APPENDIX 3.7-B

Special-Status Plant and Wildlife Species Potentially Affected by the HST Alternatives

This appendix provides the methodologies and identifies the range of impacts for special-status species. It is divided into six attachments:

- Attachment 3.7-B1 provides an illustrated methodology for establishing buffer zones for assessing direct permanent versus indirect permanent effects during the construction period.
- Attachment 3.7-B2 provides the range of impacts for special-status plant species affected during the construction period.
- Attachment 3.7-B3 provides the range of impacts for special-status wildlife species affected during the construction period.
- Attachment 3.7-B4 provides the range of impacts for special-status plant species affected during the project period.
- Attachment 3.7-B5 provides the range of impacts for special-status wildlife species affected during the project period.
- Attachment 3.7-B6 provides the methodology for deriving the biological resources impact acreages.

ATTACHMENT 3-7-B1

Methodology for Impact Calculations for Endangered Species Act-Listed Species

1.0 Methodology

To address regulatory requirements for identifying potential effects on special status species effectively, the *California High-Speed Train Central Valley Biological Resources and Wetlands Survey Plan* (Authority and FRA 2010) established three biological resource study areas for the following types of resources:

- Habitat Study Area – Construction footprint plus a 1,000-foot-radius buffer around project elements to evaluate direct permanent (construction footprint) and indirect permanent (buffer zone) effects on identified suitable habitat for San Joaquin Valley kit fox.
- Wetland Study Area – Construction footprint plus a 250-foot-radius buffer around project elements to evaluate direct and indirect effects on special-status wildlife that rely on vernal pools, seasonal wetlands, and open waters. Direct permanent effects to California tiger salamander and vernal pool branchiopods are within the 100-foot construction footprint and indirect permanent effects are within the 250-foot-radius buffer around project elements. This approach conforms with 404 Waters of the U.S. impact evaluation(s) assessment methodology.
- Special-Status Plant Study Area – Construction footprint to evaluate direct permanent effects plus a 100-foot-radius buffer around project elements to evaluate indirect permanent effects on special-status plant species. The 100-foot buffer is also utilized to assess impacts to Valley elderberry longhorn beetle.

An illustrated methodology for establishing buffer zones for assessing direct permanent versus indirect permanent effects can be found within Figures 3.7B1-1 through 3.7B1-4. Habitats identified as suitable for a special-status species are assumed to be occupied by the species. Total effect calculations to species utilize a sum of identified suitable habitat acres.

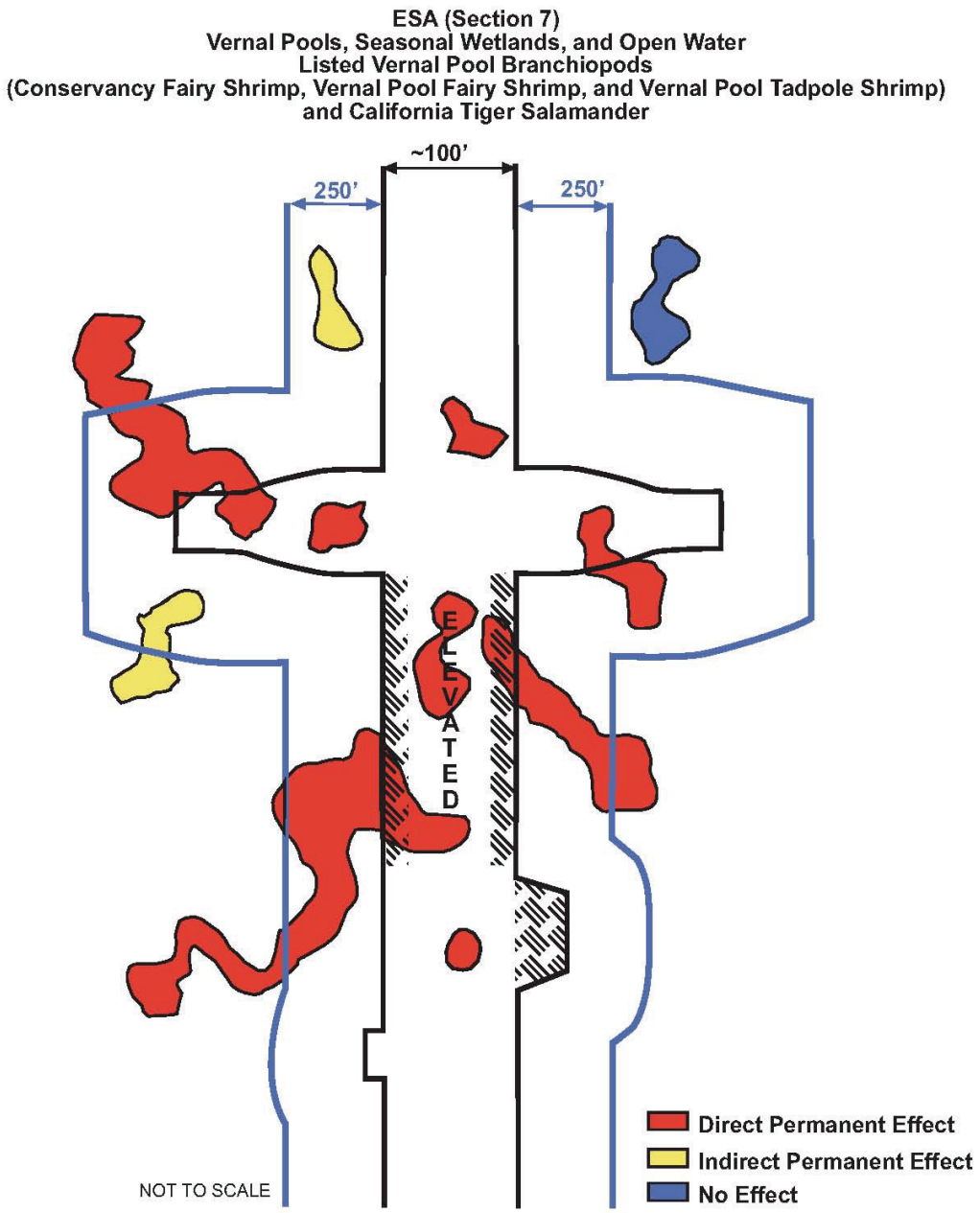

Figure 3-7-B1-1
Vernal Pools, Seasonal Wetlands, and Open Water Listed Vernal Pool Branchiopods

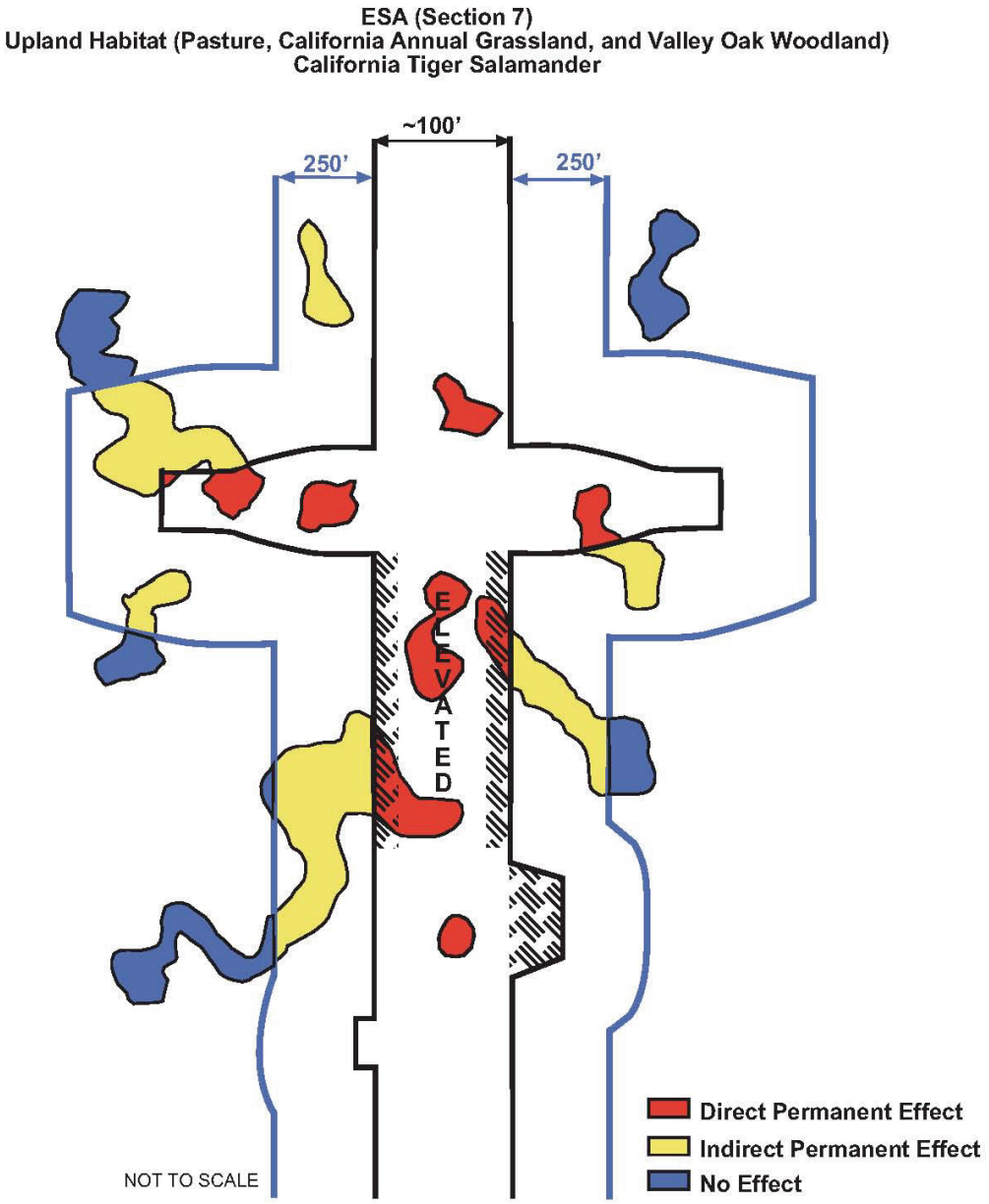

Figure 3.7-B1-2
Upland Habitat

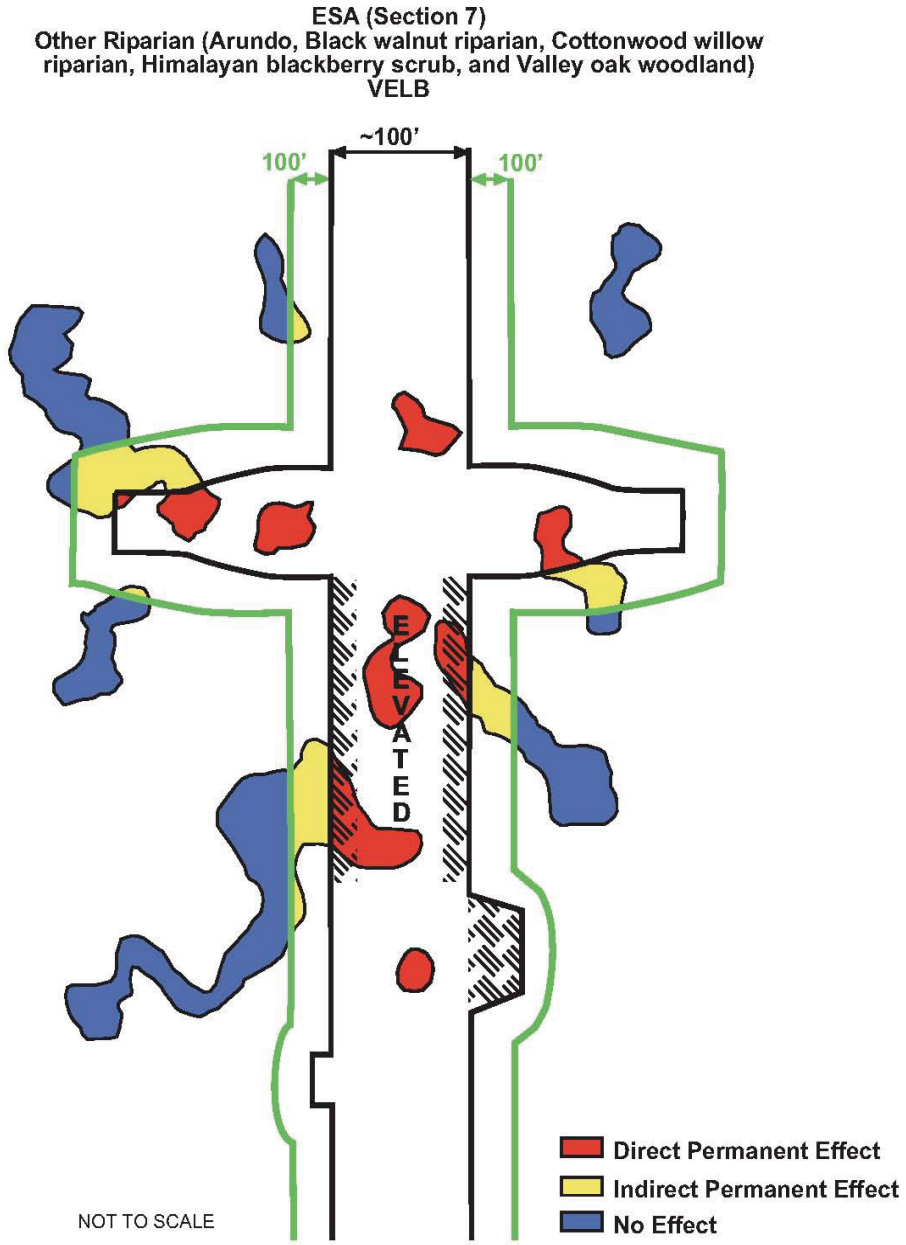

Figure 3.7-B1-3
Other Riparian

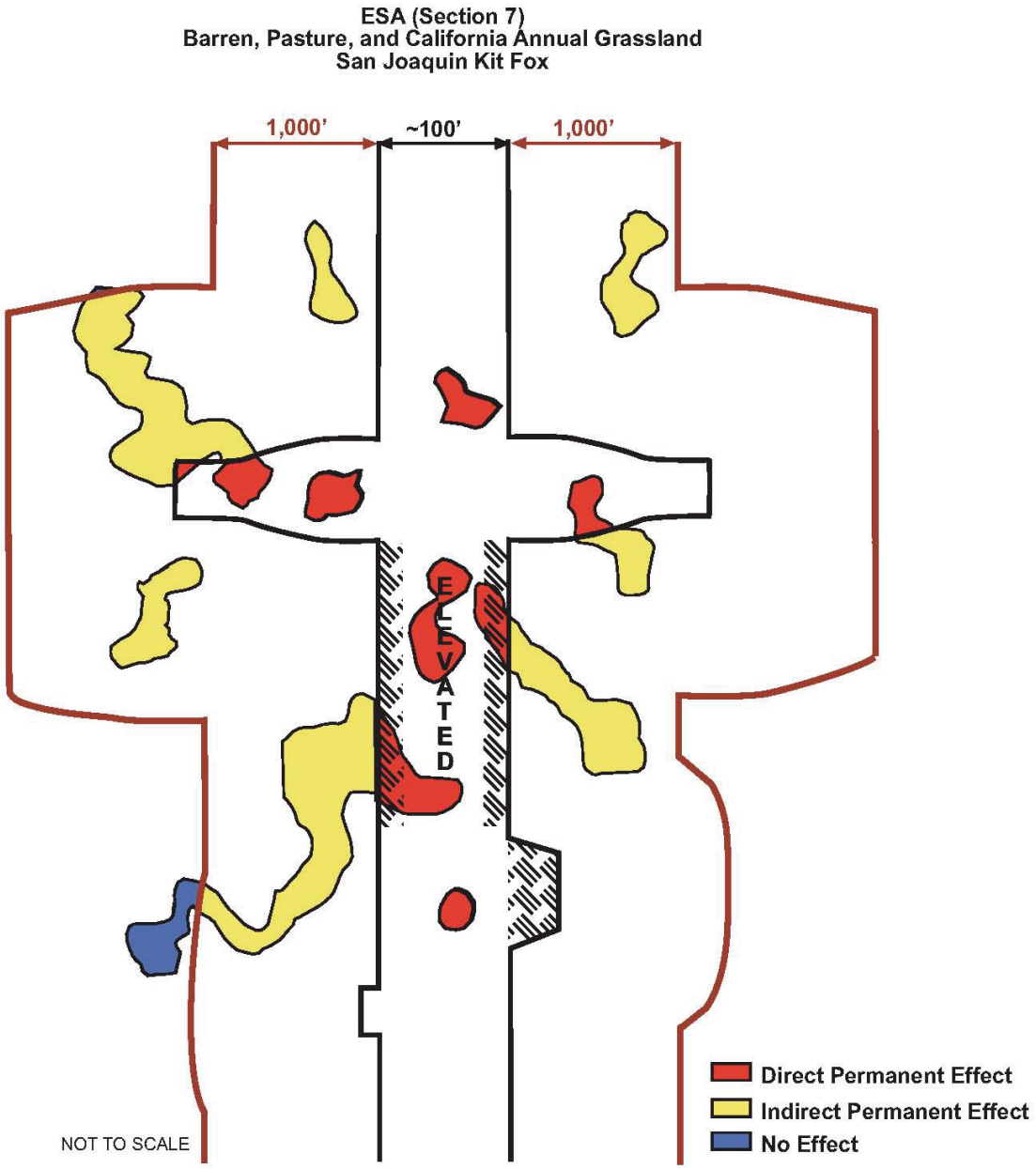

Figure 3-7-B1-4
Barren, Pasture, and California Annual Grassland

ATTACHMENT 2

Special-Status Plant Species Potentially Affected During the Construction Period

Table 3.7-B2-1
Special-Status Plant Species Potentially Affected During the Construction Period of the UPRR/SR 99 and Downtown Fresno Station Alternatives (acres[a])

