	-	-	64.071	-	58.750	-
Salt grass flats Alliance	5.870	3.849	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sandbar willow thickets Alliance	-	-	-	-	-	-	-	-	-	-	-	-	0.592	0.112	1.362	0.326	-	-	-	-
Scale broom scrub Alliance	15.453	9.459	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.482	-	1.482	-
Unvegetated wash	0.773	0.542	19.931	23.021	0.455	0.062	-	-	-	-	-	-	0.338	0.086	4.609	0.162	0.038	-	0.038	-
White bursage scrub Alliance	0.002	0.911	-	-	-	-	-	-	-	-	-	-	0.870	0.969	-	-	-	-	-	-
Winterfat scrubland Alliance	-	-	-	-	-	-	-	-	12.340	11.114	-	-	-	-	-	-	-	-	-	-

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Variation A

Approximately 123 acres of this plant community occur within the main alignment corridor corresponding to Variation A (a so-called Variation A Main alignment), and approximately 125 acres occur within Variation A alignment. Variation A Main alignment would result in lesser impacts to this plant community compared to Variation A alignment. Through implementation of the above avoidance and minimization measures, and replanting efforts, impacts to this plant community will be reduced.

Variation B

Approximately 0.3 acres of this plant community occur within the main alignment corridor corresponding to Variation B (a so-called Variation B Main alignment) 8.7 acres occur within the Variation B1 alignment, and 0.3 acres occur in Variation B alignment. Variation B Main alignment or Variation B1 alignment would result in lesser impacts to this plant community compared to Variation B alignment.

Variation D

This plant community was not observed in this variation.

Variation E

Approximately 32 acres of this plant community occur within the main alignment corridor corresponding to Variation E (a so-called Variation E Main), and approximately 42 acres occur within Variation E. Variation E Main alignment would result in lesser impacts to this plant community in comparison to Variation E alignment.

Freeway/Expressway and Freeway/Tollway with HSR Alternatives

Main Alignment/Common Areas

Approximately 405 acres of this plant community occur within the main alignment/common areas. Through implementation of the above avoidance and minimization measures, and replanting efforts, impacts to this plant community will be reduced.

Variation B

Approximately 2.1 acres of this plant community occur within the main alignment corridor corresponding to Variation B (a so-called Variation B Main), approximately 11.1 acres occur within Variation B alignment, and approximately 2.1 acres occur within Variation B1 alignment. Variation B Main alignment or Variation B1 alignment would result in lesser impacts to this plant community in comparison to Variation B alignment.

Variation D

This plant community was not observed in this variation.

.Variation E

Approximately 54 acres of this plant community occur within the main alignment corridor corresponding to Variation E (a so-called Variation E Main), and approximately 67 acres occur within Variation E alignment. Variation E Main alignment would result in less impacts to this plant community in comparison to Variation E alignment.

Rail Option 1 and Rail Option 7

Approximately 8.6 acres of this plant community occur within both Option 1 and Option 7. Either option would result in the same amount of impacts to this plant community. Through implementation of the above avoidance and minimization measures, and replanting efforts, impacts to this plant community will be reduced.

Riparian Woodland

Approximately 28 acres of riparian woodlands (Fremont cottonwood forest [21.7], sandbar willow thickets [4.1 acres], and mixed willow [2.4]) are located within the BSA, with majority of them occurring near the Mojave River.

As stated above, this plant community was noted within the Mojave River. Because the proposed roadway is expected to be spanning the river on a bridge with no footings within the river, no direct impacts to this plant community are expected to occur. There will be a shadowing effect to this community from the bridge and abutment structures. Because of this indirect impact the plant community below is expected to degrade. The total 28 acres of this community should be considered as a permanent loss as a result.

Freeway/Expressway and Freeway/Tollway Alternatives

Main Alignment/Common Areas

Approximately 9.6 acres of Fremont cottonwood forest exist within the main alignment/common areas. Approximately 0.4 acres of mixed willow thickets occur within the main alignment/common areas. Through implementation of the above avoidance and minimization measures, and replanting efforts, impacts to this plant community will be reduced.

Variation A

Approximately 2 acres of mixed willow occurs within Variation A. This plant community was not observed in the main alignment corridor corresponding to Variation A (Variation A Main) A and thus would result in lesser impacts in comparison to Variation A..

Variation B

This plant community was not observed in this variation.

Variation D

This plant community was not observed in this variation.

Variation E

Approximately 3.3 acres of Fremont cottonwood forest was observed within Variation E Main, and approximately 0.7 acres occurs within Variation E. Variation E would result in less impacts to this plant community in comparison to Variation E Main.

Approximately 0.4 acres of sandbar willow thickets was observed within Variation E Main, and approximately 1.3 acres occurs within Variation E. Variation E Main would result in less impact to this plant community in comparison to Variation E.

Freeway/Expressway and Freeway/Tollway with HSR Alternatives

Main Alignment/Common Areas

Approximately 10.4 acres of Fremont cottonwood forest exist within the main alignment/common areas. Approximately 0.4 acres of mixed willow occur within the main alignment/common areas. Through implementation of the above avoidance and minimization measures, and replanting efforts, impacts to this plant community will be reduced.

Variation B

This plant community was not observed in this variation.

Variation D

This plant community was not observed in this variation.

Variation E

Approximately 4.9 acres Fremont cottonwood forest was observed within Variation E Main alignment and approximately 3.2 acres occurs within Variation E alignment. Variation E would result in less impacts to this plant community in comparison to Variation E Main alignment

Approximately 0.7 acres of sandbar willow thickets was observed within Variation E Main alignment, and approximately 1.7 acres occurs within Variation E alignment. Variation E Main alignment would result in less impacts to this plant community in comparison to Variation E alignment.

Rail Option 1 and Rail Option 7

Approximately 1 acre of Fremont cottonwood forest occur both Option 1 and Option 7. Either option would result in the same amount of impacts to this plant community. Through implementation of the above avoidance and minimization measures, and replanting efforts, impacts to this plant community will be reduced.

Wildlife Movement Corridors

Permanent impacts on wildlife movement corridors may occur under all of the build alternatives for species such as gray fox, kit fox, coyote, American badger, and bobcat. Construction of a multi-lane highway over such a long span has the potential to create a barrier to wildlife movement locally. Each build alternative, including the

proposed variations, would have the same effect on wildlife movement because each crosses the same natural drainages at right angles. Two exceptions are Variation E alignment, which would cross the Mojave River in two locations instead of at one location, and the alternative with rail, which would impact an area of I-15 that would otherwise not be impacted; however, all crossings of the Mojave River are expected to be bridged at a relatively high elevation, which would minimize impacts. More information on wildlife movement corridors can be found in Appendix G Wildlife Corridor Evaluations of the NES (AMEC, 2011).

Indirect Impacts

Indirect impacts on biological resources would occur to those natural habitats in surrounding areas immediately adjacent to the proposed project limits, after the completion of the proposed project. Any one of these topics or combination of two or more can be referred to as an “edge effect.” It is expected that implementation of the proposed project would result in indirect impacts to biological resources in the following ways: increased light and glare; increased noise; vibration; increase in populations of non-native plants; increase in vehicle/wildlife collisions and kills; and growth inducement.

Indirect impacts associated with the proposed project are not quantifiable but are reasonably foreseeable. As such, the discussion that follows provides a common-sense identification of the types of secondary impacts and their relative magnitude.

Light and Glare

Development of the site has the potential to increase the nighttime light and glare sources on the site when compared to current levels. In particular, areas most sensitive to increased lighting and glare over natural conditions would be the rivers, washes, and drainages, which provide for a natural pathway for wildlife. It appears that lighting fixtures installed at these natural features would cast light into them.

Nighttime illumination is known to adversely affect some species of wildlife in natural areas. It can disturb breeding and foraging behavior and potentially alter breeding cycles of birds, mammals, and nocturnal invertebrates. In addition, light could deter some animal species, especially the larger mammals, from using rivers, creeks, and washes as a movement corridor. If uncontrolled, such lighting where proximal to these movement corridors, could adversely impact the composition and behavior of the wildlife that occur in these areas. This impact is considered potentially substantial. With the implementation of the proposed mitigation measures stated below, the level of impacts to wildlife due to lighting and glare would be less than substantial.

It appears there is no appreciable difference in impacts to wildlife due to lighting between the alternatives or among any of the variations or options.

Noise

It is understood that operating noise from the proposed rail would be 65 dBA at a distance of about 300 feet and it is estimated that temporary noise levels during construction would be at 65 dBA to 400 feet from any point source. U.S. Fish and Wildlife Service typically uses 65 dBA as the threshold at which nesting birds have been observed to be affected. Therefore, it is expected that activities of noise-sensitive wildlife would be impacted by noise levels up to 400 feet temporarily and up to 300 feet during regular operation for all alternatives including high speed rail. Because construction of the rail line would occur in phases along the route and would be temporarily in nature, impacts from construction on wildlife are expected to be less than substantial. Similarly to construction impacts normal operation of the HSR would be temporary in nature and limited only to those instances when trains are passing any given point. Based on given average train trips, impacts from normal operation of the HSR on wildlife are expected to be less than substantial

It is expected that the use of the Freeway/Expressway (Freeway/Tollway) would increase the level of noise when compared to the current conditions of cars traveling in rural areas up to 65 dBA at a distance of 100 feet from the source. Therefore it is expected that activities of noise-sensitive wildlife would be impacted by noise levels up to 400 feet temporarily during construction and up to 150 feet during regular operation for all Freeway/Expressway (Freeway/Tollway) only alternatives.

Vibration

Similar to noise, it is expected that trains traveling on the HSR would generate vibrations as it passed along the rail. It is reasonable to expect that the vibrations would be detected by wildlife within the immediate vicinity, but it is difficult to quantify the level at which each individual animal would detect the vibrations and even more difficult to predict individual reactions. It is possible, and even expected at times, for wildlife that are attempting to cross the route at crossing points (culverts) would be stressed and not cross. Some individuals could attempt to cross again at a later time and some may never attempt again. However, the source of stressor (passing train) would occur for relatively short periods. Based on the anticipated daily train trips, it is expected that few individuals would be affected by the vibrations. Those that are affected would have periods without such stressor, providing opportunities to cross. Because of the relatively few anticipated daily train trips, momentary nature of the source of stressor, and opportunities without the source of the stressor, it is expected that impacts to wildlife activities caused by HSR vibrations would be less than substantial.

Larger vehicles such as semi trucks traveling along the Freeway/Expressway or Freeway/Tollway would also generate vibrations. These vibrations would be much less when compared to HSR trains due to the smaller mass of the vehicle and slower speed. As such, vibrations would attenuate over a short distance and are not expected to affect wildlife within the crossings or beyond the immediate road shoulder. Therefore, impacts to wildlife due to the use of the Freeway/Expressway or

Freeway/Tollway alternative, variations or options would be considered less than substantial.

Vibrations would be generated by construction equipment during the construction phase of the project. Certain heavy equipment is known to cause vibrations when operating such as pile drivers, dozers, and large excavators. It is assumed that this equipment would have a need to operate within all areas of the disturbance envelope, including the margins of the project nearest the adjacent open space and natural washes. It is the operation of heavy equipment in these areas that have the potential to substantially affect the movement of wildlife species. With the implementation of the below proposed mitigation measure, it is expected that impacts to nocturnal wildlife activities caused by construction equipment vibrations would be minimized to a point that is less than substantial. Diurnal wildlife activities would be temporarily impacted and wildlife from immediately surrounding construction areas would be temporarily displaced. Because it would be temporary and because construction would occur along the route in phases, impacts to diurnal wildlife activities is expected to be less than substantial.

Non-native Plants

Areas within the project development envelope consist of native and non-native plants. Although non-native plants already occur within the project footprint and within the vicinity, it can be reasonably concluded that creation of a larger roadway could exacerbate this condition.

Vehicle/Wildlife Collision Kills

Various types of dirt, gravel and paved roads exist throughout the development envelope of the proposed project. With the exception of the areas where the new proposed Freeway/Expressway (Freeway/Tollway) alignment intersect with the existing SR-14, SR-395, Interstate 15 and SR-18, no roads are currently exist along the proposed corridor.

Road-strike data were collected in various areas of the project site during the wildlife crossing study. Based on these data, it was determined that wildlife was taken as a result of vehicle strikes. Because few animals were noted a statistical analysis could not be conducted to determine amount of collisions one could expect under the existing conditions of the project site. When attempting to understand the difference between existing conditions when compared to post-implementation of the proposed project it must be assumed relatively few strikes occur under current conditions. Because of the speed limits expected on the proposed Freeway/Expressway and Freeway/Tollway alternatives, and considering the expected volume of traffic within a rural area, it is expected that there would be a relatively high vehicle/wildlife collision rate. Therefore, there is potential for a substantial increase in vehicle/wildlife collisions to occur with the implementation of any of the proposed build alternatives. It appears there is no appreciable difference among any of the build alternatives, variations, or options. Implementation of the proposed mitigation

measures could reduce the impact from the potential increase in vehicle/wildlife collisions to a level less than substantial.

Any vehicle/wildlife strikes resulting from operation of the HSR would be an increase from the existing conditions since such a rail does not currently exist. Because the rail line is located within the median of the proposed freeway/expressway for much of the route, the alternative including HSR and all of the related variations and options would not substantially increase the number of vehicle/wildlife collisions.

Growth Inducement

It is reasonable to assume that the construction of a new highway a rural area such as many areas of the proposed project site would provide opportunities for development that would not otherwise exist. The construction of the Freeway/Expressway or Freeway/Tollway would provide a faster travel time to/from the vicinity of the project site providing for development. It is challenging to predict the amount of development, or growth, of areas surrounding the project site and therefore difficult to quantify the impacts to the natural resources. It should be assumed that any growth that converts natural habitat to a developed condition would negatively impact biological resources. The level of impact would be dependent on the specifics of the individual project and would only be understood after the evaluation of those individual projects. Analysis of known approved projects to biological resources is discussed in the Cumulative Impacts section.

Avoidance, Minimization, and/or Mitigation Measures

The project would be designed to minimize impacts on natural communities. If impacts to natural communities cannot be avoided, the following measures will be implemented:

- BNC-1:** The road shoulder and graded slopes will be revegetated with like plant communities prior to construction conditions to minimize the loss of each community.
- BNC-2:** The elevation of the highway will be kept to a minimum necessary for drainage to reduce the overall footprint due to required shoulder sloping.
- BNC-3:** Joshua tree woodland will be preserved in place as feasible. A biological monitor will be onsite to establish an environmentally sensitive area (ESA) around the areas where this species occurs. If impacts cannot be avoided, these areas should be included in the calculations for acquisition of land to preserve in perpetuity. To further reduce project impacts to this community, individual trees can be translocated to an area that will not be impacted. To aid in revegetation of the finish graded slopes, individual trees can be temporarily located in an onsite nursery and replanted within revegetation areas located within ROW outside the clear recovery zone.

BNC-4: Riparian woodland will be preserved in place as feasible. Impacts will be avoided with the design of a span bridge over the river with no impacts to jurisdictional areas. A biological monitor will be onsite to establish an ESA around the jurisdictional areas within the Mojave River.

The project would also be designed to minimize impacts on wildlife movement corridors. When feasible, all Mojave River crossings will be bridged at a relatively high elevation to minimize impacts. However, this must be balanced with BNC-2 to determine an elevation suitable for wildlife crossings while minimizing the project footprint. Specific design features will include the following:

BNC-5: Use large at-grade culverts under the new highway where natural drainages occur, where feasible. Wildlife are more likely to use such crossings when “daylight” or openings to the other side are visible. Where culvert lengths need to be longer due to design, median daylights will be used. Fencing will be used as needed to guide wildlife into the culverts and along the ROW to prevent wildlife from trying to cross the highway.

BNC-6: Construct bridges and culverts that cross drainage features to be high and wide enough to allow large wildlife to travel under the structure. The design will also include culverts as crossing structures that are specifically designed for wildlife travel.

BNC-7: Design the culverts to be a “soft bottom.” Because it is not feasible to bridge all 200+ natural drainages, it is understood that the smaller drainages will have a hard-bottom box culvert that is placed a minimum 1 foot below surrounding grade to allow soil to be placed on top of the hard bottom, thus creating a soft bottom. It is also understood that without this soft-bottom design, each culvert would essentially require a bridging design that would be cost prohibitive. As feasible, culverts will also be designed to be tall and wide to better attract wildlife use.

With the implementation of the mitigation measures stated below, the indirect impacts to wildlife would be less than substantial.

BNC-8: Use lighting in areas only where necessary for safety and signage. Eliminate all lighting in other areas.

BNC-9: All lighting should be downcast to minimize lighting of natural areas, particularly rivers, washes and drainages.

BNC-10: Limit operation of vibration causing equipment such as pile drivers, dozers, large excavators to daylight hours when working in areas adjacent to open space.

- BNC-11:** Biological monitor shall be present to observe activities of wildlife during construction adjacent to open spaces. If activities are noted to affect wildlife, biological monitor shall stop construction activities as necessary.
- BNC -12:** Install fencing along the route that prevent wildlife from crossing in areas other than intended wildlife crossing locations. Fencing shall be installed to channel wildlife to the intended crossing locations.
- BNC-13:** Maintain fencing throughout the existence of the Freeway/Expressway or Freeway/Tollway alignment.

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3.3.2 Wetlands and Other Waters

Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the Clean Water Act (CWA) (33 U.S. Code 1344), is the main law regulating wetlands and surface waters. One purpose of the CWA is to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the U.S. include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of: hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the Clean Water Act.

Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE) with oversight by the U.S. Environmental Protection Agency (EPA).

The USACE issues two types of 404 permits: General and Standard permits. There are two types of General Permits: Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effects. Nationwide permits are issued to authorize a variety of minor project activities with no more than minimal effects.

There are two types of Individual permits: Standard permits and Letters of Permission. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of the USACE' Standard permits. For Standard permits, the USACE's decision to approve is based on compliance with EPA's Section 404(b)(1) guidelines (EPA 40 CFR Part 230), and whether permit approval is in the public interest. The Section 404(b)(1) guidelines were developed by the EPA in conjunction with the USACE and allow the discharge of dredged or fill material into the aquatic system (waters of the United States) only if there is no practicable alternative that would have less adverse effect. The guidelines state that the USACE may not issue a permit if there is a least environmentally damaging practicable alternative to the proposed discharge that would have fewer effects on waters of the U.S., and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, EO 11890 states that a federal agency, such as the FHWA and/or Caltrans, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the

head of the agency finds: (1) that there is no practicable alternative to the construction and (2) the proposed project includes all practicable measures to minimize harm.

At the state level, wetlands and waters are regulated primarily by the California Department of Fish and Wildlife (CDFW), the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB). Sections 1600-1607 of the California Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify the CDFW before beginning construction. If the CDFW determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFW jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFW.

RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCBs also issue water quality certifications for impacts to wetlands and waters in compliance with Section 401 of the CWA. See the Water Quality section for more details.

Affected Environment

Information in this section comes from the *Natural Environment Study* (August, 2014) and the *Jurisdictional Determinations* contained in Appendix H of the *Natural Environment Study*.

Survey Results for Jurisdictional Waters

To determine the estimated acreages of jurisdictional features associated with an alternative/variation/option, calculations are divided to differentiate between the main alignment common areas, the main alignment corresponding to the variations, the variations, and the rail options (see Figure 3.3-1 Alignment Key Map for Biological Study Area). These acreages should be considered preliminary until designs are finalized and jurisdiction is verified by USACE, SWRCB, and CDFW.

A combined total of approximately 134.074 acres of hydrological features were mapped within the BSA inclusive of all variations to the proposed alternatives.

Freeway/Expressway Alternative

Potentially jurisdictional waters identified under this alternative will be separated by USACE, SWRCB and CDFW jurisdiction. The jurisdictional waters will then be further discussed by the Main Alignment common areas, by Main A, B, D, E, and by Variations A, B, B1, D, and E.

Approximately 121.18 acres of hydrological features were mapped within the BSA inclusive of all variations to the Freeway/Expressway Alternative.

Freeway/Tollway Alternative

Potentially jurisdictional waters identified under this alternative would be the same as the jurisdictional waters identified under the Freeway/Expressway Alternative (with Main Alignment common areas, Main A, B, D, E, and Variations A, B, B1, D, and E). This alternative follows the same footprint as the Freeway/Expressway alternative, but it would have sections that operate as a tollway.

Freeway/Expressway with HSR Alternative

Potentially jurisdictional waters identified under this alternative will be separated by USACE, SWRCB and CDFW jurisdiction. The jurisdictional waters will then be further discussed by the Main Alignment common areas, Rail Option 1, Rail Option 7, and by Main B, D, E, and Variations B, B1, D, and E with HSR Feeder Service.

Approximately 134.07 acres of hydrological features were mapped within the BSA inclusive of all variations to the Freeway/Expressway with HSR alternative.

Freeway/Tollway Alternative with HSR Alternative

Potentially jurisdictional waters identified under this alternative would be the same as the jurisdictional waters identified under the Freeway/Expressway Alternative with the HSR Feeder Service (with Main Alignment common areas, Rail Option 1, Rail Option 7, Main B, D, E, and Variations B, B1, D, and E with HSR Feeder Services). This alternative follows the same footprint as the Freeway/Expressway Alternative, but it would have sections that operate as a tollway.

Literature Review for Jurisdictional Waters

Upon further analysis, several of the hydrological features are identified as non-jurisdictional under USACE, SWRCB, or CDFW. These isolated and erosional features only flow during intense storms and vary in their lack of hydrophytic vegetation, ordinary high water mark (OHWM), and hydrological or biological functions. Caltrans identified one perennial stream (the Mojave River) and four of its ephemeral tributaries jurisdictional under USACE and SWRCB. CDFW will take jurisdiction over the Mojave River and its tributaries in addition to several isolated ephemeral washes occurring within the project footprint.

USACE and SWRCB Jurisdiction

Approximately 87.37 acres within the BSA of the Freeway/Expressway and Freeway/Tollway alternative and approximately 83.165 acres within the BSA of the alternatives with HSR that flow through the following HUC sub-watersheds either evaporate or percolate into the groundwater table: Apple Valley Dry Lake; Sheep Creek-El Mirage Lake; Le Montaine Creek-Eller Slough; Mescal Creek-Rocky Buttes; Big Rock Creek-Big Rock Wash; Rock Creek-Buckhorn Lake; Town of Pearblossom; Little Rock Wash; Rosamond Lake; Lake Palmdale-Piute Ponds; and Amargosa Creek.

The Rosamond dry lake, Buckhorn dry lake, Rogers dry lake, El Mirage dry lake, and Apple Valley dry lake serve as the downstream hydrological terminus to these

isolated intermontane basins (USACE, 2010; 2011a; 2011b; 2013). These dry lake systems are isolated waters without a surface connection and are considered non-jurisdictional waters of the U.S. (*Natural Environment Study, 2014*).

Within the BSA, several unnamed ephemeral dry washes occurring in the Lower Fremont Wash, Upper Fremont Wash, and Bell Mountain-Mojave River HUC sub-watersheds are characterized by short duration flows of storm surges and flash floods. A USACE-approved jurisdictional determination within the same Mojave watershed of numerous unnamed ephemeral streams 3.8 miles south of the BSA were considered non-jurisdictional under the Solid Waste Agency of Northern Cook County (SWANCC) (USACE, 2012) Caltrans concludes that numerous unnamed ephemeral dry washes downstream of these non-jurisdictional washes have the same flow regime that abate into the landscape. As such, they have no hydrological or ecological surface connections to the Mojave River and should be considered non-jurisdictional WUS under SWANCC (2001). Approximately 87.37 acres within the BSA of the Freeway/Expressway and Freeway/Tollway alternatives and approximately 83.165 acres within the BSA of the alternatives with HSR are considered non-jurisdictional WUS.

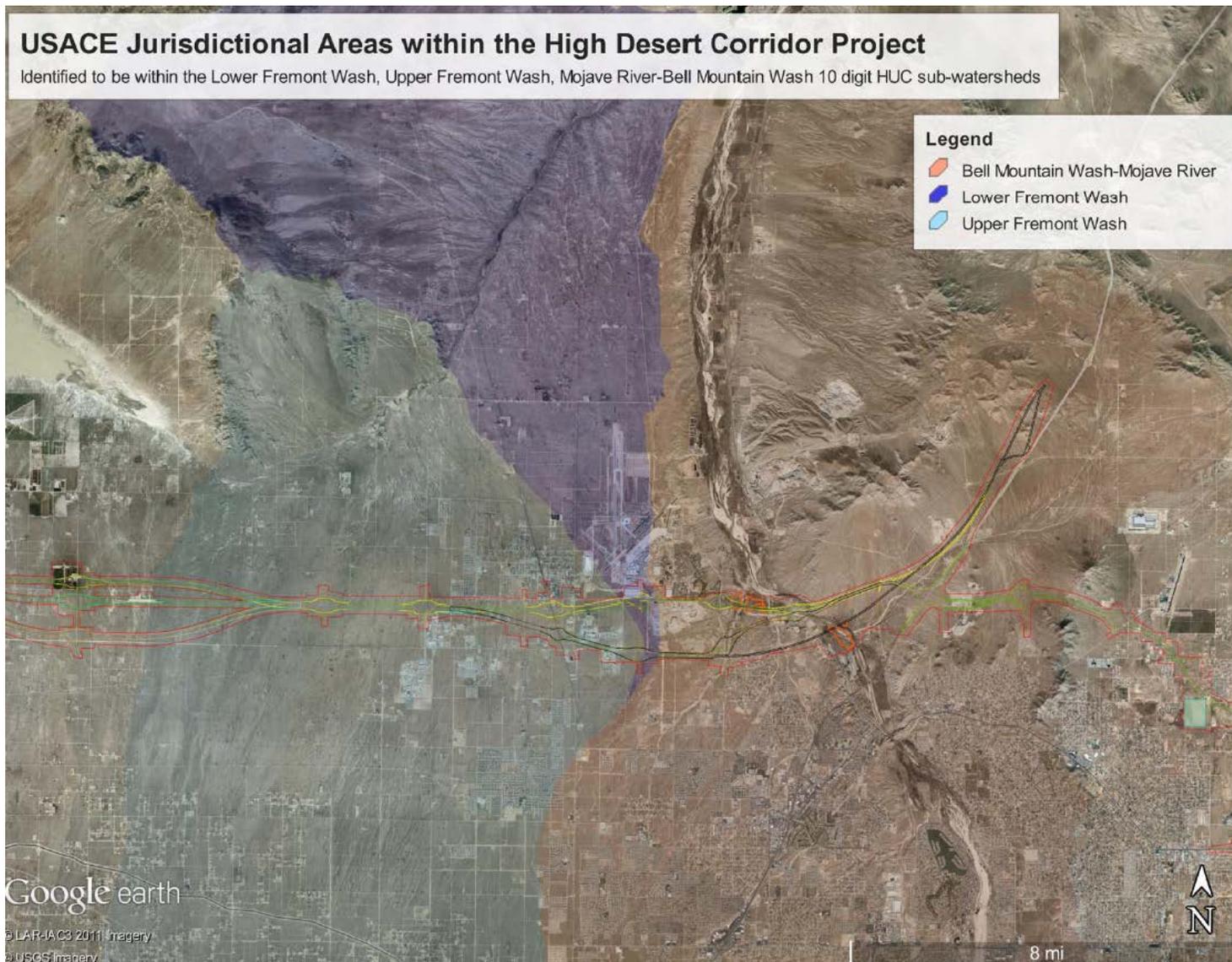
The Mojave River is an intermittent stream that is considered the largest USACE-determined waters of the U.S. within the project due to its downstream muted hydrological connection to Silver Lakes (two manmade navigable lakes in the city of Helendale). Due to this hydrological connection and that portions of the Mojave River within the BSA are perennial due to local geology through the area known as “the narrows” (ECORP, 2013), the Mojave River qualifies as a navigable water of the U.S. under 33 CFR § 329 and meets the definition of a traditional navigable water (TNW). Several ephemeral tributaries to the Mojave River that meet the definition of non-relatively permanent waters (non-RPWs) include Fremont Wash, an unnamed tributary to Fremont Wash, Turner Wash, Ossom Wash, and Bell Mountain Wash. These waters of the U.S. drainages are within the Upper Fremont Wash and Mojave River-Bell Mountain Wash HUC sub-watersheds (see Figure 3.3.2-1).

