3.3.4 Terrestrial Resources

This discussion of terrestrial resources is divided into six subsections. Section 3.3.4.1 discusses the affected environment (environmental baseline), including vegetation classifications, special-status plants[1], non-native invasive plants (NNIP);[2] Section 3.3.4.2 describes wildlife habitat, special-status wildlife,[3] commercially valuable wildlife,[4] and wetland, riparian and littoral habitats.[5] Section 3.3.4.3 addresses wetlands, riparian, and littoral habitats within the Project area. Section 3.3.4.4 describes known or potential Project effects on terrestrial resources, including cumulative effects, Section 3.3.4.5 describes unavoidable adverse effects, and proposed measures recommended by agencies and other interested parties in written comments on SSWD's DLA that were not adopt by SSWD are discussed in Section 3.3.4.6.

Where existing, relevant and reasonably available information was not sufficient to determine the potential effects of the Project on terrestrial resources, SSWD conducted four studies: 1) Study 3.3, *Instream Flow*; 2) Study 4.1, *Special-Status Plants and Non-Native Invasive Plants*; 3) Study 4.2, *Special-Status Wildlife – Raptors*; and 4) Study 4.3, *Special-Status Wildlife – Bats.* The studies are complete, and information on the study results can be found in this Application for New License. Additionally, data related to each study is located in Appendix E1 of this Application.

3.3.4.1 Affected Environment

3.3.4.1.1 Vegetation in the Proposed FERC Project Boundary

SSWD assessed vegetation with information from the CDFW's Vegetation Classification and Mapping Program (VegCAMP), which is publicly available data. The data were mapped using a GIS database and overlaid in layers. The area depicted includes the proposed FERC Project Boundary, and VegCAMP classifications within this area were quantified using GIS.

1 For the purpose of this Application for New License, a special-status plant is a species that has a reasonable possibility of being affected by Project O&M or associated recreation and meets one or more of the following criteria: 1) listed on CDFW's list of California Rare (SR) species under the Native Species Plant Protection Act; 2) listed as threatened or endangered under CESA; or 3) listed on the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants. Botanical species listed as threatened or endangered, or a candidate or proposed for listing, under the ESA are discussed separately in Section 3.3.5.

2 For the purpose of this Application for New License, NNIP are defined as those plant species listed as noxious weeds by the California Department of Food and Agriculture (CDFA). State-designated noxious weeds are typically assigned one of three ratings: 1) A-list species are mandated for eradication or control; 2) B-list species are widespread plants that agricultural commissioners may designate for local control efforts; and 3) C-list species are considered too widespread to control (CDFA 2018). Aquatic invasive plants, including algae, are discussed in Section 3.3.3.

3 For the purpose of this Application for New License, a special-status wildlife species is a species that has a reasonable possibility of being affected by Project O&M or associated recreation and meets one or more of the following criteria: 1) protected under the Bald and Golden Eagle Protection Act; 2) designated by CDFW as a Species of Special Concern (SSC); 3) listed as threatened or endangered, or a candidate or proposed for listing under CESA; or 4) Fully Protected (FP) under California law. Wildlife species listed as threatened or endangered, or a candidate or proposed for listing, under the ESA are discussed separately in Section 3.2.5.

4 For the purpose of this Application for New License, a commercially-valuable wildlife species is any species listed as a 'Harvest species' by CDFW. Per CDFW, a "Harvest species" is "game birds (Fish and Game Code § 3500); Game Mammals (Fish and Game Code § 3950) and Fur-bearing Mammals and Non-game animals as designated in the California Code of Regulations" (CDFW 2015a).

5 Aquatic reptiles, mollusks and snails are discussed in Section 3.3.3.

The area evaluated for vegetation encompasses 2,661.9 ac. The VegCAMP classifications and total acreage within the proposed FERC Project Boundary are summarized in Table 3.3.4-1, and shown in Figure 3.3.4-1. This information is generated by software and not necessarily ground-truthed at any given location.

Table 3.3.4-1. Acres of each VegCAMP vegetation classification within the Camp Far West Hydroelectric proposed FERC Project Boundary and adjacent area.[1]

Vegetation and Habitat Type	Sensitive Natural Community[2]	Area (acres)[1]	Percentage of Area (%)
TREE DOMINATED HABITATS			
Aesculus californicus	S3	1.42	0.05
Pinus sabiniana	--	2.66	0.10
Populus fremontii	S3	1.33	0.05
Quercus douglasii	--	452.60	17.00
Quercus lobata	S3	2.99	0.12
Quercus wislizeni	--	91.55	3.45
Salix laevigata	S3	3.35	0.12
Subtotal		555.90	20.89
HERBACEOUS HABITATS			
California Annual and Perennial Grassland	--	231.43	8.70
Californian Warm Temperate Marsh/Seep Group	S2	2.83	0.11
Irrigated Pasture Lands	--	9.00	0.34
Mediterranean California Naturalized Annual and Perennial Grassland	--	80.78	3.03
Subtotal		324.04	12.18
OTHER HABITATS			
Built-Up and Urban Disturbance	--	27.81	1.04
Perennial Stream Channel	--	0.84	0.03
Reservoir	--	1,749.61	65.73
River and Lacustrine Flats and Streambeds	--	1.73	0.06
Small Earthen Dam Ponds and Natural Lakes	--	1.58	0.06
Vernal Pool & Californian Annual and Perennial Grassland Matrix	S2	0.39	0.01
Subtotal		1,781.96	66.93
	Total	**2,661.90**	**100.00**

Source: CDFW 2018a

[1] The area evaluated for vegetation encompasses 2,661.9 ac (i.e., 2,674.0 ac in the Proposed Project Boundary and an additional 12.1 ac adjacent to the boundary).

[2] S2, Imperiled - Imperiled in the State because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.
S3, Vulnerable - Vulnerable in the State due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.

Six of the VegCAMP natural communities identified within the Proposed Project Boundary are considered Sensitive Natural Communities with rankings of S2 and S3 by the CDFW.[6] These cover 12.31 ac and are: 1) *Aesculus californicus; 2) Populus fremontii; 3) Quercus lobata; 4) Salix laevigata;* 5) Californian Warm Temperate Marsh/Seep Group; and 6) Vernal Pool & Californian Annual and Perennial Grassland Matrix.

6 CDFW encourages Natural Communities with Sensitive ranks of S1 to S3 be addressed in the environmental review processes of CEQA and its equivalents (CDFW 2018a). The ranks are defined as follows: S1, Critically Imperiled - Critically imperiled in the State because of extreme rarity (often 5 or fewer populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation from the state; S2, Imperiled - Imperiled in the State because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state; and S3, Vulnerable - Vulnerable in the State due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.