	Impacts by Project Combination			Fresno HST Station Alternatives		
	UPRR/SR 99 with West Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
Sanford's arrowhead	11.63	13.11	12.33	--	--	11.63 to 13.33
Delta button-celery	10.51	12.01	11.66	--	--	10.51 to 12.01
spiny-sepaled button-celery	10.37	10.71	10.89	--	--	10.37 to 10.89
Hoover's calycadenia	46.81	48.47	54.43	7.65	0.08	46.89 to 62.08
Coulter's goldfields	10.51	12.01	11.68	--	--	10.51 to 12.01
Hartweg's golden sunburst	3.69	3.69	3.93	--	--	3.69 to 3.93
Wright's trichocoronis	10.95	12.36	11.68	--	--	10.95 to 12.36
Heckard's peppergrass	4.37	4.36	4.69	--	--	4.36 to 4.69
caper-fruited tropidocarpum	3.69	3.69	3.93	--	--	3.69 to 3.93
dwarf downingia	7.12	7.37	6.96	--	--	6.96 to 7.37
heartscale	5.61	5.60	5.93	--	--	5.60 to 5.93
brittlescale	10.37	10.71	10.89	--	--	10.37 to 10.89
San Joaquin spearscale	10.37	10.71	10.89	--	--	10.37 to 10.89
lesser saltscale	10.37	10.71	10.89	--	--	10.37 to 10.89
vernal pool smallscale	10.37	10.71	10.89	--	--	10.37 to 10.89

	Impacts by Project Combination			Fresno HST Station Alternatives		
	UPRR/SR 99 with West Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
subtle orache	3.69	3.69	3.93	--	--	3.69 to 3.93
Lost Hills crownscale	10.37	10.71	10.89	--	--	10.37 to 10.89
Hoover's spurge	10.37	10.71	10.89	--	--	10.37 to 10.89
alkali milk-vetch	10.37	10.71	10.89	--	--	10.37 to 10.89
Merced phacelia	3.69	3.69	3.93	--	--	3.69 to 3.93
Keck's checkerbloom	15.17	16.54	16.45	--	--	15.17 to 16.54
beaked clarkia	4.93	4.93	5.17	--	--	4.93 to 5.17
Henderson's bent grass	7.12	7.37	6.96	--	--	6.96 to 7.37
California satintail	3.83	4.99	4.72	--	--	3.83 to 4.99
Colusa grass	7.12	7.37	6.96	--	--	6.96 to 7.37
San Joaquin Valley Orcutt grass	7.12	7.37	6.96	--	--	6.96 to 7.37
hairy Orcutt grass	7.12	7.37	6.96	--	--	6.96 to 7.37
Greene's tuctoria	7.12	7.37	6.96	--	--	6.96 to 7.37
pincushion navarretia	7.12	7.37	6.96	--	--	6.96 to 7.37
shining navarretia	10.81	11.06	10.90	--	--	10.81 to 11.06
prostrate vernal pool navarretia	10.81	11.06	10.90	--	--	10.81 to 11.06
recurved larkspur	4.93	4.94	5.38	--	--	4.94 to 5.38

	Impacts by Project Combination			Fresno HST Station Alternatives		
	UPRR/SR 99 with West Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
little mousetail	7.12	7.37	6.96	--	--	6.96 to 7.37
succulent owl's-clover	7.12	7.37	6.96	--	--	6.96 to 7.37
palmate-bracted bird's-beak	3.69	3.69	3.93	--	--	3.69 to 3.93
Boggs Lake hedge-hyssop	7.12	7.37	6.96	--	--	6.96 to 7.37

[a] All non-zero values are rounded to the nearest one-hundredth acre.

Table 3.7-B2-2
Special-Status Plant Species Potentially Affected During the Construction Period of the BNSF and Downtown Fresno Station Alternatives (acres[a])

	Impacts by Project Combination		Le Grand Design Options				Fresno HST Station Alternatives		Impact of Components Combined		
	BNSF North–South Alignment with Ave 24 Wye	BNSF North–South Alignment with Ave 21 Wye	Mission Ave	Mission Ave East of Le Grand	Mariposa Way	Mariposa Way East of Le Grand	Mariposa Street Station	Kern Street Station	BNSF Alternative with Ave 24 Wye	BNSF Alternative with Ave 21 Wye	Total Range of Impacts
Sanford's arrowhead	8.11	6.45	4.17	4.47	6.39	5.49	--	--	12.28 to 14.49	10.62 to 12.84	10.62 to 14.49
Delta button-celery	8.26	7.44	3.43	3.69	6.35	5.66	--	--	11.69 to 14.61	10.87 to 13.79	10.87 to 14.61
spiny-sepaled button-celery	10.05	9.71	19.81	19.94	25.67	31.10	--	--	29.86 to 41.16	29.52 to 40.81	29.52 to 41.16
Hoover's calycadenia	43.06	42.45	20.05	23.03	40.52	29.52	7.65	0.08	63.19 to 91.23	62.57 to 90.61	62.57 to 91.23
Coulter's goldfields	8.26	7.44	3.43	3.69	6.35	5.66	--	--	11.69 to 14.61	10.87 to 13.79	10.87 to 14.61
Hartweg's golden sunburst	4.34	4.29	16.48	16.47	20.16	26.48	--	--	20.82 to 30.83	20.76 to 30.77	20.76 to 30.83
Wright's trichocoronis	8.26	7.45	3.43	3.69	6.50	5.81	--	--	11.69 to 14.76	10.88 to 13.95	10.88 to 14.76
Heckard's peppergrass	4.89	4.86	19.60	19.71	25.03	30.23	--	--	24.49 to 35.13	24.46 to 35.09	24.46 to 35.13
caper-fruited tropidocarpum	4.34	4.29	16.48	16.47	20.16	26.48	--	--	20.82 to 30.83	20.76 to 30.77	20.76 to 30.83
dwarf downingia	5.71	5.43	3.33	3.47	5.66	4.77	--	--	9.04 to 11.36	8.76 to 11.08	8.76 to 11.08
heartscale	6.14	6.10	19.60	19.71	25.03	30.23	--	--	25.74 to 36.37	25.70 to 36.33	25.70 to 36.37
brittlescale	10.05	9.71	19.81	19.94	25.67	31.10	--	--	29.86 to 41.16	29.52 to 40.81	29.52 to 41.16
San Joaquin spearscale	10.05	9.71	19.81	19.94	25.67	31.10	--	--	29.86 to 41.16	29.52 to 40.81	29.52 to 41.16
lesser saltscale	10.05	9.71	19.81	19.94	25.67	31.10	--	--	29.86 to 41.16	29.52 to 40.81	29.52 to 41.16
vernal pool smallscale	10.05	9.71	19.81	19.94	25.67	31.10	--	--	29.86 to 41.16	29.52 to 40.81	29.52 to 41.16
subtle orache	4.34	4.29	16.48	16.47	20.16	26.48	--	--	20.82 to 30.83	20.76 to 30.77	20.76 to 30.77
Lost Hills crownscale	10.05	9.71	19.81	19.94	25.67	31.10	--	--	29.82 to 41.16	29.52 to 40.81	29.52 to 41.16
Hoover's spurge	10.05	9.71	19.81	19.94	25.67	31.10	--	--	29.82 to 41.16	29.52 to 40.81	29.52 to 41.16
alkali milk-vetch	10.05	9.71	19.81	19.94	25.67	31.10	--	--	29.82 to 41.16	29. 52 to 40.81	29.52 to 41.16
Merced phacelia	4.34	4.29	16.48	16.47	20.16	26.48	--	--	20.82 to 30.83	20.76 to 30.77	20.76 to 30.83
Keck's checkerbloom	13.40	12.59	19.91	20.16	26.28	31.91	--	--	33.31 to 45.31	32.49 to 44.49	32.49 to 45.31
beaked clarkia	5.59	5.53	16.48	16.47	20.16	26.48	--	--	22.06 to 32.07	22.00 to 32.02	22.00 to 32.07
Henderson's bent grass	5.71	5.43	3.33	3.47	5.66	4.77	--	--	9.04 to 11.36	8.76 to 11.08	8.76 to 11.36
California satintail	2.55	2.02	0.10	0.23	0.84	1.04	--	--	2.65 to 3.59	2.12 to 3.07	2.12 to 3.59
Colusa grass	5.71	5.43	3.33	3.47	5.66	4.77	--	--	9.04 to 11.36	8.76 to 11.08	8.76 to 11.36

	Impacts by Project Combination		Le Grand Design Options				Fresno HST Station Alternatives		Impact of Components Combined		
	BNSF North–South Alignment with Ave 24 Wye	BNSF North–South Alignment with Ave 21 Wye	Mission Ave	Mission Ave East of Le Grand	Mariposa Way	Mariposa Way East of Le Grand	Mariposa Street Station	Kern Street Station	BNSF Alternative with Ave 24 Wye	BNSF Alternative with Ave 21 Wye	Total Range of Impacts
San Joaquin Valley Orcutt grass	5.71	5.43	3.33	3.47	5.66	4.77	--	--	9.04 to 11.36	8.76 to 11.08	8.76 to 11.36
hairy Orcutt grass	5.71	5.43	3.33	3.47	5.66	4.77	--	--	9.04 to 11.36	8.76 to 11.08	8.76 to 11.36
Greene's tuctoria	5.71	5.43	3.33	3.47	5.66	4.77	--	--	9.04 to 11.36	8.76 to 11.08	8.76 to 11.36
pincushion navarretia	5.71	5.43	3.33	3.47	5.66	4.77	--	--	9.04 to 11.36	8.76 to 11.08	8.76 to 11.36
shining navarretia	10.05	9.72	19.81	19.94	25.82	31.25	--	--	29.86 to 41.30	29.53 to 40.97	29.53 to 41.30
prostrate vernal pool navarretia	10.05	9.72	19.81	19.94	25.82	31.25	--	--	29.86 to 41.30	29.53 to 40.97	29.53 to 41.30
recurved larkspur	4.04	5.28	16.48	17.02	20.16	26.63	--	--	20.52 to 30.67	21.76 to 31.91	20.52 to 31.91
little mousetail	5.71	5.43	3.33	3.47	5.66	4.77	--	--	9.04 to 11.36	8.76 to 11.08	8.76 to 11.36
succulent owl's-clover	5.71	5.43	3.33	3.47	5.66	4.77	--	--	9.04 to 11.36	8.76 to 11.08	8.76 to 11.36
palmate-bracted bird's-beak	3.68	4.96	16.48	16.47	20.16	26.48	--	--	20.15 to 30.16	21.43 to 31.44	20.15 to 31.44
Boggs Lake hedge-hyssop	5.71	5.43	3.33	3.47	5.66	4.77	--	--	9.04 to 11.36	8.76 to 11.08	8.76 to 11.36

[a] All non-zero values are rounded to the nearest one-hundredth acre.

Table 3.7-B2-3
Special-Status Plant Species Potentially Affected During the Construction Period of the Hybrid and Downtown Fresno Station Alternatives (acres[a])

	Impacts by Project Combination		Fresno HST Station Alternatives		
	Hybrid North-South Alignment with Ave 24 Wye	Hybrid North-South Alignment with Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
Sanford's arrowhead	10.74	10.57	--	--	10.57 to 10.74
Delta button-celery	10.01	10.38	--	--	10.01 to 10.38
spiny-sepaled button-celery	10.01	10.03	--	--	10.01 to 10.03
Hoover's calycadenia	33.25	43.02	7.65	0.08	33.33 to 50.67
Coulter's goldfields	10.01	10.38	--	--	10.01 to 10.38
Hartweg's golden sunburst	3.69	3.93	--	--	3.69 to 3.93
Wright's trichocoronis	10.46	10.40	--	--	10.40 to 10.46
Heckard's peppergrass	4.09	4.10	--	--	4.09 to 4.10
caper-fruited tropidocarpum	3.69	3.93	--	--	3.69 to 3.93
dwarf downingia	6.76	6.11	--	--	6.11 to 6.76
heartscale	5.33	5.34	--	--	5.33 to 5.34
brittlescale	10.01	10.03	--	--	10.01 to 10.03
San Joaquin spearscale	10.01	10.03	--	--	10.01 to 10.03
lesser saltscale	10.01	10.03	--	--	10.01 to 10.03
vernal pool smallscale	10.01	10.03	--	--	10.01 to 10.03
subtle orache	3.69	3.93	--	--	3.69 to 3.93
Lost Hills crownscale	10.01	10.03	--	--	10.01 to 10.03
Hoover's spurge	10.01	10.03	--	--	10.01 to 10.03
alkali milk-vetch	10.01	10.03	--	--	10.01 to 10.03
Merced phacelia	3.69	3.93	--	--	3.69 to 3.93
Keck's checkerbloom	14.88	15.35	--	--	14.88 to 15.35
beaked clarkia	4.93	5.17	--	--	4.93 to 5.17
Henderson's bent grass	6.76	6.11	--	--	6.11 to 6.76
California satintail	3.70	4.29	--	--	3.70 to 4.29

	Impacts by Project Combination		Fresno HST Station Alternatives		
	Hybrid North-South Alignment with Ave 24 Wye	Hybrid North-South Alignment with Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
Colusa grass	6.76	6.11	--	--	6.11 to 6.76
San Joaquin Valley Orcutt grass	6.76	6.11	--	--	6.11 to 6.76
hairy Orcutt grass	6.76	6.11	--	--	6.11 to 6.76
Greene's tuctoria	6.76	6.11	--	--	6.11 to 6.76
pincushion navarretia	6.76	6.11	--	--	6.11 to 6.76
shining navarretia	10.45	10.04	--	--	10.04 to 10.45
prostrate vernal pool navarretia	10.45	10.04	--	--	10.04 to 10.45
recurved larkspur	4.93	5.38	--	--	4.93 to 5.38
little mousetail	6.76	6.11	--	--	6.11 to 6.76
succulent owl's-clover	6.76	6.11	--	--	6.11 to 6.76
palmate-bracted bird's-beak	3.69	3.93	--	--	3.69 to 3.93
Boggs Lake hedge-hyssop	6.76	6.11	--	--	6.11 to 6.76

[a] All non-zero values are rounded to the nearest one-hundredth acre.