Freeway/Expressway and Freeway/Tollway Alternatives

Main Alignment/Common Areas

Within the BSA of the Main Alignment common areas, potential USACE jurisdictional features are identified as those within the Upper Fremont Wash and Bell Mountain-Mojave River 10-digit HUC sub-watersheds. Fremont Wash and Bell Mountain Wash are ephemeral non-RPWs identified as the USACE jurisdictional features within the main alignment common areas due to their downstream connections to the Mojave River. Approximately 15.984 acres within the Main Alignment/Common Areas are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway alternatives.

Figure 3.3.2-1 USACE Jurisdictional Areas within High Desert Corridor Project



Variation A

Potential USACE jurisdictional features were not identified within the BSA of the main alignment corridor corresponding to Variation A (a so-called Variation A Main alignment). The Rosamond dry lake, Buckhorn dry lake, Rogers dry lake serve as the downstream hydrological terminus to the washes within the isolated intermontane basins (USACE 2010, USACE 2011a). These dry lake systems are isolated waters without a surface connection and are considered non-jurisdictional WUS (AMEC 2012, ICF 2012, ECORP 2013). Approximately 16.306 acres within Variation A Main alignment are considered non-jurisdictional WUS for the Freeway/Expressway (Freeway/Tollway) Alternative. Approximately 27.926 acres within Variation A alignment are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway alternatives.

Variation B

Potential USACE jurisdictional features identified within the Variation include Fremont Wash and its contributing unnamed washes. The El Mirage dry lake serves as the downstream hydrological terminus to the washes within the isolated intermontane basin for numerous drainages (USACE 2011b). This dry lake system within the Sheep Creek-El Mirage Lake 10 digit HUC watershed is considered an isolated water without a surface connection and is considered non-jurisdictional WUS (USACE 2011b). Approximately 1.665 acres within the main alignment corridor corresponding to Variation B (a so-called Variation B Main) are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway alternatives. Approximately 1.541 acres within Variation B alignment are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway alternatives. Approximately 2.166 acres within Variation B1 alignment are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway alternatives.

Variation D

Potential USACE jurisdictional features were not identified within the BSA of the main alignment corridor corresponding to Variation D (a so-called Variation D Main alignment) and Variation D alignment. The Rosamond dry lake, Buckhorn dry lake, and Rogers dry lake serve as the downstream hydrological terminus to the washes within the isolated intermontane basins (USACE, 2010; 2011a; 2011b; 2013). These dry lake systems are isolated waters without a surface connection and are considered non-jurisdictional waters of the U.S. (AMEC, 2012; ICF, 2012; ECORP, 2013). Approximately 3.633 acres within Variation D Main alignment are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway alternatives. Approximately 1.941 acres within Variation D alignment are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway alternatives.

Variation E

Within the BSA of the main alignment corridor corresponding to Variation E (a so-called Variation E Main alignment) and Variation E alignment, TNW Mojave River is perennial and is considered a USACE jurisdictional feature, along with several of its ephemeral non-RPW tributaries; these include Turner Wash and Ossom Wash.

Approximately 2.97 acres within Variation E Main alignment are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway alternatives. Approximately 12.91 acres within Variation E alignment are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway alternatives.

Summary

Approximately 121.18 acres of hydrological features were mapped within the BSA inclusive of all variations to the Freeway/Expressway Alternative. Of these hydrological features, approximately 87.37 acres within the BSA are considered non-jurisdictional WUS.

Approximately 33.81 acres within the BSA inclusive of all variations to the Freeway/Expressway and Freeway/Tollway alternatives are considered under USACE jurisdiction.

Freeway/Expressway and Freeway/Tollway with HSR Alternatives

Main Alignment/Common Areas

Within the BSA of the Main Alignment common areas, potential USACE jurisdictional features are identified as those within the Upper Fremont Wash, and Bell Mountain-Mojave River 10-digit HUC sub-watershed. Fremont Wash and Bell Mountain Wash are ephemeral non-RPWs identified as the USACE jurisdictional features within the main alignment common areas due to their downstream connections to the Mojave River. Approximately 60.138 acres within the Main Alignment/Common areas are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway with HSR alternatives.

Rail Option 1

Potential USACE jurisdictional features were not identified within the BSA of Rail Option 1. The Rosamond dry lake, Buckhorn dry lake, and Rogers dry lake serve as the downstream hydrological terminus to the washes within the isolated intermontane basins (USACE, 2010; 2011a). These dry lake systems are isolated waters without a surface connection and are considered non-jurisdictional waters of the U.S. (AMEC, 2012; ICF, 2012; ECORP, 2013). Approximately 4.356 acres within Rail Option 1 are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway with HSR alternatives.

Rail Option 7

Potential USACE jurisdictional features were not identified within the BSA of Rail Option 7. The Rosamond dry lake, Buckhorn dry lake, and Rogers dry lake serve as the downstream hydrological terminus to the washes within the isolated intermontane basins (USACE, 2010; 2011a). These dry lake systems are isolated waters without a surface connection and are considered non-jurisdictional waters of the U.S. (AMEC, 2012; ICF, 2012; ECORP, 2013). Approximately 3.437 acres within Rail Option 7 are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway with HSR alternatives.

Variation B

Potential USACE jurisdictional features identified within Variation B Main alignment include Fremont Wash and its contributing unnamed washes. The El Mirage dry lake serves as the downstream hydrological terminus to the washes within the isolated intermontane basin for numerous drainages (USACE 2011b). This dry lake system is considered an isolated water without a surface connection and is considered non-jurisdictional WUS (USACE 2011b). Approximately 1.989 acres within Variation B Main alignment are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway with HSR alternatives. Approximately 1.784 acres within Variation B alignment are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway with HSR alternatives. Approximately 2.411 acres within Variation B1 are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway with HSR alternatives.

Variation D

Potential USACE jurisdictional features were not identified within the BSA of the main alignment corridor corresponding to Variation D (a so-called Variation D Main). The Rosamond dry lake, Buckhorn dry lake, Rogers dry lake serve as the downstream hydrological terminus to the washes within the isolated intermontane basins (USACE 2010, USACE 2011a, USACE 2011b, USACE 2013). These dry lake systems are isolated waters without a surface connection and are considered non-jurisdictional WUS (AMEC 2012, ICF 2012, ECORP 2013). Approximately 4.214 acres within Variation D Main alignment are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway with HSR alternatives. Approximately 2.423 acres within Variation D alignment are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway with HSR alternatives

Variation E with Rail XpressWest Connection

Within the BSA of the main alignment corridor corresponding to Variation E (a so-called Variation E Main)E with HSR Feeder Service, Mojave River is perennial and is considered a USACE jurisdictional feature along with several of its ephemeral non-RPW tributaries; these include Turner Wash, Ossom Wash and Bell Mountain Wash. Approximately 5.669 acres within Main E are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway with HSR alternatives. Approximately 18.250 acres within Variation E are considered non-jurisdictional WUS for the Freeway/Expressway and Freeway/Tollway with HSR alternatives.

Summary

Approximately 134.07 acres of hydrological features were mapped within the BSA inclusive of all variations to the Freeway/Expressway and Freeway/Tollway with HSR alternatives. Of these hydrological features, approximately 83.165 acres within the BSA are considered non-jurisdictional WUS.

Approximately 50.905 acres within the BSA inclusive of all variations to the Freeway/Expressway and Freeway/Tollway with HSR alternatives are considered under USACE jurisdiction.

SWRCB Jurisdiction

Under CWA Section 401, SWRCB takes jurisdiction over CWA Section 404 USACE jurisdictional features, as well as SWRCB jurisdictional features identified as waters of the State under the Porter-Cologne Act.

Surveys conducted along the main alignment within the Big Rock Creek-Big Rock Wash 10-digit HUC watershed identified a potential waters of the U.S./waters of the State wetland (ICF, 2012). Further analysis concluded that the wetland lacked hydric soils and would not be considered SWRCB jurisdictional under the Porter-Cologne Act.

Common to All Alternatives/Variations/Options

Within the BSA, SWRCB jurisdictional features are the same as the USACE jurisdictional features for all of the alternatives, variations, and options. The Mojave River, Fremont Wash, an unnamed tributary to Fremont Wash, Turner Wash, Ossom Wash, and Bell Mountain Wash are considered SWRCB waters of the State (see Figure 3.3.2-2).

Approximately 121.18 acres of hydrological features were mapped within the BSA inclusive of all variations to the Freeway/Expressway alternative. Of these hydrological features, approximately 87.37 acres within the BSA are considered non-jurisdictional SWRCB WSC.

Approximately 33.81 acres within the BSA inclusive of all variations to the Freeway/Expressway and Freeway/Tollway alternatives are considered under SWRCB jurisdiction.

Approximately 134.07 acres of hydrological features were mapped within the BSA inclusive of all variations to the Freeway/Expressway and Freeway/Tollway with HSR alternatives. Of these hydrological features, approximately 83.165 acres within the BSA are considered non-jurisdictional SWRCB WSC.

Approximately 50.905 acres within the BSA inclusive of all variations to the Freeway/Expressway and Freeway/Tollway with HSR alternatives are considered under SWRCB jurisdiction.

CDFW Jurisdiction

Under the California Fish and Game Code § 1600-1603, CDFW takes jurisdiction over any alteration of a river, stream, or lake where fish or wildlife resources may be substantially adversely affected. Streams (and rivers) are defined by the presence of a channel bed and banks, and at least an ephemeral flow of water.

Common to All Alternatives/Variations/Options

Within the BSA, the Mojave River and its tributaries, along with Little Rock Wash, Big Rock Wash, Grandview Canyon Creek, Graham Canyon Creek, Mescal Creek, Sheep Creek, several associated state-determined wetlands, and numerous isolated unnamed ephemeral washes, are considered CDFW waters of the State (see Figure 3.3.2-3). These drainages are located within the following 10-digit HUC watersheds: Amargosa Creek, Lake Palmdale-Piute Ponds, Rosamond Lake, Little Rock Wash, Town of Pearblossom, Rock Creek-Buckhorn Lake, Big Rock Creek-Big Rock Wash, Le Montaine Creek-Eller Slough, Mescal Creek-Rocky Buttes, Sheep Creek-El Mirage Lake, Lower Fremont Wash, Upper Fremont Wash, Bell Mountain-Mojave River, and Apple Valley Dry Lake.

Approximately 121.18 acres of CDFW jurisdictional features were mapped within the BSA inclusive of all variations to the Freeway/Expressway and Freeway/Tollway alternative.

Approximately 134.07 acres of CDFW jurisdictional features were mapped within the BSA inclusive of all variations to the Freeway/Expressway and Freeway/Tollway with HSR alternatives.

Figure 3.3.2-2 SWRCB Waters of the State Jurisdictional Areas within High Desert Corridor Project

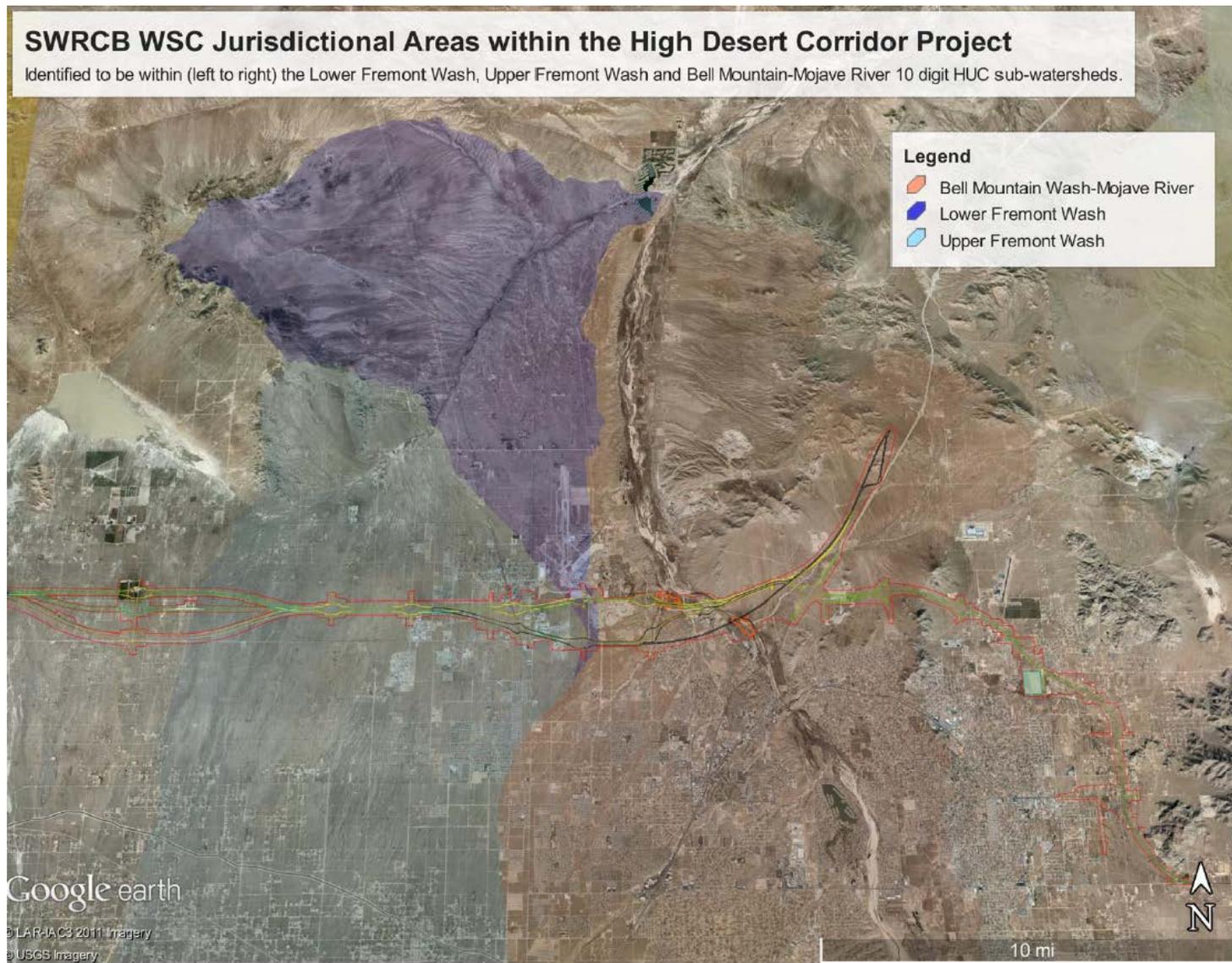
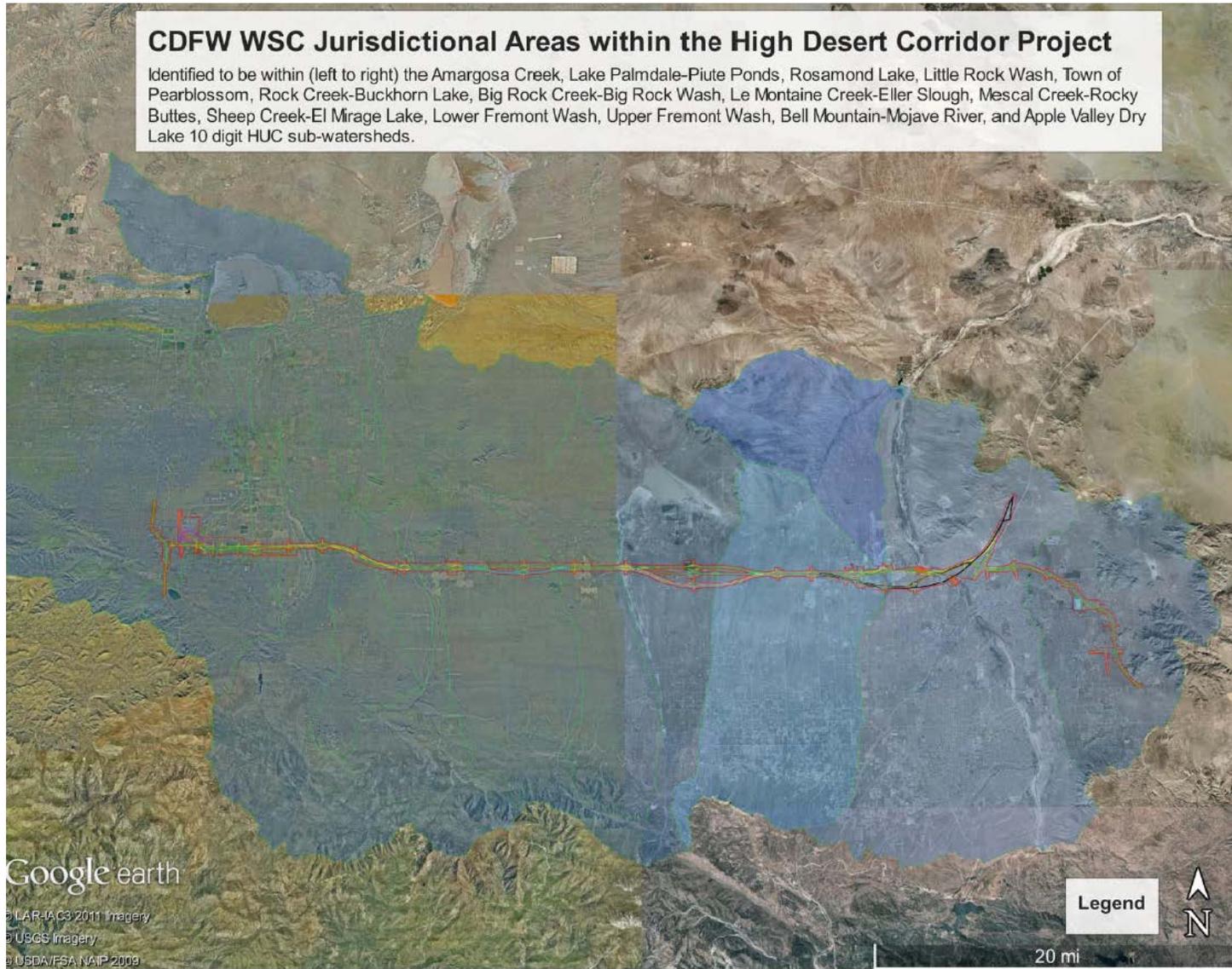


Figure 3.3.2-3 CDFW Waters of the State Jurisdictional Areas within High Desert Corridor Project



Environmental Consequences

No Build Alternative

No impacts would occur under the No Build Alternative.

Build Alternatives

USACE Jurisdiction Impacts

Pursuant to the CWA, all dredge and fill activities within waters of the U.S. are regulated under Section 404, by USACE. Within the project footprint, USACE jurisdictional features are located within the Lower Fremont Wash and Bell Mountain-Mojave River 10-digit HUC sub-watersheds of all alternatives, variations, and options.

The following subsections summarize the impacts to USACE jurisdictional waters by alternative. The data in table format can be found in the NES.

Freeway/Expressway and Freeway/Tollway Alternatives

There are 33.81 acres within the BSA inclusive of all variations to the Freeway/Expressway and Freeway/Tollway alternative are considered under USACE jurisdiction.

Main Alignment/Common Areas

Permanent direct impacts to waters of the U.S. in the main alignment common areas are approximately 0.937 acres. These permanent impacts include:

- Piers, piling, or footing locations below the OHWM of several contributing unnamed washes to Bell Mountain Wash.
- Box culverts within Fremont Wash and an unnamed tributary to Fremont Wash. These washes do not have wetlands or riparian vegetation and are not considered shade-sensitive; permanent indirect impacts are not expected.

Based on the data presented in the NES, temporary impacts to waters of the U.S. in the main alignment common areas are approximately 10.297 acres. These temporary impacts include equipment maneuvering and unpaved access roads surrounding the Fremont Wash, an unnamed tributary to Fremont Wash, Bell Mountain Wash, and several contributing washes to Bell Mountain Wash.

Variations A and D

Potential USACE jurisdictional features were not identified within the project footprint of Variations A, and D of the Freeway/Expressway (Freeway/ Tollway) Alternative.

Variation B

Permanent direct impacts to waters of the U.S. in the Variation B Main alignment are approximately 0.080 acres, Variation B alignment are approximately 0.030 acres, and Variation B1 alignment are approximately 0.110 acres. These permanent impacts include:

- Box culverts within Fremont Wash and its contributing washes. These washes do not have wetlands or riparian vegetation and are not considered shade-sensitive; permanent indirect impacts are not expected.

Temporary impacts to waters of the U.S. in the Variation B Main alignment are approximately 0.110 acres, Variation B alignment are approximately 0.030 acres, and Variation B1 alignment are 0.180 acres. These temporary impacts include: equipment maneuvering and unpaved access roads surrounding the Fremont Wash and contributing washes.

Variation E Main Alignment with Mojave River Bridges Option 1

Permanent direct impacts to waters of the U.S. in Variation E Main alignment with the Mojave River Bridges: Option 1 are approximately 0.800 acre. These permanent impacts include:

- Piers, piling, or footing locations below the OHWM of several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.

Permanent indirect impacts to waters of the U.S. in Variation E Main alignment with the Mojave River Bridges: Option 1 are approximately 0.264 acres. These permanent indirect impacts include:

- Bridge shading from the Mojave River full-span bridges over non-wetland riparian vegetation. Staging and equipment access will occur above the OHWM; temporary impacts are not anticipated.

Temporary impacts to waters of the U.S. in Variation E Main alignment with the Mojave River Bridges: Option 1 are approximately 4.309 acres. These temporary impacts include equipment maneuvering and unpaved access roads surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.

Variation E Main Alignment with Mojave River Bridges Option 2

Permanent direct impacts to waters of the U.S. in Variation E Main alignment with the Mojave River Bridges: Option 2 are approximately 0.80 acres. These permanent impacts include:

- Piers, piling or footing locations below the OHWM of the Mojave River and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.

Permanent indirect impacts to waters of the U.S. in Variation E Main alignment with the Mojave River Bridges: Option 2 are approximately 0.447 acres. These permanent indirect impacts include: Bridge shading from the Mojave River bridges over non-wetland riparian vegetation. Staging and equipment access will occur above the OHWM; temporary impacts are not anticipated.

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Temporary impacts to waters of the U.S. in Variation E Main alignment with the Mojave River Bridges: Option 2 are approximately 4.309 acres. These temporary impacts include equipment maneuvering and unpaved access roads within the Mojave River, and surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.

Variation E Main Alignment with Mojave River Bridges Option 3

Permanent direct impacts to waters of the U.S. in Variation E Main alignment with the Mojave River Bridges: Option 3 are approximately 0.750 acres. These permanent impacts include:

- Piers, piling or footing locations below the OHWM of several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.

Permanent indirect impacts to waters of the U.S. in Variation E Main alignment with the Mojave River Bridges: Option 3 are approximately 0.314 acres. These permanent indirect impacts include:

- Bridge shading from the Mojave River bridges over non-wetland riparian vegetation. Staging and equipment access will occur above the OHWM; temporary impacts are not anticipated.

Temporary impacts to waters of the U.S. in Variation E Main alignment with the Mojave River Bridges: Option 3 are approximately 4.309 acres. These temporary impacts include: equipment maneuvering and unpaved access roads surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.

Variation E Alignment with Mojave River Bridges Option 1

Permanent direct impacts to waters of the U.S. in Variation E alignment with the Mojave River Bridges: Option 1 are approximately 1.811 acre. These permanent impacts include:

- Piers, piling or footing locations below the OHWM of several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.
- Piers, piling or footing locations within WUS non-wetland riparian vegetation of the Mojave River.

Permanent indirect impacts to waters of the U.S. in Variation E alignment with the Mojave River Bridges: Option 1 are approximately 0.601acre. These permanent indirect impacts include:

- Bridge shading from the Mojave River full-span bridges over non-wetland riparian vegetation. Staging and equipment access will occur above the OHWM; temporary impacts are not anticipated.

Temporary impacts to waters of the U.S. in Variation E alignment with the Mojave River Bridges: Option 1 are approximately 14.262 acres. These temporary impacts include equipment maneuvering and unpaved access roads surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.

Variation E Alignment with Mojave River Bridge Option 2

Permanent direct impacts to waters of the U.S. in Variation E with the Mojave River Bridges Option 2 are approximately 1.811 acres. These permanent impacts include:

- Piers, piling, or footing locations below the OHWM of the Mojave River and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.
- Piers, piling, or footing locations within waters of the U.S. non-wetland riparian vegetation of the Mojave River.

Permanent indirect impacts to waters of the U.S. in Variation E alignment with the Mojave River Bridges: Option 2 are approximately 0.871 acres. These permanent indirect impacts include:

- Bridge shading from the Mojave River bridges over non-wetland riparian vegetation. Staging and equipment access will occur above the OHWM; temporary impacts are not anticipated.

Temporary impacts to Variation E alignment with the Mojave River Bridges Option 2 are approximately 14.262 acres. These temporary impacts include equipment maneuvering and unpaved access roads within the Mojave River, and surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.

Variation E Alignment with Mojave River Bridge Option 3

Permanent direct impacts to waters of the U.S. in Variation E alignment with the Mojave River Bridges Option 3 are approximately 1.724 acres. These permanent impacts include:

- Piers, piling or footing locations below the OHWM of several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.

Permanent indirect impacts to waters of the U.S. in Variation E alignment with the Mojave River Bridges: Option 3 are approximately 0.688 acres. These permanent indirect impacts include:

- Bridge shading from the Mojave River bridges over non-wetland riparian vegetation. Staging and equipment access will occur above the OHWM; temporary impacts are not anticipated.

Temporary impacts to waters of the U.S. in Variation E with the Mojave River Bridges: Option 3 are approximately 14.262 acres. These temporary impacts include: equipment maneuvering and unpaved access roads surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Fremont Wash, Turner Wash, Ossom Wash, and the Mojave River.

Freeway/Expressway and Freeway/Tollway with HSR Alternatives

Approximately 50.905 acres within the BSA inclusive of all variations to the Freeway/Expressway and Freeway/Tollway with HSR alternatives are considered under USACE jurisdiction.

Main Alignment/Common Areas

Permanent direct impacts to waters of the U.S. in the main alignment common areas are approximately 0.651 acre. These permanent impacts include:

- Box culverts within Fremont Wash and an unnamed tributary to Fremont Wash. These washes do not have waters of the U.S. wetlands or waters of the U.S. non-wetland riparian vegetation and are not considered shade-sensitive; permanent indirect impacts are not expected.

Temporary impacts to waters of the U.S. in the main alignment common areas are approximately 8.927 acre. These temporary impacts include equipment maneuvering and unpaved access roads surrounding Fremont Wash and an unnamed tributary to Fremont Wash.

Rail Option 1, Rail Option 7, and Variation D

Potential USACE jurisdictional features were not identified within the Rail Options 1 and 7, or Variation D of the Freeway/Expressway (Freeway/Tollway) Alternative with the HSR Feeder Service.

Variation B

Permanent direct impacts to waters of the U.S. in the Variation B Main alignment are approximately 0.115 acres, Variation B alignment are approximately 0.115 acres, and Variation B1 alignment are approximately 0.115 acres. These permanent impacts include:

- Box culverts within Fremont Wash and its contributing washes. These washes do not have wetlands or riparian vegetation and are not considered shade-sensitive; permanent indirect impacts are not expected.

Temporary impacts to waters of the U.S. in the Variation B Main alignment are approximately 0.086 acres, Variation B alignment are approximately 0.086 acres, Variation B1 alignment are approximately 0.086 acres. These temporary impacts include: equipment maneuvering and unpaved access roads surrounding the Fremont Wash and contributing washes.

Variation E Main Alignment with HSR and with Mojave River Bridges Option A

Permanent direct impacts to waters of the U.S. in Variation E Main alignment with HSR and with Mojave River Bridges Option A are approximately 2.955 acres. These permanent impacts include:

- Piers, piling, or footing locations below the OHWM of several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.