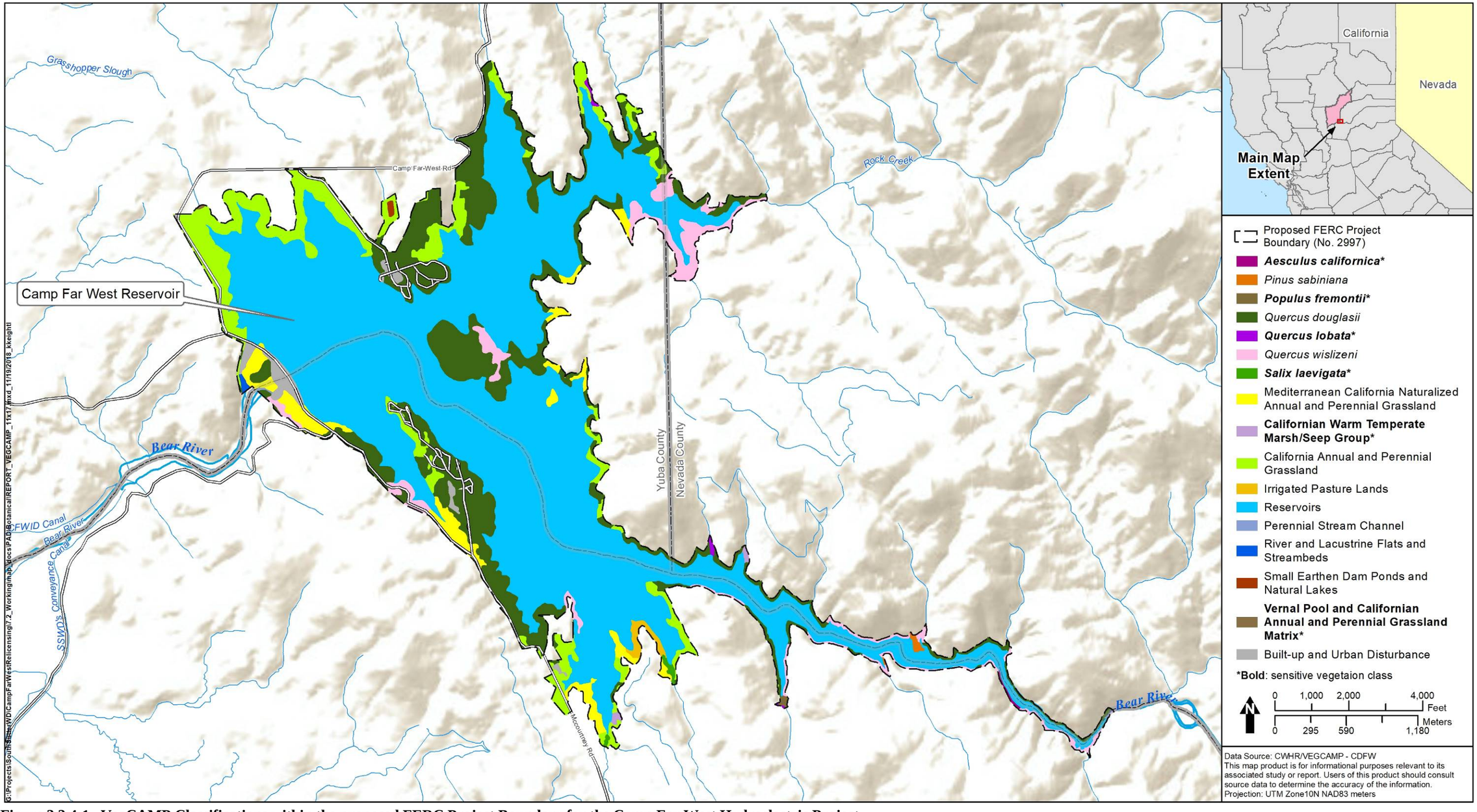

Figure 3.3.4-1. VegCAMP Classifications within the proposed FERC Project Boundary for the Camp Far West Hydroelectric Project.

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Tree-Dominated Habitats

Overall, tree-dominated habitats cover 555.90 ac of the area evaluated (Table 3.3.4-1). A discussion of each tree-dominated habitat is below (CDFW 2018a, Sawyer et al. 2009).

- *Aesculus californica* (1.42 ac). California buckeye (*Aesculus californica*) dominates the tree layer, with California ash (*Fraxinus dipetala*), foothill pine (*Pinus sabiniana*), and holly leaved cherry (*Prunus ilicifolia*) also present. Within this vegetation type there is often a developed shrub layer and a sparse and grassy understory. VegCAMP identified *Aesculus californica* in the furthest southeast portion of the proposed FERC Project Boundary (Figure 3.3.4-1). This vegetation type is a Sensitive Natural Community with a ranking of S3.
- *Pinus sabiniana* (2.66 ac). Foothill pine is the dominant species in the tree canopy, but often co-occurs with California buckeye, California black oak (*Quercus kelloggii*), and canyon live oak (*Quercus chrysolepis*). The canopy tends to be open to intermittent with a somewhat common shrub layer and sparse or grassy understory. *Pinus sabiniana* was identified at one location near the southeast corner of the proposed FERC Project Boundary (Figure 3.3.4-1).
- *Populus fremontii* (1.33 ac). This variable forest habitat includes Fremont's cottonwood (*Populus fremontii*), box elder (*Acer negundo*), western sycamore (*Platanus racemosa*), red willow (*Salix laevigata*) and other species in lesser quantities. Each of the three strata are variable in openness and density. *Populus fremontii* was identified at one location near the southeast corner of the proposed FERC Project Boundary down a short arm of the reservoir (Figure 3.3.4-1). This vegetation type is a Sensitive Natural Community with a ranking of S3.
- *Quercus douglasii* (452.60 ac). *Quercus douglasii* is dominated by California blue oak in the tree layer with some co-occurrence with California buckeye, foothill pine, valley oak (*Quercus lobata*), and interior live oak (*Quercus wislizeni*). The canopy can be savannah like to dense with a low to moderately developed shrub layer and seasonally present herb layer. *Quercus douglasii* can be found throughout the proposed FERC Project Boundary and is the most common terrestrial vegetation classification (Figure 3.3.4-1).
- *Quercus lobata* (2.99 ac). The tree layer includes valley oak with some box elder, western sycamore, Fremont's cottonwood, and California black oak. The canopy has a variable understory of shrubs and herbs. Within the proposed FERC Project Boundary, *Quercus lobata* occurs in an isolated area near the Nevada, Placer, and Yuba County border (Figure 3.3.4-1). This vegetation type is a Sensitive Natural Community with a ranking of S3.
- *Quercus wislizeni* (91.55 ac). Interior live oak, California buckeye, foothill pine, and California black oak all occur in the tree layer. The canopy cover, shrub cover, and herbaceous layers are all variable within this vegetation community. *Quercus wislizeni* is the second most common tree-dominated habitat, occurring in isolated pockets

throughout the proposed FERC Project Boundary, but the largest concentration is located in the northeastern corner (Figure 3.3.4-1).

- *Salix laevigata* (3.35 ac). Generally dominated by red willow in the tree layer, this community includes various other tree species including, but not limited to, box elder and white alder (*Alnus rhombifolia*). These woodlands tend to have a moderately developed shrub layer and a variable understory. *Salix laevigata* within the proposed FERC Project Boundary is located in two narrow riparian crevices on the southern-most portion of the reservoir (Figure 3.3.4-1). This vegetation type is a Sensitive Natural Community with a ranking of S3.

Herbaceous Habitats

Herbaceous habitats cover 324.04 ac of the area evaluated (Table 3.3.4-1). A discussion of each herbaceous habitat is below (CDFW 2018a, Sawyer et al. 2009).

- California Annual and Perennial Grassland (231.43 ac). California annual and perennial grasslands are generally dominated by non-native species such as small quaking grass (*Briza minor*), foxtail chess (*Bromus madritensis* ssp. *madritensis*), crane's bill geranium (*Geranium molle*), and hairy hawkbit (*Leontodon saxatilis*) at varying covers with some assemblages of other species including, but not limited to common fiddleneck (*Amsinckia menziesii*) and western buttercup (*Ranunculus occidentalis* var. *occidentalis*). Areas of low grass density occur in isolated patches allowing for a non-grassy herbaceous layer to develop. Perennial species consisting of goose grass (*Galium aparine*), shiny peppergrass (*Lepidium nitidum*), and bulbous blue grass (*Poa bulbosa*), and others can also occur in patches. These types of grasslands are present in most areas of the proposed FERC Project Boundary (Figure 3.3.4-1).
- California Warm Temperate Marsh/Seep Group (283.00 ac). California Warm Temperate Marsh/Seeps are characterized by a mixture of sedges (*Carex* spp.), rushes (*Juncus* spp.), as well as some instances of seep monkey flower (*Erythranthe guttata*), deergrass (*Muhlenbergia rigens*), and beardless wildrye (*Elymus triticoides*). Within the proposed FERC Project Boundary, these types of marshes and seeps occur in two narrow riparian crevices on the southeast portion of the reservoir (Figure 3.3.4-1). This vegetation type is a Sensitive Natural Community with a ranking of S2.
- Irrigated Pasture Lands (9.00 ac). Irrigated pasture lands are typically dominated by a random assemblage of non-native species including, but not limited to, slender wild oat (*Avena barbata*), Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*), greenstem filaree (*Erodium moschatum*), and cutleaf plantain (*Plantago coronopus*). The one location of this type of habitat within the proposed FERC Project Boundary is at the southern boundary of the reservoir just east of McCourtney Road (Figure 3.3.4-1)
- Mediterranean California Naturalized Annual and Perennial Grassland (80.78 ac). Mediterranean California Naturalized Annual and Perennial Grasslands are generally dominated by various non-native grass species including, but not limited to slender oat, poverty brome (*Bromus sterilis*), and bristly dogtail grass (*Cynosurus echinatus*). Additionally, non-grassy herbaceous species can also co-dominate including, but not

limited to, black mustard (*Brassica nigra*), common groundsel (*Senecio vulgaris*), yellow star-thistle (*Centaurea solstitialis*), and narrowleaf plantain (*Plantago lanceolata*). These types of grasslands are present in multiple areas of the proposed FERC Project Boundary with the exception of regions of the Project east of the Nevada and Yuba County longitudinal border (Figure 3.3.4-1).

Other Habitats

Other habitats cover 1,781.96 ac of the area of the area evaluated (Table 3.3.4-1). A discussion of each other habitat is below (CDFW 2018a).