Table 3.7-B2-4
Special-Status Plant Species Potentially Affected During the Construction Period of the HMF Alternatives (acres[a])

	Castle Commerce Center	Harris-DeJager	Fagundes	Gordon-Shaw	Kojima Development
Sanford's arrowhead	0.84	--	0.05	0.15	0.37
Delta button-celery	0.24	--	--	0.15	0.54
spiny-sepaled button-celery	0.17	--	--	0.15	0.72
Hoover's calycadenia	8.26	0.67	--	--	0.89
Coulter's goldfields	0.24	--	--	0.15	0.54
Hartweg's golden sunburst	--	--	--	--	0.35
Wright's trichocoronis	0.69	--	--	0.15	0.54
Heckard's peppergrass	0.41	--	--	--	0.29
caper-fruited tropidocarpum	--	--	--	--	0.35
dwarf downingia	0.62	--	--	0.15	0.35
heartscale	--	--	--	--	0.29
brittlescale	0.17	--	--	0.15	0.72
San Joaquin spearscale	0.17	--	--	0.15	0.72
lesser saltscale	0.17	--	--	0.15	0.72
vernal pool smallscale	0.17	--	--	0.15	0.72
subtle orache	--	--	--	--	0.35
Lost Hills crownscale	0.17	--	--	0.15	0.72
Hoover's spurge	0.17	--	--	0.15	0.72

	Castle Commerce Center	Harris-DeJager	Fagundes	Gordon-Shaw	Kojima Development
alkali milk-vetch	0.17	--	--	0.15	0.72
Merced phacelia	--	--	--	--	0.35
Keck's checkerbloom	0.24	--	--	0.15	0.89
beaked clarkia	--	--	--	--	0.35
Henderson's bent grass	0.62	--	--	0.15	0.37
California satintail	0.07	--	--	--	0.17
Colusa grass	0.62	--	--	0.15	0.37
San Joaquin Valley Orcutt grass	0.62	--	--	0.15	0.37
hairy Orcutt grass	0.62	--	--	0.15	0.37
Greene's tuctoria	0.62	--	--	0.15	0.37
pincushion navarretia	0.62	--	--	0.15	0.37
shining navarretia	0.62	--	--	0.15	0.72
prostrate vernal pool navarretia	0.62	--	--	0.15	0.72
recurved larkspur	0.44	--	--	--	0.35
little mousetail	0.62	--	--	0.15	0.37
succulent owl's-clover	0.62	--	--	0.15	0.37
palmate-bracted bird's-beak	--	--	--	--	0.35
Boggs Lake hedge-hyssop	0.62	--	--	0.15	0.37

[a] All non-zero values are rounded to the nearest one-hundredth acre.

ATTACHMENT 3

Special-Status Wildlife Species Potentially Affected During the Construction Period

Table 3.7-B3-1
Special-Status Wildlife Species Potentially Affected During the Construction Period of the UPRR/SR 99 and Downtown Fresno Station Alternatives (acres[a])

	Impacts by Project Alternative			Fresno HST Station Alternatives		
	UPRR/SR 99 with West Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
Conservancy fairy shrimp	0.82	0.97	1.07	--	--	0.82 to 1.07
vernal pool fairy shrimp	0.82	0.97	1.07	--	--	0.82 to 1.07
vernal pool tadpole shrimp	0.82	0.97	1.07	--	--	0.82 to 1.07
valley elderberry longhorn beetle	3.82	4.98	4.71	--	--	3.82 to 4.98
Kern brook lamprey	6.00	6.36	6.20	--	--	6.00 to 6.36
Central Valley steelhead	6.00	6.36	6.20	--	--	6.00 to 6.36
Central Valley spring-run Chinook salmon	6.00	6.36	6.20	--	--	6.00 to 6.36
Chinook salmon - Central Valley fall / late fall-run ESU	6.00	6.36	6.20	--	--	6.00 to 6.36
hardhead	6.00	6.36	6.20	--	--	6.00 to 6.36
San Joaquin roach	6.00	6.36	6.20	--	--	6.00 to 6.36
California tiger salamander	0.68	0.67	0.76	--	--	0.67 to 0.76
western spadefoot	3.69	3.69	3.93	--	--	3.69 to 3.93
western pond turtle	12.87	15.04	14.75	--	--	12.87 to 15.04
fulvous whistling-duck	14.74	17.35	16.63	--	--	14.74 to 17.35
redhead	14.74	17.35	16.63	--	--	14.74 to 17.35

	Impacts by Project Alternative			Fresno HST Station Alternatives		
	UPRR/SR 99 with West Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
American white pelican	9.82	11.34	10.90	--	--	9.82 to 11.34
least bittern	7.63	8.34	7.33	--	--	7.33 to 8.34
white-tailed kite	309.39	352.36	310.83	7.65	0.08	311.56 to 355.50
bald eagle	9.83	11.36	11.12	--	--	9.83 to 11.36
northern harrier	298.31	339.76	298.46	7.65	0.08	298.39 to 347.40
Swainson's hawk	308.64	352.64	306.89	7.65	0.08	306.97 to 360.29
golden eagle	234.18	272.08	225.68	--	--	225.68 to 272.08
American peregrine falcon	481.24	551.43	505.69	28.05	3.54	484.78 to 579.48
lesser sandhill crane	197.86	231.24	184.75	--	--	184.75 to 231.24
greater sandhill crane	197.86	231.24	184.75	--	--	184.75 to 231.24
snowy plover	7.19	7.99	7.31	--	--	7.19 to 7.99
mountain plover	124.34	120.57	112.69	7.65	0.08	112.77 to 131.98
whimbrel	1.19	1.64	1.12	--	--	1.12 to 1.64
long-billed curlew	4.88	5.33	5.05	--	--	4.88 to 5.33
marbled godwit	1.19	1.64	1.12	--	--	1.12 to 1.64
red knot	1.19	1.64	1.12	--	--	1.12 to 1.64
short-billed dowitcher	1.19	1.64	1.12	--	--	1.12 to 1.64
black tern	53.58	66.77	48.69	--	--	48.69 to 66.77

	Impacts by Project Alternative			Fresno HST Station Alternatives		
	UPRR/SR 99 with West Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
western burrowing owl	369.37	419.66	375.35	28.02	3.49	372.85 to 447.68
long-eared owl	286.37	334.07	286.62	--	--	286.37 to 334.07
short-eared owl	115.12	146.20	126.83	--	--	115.12 to 146.20
Costa's hummingbird	252.77	303.93	282.20	0.03	0.05	252.80 to 303.98
loggerhead shrike	363.36	413.30	369.15	28.02	3.49	366.85 to 441.33
least Bell's vireo	3.82	4.98	4.71	--	--	3.82 to 4.98
yellow-billed magpie	399.98	460.46	405.00	17.10	3.30	403.28 to 477.56
purple martin	110.83	117.77	112.94	17.13	3.35	114.18 to 134.90
bank swallow	3.82	4.98	4.71	--	--	3.82 to 4.98
yellow warbler	3.82	4.98	4.71	--	--	3.82 to 4.98
yellow-breasted chat	3.82	4.98	4.71	--	--	3.82 to 4.98
spotted towhee	148.52	181.04	176.96	0.03	0.05	148.54 to 181.09
Oregon vesper sparrow	110.28	112.63	103.54	3.27	0.11	103.64 to 115.91
Belding's savannah sparrow	1.87	2.31	1.88	--	--	1.87 to 2.31
grasshopper sparrow	66.81	93.53	79.25	--	--	66.81 to 93.53
song sparrow ("Modesto" population)	4.23	5.25	5.06	--	--	4.23 to 5.25
tricolored blackbird	65.85	88.56	58.09	--	--	58.09 to 88.56
yellow-headed blackbird	153.53	198.39	165.08	--	--	153.53 to 198.39

	Impacts by Project Alternative			Fresno HST Station Alternatives		
	UPRR/SR 99 with West Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
Lawrence's goldfinch	227.23	269.58	275.91	10.95	0.24	227.47 to 286.86
western red bat	451.18	511.55	465.36	24.77	3.43	454.61 to 536.32
pallid bat	349.66	405.36	363.35	7.65	0.08	349.74 to 413.00
western mastiff bat	451.18	511.55	465.36	24.77	3.43	454.61 to 536.32
San Joaquin kit fox	307.30	333.99	324.64	28.05	3.54	310.84 to 362.04
American badger	214.53	231.07	220.13	7.67	0.13	214.66 to 238.74

[a] All non-zero values are rounded to the nearest one-hundredth acre.

Table 3.7-B3-2
Special-Status Wildlife Species Potentially Affected During the Construction Period of the BNSF and Downtown Fresno Station Alternatives (acres[a])

	Impacts by Project Combination		Le Grand Design Options				Fresno HST Station Alternatives		Impact of Components Combined		
	BNSF North-South Alignment with Ave 24 Wye	BNSF North-South Alignment with Ave 21 Wye	Mission Ave	Mission Ave East of Le Grand	Mariposa Way	Mariposa Way East of Le Grand	Mariposa Street Station	Kern Street Station	BNSF Alternative with Ave 24 Wye	BNSF Alternative with Ave 21 Wye	Total Range of Impacts
Conservancy fairy shrimp	0.69	0.68	3.18	3.29	5.01	3.75	--	--	3.87 to 5.70	3.86 to 5.68	3.86 to 5.70
vernal pool fairy shrimp	0.69	0.68	3.18	3.29	5.01	3.75	--	--	3.87 to 5.70	3.86 to 5.68	3.86 to 5.70
vernal pool tadpole shrimp	0.69	0.68	3.18	3.29	5.01	3.75	--	--	3.87 to 5.70	3.86 to 5.68	3.86 to 5.70
valley elderberry longhorn beetle	2.55	2.02	0.10	0.23	0.84	1.04	--	--	2.65 to 3.59	2.12 to 3.07	2.12 to 3.59
Kern brook lamprey	5.13	4.81	0.21	0.23	0.64	0.87	--	--	5.34 to 5.99	5.02 to 5.68	5.02 to 5.99
Central Valley steelhead	5.13	4.81	0.21	0.23	0.64	0.87	--	--	5.34 to 5.99	5.02 to 5.68	5.02 to 5.99
Central Valley spring-run Chinook salmon	5.13	4.81	0.21	0.23	0.64	0.87	--	--	5.34 to 5.99	5.02 to 5.68	5.02 to 5.99
Chinook salmon - Central Valley fall / late fall-run ESU	5.13	4.81	0.21	0.23	0.64	0.87	--	--	5.34 to 5.99	5.02 to 5.68	5.02 to 5.99
hardhead	5.13	4.81	0.21	0.23	0.64	0.87	--	--	5.34 to 5.99	5.02 to 5.68	5.02 to 5.99
San Joaquin roach	5.13	4.81	0.21	0.23	0.64	0.87	--	--	5.34 to 5.99	5.02 to 5.68	5.02 to 5.99
California tiger salamander	0.55	0.57	3.12	3.24	4.87	3.75	--	--	3.67 to 5.42	3.69 to 5.43	3.67 to 5.43
western spadefoot	4.34	4.29	16.48	16.47	20.16	26.48	--	--	20.82 to 30.83	20.76 to 30.77	20.76 to 30.83
western pond turtle	8.98	7.31	1.02	1.32	1.95	2.39	--	--	10.00 to 11.37	8.33 to 9.71	8.33 to 11.37
fulvous whistling-duck	10.22	8.07	4.27	4.70	6.85	6.14	--	--	14.49 to 17.06	12.34 to 14.92	12.34 to 17.06
redhead	10.22	8.07	4.27	4.70	6.85	6.14	--	--	14.49 to 17.06	12.34 to 14.92	12.34 to 17.06
American white pelican	7.71	6.87	0.31	0.45	1.49	1.91	--	--	8.02 to 9.62	7.18 to 8.78	7.18 to 9.62
least bittern	5.81	5.02	0.34	0.36	0.82	1.02	--	--	6.15 to 6.83	5.36 to 6.04	5.36 to 6.83
white-tailed kite	225.81	144.37	47.73	51.99	68.59	61.51	7.65	0.08	273.62 to 302.04	192.18 to 220.60	192.18 to 302.04
bald eagle	7.73	6.86	0.31	1.00	1.49	2.06	--	--	8.03 to 9.78	7.17 to 8.92	7.17 to 9.78
northern harrier	216.84	136.26	47.42	50.99	67.10	59.46	7.65	0.08	264.34 to 291.59	183.76 to 211.01	183.76 to 291.59
Swainson's hawk	224.97	141.24	46.29	51.88	67.39	61.45	10.47	18.16	271.34 to 300.00	187.61 to 216.28	187.61 to 300.00
golden eagle	148.51	86.11	39.98	41.57	40.01	44.54	--	--	188.48 to 193.04	126.09 to 130.64	126.09 to 193.04
American peregrine falcon	425.42	274.35	91.02	103.68	123.35	112.87	28.05	3.54	519.98 to 576.82	368.91 to 425.75	368.91 to 576.82

	Impacts by Project Combination		Le Grand Design Options				Fresno HST Station Alternatives		Impact of Components Combined		
	BNSF North-South Alignment with Ave 24 Wye	BNSF North-South Alignment with Ave 21 Wye	Mission Ave	Mission Ave East of Le Grand	Mariposa Way	Mariposa Way East of Le Grand	Mariposa Street Station	Kern Street Station	BNSF Alternative with Ave 24 Wye	BNSF Alternative with Ave 21 Wye	Total Range of Impacts
lesser sandhill crane	133.40	74.23	36.99	37.91	35.16	40.64	--	--	168.55 to 174.04	109.39 to 114.88	109.39 to 174.04
greater sandhill crane	133.40	74.23	36.99	37.91	35.16	40.64	--	--	168.55 to 174.04	109.39 to 114.88	109.39 to 174.04
snowy plover	5.78	4.97	0.34	0.36	0.67	0.87	--	--	6.12 to 6.65	5.31 to 5.84	5.31 to 6.65
mountain plover	88.48	68.73	25.28	29.65	47.12	33.83	7.65	0.08	113.84 to 143.25	94.09 to 123.50	94.09 to 143.25
whimbrel	0.68	0.19	0.13	0.13	0.03	--	--	--	0.69 to 0.82	0.20 to 0.33	0.20 to 0.82
long-billed curlew	5.03	4.48	16.61	16.60	20.19	26.49	--	--	21.63 to 31.52	21.09 to 30.97	21.09 to 31.52
marbled godwit	0.68	0.19	0.13	0.13	0.03	--	--	--	0.69 to 0.82	0.20 to 0.33	0.20 to 0.82
red knot	0.68	0.19	0.13	0.13	0.03	--	--	--	0.69 to 0.82	0.20 to 0.33	0.20 to 0.82
short-billed dowitcher	0.68	0.19	0.13	0.13	0.03	--	--	--	0.69 to 0.82	0.20 to 0.33	0.20 to 0.82
black tern	17.89	5.93	6.25	3.35	1.21	2.42	--	--	19.10 to 24.14	7.14 to 12.17	7.14 to 24.14
western burrowing owl	164.68	119.87	51.84	57.20	73.10	64.78	28.02	3.49	339.88 to 385.67	237.51 to 283.30	237.51 to 385.67
long-eared owl	273.30	154.52	70.65	83.29	81.77	96.74	--	--	343.95 to 370.03	225.18 to 251.26	225.18 to 370.03
short-eared owl	74.28	36.18	33.06	29.64	29.44	36.32	--	--	103.72 to 110.60	65.62 to 72.50	65.62 to 110.60
Costa's hummingbird	245.48	143.23	70.36	76.30	79.68	93.31	0.08	0.12	315.87 to 338.84	213.62 to 236.59	213.62 to 338.84
loggerhead shrike	279.42	177.37	51.61	56.95	72.43	63.88	48.74	70.30	334.52 to 379.88	232.47 to 277.83	232.47 to 379.88
least Bell's vireo	2.55	2.02	0.10	0.23	0.84	1.04	--	--	2.65 to 3.59	2.12 to 3.07	2.12 to 3.59
yellow-billed magpie	359.73	211.21	79.08	90.56	89.87	103.67	17.10	3.30	442.10 to 480.50	293.58 to 331.98	293.58 to 480.50
purple martin	111.56	73.18	13.02	11.81	16.82	20.75	17.13	3.35	126.72 to 149.44	88.34 to 111.06	88.34 to 149.44
bank swallow	2.55	2.02	0.10	0.23	0.84	1.04	--	--	2.65 to 3.59	2.12 to 3.07	2.12 to 3.59
yellow warbler	2.55	2.02	0.10	0.23	0.84	1.04	--	--	2.65 to 3.59	2.12 to 3.07	2.12 to 3.59
yellow-breasted chat	2.55	2.02	0.10	0.23	0.84	1.04	--	--	2.65 to 3.59	2.12 to 3.07	2.12 to 3.59
spotted towhee	203.09	116.44	47.27	55.24	56.02	61.88	0.03	0.05	250.39 to 265.02	163.74 to 178.37	163.74 to 265.02

	Impacts by Project Combination		Le Grand Design Options				Fresno HST Station Alternatives		Impact of Components Combined		
	BNSF North-South Alignment with Ave 24 Wye	BNSF North-South Alignment with Ave 21 Wye	Mission Ave	Mission Ave East of Le Grand	Mariposa Way	Mariposa Way East of Le Grand	Mariposa Street Station	Kern Street Station	BNSF Alternative with Ave 24 Wye	BNSF Alternative with Ave 21 Wye	Total Range of Impacts
Oregon vesper sparrow	63.71	42.82	26.60	28.53	36.17	35.94	3.27	0.11	90.42 to 103.15	69.53 to 82.27	69.53 to 103.15
Belding's savannah sparrow	1.20	0.72	3.25	3.38	4.89	3.75	--	--	4.45 to 6.09	3.98 to 5.61	3.98 to 6.09
grasshopper sparrow	72.01	42.66	26.95	28.06	28.55	33.97	--	--	98.96 to 105.98	69.61 to 76.63	69.61 to 105.98
song sparrow ("Modesto" population)	2.69	2.24	3.22	3.47	5.47	4.56	--	--	5.91 to 8.17	5.46 to 7.71	5.46 to 8.17
tricolored blackbird	40.31	25.07	25.94	24.92	27.37	33.77	--	--	65.23 to 74.08	49.99 to 58.84	49.99 to 74.08
yellow-headed blackbird	100.72	55.74	16.71	14.94	9.61	9.91	--	--	110.33 to 117.43	65.35 to 72.45	65.35 to 117.43
Lawrence's goldfinch	262.23	172.92	69.30	81.23	101.74	93.80	10.95	0.24	331.78 to 374.92	242.46 to 285.61	242.46 to 374.92
western red bat	409.11	263.30	86.13	97.71	113.79	107.43	24.77	3.43	498.67 to 547.67	352.87 to 401.87	352.87 to 547.67
pallid bat	303.30	194.02	74.05	87.12	98.31	88.21	7.65	0.08	377.43 to 409.26	268.16 to 299.98	268.16 to 409.26
western mastiff bat	409.11	263.30	86.13	97.71	113.79	107.43	24.77	3.43	498.67 to 547.67	352.87 to 401.87	352.87 to 547.67
San Joaquin kit fox	255.33	171.06	49.38	52.70	74.60	61.14	28.05	3.54	308.25 to 357.99	223.98 to 273.71	223.98 to 357.99
American badger	183.08	119.86	41.56	44.04	64.51	54.26	7.67	0.13	224.77 to 255.26	161.54 to 192.04	161.54 to 255.26

[a] All non-zero values are rounded to the nearest one-hundredth acre.