Permanent indirect impacts to waters of the U.S. in Variation E Main alignment with HSR and with Mojave River Bridges Option A are approximately 0.665 acres. These permanent indirect impacts include:

- Bridge shading from the Mojave River full-span bridges over nonwetland riparian vegetation. Staging and equipment access will occur above the OHWM; temporary impacts are not anticipated.

Temporary impacts to waters of the U.S. in Variation E Main alignment with HSR and with Mojave River Bridges Option A are approximately 15.038 acres. These temporary impacts include equipment maneuvering and unpaved access roads surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.

Variation E Main Alignment with HSR and with Mojave River Bridges Option B

Permanent direct impacts to waters of the U.S. in Variation E Main alignment with HSR and with Mojave River Bridges Option B are approximately 3.125 acres. These permanent impacts include:

- Piers, piling, or footing locations below the OHWM of the Mojave River and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.
- Piers, piling, or footing locations within waters of the U.S. non-wetland riparian vegetation of the Mojave River.

Permanent indirect impacts to waters of the U.S. in Variation E Main with HSR Feeder Service and with Mojave River Bridges Option B are approximately 0.665 acres. These permanent indirect impacts include:

- Bridge shading from the Mojave River clear-span bridges over nonwetland riparian vegetation. Staging and equipment access will occur above the OHWM; temporary impacts are not anticipated.

Temporary impacts to waters of the U.S. in Variation E Main alignment with HSR and with Mojave River Bridges Option B are approximately 15.038 acres. These temporary impacts include equipment maneuvering and unpaved access roads within the Mojave River and surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.

*Variation E Alignment with HSR and with Mojave River Bridges Rail with Freeway
Option 1A*

Permanent direct impacts to waters of the U.S. in Variation E with HSR alignment and with Mojave River Bridges Option 1 are approximately 1.172 acres. These permanent impacts include:

- Piers, piling or footing locations below the OHWM of several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.
- Piers, piling or footing locations within wetland waters of the U.S. of the Mojave River.
- Piers, piling or footing locations within non-wetland waters of the U.S. of the Mojave River.

Permanent indirect impacts to waters of the U.S. in Variation E with HSR alignment and with Mojave River Bridges Option 1 are approximately 2.517 acres. These permanent indirect impacts include:

- Bridge shading from the Mojave River full-span bridges over waters of the U.S. non-wetland riparian vegetation. Staging and equipment access will occur above the OHWM; temporary impacts are not anticipated.

Temporary impacts to waters of the U.S. in Variation E Rail with HSR alignment and with Mojave River Bridges Option 1 are approximately 25.961 acres. These temporary impacts include equipment maneuvering and unpaved access roads surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.

*Variation E with HSR Alignment and with Mojave River Bridges Rail with Freeway
Option 2*

Permanent direct impacts to waters of the U.S. in Variation E with HSR Feeder Service: Freeway Portion with the Mojave River Bridges Option 2 are approximately 1.169 acres. These permanent impacts include:

- Piers, piling or footing locations below the OHWM of several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.
- Piers, piling or footing locations within wetland WUS of the Mojave River.
- Piers, piling or footing locations within non-wetland WUS of the Mojave River.

Permanent indirect impacts to waters of the U.S. in Variation E with HSR Feeder Service: Freeway Portion with the Mojave River Bridges Option 2 are approximately 2.700 acres. These permanent indirect impacts include:

- Bridge shading from the Mojave River bridges over non-wetland riparian vegetation WUS and wetland WUS. Staging and equipment access will occur above the OHWM; temporary impacts are not anticipated.

Temporary impacts to Variation E with HSR Feeder Service: Freeway Portion with the Mojave River Bridges Option 2 are approximately 25.961 acres. These temporary impacts include: equipment maneuvering and unpaved access roads within the Mojave River, and surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Fremont Wash, Turner Wash, Ossom Wash, and the Mojave River.

Variation E with HSR Feeder Service Alignment and with Mojave River Bridges Rail with Freeway Option 3

Permanent direct impacts to waters of the U.S. in Variation E with HSR Feeder Service: Freeway Portion with the Mojave River Bridges Option 3 are approximately 0.879 acres. These permanent impacts include:

- Piers, piling or footing locations below the OHWM of the Mojave River and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.
- Piers, piling or footing locations within WUS non-wetland riparian vegetation of the Mojave River.

Permanent indirect impacts to waters of the U.S. in Variation E with HSR Feeder Service: Freeway Portion with the Mojave River Bridges Option 2 are approximately 2.810 acres. These permanent indirect impacts include:

- Bridge shading from the Mojave River bridges over non-wetland riparian vegetation WUS and wetland WUS (see Table 3.3.2-1). Staging and equipment access will occur above the OHWM; temporary impacts are not anticipated.

Temporary impacts to Variation E with HSR Feeder Service: Freeway Portion with the Mojave River Bridges Option 3 are approximately 25.961 acres. These temporary impacts include: equipment maneuvering and unpaved access roads within the Mojave River, and surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Fremont Wash, Turner Wash, Ossom Wash, and the Mojave River.

Summary

With the implementation of avoidance and minimization measures, permanent impacts to no more than 3.537 acres of waters of the U.S. are anticipated within the proposed Freeway/Expressway and Freeway/Tollway alternatives along the longest/widest variations.

With the implementation of avoidance and minimization measures, permanent impacts to no more than 4.702 acres of waters of the U.S. are anticipated along the Freeway/Expressway and Freeway/Tollway with HSR along the widest variations.

Freeway/Expressway and Freeway/Tollway with HSR – Variation E is the most environmentally damaging alternative to USACE jurisdictional features and has adverse impacts to federal wetlands compared to Variation E Main.

Freeway/Expressway Freeway/Tollway with HSR – Variation E Main does not impact federal wetlands.

Option 1, 2 and Option B of the Mojave River Bridges has direct impacts to USACE jurisdictional features and is the most environmentally damaging alternative to the Mojave River compared to Option 3 and Option A of the Mojave River Bridges.

These acreage conclusions represent a calculated estimation of the jurisdictional areas within the project impact area, and are subject to modification following the USACE verification process.

With the implementation of avoidance and minimization measures, current designs of the proposed alignment and variations do not exceed the NEPA/404 MOU (FHWA et al. 2006) threshold of five or more acres of permanent impacts to WUS. These acreage conclusions were brought to the attention of USACE during the March 13, 2014 coordination meeting, which discussed impacts and possible NEPA/404 coordination. During project refinement, coordination with USACE will continue to ensure recommendations are implemented further avoid or minimize impacts to USACE jurisdictional features.

**Table 3.3.2-1 Temporary and Permanent Impacts to USACE Jurisdictional Features
for the High Desert Corridor Project**

	Non-Wetland Waters of the U.S.			Wetland Waters of the U.S.			Total	
	Temporary Impacts	Permanent Indirect	Permanent Direct	Temporary	Permanent Indirect	Permanent Direct	Temporary Impacts	Permanent Impacts (Direct and Indirect)
	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>(Fill and Shading Effects)</i>
Freeway/Expressway (Freeway/Tollway) Alternative								
Total Main Alignment/ Common Areas (Acres)	10.297	0.00	0.937	0.00	0.00	0.00	10.297	0.937
TOTAL VARIATION B MAIN (acres)	0.110	0.00	0.080	0.00	0.00	0.00	0.110	0.080
TOTAL VARIATION B (acres)	0.030	0.00	0.030	0.00	0.00	0.00	0.030	0.030
TOTAL VARIATION B1 (acres)	0.180	0.00	0.110	0.00	0.00	0.00	0.180	0.110
TOTAL VARIATION E MAIN WITH MOJAVE RIVER BRIDGES: OPTION 1 (acres)	4.309	0.264	0.800	0.000	0.000	0.000	4.309	1.064
TOTAL VARIATION E MAIN WITH MOJAVE RIVER BRIDGES: OPTION 2 (acres)	4.309	0.447	0.800	0.00	0.00	0.00	4.309	1.247
TOTAL VARIATION E MAIN WITH MOJAVE RIVER BRIDGES: OPTION 3 (acres)	4.309	0.314	0.750	0.000	0.000	0.000	4.309	1.064
TOTAL VARIATION E- WITH MOJAVE RIVER BRIDGES: OPTION 1 (acres)	14.262	0.601	1.811	0.000	0.000	0.000	14.262	2.412
TOTAL VARIATION E- WITH MOJAVE RIVER BRIDGES: OPTION 2 (acres)	14.262	0.871	1.811	0.000	0.000	0.000	14.262	2.682
TOTAL VARIATION E- WITH MOJAVE RIVER BRIDGES: OPTION 3 (acres)	14.262	0.688	1.724	0.000	0.000	0.000	14.262	2.412

**Table 3.3.2-1 Temporary and Permanent Impacts to USACE Jurisdictional Features
for the High Desert Corridor Project**

	Non-Wetland Waters of the U.S.			Wetland Waters of the U.S.			Total	
	Temporary Impacts	Permanent Indirect	Permanent Direct	Temporary	Permanent Indirect	Permanent Direct	Temporary Impacts	Permanent Impacts (Direct and Indirect)
	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>(Fill and Shading Effects)</i>
Freeway/Expressway (Freeway/Tollway) Alternative with HSR Feeder Service								
TOTAL MAIN ALIGNMENT/Common AREAS (acres)	8.927	0.00	0.651	0.00	0.00	0.00	8.927	0.651
TOTAL VARIATION B MAIN (acres)	0.086	0.00	0.115	0.00	0.00	0.00	0.086	0.115
TOTAL VARIATION B (acres)	0.103	0.00	0.044	0.00	0.00	0.00	0.103	0.044
TOTAL VARIATION B1 (acres)	0.123	0.00	0.179	0.00	0.00	0.00	0.123	0.179
TOTAL VARIATION E MAIN WITH RAIL EXPRESSWEST CONNECTION WITH MOJAVE RIVER BRIDGES: OPTION A (acres)	15.038	0.665	2.955	0.00	0.00	0.00	15.038	3.620
TOTAL MAIN E WITH RAIL EXPRESSWEST CONNECTION WITH MOJAVE RIVER BRIDGES: OPTION B (acres)	15.038	0.665	3.125	0.00	0.00	0.00	15.038	3.790
TOTAL VARIATION E WITH RAIL EXPRESSWEST CONNECTION WITH MOJAVE RIVER BRIDGES: OPTION 1 (acres)	25.234	0.00	0.879	0.73	2.52	0.29	25.961	3.689
VARIATION E WITH RAIL EXPRESSWEST CONNECTION WITH MOJAVE RIVER BRIDGES: RAIL WITH FREEWAY OPTION 2 (acres)	25.234	0.00	0.879	0.73	2.70	0.29	25.961	3.872

**Table 3.3.2-1 Temporary and Permanent Impacts to USACE Jurisdictional Features
for the High Desert Corridor Project**

	Non-Wetland Waters of the U.S.			Wetland Waters of the U.S.			Total	
	Temporary Impacts	Permanent Indirect	Permanent Direct	Temporary	Permanent Indirect	Permanent Direct	Temporary Impacts	Permanent Impacts (Direct and Indirect)
	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>(Fill and Shading Effects)</i>
VARIATION E WITH RAIL EXPRESSWEST CONNECTION WITH MOJAVE RIVER BRIDGES: RAIL WITH FREEWAY OPTION 3 (acres)	25.234	0.00	0.879	0.73	2.81	0.00	25.961	3.689

SWRCB Jurisdiction

Pursuant to the CWA, all dredge and fill activities regulated under Section 404 are required to obtain a 401 Water Quality Certification from the SWRCB. Typically, waters of the State, as regulated under Section 401 of the CWA, reflect those waters that fall under USACE jurisdiction. The SWRCB is ultimately responsible for determining waters of the State pursuant to Section 401 of the CWA and the Porter-Cologne Act.

Common to All Alternatives/Variations/Options

Within the project footprint, impacts to SWRCB jurisdictional features are the same as the impacts to USACE jurisdictional features for all of the alternatives, variations, and options. The Mojave River, Fremont Wash, Turner Wash, Ossom Wash, Bell Mountain Wash and contributing unnamed washes are considered SWRCB WSC (see Table 3.3.2-2).

With the implementation of avoidance and minimization measures, permanent impacts to no more than 3.537 acres of SWRCB WSC (see Table 3.3.2-2) are anticipated within the proposed Freeway/Expressway and Freeway/Tollway alternatives along the longest/widest variations.

With the implementation of avoidance and minimization measures, permanent impacts to no more than 4.702 acres of SWRCB WSC are anticipated along the Freeway/Expressway and Freeway/Tollway with HSR along the widest variations (see Table 3.3.2-2).

Freeway/Expressway and Freeway/Tollway with HSR – Variation E is the most environmentally damaging alternative to SWRCB WSC jurisdictional features and has adverse impacts to federal wetlands compared to Main E. Freeway/Expressway (Freeway/Tollway) with HSR Feeder Service – Main E does not impact federal wetlands.

Option 1, 2 and Option B of the Mojave River Bridges has direct impacts to SWRCB WSC jurisdictional features and is the most environmentally damaging alternative to the Mojave River compared to Option 3 and Option A of the Mojave River Bridges. Coordination with the SWRCB will be required to confirm waters of the State and to obtain Section 401 Certification.

**Table 3.3.2-2 Temporary and Permanent Impacts to SWRCB Waters of the State Jurisdictional Features
for the High Desert Corridor Project**

	Non-Wetland SWRCB Waters of the State			Wetland SWRCB Waters of the State			Total	
	Temporary Impacts	Permanent Indirect	Permanent Direct	Temporary	Permanent Indirect	Permanent Direct	Temporary Impacts	Permanent Impacts (Direct and Indirect)
	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>(Fill and Shading Effects)</i>
Freeway/Expressway (Freeway/Tollway) Alternative								
TOTAL MAIN ALIGNMENT/COMMON AREAS (acres)	10.297	0.00	0.937	0.00	0.00	0.00	10.297	0.937
TOTAL VARIATION B MAIN (acres)	0.110	0.00	0.080	0.00	0.00	0.00	0.110	0.080
TOTAL VARIATION B (acres)	0.030	0.00	0.030	0.00	0.00	0.00	0.030	0.030
TOTAL VARIATION B1 (acres)	0.180	0.00	0.110	0.00	0.00	0.00	0.180	0.110
TOTAL VARIATION E MAIN WITH MOJAVE RIVER BRIDGES: OPTION 1 (acres)	4.309	0.264	0.800	0.000	0.000	0.000	4.309	1.064
TOTAL VARIATION E MAIN WITH MOJAVE RIVER BRIDGES: OPTION 2 (acres)	4.309	0.447	0.800	0.00	0.00	0.00	4.309	1.247
TOTAL VARIATION E MAIN WITH MOJAVE RIVER BRIDGES: OPTION 3 (acres)	4.309	0.314	0.750	0.000	0.000	0.000	4.309	1.064
TOTAL VARIATION E- WITH MOJAVE RIVER BRIDGES: OPTION 1 (acres)	14.262	0.601	1.811	0.000	0.000	0.000	14.262	2.412
TOTAL VARIATION E- WITH MOJAVE RIVER BRIDGES: OPTION 2 (acres)	14.262	0.871	1.811	0.000	0.000	0.000	14.262	2.682
TOTAL VARIATION E- WITH MOJAVE RIVER BRIDGES: OPTION 3 (acres)	14.262	0.688	1.724	0.000	0.000	0.000	14.262	2.412

**Table 3.3.2-2 Temporary and Permanent Impacts to SWRCB Waters of the State Jurisdictional Features
for the High Desert Corridor Project**

	Non-Wetland SWRCB Waters of the State			Wetland SWRCB Waters of the State			Total	
	Temporary Impacts	Permanent Indirect	Permanent Direct	Temporary	Permanent Indirect	Permanent Direct	Temporary Impacts	Permanent Impacts (Direct and Indirect)
	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>(Fill and Shading Effects)</i>
Freeway/Expressway (Freeway/Tollway) Alternative with the HSR Feeder Service								
TOTAL MAIN ALIGNMENT/COMMON AREAS (acres)	8.927	0.00	0.651	0.00	0.00	0.00	8.927	0.651
TOTAL VARIATION B MAIN (acres)	0.086	0.00	0.115	0.00	0.00	0.00	0.086	0.115
TOTAL VARIATION B (acres)	0.103	0.00	0.044	0.00	0.00	0.00	0.103	0.044
TOTAL VARIATION B1 (acres)	0.123	0.00	0.179	0.00	0.00	0.00	0.123	0.179
TOTAL VARIATION E MAIN WITH RAIL EXPRESSWEST CONNECTION WITH MOJAVE RIVER BRIDGES: OPTION A (acres)	15.038	0.665	2.955	0.00	0.00	0.00	15.038	3.620
TOTAL VARIATION E MAIN WITH RAIL EXPRESSWEST CONNECTION WITH MOJAVE RIVER BRIDGES: OPTION B (acres)	15.038	0.665	3.125	0.00	0.00	0.00	15.038	3.790
TOTAL VARIATION E WITH RAIL EXPRESSWEST CONNECTION WITH MOJAVE RIVER BRIDGES: OPTION 1 (acres)	25.234	0.00	0.879	0.73	2.52	0.29	25.961	3.689

**Table 3.3.2-2 Temporary and Permanent Impacts to SWRCB Waters of the State Jurisdictional Features
for the High Desert Corridor Project**

	Non-Wetland SWRCB Waters of the State			Wetland SWRCB Waters of the State			Total	
	Temporary Impacts	Permanent Indirect	Permanent Direct	Temporary	Permanent Indirect	Permanent Direct	Temporary Impacts	Permanent Impacts (Direct and Indirect)
	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>(Fill and Shading Effects)</i>
VARIATION E WITH RAIL EXPRESSWEST CONNECTION WITH MOJAVE RIVER BRIDGES: RAIL WITH FREEWAY OPTION 2 (acres)	25.234	0.00	0.879	0.73	2.70	0.29	25.961	3.872
VARIATION E WITH RAIL EXPRESSWEST CONNECTION WITH MOJAVE RIVER BRIDGES: RAIL WITH FREEWAY OPTION 3 (acres)	25.234	0.00	0.879	0.73	2.81	0.00	25.961	3.689

CDFW Jurisdiction

Pursuant to Fish and Game Code Section 1600-1603, any alterations within the streambed, bank, and channels of waters of the State are regulated by CDFW.

The following subsections summarize the impacts to CDFW jurisdictional waters by alternatives. The data in table format can be found in the NES.

Freeway/Expressway (Freeway/Tollway) Alternative

Approximately 121.18 acres of CDFW jurisdictional features were mapped within the BSA inclusive of all variations to the Freeway/Expressway alternative.

Main Alignment/Common Areas

Ephemeral washes located in the main alignment common areas are located within the following 10-digit HUC sub-watersheds: Bell Mountain-Mojave River, Amargosa Creek, Lake Palmdale-Piute Ponds, Little Rock Wash, Town of Pearblossom, Rock Creek-Buckhorn Lake, Big Rock Creek-Big Rock Wash, Le Montaine Creek-Eller Slough, Mescal Creek-Rocky Buttes, Lower Fremont Wash, Upper Fremont Wash, and Apple Valley Dry Lake.

Permanent direct impacts to CDFW jurisdictional features in the Main Alignment common areas are approximately 24.017 acres. These permanent direct impacts include:

- Box culverts, desert scrub vegetation clearing, limited to the top of the banks of Grandview Canyon Creek, Graham Canyon Creek, Mescal Creek, Sheep Creek, Fremont Wash, contributing washes and numerous isolated unnamed washes.
- Piers, pilings, footings, desert scrub vegetation clearing within the streambeds of Little Rock Wash. Piers, piling or footing locations within CDFW-defined wetlands of Big Rock Wash.

Temporary impacts to CDFW jurisdictional features in the Main Alignment common areas are approximately 34.649 acres. These temporary impacts include: equipment maneuvering and unpaved access roads within the Little Rock Wash, Big Rock Wash, Grandview Canyon Creek, Graham Canyon Creek, Mescal Creek, Sheep Creek, Fremont Wash, contributing washes and numerous isolated unnamed washes.

Variation A

Ephemeral washes located in the Variation A Main alignment and Variation A alignment are located within the following 10-digit HUC sub-watersheds:

- Lake Palmdale-Piute Ponds
- Amargosa Creek
- Little Rock Wash

Permanent direct impacts to CDFW jurisdictional features in the Variation A Main are approximately 11.516 acres and Variation A are approximately 15.379 acres. These permanent direct impacts include:

- Box culverts and desert scrub vegetation clearing several isolated unnamed washes
- Piers, pilings, footings, desert scrub vegetation clearing within the streambeds of Little Rock Wash.

Permanent indirect impacts are not anticipated as these ephemeral washes do not contain CDFW-defined wetlands.

Temporary impacts to CDFW jurisdictional features in the Variation A Main are approximately 4.791 acres and Variation A are approximately 12.547 acres. These temporary impacts include: equipment maneuvering and unpaved access roads within Little Rock Wash, and several isolated unnamed washes.

Variation B

Ephemeral washes located in the Variation B Main alignment, Variation B alignment, and Variation B1 alignment are located within the following 10 digit HUC sub-watersheds:

- Sheep Creek-El Mirage Lake
- Le Montaine Creek-Eller Slough
- Lower Fremont Wash

Permanent direct impacts to CDFW jurisdictional features in the Variation B Main alignment are approximately 0.642 acres, Variation B alignment are approximately, 0.623 acres, and Variation B1 are approximately 0.745 acres. These permanent direct impacts include:

- Box culverts and desert scrub vegetation clearing within Sheep Creek, Fremont Wash, contributing washes and several isolated unnamed washes

Permanent indirect impacts are not anticipated as these ephemeral washes do not contain CDFW-defined wetlands.

Temporary impacts to CDFW jurisdictional features in the Variation B Main are approximately 1.060 acres, Variation B are approximately 0.908 acres, and Variation B1 are approximately 1.346 acres within Sheep Creek, Fremont Wash, an unnamed tributary to Fremont Wash and several isolated unnamed washes.

Variation D

Ephemeral washes located in the Variation D Main alignment and Variation D alignment are located within the following 10-digit HUC sub-watersheds:

- Le Montaine Creek-Eller Slough

- Mescal Creek-Rocky Buttes

Permanent direct impacts to CDFW waters of the State in the Variation D Main alignment are approximately 1.315 acres and Variation D alignment are approximately 0.581 acres.

Permanent indirect impacts are not anticipated because these ephemeral washes do not contain CDFW-defined waters of the State wetlands.

Temporary impacts to CDFW waters of the State in the Variation D Main alignment are approximately 2.319 acres and Variation D alignment are approximately 1.36 acres. These temporary impacts include equipment maneuvering and unpaved access roads within Mescal Creek and several isolated unnamed washes.

Variation E with the Mojave River Bridges Option 1

Ephemeral washes located in the Variation E Main alignment and Variation E alignment with the Mojave River Bridges: Option 1 are located within the following 10-digit HUC sub-watersheds:

- Bell Mountain-Mojave River
- Upper Fremont Wash
- Lower Fremont Wash

Permanent direct impacts to CDFW jurisdictional features in the Variation E Main with Mojave River Bridge Option 1 are approximately 2.223 acres. Permanent direct impacts to CDFW jurisdictional features in Variation E with Mojave River Bridge Option 1 are approximately 3.310 acres. These permanent impacts include bridge shading and:

- Piers, pilings, footings, desert scrub vegetation clearing, limited to the top of the banks of Turner Wash, Ossom Wash, and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.
- Piers, piling or footing locations within CDFW-defined wetlands of the Mojave River.

Temporary impacts to CDFW jurisdictional features in the Variation E Main with Mojave River Bridge Option 1 are approximately 2.580 acres. Temporary impacts to CDFW jurisdictional features in the Variation E with Mojave River Bridge Option 1 are approximately 16.714 acres. These temporary impacts include: equipment maneuvering and unpaved access roads within the Mojave River and surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Fremont Wash, Turner Wash, Ossom Wash, and the Mojave River.

Variation E with the Mojave River Bridges Option 2

Ephemeral washes located in the Variation E Main alignment and Variation E alignment with the Mojave River Bridges: Option 2 are located within the following 10-digit HUC sub-watersheds:

- Bell Mountain-Mojave River
- Upper Fremont Wash
- Lower Fremont Wash

Permanent direct impacts to CDFW jurisdictional features in the Variation E Main with Mojave River Bridge Option 2 are approximately 2.410 acres. Permanent direct impacts to CDFW jurisdictional features in the Variation E with the Mojave River Bridge Option 2 are approximately 3.418 acres. These permanent impacts include bridge shading and:

- Piers, pilings, footings, desert scrub vegetation clearing, limited to the top of the banks of Turner Wash, Ossom Wash, and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.
- Piers, piling or footing locations within CDFW-defined wetlands of the Mojave River.

Temporary impacts to CDFW jurisdictional features in the Variation E Main with Mojave River Bridge Option 2 are approximately 2.58 acres. Temporary impacts to CDFW jurisdictional features in the Variation E with the Mojave River Bridge Option 2 are approximately 16.714 acres. These temporary impacts include: equipment maneuvering and unpaved access roads within the Mojave River and surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Fremont Wash, Turner Wash, Ossom Wash, and the Mojave River.

Variation E with the Mojave River Bridges Option 3

Ephemeral washes located in the Main E with Mojave River Bridge Option 3 are located within the following 10 digit HUC sub-watersheds:

- Bell Mountain-Mojave River
- Upper Fremont Wash
- Lower Fremont Wash

Permanent direct impacts to CDFW jurisdictional features in the Variation E Main alignment with Mojave River Bridge Option 3 are approximately 1.622 acres. Permanent direct impacts to CDFW jurisdictional features in the Variation E with Mojave River Bridge Option 3 are approximately 2.634 acres. These permanent impacts include:

- Piers, pilings, footings, desert scrub vegetation clearing, limited to the top of the banks of Turner Wash, Ossom Wash, and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.
- Piers, piling or footing locations within CDFW-defined wetlands of the Mojave River.

Permanent indirect impacts to CDFW jurisdictional features in the Variation E Main alignment with the Mojave River Bridges: Option A are approximately 0.615 acres. Permanent indirect impacts to CDFW jurisdictional features in the Variation E with

Mojave River Bridge Option 3 are approximately 0.78 acres. These permanent indirect impacts include:

- Bridge shading from the Mojave River multi-span bridges over CDFW-defined wetlands.

Temporary impacts to CDFW jurisdictional features in the Variation E Main alignment with Mojave River Bridge Option 3 are approximately 2.580 acres. Temporary impacts to CDFW jurisdictional features in the Variation E with Mojave River Bridge Option 3 are approximately 16.714 acres. These temporary impacts include: equipment maneuvering and unpaved access roads within the Mojave River and surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Fremont Wash, Turner Wash, Ossom Wash, and the Mojave River.

Freeway/Expressway and Freeway/Tollway with HSR Alternatives

Approximately 134.07 acres of CDFW jurisdictional features were mapped within the BSA inclusive of all variations to the Freeway/Expressway (Freeway/Tollway) with HSR Feeder Service Alternative.

Main Alignment/Common Areas

Permanent direct impacts to CDFW jurisdictional features in the Main Alignment common areas are approximately 45.975 acres. These permanent direct impacts include:

- Piers, pilings, footings, desert scrub vegetation clearing, limited to the top of the banks of several isolated unnamed washes.
- Piers, piling or footing locations within CDFW-defined WSC wetlands of Big Rock Wash.

Temporary impacts to CDFW jurisdictional features in the Main Alignment common areas are approximately 50.889 acres. These temporary impacts include: equipment maneuvering and unpaved access roads within several isolated unnamed washes.

Rail Option 1

Ephemeral washes located in the Rail Option 1 are located within the following 10-digit HUC sub-watersheds:

- Amargosa Creek
- Lake Palmdale-Piute Ponds

Permanent and temporary impacts to CDFW jurisdictional features in the in the Rail Option 1 areas are approximately 3.136 acres. These permanent direct impacts include:

- Piers, pilings, footings, desert scrub vegetation clearing, limited to the top of the banks of several isolated unnamed washes.