- Built-Up and Urban Disturbance (27.81 ac). Built-Up and Urban Disturbance cover types apply to landscapes that are dominated by urban structures, residential units, or other developed land use elements such as highways, city parks, dams, etc. Within the proposed FERC Project Boundary, urban lands occur in the northwest portion of the Project (Figure 3.3.4-1).
- Perennial Stream Channels (0.84 ac). Perennial Stream Channels are labeled in VegCAMP mapping as areas of perennially flowing channels, instream bars, and either mostly or completely unvegetated intermittent stream channels. Within the proposed FERC Project Boundary, perennial stream channels can be found downstream of the Camp Far West Dam at the west end of the Project and at the furthest southeast edge (Figure 3.3.4-1).
- Reservoir (1,749.61 ac). This cover type is composed of all open water contained by the reservoir boundaries. This is the most common classification type within the proposed FERC Project Boundary (Figure 3.3.4-1).
- River and Lacustrine Flats and Streambeds (1.73 ac). River and Lacustrine Flats and Streambeds are typically composed of tributaries of major water bodies and contain a high degree of riparian and/or wetland vegetation cover. Within the proposed FERC Project Boundary this habitat occurs downstream of the Camp Far West Dam at the west end of the Project (Figure 3.3.4-1).
- Small Earthen Dam Ponds and Natural Lakes (1.58 ac). Small Earthen Dam Ponds and Natural Lakes is a cover type typically associated with small freshwater lacustrine systems that are either completely natural or only have earthen banks with no permanent or impermeable structures that control hydrology. Within the proposed FERC Project Boundary, this habitat is found north of the reservoir surrounded by a large patch of grassland (Figure 3.3.4-1).
- Vernal Pool & Californian Annual and Perennial Grassland Matrix (0.39 ac). Vernal Pool & Californian Annual and Perennial Grassland Matrix habitat is composed of vernal pools with a semi-impermeable layer allowing for water to pond for an intermittent period of time. These habitats are typically surrounded by grasslands. This habitat is found at the northwest corner of the proposed FERC Project Boundary. This vegetation type is a Sensitive Natural Community with a ranking of S2.

3.3.4.1.2 Vegetation Along the Bear River Downstream of the Project

A narrow band of vegetation on either side of the Bear River downstream of the Project may be cumulatively affected by Project releases and downstream non-Project water diversions. SSWD assessed vegetation with information from the CDFW's VegCAMP. The data were mapped using a GIS database and overlaid in layers. The area depicted included the band of vegetation within a 250-ft wide buffer of the Bear River downstream of the Project to its confluence with the Feather River. VegCAMP classifications within this area were quantified using GIS and are described in Table 3.3.4-2 and shown on Figures 3.3.4-2 to 3.3.4-5.

Table 3.3.4-2. Acres of each VegCAMP vegetation classification downstream of the Camp Far West Hydroelectric Project.

Vegetation and Habitat Type	Sensitive Natural Community[1]	Area (acres)	Percentage of Area (%)
TREE DOMINATED HABITATS			
Acer negundo	S2	3.75	0.34
Alnus rhombifolia	--	5.97	0.55
Juglans hindsii and hybrids	S1	3.37	0.31
Populus fremontii	S3	215.18	19.66
Quercus douglasii	--	19.66	1.79
Quercus lobata	S3	171.75	15.70
Quercus wislizeni	--	6.95	0.64
Salix gooddingii	S3	28.33	2.59
Salix laevigata	S3	2.09	0.19
Subtotal		457.05	41.77
HERBACEOUS HABITATS			
Arundo donax	--	37.74	3.45
California Annual and Perennial Grassland	--	7.72	0.71
Californian Warm Temperate Marsh/Seep Group	S2	4.42	0.40
Cephalanthus occidentalis	S2	1.48	0.14
Mediterranean California Naturalized Annual and Perennial Grassland	--	218.18	19.94
Myriophyllum spp. – Permanently Flooded Herbaceous Alliance	--	0.61	0.06
Naturalized warm-temperate riparian and wetland group	--	6.46	0.59
Rubus armeniacus	--	14.53	1.33
Salix exigua	--	19.88	1.82
Salix lasiolepis	--	22.10	2.02
Vitis californica - Provisional	--	1.81	0.17
Subtotal		334.93	30.63
OTHER HABITATS			
Agriculture	-	100.08	9.15
Bare Gravel and Sand	--	10.48	0.96
Built Up and Urban Disturbance	--	0.17	0.02
Perennial Stream Channel	--	34.08	3.11
Quarry, Mine, Gravel	--	10.0	0.91
River and Lacustrine Flats and Streambeds	--	2.76	0.25
Urban	--	16.59	1.52
Water	--	127.76	11.68
Subtotal		301.92	27.6
	Total	**1,093.90**	**100.00**

Source: CDFW 2018a

[1] S2, Imperiled - Imperiled in the State because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.
S3, Vulnerable - Vulnerable in the State due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.

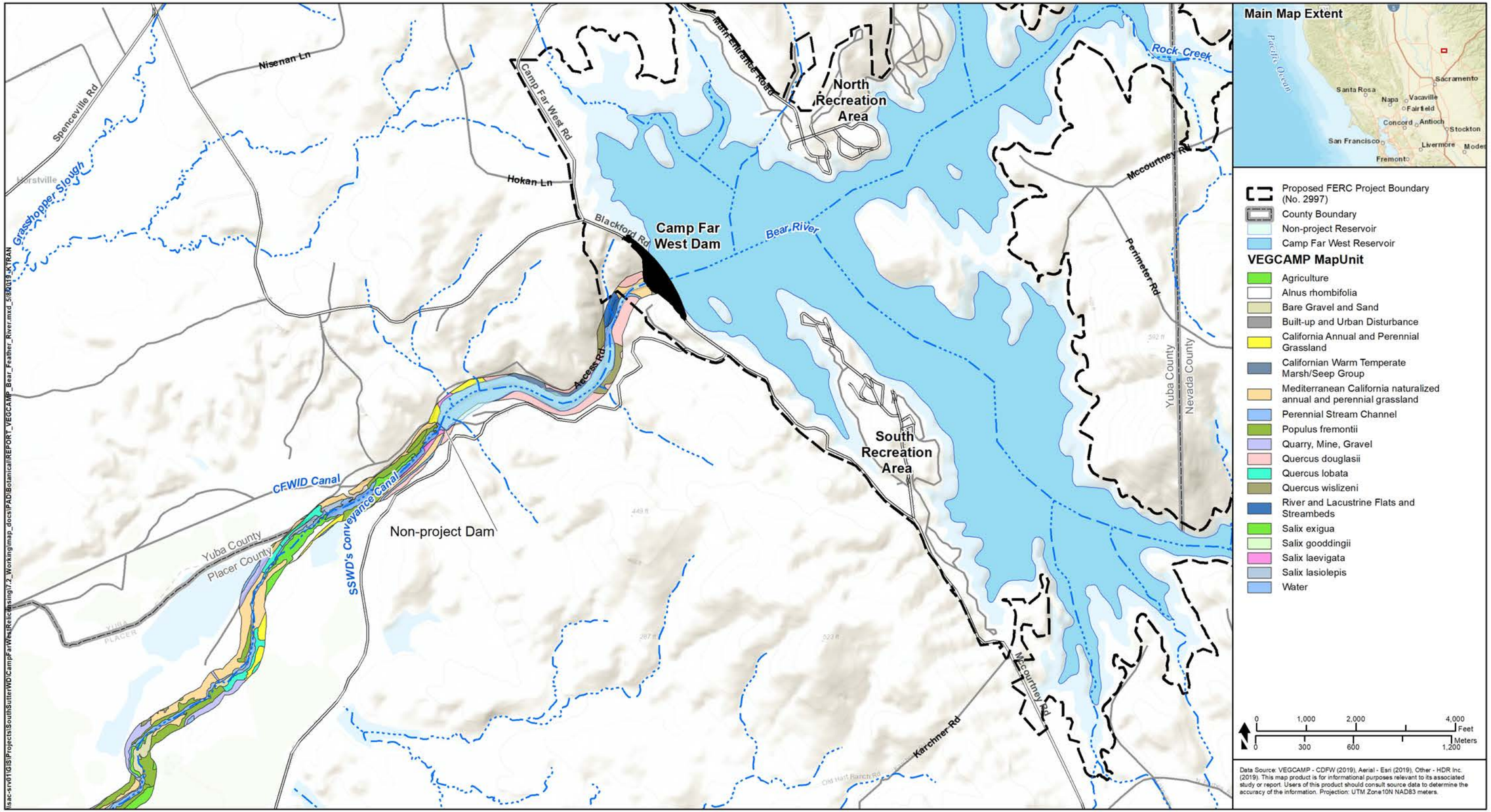

Figure 3.3.4-2. VegCAMP Classifications downstream of the proposed FERC Project Boundary for the Camp Far West Hydroelectric Project.