Table 3.7-B3-3
Special-Status Wildlife Species Potentially Affected During the Construction Period of the Hybrid and Downtown Fresno Station Alternatives (acres[a])

	Impacts by Project Combination		Fresno HST Station Alternatives		
	Hybrid North-South Alignment with Ave 24 Wye	Hybrid North-South Alignment with Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
Conservancy fairy shrimp	0.50	0.45	--	--	0.45 to 0.50
vernal pool fairy shrimp	0.50	0.45	--	--	0.85 to 0.50
vernal pool tadpole shrimp	0.50	0.45	--	--	0.85 to 0.50
valley elderberry longhorn beetle	3.69	4.28	--	--	3.69 to 4.28
Kern brook lamprey	5.92	5.93	--	--	5.92 to 5.93
Central Valley steelhead	5.92	5.93	--	--	5.92 to 5.93
Central Valley spring-run Chinook salmon	5.92	5.93	--	--	5.92 to 5.93
Chinook salmon - Central Valley fall / late fall-run ESU	5.92	5.93	--	--	5.92 to 5.93
hardhead	5.92	5.93	--	--	5.92 to 5.93
San Joaquin roach	5.92	5.93	--	--	5.92 to 5.93
California tiger salamander	0.40	0.17	--	--	0.17 to 0.40
western spadefoot	3.69	3.93	--	--	3.69 to 3.93
western pond turtle	12.43	13.99	--	--	12.43 to 13.99
fulvous whistling-duck	13.93	14.62	--	--	13.93 to 14.62
redhead	13.93	14.62	--	--	13.93 to 14.62
American white pelican	9.61	10.21	--	--	9.61 to 10.21
least bittern	7.46	6.41	--	--	6.41 to 7.46
white-tailed kite	279.33	250.40	7.65	0.08	250.49 to 286.97
bald eagle	9.63	10.43	--	--	9.63 to 10.43
northern harrier	268.46	238.73	7.65	0.08	238.81 to 276.11

	Impacts by Project Combination		Fresno HST Station Alternatives		
	Hybrid North-South Alignment with Ave 24 Wye	Hybrid North-South Alignment with Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
Swainson's hawk	279.77	246.98	7.65	0.08	247.06 to 287.42
golden eagle	217.46	181.77	--	--	181.77 to 217.46
American peregrine falcon	439.40	438.68	28.05	3.54	442.22 to 467.45
lesser sandhill crane	200.58	164.44	--	--	164.44 to 200.58
greater sandhill crane	200.58	164.44	--	--	164.44 to 200.58
snowy plover	7.03	6.40	--	--	6.40 to 7.03
mountain plover	104.08	99.52	7.65	0.08	99.60 to 111.73
whimbrel	1.10	0.47	--	--	0.47 to 1.10
long-billed curlew	4.79	4.40	--	--	4.40 to 4.79
marbled godwit	1.10	0.47	--	--	0.47 to 1.10
red knot	1.10	0.47	--	--	0.47 to 1.10
short-billed dowitcher	1.10	0.47	--	--	0.47 to 1.10
black tern	60.65	45.15	--	--	45.15 to 60.65
western burrowing owl	330.71	314.41	28.02	3.49	317.90 to 358.74
long-eared owl	300.08	277.32	--	--	277.32 to 300.08
short-eared owl	117.67	108.03	--	--	108.03 to 117.67
Costa's hummingbird	251.23	254.27	0.03	0.05	251.26 to 254.32
loggerhead shrike	324.79	308.48	28.02	3.49	311.96 to 352.81
least Bell's vireo	3.69	4.28	--	--	3.69 to 4.28
yellow-billed magpie	381.50	354.58	17.10	3.30	357.88 to 398.60

	Impacts by Project Combination		Fresno HST Station Alternatives		
	Hybrid North-South Alignment with Ave 24 Wye	Hybrid North-South Alignment with Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
purple martin	98.99	95.82	17.13	3.35	99.17 to 116.11
bank swallow	3.69	4.28	--	--	3.69 to 4.28
yellow warbler	3.69	4.28	--	--	3.69 to 4.28
yellow-breasted chat	3.69	4.28	--	--	3.69 to 4.28
spotted towhee	162.98	178.90	0.03	0.05	163.01 to 178.95
Oregon vesper sparrow	89.52	92.45	3.27	0.11	89.62 to 95.72
Belding's savannah sparrow	1.50	0.63	--	--	0.63 to 1.50
grasshopper sparrow	70.02	63.73	--	--	63.73 to 70.02
song sparrow ("Modesto" population)	4.02	4.23	--	--	4.02 to 4.23
tricolored blackbird	80.15	53.91	--	--	53.91 to 80.15
yellow-headed blackbird	144.46	122.36	--	--	122.36 to 144.46
Lawrence's goldfinch	214.26	257.43	10.95	0.24	214.50 to 268.38
western red bat	421.45	407.69	24.77	3.43	411.12 to 446.23
pallid bat	331.33	321.65	7.65	0.08	321.73 to 338.98
western mastiff bat	421.45	407.69	24.77	3.43	411.12 to 446.23
San Joaquin kit fox	257.41	271.11	28.05	3.54	260.95 to 299.16
American badger	193.65	191.16	7.67	0.13	191.29 to 201.33

[a] All non-zero values are rounded to the nearest one-hundredth acre.

Table 3.7-B3-4
Special-Status Wildlife Species Potentially Affected During the Construction Period of HMF Alternatives (acres[a])

	Castle Commerce Center	Harris-DeJager	Fagundes	Gordon-Shaw	Kojima Development
Conservancy fairy shrimp	--	--	--	--	0.01
vernal pool fairy shrimp	--	--	--	--	0.01
vernal pool tadpole shrimp	--	--	--	--	0.01
valley elderberry longhorn beetle	0.07	--	--	--	0.17
Kern brook lamprey	0.17	--	--	0.14	0.18
Central Valley steelhead	0.17	--	--	0.14	0.18
Central Valley spring-run Chinook salmon	0.17	--	--	0.14	0.18
Chinook salmon - Central Valley fall / late fall-run ESU	0.17	--	--	0.14	0.18
hardhead	0.17	--	--	0.14	0.18
San Joaquin roach	0.17	--	--	0.14	0.18
California tiger salamander	--	--	--	--	0.01
western spadefoot	--	--	--	--	0.35
western pond turtle	0.27	--	0.05	0.14	0.35
fulvous whistling-duck	0.46	--	0.05	0.15	0.54
redhead	0.46	--	0.05	0.15	0.54
American white pelican	0.24	--	--	0.15	0.53
least bittern	0.82	--	--	0.15	0.37
white-tailed kite	14.94	0.95	3.70	0.29	1.69
bald eagle	0.68	--	--	0.14	0.35

	Castle Commerce Center	Harris-DeJager	Fagundes	Gordon-Shaw	Kojima Development
northern harrier	14.25	0.95	3.70	0.14	1.35
Swainson's hawk	14.92	0.95	3.70	0.29	1.69
golden eagle	5.25	0.28	3.44	0.14	0.81
American peregrine falcon	44.50	0.95	4.60	0.54	20.39
lesser sandhill crane	5.01	0.28	3.44	0.14	0.80
greater sandhill crane	5.01	0.28	3.44	0.14	0.80
snowy plover	0.36	--	--	0.14	0.18
mountain plover	11.60	0.67	0.07	0.14	0.89
whimbrel	0.20	--	--	0.00	0.19
long-billed curlew	0.20	--	--	0.00	0.53
marbled godwit	0.20	--	--	0.00	0.19
red knot	0.20	--	--	0.00	0.19
short-billed dowitcher	0.20	--	--	0.00	0.19
black tern	0.52	--	0.50	0.00	0.19
western burrowing owl	43.38	0.95	4.60	0.28	1.33
long-eared owl	6.49	0.28	3.70	0.40	19.48
short-eared owl	1.49	0.28	0.50	0.00	0.80
Costa's hummingbird	3.48	0.28	0.76	0.40	19.65
loggerhead shrike	43.21	0.95	4.60	0.14	1.15
least Bell's vireo	0.07	--	--	--	0.07
yellow-billed magpie	34.30	0.28	4.60	0.40	19.48

	Castle Commerce Center	Harris-DeJager	Fagundes	Gordon-Shaw	Kojima Development
purple martin	29.34	--	1.16	0.14	0.35
bank swallow	0.07	--	--	--	0.17
yellow warbler	0.08	--	--	--	0.17
yellow-breasted chat	0.08	--	--	--	0.17
spotted towhee	1.84	0.28	0.26	0.26	18.86
Oregon vesper sparrow	4.51	--	0.07	0.14	0.35
Belding's savannah sparrow	0.20	--	--	--	0.01
grasshopper sparrow	1.16	0.28	2.86	--	0.61
song sparrow ("Modesto" population)	0.08	--	--	--	0.36
tricolored blackbird	0.60	--	3.37	--	0.71
yellow-headed blackbird	1.68	0.28	3.37	--	0.45
Lawrence's goldfinch	11.88	0.95	0.26	0.40	19.93
western red bat	42.43	0.95	4.59	0.54	20.38
pallid bat	13.38	0.95	3.48	0.40	20.20
western mastiff bat	42.43	0.95	4.59	0.54	20.38
San Joaquin kit fox	43.25	0.95	1.18	0.14	1.34
American badger	14.14	0.95	0.33	0.14	1.32

[a] All non-zero values are rounded to the nearest one-hundredth acre.

ATTACHMENT 4

Special-Status Plant Species Potentially Affected During the Project Period

Table 3.7-B4-1
Special-Status Plant Species Potentially Affected During the Project Period of UPRR/SR 99 and Downtown Fresno Station Alternatives (acres[a])

	Impacts by Project Combination			Fresno HST Station Alternatives		
	UPRR/SR 99 with West Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
Sanford's arrowhead	36.41	30.71	29.78	--	--	29.78 to 36.41
Delta button-celery	18.43	13.82	9.23	--	--	9.23 to 18.43
spiny-sepaled button-celery	21.12	19.09	18.14	--	--	18.14 to 21.12
Hoover's calycadenia	113.94	115.78	134.06	12.40	18.16	126.34 to 152.23
Coulter's goldfields	18.43	13.82	9.23	--	--	9.23 to 18.43
Hartweg's golden sunburst	11.91	11.70	12.66	--	--	11.70 to 12.66
Wright's trichocoronis	22.96	17.95	9.88	--	--	9.88 to 22.96
Heckard's peppergrass	13.35	13.01	14.39	--	--	13.01 to 14.39
caper-fruited tropidocarpum	11.91	11.70	12.66	--	--	11.70 to 12.66
dwarf downingia	13.49	11.28	5.89	--	--	5.89 to 13.49
heartscale	13.99	13.65	15.02	--	--	13.65 to 15.02
brittlescale	21.12	19.09	18.14	--	--	18.14 to 21.12
San Joaquin spearscale	21.12	19.09	18.14	--	--	18.14 to 21.12
lesser saltscale	21.12	19.09	18.14	--	--	18.14 to 21.12
vernal pool smallscale	21.12	19.09	18.14	--	--	18.14 to 21.12

	Impacts by Project Combination			Fresno HST Station Alternatives		
	UPRR/SR 99 with West Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
subtle orache	11.91	11.70	12.66	--	--	11.70 to 12.66
Lost Hills crownscale	21.12	19.09	18.14	--	--	18.14 to 21.12
Hoover's spurge	21.12	19.09	18.14	--	--	18.14 to 21.12
alkali milk-vetch	21.12	19.09	18.14	--	--	18.14 to 21.12
Merced phacelia	11.91	11.70	12.66	--	--	11.70 to 12.66
Keck's checkerbloom	30.68	25.69	22.09	--	--	22.09 to 30.68
beaked clarkia	12.55	12.33	13.29	--	--	12.33 to 13.29
Henderson's bent grass	13.49	11.28	5.89	--	--	5.89 to 13.49
California satintail	9.47	6.67	3.99	--	--	3.99 to 9.47
Colusa grass	13.49	11.28	5.89	--	--	5.89 to 13.49
San Joaquin Valley Orcutt grass	13.49	11.28	5.89	--	--	5.89 to 13.49
hairy Orcutt grass	13.49	11.28	5.89	--	--	5.89 to 13.49
Greene's tuctoria	13.49	11.28	5.89	--	--	5.89 to 13.49
pincushion navarretia	13.49	11.28	5.89	--	--	5.89 to 13.49
shining navarretia	25.40	22.98	18.55	--	--	18.55 to 25.40
prostrate vernal pool navarretia	25.40	22.98	18.55	--	--	18.55 to 25.40
recurved larkspur	12.55	12.33	13.72	--	--	12.33 to 13.72
little mousetail	13.49	11.28	5.89	--	--	5.89 to 13.49

	Impacts by Project Combination			Fresno HST Station Alternatives		
	UPRR/SR 99 with West Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
succulent owl's-clover	13.49	11.28	5.89	--	--	5.89 to 13.49
palmate-bracted bird's-beak	11.91	11.70	12.66	--	--	11.70 to 12.66
Boggs Lake hedge-hyssop	13.49	11.28	5.89	--	--	5.89 to 13.49

[a] All non-zero values are rounded to the nearest one-hundredth acre.