- Piers, piling or footing locations within CDFW-defined WSC wetlands of Big Rock Wash.
- Temporary impacts include: equipment maneuvering and unpaved access roads within several isolated unnamed washes.

Rail Option 7

Ephemeral washes located in the Rail Option 1 are located within the following 10-digit HUC sub-watersheds:

- Amargosa Creek
- Lake Palmdale-Piute Ponds

Permanent and temporary impacts to CDFW jurisdictional features in the Rail Option 7 are approximately 2.005 acres. These permanent direct impacts include:

- Piers, pilings, footings, desert scrub vegetation clearing, limited to the top of and several isolated unnamed washes.
- Temporary impacts include: equipment maneuvering and unpaved access roads within several isolated unnamed washes.

Variation B

Ephemeral washes located in the Variation B Main alignment are located within the following 10 digit HUC sub-watersheds:

- Sheep Creek-El Mirage Lake
- Le Mountaine Creek-Eller Slough
- Lower Fremont Wash

Permanent direct impacts to CDFW jurisdictional features in the Main B are approximately 0.995 acres. Permanent direct impacts to CDFW jurisdictional features in the Variation B are approximately 0.899 acres. Permanent direct impacts to CDFW jurisdictional features in the Variation B1 are approximately 1.247 acres. These permanent direct impacts include:

- Box culverts and desert scrub vegetation clearing within Sheep Creek, Fremont Wash, an unnamed tributary to Fremont Wash and several isolated unnamed washes

Temporary impacts to CDFW jurisdictional features in the Main B are approximately 1.060 acres. Temporary impacts to CDFW jurisdictional features in the Variation B are approximately 0.888 acres. Temporary impacts to CDFW jurisdictional features in the Variation B1 are approximately 1.30 acres. These temporary impacts include: equipment maneuvering and unpaved access roads within Sheep Creek, Fremont Wash, contributing unnamed washes and several isolated unnamed washes.

Variation D

Ephemeral washes located in the Variation D Main alignment are located within the following 10 digit HUC sub-watersheds:

- Le Montaine Creek-Eller Slough
- Mescal Creek-Rocky Buttes

Permanent direct impacts to CDFW jurisdictional features in the Variation D Main are approximately 2.737 acres. Permanent direct impacts to CDFW jurisdictional features in the Variation D are approximately 1.264 acres. These permanent direct impacts include:

- Box culverts and desert scrub vegetation clearing within Mescal Creek and several isolated unnamed washes

Permanent indirect impacts are not anticipated as these ephemeral washes do not contain CDFW-defined wetlands.

Temporary impacts to CDFW jurisdictional features in the Variation D Main alignment are approximately 1.476 acres. Temporary impacts to CDFW jurisdictional features in the Variation D are approximately 1.080 acres. These temporary impacts include: equipment maneuvering and unpaved access roads within Mescal Creek and several isolated unnamed washes.

Variation E Main Alignment with HSR and with the Mojave River Bridges Option A

Ephemeral washes located in the Variation E alignment with the Mojave River Bridges: Option A are located within the following 10 digit HUC sub-watersheds:

- Bell Mountain-Mojave River
- Upper Fremont Wash
- Lower Fremont Wash

Permanent impacts to CDFW jurisdictional features in Variation E Main alignment with HSR and with Mojave River Bridges Option A are approximately 5.358 acres. These permanent impacts include:

- Piers, piling or footing locations below the banks of several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.
- Indirect impacts will be due to bridge shading from the Mojave River clear-span bridges over riparian vegetation (see Table 3.3.2-3). Staging and equipment access will occur above banks.

Temporary impacts to CDFW jurisdictional features in Variation E Main HSR and with Mojave River Bridges Option A are approximately 7.771 acres. These temporary impacts include: equipment maneuvering and unpaved access roads surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Fremont Wash, Turner Wash, Ossom Wash, and the Mojave River.

Variation E Main with HSR Alignment and with the Mojave River Bridges Option B

Ephemeral washes located in the Variation E- with the Mojave River Bridges: Option B are located within the following 10 digit HUC sub-watersheds:

- Bell Mountain-Mojave River
- Upper Fremont Wash
- Lower Fremont Wash

Permanent impacts to CDFW jurisdictional features in the Variation E with HSR Feeder Service and with Mojave River Bridges: Option B are approximately 5.286 acres. These permanent impacts include:

- Piers, pilings, footings, desert scrub vegetation clearing, limited to the top of the banks of Turner Wash, Ossom Wash, and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.
- Piers, piling or footing locations within CDFW-defined wetlands of the Mojave River.
- Indirect impacts will be due to bridge shading from the Mojave River clear-span bridges over riparian vegetation (see Table 3.3.2-3). Staging and equipment access will occur above banks.

Temporary impacts to CDFW jurisdictional features in the Variation E with HSR Feeder Service and with Mojave River Bridges: Option B are approximately 7.771 acres. These temporary impacts include: equipment maneuvering and unpaved access roads within the Mojave River and surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Fremont Wash, Turner Wash, Ossom Wash, and the Mojave River.

Variation E with HSR: with Mojave River Bridges: Rail with Freeway Option 1

Ephemeral washes located in the Variation E with the Mojave River Bridges: Option B are located within the following 10 digit HUC sub-watersheds:

- Bell Mountain-Mojave River
- Upper Fremont Wash
- Lower Fremont Wash

Permanent impacts to CDFW jurisdictional features in Variation E with HSR Feeder Service: with Mojave River Bridges: Rail with Freeway Option 1 are approximately 5.484 acres. These permanent impacts include:

- Piers, piling or footing locations below the banks of several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.
- Indirect impacts will be due to bridge shading from the Mojave River full-span bridges over riparian vegetation (see Table 3.3.2-3). Staging and equipment access will occur above banks.

Temporary impacts to CDFW jurisdictional features in Variation E with HSR Feeder Service: with Mojave River Bridges: Rail with Freeway Option 1 are approximately 25.551 acres. These temporary impacts include: equipment maneuvering and unpaved access roads surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Fremont Wash, Turner Wash, Ossom Wash, and the Mojave River.

Variation E with HSR: with Mojave River Bridges: Rail with Freeway Option 2

Ephemeral washes located in the Variation E with the Mojave River Bridges: Option B are located within the following 10 digit HUC sub-watersheds:

- Bell Mountain-Mojave River
- Upper Fremont Wash
- Lower Fremont Wash

Permanent impacts to CDFW jurisdictional features in Variation E with HSR Feeder Service: with Mojave River Bridges: Rail with Freeway Option 2 are approximately 6.697 acres. These permanent impacts include:

- Piers, piling or footing locations below the banks of several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.
- Piers, piling or footing locations within CDFW defined wetlands of the Mojave River.
- Indirect impacts will be due to bridge shading from the Mojave River full-span bridges over riparian vegetation. Staging and equipment access will occur above banks.

Temporary impacts to Variation E with HSR Feeder Service: with Mojave River Bridges: Rail with Freeway Option 2 are approximately 24.338 acres. These temporary impacts include: equipment maneuvering and unpaved access roads within the Mojave River, and surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.

Variation E with HSR: with Mojave River Bridges: Rail with Freeway Option 3

Ephemeral washes located in the Variation E with the Mojave River Bridges: Option B are located within the following 10 digit HUC sub-watersheds:

- Bell Mountain-Mojave River
- Upper Fremont Wash
- Lower Fremont Wash

Permanent direct impacts to CDFW jurisdictional features in Variation E with HSR Feeder Service: with Mojave River Bridges: Rail with Freeway Option 3 are approximately 6.315 acres. These permanent impacts include:

- Piers, piling or footing locations below the banks of the Mojave River and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.
- Piers, piling or footing locations within CDFW-defined wetlands of the Mojave River.
- Indirect impacts will be due to bridge shading from the Mojave River full-span bridges over riparian vegetation. Staging and equipment access will occur above banks.

Temporary impacts to Variation E with HSR Feeder Service: with Mojave River Bridges: Rail with Freeway Option 3 are approximately 20.833 acres. These temporary impacts include: equipment maneuvering and unpaved access roads within the Mojave River, and surrounding Turner Wash, Ossom Wash, and several contributing unnamed washes to Turner Wash, Ossom Wash, and the Mojave River.

Summary

With the implementation of avoidance and minimization measures, permanent impacts to no more than 43.559 acres of CDFW jurisdictional features (see Table 3.3.2-3) are anticipated along the proposed Freeway/Expressway and Freeway/Tollway alternatives along the widest variations.

With the implementation of avoidance and minimization measures, permanent impacts to no more than 59.792 acres of CDFW jurisdictional features are anticipated along the Freeway/Expressway and Freeway/Tollway with HSR along the widest variations.

Freeway/Expressway and Freeway/Tollway with HSR – Variation E is the most environmentally damaging alternative to CDFW jurisdictional features and has more impacts to CDFW-defined wetlands compared to Main E.

Option 1, Option 2 and Option B of the Mojave River Bridges has more impacts to CDFW jurisdictional features and is the most environmentally damaging alternative to the Mojave River compared to Option 3 and Option A of the Mojave River Bridges.

Coordination with CDFW will be required to confirm jurisdictional features and obtain a 1602 Streambed Alteration Agreement.

**Table 3.3.2-3 Temporary and Permanent Impacts to CDFW Waters of the State Jurisdictional Features
for the High Desert Corridor Project**

	CDFW Waters of the State Ephemeral Washes			CDFW Defined Waters of the State Wetlands			Total	
	Temporary Impacts	Permanent Indirect	Permanent Direct	Temporary	Permanent Indirect	Permanent Direct	Temporary Impacts	Permanent Impacts (Direct and Indirect)
	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>(Fill and Shading Effects)</i>
Freeway/Expressway (Freeway/Tollway) Alternative								
TOTAL MAIN ALIGNMENT/COMMON AREAS (acres)	34.649	0.00	24.017	0.00	0.00	0.00	34.649	24.017
TOTAL VARIATION A MAIN (acres)	4.791	0.00	11.516	0.00	0.00	0.00	4.791	11.516
TOTAL VARIATION A (acres)	12.547	0.00	15.379	0.00	0.00	0.00	12.547	15.379
TOTAL VARIATION B MAIN (acres)	1.060	0.00	0.642	0.00	0.00	0.00	1.060	0.642
TOTAL VARIATION B (acres)	0.908	0.00	0.623	0.00	0.00	0.00	0.908	0.623
TOTAL VARIATION B1 (acres)	1.346	0.00	0.745	0.00	0.00	0.00	1.346	0.745
TOTAL VARIATION D MAIN (acres)	2.319	0.00	1.315	0.00	0.00	0.00	2.319	1.315
VARIATION D (acres)	1.360	0.00	0.581	0.00	0.00	0.00	1.360	0.581
TOTAL MAIN E WITH MOJAVE RIVER BRIDGES: OPTION 1 (acres)	1.944	0.00	1.533	0.64	0.00	0.70	2.580	2.237
TOTAL MAIN E WITH MOJAVE RIVER BRIDGES: OPTION 2 (acres)	1.944	0.00	1.533	0.64	0.00	0.89	2.580	2.420
TOTAL MAIN E WITH MOJAVE RIVER BRIDGES: OPTION 3 (acres)	1.944	0.00	1.533	0.64	0.62	0.09	2.580	2.237

**Table 3.3.2-3 Temporary and Permanent Impacts to CDFW Waters of the State Jurisdictional Features
for the High Desert Corridor Project**

	CDFW Waters of the State Ephemeral Washes			CDFW Defined Waters of the State Wetlands			Total	
	Temporary Impacts	Permanent Indirect	Permanent Direct	Temporary	Permanent Indirect	Permanent Direct	Temporary Impacts	Permanent Impacts (Direct and Indirect)
	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>(Fill and Shading Effects)</i>
TOTAL VARIATION E- WITH MOJAVE RIVER BRIDGES: OPTION 1 (acres)	15.106	0.00	2.526	1.61	0.00	0.78	16.714	3.310
TOTAL VARIATION E- WITH MOJAVE RIVER BRIDGES: OPTION 2 (acres)	15.106	0.00	2.526	1.61	0.00	0.89	16.714	3.418
TOTAL VARIATION E- WITH MOJAVE RIVER BRIDGES: OPTION 3 (acres)	15.106	0.00	2.526	1.61	0.78	0.11	16.714	3.418
Freeway/Expressway (Freeway/Tollway) Alternative with the HSR Feeder Service								
TOTAL MAIN ALIGNMENT/COMMON AREAS (acres)	47.640	0.000	41.416	3.249	0.000	4.559	50.889	45.975
TOTAL RAIL OPTION 1 (acres)	0.000	0.00	3.136	0.00	0.00	0.00	0.000	3.136
TOTAL RAIL OPTION 7 (acres)	0.000	0.00	2.005	0.00	0.00	0.00	0.000	2.005
TOTAL VARIATION B MAIN (acres)	1.060	0.00	0.995	0.00	0.00	0.00	1.060	0.995
TOTAL VARIATION B (acres)	0.888	0.00	0.899	0.00	0.00	0.00	0.888	0.899
TOTAL VARIATION B1 (acres)	1.300	0.00	1.247	0.00	0.00	0.00	1.300	1.247
VARIATION D MAIN (acres)	1.476	0.00	2.737	0.00	0.00	0.00	1.476	2.737
VARIATION D (acres)	1.080	0.00	1.264	0.00	0.00	0.00	1.080	1.264

**Table 3.3.2-3 Temporary and Permanent Impacts to CDFW Waters of the State Jurisdictional Features
for the High Desert Corridor Project**

	CDFW Waters of the State Ephemeral Washes			CDFW Defined Waters of the State Wetlands			Total	
	Temporary Impacts	Permanent Indirect	Permanent Direct	Temporary	Permanent Indirect	Permanent Direct	Temporary Impacts	Permanent Impacts (Direct and Indirect)
	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>Shading Effects</i>	<i>Fill</i>	<i>Equipment and Access Roads</i>	<i>(Fill and Shading Effects)</i>
TOTAL VARIATION E MAIN WITH RAIL EXPRESSWEST CONNECTION WITH MOJAVE RIVER BRIDGES: OPTION A (acres)	7.570	0.00	4.157	0.20	1.08	0.12	7.771	5.358
TOTAL VARIATION E MAIN WITH RAIL EXPRESSWEST CONNECTION WITH MOJAVE RIVER BRIDGES: OPTION B (acres)	7.570	0.00	4.157	0.20	0.48	0.65	7.771	5.286
TOTAL VARIATION E WITH RAIL EXPRESSWEST CONNECTION WITH MOJAVE RIVER BRIDGES: OPTION 1 (acres)	24.671	0.00	2.042	0.88	3.10	0.34	25.551	5.484
VARIATION E WITH RAIL EXPRESSWEST CONNECTION WITH MOJAVE RIVER BRIDGES: RAIL WITH FREEWAY OPTION 2 (acres)	23.458	0.00	3.255	0.88	0.00	3.44	24.338	6.697
VARIATION E WITH RAIL EXPRESSWEST CONNECTION WITH MOJAVE RIVER BRIDGES: RAIL WITH FREEWAY OPTION 3 (acres)	23.458	0.00	2.873	0.88	0.00	3.44	20.833	6.315

Summary of Impacts

The project has three alternatives that avoid adverse impacts to federal wetlands. Specifically, the Freeway/Expressway and Freeway/Tollway alternatives – Main Alignment, the Freeway/Expressway and Freeway/Tollway alternatives – Variation E, and the Freeway/Expressway and Freeway/Tollway with HSR – Main Alignment are the wetlands only practicable alternatives.

Per Executive Order 11990 for the Protection of Wetlands, the Freeway/Expressway and Freeway/Tollway with HSR – Variation E was identified as the most environmentally damaging to federal wetlands.

USACE Jurisdiction

With the implementation of avoidance and minimization measures, permanent impacts to no more than 3.537 acres of WUS are anticipated within the proposed Freeway/Expressway and Freeway/Tollway alternatives along the longest/widest variations.

With the implementation of avoidance and minimization measures, permanent impacts to no more than 4.702 acres of WUS are anticipated along the Freeway/Expressway and Freeway/Tollway with HSR along the widest variations.

Freeway/Expressway and Freeway/Tollway with HSR – Variation E is the most environmentally damaging alternative to USACE jurisdictional features and has adverse impacts to federal wetlands compared to Main E. Freeway/Expressway and Freeway/Tollway with HSR – Main E does not impact federal wetlands.

Option 1, 2 and Option B of the Mojave River Bridges has direct impacts to USACE jurisdictional features and is the most environmentally damaging alternative to the Mojave River compared to Option 3 and Option A of the Mojave River Bridges.

These acreage conclusions represent a calculated estimation of the jurisdictional areas within the project impact area, and are subject to modification following the USACE verification process. With the implementation of avoidance and minimization measures, current designs of the proposed alignment and variations do not exceed the NEPA/404 MOU (FHWA et al. 2006) threshold of five or more acres of permanent impacts to WUS. These acreage conclusions were brought to the attention of USACE during the March 13, 2014 coordination meeting, which discussed impacts and possible NEPA/404 coordination. During project refinement, coordination with USACE will continue to ensure recommendations are implemented further avoid or minimize impacts to USACE jurisdictional features.

SWRCB Jurisdiction

With the implementation of avoidance and minimization measures, permanent impacts to no more than 3.537 acres of SWRCB WSC are anticipated within the proposed Freeway/Expressway and Freeway/Tollway alternatives along the longest/widest variations.

With the implementation of avoidance and minimization measures, permanent impacts to no more than 4.702 acres of SWRCB WSC are anticipated along the Freeway/Expressway and Freeway/Tollway with HSR alternatives along the widest variations.

Freeway/Expressway and Freeway/Tollway with HSR alternatives – Variation E is the most environmentally damaging alternative to SWRCB WSC jurisdictional features and has adverse impacts to federal wetlands compared to Main E. Freeway/Expressway and Freeway/Tollway with HSR alternatives – Main E does not impact federal wetlands.

Option 1, 2 and Option B of the Mojave River Bridges has direct impacts to SWRCB WSC jurisdictional features and is the most environmentally damaging alternative to the Mojave River compared to Option 3 and Option A of the Mojave River Bridges.

Coordination with the SWRCB will be required to confirm WSC and obtain Section 401 Certification

CDFW Jurisdiction

With the implementation of avoidance and minimization measures, permanent impacts to no more than 43.559 acres of CDFW jurisdictional features are anticipated along the proposed Freeway/Expressway and Freeway/Tollway alternatives along the widest variations.

With the implementation of avoidance and minimization measures, permanent impacts to no more than 59.792 acres of CDFW jurisdictional features are anticipated along the Freeway/Expressway and Freeway/Tollway with HSR alternatives along the widest variations.

Freeway/Expressway and Freeway/Tollway with HSR alternatives – Variation E is the most environmentally damaging alternative to CDFW jurisdictional features and has more impacts to CDFW-defined wetlands compared to Main E.

Option 1, Option 2 and Option B of the Mojave River Bridges has more impacts to CDFW jurisdictional features and is the most environmentally damaging alternative to the Mojave River compared to Option 3 and Option A of the Mojave River Bridges.

Coordination with CDFW will be required to confirm jurisdictional features and obtain a 1602 Streambed Alteration Agreement.

The project would require the following permits:

- U.S. Army Corps of Engineers Section 404 Permit
- RWQCB Section 401 Water Quality Certification
- CDFW Section 1602 Streambed Alteration Agreement

Avoidance, Minimization, and/or Mitigation Measures

Complete avoidance of permanent impacts to WUS, WSC, CDFW jurisdictional features was determined not possible in achieving the project purpose. The project has been designed to minimize temporary and permanent impacts to WUS, WSC and CDFW jurisdictional areas to the maximum extent practicable. Due to the topography associated with the eastern portion of the project within the Mojave River Valley, the proposed main alignment will be constructed with an above-grade separation supported by piers from Phantom W Street to I-15. This preliminary design will ease the fluctuations of the transportation corridor over the terrain and avoid or minimize impacts to the following jurisdictional features:

- Mojave River and several contributing unnamed washes
- Bell Mountain Wash and several contributing unnamed washes
- Ossom Wash
- Turner Wash and a contributing unnamed wash

The following avoidance, minimization, and mitigation measures will be implemented:

- BWL-1:** Project alternatives and pier locations will continue to be refined to include measures to protect sensitive areas and to maintain the hydrological integrity of the jurisdictional washes.
- BWL-2:** Any work within the ephemeral washes will be conducted when there is no flow during the dry season (May 1 to October 15).
- BWL-3:** Temporary construction staging areas and access roads will be strategically placed to avoid and/or minimize impacts to jurisdictional features to the extent feasible and are expected to be enhanced to pre-project conditions.
- BWL-4:** Compensatory mitigation for impacts to jurisdictional features of USACE, RWQCB, and CDFW will be determined during the permitting process with the agencies with considerations to on-site restoration, off-site mitigation, and in-lieu fees. In general, the ratios are based on the amount and quality of the permanently and directly impacted jurisdictional features of the agencies.

3.3.3 Plant Species

Regulatory Setting

The U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) have regulatory responsibility for the protection of special-status plant species. “Special-status” species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are provided varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Please see Section 3.3.5, Threatened and Endangered Species, for detailed information about these species.

This section of the document discusses all other special-status plant species, including CDFW species of special concern, USFWS candidate species, and California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at 16 U.S.C., Section 1531, *et seq.* See also 50 Code of Federal Regulations (CFR) Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, *et seq.* Department projects are also subject to the Native Plant Protection Act, found at Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act (CEQA), CA Public Resources Code, Sections 2100-21177.

Affected Environment

Information regarding plant species was obtained from the *Natural Environment Study* (August 2014). To identify special-status plant species that may occur in the project biological study area (BSA), a records search of the California Natural Diversity Database (CNDDDB) and the CNPS was performed. A total of 21 special-status plant species have the potential to be present within the BSA, as described in Table 3.3.3-1.

**Table 3.3.3-1 Special-Status Plant Species
with Potential to Occur in the Biological Study Area**

Species	Status	Habitat	Potential to Occur in the Biological Study Area
Alkali Mariposa Lily <i>Calochortus striatus</i>	CNPS 1B.2	Shadescale scrub, chaparral, wetland- riparian.	Present. Observed during focused surveys.
White Pygmy Poppy <i>Canbya candida</i>	CNPS 4.2	Creosote bush scrub, Joshua tree woodland.	Present. Observed during focused surveys.

**Table 3.3.3-1 Special-Status Plant Species
with Potential to Occur in the Biological Study Area**

Species	Status	Habitat	Potential to Occur in the Biological Study Area
San Fernando Valley Spineflower <i>Chorizanthe parryi</i> var. <i>Ferrandina</i>	CNPS 1B.1	Coastal sage scrub.	Potentially occurring. Suitable habitat occurs within the BSA, but the species was not observed during focused surveys.
Desert cymopterus <i>Cymopterus deserticola</i>	CNPS 1B.2	Loose, sandy soil of flats in old dune areas with well-drained sand in Joshua tree woodland and Mojavean desert scrub. Historically distributed from east of Victorville to Muroc and Kramer. Most occurrences located in or near Edwards Air Force Base.	Potentially occurring. Suitable habitat occurs within the BSA, but the species was not observed during focused surveys.
Slender-Horned spineflower <i>Dodecahema leptoceras</i>	CNPS 1B.1	Chaparral, coastal sage scrub.	Potentially occurring. Suitable habitat occurs within the BSA, but the species was not observed during focused surveys.
Booth's evening-primrose <i>Eremothera boothii</i> ssp. <i>Boothii</i> (<i>Camissonia boothii</i> ssp. <i>Boothii</i>)	CNPS 2B.3	Joshua tree woodland and pinyon-juniper woodland. In California, known from Inyo, Mono, and San Bernardino counties.	Present. Observed during focused surveys.
Parish's daisy <i>Erigeron parishii</i>	CNPS 1B.1	Creosote bush scrub and pinyon-juniper woodland.	Potentially occurring. Suitable habitat occurs within the BSA, but the species was not observed during focused surveys.
Cushenbury buckwheat <i>Eriogonum ovalifolium</i> var. <i>vineum</i>	CNPS 1B.1	Creosote bush scrub and pinyon-juniper woodland.	Potentially occurring. Suitable habitat occurs within the BSA, but the species was not observed during focused surveys.
Sagebrush loeflingia <i>Loeflingia squarrosa</i> var. <i>artemisiarum</i>	CNPS 2B.2	Sandy dunes and flats in creosote bush scrub and sagebrush scrub. In California, known from Los Angeles, Ventura, Lassen, and San Bernardino counties.	Potentially occurring. Suitable habitat occurs within the BSA, but the species was not observed during focused surveys.

**Table 3.3.3-1 Special-Status Plant Species
with Potential to Occur in the Biological Study Area**

Species	Status	Habitat	Potential to Occur in the Biological Study Area
Mojave monkeyflower <i>Mimulus mohavensis</i>	CNPS 1B.2	Gravelly banks of desert washes. Known only from around Barstow in the Mojave Desert.	Potentially occurring. Suitable habitat occurs within the BSA, but the species was not observed during focused surveys.
Crowned muilla <i>Muilla coronate</i>	CNPS 4.2	Occurs in heavy soils of chenopod scrub, Joshua tree woodland, Mojavean desert scrub.	Present. Observed during focused surveys.
Spreading navarretia <i>Navarretia fossalis</i>	CNPS 1B.1	Shadescale scrub, freshwater-marsh, wetland-riparian, vernal-pools.	Potentially occurring. Suitable habitat occurs within the BSA, but the species was not observed during focused surveys.
Robbins' nemacladus <i>Nemacladus secundiflorus</i> var. <i>robbinsii</i>	CNPS 1B.2	Chaparral, valley and foothill grasslands.	Potentially occurring. Suitable habitat occurs within the BSA, but the species was not observed during focused surveys.
Short-joint beavertail <i>Opuntia basilaris</i> var. <i>brachyclada</i>	CNPS 1B.2	Sandy soil or coarse, granitic loam in chaparral, Joshua tree woodland, Mojavean desert scrub, and pinyon-juniper woodland. Known only from Los Angeles and San Bernardino counties. Historically distributed on the desert slopes of the San Gabriel and San Bernardino mountains, and also the Providence Mountains.	Potentially occurring. Suitable habitat occurs within the BSA, but the species was not observed during focused surveys.
California Orcutt grass <i>Orcuttia californica</i>	CNPS 1B.1	Valley grassland, freshwater wetlands, wetland-riparian.	Potentially occurring. Suitable habitat occurs within the BSA, but the species was not observed during focused surveys.
Cushenbury oxytheca <i>Oxytheca parishii</i> var. <i>goodmaniana</i>	CNPS 1B.1	Pinyon-juniper woodland.	Potentially occurring. Suitable habitat occurs within the BSA, but the species was not observed during focused surveys.