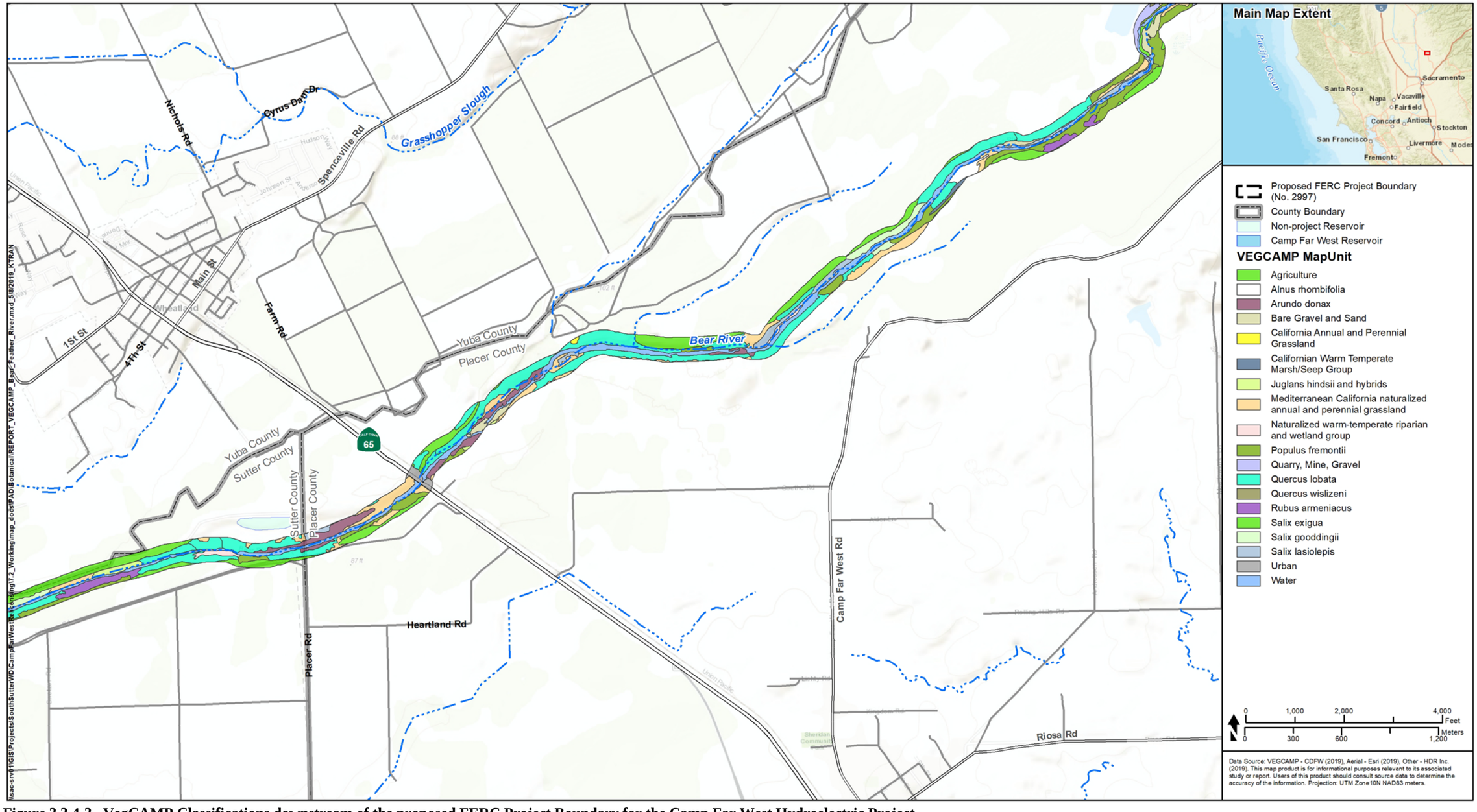

Figure 3.3.4-3. VegCAMP Classifications downstream of the proposed FERC Project Boundary for the Camp Far West Hydroelectric Project.

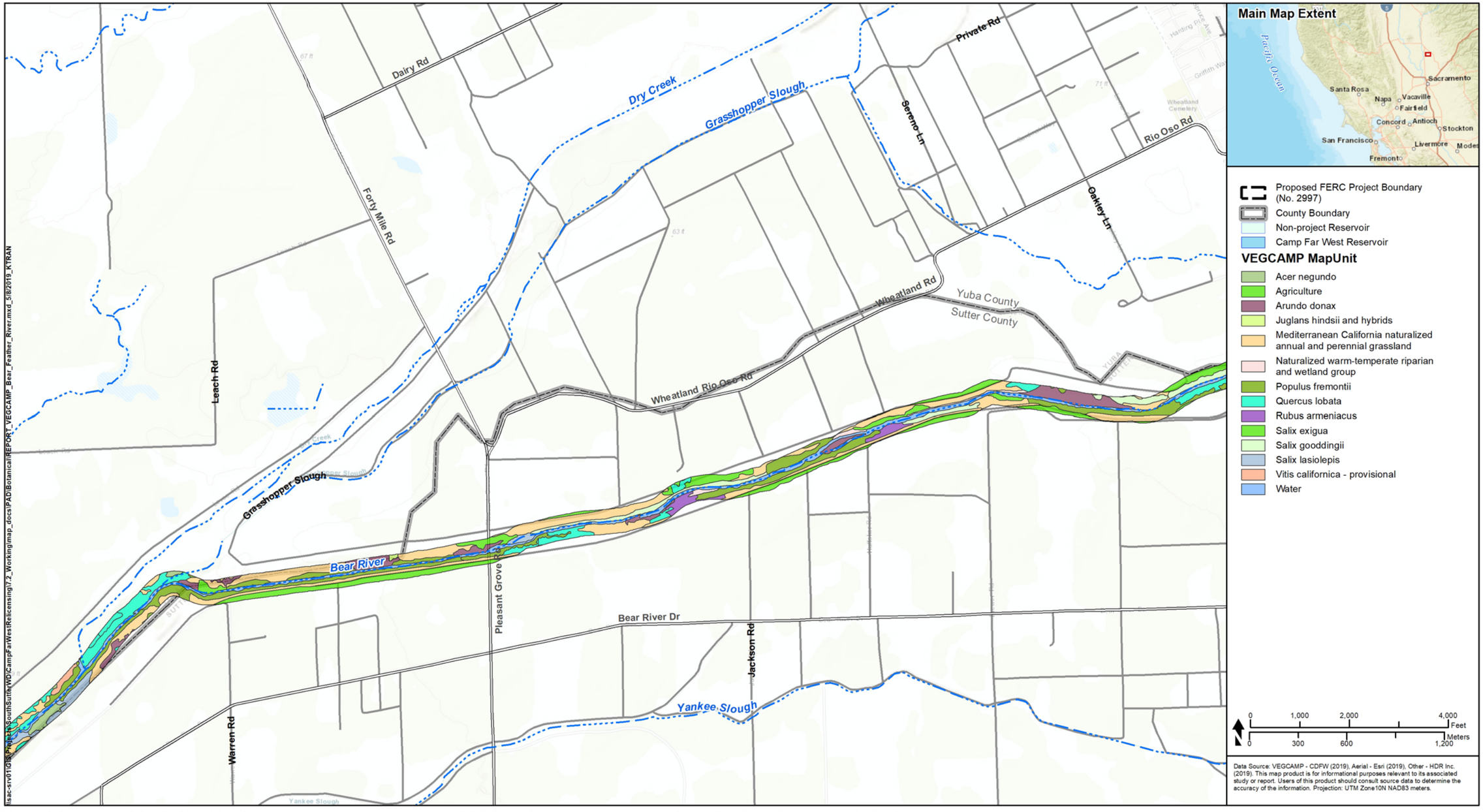

Figure 3.3.4-4. VegCAMP Classifications downstream of the proposed FERC Project Boundary for the Camp Far West Hydroelectric Project.