Table 3.7-B4-2
Special-Status Plant Species Potentially Affected during the Project Period of BNSF and Downtown Fresno Station Alternatives (acres[a])

	Impacts by Project Combination		Le Grand Design Options				Fresno HST Station Alternatives		Impact of Components Combined		
	BNSF North-South Alignment with Ave 24 Wye	BNSF North-South Alignment with Ave 21 Wye	Mission Ave	Mission Ave East of Le Grand	Mariposa Way	Mariposa Way East of Le Grand	Mariposa Street Station	Kern Street Station	BNSF Alternative with Ave 24 Wye	BNSF Alternative with Ave 21 Wye	Total Range of Impacts
Sanford's arrowhead	30.40	28.26	15.37	15.54	9.36	7.84	--	--	38.24 to 45.95	36.10 to 43.80	36.10 to 45.95
Delta button-celery	17.58	13.99	11.08	10.77	9.83	9.40	--	--	26.98 to 28.67	23.39 to 25.07	23.39 to 28.67
spiny-sepaled button-celery	63.63	53.54	74.62	63.34	75.81	38.41	--	--	102.03 to 139.44	91.95 to 129.35	91.95 to 139.44
Hoover's calycadenia	176.96	168.69	115.44	71.10	80.23	39.40	12.40	18.16	228.76 to 310.57	220.49 to 302.29	220.49 to 310.57
Coulter's goldfields	17.58	13.99	11.08	10.77	9.83	9.40	--	--	26.98 to 28.67	23.39 to 25.07	23.39 to 28.67
Hartweg's golden sunburst	52.03	43.01	64.48	53.42	68.51	32.87	--	--	84.90 to 120.54	75.87 to 111.51	75.87 to 120.54
Wright's trichocoronis	18.34	14.39	11.08	10.77	9.83	9.40	--	--	27.74 to 29.42	23.79 to 25.47	23.79 to 29.42
Heckard's peppergrass	58.00	48.80	72.99	61.49	74.55	36.13	--	--	94.14 to 132.55	84.94 to 123.35	84.94 to 132.55
caper-fruited tropidocarpum	52.03	43.01	64.48	53.42	68.51	32.87	--	--	84.90 to 120.54	75.87 to 111.51	75.87 to 120.54
dwarf downingia	12.35	10.94	10.14	9.92	7.30	5.54	--	--	17.89 to 22.49	16.48 to 21.08	16.48 to 22.49
heartscale	59.94	50.74	72.99	61.49	74.55	36.13	--	--	96.07 to 134.49	86.87 to 125.29	86.87 to 134.49
brittlescale	63.63	53.54	74.62	63.34	75.81	38.41	--	--	102.03 to 139.44	91.95 to 129.35	91.95 to 139.44
San Joaquin spearscale	63.63	53.54	74.62	63.34	75.81	38.41	--	--	102.03 to 139.44	91.95 to 129.35	91.95 to 139.44
lesser saltscale	63.63	53.54	74.62	63.34	75.81	38.41	--	--	102.03 to 139.44	91.95 to 129.35	91.95 to 139.44
vernal pool smallscale	63.63	53.54	74.62	63.34	75.81	38.41	--	--	102.03 to 139.44	91.95 to 129.35	91.95 to 139.44
subtle orache	52.03	43.01	64.48	53.42	68.51	32.87	--	--	84.90 to 120.54	75.87 to 111.51	75.87 to 120.54

	Impacts by Project Combination		Le Grand Design Options				Fresno HST Station Alternatives		Impact of Components Combined		
	BNSF North-South Alignment with Ave 24 Wye	BNSF North-South Alignment with Ave 21 Wye	Mission Ave	Mission Ave East of Le Grand	Mariposa Way	Mariposa Way East of Le Grand	Mariposa Street Station	Kern Street Station	BNSF Alternative with Ave 24 Wye	BNSF Alternative with Ave 21 Wye	Total Range of Impacts
Lost Hills crownscale	63.63	53.54	74.62	63.34	75.81	38.41	--	--	102.03 to 139.44	91.95 to 129.35	91.95 to 139.44
Hoover's spurge	63.63	53.54	74.62	63.34	75.81	38.41	--	--	102.03 to 139.44	91.95 to 129.35	91.95 to 139.44
alkali milk-vetch	63.63	53.54	74.62	63.34	75.81	38.41	--	--	102.03 to 139.44	91.95 to 129.35	91.95 to 139.44
Merced phacelia	52.03	43.01	64.48	53.42	68.51	32.87	--	--	84.90 to 120.54	75.87 to 111.51	75.87 to 120.54
Keck's checkerbloom	69.64	57.16	75.49	64.12	77.89	41.82	--	--	111.46 to 147.53	98.98 to 135.05	98.98 to 147.53
beaked clarkia	53.97	44.94	64.48	53.42	68.51	32.87	--	--	86.83 to 122.47	77.80 to 113.44	77.80 to 122.47
Henderson's bent grass	12.35	10.94	10.14	9.92	7.30	5.54	--	--	17.89 to 22.49	16.48 to 21.08	16.48 to 22.49
California satintail	5.99	3.45	0.95	0.85	2.53	3.86	--	--	6.85 to 9.85	4.30 to 7.31	4.30 to 9.85
Colusa grass	12.35	10.94	10.14	9.92	7.30	5.54	--	--	17.89 to 22.49	16.48 to 21.08	16.48 to 22.49
San Joaquin Valley Orcutt grass	12.35	10.94	10.14	9.92	7.30	5.54	--	--	17.89 to 22.49	16.48 to 21.08	16.48 to 22.49
hairy Orcutt grass	12.35	10.94	10.14	9.92	7.30	5.54	--	--	17.89 to 22.49	16.48 to 21.08	16.48 to 22.49
Greene's tuctoria	12.35	10.94	10.14	9.92	7.30	5.54	--	--	17.89 to 22.49	16.48 to 21.08	16.48 to 22.49
pincushion navarretia	12.35	10.94	10.14	9.92	7.30	5.54	--	--	17.89 to 22.49	16.48 to 21.08	16.48 to 22.49
shining navarretia	64.38	53.95	74.62	63.34	75.81	38.41	--	--	102.79 to 140.20	92.35 to 129.76	92.35 to 140.20
prostrate vernal pool navarretia	64.38	53.95	74.62	63.34	75.81	38.41	--	--	102.79 to 140.20	92.35 to 129.76	92.35 to 140.20
recurved larkspur	54.06	45.03	64.48	53.90	68.51	33.56	--	--	87.61 to 122.56	78.58 to 113.53	78.58 to 122.56
little mousetail	12.35	10.94	10.14	9.92	7.30	5.54	--	--	17.89 to 22.49	16.48 to 21.08	16.48 to 22.49
succulent owl's-clover	12.35	10.94	10.14	9.92	7.30	5.54	--	--	17.89 to 22.49	16.48 to 21.08	16.48 to 22.49

	Impacts by Project Combination		Le Grand Design Options				Fresno HST Station Alternatives		Impact of Components Combined		
	BNSF North-South Alignment with Ave 24 Wye	BNSF North-South Alignment with Ave 21 Wye	Mission Ave	Mission Ave East of Le Grand	Mariposa Way	Mariposa Way East of Le Grand	Mariposa Street Station	Kern Street Station	BNSF Alternative with Ave 24 Wye	BNSF Alternative with Ave 21 Wye	Total Range of Impacts
palmate-bracted bird's-beak	52.03	43.01	64.48	53.42	68.51	32.87	--	--	84.90 to 120.54	75.87 to 111.51	75.87 to 120.54
Boggs Lake hedge-hyssop	12.35	10.94	10.14	9.92	7.30	5.54	--	--	17.89 to 22.49	16.48 to 21.08	16.48 to 22.49

[a] All non-zero values are rounded to the nearest one-hundredth acre.

Table 3.7-B4-3
Special-Status Plant Species Potentially Affected during the Project Period of the Hybrid and Downtown Fresno Station Alternatives (acres[a])

	Impacts by Project Combination		Fresno HST Station Alternatives		
	Hybrid North-South Alignment with Ave 24 Wye	Hybrid North-South Alignment with Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
Sanford's arrowhead	36.54	30.13	--	--	30.13 to 36.54
Delta button-celery	17.19	9.80	--	--	9.80 to 17.19
spiny-sepaled button-celery	56.27	53.15	--	--	53.15 to 56.27
Hoover's calycadenia	142.91	158.29	12.40	18.16	155.31 to 176.46
Coulter's goldfields	17.19	9.80	--	--	9.80 to 17.19
Hartweg's golden sunburst	46.18	46.81	--	--	46.18 to 46.81
Wright's trichocoronis	21.28	10.46	--	--	10.46 to 21.28
Heckard's peppergrass	49.57	49.38	--	--	49.38 to 49.57
caper-fruited tropidocarpum	46.18	46.81	--	--	46.18 to 46.81
dwarf downingia	13.93	6.74	--	--	6.74 to 13.93
heartscale	50.26	50.07	--	--	50.07 to 50.26
brittlescale	56.27	53.15	--	--	53.15 to 56.27
San Joaquin spearscale	56.27	53.15	--	--	53.15 to 56.27
lesser saltscale	56.27	53.15	--	--	53.15 to 56.27
vernal pool smallscale	56.27	53.15	--	--	53.15 to 56.27
subtle orache	46.18	46.81	--	--	46.18 to 46.81
Lost Hills crownscale	56.27	53.15	--	--	53.15 to 56.27
Hoover's spurge	56.27	53.15	--	--	53.15 to 56.27
alkali milk-vetch	56.27	53.15	--	--	53.15 to 56.27
Merced phacelia	46.18	46.81	--	--	46.18 to 46.81
Keck's checkerbloom	63.81	56.96	--	--	56.96 to 63.81
beaked clarkia	46.88	47.51	--	--	46.88 to 47.51
Henderson's bent grass	13.93	6.74	--	--	6.74 to 13.93

	Impacts by Project Combination		Fresno HST Station Alternatives		
	Hybrid North-South Alignment with Ave 24 Wye	Hybrid North-South Alignment with Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
California satintail	7.35	3.71	--	--	3.71 to 7.35
Colusa grass	13.93	6.74	--	--	6.74 to 13.93
San Joaquin Valley Orcutt grass	13.93	6.74	--	--	6.74 to 13.93
hairy Orcutt grass	13.93	6.74	--	--	6.74 to 13.93
Greene's tuctoria	13.93	6.74	--	--	6.74 to 13.93
pincushion navarretia	13.93	6.74	--	--	6.74 to 13.93
shining navarretia	60.11	53.55	--	--	53.55 to 60.11
prostrate vernal pool navarretia	60.11	53.55	--	--	53.55 to 60.11
recurved larkspur	46.96	48.01	--	--	46.96 to 48.01
little mousetail	13.93	6.74	--	--	6.74 to 13.93
succulent owl's-clover	13.93	6.74	--	--	6.74 to 13.93
palmate-bracted bird's-beak	46.18	46.81	--	--	46.18 to 46.81
Boggs Lake hedge-hyssop	13.93	6.74	--	--	6.74 to 13.93

[a] All non-zero values are rounded to the nearest one-hundredth acre.

Table 3.7-B4-4
Special-Status Plant Species Potentially Affected During the Project Period of the HMF Alternatives (acres[a])

	Castle Commerce Center	Harris-DeJager	Fagundes	Gordon-Shaw	Kojima Development
Sanford's arrowhead	8.72	1.53	2.11	3.98	4.06
Delta button-celery	2.66	0.63	0.97	3.67	4.22
spiny-sepaled button-celery	2.42	0.19	0.49	2.62	79.98
Hoover's calycadenia	27.10	3.34	0.02	16.11	79.35
Coulter's goldfields	2.66	0.63	0.97	3.67	4.22
Hartweg's golden sunburst	--	--	--	--	77.05
Wright's trichocoronis	2.66	0.63	0.97	3.67	4.22
Heckard's peppergrass	0.41	--	--	--	78.39
caper-fruited tropidocarpum	--	--	--	--	77.05
dwarf downingia	2.42	0.19	0.96	2.62	2.94
heartscale	0.41	--	--	--	78.39
brittlescale	2.42	0.19	0.49	2.62	79.98
San Joaquin spearscale	2.42	0.19	0.49	2.62	79.98
lesser saltscale	2.42	0.19	0.49	2.62	79.98
vernal pool smallscale	2.42	0.19	0.49	2.62	79.98
subtle orache	--	--	--	--	77.05
Lost Hills crownscale	2.42	0.19	0.49	2.62	79.98
Hoover's spurge	2.42	0.19	0.49	2.62	79.98

	Castle Commerce Center	Harris-DeJager	Fagundes	Gordon-Shaw	Kojima Development
alkali milk-vetch	2.42	0.19	0.49	2.62	79.98
Merced phacelia	--	--	--	--	77.05
Keck's checkerbloom	2.66	0.19	0.97	2.62	81.26
beaked clarkia	--	--	--	--	77.05
Henderson's bent grass	2.42	0.19	0.96	2.62	2.94
California satintail	0.24	0.44	0.48	1.05	1.28
Colusa grass	2.42	0.19	0.96	2.62	2.94
San Joaquin Valley Orcutt grass	2.42	0.19	0.96	2.62	2.94
hairy Orcutt grass	2.42	0.19	0.96	2.62	2.94
Greene's tuctoria	2.42	0.19	0.96	2.62	2.94
pincushion navarretia	2.42	0.19	0.96	2.62	2.94
shining navarretia	2.42	0.19	0.96	2.62	2.94
prostrate vernal pool navarretia	2.42	0.19	0.96	2.62	2.94
recurved larkspur	0.23	--	--	--	77.05
little mousetail	2.42	0.19	0.96	2.62	2.94
succulent owl's-clover	2.42	0.19	0.96	2.62	2.94
palmate-bracted bird's-beak	--	--	--	--	77.05
Boggs Lake hedge-hyssop	2.42	0.19	0.96	2.62	2.94

[a] All non-zero values are rounded to the nearest one-hundredth acre.

ATTACHMENT 5

Special-Status Wildlife Species Potentially Affected During the Project Period

Table 3.7-B5-1
Special-Status Wildlife Species Potentially Affected During the Project Period of UPRR/SR 99 and Downtown Fresno Station Alternatives (acres[a])

	Impacts by Project Combination			Fresno HST Station Alternatives		
	UPRR/SR 99 with West Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
Conservancy fairy shrimp	2.61	2.65	3.07	--	--	2.61 to 3.07
vernal pool fairy shrimp	2.61	2.65	3.07	--	--	2.61 to 3.07
vernal pool tadpole shrimp	2.61	2.65	3.07	--	--	2.61 to 3.07
valley elderberry longhorn beetle	9.22	6.43	3.75	--	--	3.75 to 9.22
Kern brook lamprey	7.76	6.08	3.76	--	--	3.76 to 7.76
Central Valley steelhead	7.76	6.08	3.76	--	--	3.76 to 7.76
Central Valley spring-run Chinook salmon	7.76	6.08	3.76	--	--	3.76 to 7.76
Chinook salmon - Central Valley fall / late fall-run ESU	7.76	6.08	3.76	--	--	3.76 to 7.76
hardhead	7.76	6.08	3.76	--	--	3.76 to 7.76
San Joaquin roach	7.76	6.08	3.76	--	--	3.76 to 7.76
California tiger salamander	1.44	1.31	1.73	--	--	1.31 to 1.73
western spadefoot	11.91	11.70	12.66	--	--	11.70 to 12.66
western pond turtle	31.57	24.53	25.92	--	--	24.53 to 31.57
fulvous whistling-duck	40.82	32.54	32.44	--	--	32.44 to 40.82
redhead	40.82	32.54	32.44	--	--	32.44 to 40.82

	Impacts by Project Combination			Fresno HST Station Alternatives		
	UPRR/SR 99 with West Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
American white pelican	16.99	12.51	7.51	--	--	7.51 to 16.99
least bittern	19.88	16.81	9.02	--	--	9.02 to 19.88
white-tailed kite	1,035.05	1,003.81	813.27	12.40	18.16	825.67 to 1,053.22
bald eagle	17.23	12.76	8.18	--	--	8.18 to 17.23
northern harrier	1,017.19	990.42	804.46	12.40	18.16	816.86 to 1,035.35
Swainson's hawk	1,028.33	997.57	792.36	12.40	18.16	804.76 to 1,046.50
golden eagle	846.14	825.87	600.55	--	--	600.55 to 846.14
American peregrine falcon	1,890.91	1,853.30	1,973.82	50.05	70.41	1,903.35 to 2,044.23
lesser sandhill crane	706.62	663.35	502.19	--	--	502.19 to 706.62
greater sandhill crane	706.62	663.35	502.19	--	--	502.19 to 706.62
snowy plover	15.57	12.78	8.55	--	--	8.55 to 15.57
mountain plover	342.79	345.16	303.20	12.40	18.16	315.60 to 363.33
whimbrel	7.81	6.70	4.80	--	--	4.80 to 7.81

	Impacts by Project Combination			Fresno HST Station Alternatives		
	UPRR/SR 99 with West Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
long-billed curlew	19.72	18.40	17.45	--	--	17.45 to 19.72
marbled godwit	7.81	6.70	4.80	--	--	4.80 to 7.81
red knot	7.81	6.70	4.80	--	--	4.80 to 7.81
short-billed dowitcher	7.81	6.70	4.80	--	--	4.80 to 7.81
black tern	292.51	204.23	145.23	--	--	145.23 to 292.51
western burrowing owl	1,466.54	1,411.43	1,307.43	50.00	70.30	1,357.42 to 1,536.84
long-eared owl	989.91	938.22	1,081.62	--	--	938.22 to 1,081.62
short-eared owl	453.62	419.32	346.76	--	--	346.76 to 453.62
Costa's hummingbird	920.96	897.70	1,058.57	0.05	0.12	897.75 to 1,058.69
loggerhead shrike	1,458.72	1,405.29	1,303.61	50.00	70.30	1,353.61 to 1,529.02
least Bell's vireo	9.22	6.43	3.75	--	--	3.75 to 9.22
yellow-billed magpie	1,380.67	1,335.12	1,414.07	22.33	37.55	1,357.45 to 1,451.62
purple martin	317.84	293.20	306.64	22.38	37.66	315.58 to 355.50

	Impacts by Project Combination			Fresno HST Station Alternatives		
	UPRR/SR 99 with West Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
bank swallow	9.22	6.43	3.75	--	--	3.75 to 9.22
yellow warbler	9.37	6.57	3.89	--	--	3.89 to 9.37
yellow-breasted chat	9.37	6.57	3.89	--	--	3.89 to 9.37
spotted towhee	461.54	498.34	780.15	0.05	0.12	461.59 to 780.27
Oregon vesper sparrow	615.03	623.33	593.89	15.27	14.59	608.47 to 638.60
Belding's savannah sparrow	9.25	8.01	6.52	--	--	6.52 to 9.25
grasshopper sparrow	199.38	242.24	207.48	--	--	199.38 to 242.24
song sparrow ("Modesto" population)	10.27	7.18	4.94	--	--	4.94 to 10.27
tricolored blackbird	345.81	244.27	164.74	--	--	164.74 to 345.81
yellow-headed blackbird	625.62	602.43	440.79	--	--	440.79 to 625.62
Lawrence's goldfinch	954.66	999.72	1,327.35	27.72	32.87	982.38 to 1,360.22
western red bat	1,504.17	1,460.13	1,561.38	34.78	55.83	1,494.91 to 1,617.21
pallid bat	1,218.82	1,192.97	1,282.58	12.40	18.16	1,205.37 to 1,300.74

	Impacts by Project Combination			Fresno HST Station Alternatives		
	UPRR/SR 99 with West Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 24 Wye	UPRR/SR 99 with East Chowchilla Design Option & Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
western mastiff bat	1,504.17	1,460.13	1,561.38	34.78	55.83	1,494.91 to 1,617.21
San Joaquin kit fox	1,150.34	1,197.52	1,182.86	50.05	70.41	1,200.38 to 1,267.93
American badger	587.95	633.80	588.15	12.45	18.28	600.40 to 652.08

[a] All non-zero values are rounded to the nearest one-hundredth acre.