**Table 3.3.3-1 Special-Status Plant Species
with Potential to Occur in the Biological Study Area**

Species	Status	Habitat	Potential to Occur in the Biological Study Area
Beaver Dam breadroot <i>Pediomelum castoreum</i>	CNPS 1B.2	Creosote bush scrub, Joshua tree woodland.	Potentially occurring. Suitable habitat occurs within the BSA, but the species was not observed during focused surveys.
Parish's popcornflower <i>Plagiobothrys parishii</i>	CNPS 1B.1	Joshua tree woodland, wetland-riparian.	Potentially occurring. Suitable habitat occurs within the BSA, but the species was not observed during focused surveys.
Mojave fish-hook cactus <i>Sclerocactus polyancistrus</i>	CNPS 4.2	Creosote bush scrub and Joshua tree woodland.	Present. Observed during focused surveys.
Southern mountains skullcap <i>Scutellaria bolanderi</i> ssp. <i>austromontana</i>	CNPS 1B.2	Chaparral, foothill woodland, yellow pine forest, wetland riparian.	Potentially occurring. Suitable habitat occurs within the BSA, but the species was not observed during focused surveys.
San Bernardino aster <i>Symphyotrichum defoliatum</i>	CNPS 1B.2	Grasslands and meadows.	Potentially occurring. Suitable habitat occurs within the BSA, but the species was not observed during focused surveys.
<p>California Native Plant Society: List 1B = rare, threatened, or endangered in California and elsewhere. List 2 = rare, threatened, or endangered in California, but more common elsewhere. List 4 = limited distribution (Watch List). Threat Code: .1 = Seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat) .2 = Fairly endangered in California (20-80% occurrences threatened) .3 = Not very endangered in California (<20% of occurrences threatened or no current threats known)</p>			

Source: *Natural Environment Study, 2014.*

Focused plant surveys for special-status plant species were conducted in April and May 2011. Five special-status plant species were observed within the BSA during the 2011 focused surveys: alkali mariposa lily, white pygmy poppy, Booth's evening primrose, crowned muilla, and Mojave fish-hook cactus. Thirteen (13) individuals of alkali mariposa lily were identified in 5 locations west of the Mojave River at the boundaries of the BSA. Five individuals of white pygmy poppy were observed in 5 locations near Variation A within the BSA. Booth's evening primrose was observed at 1 location along the Mojave River within the Variation E Alignment. Five individuals of crowned muilla were identified in 5 locations near Variation A within

the BSA. Mojave fish-hook cactus was observed east of the Mojave River, where the main alignment and Variation E converge.

No other special-status plant species were observed within the BSA during the surveys; however, these focused surveys were conducted during an extended period of drought conditions. Although survey results indicated no presence during extreme drought conditions, it does not preclude these species from occurring within the BSA.

Environmental Consequences

No Build Alternative

Because no ground disturbance would occur under the No Build Alternative, there would be no impacts on special-status plant species.

Build Alternatives

The build alternatives would result in temporary and permanent impacts to individual alkali mariposa lily, white pygmy poppy, Booth's evening primrose, crowned muilla, and Mojave fish-hook cactus and their habitat due to roadway development and the acquisition of new right-of-way (ROW), discussed below.

For the purpose of avoiding redundancy, when discussing project impacts to plant species, it should be noted that the Freeway/Expressway Alternative, Freeway/Tollway Alternative, Freeway/Expressway Alternative with the HSR Feeder Service, and the Freeway/Tollway Alternative with the HSR Feeder Service are discussed collectively because the impacts amount to the same in main alignment/common areas; however, it is the variations and options that differ in impacts to plant species, and thus they are each broken down and discussed (see Figure 3.3-1 Alignment Key Map for Biological Study Area).

In addition, because there is potential for the San Fernando Valley spineflower, desert cymopterus, slender-horned spineflower, parish's daisy, cushenbury buckwheat, sagebrush loeflingia, Mojave monkeyflower, spreading navarretia, robbins' nemacladus, short-joint beavertail, California orcutt grass, cushenbury oxytheca, beaver dam breadroot, parish's popcornflower, southern mountains skullcap, and San Bernardino aster to occur in the BSA, impacts may also occur on these species as well.

Alkali Mariposa Lily

Main Alignment/Common Areas, Rail Option 1, Rail Option 7, Variation A, Variation B, and Variation D

This plant species was not observed in these options/variations. No impacts would occur.

Variation E

Thirteen (13) individuals were observed within the main alignment corridor corresponding to Variation E alignment (a so-called Variation E Main). The habitat that includes this species and individual plants along Variation E Main alignment

would be impacted. Through implementation of the avoidance and minimization measures, and replanting efforts, impacts to this species would be reduced.

No individuals were observed within Variation E alignment (Highway and Rail); therefore, Variation E alignment would result in lesser impacts to this species compared to the corresponding Variation E Main.

White Pygmy Poppy

Main Alignment/Common Areas, Rail Option 1, Rail Option 7, Variation B, Variation D, Variation E

This plant species was not observed in these options/variations. No impacts would occur.

Variation A

Five individuals were observed within the corresponding main alignment of Variation A (a so-called Variation A Main). Variation A Main alignment would impact individual species and this species habitat. Through implementation of the avoidance and minimization measures, and replanting efforts, impacts to this species would be reduced.

No individuals were observed within Variation A alignment; therefore, Variation A alignment would result in lesser impacts to this species compared to the corresponding Variation A Main alignment corridor.

Booth's Evening Primrose

Main Alignment/Common Areas, Rail Option 1, Rail Option 7, Variation A, Variation B, and Variation D

This plant species was not observed in these options/variations. No impacts would occur.

Variation E

One individual was observed within Variation E (Highway). Variation E would impact habitat that includes this species and individual plants. Through implementation of the avoidance and minimization measures, and replanting efforts, impacts to this species would be reduced.

No individuals were observed within the Variation E Main alignment; therefore, Variation E Main alignment corridor would result in lesser impacts to this species compared to Variation E alignment.

Crowned Muilla

Main Alignment/Common Areas, Rail Option 1, Rail Option 7, Variation B, Variation D, and Variation E

This plant species was not observed in these options/variations. No impacts would occur.

Variation A

Five individuals were observed within Variation A Main alignment. Individual plant species and the species habitat along Variation A Main alignment would be impacted. Through implementation of the avoidance and minimization measures, and replanting efforts, impacts to this species would be reduced.

No individuals were observed within Variation A alignment; therefore, Variation A alignment would result in lesser impacts to this species compared to Variation A Main alignment..

Mojave Fish-Hook Cactus

Main Alignment/Common Areas

Four individuals were observed within the main alignment east of the Mojave River, after the alignment converges with Variation E. The main alignment would impact individual plant species and habitat. Through implementation of the above avoidance and minimization measures, and replanting efforts, impacts to this species would be reduced.

Rail Option 1, Rail Option 7, Variation A, Variation B, Variation D, and Variation E

This plant species was not observed in these options/variations. No impacts would occur.

Avoidance, Minimization, and/or Mitigation Measures

The project would be designed to minimize impacts on special-status plant species. The alkali mariposa lily, crowned muilla, white pygmy poppy, and Mojave fish-hook cactus were identified at the boundaries of the BSA; therefore, there is potential for these areas to be preserved in place. The Booth's evening primrose was also identified in an area that may be avoided by spanning the Mojave River with a bridge. To avoid and mitigate impacts for all plant species, the following measures will be implemented:

- BPL-1:** Conduct focused plant surveys at a time prior to construction when detection is most optimal, such as normal rain fall years. If the results of surveys indicate presence of any of the species identified in Table 3.3.3-1 (*Special-Status Plant Species with Potential to Occur in the Biological Study Area*), then BPL-2 through BPL-4 will be implemented.
- BPL-2:** Provide a biological monitor onsite to establish an environmentally sensitive area (ESA) around the areas where each special-status species occurs
- BPL-3:** Collect and propagate bulbs of each species at an approved nursery and plant onsite.
- BPL-4:** Translocate individual plants to areas offsite that will not be impacted by implementation of this project.

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3.3.4 Animal Species

Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries), and the California Department of Fish and Wildlife (CDFW) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal or state Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed in Section 3.3.5. All other special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NOAA Fisheries candidate species.

Federal laws and regulations relevant to wildlife include the following:

- National Environmental Policy Act (NEPA)
- Migratory Bird Treaty Act (MBTA)
- Fish and Wildlife Coordination Act

State laws and regulations relevant to wildlife include the following:

- California Environmental Quality Act (CEQA)
- Sections 1600 – 1603 of the California Fish and Game Code
- Section 4150 and 4152 of the California Fish and Game Code

Affected Environment

Information in this section comes from the *Natural Environment Study* (June 2014).

A list of 61 wildlife species was observed, or detected by their sign, in the Biological Study Area (BSA) and are included in Appendix J – Wildlife Compendium of the *Natural Environment Study*. This is a comprehensive list of all wildlife observed on all site visits, general studies, and focused surveys. Species observed include 42 bird species, 12 mammal species, and 7 reptile species.

A total of 39 special-status animal species were identified as occurring within the vicinity of the proposed project site. Of those, 26 species were observed or have a potential to occur within the project limits due to habitat suitability, as noted in Table 2: Special-status Species with Potential for Occurrence of the *Natural Environment Study*. Listed special-status species are discussed in Section 3.3.5.

Nineteen (19) nonlisted special-status wildlife species have the potential to occur within the BSA and were evaluated in the *Natural Environment Study*, as listed in Table 3.3.4-1.

**Table 3.3.4-1 Special-Status Wildlife Species
with Potential to Occur in the Biological Study Area**

Species	Status	Habitat	Potential to Occur in the Biological Study Area
<i>Accipiter cooperii</i> Cooper's hawk	CDFW: WL MBTA	Woodland and semi-open habitats, riparian groves, and mountain canyons.	Suitable foraging habitat present. None observed during site visits. Moderate potential for occurrence.
<i>Agelaius tricolor</i> Tricolored blackbird	CDFW: SSC, BLM: S MBTA	Lowland species, breeding in freshwater marshes with tall emergent vegetation, in upland habitats (especially thickets of non-native Himalayan blackberry), and in silage fields. Forages in agricultural areas where livestock is present and grass is short.	Suitable habitat present. Present. Observed during site visits.
<i>Circus cyaneus</i> Northern harrier	CDW: SSC MBTA	Coastal salt and fresh water marsh. Nest and forages in grassland from saltgrass in desert sink to mountain cienagas. Also nests on ground in shrubby vegetation.	Suitable foraging habitat present. Observed during site visits.
<i>Athene cunicularia</i> Burrowing owl	CDFW: SSC, BLM: S MBTA	Usually occupies ground squirrel burrows in open, dry grasslands, agricultural and range lands, railroad ROWs, margins of highways, golf courses, and airports. Resident over most of southern California (sparsely distributed over desert areas).	Suitable nesting and foraging habitat present. Observed during site surveys.
<i>Asio flammeus</i> Short-eared owl	CDFW: SSC MBTA	Found in fresh and salt swampland, lowland meadows, irrigated alfalfa fields. Nests on dry ground concealed by vegetation.	Suitable foraging habitat present. Observed during site surveys.
<i>Charadrius montanus</i> Mountain plover	CDFW: SSC, BLM: S MBTA	Nests in heavily grazed, shortgrass prairie, xeric scrub and fallow fields. A dietary generalist in winter when it inhabits semi-desert, dry, bare agricultural land and breeding-type habitats.	Suitable habitat present. None observed during site visits. High potential for occurrence.

**Table 3.3.4-1 Special-Status Wildlife Species
with Potential to Occur in the Biological Study Area**

Species	Status	Habitat	Potential to Occur in the Biological Study Area
<i>Falco mexicanus</i> Prairie falcon	CDFW: WL MBTA	Nests in cliffs or rocky outcrops; forages in open arid valleys and agricultural fields. Throughout the desert and arid interior portions of coastal countries. Uncommon resident in southern California.	Suitable foraging habitat present. None observed during site visits. Potential for occurrence.
<i>Icteria virens</i> Yellow-breasted chat	CDFW: SSC MBTA	Found in dense second-growth, riparian thickets and brush. Also found in abandoned farmland and other rural areas where overgrown vegetation proliferates.	Suitable habitat present in Mojave River. None observed during site visits. Moderate potential for occurrence.
<i>Lanius ludovicianus</i> Loggerhead shrike	CDFW: SSC MBTA	Semi-open areas, nesting in trees and shrubs.	Suitable habitat present. Observed during site visits.
<i>Piranga rubra</i> Summer tanager	CDFW: SSC MBTA	Occur along streams among willows, cottonwoods, mesquite, or saltcedar.	Suitable habitat in Mojave River. Observed in Mojave River during site visits.
<i>Toxostoma lecontei</i> Le Conte's thrasher	CDFW: SSC MBTA	Inhabits sparsely vegetated desert flats, dunes, alluvial fans, or gently rolling hills having a high proportion of saltbush (<i>Atriplex</i> spp.) or cholla (<i>cylindrical Opuntia</i> spp.), often occurring along small washes or sand dunes. Prefers dense thorny shrubs (most often saltbush or cholla) for nesting. Uncommon and local resident in low desert scrub throughout most of the Mojave Desert. Breeding range into eastern Mojave,	Suitable habitat present. Observed during focused surveys.
<i>Setophaga petechia</i> Yellow Warbler	CA: SSC MBTA	Riparian plant associations, prefer willows, cottonwood, aspen, sycamore and alder trees for nesting and foraging.	Suitable habitat in Mojave River. Present. Observed in Mojave River during site visits.

**Table 3.3.4-1 Special-Status Wildlife Species
with Potential to Occur in the Biological Study Area**

Species	Status	Habitat	Potential to Occur in the Biological Study Area
<i>Eumops perotis californicus</i> Western mastiff bat	CDFW: SSC, BLM: S	Primarily cliff-dwelling mammal that occurs in dry desert washes, floodplains, chaparral, oak woodlands, open ponderosa pine forests, grasslands, and montane meadows.	Suitable habitat present. Foraging habitat present. Moderate potential for occurrence.
<i>Microtus californicus mohavensis</i> Mojave River vole	CDFW: SSC	Weedy herbaceous growth in wet areas along the Mojave River, and possibly in some nearby irrigated pastures.	Suitable habitat present. Moderate potential for occurrence.
<i>Myotis yumanensis</i> Yuma myotis	BLM: S, WBWG: LM	Occasionally roosting in mines or caves, but often found in buildings or bridges. Bachelors sometimes roost in abandoned cliff swallow nests.	Suitable foraging habitat present. Moderate potential for occurrence.
<i>Neotoma lepida intermedia</i> San Diego Desert Woodrat	CDFW: SSC	Found in southern California inhabiting Joshua tree, pinyon-juniper, mixed and chamise-redshank chaparral, sagebrush, and most desert habitats. Nest middens are built against a rock crevice, at the base of creosote or cactus or in the lower branches of trees.	Suitable habitat present. Present. Observed during MGS trapping surveys.
<i>Taxidea taxus</i> American badger	CDFW: SSC	Prefers open areas and may frequent brushlands with little groundcover. Inhabits regions ranging from below sea level to elevations upwards of 3,600 meters.	Suitable habitat present. Present. Observed during site visits.
<i>Anniella pulchra pulchra</i> Silvery legless lizard	CDFW: SSC, USFS: S	Occurs in moist warm loose soil with plant cover. Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Found from 0 to 5,900 feet elevation.	Suitable habitat present. Known to occur in vicinity of project. High potential for occurrence.

**Table 3.3.4-1 Special-Status Wildlife Species
with Potential to Occur in the Biological Study Area**

Species	Status	Habitat	Potential to Occur in the Biological Study Area
<i>Phrynosoma blainvillii</i> Coast horned lizard	CDFW: SSC, BLM: S, USFS: S	Occurs in annual grassland, coastal sage scrub, chaparral, and woodland communities. Prefers open country, especially sandy areas, washes, and floodplains.	Suitable habitat present. Present. Observed during focused surveys.
Designations:			
US – United States		CDFW: SSC – Species of Special Concern	
CA – California		CDFW: FP – Fully Protected	
FE – Federally Endangered		CDFW: WL – Watch List	
FT – Federally Threatened		BLM : S – Sensitive	
SE – State Endangered		USFS: S – Sensitive	
ST – State Threatened			
MBTA – Migratory Bird Treaty Act			

Source: Natural Environment Study, 2014.

Reptiles

Silvery legless lizard (*Anniella pulchra pulchra*) is known to occur in numerous locations within the vicinity of the project site. Suitable habitat for the coast horned lizard (*Phrynosoma blainvillii*) is present, and several individuals were observed within the limits of the project on site visits.

Birds

Suitable habitat for Cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), tricolored blackbird (*Agelaius tricolor*), and short-eared owl (*Asio flammeus*) exists within the project area, and individuals of these species were seen during site visits.

Short-eared owl, mountain plover (*Charadrius montanus*), prairie falcon (*Falco mexicanus*), yellow-breasted chat (*Icteria virens*), loggerhead shrike (*Lanius ludovicianus*), summer tanager (*Piranga rubra*), Le Conte's thrasher (*Toxostoma lecontei*), and yellow warbler (*Setophaga petechia*) were not observed during site visits; however, suitable habitat for these species is present, and these species could occur on the project site in the future during the construction phase.

Burrowing owl (*Athene cunicularia*) habitat assessment surveys were conducted throughout the BSA. Several individuals, sign of scat, and sign of active burrows were observed throughout much of the project site.

Mammals

No observations of the western mastiff bat (*Eumops perotis californicus*), Yuma myotis (*Myotis yumanensis*), and Mojave river vole (*Microtus californicus*)

mohavensis) were recorded during site visits; however, suitable habitat for these species is present within the project area. Both the San Diego desert woodrat (*Neotoma lepida intermedia*) and American badger (*Taxidea taxus*) were observed during site visits.

Environmental Consequences

For the purpose of avoiding redundancy, when discussing project impacts, it should be known that the Freeway/Expressway Alternative, Freeway/Tollway Alternative, Freeway/Expressway Alternative with the HSR Feeder Service, and the Freeway/Tollway Alternative with the HSR Feeder Service are discussed collectively because the impacts amount to the same in the main alignment/common areas. However, it is the variations and options that differ in impacts to animal species; thus, they are each broken down and discussed (see Figure 3.3-1 Alignment Key Map for Biological Study Area).

No Build Alternative

Because no ground disturbance would occur under the No Build Alternative, there would be no impacts to special-status wildlife species.

Build Alternatives

Reptiles

Silvery legless lizard (*Anniella pulchra pulchra*): Silvery legless lizard is known to occur in numerous locations within the vicinity of the project site. Observations are within the same habitat type found within the project limits within 0.5 mile of the site. Avoidance and minimization measures BAN-1 and BAN-5 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Coast horned lizard (*Phrynosoma blainvillii*): Suitable habitat for this species is present, and several individuals were observed within the limits of the project on site visits. It is expected that the number of individuals found would be equal to those of the surrounding area. Avoidance and minimization measures BAN-1 and BAN-5 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Freeway/Expressway and Freeway/Tollway Alternatives

Because these alternatives feature a highway only, it is narrower in comparison to the Freeway/Expressway and Freeway/Tollway with HSR alternatives, and therefore impacts to habitat for these species will occur to a lesser extent because of the reduced area of impact.

Main Alignment/Common Areas

Within the BSA of the main alignment common areas, impacts to silvery legless lizard and coast horned lizard have the potential to occur. Silvery legless lizard and coast horned lizard habitat occurs throughout the proposed project corridor. Impacts to this species are expected to occur due to clearing and grubbing activities associated

of the proposed project. With the incorporation of minimization measures, the impacts to individuals of this species are expected to be low.

Variation A

Potential impacts to the silvery legless lizard and coast horned lizard may occur with the implementation of the main alignment corridor corresponding to Variation A (a so-called Variation A Main alignment). The preferred habitat type is known to occur within the limits of this alignment; however, with avoidance and minimization measures, impacts to these species are expected to be low. Variation A Main alignment would result in fewer acres of permanent and temporary impacts to habitat compared to the Variation A alignment.

Variation A alignment contains potential habitat for the silvery legless lizard and coast horned lizard and, if implemented, it would potentially cause impacts to these species. With avoidance and minimization measures, such as having a biological monitor present for clearing and grubbing activities and translocation of individuals onsite, impacts to these species is expected to be low. However, Variation A alignment requires considerably more acres of temporary and permanent impacts to habitat compared to Variation A Main alignment; therefore, the potential impacts to these species and habitat is slightly higher if Variation A alignment is chosen as the preferred alternative.

Variation B

The main alignment corridor corresponding to Variation B (a so-called Variation B Main alignment) includes areas that are potential habitat to the silvery legless lizard and coast horned lizard, and with the implementation of this alignment, impacts may occur. However, with the avoidance and minimization measures mentioned above, impacts are expected to be low. Variation B Main alignment has the potential to have impact on habitat to a lesser extent than Variation B alignment and Variation B1 alignment, because this option traverses less open space than these variations and, at one location, bisects farmland rather than suitable habitat.

Variation B alignment contains potential habitat for the silvery legless lizard and coast horned lizard and, if implemented, it could potentially cause impacts to these species. With avoidance and minimization measures, such as having a biological monitor present for clearing and grubbing activities, and translocation of individuals onsite, impacts to these species is expected to be low; however, Variation B alignment requires considerably more acres of temporary and permanent impacts to habitat compared to Variation B Main alignment and Variation B1 alignment, due to its alignment encompassing a greater distance.

Potential impacts to the silvery legless lizard and coast horned lizard may occur with the implementation of Variation B1 alignment. The preferred habitat type is known to occur within the limits of this variation; however, with avoidance and minimization measures, impacts to these species would be minor. This variation would require slightly more acres of permanent and temporary impacts to habitat than Variation B Main alignment because it runs through open space, whereas Variation B Main

alignment bisects farmland at one location. If Variation B1 alignment was selected as the preferred alternative, it would require fewer acres of permanent and temporary impacts to habitat compared to Variation B alignment.

Variation D

Potential impacts to the silvery legless lizard and coast horned lizard may occur with the implementation of the main alignment corridor corresponding to Variation D (a so-called Variation D Main alignment). The preferred habitat type is known to occur within the limits of this alignment; however, with avoidance and minimization measures, impacts to this species would be minor. If Variation D Main alignment was selected as the preferred alternative, it would require fewer acres of permanent and temporary impacts to habitat compared to Variation D alignment, due to traversing a shorter distance.

Variation D alignment contains potential habitat for the silvery legless lizard and coast horned lizard and, if implemented, it would potentially cause impacts to these species. With avoidance and minimization measures, such as having a biological monitor present for clearing and grubbing activities, and translocation of individuals onsite, impacts to these species is expected to be low; however, Variation D alignment requires considerably more acres of temporary and permanent impacts to habitat compared to Variation D Main alignment, due to its alignment encompassing a greater distance. Much of this alignment includes open space, which is one of the preferred habitats of the silvery legless lizard and coast horned lizard.

Variation E

Potential habitat for the silvery legless lizard and coast horned lizard occurs within the potential impact area of the main alignment corridor corresponding to Variation E (a so-called Variation E Main alignment) and, if implemented, this alignment could have an impact to these species. With avoidance and minimization measures, impacts to this species are to be considered low. Variation E Main alignment requires fewer acres for implementation compared to Variation E Highway Only and Variation E with Rail XpressWest Connection; therefore, it would have less of an impact to habitat if implemented.

Variation E Highway Only alignment includes areas that are potential habitat to the silvery legless lizard and coast horned lizard, and with the implementation of this variation, impacts to these species may occur; however, with avoidance and minimization measures, impacts are expected to be low. Variation E Highway Only has the potential to have impact on habitat to a greater extent than Variation E Main alignment, because this option traverses more open space in comparison; however, Variation E Highway Only has less of an impact than Variation E with Rail XpressWest Connection.

Freeway/Expressway and Freeway/Tollway with HSR Alternatives

Impacts with the Freeway/Expressway and Freeway/Tollway with HSR Alternatives are generally the same with the exception of the variations described below. The

Freeway/Expressway and Freeway/Tollway with HSR alternatives have a wider footprint when compared to the Freeway/Expressway and Freeway/Tollway alternatives, and therefore impacts to scrubland habitat for these species will be higher in comparison. The HSR Alternative increases the potential impact to this species proportional to the increase in scrubland community impacts. In addition to this, the HSR spur in Victorville that departs from the highway alignment would be an additional impact for this alternative affecting approximately 85 acres of scrubland habitat, and thus result in increased impacts to habitat for these species.

Rail Option 1

Rail Option 1 includes areas that are potential habitat to the silvery legless lizard and coast horned lizard, and with the implementation of this option, impacts to the silvery legless lizard and coast horned lizard may occur; however, with avoidance and minimization measures, impacts are expected to be low. Rail Option 1 has the potential to have impact on habitat to a greater extent than Rail Option 7, because this option traverses more open space than Rail Option 7; however, this option runs through the outskirts of urbanized areas within Palmdale, which is considered to be marginal quality habitat. Rail Option 1 also requires more acreage of permanent and temporary impacts to preferred habitat compared to Rail Option 7.

Rail Option 7

Rail Option 7 includes areas that are potential habitat to the silvery legless lizard and coast horned lizard, and with the implementation of this option, impacts may occur; however, with avoidance and minimization measures, impacts are expected to be low. Rail Option 7 has the potential to have impact on habitat to a lesser extent than Rail Option 1. This option traverses less open space and is within the outskirts of urbanized areas near Palmdale, which are of marginal quality habitat.

Variation E with Rail XpressWest Connection

Variation E with Rail XpressWest Connection alignment contains potential habitat for the silvery legless lizard and coast horned lizard and, if implemented, it would potentially cause impacts to this species. With avoidance and minimization measures, such as having a biological monitor present for clearing and grubbing activities and translocation of individuals onsite, impacts to these species is expected to be low; however, Variation E with Rail XpressWest Connection requires considerably more acres of temporary and permanent impacts to habitat compared to Variation E Main alignment and Variation E Highway Only alignment, due to the alignment encompassing a larger area with more open space.

Birds

Cooper's hawk (*Accipiter cooperii*): Suitable habitat for this species is present, and one individual was observed within the limits of the project on site visits. Avoidance and minimization measures BAN-2 and BAN-4 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Northern harrier (*Circus cyaneus*): Suitable habitat for this species is present, and one individual was observed within the limits of the project on site visits. Avoidance and minimization measures BAN-2 and BAN-4 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Tricolored blackbird (*Agelaius tricolor*): Suitable foraging habitat for this species is present within the project limits, and this species was seen in a flock on several surveys. Nesting habitat occurs outside the project limits. Avoidance and minimization measures BAN-2 and BAN-4 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Short-eared owl (*Asio flammeus*): Suitable habitat for this species is present, and one individual was observed within the limits of the project on site visits. Avoidance and minimization measures BAN-2 and BAN-4 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Mountain plover (*Charadrius montanus*): No individuals of this species were noted within the BSA during site visits; however, suitable habitat for this species is present, and this species could occur on the project site in the future during construction phase. Avoidance and minimization measures BAN-2 and BAN-4 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Prairie falcon (*Falco mexicanus*): Suitable habitat for this species is present, and one individual was observed within the limits of the project during site visits. Avoidance and minimization measures BAN-2 and BAN-4 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Yellow-breasted chat (*Icteria virens*): No individuals of this species were noted within the BSA during site visits; however, suitable habitat for this species is present, and this species could occur on the project site in the future during construction phase. Avoidance and minimization measures BAN-2 and BAN-4 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Loggerhead shrike (*Lanius ludovicianus*): Suitable habitat for this species is present, and individuals were observed within the limits of the project on site visits. Avoidance and minimization measures BAN-2 and BAN-4 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Le Conte's thrasher (*Toxostoma lecontei*): No individuals of this species were noted within the BSA during site visits; however, suitable habitat for this species is present,

and this species could occur on the project site in the future during the construction phase. Avoidance and minimization measures BAN-2 and BAN-4 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Implementation of the proposed project has the potential to impact these species during the construction phase of this project. Because these species have the ability to fly away, direct impacts to individual adults are not expected during the construction phase of this project. Potential exists for impacts to nesting birds should they be present. With the implementation of avoidance and minimization measures, impacts to these species will be minimized.

Freeway/Expressway and Freeway/Tollway Alternatives

Because these alternatives feature a highway only, it is narrower in comparison to the Freeway/Expressway and Freeway/Tollway with HSR alternatives, and therefore impacts to habitat for these species will occur to a lesser extent because of the reduced area of impact.

Main Alignment/Common Areas

Within the BSA of the main alignment common areas, impacts to the above-listed species have the potential to occur. Foraging and nesting habitat occurs throughout the proposed project corridor. Impacts to these species are expected to occur due to clearing and grubbing activities associated with the implementation of the proposed project. With the incorporation of minimization measures, the impacts to individuals of these species are expected to be low.

Variation A

Potential impacts to the above-listed species may occur with the implementation of the main alignment corridor corresponding to Variation A (a so-called Variation A Main alignment). Foraging and nesting habitat type is known to occur within the limits of this alignment; however, with avoidance and minimization measures, impacts to these species are expected to be low. Variation A Main alignment would require fewer acres of permanent and temporary impacts to foraging and nesting habitat compared to the Variation A.