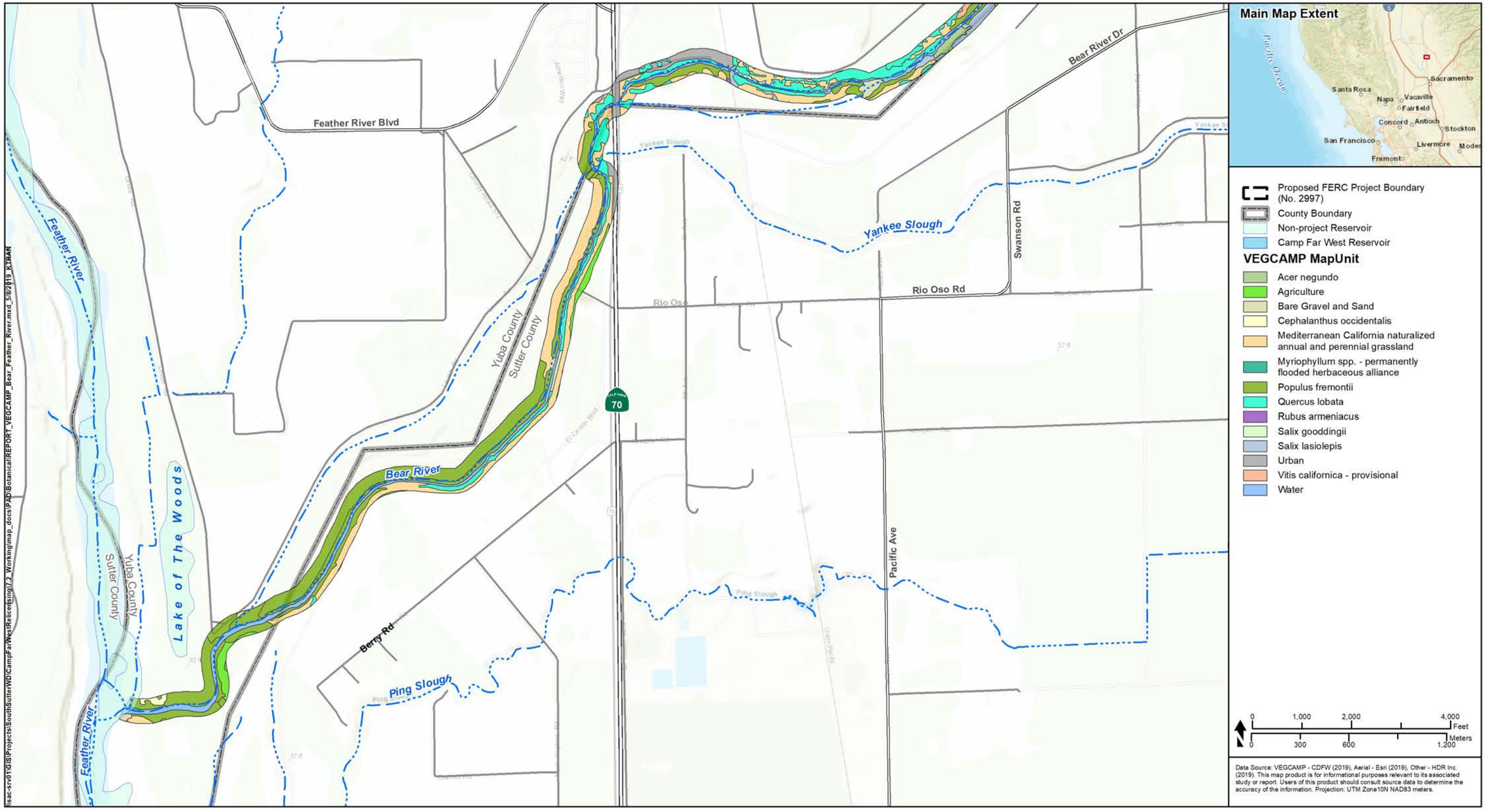

Figure 3.3.4-5. VegCAMP Classifications downstream of the proposed FERC Project Boundary for the Camp Far West Hydroelectric Project.

Tree-Dominated Habitats

Overall, tree-dominated habitats cover 457.05 ac of the band of vegetation within a 250 ft buffer of the Bear River downstream of the Project to its confluence with the Feather River (Table 3.4.4-2). A discussion of each of tree-dominated habitat is below (CDFW 2018a, Sawyer et al. 2009).

- *Acer negundo* (3.75 ac). Box-elder (*Acer negundo)* is dominant or co-dominant in tree canopy with *Alnus rhombifolia, Fraxinus latifolia, Juglans hindsii* and hybrids, *Platanus racemosa, Populus fremontii, P. trichocarpa, Quercus lobata, Salix gooddingii,* and other *Salix spp*. Trees are less than 20 m in height; cover is intermittent to continuous, and it may be two tiered. Shrub layer is open to intermittent and the herbaceous layer is sparse to abundant. This vegetation type is a Sensitive Natural Community with a ranking of S2.
- *Alnus rhombifolia* (5.97 ac). White alder (*Alnus rhombifolia*) is dominant or co-dominant in tree canopy with *Acer macrophyllum, Chamaecyparis lawsoniana, Fraxinus latifolia, Lithocarpus densiflorus, Platanus racemosa, Populus fremontii, P. Trichocarpa, Pseudotsuga menziesii*, *Quercus lobata,* and *Salix spp.* Trees are less than 35 m in height; canopy is open to continuous; it may be two tiered, shrub layer is sparse to continuous, and herbaceous layer is variable.
- *Juglans hindsii* and hybrids (3.37 ac). Hind's walnut (*Juglans hindsii*) or hybrids are dominant in the tree canopy with *Populus fremontii, Quercus lobata, Salix exigua, Salix gooddingii, and Sambucus nigra.* Trees are less than 25 m in height; canopy is intermittent to continuous, the shrub layer is open to intermittent, and the herbaceous layer is sparse. Habitat requirements include intermittently flooded or saturated riparian corridors, floodplains, stream banks, and terraces with alluvial soils. This vegetation type is a Sensitive Natural Community with a ranking of S1.
- *Populus fremontii* (215.18 ac). See Section 3.3.4.1.1.
- *Quercus douglasii* (19.66 ac), *Quercus lobata* (171.75 ac), and *Quercus wislizeni* (6.95 ac). See Section 3.3.4.1.1.
- *Salix gooddingii (*28.33 ac*).* Black willow (*Salix gooddingii)* is dominant or co-dominant in the tree canopy with *Alnus rhombifolia, Populus fremontii, Salix laevigata, Salix lasiolepis, Salix lucida spp. lasiandra, Sambucus nigra,* and *Washingtonia filifera.* Trees are less than 30 m in height; canopy is open to continuous, the shrub layer is open to continuous, and the herbaceous layer is variable. This vegetation type is a Sensitive Natural Community with a ranking of S3.
- *Salix laevigata* (2.09 ac). See Section 3.3.4.1.1.

Herbaceous Habitats

Herbaceous habitats cover 334.93 ac of the area within a 250 foot buffer of the Bear River downstream of the Project to its confluence with the Feather River, with Mediterranean

California naturalized annual and perennial grassland being the dominant habitat type (Table 3.3.4-2). A discussion of each herbaceous habitats is below (CDFW 2018a, Sawyer et al. 2009).

- *Arundo donax* (37.74 ac). *Arundo donax* is dominant in the herbaceous layer. Emergent trees may occur at low cover. *Arundo donax* is less than 8 m in height and canopy is continuous.
- California Annual and Perennial Grassland (7.72 ac). See Section 3.3.4.1.1.
- Californian Warm Temperate Marsh/Seep Group (4.42 ac). See Section 3.3.4.1.1.
- *Cephalanthus occidentalis* (1.48 ac). Button willow (*Cephalanthus occidentalis*) is dominant in the shrub canopy with *Cornus sericea, Salix gooddingii, S. lucida ssp. lasiandra,* and *Salix exigua*. Shrubs are less than 6 m in height; canopy is continuous, intermittent, or open and the herbaceous layer is sparse or grassy. This vegetation type is a Sensitive Natural Community with a ranking of S2.
- Mediterranean California Naturalized Annual and Perennial Grassland (218.18 ac). See Section 3.3.4.1.1.
- *Myriophyllum spp.* (0.61 ac). *Myriophyllum spp.* or other non-native submersed aquatic plant is dominant or co-dominant in the aquatic herb layer with other aquatics including *Azolla filiculoides, Ceratophyllum demersum, Eichhornia crassipes, Elodea canadensis, Ludwigia peploides, Myriophyllum aquaticum* or *Potamogeton crispus.* Naturalized Warm-Temperate Riparian and Wetland Group (6.46 ac). Includes *Lepidium latifolium* which is dominant in the herbaceous layer. Emergent trees and shrubs may occur at low cover, herbs are less than 2 m in height, and canopy is intermittent to continuous. The group also includes smartweed (*Persicaria lapathifolia or Xanthium strumarium*) which is dominant or co-dominant in the herbaceous layer. Smartweed is less than 1.5 m in height and cover is open to continuous.
- *Rubus armeniacus* (14.53 ac). Himalayan black berry (*Rubus armeniacus)* is dominant or co-dominant in the shrub layer. Shrubs are less than 3 m in height, canopy is intermittent to continuous, and herbaceous layer is open to intermittent. Himalayan black berry is an invasive species found in pastures, forest plantations, roadsides, streamsides, river flats, floodplains, fence lines, and right-of-way corridors.
- *Salix exigua* (19.88 ac). Sandbar willow (*Salix exigua*) is dominant or co-dominant in the shrub canopy with *Baccharis spp., Brickellia californica, Rosa californica, Rubus armeniacus, R. ursinus, Salix lasiolepis,* and *S. melanopsis*. Emergent trees of many different species may be present at low cover. Shrubs are less than 7 m in height; canopy is intermittent to continuous.
- *Salix lasiolepis* (22.10 ac). Arroyo willow (*Salix lasiolepis*) is dominant or co-dominant in the shrub or tree canopy. As a shrubland, emergent trees may be present at low cover. Plants are less than 10 m in height; canopy is open to continuous and the herbaceous layer is variable.