Table 3.7-B5-2
Special-Status Wildlife Species Potentially Affected During the Project Period of BNSF and Downtown Fresno Station Alternatives (acres[a])

	Impacts by Project Combination		Le Grand Design Options				Fresno HST Station Alternatives		Impact of Components Combined		
	BNSF North-South Alignment with Ave 24 Wye	BNSF North-South Alignment with Ave 21 Wye	Mission Ave	Mission Ave East of Le Grand	Mariposa Way	Mariposa Way East of Le Grand	Mariposa Street Station	Kern Street Station	BNSF Alternative with Ave 24 Wye	BNSF Alternative with Ave 21 Wye	Total Range of Impacts
Conservancy fairy shrimp	7.88	7.56	9.15	8.65	6.58	3.27	--	--	11.15 to 17.03	10.83 to 16.71	10.83 to 17.03
vernal pool fairy shrimp	7.88	7.56	9.15	8.65	6.58	3.27	--	--	11.15 to 17.03	10.83 to 16.71	10.83 to 17.03
vernal pool tadpole shrimp	7.88	7.56	9.15	8.65	6.58	3.27	--	--	11.15 to 17.03	10.83 to 16.71	10.83 to 17.03
valley elderberry longhorn beetle	5.99	3.45	0.95	0.85	2.53	3.86	--	--	6.85 to 9.85	4.30 to 7.31	4.30 to 9.85
Kern brook lamprey	5.24	4.46	1.61	1.85	1.25	2.26	--	--	6.49 to 7.50	5.70 to 6.71	5.70 to 7.50
Central Valley steelhead	5.24	4.46	1.61	1.85	1.25	2.26	--	--	6.49 to 7.50	5.70 to 6.71	5.70 to 7.50
Central Valley spring-run Chinook salmon	5.24	4.46	1.61	1.85	1.25	2.26	--	--	6.49 to 7.50	5.70 to 6.71	5.70 to 7.50
Chinook salmon - Central Valley fall / late fall-run ESU	5.24	4.46	1.61	1.85	1.25	2.26	--	--	6.49 to 7.50	5.70 to 6.71	5.70 to 7.50
hardhead	5.24	4.46	1.61	1.85	1.25	2.26	--	--	6.49 to 7.50	5.70 to 6.71	5.70 to 7.50
San Joaquin roach	5.24	4.46	1.61	1.85	1.25	2.26	--	--	6.49 to 7.50	5.70 to 6.71	5.70 to 7.50
California tiger salamander	5.97	5.80	8.51	8.07	6.04	3.27	--	--	9.24 to 14.48	9.07 to 14.31	9.07 to 14.48
western spadefoot	52.03	43.01	64.48	53.42	68.51	32.87	--	--	84.90 to 120.54	75.87 to 111.51	75.87 to 120.54
western pond turtle	20.78	17.00	7.31	7.92	5.30	7.43	--	--	26.08 to 28.69	22.30 to 24.92	22.30 to 28.69
fulvous whistling-duck	33.72	29.54	16.24	16.32	11.44	11.25	--	--	44.98 to 50.05	40.79 to 45.86	40.79 to 50.05
redhead	33.72	29.54	16.24	16.32	11.44	11.25	--	--	44.98 to 50.05	40.79 to 45.86	40.79 to 50.05
American white pelican	11.61	8.19	2.57	2.71	3.79	6.13	--	--	14.19 to 17.75	10.76 to 14.32	10.76 to 17.75
least bittern	12.70	11.51	2.03	2.19	1.34	2.81	--	--	14.04 to 15.51	12.86 to 14.32	12.86 to 15.51
white-tailed kite	923.16	820.45	305.18	268.08	195.58	173.57	12.40	18.16	1,109.13 to 1,246.51	1,006.42 to 1,143.80	1,006.42 to 1,246.51
bald eagle	11.33	8.00	2.55	3.18	3.77	6.81	--	--	13.88 to 18.13	10.55 to 14.80	10.55 to 18.13
northern harrier	909.90	810.53	302.63	264.90	191.81	166.76	12.40	18.16	1,089.06 to 1,230.70	989.69 to 1,131.32	989.69 to 1,230.70
Swainson's hawk	885.17	776.29	303.63	267.32	193.27	172.49	12.40	18.16	1,070.06 to 1,206.96	961.18 to 1,098.08	961.18 to 1,206.96
golden eagle	621.63	554.78	239.08	232.91	155.48	127.49	--	--	749.12 to 860.71	682.27 to 793.87	682.27 to 860.71

	Impacts by Project Combination		Le Grand Design Options				Fresno HST Station Alternatives		Impact of Components Combined		
	BNSF North-South Alignment with Ave 24 Wye	BNSF North-South Alignment with Ave 21 Wye	Mission Ave	Mission Ave East of Le Grand	Mariposa Way	Mariposa Way East of Le Grand	Mariposa Street Station	Kern Street Station	BNSF Alternative with Ave 24 Wye	BNSF Alternative with Ave 21 Wye	Total Range of Impacts
American peregrine falcon	2,009.99	1,914.84	443.51	421.24	393.78	395.98	50.05	70.41	2,453.81 to 2,523.91	2,358.66 to 2,428.76	2,358.66 to 2,523.91
lesser sandhill crane	422.86	347.99	222.64	216.36	141.21	116.53	--	--	539.40 to 645.50	464.52 to 570.63	464.52 to 645.50
greater sandhill crane	422.86	347.99	222.64	216.36	141.21	116.53	--	--	539.40 to 645.50	464.52 to 570.63	464.52 to 645.50
snowy plover	11.84	10.91	2.01	2.19	1.33	2.79	--	--	13.17 to 14.64	12.24 to 13.70	12.24 to 14.64
mountain plover	268.70	247.52	166.71	135.70	102.47	70.32	12.40	18.16	351.42 to 453.57	330.24 to 432.40	330.24 to 453.57
whimbrel	6.98	6.73	0.43	0.34	0.10	0.55	--	--	7.08 to 7.53	6.83 to 7.29	6.83 to 7.53
long-billed curlew	59.01	49.74	64.91	53.76	68.60	33.42	--	--	92.43 to 127.62	83.16 to 118.34	83.16 to 127.62
marbled godwit	6.98	6.73	0.43	0.34	0.10	0.55	--	--	7.08 to 7.53	6.83 to 7.29	6.83 to 7.53
red knot	6.98	6.73	0.43	0.34	0.10	0.55	--	--	7.08 to 7.53	6.83 to 7.29	6.83 to 7.53
short-billed dowitcher	6.98	6.73	0.43	0.34	0.10	0.55	--	--	7.08 to 7.53	6.83 to 7.29	6.83 to 7.53
black tern	124.97	95.42	88.16	81.11	31.68	31.52	--	--	156.49 to 213.13	126.95 to 183.58	126.95 to 213.13
western burrowing owl	1,204.83	1,075.79	337.19	286.93	214.99	189.79	50.00	70.30	1,444.62 to 1,612.31	1,315.58 to 1,483.28	1,315.58 to 1,612.31
long-eared owl	1,056.21	969.68	309.65	340.33	320.95	342.07	--	--	1,365.86 to 1,398.28	1,279.34 to 1,311.75	1,279.34 to 1,398.28
short-eared owl	306.50	253.60	169.94	146.99	118.03	78.30	--	--	384.80 to 476.44	331.90 to 423.54	331.90 to 476.44
Costa's hummingbird	1,196.74	1,139.88	272.83	282.37	312.03	314.77	0.12	0.12	1,469.62 to 1,511.63	1,412.76 to 1,454.77	1,412.76 to 1,511.63
loggerhead shrike	1,199.59	1,071.33	335.53	285.02	213.69	187.48	50.00	70.30	1,437.06 to 1,605.41	1,308.81 to 1,477.16	1,308.81 to 1,605.41
least Bell's vireo	6.85	3.45	0.95	0.85	2.53	3.86	--	--	6.85 to 9.85	4.30 to 7.31	4.30 to 9.85
yellow-billed magpie	1,496.37	1,397.73	343.34	372.38	346.03	364.15	22.33	37.55	1,862.04 to 1,906.29	1,763.40 to 1,807.66	1,763.40 to 1,906.29
purple martin	382.07	324.72	33.80	31.43	45.10	52.47	22.38	37.66	435.88 to 472.20	378.53 to 414.86	378.53 to 472.20
bank swallow	5.99	3.45	0.95	0.85	2.53	3.86	--	--	6.85 to 9.85	4.30 to 7.31	4.30 to 9.85

	Impacts by Project Combination		Le Grand Design Options				Fresno HST Station Alternatives		Impact of Components Combined		
	BNSF North-South Alignment with Ave 24 Wye	BNSF North-South Alignment with Ave 21 Wye	Mission Ave	Mission Ave East of Le Grand	Mariposa Way	Mariposa Way East of Le Grand	Mariposa Street Station	Kern Street Station	BNSF Alternative with Ave 24 Wye	BNSF Alternative with Ave 21 Wye	Total Range of Impacts
yellow warbler	5.99	3.45	0.95	0.85	2.53	3.86	--	--	6.85 to 9.85	4.30 to 7.31	4.30 to 9.85
yellow-breasted chat	5.99	3.45	0.95	0.85	2.53	3.86	--	--	6.85 to 9.85	4.30 to 7.31	4.30 to 9.85
spotted towhee	817.01	791.21	106.27	135.64	196.57	237.45	0.05	0.12	923.33 to 1,054.57	897.53 to 1,028.77	897.53 to 1,054.57
Oregon vesper sparrow	483.65	465.49	157.87	146.52	120.95	86.26	15.27	14.59	584.49 to 656.79	566.34 to 638.63	566.34 to 656.79
Belding's savannah sparrow	12.57	12.25	8.91	8.41	6.13	3.80	--	--	16.37 to 21.48	16.06 to 21.16	16.06 to 21.48
grasshopper sparrow	244.22	214.03	87.78	74.43	89.59	55.17	--	--	299.38 to 333.81	269.20 to 303.63	269.20 to 333.81
song sparrow ("Modesto" population)	10.43	7.77	9.40	8.85	8.14	6.70	--	--	17.13 to 19.83	14.46 to 17.17	14.46 to 19.83
tricolored blackbird	245.34	197.17	167.69	151.66	111.92	79.37	--	--	324.70 to 413.02	276.54 to 364.86	276.54 to 413.02
yellow-headed blackbird	516.46	473.81	119.79	110.47	61.08	61.37	--	--	577.54 to 636.25	534.89 to 593.60	534.89 to 636.25
Lawrence's goldfinch	1,329.34	1,298.43	256.93	229.51	302.20	299.01	27.72	32.87	1,586.57 to 1,664.41	1,555.66 to 1,633.50	1,555.66 to 1,664.41
western red bat	1,667.27	1,572.62	398.38	389.24	363.58	372.81	34.78	55.83	2,065.63 to 2,121.47	1,970.98 to 2,026.82	1,970.98 to 2,121.47
pallid bat	1,309.27	1,268.83	370.68	364.21	322.62	326.06	12.40	18.16	1,644.29 to 1,698.11	1,603.85 to 1,657.67	1,603.85 to 1,698.11
western mastiff bat	1,667.27	1,572.62	398.38	389.24	363.58	372.81	34.78	55.83	2,065.63 to 2,121.47	1,970.98 to 2,026.82	1,970.98 to 2,121.47
San Joaquin kit fox	1,091.65	1,006.62	244.14	192.59	184.28	149.18	50.05	70.41	1,290.87 to 1,406.19	1,205.85 to 1,321.17	1,205.85 to 1,406.19
American badger	584.12	510.78	198.85	161.17	149.78	121.52	12.45	18.28	718.09 to 801.25	644.75 to 727.91	644.75 to 801.25

[a] All non-zero values are rounded to the nearest one-hundredth acre.

Table 3.7-B5-3
Special-Status Wildlife Species Potentially Affected During the Project Period of the Hybrid and Downtown Fresno Station Alternatives (acres[a])

	Impacts by Project Combination		Fresno HST Station Alternatives		
	Hybrid North-South Alignment with Ave 24 Wye	Hybrid North-South Alignment with Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
Conservancy fairy shrimp	4.77	3.92	--	--	3.92 to 4.77
vernal pool fairy shrimp	4.77	3.92	--	--	3.92 to 4.77
vernal pool tadpole shrimp	4.77	3.92	--	--	3.92to 4.77
valley elderberry longhorn beetle	7.10	3.47	--	--	3.47 to 7.10
Kern brook lamprey	6.70	3.73	--	--	3.73 to 6.70
Central Valley steelhead	6.70	3.73	--	--	3.73 to 6.70
Central Valley spring-run Chinook salmon	6.70	3.73	--	--	3.73 to 6.70
Chinook salmon - Central Valley fall / late fall-run ESU	6.70	3.73	--	--	3.73 to 6.70
hardhead	6.70	3.73	--	--	3.73 to 6.70
San Joaquin roach	6.70	3.73	--	--	3.73 to 6.70
California tiger salamander	3.39	2.56	--	--	2.56 to 3.39
western spadefoot	46.18	46.81	--	--	46.18 to 46.81
western pond turtle	29.94	26.03	--	--	26.03 to 29.94
fulvous whistling-duck	39.30	32.60	--	--	32.60 to 39.30
redhead	39.30	32.60	--	--	32.60 to 39.30
American white pelican	13.81	7.24	--	--	7.24 to 13.81
least bittern	16.55	8.21	--	--	8.21 to 16.55
white-tailed kite	1,224.01	950.43	12.40	18.16	962.83 to 1,242.17
bald eagle	14.14	7.95	--	--	7.95 to 14.14
northern harrier	1,209.17	941.78	12.40	18.16	954.18 to 1,227.33
Swainson's hawk	1,224.01	950.43	12.40	18.16	962.83 to 1,242.17

	Impacts by Project Combination		Fresno HST Station Alternatives		
	Hybrid North-South Alignment with Ave 24 Wye	Hybrid North-South Alignment with Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
golden eagle	970.47	695.90	--	--	695.90 to 970.47
American peregrine falcon	2,211.15	2,089.77	50.05	70.41	2,139.82 to 2,281.56
lesser sandhill crane	774.66	553.71	--	--	553.71 to 774.66
greater sandhill crane	774.66	553.71	--	--	553.71 to 774.66
snowy plover	12.68	7.70	--	--	7.70 to 12.68
mountain plover	415.75	351.76	12.40	18.16	364.16 to 433.91
whimbrel	5.98	4.01	--	--	4.01 to 5.98
long-billed curlew	52.16	50.82	--	--	50.82 to 52.16
marbled godwit	5.98	4.01	--	--	4.01 to 5.98
red knot	5.98	4.01	--	--	4.01 to 5.98
short-billed dowitcher	5.98	4.01	--	--	4.01 to 5.98
black tern	324.55	166.45	--	--	166.45 to 324.55
western burrowing owl	1,514.79	1,301.42	50.00	70.30	1,351.42 to 1,585.09
long-eared owl	1,276.52	1,196.95	--	--	1,196.95 to 1,276.52
short-eared owl	505.07	393.72	--	--	393.72 to 505.07
Costa's hummingbird	1,258.44	1,225.28	0.05	0.12	1,225.33 to 1,258.56
loggerhead shrike	1,508.03	1,297.64	50.00	70.30	1,347.64 to 1,578.33
least Bell's vireo	7.10	3.47	--	--	3.47 to 7.10
yellow-billed magpie	1,722.49	1,587.03	22.33	37.55	1,609.36 to 1,760.04
purple martin	353.91	335.25	22.38	37.66	357.63 to 391.57