Variation A alignment contains potential habitat for the above-listed species and, if implemented, it would potentially cause impacts to these species. With avoidance and minimization measures, such as having a biological monitor present for clearing and grubbing activities and avoiding construction during nesting season, impacts to these species are expected to be low. However, Variation A alignment requires considerably more acres of temporary and permanent impacts to foraging and nesting habitat of compared to Variation A Main alignment; therefore, potential impacts to these species and foraging and nesting habitat are slightly higher.

Variation B

The main alignment corridor corresponding to Variation B (a so-called Variation B Main alignment) includes areas that are potential habitat to the above-listed species, and with the implementation of this alignment, impacts to these species may occur; however, with avoidance and minimization measures, impacts are expected to be low. Variation B Main Alignment has the potential to have impact on habitat to a lesser extent than Variation B and Variation B1, because this option traverses less open space than these variations and, at one location, bisects farmland rather than suitable habitat.

Variation B alignment contains potential foraging and nesting habitat for the above-listed species and, if implemented, it could potentially cause impacts to these species. With avoidance and minimization measures, such as having a biological monitor present for clearing and grubbing activities, impacts to these species are expected to be low; however, Variation B alignment requires considerably more acres of temporary and permanent impacts to foraging and nesting habitat compared to Variation B Main alignment and Variation B1, due to its alignment encompassing a greater distance.

Potential impacts to the above-listed species may occur with the implementation of Variation B1 alignment. Foraging and nesting habitat is known to occur within the limits of this variation; however, with avoidance and minimization measures, impacts to these species would be minor. This variation would require slightly more acres of permanent and temporary impacts to foraging and nesting habitat than Variation B Main alignment because it runs through open space, whereas Variation B Main alignment bisects farmland at one location.

Variation D

Potential impacts to the above-listed species may occur with the implementation of the main alignment corridor corresponding to Variation D (a so-called Variation D Main alignment). Foraging and nesting habitat type is known to occur within the limits of this alignment; however, with avoidance and minimization measures, impacts to these species would be minor. Variation D Main alignment would require fewer acres of permanent and temporary impacts to foraging and nesting compared to Variation D, due to traversing a shorter distance.

Variation D alignment contains potential habitat for the above-listed species and, if implemented, it would potentially cause impacts to these species. With avoidance and minimization measures, such as avoiding construction during nesting season, impacts to these species are expected to be low; however, Variation D alignment requires considerably more acres of temporary and permanent impacts to foraging and nesting habitat compared to Variation D Main alignment, due to its alignment encompassing a greater distance. Much of this alignment includes undisturbed space, which is a higher quality habitat for these species.

Variation E

Potential habitat for the above-listed species occurs within the potential impact area of the main alignment corridor corresponding to Variation E (a so-called Variation E Main alignment) and, if implemented, this alignment could have an impact to these species. With avoidance and minimization measures, impacts to these species are to be considered low. Variation E Main alignment requires fewer acres for implementation compared to Variation E Highway Only and Variation E with Rail XpressWest Connection; therefore, it would have less of an impact to foraging and nesting habitat if implemented.

Variation E Highway Only alignment includes areas that are potential foraging and nesting habitat to the above-listed species, and with the implementation of this variation, impacts may occur; however, with avoidance and minimization measures, impacts to are expected to be low. Variation E Highway Only alignment has the potential to have impact on foraging and nesting habitat to a greater extent than Variation E Main alignment, because this option traverses more open space in comparison; however, Variation E Highway Only has less of an impact than Variation E with Rail XpressWest Connection.

Freeway/Expressway and Freeway/Tollway with HSR Alternatives

Impacts with the Freeway/Expressway and Freeway/Tollway with HSR alternatives are generally the same with the exception of the variations described below. The Freeway/Expressway and Freeway/Tollway with HSR alternatives have a wider footprint when compared to the Freeway/Expressway and Freeway/Tollway alternatives, and therefore impacts to habitat for these species will be higher in comparison. The alternatives with HSR increase the potential impact to this species proportional to the increase in scrubland community impacts. In addition to this, the HSR spur in Victorville that departs from the highway alignment would be an additional impact for this alternative, affecting approximately 85 acres of scrubland habitat, and thus result in increased impacts to habitat for these species.

Rail Option 1

Rail Option 1 includes areas that are potential habitat to the above-listed species, and with the implementation of this option, impacts may occur; however, with avoidance and minimization measures, impacts are expected to be low. Rail Option 1 has the potential to have impact on foraging and nesting habitat to a greater extent than Rail Option 7, because this option traverses more open space than Rail Option 7; however, this option runs through the outskirts of urbanized areas within Palmdale, which is considered to be marginal quality habitat. Rail Option 1 also requires more acreage of permanent and temporary impacts to preferred foraging and nesting habitat compared to Rail Option 7.

Rail Option 7

Rail Option 7 includes areas that are potential habitat to the above-listed species, and with the implementation of this option, impacts may occur; however, with avoidance and minimization measures, impacts are expected to be low. Rail Option 7 has the

potential to have impact on habitat to a lesser extent than Rail Option 1. This option traverses less open space and is within the outskirts of urbanized areas near Palmdale, which are of marginal quality habitat.

Variation E with Rail XpressWest Connection

Variation E with Rail XpressWest Connection alignment contains potential habitat for the above-listed species and, if implemented, it would potentially cause impacts to these species. With avoidance and minimization measures, such as having a biological monitor present for clearing, impacts to these species are expected to be low; however, Variation E with Rail XpressWest Connection alignment requires considerably more acres of temporary and permanent impacts to foraging and nesting habitat compared to Variation E Main alignment and Variation E Highway Only, due to the alignment encompassing a larger area with more open space.

Burrowing owl (*Athene cunicularia*): Burrowing owl habitat assessment surveys were conducted throughout the BSA. Several individuals, sign of scat, and sign of active burrows were observed throughout much of the project site. For areas of suitable habitat and observation locations, refer to the burrowing owl habitat assessment reports in Appendix E of the *Natural Environment Study*. Sign or individuals were detected in eastern Palmdale, near the county line, and near the HSR line north and east of the Mojave River. Additional phase burrowing owl surveys were not conducted at the time of this writing (August 2014), so an exact number of individuals or pairs occurring within the project limits is unknown.

It is expected that because burrowing owl are known to migrate and occupancy of any particular area can change from time to time for several reasons, additional surveys will be required within 1 year prior to construction. The purpose of the survey would be to determine the number of pairs or individuals within the impact limits for mitigation calculation. Avoidance and minimization measures BAN-2 and BAN-4 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Freeway/Expressway and Freeway/Tollway Alternatives

Because these alternatives feature a highway only, it is narrower in comparison to the Freeway/Expressway and Freeway/Tollway with HSR alternatives, and therefore impacts to habitat for this species will occur to a lesser extent because of the reduced area of impact.

Main Alignment/Common Areas

Within the BSA of the main alignment common areas, impacts to burrowing owl have the potential to occur. Burrowing owl habitat occurs throughout the proposed project corridor, within dry grasslands, agricultural and range lands, railroad ROWs, margins of highways, golf courses, and airports. Impacts to this species are expected to occur due to clearing and grubbing activities associated with implementation of the proposed project. With the incorporation of minimization measures, impacts to individuals of this species are expected to be low.

Variation A

Potential impacts to the burrowing owl may occur with the implementation of the main alignment corridor corresponding to Variation A (a so-called Variation A Main alignment). The burrowing owl's preferred habitat type is known to occur within the limits of this alignment; however, with avoidance and minimization measures, impacts to this species are expected to be low. Variation A Main alignment would require fewer acres of permanent and temporary impacts to dry grasslands, agricultural and range lands, railroad ROWs, margins of highways, golf courses, and airports compared to the Variation A alignment because it traverses less distance along existing roadways.

Variation A alignment contains potential habitat for the burrowing owl and, if implemented, it would potentially cause impacts to this species. With avoidance and minimization measures, such as having a biological monitor present for clearing and grubbing activities and translocation of individuals onsite, impacts to this species are expected to be low; however, Variation A alignment requires considerably more acres of temporary and permanent impacts to dry grasslands, agricultural and range lands, railroad ROWs, margins of highways, golf courses, and airports compared to Variation A Main alignment. Therefore, potential impacts to this species and its habitat are slightly higher with the implementation of this variation.

Variation B

The main alignment corridor corresponding to Variation B (a so-called Variation B Main alignment) includes areas that are potential habitat to the burrowing owl, and with the implementation of this alignment, impacts to the burrowing owl may occur; however, with avoidance and minimization measures, impacts to burrowing owl are expected to be low. Variation B Main alignment has the potential to have impact on burrowing owl habitat to a lesser extent than Variation B and Variation B1, because this option traverses less open space than these variations and, at one location, bisects farmland rather than suitable habitat.

Variation B contains potential habitat for the burrowing owl and, if implemented, it could potentially cause impacts to this species. With avoidance and minimization measures, such as having a biological monitor present for clearing and grubbing activities, and translocation of individuals onsite, impacts to this species are expected to be low; however, Variation B requires considerably more acres of temporary and permanent impacts to dry grasslands, agricultural and range lands, railroad ROWs, margins of highways, golf courses, and airports compared to Variation B Main alignment and Variation B1 alignment, due to its alignment encompassing a greater distance.

Potential impacts to the burrowing owl may occur with the implementation of Variation B1 alignment. The burrowing owl's preferred habitat type is known to occur within the limits of this variation; however, with avoidance and minimization measures, impacts to this species would be minor. This variation would require slightly more acres of permanent and temporary impacts to burrowing owl habitat

than Variation B Main alignment because it runs through open space, whereas Variation B Main alignment bisects farmland at one location. Variation B1 alignment would require fewer acres of permanent and temporary impacts to brushlands with little groundcover compared to Variation B alignment.

Variation D

Potential impacts to the burrowing owl may occur with the implementation of the main alignment corridor corresponding to Variation D (a so-called Variation D Main alignment). The burrowing owl's preferred habitat type is known to occur within the limits of this alignment; however, with avoidance and minimization measures, impacts to this species would be minor. Variation D Main alignment would require fewer acres of permanent and temporary impacts to dry grasslands, agricultural and range lands, railroad ROWs, margins of highways, golf courses, and airports, compared to Variation D, due to the shorter distance along an existing roadway.

Variation D contains potential habitat for the burrowing owl and, if implemented, it would potentially cause impacts to this species. With avoidance and minimization measures, such as having a biological monitor present for clearing and grubbing activities, and translocation of individuals onsite, impacts to this species are expected to be low; however, Variation D requires considerably more acres of temporary and permanent impacts to dry grasslands, agricultural and range lands, railroad ROWs, margins of highways, golf courses, and airports compared to Variation D Main alignment, due to its alignment encompassing a greater distance. Much of this alignment includes open space, which is one of the preferred habitats of the burrowing owl.

Variation E

Potential habitat for the burrowing owl occurs within the potential impact area of the main alignment corridor corresponding to Variation E (a so-called Variation E Main alignment) and, if implemented, this alignment could have an impact to burrowing owl individuals. With avoidance and minimization measures, impacts to this species are to be considered low. Variation E Main alignment requires fewer acres for implementation compared to Variation E Highway Only alignment and Variation E with Rail XpressWest Connection alignment; therefore, it would have less of an impact to burrowing owl habitat if implemented.

Variation E Highway Only alignment includes areas that are potential habitat to the burrowing owl, and with the implementation of this variation, impacts to the burrowing owl may occur; however, with avoidance and minimization measures, impacts to burrowing owl are expected to be low. Variation E Highway Only alignment has the potential to have impact on burrowing owl habitat to a greater extent than Variation E Main alignment, because this option traverses more open space in comparison; however, Variation E Highway Only alignment has less of an impact than Variation E with Rail XpressWest Connection alignment.

Freeway/Expressway and Freeway/Tollway with HSR Alternatives

Impacts with the Freeway/Expressway and Freeway/Tollway with HSR alternatives are generally the same with the exception of the variations described below. The Freeway/Expressway and Freeway/Tollway with HSR alternatives have a wider footprint when compared to the Freeway/Expressway and Freeway/Tollway alternative, and therefore impacts to habitat for this species will be higher in comparison. The alternatives with HSR increase the potential impact to this species proportional to the increase in scrubland community impacts. In addition to this, the HSR spur in Victorville that departs from the highway alignment would be an additional impact for this alternative, affecting approximately 85 acres of scrubland habitat, and thus result in increased impacts to habitat for this species.

Rail Option 1

Rail Option 1 includes areas that are potential habitat to the burrowing owl, and with the implementation of this option, impacts to the burrowing owl may occur; however, with avoidance and minimization measures, impacts to burrowing owl are expected to be low. Rail Option 1 has the potential to have impact on burrowing owl habitat to a greater extent than Rail Option 7, because this option traverses more open space than Rail Option 7; however, this option runs through the outskirts of urbanized areas within Palmdale, which is considered to be low quality habitat. Rail Option 1 also requires more acreage of permanent and temporary impacts to the burrowing owl's preferred habitat of dry grasslands, agricultural and range lands, railroad ROWs, margins of highways, golf courses, and airports compared to Rail Option 7.

Rail Option 7

Rail Option 7 includes areas that are potential habitat to the burrowing owl, and with the implementation of this option, impacts to the burrowing owl may occur; however, with avoidance and minimization measures, impacts to burrowing owl are expected to be low. Rail Option 7 has the potential to have impact on burrowing owl habitat to a lesser extent than Rail Option 1. This option traverses less open space and is within the outskirts of urbanized areas near Palmdale, which are of low quality habitat.

Variation E with Rail XpressWest Connection

Variation E with Rail XpressWest Connection alignment contains potential habitat for burrowing owl and, if implemented, it would potentially cause impacts to this species. With avoidance and minimization measures, such as having a biological monitor present for clearing and grubbing activities and translocation of individuals onsite, impacts to this species are expected to be low; however, Variation E with Rail XpressWest Connection requires considerably more acres of temporary and permanent impacts to dry grasslands, agricultural and range lands, railroad ROWs, margins of highways, golf courses, and airports compared to Variation E Main alignment and Variation E Highway Only alignment, due to the alignment encompassing a larger area with more open space.

Summer tanager (*Piranga rubra*): No individuals of this species were noted within the BSA during site visits; however, suitable habitat for this species is present, and

this species could occur on the project site in the future during construction phase. Avoidance and minimization measures BAN-2 and BAN-4 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Yellow Warbler (*Setophaga petechia*): No individuals of this species were noted within the BSA during site visits; however, suitable habitat for this species is present, and this species could occur on the project site in the future during construction phase. Avoidance and minimization measures BAN-2 and BAN-4 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Implementation of the proposed project has the potential to impact these species during the construction phase of this project. Because these species have the ability to fly away, direct impacts to individual adults are not expected during the construction phase of this project. Potential exists for impacts to nesting birds should they be present. With the implementation of avoidance and minimization measures BAN-2 and BAN-4, impacts to this species will be minimized.

These species are a riparian obligate species along riparian habitats. Because only a few alternatives contain this type of habitat, others are eliminated from discussion. Variations E Main, Variation E Highway Only, and Variation E with Rail XpressWest Connection are discussed below.

Freeway/Expressway and Freeway/Tollway Alternatives

Because these alternatives feature a highway only, it is narrower in comparison to the Freeway/Expressway and Freeway/Tollway with HSR alternatives, and therefore impacts to habitat for these species will occur to a lesser extent because of the reduced area of impact.

Variation E

Potential habitat for these species occurs within the potential impact area of the main alignment corridor corresponding to Variation E (a so-called Variation E Main alignment) and, if implemented, this alignment could have an impact to individuals. With avoidance and minimization measures impacts to these species are to be considered low. Variation E Main alignment requires fewer acres for implementation within the Mojave River compared to Variation E Highway Only alignment and Variation E with Rail XpressWest Connection alignment; therefore, it would have less of an impact to foraging and nesting habitat if implemented.

Variation E Highway Only alignment includes areas that are potential foraging and nesting habitat to these species, and with the implementation of this variation, impacts may occur; however, with avoidance and minimization measures, impacts are expected to be low. Variation E Highway Only alignment has the potential to have impact on foraging and nesting habitat to a greater extent than Variation E Main alignment, because this option has more impacts to the Mojave River; however,

Variation E Highway Only alignment has less of an impact than Variation E with Rail XpressWest Connection alignment.

Freeway/Expressway and Freeway/Tollway with HSR Alternatives

The Freeway/Expressway and Freeway/Tollway with HSR alternatives have a wider footprint when compared to the Freeway/Expressway and Freeway/Tollway alternatives, and therefore impacts to habitat for these species will be higher in comparison. The alternatives with HSR increase the potential impact to these species proportional to the increase in scrubland community impacts

Variation E with Rail XpressWest Connection

Variation E with Rail XpressWest Connection alignment contains potential habitat for these species and, if implemented, it would potentially cause impacts. With avoidance and minimization measures, such as having a biological monitor present for clearing, impacts to these species are expected to be low; however, Variation E with Rail XpressWest Connection alignment requires considerably more acres of temporary and permanent impacts foraging and nesting habitat compared to Variation E Main alignment and Variation E Highway Only alignment, due to the alignment encompassing a larger area with more impacts to the Mojave River.

Mammals

Western mastiff bat (*Eumops perotis californicus*): No individuals of this species were noted within the BSA during site visits; however, suitable habitat for this species is present, and this species could occur on the project site in the future during the construction phase. Avoidance and minimization measures BAN-3 and BAN-5 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Yuma myotis (*Myotis yumanensis*): No individuals of this species were noted within the BSA during site visits; however, suitable habitat for this species is present, and this species could occur on the project site in the future during construction phase. Avoidance and minimization measures BAN-3 and BAN-5 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Implementation of the proposed project has the potential to impact these species during the construction phase of this project. Because these species have the ability to fly away, direct impacts to individual adults are not expected during the construction phase of this project. Potential exists for impacts to dependent juveniles should they be present. With the implementation of the above-stated avoidance and minimization measures, impacts to these species will be minimized.

Freeway/Expressway and Freeway/Tollway Alternatives

Because these alternatives feature a highway only, it is narrower in comparison to the Freeway/Expressway and Freeway/Tollway with HSR alternatives, and therefore

impacts to habitat for these species will occur to a lesser extent because of the reduced area of impact.

Main Alignment/Common Areas

Within the BSA of the main alignment common areas, impacts have the potential to occur. Habitat occurs throughout the proposed project corridor. Impacts to these species are expected to occur due to clearing and grubbing activities associated with implementation of the proposed project. With incorporation of the minimization measures listed above, the impacts to individuals of these species are expected to be low.

Variation A

Potential impacts may occur with the implementation of the main alignment corridor corresponding to Variation A (a so-called Variation A Main alignment). Preferred habitat type is known to occur within the limits of this alignment; however, with avoidance and minimization measures mentioned above, impacts to these species are expected to be low. Variation A Main alignment would require fewer acres of permanent and temporary impacts to habitat compared to the Variation A alignment, because it traverses less distance along existing roadways.

Variation A alignment contains potential habitat for these species and, if implemented, it would potentially cause impacts to these species. With the avoidance and minimization measures mentioned above, such as having a biological monitor present for clearing and grubbing activities and translocation of individuals onsite, impacts are expected to be low; however, Variation A alignment requires considerably more acres of temporary and permanent impacts to habitat compared to Variation A Main alignment. Therefore, potential impacts to these species and its habitat are slightly higher with the implementation of this variation.

Variation B

The main alignment corridor corresponding to Variation B (a so-called Variation B Main alignment) includes areas that are potential habitat, and with the implementation of this alignment, impacts may occur; however, with the avoidance and minimization measures mentioned above, impacts are expected to be low. Variation B Main alignment has the potential to have impact on habitat to a lesser extent than Variation B alignment and Variation B1 alignment, because this option traverses less open space than these variations and, at one location, bisects farmland rather than suitable habitat.

Variation B alignment contains potential habitat for these species and, if implemented, it could potentially cause impacts to these species. With avoidance and minimization measures, impacts are expected to be low; however, Variation B requires considerably more acres of temporary and permanent impacts to habitat compared to Variation B Main alignment and Variation B1 alignment, due to its alignment encompassing a greater distance.

Potential impacts may occur with the implementation of Variation B1 alignment. The preferred habitat type is known to occur within the limits of this variation; however, with avoidance and minimization measures mentioned above, impacts to these species would be minor. This variation would require slightly more acres of permanent and temporary impacts to habitat than Variation B Main alignment because it runs through open space, whereas Variation B Main alignment bisects farmland at one location. Variation B1 alignment would require fewer acres of permanent and temporary impacts to habitat, compared to Variation B alignment.

Variation D

Potential impacts may occur with the implementation of the main alignment corridor corresponding to Variation D (a so-called Variation D Main alignment). The preferred habitat type is known to occur within the limits of this alignment; however, with avoidance and minimization measures mentioned above, impacts to these species would be minor. Variation D Main alignment would require fewer acres of permanent and temporary impacts to habitat compared to Variation D alignment, due to the shorter distance along an existing roadway.

Variation D alignment contains potential habitat for these species and, if implemented, it would potentially cause impacts. With the avoidance and minimization measures mentioned above, such as having a biological monitor present for clearing and grubbing activities, and translocation of individuals onsite, impacts to these species are expected to be low; however, Variation D requires considerably more acres of temporary and permanent impacts to habitat compared to Variation D Main alignment, due to its alignment encompassing a greater distance. Much of this alignment includes open space, which is preferred habitat.

Variation E

Potential habitat occurs within the potential impact area of the main alignment corridor corresponding to Variation E (a so-called Variation E Main alignment) and, if implemented, this alignment could have an impact to individuals of these species. With avoidance and minimization measures, impacts to these species are to be considered low. Variation E Main alignment requires fewer acres for implementation compared to Variation E Highway Only alignment and Variation E with Rail XpressWest Connection alignment; therefore, it would have less of an impact to habitat if implemented.

Variation E Highway Only alignment includes areas that are potential habitat, and with the implementation of this variation, impacts may occur; however, with the avoidance and minimization measures mentioned above, impacts are expected to be low. Variation E Highway Only alignment has the potential to have impact on habitat to a greater extent than Variation E Main alignment, because this option traverses more open space compared; however, Variation E Highway Only alignment has less of an impact than Variation E with Rail XpressWest Connection alignment.

Freeway/Expressway and Freeway/Tollway with HSR Alternatives

Impacts with the Freeway/Expressway and Freeway/Tollway with HSR alternatives are generally the same with the exception of the variations described below. The Freeway/Expressway and Freeway/Tollway with HSR alternatives have a wider footprint when compared to the Freeway/Expressway and Freeway/Tollway alternatives, and therefore impacts to habitat for these species will be higher in comparison. The alternatives with HSR increase the potential impact to this species proportional to the increase in scrubland community impacts. In addition to this, the HSR spur in Victorville that departs from the highway alignment would be an additional impact for this alternative, affecting approximately 85 acres of scrubland habitat, and thus result in increased impacts to habitat for these species

Rail Option 1

Rail Option 1 includes areas that are potential habitat, and with the implementation of this option, impacts may occur; however, with the avoidance and minimization measures mentioned above, impacts are expected to be low. Rail Option 1 has the potential to have impact on these species to a greater extent than Rail Option 7 because this option traverses more open space than Rail Option 7; however, this option runs through the outskirts of urbanized areas within Palmdale, which is considered to be marginal quality habitat. Rail Option 1 also requires more acreage of permanent and temporary impacts to the habitat compared to Rail Option 7.

Rail Option 7

Rail Option 7 includes areas that are potential habitat, and with the implementation of this option, impacts may occur; however, with the avoidance and minimization measures mentioned above, impacts are expected to be low. Rail Option 7 has the potential to have impact on habitat to a lesser extent than Rail Option 1. This option traverses less open space and is within the outskirts of urbanized areas near Palmdale, which are of marginal quality habitat.

Variation E with Rail XpressWest Connection

Variation E with Rail XpressWest Connection alignment contains potential habitat and, if implemented, it would potentially cause impacts to these species. With the avoidance and minimization measures mentioned above, such as having a biological monitor present for clearing and grubbing activities and translocation of individuals onsite, impacts to these species are expected to be low; however, Variation E with Rail XpressWest Connection requires considerably more acres of temporary and permanent impacts to habitat compared to Variation E Main alignment and Variation E Highway Only alignment, due to the alignment encompassing a larger area with more open space.

Mojave river vole (*Microtus californicus mohavensis*): No sign or observation of individuals was recorded during surveys or site visits; however, suitable habitat for this species occurs within the BSA. Avoidance and minimization measure BAN-5 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Because the habitat on the project site appears similar to that of the surrounding area, it is expected that impacts to this species would be no greater in the number of individuals expected to be taken in any one area within the project limits.

Impacts to this species can be minimized, to some extent, by requiring a biological monitor to be present onsite during initial clearing and grubbing activity to capture and relocate any individuals.

Habitat for this species can be re-established within temporary impact zones between the highway and edge of ROW. This area should be replanted with native plants similar to the natural surrounding area and the soil compacted only to a point necessary for construction purposes. This would allow any natural occurring individuals within the immediate vicinity to repopulate the temporary impact zone.

This species is a riparian obligate species primarily within weedy herbaceous-dominated riparian habitats near the Mojave River. Because only a few alternatives contain this type of habitat, others are eliminated from discussion. Variations E Main, Variation E Highway Only, and Variation E with Rail XpressWest Connection are discussed below.

Freeway/Expressway and Freeway/Tollway Alternatives

Because these alternatives feature a highway only, it is narrower in comparison to the Freeway/Expressway Freeway/Tollway with HSR alternatives, and therefore impacts to habitat for this species will occur to a lesser extent because of the reduced area of impact.

Variation E

Potential habitat for the Mojave river vole occurs within the potential impact area of the main alignment corridor corresponding to Variation E (a so-called Variation E Main alignment) and, if implemented, this alignment could have an impact to Mojave river vole individuals. With avoidance and minimization measures mentioned in the previous section, impacts to this species are to be considered low. Variation E Main alignment requires fewer acres for implementation compared to Variation E Highway Only alignment and Variation E with Rail XpressWest Connection alignment; therefore, it would have less of an impact to Mojave river vole foraging and nesting habitat within the Mojave River if implemented.

Variation E Highway Only alignment includes areas that are potential foraging and nesting habitat to the Mojave river vole, and with the implementation of this variation, impacts to the Mojave river vole may occur; however, with the avoidance and minimization measures mentioned above, impacts to Mojave river vole are expected to be low. Variation E Highway Only alignment has the potential to have impact on Mojave river vole foraging and nesting habitat within the Mojave River, to a greater extent than Variation E Main alignment, because this option traverses more open space in comparison; however, Variation E Highway Only alignment has less of an impact than Variation E with Rail XpressWest Connection alignment.

Freeway/Expressway and Freeway/Tollway with HSR Alternatives

The Freeway/Expressway Freeway/Tollway with HSR alternatives have a wider footprint when compared to the Freeway/Expressway and Freeway/Tollway alternatives, and therefore impacts to habitat for this species will be higher in comparison. The HSR alternatives increase the potential impact to this species proportional to the increase in scrubland community impacts.

Variation E with Rail XpressWest Connection

Variation E with Rail XpressWest Connection alignment contains potential habitat for the Mojave river vole and, if implemented, it would potentially cause impacts to this species. With the avoidance and minimization measures mentioned above, such as having a biological monitor present for clearing, impacts to this species are expected to be low; however, Variation E with Rail XpressWest Connection requires considerably more acres of temporary and permanent impacts to Mojave river vole foraging and nesting habitat compared to Variation E Main alignment and Variation E Highway Only alignment, due to the alignment encompassing a larger area within the Mojave River.

San Diego Desert Woodrat (*Neotoma lepida intermedia*): This species was observed during site visits. Individuals and sign of this species were observed during site visits. It is expected to occur in relatively normal numbers throughout the project limits when compared to similar habitat in the vicinity. Avoidance, minimization, and mitigation measures BAN-1 BAN-5 BAN-6, BAN-7, and BAN-8 should be implemented. Impacts to individuals of this species will be mitigated per consultation with the appropriate agencies.