- *Vitis californica* (1.81 ac). California grape (*Vitis californica*) can be found throughout central and northern California. It is a deciduous vine that can grow to over 10 m in length. *Vitis californica* grows along streams and rivers and is native to California.

Other Habitats

Other habitats cover 301.92 ac of the area within a 250 ft buffer of the Bear River downstream of the Project to its confluence with the Feather River, with water as the dominant habitat type (Table 3.3.4-2). A discussion of each other habitat is below (CDFW 2018a).

- Agriculture (100.08 ac). Agricultural land is used primarily for the production of food and fiber. High-altitude imagery indicates agricultural activity by distinctive geometric field and road patterns on the landscape and traces produced by mechanized equipment. Agricultural land uses include forest landscapes such as orchards as well as non-forested land uses such as vineyards and field crops. Land used exclusively for livestock pasture may, however, be mapped as annual grassland in those cases in which land uses are not recognizable.
- Bare Gravel and Sand (10.48 ac). Landscapes generally devoid of vegetation as seen from a high-altitude image source such as aerial photography, are labeled as Barren. This category includes mappable landscape units in which surface lithology is dominant, such as exposed bedrock, cliffs, interior sandy or gypsum areas, and the like. It usually does not include barren areas considered as modified or developed, as in urban areas.
- Built Up and Urban Disturbance (0.17 ac). See Section 3.3.4.1.1.
- Perennial Stream Channel (34.08 ac). See Section 3.3.4.1.1.
- Quarry, Mine, Gravel (10.0 ac). Urban development in California occurs in phases. When land is cleared prior to being paved, this type represents the occurrence of non-vegetated barren ground that is caused by urbanization. This land-use type also represents other mechanically-caused barren ground, such as open quarries or mined areas, barren ground along highways and other areas cleared of vegetation prior to construction.
- River and Lacustrine Flats and Streambeds (2.76 ac). See Section 3.3.4.1.1.
- Urban (16.59 ac). The juxtaposition of urban vegetation types within cities produces a rich mosaic with considerable edge areas. The overall mosaic may be more valuable as wildlife habitat than the individual units in that mosaic. Species composition in urban habitats varies with planting design and climate. Monoculture is commonly observed in tree groves and street tree strips.
- Water (127.76 ac). Water is labeled in those cases in which permanent sources of surface water are identified within a landscape unit of sufficient size to be mapped. The category includes lakes, streams, and canals of various size, bays and estuaries and similar water bodies. These areas are considered to have a minimum of vegetation components, except along the edges, which may be mapped as types such as Wet Meadows, Tule-Cattail freshwater marshes, or Pickleweed-Cordgrass saline or mixed marshes. Islands of

sufficient size within water bodies will be mapped according to their terrestrial dominant vegetation types.

3.3.4.1.3 Special-Status Plants

Both documented and potentially occurring special-status plants are described below based on the results of queries to the CDFW's CNDDB (CDFW 2018b); USFWS' Information, Planning, and Conservation System (IPaC) Trust Resources Report for Nevada, Placer and Yuba counties (USFWS 2018a); the CNPS' Inventory of Rare and Endangered Plants database (CNPS 2018); and the Camp Far West Project's Biological Assessment (Sycamore Associates 2013a, Appendix A). Database queries included all United States Geological Survey (USGS) 1:24,000 topographic quadrangles that include the proposed FERC Project Boundary and the surrounding quadrangles. Quadrangles containing the proposed FERC Project Boundary include Camp Far West and Wolf. Quadrangles immediately adjacent to the Proposed Project Boundary quadrangles include Auburn, Browns Valley, Gold Hill, Grass Valley, Lake Combie, Lincoln, Rough and Ready, Sheridan, Smartsville, and Wheatland.

Table 3.3.4-3 lists the 14 special-status plants known to occur or with the potential to occur in the Proposed Project Boundary, six of which are known from the Proposed Project Boundary or quadrangles containing the proposed FERC Project Boundary.

Table 3.3.4-3. Special-status plants known or with the potential to occur in the Camp Far West Hydroelectric Project Vicinity.

Scientific Name / Common Name	Status[1]	Blooming Period[2]	Habitat Characteristics[2]	Potential	Rationale
FOUND WITHIN CAMP FAR WEST AND WOLF QUARDRANGLES (PROPOSED PROJECT BOUNDARY)					
Azolla microphylla/ Mexican mosquito fern	4.2	August	Ponded areas and slow moving water in marshes and swamps; 98 - 328 ft	Present	One occurrence found in Seep 3, which was located along the NSRA shoreline (Sycamore Associates 2013a)
Clarkia biloba ssp. *brandegeeae*/ Brandegee's clarkia	4.2	May–July	Chaparral, cismontane woodland, and lower montane coniferous forests, often in roadcuts; 245 - 3,000 ft	Present	Two occurrences along the south side of 'riverine' reach of the reservoir (Sycamore Associates 2013a)
Lilium humboldtii ssp. *humboldtii*/ Humboldt lily	4.2	May–August	Openings in chaparral, cismontane woodland, and lower montane coniferous forest; 295 - 4,200 ft	Yes	Suitable habitat is present in the FERC Project Boundary
Wolffia brasiliensis/ Brazilian watermeal	2B.3	April and December	Shallow freshwater marshes and swamps; 65 - 330 ft	Yes	Suitable habitat is present in the FERC Project Boundary

Table 3.3.4-3. (continued)

Scientific Name / Common Name	Status[1]	Blooming Period[2]	Habitat Characteristics[2]	Potential	Rationale
FOUND WITHIN CAMP FAR WEST AND WOLF QUARDRANGLES (PROPOSED PROJECT BOUNDARY) (cont.)					
Brodiaea sierrae/ Sierra foothills brodiaea	4.3	May–August	Usually found in serpentine or gabbro soils in chaparral, cismontane woodland, and lower montane coniferous forest; 160 - 3,215 ft	Present	One occurrence along south side of 'riverine' reach of reservoir (Sycamore Associates 2013a)
Subtotal	*5*				
FOUND WITHIN AUBURN, BROWNS VALLEY, GOLD HILL, GRASS VALLEY, LAKE COMBIE, LINCOLN, ROUGH AND READY, SHERIDAN, SMARTSVILLE, AND WHEATLAND QUARDRANGLES (OUTSIDE PROPOSED PROJECT BOUNDARY)					
Allium jepsonii/ Jepson's onion	1B.2	April–August	Serpentine or volcanic soils in chaparral, cismontane woodland, and lower montane coniferous forest; 980 - 4,330 ft	No	No serpentine or volcanic soils are present in the FERC Project Boundary
Allium sanbornii var. *sanbornii/* Sanborn's onion	4.2	May–September	Usually serpentine or gravelly soils in chaparral, cismontane woodland, and lower montane coniferous forest; 850 - 4,955 ft	No	No serpentine soils are present in the FERC Project Boundary
Balsamorhiza macrolepis/ Big-scale balsamroot	1B.2	March–June	Occasionally in serpentine soils in chaparral, cismontane woodland, and grasslands; 295 - 5,100 ft	No	No serpentine soils are present in the FERC Project Boundary
Fritillaria eastwoodiae/ Butte County fritillary	3.2	March–June	Sometimes serpentine soils in chaparral, cismontane woodland, and lower montane coniferous forest; 160 - 4,920 ft	Yes	Suitable habitat is present in the FERC Project Boundary
Juncus leiospermus var. *ahartii/* Ahart's dwarf rush	1B.2	March–May	Mesic soils in grasslands; 95 - 750 ft	Yes	Suitable habitat is present in the FERC Project Boundary.
Plagiobothrys glyptocarpus var. *modestus/* Cedar Crest popcornflower	3	April–June	Cismontane woodland and mesic grasslands; 2,850 - 2,855 ft	Yes	Suitable habitat is present in the FERC Project Boundary.
Rhynchospora capitellata/ Brownish beaked-rush	2B.2	July–August	Mesic soils in meadows, seeps, marshes, swamps, and montane coniferous forests; 145 - 6,560 ft	Yes	Suitable habitat is present in the FERC Project Boundary.
Sidalcea gigantea/ Giant checkerbloom	4.3	(January–June) July–October	Meadows and seeps of montane coniferous forests; 2,195 - 6,400 ft	Yes	Suitable habitat is present in the FERC Project Boundary.