	Impacts by Project Combination		Fresno HST Station Alternatives		
	Hybrid North-South Alignment with Ave 24 Wye	Hybrid North-South Alignment with Ave 21 Wye	Mariposa Street Station	Kern Street Station	Total Range of Impacts
bank swallow	7.10	3.47	--	--	3.47 to 7.10
yellow warbler	7.25	3.62	--	--	3.62 to 7.25
yellow-breasted chat	7.25	3.62	--	--	3.62 to 7.25
spotted towhee	681.76	850.57	0.05	0.12	681.81 to 850.69
Oregon vesper sparrow	660.71	590.73	15.27	14.59	605.32 to 675.98
Belding's savannah sparrow	9.36	6.53	--	--	6.53 to 9.36
grasshopper sparrow	219.62	240.06	--	--	219.62 to 240.06
song sparrow ("Modesto" population)	10.13	5.62	--	--	5.62 to 10.13
tricolored blackbird	414.59	228.34	--	--	228.34 to 414.59
yellow-headed blackbird	696.06	502.55	--	--	502.55 to 696.06
Lawrence's goldfinch	1,168.24	1,359.44	27.72	32.87	1,195.96 to 1,392.31
western red bat	1,859.36	1,738.96	34.78	55.83	1,773.74 to 1,915.19
pallid bat	1,535.62	1,430.91	12.40	18.16	1,443.31 to 1,553.78
western mastiff bat	1,859.36	1,738.96	34.78	55.83	1,773.74 to 1,915.19
San Joaquin kit fox	1,211.64	1,189.09	50.05	70.41	1,239.14 to 1,282.05
American badger	704.90	667.27	12.45	18.28	679.72 to 723.18

[a] All non-zero values are rounded to the nearest one-hundredth acre.

Table 3.7-B5-4
Special-Status Wildlife Species Potentially Affected During the Project Period of the HMF Alternatives (acres[a])

	Castle Commerce Center	Harris-DeJager	Fagundes	Gordon-Shaw	Kojima Development
Conservancy fairy shrimp	0.41	0.42	--	0.12	1.34
vernal pool fairy shrimp	0.41	0.42	--	0.12	1.34
vernal pool tadpole shrimp	0.41	0.42	--	0.12	1.34
valley elderberry longhorn beetle	0.24	0.44	0.48	1.05	1.28
Kern brook lamprey	2.01	0.19	0.49	2.56	1.10
Central Valley steelhead	2.01	0.19	0.49	2.56	1.10
Central Valley spring-run Chinook salmon	2.01	0.19	0.49	2.56	1.10
Chinook salmon - Central Valley fall / late fall-run ESU	2.01	0.19	0.49	2.56	1.10
hardhead	2.01	0.19	0.49	2.56	1.10
San Joaquin roach	2.01	0.19	0.49	2.56	1.10
California tiger salamander	0.41	--	--	--	1.34
western spadefoot	--	--	--	--	77.05
western pond turtle	7.75	1.53	1.85	3.92	2.65
fulvous whistling-duck	8.97	1.53	2.13	3.98	5.34
redhead	8.97	1.53	2.13	3.98	5.34
American white pelican	2.25	0.63	0.97	3.67	2.87
least bittern	3.61	0.19	1.24	2.62	1.60
white-tailed kite	200.27	232.35	200.81	297.08	89.79
bald eagle	2.48	0.63	0.97	3.61	2.37

	Castle Commerce Center	Harris-DeJager	Fagundes	Gordon-Shaw	Kojima Development
northern harrier	197.78	231.72	199.84	293.47	87.42
Swainson's hawk	202.09	231.00	215.58	296.12	89.09
golden eagle	157.94	225.67	198.45	273.67	82.41
American peregrine falcon	310.50	398.75	226.47	379.79	374.84
lesser sandhill crane	158.11	116.10	189.02	36.10	81.07
greater sandhill crane	158.11	116.10	189.02	36.10	81.07
snowy plover	2.82	0.19	0.77	2.56	1.94
mountain plover	68.45	13.01	84.91	32.53	80.04
whimbrel	0.81	--	0.28	0.06	1.34
long-billed curlew	0.81	--	0.28	0.06	78.39
marbled godwit	0.81	--	0.28	0.06	1.34
red knot	0.81	--	0.28	0.06	1.34
short-billed dowitcher	0.81	--	0.28	0.06	1.34
black tern	6.51	103.44	94.65	0.06	0.50
western burrowing owl	305.38	126.90	215.65	71.81	88.43
long-eared owl	169.25	278.40	190.44	108.16	366.45
short-eared owl	117.45	107.78	94.37	20.64	81.07
Costa's hummingbird	133.35	379.83	106.29	332.83	367.54
loggerhead shrike	303.37	126.71	215.16	69.24	87.34
least Bell's vireo	0.24	0.44	0.48	1.05	1.28
yellow-billed magpie	257.53	390.22	221.54	352.37	368.27

	Castle Commerce Center	Harris-DeJager	Fagundes	Gordon-Shaw	Kojima Development
purple martin	99.14	2.90	8.52	12.02	5.50
bank swallow	0.24	0.44	0.48	1.05	1.28
yellow warbler	1.04	0.44	0.48	1.05	1.28
yellow-breasted chat	1.04	0.44	0.48	1.05	1.28
spotted towhee	83.42	166.64	2.18	86.40	285.88
Oregon vesper sparrow	62.46	14.67	88.85	25.11	80.42
Belding's savannah sparrow	1.21	--	0.28	--	2.18
grasshopper sparrow	111.75	4.34	9.61	20.59	80.57
song sparrow ("Modesto" population)	1.45	--	0.48	0.06	3.12
tricolored blackbird	7.95	103.87	104.75	1.11	80.16
yellow-headed blackbird	118.26	217.34	113.98	258.21	4.87
Lawrence's goldfinch	132.66	175.17	6.64	113.76	367.66
western red bat	285.05	393.75	207.14	371.10	372.16
pallid bat	192.45	392.20	200.25	360.44	369.06
western mastiff bat	285.05	393.75	207.14	371.10	372.16
San Joaquin kit fox	291.71	23.72	95.26	69.96	87.41
American badger	193.87	19.16	86.62	56.89	86.85

[a] All non-zero values are rounded to the nearest one-hundredth acre.

ATTACHMENT 6

Methodology for Biological Resources Impact Acreages

Methodology for Biological Resources Impact Acreages

Construction-period and project impacts are calculated within the construction footprint as shown on Figure 3.7-B5-1 (all figures at the end of this Attachment).

Construction Period Impacts: Temporary impacts on natural resources that occur during high-speed train (HST) construction that can be restored after the cessation of activity.

Project Impacts: Permanent impacts on natural resources that occur during HST construction and operation.

Indirect Permanent Impacts: Represents a 250-foot-radius buffer around project elements to evaluate indirect permanent impacts.

Exhibit 1 provides the acreages by alternative and design option, impact type, and resource electronically on compact disk (CD).

Executive Summary Table S-4

The impact acreages presented in Table S-4 are calculated using the north-south alignment and the applicable design option unless otherwise noted below.

UPRR/SR 99 Alternative with the East Chowchilla Design Options

Example – Direct Permanent Impacts on Vernal Pools and Seasonal Wetlands (acres)

	East Chowchilla Avenue 24 Design Option		East Chowchilla Avenue 21 Design Option		North-South Alignment Isolated and with Wye Design Option	
North-South Alignment	**A**	3.44	**B**	3.51		
with Ave 24 Wye	**C**	0.15			A + C	3.59
with Ave 21 Wye			**D**	0.66	B + D	4.17

BNSF Alternative with the Mariposa Way and Mission Avenue Design Options

Example – Direct Permanent Impacts on Vernal Pools and Seasonal Wetlands (acres)

	Avenue 24		Avenue 21	
North-South Alignment	**A**	6.08	**B**	6.18
Ave 24 Wye	**C**	0.39		
Ave 21 Wye			**D**	0.23

	Mariposa Way				Mission Avenue				North-South Alignment Isolated with Mariposa Way, Mission Avenue, and with Wye Design Option
	Le Grand		East of Le Grand		Le Grand		East of Le Grand		
	E	10.91	**F**	7.02	**G**	11.63	**H**	11.31	
North-South	16.99		13.10		17.71		17.39		A + E/F/G/H[a]

Alignment with Design Option	17.09	13.20	17.81	17.49	B + E/F/G/H[a]
with Ave 24 Wye	17.38	13.49	18.1	17.78	A + C + E/F/G/H[a]
with Ave 21 Wye	17.32	13.43	18.04	17.72	B + D + E/F/G/H[a]

[a]E, F, G, or H is added to the sum of the north-south alignment and wye to get the sum for each design option.
For example A +C + E presents the direct permanent impacts for vernal pools and seasonal wetlands for the BNSF Avenue 24, including the wye, with the Mariposa Way Le Grand design option.

Summary of Habitat Grouping

The impact acreages for special-status plant and wildlife species and Waters of the U.S. (aquatic communities) consist of the following habitat types.

Special-status Plant Species	Special-status Wildlife Species	Waters of the US (aquatic communities)
Barren	Barren	Freshwater Marsh
Pasture	Field Crop	Palustrine Forested Wetland
California Annual Grassland	Row Crop	Natural Watercourse
Mixed Riparian	Fallow Field	Constructed Watercourse
Other Riparian	Pasture	Constructed Basins
Ruderal	Inactive Agriculture	Open Water
Freshwater Marsh	California Annual Grassland	
Seasonal Wetland	Mixed Riparian	
Vernal Pool	Other Riparian	
Palustrine Forested Wetland	Eucalyptus	
Natural Watercourse	Ruderal	
	Freshwater Marsh	
	Seasonal Wetland	
	Vernal Pool	
	Palustrine Forested Wetland	
	Natural Watercourse	
	Open Water	

Biological Resources and Wetlands

Range of Impacts

The range of impact acreages presented in Section 3.7 and the Biological Resources and Wetlands Technical Report are based on the following methodology:

UPRR/SR 99 ALTERNATIVE

- (Minimum of Impacts by Project Combination + Minimum of Fresno Station Alternatives) to (Maximum of Impacts by Project Combination + Maximum of Fresno Station Alternatives).

BNSF ALTERNATIVE

- (BNSF north-south alignment with Ave 24 Wye + Minimum of Le Grand Design Options + Minimum of Fresno Station Alternatives) to (BNSF north-south alignment with Ave 24 Wye + Maximum of Le Grand Design Options + Maximum of Fresno Station Alternatives).

Impact of Components Combined: BNSF Alt, Ave 21 Wye Range of Impacts

- (BNSF north-south alignment with Ave 21 Wye + Minimum of Le Grand Design Options + Minimum of Fresno Station Alternatives) to (BNSF north-south alignment with Ave 21 Wye + Maximum of Le Grand Design Options + Maximum of Fresno Station Alternatives).

Total Range of Impacts

- (Minimum of Impact of Components Combined) to (Maximum of Impact of Components Combined).

HYBRID ALTERNATIVE

- (Minimum of Impacts by Project Combination + Minimum of Fresno Station Alternatives) to (Maximum of Impacts by Project Combination + Maximum of Fresno Station Alternatives).

STATIONS AND HEAVY MAINTENANCE FACILITIES

NO RANGES

SUMMARY OF HABITAT GROUPING

The impact acreages for terrestrial and aquatic communities consist of the following habitat types.

Terrestrial Communities	Aquatic Communities
Developed Areas	Vernal Pools
Urban	Other Seasonal Wetlands
Commercial/Industrial	Fremont Cottonwood Forested Wetlands
Transportation Corridor	Coastal and Valley Freshwater Marsh
Barren	Natural Watercourses
Agricultural Lands	Constructed Basins
Orchard	Constructed Watercourses
Vineyard	Open Waters
Field Crop	
Row Crop	
Fallow Field	
Dairy	
Pasture	
Inactive Agriculture	
Rural Residential	
Ruderal Vegetation	
California Annual Grassland	
Great Valley Mixed Riparian Forest	

Terrestrial Communities	Aquatic Communities
Other Riparian	
Eucalyptus Woodlands	

Wetland Delineation Report

The impact acreages presented in the Wetland Delineation Report represent the acreages within the Wetland Study Area for Waters of the U.S. (aquatic communities).

UPRR/SR 99 and Hybrid Alternatives

- North-south alignment
- Avenue 21 Wye
- Avenue 24 Wye

BNSF Alternative

- North-south alignment + (Mariposa Way or Mariposa Way East of Le Grand)
- North-south alignment + (Mission Avenue or Mission Avenue East of Le Grand)
- Avenue 21 Wye
- Avenue 24 Wye

Total Impact by Alternative

- North-south alignment + Wye

Impact Calculation Diagrams

The methodology for project (direct) and construction periods (temporary) and indirect permanent impacts acres by habitat type are presented on Figures 3.7-B6-2 through 3.7-B6-5.