Freeway/Expressway and Freeway/Tollway Alternatives

Because these alternatives feature a highway only, it is narrower in comparison to the Freeway/Expressway and Freeway/Tollway with HSR alternatives, and therefore impacts to habitat for this species will occur to a lesser extent because of the reduced area of impact.

Main Alignment/Common Areas

Within the BSA of the main alignment common areas, impacts to San Diego desert woodrat have the potential to occur. San Diego desert woodrat habitat occurs throughout the proposed project corridor, within Joshua tree woodland, pinyon-juniper woodland, mixed and chamise-redshank chaparral, and sagebrush. Impacts to this species are expected to occur due to clearing and grubbing activities associated with implementation of the proposed project. With the incorporation of the minimization measures listed above, the impacts to individuals of this species are expected to be low.

Variation A

Potential impacts to the San Diego desert woodrat may occur with the implementation of the main alignment corridor corresponding to Variation A (a so-called Variation A Main alignment). The San Diego desert woodrat's preferred habitat type is known to

occur within the limits of this alignment; however, with avoidance and minimization measures mentioned above, impacts to this species are expected to be low. Variation A Main alignment would require fewer acres of permanent and temporary impacts to Joshua tree woodland, pinyon-juniper woodland, mixed and chamise-redshank chaparral, and sagebrush compared to the Variation A alignment because it traverses less distance along existing roadways.

Variation A alignment contains potential habitat for the San Diego desert woodrat and, if implemented, it would potentially cause impacts to this species. With the avoidance and minimization measures mentioned above, such as having a biological monitor present for clearing and grubbing activities and translocation of individuals onsite, impacts to this species are expected to be low; however, Variation A alignment requires considerably more acres of temporary and permanent impacts to Joshua tree woodland, pinyon-juniper woodland, mixed and chamise-redshank chaparral, and sagebrush compared to Variation A Main alignment. Therefore, the potential impacts to this species and its habitat are slightly higher with the implementation of this variation.

Variation B

The main alignment corridor corresponding to Variation B (a so-called Variation B Main alignment) includes areas that are potential habitat to the San Diego desert woodrat, and with the implementation of this alignment, impacts to the San Diego desert woodrat may occur; however, with the avoidance and minimization measures mentioned above, impacts to San Diego desert woodrat are expected to be low. Variation B Main alignment has the potential to have impact on San Diego desert woodrat habitat to a lesser extent than Variation B alignment and Variation B1 alignment because this option traverses less open space than these variations and, at one location, bisects farmland rather than suitable habitat.

Variation B contains potential habitat for the San Diego desert woodrat and, if implemented, it could potentially cause impacts to this species. With the avoidance and minimization measures mentioned above, such as having a biological monitor present for clearing and grubbing activities, and translocation of individuals onsite, impacts to this species are expected to be low; however, Variation B requires considerably more acres of temporary and permanent impacts to Joshua tree woodland, pinyon-juniper woodland, mixed and chamise-redshank chaparral, and sagebrush compared to Variation B Main alignment and Variation B1 alignment, due to its alignment encompassing a greater distance.

Potential impacts to the San Diego desert woodrat may occur with the implementation of Variation B1 alignment. The San Diego desert woodrat's preferred habitat type is known to occur within the limits of this variation; however, with avoidance and minimization measures mentioned above, impacts to this species would be minor. This variation would require slightly more acres of permanent and temporary impacts to San Diego desert woodrat habitat than Variation B Main alignment because it runs through open space, whereas Variation B Main alignment bisects farmland at one location. Variation B1 would require fewer acres of permanent and temporary

impacts to Joshua tree woodland, pinyon-juniper woodland, mixed and chamise-redshank chaparral, and sagebrush compared to Variation B alignment.

Variation D

Potential impacts to the San Diego desert woodrat may occur with the implementation of the main alignment corridor corresponding to Variation D (a so-called Variation D Main alignment). The San Diego desert woodrat's preferred habitat type is known to occur within the limits of this alignment; however, with avoidance and minimization measures mentioned above, impacts to this species would be minor. Variation D Main alignment would require fewer acres of permanent and temporary impacts to Joshua tree woodland, pinyon-juniper woodland, mixed and chamise-redshank chaparral, and sagebrush compared to Variation D alignment, due to the shorter distance along an existing roadway.

Variation D alignment contains potential habitat for the San Diego desert woodrat and, if implemented, it would potentially cause impacts to this species. With the avoidance and minimization measures mentioned above, such as having a biological monitor present for clearing and grubbing activities, and translocation of individuals onsite, impacts to this species are expected to be low; however, Variation D requires considerably more acres of temporary and permanent impacts to Joshua tree woodland, pinyon-juniper woodland, mixed and chamise-redshank chaparral, and sagebrush compared to Variation D Main alignment, due to its alignment encompassing a greater distance. Much of this alignment includes open space, which is one of the preferred habitats of the San Diego desert woodrat.

Variation E

Potential habitat for the San Diego desert woodrat occurs within the potential impact area of the main alignment corridor corresponding to Variation E (a so-called Variation E Main alignment) and, if implemented, this alignment could have an impact to San Diego desert woodrat individuals. With avoidance and minimization measures mentioned in the previous section, impacts to this species are to be considered low. Variation E Main alignment requires fewer acres for implementation compared to Variation E Dip Highway Only alignment and Variation E with Rail XpressWest Connection alignment; therefore, it would have less of an impact to San Diego desert woodrat habitat if implemented.

Variation E Highway Only alignment includes areas that are potential habitat to the San Diego desert woodrat, and with the implementation of this variation, impacts to the San Diego desert woodrat may occur; however, with the avoidance and minimization measures mentioned above, impacts to San Diego desert woodrat are expected to be low. Variation E Highway Only alignment has the potential to have impact on San Diego desert woodrat habitat to a greater extent than Variation E Main alignment because this option traverses more open space in comparison; however, Variation E Highway Only alignment has less of an impact than Variation E with Rail XpressWest Connection alignment.

Freeway/Expressway and Freeway/Tollway with HSR Alternatives

The Freeway/Expressway and Freeway/Tollway with HSR alternatives have a wider footprint when compared to the Freeway/Expressway and Freeway/Tollway alternatives, and therefore impacts to habitat for this species will be higher in comparison. The HSR alternatives increase the potential impact to this species proportional to the increase in scrubland community impacts. In addition to this, the HSR spur in Victorville that departs from the highway alignment would be an additional impact for this alternative, affecting approximately 85 acres of scrubland habitat, and thus result in increased impacts to habitat for this species.

Rail Option 1

Rail Option 1 includes areas that are potential habitat to the San Diego desert woodrat, and with the implementation of this option, impacts to the San Diego desert woodrat may occur; however, with the avoidance and minimization measures mentioned above, impacts to San Diego desert woodrat are expected to be low. Rail Option 1 has the potential to have impact on San Diego desert woodrat habitat to a greater extent than Rail Option 7, because this option traverses more open space than Rail Option 7; however, this option runs through the outskirts of urbanized areas within Palmdale, which is considered to be marginal quality habitat. Rail Option 1 also requires more acreage of permanent and temporary impacts to the San Diego desert woodrat's preferred habitat of Joshua tree woodland, pinyon-juniper woodland, mixed and chamise-redshank chaparral, and sagebrush compared to Rail Option 7.

Rail Option 7

Rail Option 7 includes areas that are potential habitat to the San Diego desert woodrat, and with the implementation of this option, impacts to the San Diego desert woodrat may occur; however, with the avoidance and minimization measures mentioned above, impacts to San Diego desert woodrat are expected to be low. Rail Option 7 has the potential to have impact on San Diego desert woodrat habitat to a lesser extent than Rail Option 1. This option traverses less open space and is within the outskirts of urbanized areas near Palmdale, which are of marginal quality habitat.

Variation E with Rail XpressWest Connection

Variation E with Rail XpressWest Connection alignment contains potential habitat for San Diego desert woodrat and, if implemented, it would potentially cause impacts to this species. With the avoidance and minimization measures mentioned above, such as having a biological monitor present for clearing and grubbing activities and translocation of individuals onsite, impacts to this species are expected to be low; however, Variation E with Rail XpressWest Connection requires considerably more acres of temporary and permanent impacts to Joshua tree woodland, pinyon-juniper woodland, mixed and chamise-redshank chaparral, and sagebrush compared to Variation E Main alignment and Variation E Highway Only alignment, due to the alignment encompassing a larger area with more open space.

American Badger (*Taxidea taxus*): Suitable habitat for this species is present, and individuals have been observed within the BSA. Avoidance, minimization, and

mitigation measures BAN-1, BAN-5, BAN-6, BAN-7, and BAN-9 should be implemented.

As noted above, this species occurs within the proposed project limits. Because the habitat on the project site appears similar to those of the surrounding area, it is expected that impacts to this species would be no greater in the number of individuals expected to be taken in any one area within the project limits.

Habitat for this species can be re-established within temporary impact zones between the highway and edge of ROW. This area should be replanted with native plants similar to the natural surrounding area and the soil compacted only to a point necessary for construction purposes. This would allow any natural occurring individuals within the immediate vicinity to repopulate the temporary impact zone.

Freeway/Expressway and Freeway/Tollway Alternatives

Because these alternatives feature a highway only, it is narrower in comparison to the Freeway/Expressway and Freeway/Tollway with HSR alternatives, and therefore impacts to habitat for this species will occur to a lesser extent because of the reduced area of impact.

Main Alignment/Common Areas

Within the BSA of the main alignment common areas, impacts to American badger have the potential to occur. American badger habitat occurs throughout the proposed project corridor, within brushlands with little groundcover. Impacts to this species are expected to occur due to clearing and grubbing activities associated with implementation of the proposed project. With the incorporation of the minimization measures listed above, the impacts to individuals of this species are expected to be low.

Variation A

Potential impacts to the American badger may occur with the implementation of the main alignment corridor corresponding to Variation A (a so-called Variation A Main alignment). The American badger's preferred habitat type is known to occur within the limits of this variation; however, with the avoidance and minimization measures mentioned above, impacts to this species are expected to be low. Variation A Main alignment would require fewer acres of permanent and temporary impacts to Joshua tree woodland, pinyon-juniper woodland, mixed and chamise-redshank chaparral, and sagebrush compared to the Variation A, because it traverses less distance along existing roadways.

Variation A alignment contains potential habitat for the American badger and, if implemented, it would potentially cause impacts to this species. With the avoidance and minimization measures mentioned above, such as having a biological monitor present for clearing and grubbing activities and translocation of individuals onsite, impacts to this species are expected to be low; however, Variation A alignment requires considerably more acres of temporary and permanent impacts to brushlands

with little groundcover compared to Variation A Main alignment; therefore, the potential impacts to this species and its habitat are slightly higher with the implementation of this variation.

Variation B

The main alignment corridor corresponding to Variation B (a so-called Variation B Main alignment) includes areas that are potential habitat to the American badger, and with the implementation of this alignment, impacts to the American badger may occur; however, with the avoidance and minimization measures mentioned above, impacts to American badger are expected to be low. Variation B Main alignment has the potential to have impact on American badger habitat to a lesser extent than Variation B alignment and Variation B1 alignment, because this option traverses less open space than these variations and, at one location, bisects farmland rather than suitable habitat.

Variation B alignment contains potential habitat for the American badger and, if implemented, it could potentially cause impacts to this species. With the avoidance and minimization measures mentioned above, such as having a biological monitor present for clearing and grubbing activities, and translocation of individuals onsite, impacts to this species are expected to be low; however, Variation B requires considerably more acres of temporary and permanent impacts to brushlands with little groundcover compared to Variation B Main alignment and Variation B1 alignment, due to its alignment encompassing a greater distance.

Potential impacts to the American badger may occur with the implementation of Variation B1. The American badger's preferred habitat type is known to occur within the limits of this variation; however, with avoidance and minimization measures mentioned above, impacts to this species would be minor. This variation would require slightly more acres of permanent and temporary impacts to American badger habitat than Variation B Main alignment because it runs through open space, whereas Variation B Main alignment bisects farmland at one location. Variation B1 alignment would require fewer acres of permanent and temporary impacts to brushlands with little groundcover compared to Variation B alignment.

Variation D

Potential impacts to the American badger may occur with the implementation of the main alignment corridor corresponding to Variation D (a so-called Variation D Main alignment). The American badger's preferred habitat type is known to occur within the limits of this alignment; however, with avoidance and minimization measures mentioned above, impacts to this species would be minor. Variation D Main alignment would require fewer acres of permanent and temporary impacts to brushlands with little groundcover compared to Variation D alignment, due to the shorter distance along an existing roadway.

Variation D alignment contains potential habitat for the American badger and, if implemented, it would potentially cause impacts to this species. With the avoidance and minimization measures mentioned above, such as having a biological monitor

present for clearing and grubbing activities, and translocation of individuals onsite, impacts to this species are expected to be low; however, Variation D requires considerably more acres of temporary and permanent impacts to brushlands with little groundcover compared to Variation D Main alignment, due to its alignment encompassing a greater distance. Much of this alignment includes open space, which is one of the preferred habitats of the American badger.

Variation E

Potential habitat for the American badger occurs within the potential impact area of the main alignment corridor corresponding to Variation E (a so-called Variation E Main alignment) and, if implemented, this alignment could have an impact to American badger individuals. With avoidance and minimization measures mentioned in the previous section, impacts to this species are to be considered low. Variation E Main alignment requires fewer acres for implementation compared to Variation E Highway Only alignment and Variation E with Rail XpressWest Connection alignment; therefore, it would have less of an impact to American badger habitat if implemented.

Variation E Highway Only alignment includes areas that are potential habitat to the American badger, and with the implementation of this variation, impacts to the American badger may occur; however, with the avoidance and minimization measures mentioned above, impacts to American badger are expected to be low. Variation E Highway Only alignment has the potential to have impact on American badger habitat to a greater extent than Variation E Main alignment because this option traverses more open space compared; however, Variation E Highway Only alignment has less of an impact than Variation E with Rail XpressWest Connection alignment.

Freeway/Expressway and Freeway/Tollway with HSR Alternatives

Impacts with the Freeway/Expressway and Freeway/Tollway with HSR alternatives are generally the same with the exception of the variations described below. The Freeway/Expressway and Freeway/Tollway with HSR alternatives have a wider footprint when compared to the Freeway/Expressway and Freeway/Tollway alternatives, and therefore impacts to habitat for this species will be higher in comparison. The HSR alternatives increase the potential impact to this species proportional to the increase in scrubland community impacts. In addition to this, the HSR spur in Victorville that departs from the highway alignment would be an additional impact for this alternative, affecting approximately 85 acres of scrubland habitat, and thus result in increased impacts to habitat for this species.

Rail Option 1

Rail Option 1 includes areas that are potential habitat to the American badger, and with the implementation of this option, impacts to the American badger may occur; however, with the avoidance and minimization measures mentioned above, impacts to American badger are expected to be low. Rail Option 1 has the potential to have impact on American badger habitat to a greater extent than Rail Option 7 because this

option traverses more open space than Rail Option 7; however, this option runs through the outskirts of urbanized areas within Palmdale, which is considered to be marginal quality habitat. Rail Option 1 also requires more acreage of permanent and temporary impacts to the American badger's preferred habitat of brushlands with little groundcover compared to Rail Option 7.

Rail Option 7

Rail Option 7 includes areas that are potential habitat to the American badger, and with the implementation of this option, impacts to the American badger may occur; however, with the avoidance and minimization measures mentioned above, impacts to American badger are expected to be low. Rail Option 7 has the potential to have impact on American badger habitat to a lesser extent than Rail Option 1. This option traverses less open space and is within the outskirts of urbanized areas near Palmdale, which are of marginal quality habitat.

Variation E with Rail XpressWest Connection

Variation E with Rail XpressWest Connection alignment contains potential habitat for American badger and, if implemented, it would potentially cause impacts to this species. With the avoidance and minimization measures mentioned above, such as having a biological monitor present for clearing and grubbing activities and translocation of individuals onsite, impacts to this species are expected to be low; however, Variation E with Rail XpressWest Connection requires considerably more acres of temporary and permanent impacts to brushlands with little groundcover compared to Variation E Main alignment and Variation E Highway Only alignment, due to the alignment encompassing a larger area with more open space.

Avoidance, Minimization, and/or Mitigation Measures

Impacts to wildlife species can be avoided or minimized by implementation of the measures listed below.

- BAN-1:** Impacts to silvery legless lizard, coast horned lizard, San Diego woodrat, American badger can be minimized by requiring a biological monitor to be present onsite during initial clearing and grubbing activity to capture and relocate any individuals. If areas of high-density occurrences are found, salvage efforts can be made by more carefully removing shrubs with clam-shell loaders and searching for individuals at the base of the shrub or within the root system, as this is a more likely place for them to occur. Habitat for these species can be re-established within temporary impact zones between the highway and edge of ROW. This area will be replanted with native plants similar to the natural surrounding area and the soil compacted only to a point necessary for construction purposes. This will allow any natural occurring individuals within the immediate vicinity to repopulate the temporary impact zone.
- BAN-2:** A qualified biologist will recommend approved limits of disturbance, including construction staging areas and access routes, to minimize

impacts to adjacent habitat. To ensure the avoidance of impacts to migratory birds, the following measures will be implemented pursuant to the MBTA. Clearing and grubbing of vegetation will be conducted outside of bird-nesting season. If clearing and grubbing of vegetation needs to be conducting during bird-nesting season (February 15 to September 1), a qualified biologist will monitor construction during clearing, grading, and/or trenching activities for any occurrence of birds nesting. If birds are observed nesting, construction will stop until it is determined that the fledglings have left their nests. If this is not possible, coordination with a qualified biologist should take place to minimize the risk of violating the MBTA, and the following minimization measure put in place: an ESA fencing buffer of 150 feet for songbirds and 500 feet for raptors, which must be maintained during all phases of construction.

- BAN-3:** A qualified biologist will recommend approved limits of disturbance, including construction staging areas and access routes, to minimize impacts to adjacent habitat. To ensure the avoidance of impacts to bats, preconstruction surveys will be conducted of rock faces adjacent to the roadway and any trees designated for removal due to the initiation of construction-related activities to assess any potential presence of the species. Clearing and grubbing of vegetation will be conducted outside of the bat maternity season. If clearing and grubbing of vegetation needs to be conducting during bat maternity season (March 1 to October 15), a qualified biologist will monitor construction during clearing, grading, and/or trenching activities for any occurrence of the species breeding. For planning purposes, a preconstruction survey should be conducted approximately 30 days prior to clearing and grubbing. A second preconstruction survey shall be conducted no more than 3 days prior to clearing and grubbing. If any species are found during preconstruction surveys, they will be excluded using CDFW, U.S. Forest Service (USFS), and USFWS approved methods. Alternate bat habitat will be provided for any excluded bats.
- BAN-4:** A biological monitor will be present a minimum of 1 week prior to clearing and grubbing activities to walk the proposed areas to be cleared and grubbed and dispel animals that have the ability to flee.
- BAN -5:** A qualified biologist will survey for, trap/capture species present, and relocate to a designated area approved by USFWS or CDFW
- BAN-6:** Appropriate native habitat will be replanted in temporarily impacted areas. Additionally, a Habitat Mitigation Monitoring Plan (HMMP) will be developed.
- BAN-7:** Restoration of disturbed habitat within the project limits will be conducted.

BAN-8: The boundaries of ROW shall be fenced off with materials approved by a Caltrans District Biologist for the following reasons: (1) serve as a guide for wildlife to utilize the appropriate crossings, meanwhile reducing impacts to wildlife/vehicle collisions, and (2) reduce vandalism to restoration sites.

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3.3.5 Threatened and Endangered Species

Regulatory Setting

The main federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 U.S.C., Section 1531, et seq. See also 50 CFR Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the FHWA, are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service to ensure that they are not undertaking, funding, permitting or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 may include a Biological Opinion (BO) with an Incidental Take statement, a Letter of Concurrence, and/or documentation of a no effect finding. Section 3 of the FESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code (FGC), Section 2050, et seq. The California Endangered Species Act emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The California Department of Fish and Wildlife (CDFW) is the agency responsible for implementing the CESA. Section 2081 of the Fish and Game Code prohibits take of any species determined to be an endangered species or a threatened species. "Take" is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." The CESA allows for take incidental to otherwise lawful development projects; for these actions, an incidental take permit is issued by the CDFW. For species listed under both the FESA and the CESA requiring a BO under Section 7 of the FESA, the CDFW may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the FGC.

Affected Environment

Information regarding threatened and endangered species was obtained from the *Natural Environment Study* (August 2014). USFWS, the CDFW, and NOAA's National Marine Fisheries Service are the primary agencies responsible for coordination and review involving special-status species.

The findings summarized in this section were based on extensive research and field surveys for special-status species in the biological study area and its vicinity. Prior to the surveys, record searches of the USFWS species lists, and the California Natural Diversity Database (CNDDDB) were conducted. The species list and CNDDDB covering the project study area are provided in Appendix L.

USFWS species records were reviewed at the outset of the biological studies for the project. A copy of the records list is included in Appendix L. Formal Section 7 consultation with USFWS has been initiated for the following species: desert tortoise, southwestern willow flycatcher and least Bell’s vireo. Caltrans will seek concurrence from USFWS that the proposed project may have adverse effects to the desert tortoise and is not likely to have adverse effects to the southwestern willow flycatcher and least Bell’s vireo. An incidental take permit from the USFWS for these species would be required prior to project construction for any project-related effects to these species.

Consultation with CDFW is also ongoing for the following species: desert tortoise, Mojave ground squirrel, least Bell’s vireo and southwestern willow flycatcher. The proposed project may have adverse effects to these species. The CDFW authorizes take of endangered, threatened or candidate species through the provisions of Section 2081 and 2080.1 of the Fish and Game Code. A take permit from the CDFW will be required prior to construction of the proposed project.

Copies of the agency correspondence are provided in Appendix K.

A total of thirty-nine (39) special status animal species were identified as occurring within the vicinity of the Biological Study Area (BSA). Of those, 7 threatened or endangered species were observed or have a potential to occur within the project limits due to habitat suitability, as described in Table 3.3.5-1.

Table 3.3.5-1: Threatened and Endangered Species with Potential to Occur in the Biological Study Area

Species	Status	Habitat	Potential to Occur in the Biological Study Area
Birds			
Golden eagle <i>Aquila chrysaetos</i>	CDFW: FP BLM: S	Wide range of flat or mountainous, largely open habitats, often above the tree line from seal level to 4000 meters elevation.	Foraging habitat present. Observed near project limits.
Swainson's hawk <i>Buteo swainsoni</i>	CA: ST	Open and semi-open country within deserts, grasslands and prairies.	Moderate potential for occurrence. Suitable foraging habitat present. None observed during site visits.
Western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	US: FC CA: SE	Riparian obligate species primarily with willow-cottonwood riparian forests, but other species occur in alder and box elder dominated riparian habitats.	Moderate potential for occurrence. Suitable habitat present. None observed during site visits.

Table 3.3.5-1: Threatened and Endangered Species with Potential to Occur in the Biological Study Area

Species	Status	Habitat	Potential to Occur in the Biological Study Area
Southwestern willow flycatcher <i>Empidonax traillii extimus</i>	US: FE CA: SE	Breeds and nests in riparian forest with dense understory. Rare and local in southern California.	Present. Suitable habitat in Mojave River. Observed in Mojave River during focused surveys.
Least Bell's vireo <i>Vireo bellii pusillus</i>	US: FE CA: SE	Riparian forests and willow thickets. Breeds and nests only in southwestern California; winters in Baja California.	Present. Suitable habitat present. Observed during focused surveys.
Mammals			
Mohave ground squirrel <i>Xerospermophilus mohavensis</i>	CA: ST	Occupies creosote bush scrub, saltbush scrub, and Joshua tree woodland type plant communities. This species is found in open areas of sandy and gravelly soils devoid of rocky areas in the eastern and northern parts of the Mojave Desert region.	Low potential for occurrence. Potential suitable habitat present. Not observed during investigative surveys.
Reptiles			
Desert tortoise <i>Gopherus agassizii</i>	US: FT CA: ST	Historically found throughout the Mojave and Sonoran Deserts into Arizona, Nevada, and Utah. Occurs throughout the Mojave Desert in scattered populations. Found in creosote bush scrub, saltbush scrub, thornscrub (in Mexico), and Joshua tree woodland. Found in the open desert as well as in oases, riverbanks, washes, dunes, and occasionally rocky slopes.	Present. Suitable habitat present. Observed during focused surveys.
Federal (US): FE = Federal Endangered FT = Federal Threatened FC = Federal Candidate Species		State (CA): SE = State Endangered ST = State Threatened CDFW: FP = Fully Protected Species BLM: S = Sensitive	

Source: Natural Environment Study 2014

Focused surveys for special-status wildlife species were conducted in 2011, 2012, and 2013. Desert tortoise, southwestern willow flycatcher and least Bell's vireo were observed during focused surveys, and a golden eagle was observed outside the project

limits near the High Speed Rail (HSR) alignment. Individuals and nesting behavior of southwestern willow flycatcher and least Bell's vireo have only been observed in the area where the variation E HSR rail line intersects the Mojave River. Burrows, scat, and carcass material of the desert tortoise were identified within the eastern most portion of the BSA. Suitable habitat is present within the BSA for Swainson's hawk, western yellow-billed cuckoo, and Mohave ground squirrel, but none were observed during focused surveys.

In addition, critical habitat for the southwestern willow flycatcher is present within the Mojave River at all proposed crossing locations.

For the purpose of avoiding redundancy, when discussing project impacts, it should be noted that the Freeway/Expressway Alternative, Freeway/Tollway Alternative, Freeway/Expressway Alternative with the HSR Feeder Service, and the Freeway/Tollway Alternative with the HSR Feeder Service are discussed collectively because the impacts amount to the same in main alignment/common areas; however, it is the variations and options that differ in impacts to animal species, and thus they are each broken down and discussed (see Figure 3.3-1 Alignment Key Map for Biological Study Area).

Environmental Consequences

No Build Alternative

Because no ground disturbance would occur under the No Build Alternative, there would be no impacts on threatened and endangered species.

Build Alternatives

Golden Eagle

Implementation of the proposed project has the potential to impact the golden eagle during the construction phase of this project. Because these species have the ability to fly away, direct impacts to individual adults are not expected. However, relatively large amounts of natural desert scrub habitats would be removed under all build alternatives, which may impact nesting habitat. Impacts to nesting habitat for the golden eagle are not anticipated because suitable nesting habitat is not present.

Because the Freeway/Expressway and Freeway/Tollway alternatives feature a highway only, the affected area is less in comparison to the alternatives with HSR, and therefore impacts to habitat for this species would occur to a lesser extent. The HSR alternatives increase the potential impact to this species proportional to the increase in scrubland community impacts. In addition to this, the HSR spur in Victorville that departs from the highway alignment would be an additional impact for this alternative, affecting approximately 85 acres of scrubland habitat, and thus result in increased impacts to habitat for this species.

Main Alignment/Common Areas

Within the BSA of the main alignment common areas, impacts to the golden eagle have the potential to occur. Golden eagle foraging and nesting habitat occurs throughout the proposed project corridor within flat or mountainous, largely open habitats. Impacts to this species are expected to occur due to construction activities associated with implementation of the proposed project. With incorporation of the minimization measures listed below, the impacts to individuals of this species are expected to be low.

Rail Option 1 and Rail Option 7

Rail Options 1 and 7 include areas that are potential habitat to the golden eagle, and with implementation of either option, impacts to the golden eagle may occur; however, with the avoidance and minimization measures mentioned below, impacts to the golden eagle are expected to be low. Rail Option 1 has the potential to impact golden eagle foraging and nesting habitat to a greater extent than Rail Option 7, because this option traverses more open space than Rail Option 7; however, this option runs through the outskirts of urbanized areas within Palmdale, which is considered to be marginal quality habitat. Rail Option 1 also requires more acreage of permanent and temporary impacts to golden eagle preferred foraging and nesting habitat of flat or mountainous, largely open habitats compared to Rail Option 7.