Table 3.3.4-3. (continued)

Scientific Name / Common Name	Status[1]	Blooming Period[2]	Habitat Characteristics[2]	Potential	Rationale
FOUND WITHIN AUBURN, BROWNS VALLEY, GOLD HILL, GRASS VALLEY, LAKE COMBIE, LINCOLN, ROUGH AND READY, SHERIDAN, SMARTSVILLE, AND WHEATLAND QUARDRANGLES (OUTSIDE PROPOSED PROJECT BOUNDARY) (cont.)					
Sidalcea stipularis/ Scadden Flat checkerbloom	1B.1, SE	July–August	Montane freshwater marshes and swamps; 2,295 - 2,395 ft	Yes	Suitable habitat is present in the FERC Project Boundary.
Subtotal	*9*				
Total	**14**				

[1] Status (CDFW 2018a; CNPS 2018)
SE = State Endangered
California Rare Plant Rank
1B Plants Rare, Threatened, or Endangered in California and elsewhere
2B Plants Rare, Threatened, or Endangered in California, but more common elsewhere
3 Plants about which we need more information - review list
4 Plants of limited distribution - watch list
.1 Seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat)
.2 Moderately threatened in California (20–80% of occurrences threatened; moderate degree and immediacy of threat)
.3 Not very threatened in California (<20% of occurrences threatened; low degree and immediacy of threat or no current threats known)

[2] Source: CNPS 2018

Special-Status Plants and Non-Native Invasive Plants Study

SSWD conducted a special-status plant and NNIP Study (Study 4.1, *Special-Status Plants and Non-Native Invasive Plants*) within a designated study area inside the proposed FERC project Boundary, including background literature reviews, desktop analyses, and field investigations.

The study area consisted of four specific areas: 1) the North Shore Recreation Area (NSRA); 2) the SSRA; 3) the Camp Far West Dam and associated dikes and Spillway; and 4) the Camp Far West Dam Powerhouse, for a total of 505 ac. Figure 3.3.4-6 shows the study area for special-status plants and NNIP. These are the areas where SSWD's Project O&M activities or Project-related recreation could affect special-status plants or spread NNIP.

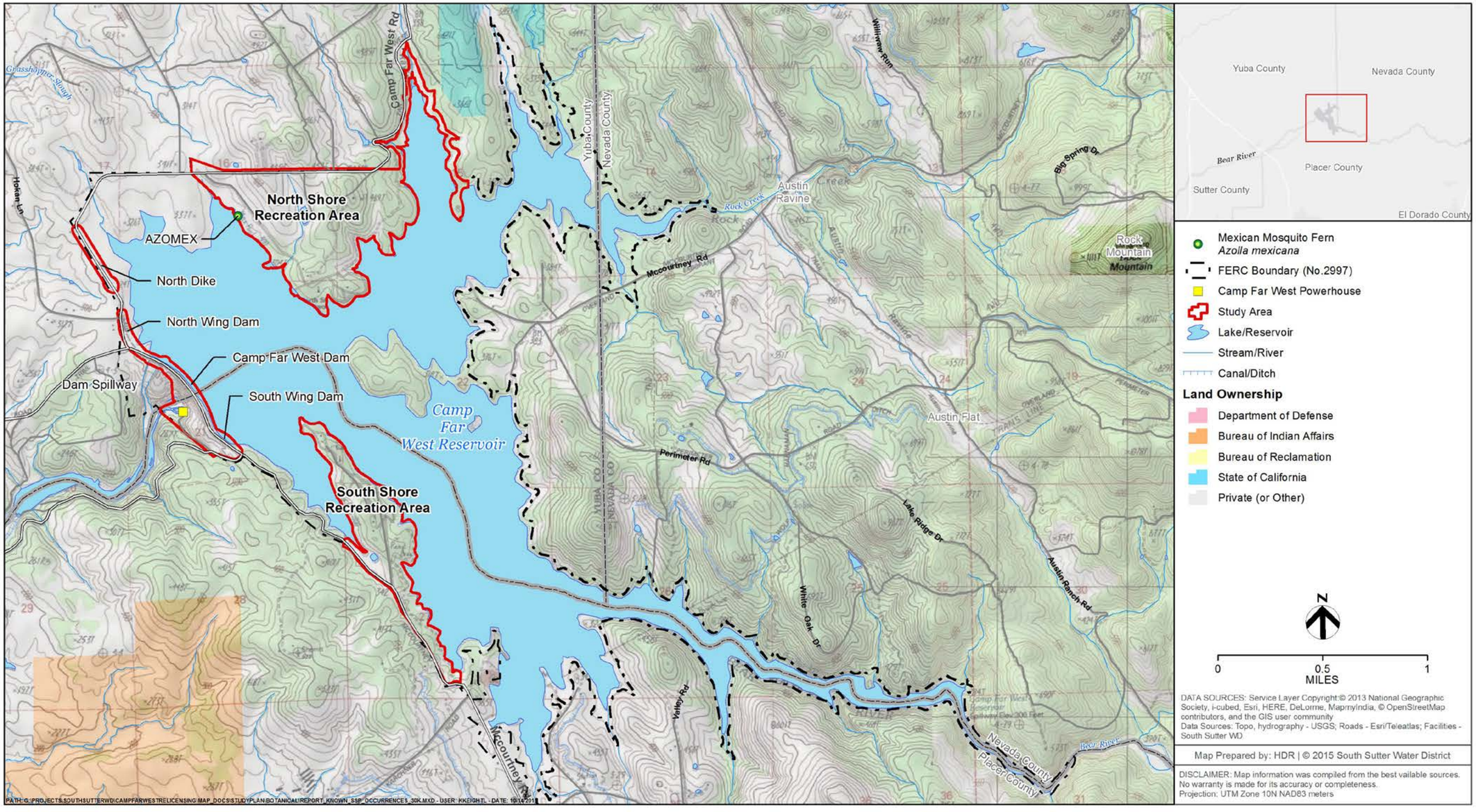

Figure 3.3.4-6. Study Area for special-status plants and NNIP studies.

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The study was conducted consistent with Section 6.0 of the *Special-Status Plants and Non-Native Invasive Plant Study Plan* that was filed with FERC on January 9, 2017. This study was conducted in conjunction with SSWD's relicensing Study 5.1, *ESA-Listed Plants*, and Study 5.2, *ESA-Listed Wildlife – Valley Elderberry Longhorn Beetle.* Additional information describing NNIP surveys and results is provided below in Section 3.3.4.1.3 and field data are provided in Appendix E1.

Before starting field surveys, SWWD identified and mapped known occurrences of special-status plants within the Study Area and prepared field maps for use by field survey teams. The maps included aerial imagery, Project features, and known special-status plant and NNIP occurrences. The maps were used for guidance purpose only; during the study, all special-status plant species and NNIP occurrences were mapped.

Field surveys were conducted from April 2017 through July 2017. Survey timing was planned based on known bloom times and herbarium collection dates. SSWD's surveyors conducted special-status plant surveys and NNIP surveys as outlined in the "Botanical Survey" section of the CDFW's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009). Surveys were comprehensive over the entire study area, except for areas deemed to be unsafe (e.g., due to steep, unstable terrain) by the field team, using systematic field techniques to ensure thorough coverage, with additional efforts focused in habitats with a higher probability of supporting special-status plants (e.g., serpentine outcrops) and NNIP. Surveys were floristic in nature, documenting all species observed; taxonomy and nomenclature were based on *The Jepson Manual* (Baldwin et al. 2012).

Following field surveys, SSWD developed GIS maps depicting NNIP occurrences, Project facilities, features, and specific Project-related impacts (e.g., dispersed use camping) and other related information collected during the study. Field data were subject to QA/QC procedures, including spot-checks of transcription and comparison of GIS maps with field notes to verify locations of mapped occurrences.

The final step of the study, SSWD's Project Operations Staff Consultation, was completed on March 15, 2018.

A total of 206 plant species was identified during the 2017 surveys (Attachment 3.3.4A); 94 were native species. No special-status plant species were identified in the study area. However five occurrences of special-status plants were identified during 2013 surveys by SSWD, all in the Proposed Project Boundary. These species are described below.

Mexican Mosquito Fern (*Azolla microphylla*)[7]

Mexican mosquito fern is a small, floating green plant with simple roots; plants are often 0.5-1 inch wide with small, alternate, overlapping leaves and dichotomous (forked branches of equal size) branching. Leaves are divided into two lobes: (1) a smaller floating upper lobe 0.7 mm long, papillose (small rounded projections) on the upper surface, the largest hairs on upper (dorsal) leaf lobes thick, 2–3 celled; and (2) a lower lobe that is larger, and variously described as submerged or floating. Plants may be green or red in color. Sporocarps (fruiting bodies) occur in pairs in the leaf axils of older plants. The species is usually found growing in ponds and slow streams at elevations less than 3,937 ft (Jepson Flora Project 2017; B.C. Ministry of Environment 2016).

SSWD located one occurrence of Mexican mosquito fern that was found in Seep 3, which is located along the NSRA shoreline (Sycamore Associates 2013a).

Brandegee's Clarkia (*Clarkia biloba* ssp. *brandegeeae*)

Brandegee's clarkia is a small (less than 3.5 ft tall) herbaceous annual with an erect stem. The leaves of Brandegee's clarkia are about 0.75 to 2.4 in. long, narrow, and have pinnate veins emanating from the mid-vein. Its pink to purple flowers (sometimes tinged with red) are widely rotate with wedge-shaped petals. A diagnostic taxonomic character for Brandegee's clarkia is the length of the petal lobes, which are generally less than one fifth the length of the entire petal. It is generally found growing in the Sierra Nevada foothill woodlands at elevations ranging from 1,260 to 4,495 ft (Jepson Flora Project 2017).