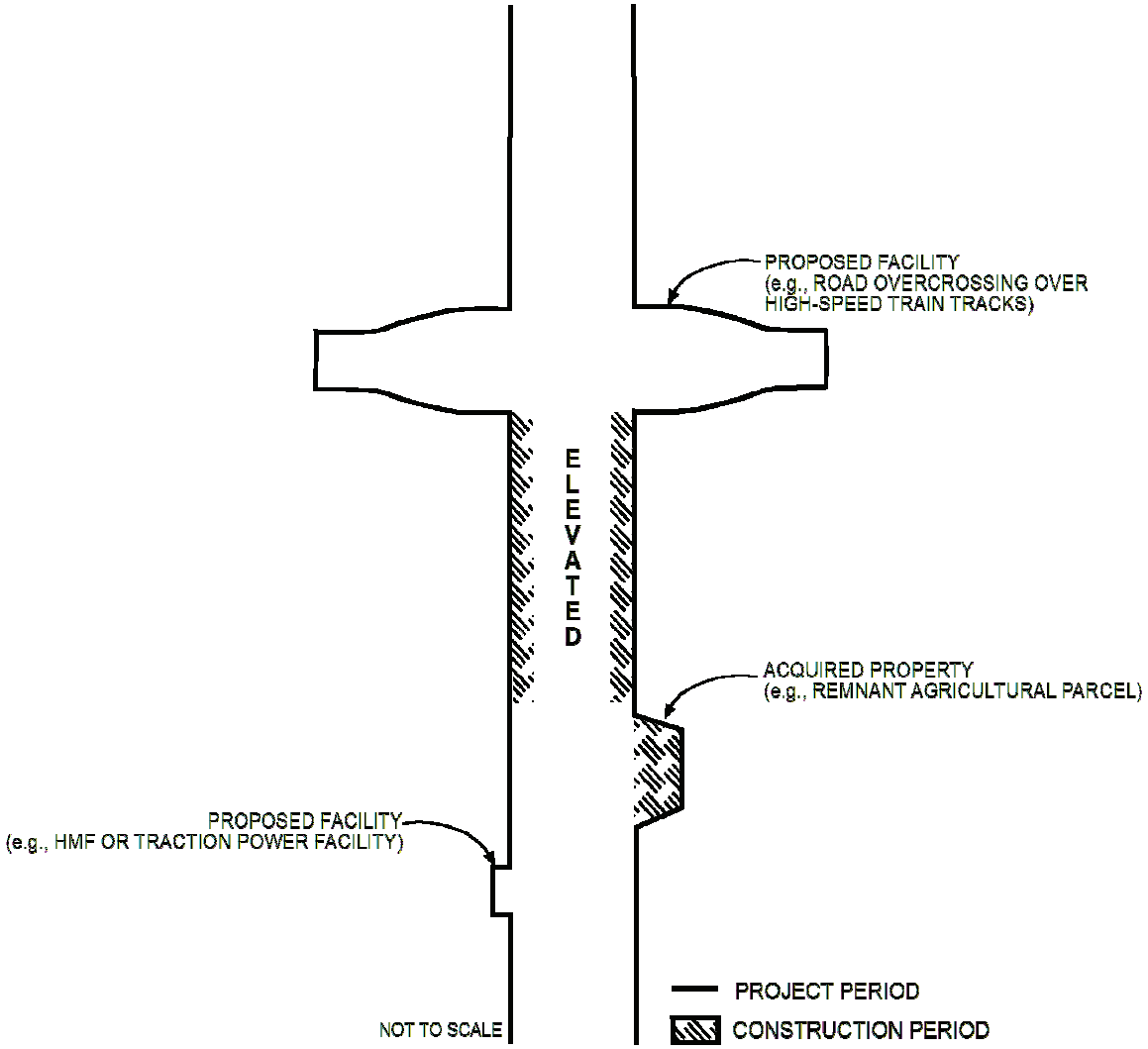

Figure 3.7-B6-1
Project Footprint

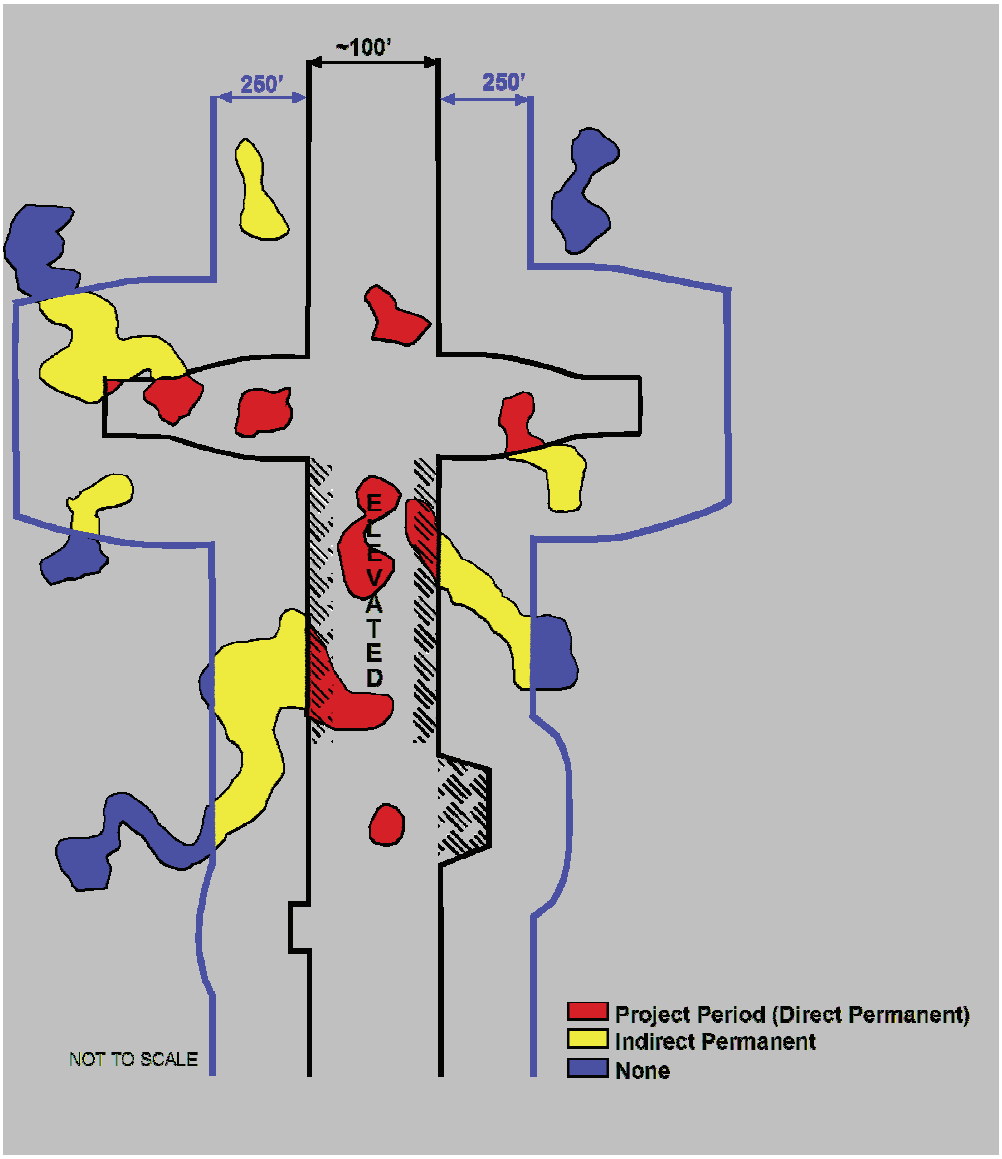

Figure 3.7-B6-2
Vernal Pools, Seasonal Wetlands and Open Water

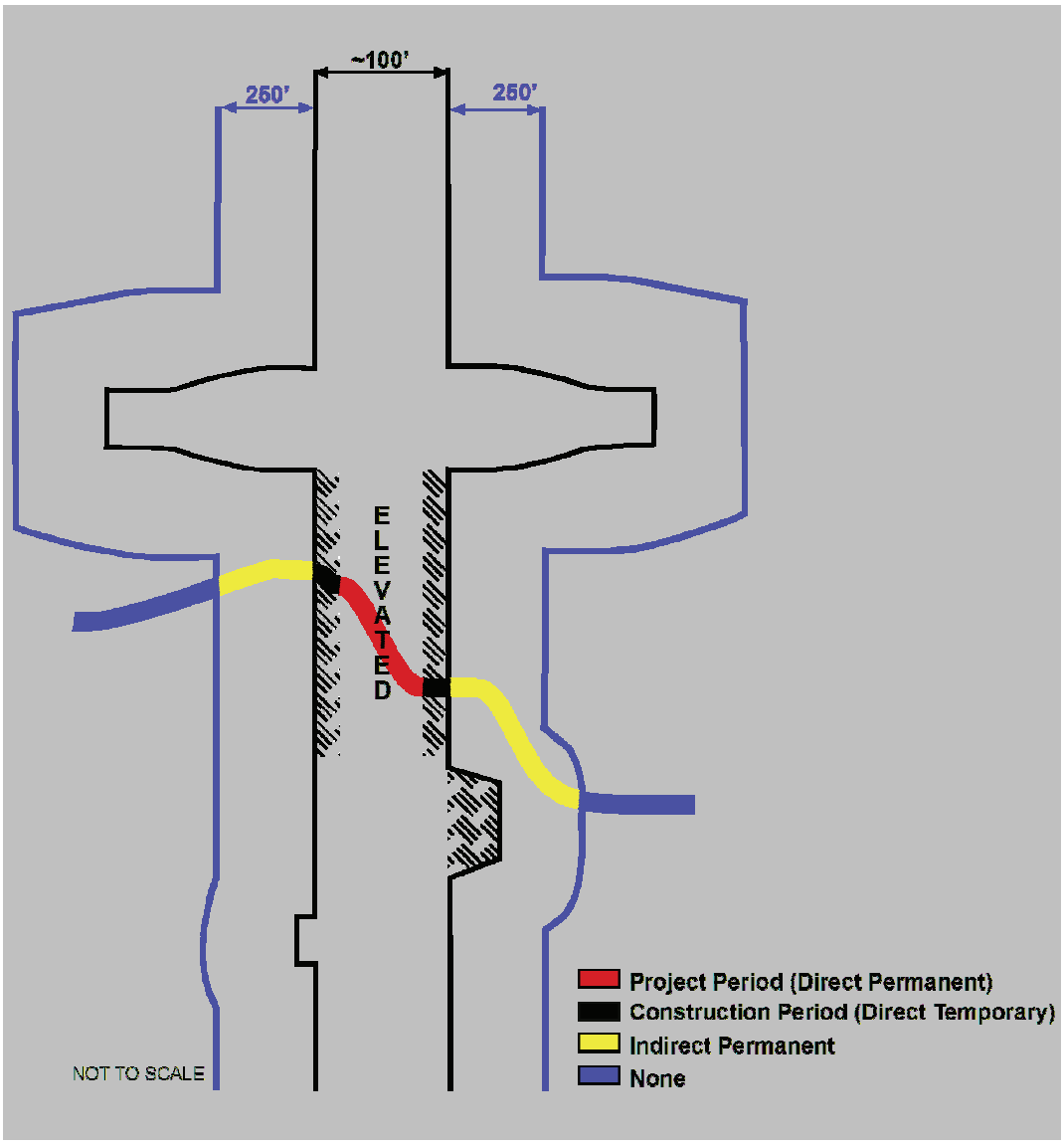

Figure 3.7-B6-3
Natural and Constructed Watercourse

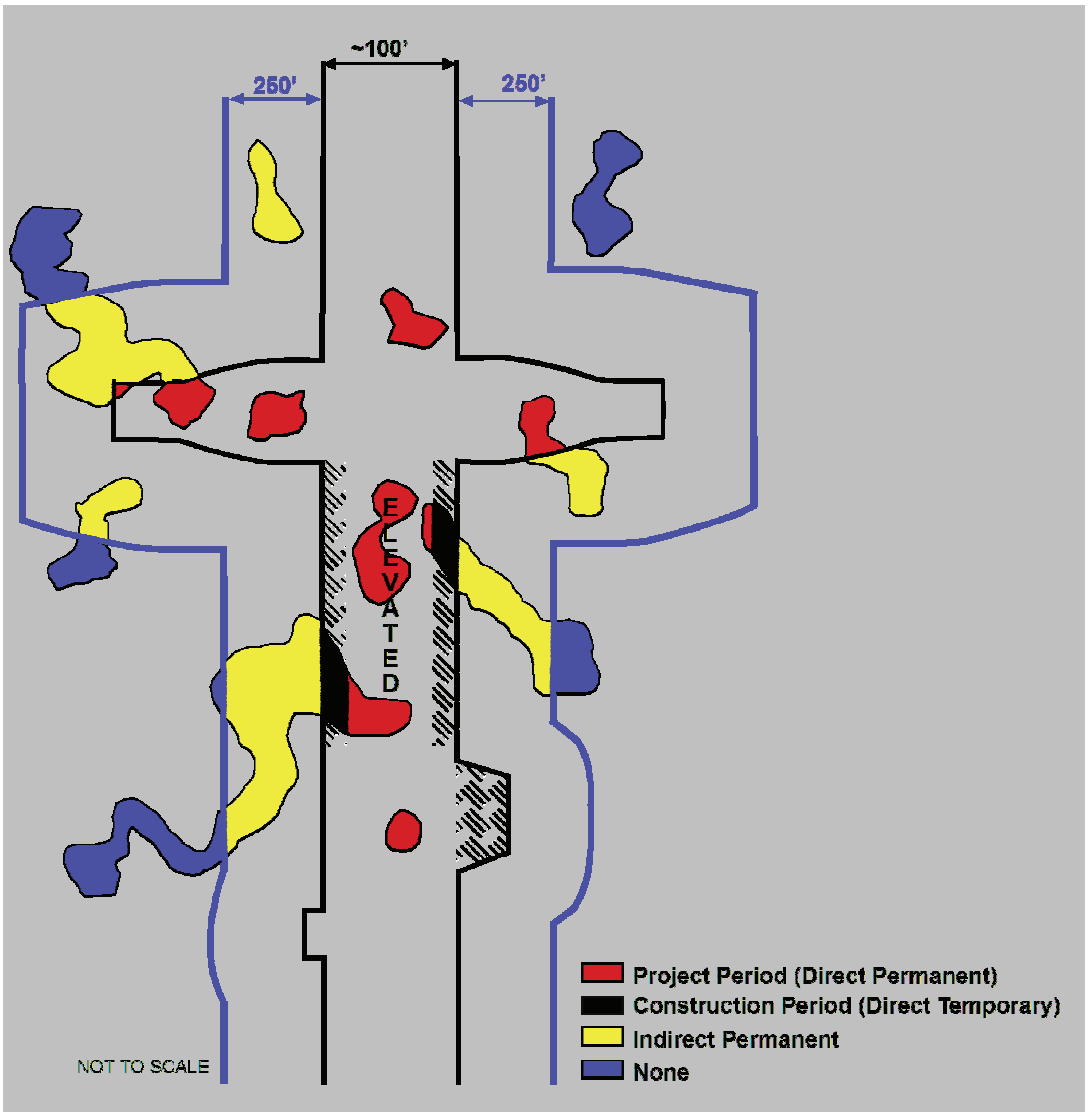

Figure 3.7-B6-4
Fremont Cottonwood Forested Wetlands, Coastal and Valley Freshwater Marsh, and Constructed Basins

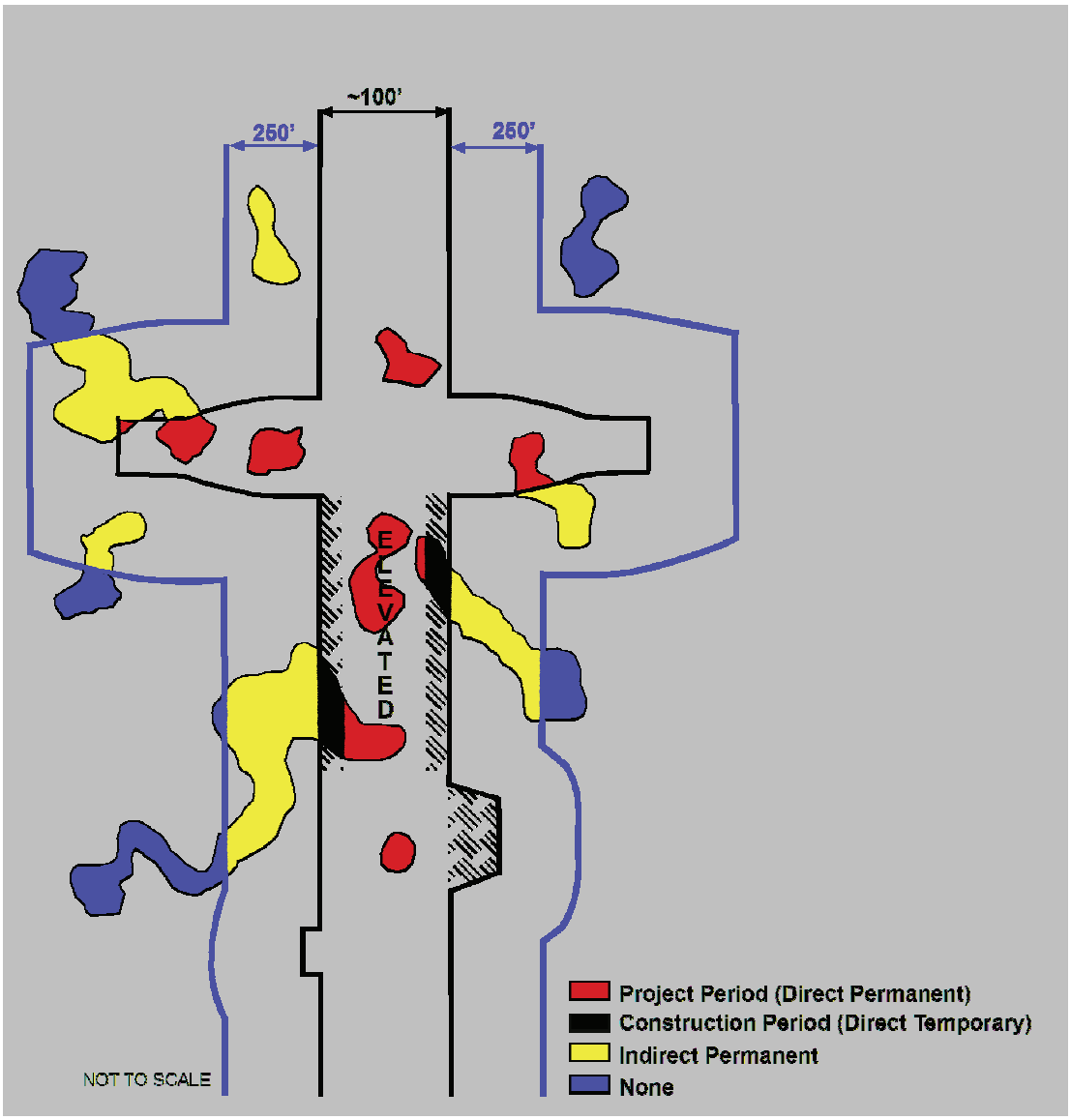

Figure 3.7-B6-5
Great Valley Mixed Riparian Forest and Other Riparian

Exhibit 1. Acreages by Alternative and Design Option, Impact Type, and Resource

Provided on CD only.