Variation A

Potential impacts to the golden eagle may occur with implementation of the main alignment corridor corresponding to Variation A (a so-called Variation A Main alignment) and Variation A alignment. Golden eagle preferred foraging and nesting habitat type is known to occur within the limits of these alignments; however, with the avoidance and minimization measures mentioned below, impacts to this species are expected to be low. Variation A Main alignment would require fewer acres of permanent and temporary impacts to golden eagle preferred foraging and nesting habitat of flat or mountainous, largely open habitats compared to the Variation A alignment; therefore, potential impacts to this species and its foraging and nesting habitat are slightly higher under the Variation A alignment.

Variation B

The main alignment corridor corresponding to Variation B (a so-called Variation B Main alignment), Variation B alignment, and Variation B1 alignment include areas that are potential habitat to the golden eagle, and with implementation of these variations, impacts to this species may occur; however, with the avoidance and minimization measures mentioned below, impacts to golden eagle are expected to be low. Variation B Main alignment has the potential to have impacts on golden eagle habitat to a lesser extent than Variation B1 alignment and Variation B alignment, because this option traverses less space than these variations and, at one location, bisects farmland which is not considered suitable habitat. Variation B requires considerably more acres of temporary and permanent impacts to golden eagle preferred foraging and nesting habitat of flat or mountainous, largely open habitats

compared to Variation B Main alignment and Variation B1 alignment due to its alignment encompassing a greater distance.

Variation D

Potential impacts to the golden eagle may occur with implementation of the main alignment corridor corresponding to Variation D (a so-called Variation D Main alignment) and Variation D alignment. Golden eagle preferred foraging and nesting habitat type is known to occur within the limits of these alignments; however, with the avoidance and minimization measures mentioned below, impacts to this species would be minor. Variation D Main alignment would require fewer acres of permanent and temporary impacts to foraging and nesting habitat of flat or mountainous largely open habitats compared to Variation D alignment due to traversing a shorter distance. Variation D requires considerably more acres of temporary and permanent impacts to golden eagle preferred foraging and nesting habitat of flat or mountainous, largely open habitats compared to Variation D Main alignment due to its alignment encompassing a greater distance. Much of this alignment includes undisturbed space, which is a higher quality habitat to the golden eagle.

Variation E

Potential habitat for the golden eagle occurs within the potential impact area of the main alignment corridor corresponding to Variation E (a so-called Variation E Main alignment), Variation E Highway Only alignment, and Variation E with Rail ExpressWest Connection alignment and, if implemented, these variations could have an impact to golden eagle individuals. With the avoidance and minimization measures mentioned below, impacts to this species are to be considered low. Variation E Main alignment requires fewer acres for implementation compared to Variation E Highway Only alignment and Variation E with Rail ExpressWest Connection alignment; therefore, it would have less of an impact to golden eagle foraging and nesting habitat if implemented. Variation E Highway Only alignment has the potential to have impact on golden eagle foraging and nesting habitat to a greater extent than Variation E Main alignment, because this option traverses more open space in comparison; however, Variation E Highway Only alignment has less of an impact than Variation E with Rail ExpressWest Connection alignment.

Swainson's Hawk

Implementation of the proposed project has the potential to impact this species during the construction phase. Because this species has the ability to fly away, direct impacts to individual adults are not expected during the construction phase. Potential exists for impacts to nesting birds should they be present.

Because the Freeway/Expressway and Freeway/Tollway alternatives feature a highway only, the affected area is less in comparison to the alternatives with HSR, and therefore impacts to habitat for this species would occur to a lesser extent. The HSR alternatives increase the potential impact to this species proportional to the increase in scrubland community impacts. In addition to this, the HSR spur in Victorville that departs from the highway alignment would be an additional impact

for this alternative, affecting approximately 85 acres of scrubland habitat, and thus result in increased impacts to habitat for this species.

Main Alignment/Common Areas

Within the BSA of the main alignment common areas, impacts to the Swainson's hawk have the potential to occur. Swainson's hawk foraging and nesting habitat occurs throughout the project corridor within open and semi-open country within deserts, grasslands, and prairies. Impacts to this species are expected to occur due to construction activities associated with implementation of the proposed project. With incorporation of the minimization measures listed below, the impact to individuals of this species is expected to be low.

Rail Option 1 Variations 1 and 7

Rail Option 1 Variations 1 and 7 include areas that are potential habitat to the Swainson's hawk and, with implementation of this option, impacts to the Swainson's hawk may occur; however, with the avoidance and minimization measures mentioned below, impacts to the Swainson's hawk are expected to be low. Rail Option 1 has the potential to impact Swainson's hawk foraging and nesting habitat to a greater extent than Rail Option 7, because this option traverses more open space than Rail Option 7; however, Rail Option 1 runs through the outskirts of urbanized areas within Palmdale, which is considered to be marginal quality habitat. Rail Option 1 also requires more acreage of permanent and temporary impacts to Swainson's hawk preferred foraging and nesting habitat of flat or mountainous, largely open habitats compared to Rail Option 7. Rail Option 7 traverses less open space and is within the outskirts of urbanized areas near Palmdale, which are of marginal quality habitat.

Variation A

Potential impacts to the Swainson's hawk may occur with implementation of the main alignment corridor corresponding to Variation A (a so-called Variation A Main alignment) and Variation A alignment. Swainson's hawk preferred foraging and nesting habitat type is known to occur within the limits of these variations; however, with the avoidance and minimization measures mentioned below, impacts to this species are expected to be low. Variation A Main alignment would require fewer acres of permanent and temporary impacts to Swainson's hawk preferred foraging and nesting habitat of open and semi-open country within deserts, grasslands, and prairies compared to Variation A alignment. Variation A alignment requires considerably more acres of temporary and permanent impacts to Swainson's hawk preferred foraging and nesting habitat of open and semi-open country within deserts, grasslands, and prairies compared to Variation A Main alignment; therefore, potential impacts to this species and its foraging and nesting habitat are slightly higher under Variation A alignment.

Variation B

The main alignment corridor corresponding to Variation B (a so called Variation B Main alignment), Variation B alignment, and Variation B1 alignment include areas that are potential habitat to the Swainson's hawk and, with implementation of these

variations, impacts to this species may occur; however, with the avoidance and minimization measures mentioned below, impacts to Swainson's hawk are expected to be low. Variation B Main alignment has the potential to have impacts on Swainson's hawk habitat to a lesser extent than Variation B1 alignment and Variation B alignment, because this option traverses less space than these variations and, at one location, bisects farmland, which is not considered suitable habitat. Variation B requires considerably more acres of temporary and permanent impacts to Swainson's hawk preferred foraging and nesting habitat of open and semi-open country within deserts, grasslands, and prairies compared to Variation B Main alignment and Variation B1 alignment due to its alignment encompassing a greater distance.

Variation D

Potential impacts to the Swainson's hawk may occur with implementation of the main alignment corridor corresponding to Variation D (a so-called Variation D Main alignment) and Variation D alignment. Swainson's hawk preferred foraging and nesting habitat type is known to occur within the limits of these variations; however, with the avoidance and minimization measures mentioned below, impacts to this species would be minor. Variation D Main alignment would require fewer acres of permanent and temporary impacts to foraging and nesting habitat of open and semi-open country within deserts, grasslands, and prairies compared to Variation D alignment due to traversing a shorter distance. Variation D requires considerably more acres of temporary and permanent impacts to Swainson's hawk preferred foraging and nesting habitat of open and semi-open country within deserts, grasslands, and prairies due to its alignment encompassing a greater distance. Much of this alignment includes undisturbed space, which is a higher quality habitat to the Swainson's hawk.

Variation E

Potential habitat for the Swainson's hawk occurs within the potential impact area of the main alignment corridor corresponding to Variation E (a so-called Variation E Main alignment), Variation E Highway Only alignment, and Variation E with Rail ExpressWest Connection alignment and, if implemented, these variations could have an impact to Swainson's hawk individuals. With the avoidance and minimization measures mentioned below, impacts to this species are to be considered low. Variation E Main alignment requires fewer acres for implementation compared to Variation E Highway Only alignment and Variation E with Rail ExpressWest Connection alignment; therefore, it would have less of an impact to Swainson's hawk foraging and nesting habitat if implemented. Variation E Highway Only alignment has the potential to have impact on Swainson's hawk foraging and nesting habitat to a greater extent than Variation E Main alignment, because this option traverses more open space in comparison; however, Variation E Highway Only alignment has less of an impact than Variation E with Rail ExpressWest Connection alignment.

Western Yellow-Billed Cuckoo

Implementation of the proposed project has the potential to impact this species during the construction phase of this project. Because this species has the ability to fly away,

direct impacts to individual adults are not expected during the construction phase of this project. Potential exists for impacts to nesting birds should they be present. This species is a riparian obligate species primarily within willow-cottonwood riparian forests, but other species occur in alder and box elder-dominated riparian habitats. Because only a few variations contain this type of habitat, others are eliminated from discussion. Variation E Main, Variation E Highway Only, and Variation E with Rail ExpressWest Connection are discussed below.

Because the Freeway/Expressway and Freeway/Tollway alternatives feature a highway only, the affected area is less in comparison to the alternatives with HSR, and therefore impacts to habitat for this species would occur to a lesser extent. The HSR alternatives increase the potential impact to this species proportional to the increase in scrubland community impacts. The HSR Alternative increases the potential impact to this species proportional to the increase in scrubland community impacts.

Variation E

Potential habitat for the western yellow-billed cuckoo occurs within the potential impact area of the main alignment corridor corresponding to Variation E (a so-called Variation E Main alignment) and, if implemented, this alignment could have an impact to western yellow-billed cuckoo individuals. With the avoidance and minimization measures mentioned below, impacts to this species are to be considered low. Variation E Main alignment requires fewer acres for implementation compared to Variation E Highway Only alignment and Variation E with Rail ExpressWest Connection alignment; therefore, it would have less of an impact to western yellow-billed cuckoo foraging and nesting habitat within the Mojave River if implemented. Variation E Highway Only alignment has the potential to have impact on western yellow-billed cuckoo foraging and nesting habitat within the Mojave River to a greater extent than Variation E Main alignment, because this option traverses more open space in comparison; however, Variation E Highway Only alignment has less of an impact than Variation E with Rail ExpressWest Connection alignment.

Southwestern Willow Flycatcher and Least Bell's Vireo

Focused surveys indicate that southwestern willow flycatcher and least Bell's vireo are not present within the reach of the main alignment. Spanning the reach of the Mojave River with a bridge along the main alignment would have low impacts to the habitat of these two species. Impacts to designated critical habitat for the southwestern willow flycatcher would be low and the continued existence of both species in this area along the Mojave River would not be jeopardized.

However, the reach of the Mojave River that intersects with Variation E of the Freeway/Expressway and Freeway/Tollway with HSR alternatives supports a greater area of suitable habitat for these species. Surveys have shown successful nesting of these species in this area as well. Therefore, under Variation E of the alternatives with HSR, impacts to these species have the potential to occur. Spanning the reach of the river at this location with a bridge would impact the quality of habitat to a point

where nesting of these species may not occur. Additionally, this area would be impacted by increased litter and vagrancy, as is typical of bridge structures over rivers. Therefore, there is potential for Variation E of the alternatives with HSR to have a substantial impact on nesting habitat for these species as well as on the critical habitat designated for the southwestern willow flycatcher.

Formal consultation with USFWS for southwestern willow flycatcher and least Bell's vireo is ongoing.

Mohave Ground Squirrel

Potential suitable habitat for this species is present within the BSA; however, none were observed during focused surveys and impacts are expected to be low.

Because the Freeway/Expressway and Freeway/Tollway alternatives feature a highway only, the affected area is less in comparison to the alternatives with HSR, and therefore impacts to habitat for this species would occur to a lesser extent. The HSR alternatives increase the potential impact to this species proportional to the increase in scrubland community impacts. In addition to this, the HSR spur in Victorville that departs from the highway alignment would be an additional impact for this alternative, affecting approximately 85 acres of scrubland habitat, and thus result in increased impacts to habitat for this species.

Main Alignment/Common Areas

Within the BSA of the main alignment common areas, impacts to Mohave ground squirrel have the potential to occur. Mohave ground squirrel habitat occurs throughout the proposed project corridor within brushlands with little groundcover. Impacts to this species are expected to be low due to clearing and grubbing activities associated with implementation of the proposed project. With incorporation of the minimization measures listed below, the impacts to individuals of this species are expected to be low.

Rail Options 1 and 7

Rail Options 1 and 7 include areas that are potential habitat to the Mohave ground squirrel, and with implementation of these options, impacts to the Mohave ground squirrel may occur; however, with the avoidance and minimization measures mentioned below, impacts to Mohave ground squirrel are expected to be low. Rail Option 1 has the potential to impact Mohave ground squirrel habitat to a greater extent than Rail Option 7, because this option traverses more open space than Rail Option 7; however, this option runs through the outskirts of urbanized areas within Palmdale, which is considered to be marginal quality habitat. Rail Option 1 also requires more acreage of permanent and temporary impacts to the Mohave ground squirrel's preferred habitat of brushlands with little groundcover compared to Rail Option 7.

Variation A

Potential impacts to the Mohave ground squirrel may occur with implementation of the main alignment corridor corresponding to Variation A (a so-called Variation A Main alignment) and Variation A alignment. The Mohave ground squirrel's preferred habitat type is known to occur within the limits of these variations; however, with the avoidance and minimization measures mentioned below, impacts to this species are expected to be low. Variation A Main alignment would require fewer acres of permanent and temporary impacts to Joshua tree woodland, pinyon-juniper woodland, mixed and chamise-redshank chaparral, and sagebrush compared to the Variation A alignment, because it traverses less distance along existing roadways. Variation A alignment requires considerably more acres of temporary and permanent impacts to brushlands with little groundcover compared to Variation A Main alignment; therefore, potential impacts to Mohave ground squirrel and its habitat is slightly higher with implementation of this variation.

Variation B

The main alignment corridor corresponding to Variation B (a so-called Variation B Main alignment), Variation B alignment, and Variation B1 alignment include areas that are potential habitat to the Mohave ground squirrel, and with implementation of these variations, impacts to the Mohave ground squirrel may occur; however, with the avoidance and minimization measures mentioned below, impacts to Mohave ground squirrel are expected to be low. Variation B Main alignment has the potential to impact Mohave ground squirrel habitat to a lesser extent than Variation B alignment and Variation B1 alignment, because this option traverses less open space than these variations and, at one location, bisects farmland rather than suitable habitat. Variation B requires considerably more acres of temporary and permanent impacts to brushlands with little groundcover compared to Variation B Main alignment and Variation B1 alignment due to its alignment encompassing a greater distance. Variation B1 alignment would require fewer acres of permanent and temporary impacts to brushlands with little groundcover compared to Variation B alignment.

Variation D

Potential impacts to the Mohave ground squirrel may occur with implementation of the main alignment corridor corresponding to Variation D Main alignment and Variation D alignment. The Mohave ground squirrel's preferred habitat type is known to occur within the limits of these variations; however, with the avoidance and minimization measures mentioned below, impacts to this species would be minor. Variation D Main alignment would require fewer acres of permanent and temporary impacts to brushlands with little groundcover compared to Variation D alignment due to the shorter distance along an existing roadway. Variation D requires considerably more acres of temporary and permanent impacts to brushlands with little groundcover compared to Variation D Main alignment due to its alignment encompassing a greater distance. Much of this alignment includes open space, which is one of the Mohave ground squirrel's preferred habitats.

Variation E

Potential habitat for the Mohave ground squirrel occurs within the potential impact area of the main alignment corridor corresponding to Variation E (a so-called Variation E Main alignment), Variation E Highway Only alignment, and Variation E with Rail ExpressWest Connection alignment and, if implemented, these variations could have an impact to Mohave ground squirrel individuals. With the avoidance and minimization measures mentioned below, impacts to this species are to be considered low. Variation E Main alignment requires fewer acres for implementation compared to Variation E Highway Only alignment and Variation E with Rail ExpressWest Connection alignment; therefore, it would have less of an impact to Mohave ground squirrel habitat if implemented. Variation E Highway Only alignment has the potential to impact Mohave ground squirrel habitat to a greater extent than Variation E Main alignment, because this option traverses more open space in comparison; however, Variation E Highway Only alignment has less of an impact than Variation E with Rail ExpressWest Connection alignment.

Desert Tortoise

This species is likely to occur within the BSA in natural shrub communities. Due to the presence of suitable habitat, and the observance of this species during focused surveys, impacts have the potential to occur. Formal consultation with USFWS for desert tortoise is ongoing.

Because the Freeway/Expressway and Freeway/Tollway alternatives feature a highway only, the affected area is less in comparison to the alternatives with HSR, and therefore impacts to habitat for this species would occur to a lesser extent. The HSR alternatives increase the potential impact to this species proportional to the increase in scrubland community impacts. In addition to this, the HSR spur in Victorville that departs from the highway alignment would be an additional impact for this alternative, affecting approximately 85 acres of scrubland habitat, and thus result in increased impacts to habitat for this species.

Main Alignment/Common Areas

Within the BSA of the main alignment common areas, impacts to desert tortoise have the potential to occur. Desert tortoise habitat occurs throughout the proposed project corridor within creosote bush scrub, saltbush scrub, and Joshua tree woodland. Impacts to this species are expected to occur due to clearing and grubbing activities associated with implementation of the proposed project. With incorporation of the minimization measures listed below, the impacts to individuals of this species is expected to be low.

Rail Options 1 and 7

Rail Options 1 and 7 include areas that are potential habitat to the desert tortoise, and with implementation of this option, impacts to the desert tortoise may occur; however, with the avoidance and minimization measures mentioned below, impacts to desert tortoise are expected to be low. Rail Option 1 has the potential to impact desert tortoise habitat to a greater extent than Rail Option 7, because this option

traverses more open space than Rail Option 7; however, Rail Option 1 runs through the outskirts of urbanized areas within Palmdale, which is considered to be low quality habitat. Rail Option 1 also requires more acreage of permanent and temporary impacts to the desert tortoise's preferred habitat of creosote bush scrub, saltbush scrub, and Joshua tree woodland compared to Rail Option 7.

Variation A

Potential impacts to the desert tortoise may occur with implementation of the main alignment corridor corresponding to Variation A (a so-called Variation A Main alignment) and Variation A alignment. The desert tortoise's preferred habitat type is known to occur within the limits of these variations; however, with the avoidance and minimization measures mentioned below, impacts to this species are expected to be low. Variation A Main alignment would require fewer acres of permanent and temporary impacts to creosote bush scrub, saltbush scrub, and Joshua tree woodland compared to Variation A alignment, because it traverses less distance along existing roadways; therefore, potential impacts to this species and its habitat are slightly higher with implementation of Variation A alignment.

Variation B

The main alignment corridor corresponding to Variation B (a so-called Variation B Main alignment), Variation B alignment, and Variation B1 alignment include areas that are potential habitat to the desert tortoise, and with implementation of these variations, impacts to the desert tortoise may occur; however, with the avoidance and minimization measures mentioned below, impacts to desert tortoise are expected to be low. Variation B Main alignment has the potential to impact desert tortoise habitat to a lesser extent than Variation B alignment and Variation B1 alignment, because this option traverses less open space than these variations and, at one location, bisects farmland rather than suitable habitat. Variation B requires considerably more acres of temporary and permanent impacts to creosote bush scrub, saltbush scrub, and Joshua tree woodland compared to Variation B Main alignment and Variation B1 alignment due to its alignment encompassing a greater distance. Variation B1 alignment would require fewer acres of permanent and temporary impacts to brushlands with little groundcover compared to Variation B.

Variation D

Potential impacts to the desert tortoise may occur with implementation of the main alignment corridor corresponding to Variation D (a so-called Variation D Main alignment) and Variation D. The desert tortoise's preferred habitat type is known to occur within the limits of these variations; however, with the avoidance and minimization measures mentioned below, impacts to this species would be minor. Variation D Main alignment would require fewer acres of permanent and temporary impacts to creosote bush scrub, saltbush scrub, and Joshua tree woodland compared to Variation D alignment due to the shorter distance along an existing roadway. Variation D requires considerably more acres of temporary and permanent impacts to creosote bush scrub, saltbush scrub, and Joshua tree woodland compared to Variation

D Main alignment due to its alignment encompassing a greater distance. Much of this alignment includes open space, which is one of the desert tortoise's preferred habitats.

Variation E

Potential habitat for the desert tortoise occurs within the potential impact area of the main alignment corridor corresponding to Variation E (a so-called Variation E Main alignment), Variation E Highway Only alignment, and Variation E with Rail ExpressWest Connection alignment and, if implemented, these variations could have an impact to desert tortoise individuals. With the avoidance and minimization measures mentioned below, impacts to this species would be low. Variation E Main alignment requires fewer acres for implementation compared to Variation E Highway Only alignment and Variation E with Rail ExpressWest Connection alignment; therefore, it would have less of an impact to desert tortoise habitat if implemented. Variation E Highway Only alignment has the potential to impact desert tortoise habitat to a greater extent than Variation E Main alignment, because this option traverses more open space in comparison; however, Variation E Highway Only alignment has less of an impact than Variation E with Rail ExpressWest Connection. Variation E with Rail ExpressWest Connection would have the greatest impact compared to the other two Variation E alignments due to the alignment encompassing a larger area with more open space.

Avoidance, Minimization, and/or Mitigation Measures

Golden Eagle, Swainson's Hawk, and Western Yellow-Billed Cuckoo

The following avoidance measures will be implemented to avoid impacts on golden eagle, Swainson's hawk, and western yellow-billed cuckoo:

BTE-1: A qualified biologist will recommend approved limits of disturbance, including construction staging areas and access routes, to minimize impacts to adjacent habitat. To ensure the avoidance of impacts to migratory birds, the following measures will be implemented pursuant to the Migratory Bird Treaty Act (MBTA). Clearing and grubbing of vegetation will be conducted outside of bird-nesting season. If clearing and grubbing of vegetation needs to be conducting during bird-nesting season (February 15th to September 1st), a qualified biologist will monitor construction during clearing, grading and/or trenching activities for any occurrence of the birds nesting. In the event birds are observed nesting, construction should stop until it is determined that the fledglings have left their nests. If this is not possible, coordination with the a qualified biologist should take place in order to minimize the risk of violating the MBTA, and the following minimization measure should be put in place: an environmentally sensitive area (ESA) fencing buffer of 150 feet for songbirds and 500 feet for raptors, which must be maintained during all phases of construction.

BTE-2: A biological monitor shall be present a minimum of 1 week prior to and during clearing and grubbing activities in order to walk the

proposed areas to be cleared and grubbed and disperse animals that have the ability to flee.

Southwestern Willow Flycatcher and Least Bell's Vireo

The main alignment alternative would completely avoid and minimize impacts to these species. BTE-1 and BTE-2, described above, will be implemented if Variation E is selected to avoid impacts on southwestern willow flycatcher and least Bell's vireo.

Mohave Ground Squirrel

The following avoidance, minimization, and/or mitigation measures will be implemented to avoid impacts on Mohave ground squirrel:

BTE-3: As identified in the Biological Opinion/Incidental Take Permit, a qualified biologist shall survey for, trap/capture species present, and relocate to a designated area approved by USFWS or CDFW.

BTE-4: Replanting appropriate native habitat in temporarily impacted areas. Additionally, a Habitat Mitigation Monitoring Plan (HMMP) will be established.

BTE-5: Like-habitat conducive to this species habitat requirements will be purchased and preserved in perpetuity.

BTE-6: The boundaries of right-of-way (ROW) will be fenced off with approved materials for the following reasons: (1) serve as a guide for wildlife to utilize the appropriate crossings meanwhile reducing impacts to wildlife/vehicle collisions, and (2) reduce vandalism to restoration sites.

Desert Tortoise

BTE-3 described above will also be implemented to avoid impacts to desert tortoise. The following additional avoidance, minimization, and/or mitigation measures will be implemented to avoid impacts on desert tortoise:

BTE-7: Temporary desert tortoise fencing will be installed on all portions of the project site accessible to desert tortoise. Locations of this fencing will be identified on plans during the design phase of the project.

BTE-8: Focused surveys will be conducted for desert tortoise and their burrows within the fenced area after the fence is installed and prior to ground-disturbing activities. A qualified biologist shall survey for, trap/capture species present, and relocate to a designated area approved by USFWS or CDFW.

BTE-9: Habitat for this species will be re-established within temporary impact zones between the highway and edge of ROW. This area will be replanted with native plants similar to the natural surrounding area and

the soil compacted only to a point necessary for construction purposes. This will allow any natural occurring individuals within the immediate vicinity to repopulate the temporary impact zone.

3.3.6 Invasive Species

Regulatory Setting

On February 3, 1999, President William J. Clinton signed Executive Order (EO) 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The EO defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health.” Federal Highway Administration (FHWA) guidance issued August 10, 1999, directs the use of the State’s invasive species list, maintained by the California Invasive Species Council to define the invasive plants that must be considered as part of the National Environmental Policy Act (NEPA) analysis for a proposed project.

Affected Environment

Information for this section came from the *Natural Environment Study* (August 2014) for the project.

Twelve (12) exotic plants occurring on the California Exotic Plant Council’s (Cal-IPC) Invasive Plant Inventory were identified throughout the project area. The invasive species identified in the project area with a high rating include giant reed (*Arundo donax*), Sahara mustard (*Brassica tournefortii*), red brome (*Bromus madritensis* ssp. *rubens.*), cheatgrass (*Bromus tectorum*) and Mediterranean tamarisk (*Tamarix ramosissima*). Moderate rated invasive species include ripgut brome (*Bromus diandrus*), shortpod mustard (*Hirschfeldia incana*), Bermuda grass (*Cynodon dactylon*), and foxtail barley (*Hordeum murium*). Limited rated invasive species include redstem stork’s bill (*Erodium cicutarium*), Russian thistle (*Salsola tragus*), and common Mediterranean grass (*Schismus barbatus*).

Environmental Consequences

No Build Alternative

There would be no change from existing conditions with the No Build Alternative.

Common to All Build Alternatives

The project has the potential to spread invasive species to adjacent native habitats in the BSA by the entering and exiting of construction equipment contaminated by invasive species, the inclusion of invasive species in seed mixtures and mulch, and the improper removal and disposal of invasive species so that seed is spread along the highway. All revegetated areas will avoid the use of species listed on Cal-IPC’s California Invasive Plant Inventory.

Avoidance, Minimization, and/or Mitigation Measures

In compliance with EO 13112, a weed abatement program will be developed to minimize the importation of nonnative plant material during and after construction. Eradication strategies would be employed should an invasion occur. At a minimum, this program will include the following measures:

- BIN-1:** Inspect and clean construction equipment at the beginning and end of each day and prior to transporting equipment from one project location to another during construction.
- BIN-2:** Minimize soil and vegetation disturbance to the greatest extent feasible during construction.
- BIN-3:** Ensure that all active portions of the construction site are watered a minimum of twice daily or more often when needed due to dry or windy conditions to prevent erosion due to wind to minimize seed dispersal during construction.
- BIN-4:** Ensure that all material stockpiled is sufficiently watered or covered to prevent erosion due to wind to minimize seed dispersal during construction.
- BIN-5:** Obtain soil/gravel/rock from weed-free sources during construction.
- BIN-6:** Use only certified weed-free straw, mulch, and/or fiber rolls for erosion control.
- BIN-7:** Revegetate affected areas adjacent to native vegetation with plant species approved by the District Biologist that are native to the vicinity after construction.
- BIN-8:** Avoid the use of species listed on Cal-IPC's California Invasive Plant Inventory for all revegetated areas after construction.
- BIN-9:** Monitor erosion control and revegetation sites for 2 to 3 years after construction to detect and control the introduction/invasion of nonnative species.
- BIN-10:** Outline eradication procedures (e.g., spraying and/or hand weeding) should an infestation occur; the use of herbicides will be prohibited within and adjacent to native vegetation, except as specifically authorized and monitored by the District Biologist.