SSWD located two occurrences along the south side of the Bear River reach of the reservoir (Sycamore Associates 2013a).

Sierra Foothills Brodiaea (*Brodiaea sierrae*)

Sierra foothills brodiaea is a perennial bulbiferous herb that typically grows at elevations from 591-3,100 ft. This species is usually found in serpentinite or gabbroic habitats. It has also been observed in the following habitat types: chaparral; cismontane woodland; and lower montane coniferous forest. This species typically grows in soils derived from basic and ultramafic intrusive rocks. The species has one to 10 linear to narrow lanceolate basal leaves. The species is potentially threatened by vehicles, road maintenance, road widening, development,

7 Photograph found at: http://www.env.gov.bc.ca/wld/documents/recovery/rcvrystrat/mexican_mosquito_fern_rcvry_strat240708.pdf (B.C. Ministry of Environment 2016).

urbanization, horticultural collecting, and hydrological alterations (CNPS 2018; Jepson Flora Project 2017).

SSWD located one occurrence of Sierra foothills brodiaea along the south side of the riverine reach of reservoir (Sycamore Associates 2013a).

3.3.4.1.3 Non-Native Invasive Plants

Both known and potential NNIP occurrences are listed in Table 3.3.4-4, based on the 2017 NNIP study, which is described below, BA for Camp Far West (Sycamore Associates 2013a), the CalWeedMapper Database (Cal-IPC 2018a), the Jepson Flora Project (2017), and collection records of plants in the Camp Far West Region with CDFA rankings (CCH 2018).

Table 3.3.4-4 lists the 42 NNIPs known to occur or with the potential to occur in the Project Vicinity, 11 of which are known to occur in the proposed FERC Project boundary.

Table 3.3.4-4. NNIP known to occur or potentially occurring in the Camp Far West Hydroelectric Project Vicinity.

Common Name/ Scientific Name	CDFA[1] Status	Flowering Period	Elevation(ft)	Habitat
KNOWN TO OCCUR WITHIN THE PROPOSED FERC PROJECT BOUNDARY				
Barbed goatgrass *(Aegilops triuncialis)*	B	May-Aug	Below 3,300	Disturbed sites, cultivated fields, roadsides
Cheatgrass (*Bromus tectorum*)	-	May-Aug	Below 3,400	Open and disturbed areas
Italian thistle *(Carduus pycnocephalus* ssp. *pycnocephalus)*	B	May-Jul	Below 3,300	Roadsides, pastures, waste areas
Maltaese starthistle (*Centaurea melitensis*)	C	Apr-Jul	Below 2,200	Disturbed fields and open woodland
Yellow starthistle *(Centaurea solstitialis)*	C	Jun-Dec	Below 4,300	Pastures, roadsides, disturbed grassland or woodland
Rush skeletonweed *(Chondrilla juncea)*	A	May-Dec	Below 2,000	Disturbed areas
Bindweed (*Convolvulus arvensis*)	C	Mar-Oct	Below 2,610	Roadsides and open areas
Bermudagrass *(Cynodon dactylon)*	C	Jun-Aug	Below 3,000	Disturbed areas
Medusahead (*Elymus caput-medusae*)	C	Apr-Jul	Below 2,000	Disturbed areas
Klamathweed *(Hypericum perforatum)*	C	Jun-Sep	Below 5,000	Rangeland areas, pastures, fields, roadsides, forest clearings, burned areas
Scarlet sesban (*Sesbania punicea*)	B	Jun-Sep	Below 600	Along streams, lake shores, other moist sites, and roadsides
Subtotal	*11*			
NOT KNOWN TO OCCUR WITHIN THE PROPOSED FERC PROJECT BOUNDARY				
Russian knapweed *(Acroptilon repens)*	A	May-Sept	Below 6,200	Fields, roadsides, cultivated ground, disturbed areas
Camelthorn *(Alhagi maurorum)*	A	Jun-Aug	Below 1,640	Agricultural areas, riverbanks
Alligatorweed *(Alternanthera philoxeroides)*	A	Jun-Oct	Below 700	Shallow water, wet soils, ditches, marshes, pond margins, slow-moving watercourse
Capeweed *(Arctotheca calendula)*	A	Mar-Jun	Below 820	Disturbed sites
Plumeless thistle *(Carduus acanthoides)*	A	May-Aug	Below 4,300	Roadsides, pastures, waste areas

Table 3.3.4-4. (continued)

Common Name/ Scientific Name	CDFA[1] Status	Flowering Period	Elevation(ft)	Habitat
NOT KNOWN TO OCCUR WITHIN THE PROPOSED FERC PROJECT BOUNDARY (cont'd)				
Musk thistle *(Carduus nutans)*	A	Jun-Jul	330-4,000	Roadsides, pastures, waste areas
Slenderflower thistle *(Carduus tenuiflorus)*	C	May-Jul	Below 3,300	Disturbed sites, roadsides, pastures, annual grasslands, waste areas
Woolly distaff thistle *(Carthamus lanatus)*	B	July-Aug	Below 3,600	Disturbed sites
Purple starthistle *(Centaurea calcitrapa)*	B	Jul-Oct	Below 3,300	Disturbed areas
Diffuse knapweed *(Centaurea diffusa)*	A	Jun-Sep	Below 7,600	Fields, roadsides
Spotted knapweed *(Centaurea stoebe* ssp. *micranthos)*	A	July-Aug	Below 8,500	Open disturbed sites, grasslands, forested areas, roadsides
Squarrose knapweed *(Centaurea virgata* var. *squarrosa)*	A	Jun-Aug	Below 4,600	Degraded rangelands
Canada thistle *(Cirisum arvense)*	B	Jun-Sep	Below 5,900	Disturbed areas
Artichoke thistle *(Cynara cardunculus)*	B	Apr-Jul	Below 1,640	Disturbed sites, open sites in grasslands, pasture, chaparral, riparian areas, abandoned agricultural fields
Scotch broom *(Cytisus scoparius)*	C	Mar-Jun	Below 3,300	Disturbed areas
Water hyacinth *(Eichhornia crassipes)*	C	Jun-Oct	Below 650	Ponds, sloughs, waterways
Oblong spurge *(Euphorbia oblongata)*	B	Apr-Aug	Below 3,300	Waste areas, disturbed sites, roadsides, fields
Leafy spurge *(Euphorbia virgate)*	A	Jun-Sep	Below 4,600	Waste areas, disturbed sites, roadsides, fields
Japanese knotweed *(Fallopia japonica)*	B	Jul-Oct	Below 3,300	Disturbed moist sites, roadsides, and riparian and wetland areas, upland sites where water tables are shallow
Giant knotweed *(Fallopia sachalinensis)*	B	Jul-Oct	Below 1,640	Disturbed moist sites, roadsides, and riparian and wetland areas
French broom *(Genista monspessulana)*	C	Mar-May	Below 1,600	Disturbed areas
Hydrilla *(Hydrilla verticillata)*	A	Jun-Aug	Below 650	Ditches, canals, ponds, reservoirs, lakes
Dyer's woad *(Isatis tinctoria)*	B	Apr-Jun	Below 3,300	Roadsides, fields, disturbed sites
Hairy whitetop *(Lepidium appelianum)*	B	Apr-Oct	Below 6,600	Disturbed open sites, fields, pastures
Lense-podded whitetop *(Lepidium chalepense)*	B	Apr-Aug	Below 5,000	Disturbed open sites, fields, pastures
White-top *(Lepidium draba)*	B	Apr-Aug	Below 5,000	Disturbed, generally saline soils, fields
Dalmation toadflax *(Linaria genistifolia* ssp. *dalmatica)*	A	May-Sep	Below 3,300	Disturbed places, pastures, fields
Purple loosestrife *(Lythrum salicaria)*	B	Jun-Sep	Below 5,300	Seasonal wetlands, ditches, cultivated fields
Scotch thistle *(Onopordum acanthium)*	A	Jul-Sep	Below 5,300	Disturbed areas
Tansy ragwort *(Senecio jacobaea)*	B	Jul-Sep	Below 5,000	Disturbed sites, waste places, roadsides, fields
Gorse *(Ulex europaeus)*	B	Nov-Jul	Below 1,300	Disturbed areas
Subtotal	*31*			
Total	**42**			

Sources: Cal-IPC 2018a; CDFA 2018, CCH 2018, Jepson Flora Project 2017, and Sycamore Associates 2013a.

[1] CDFA 2018
A: eradication, containment, rejection, or other holding action at the state-county level is mandated
B: eradication, containment, control, or other holding action is at the discretion of the commissioner
C: no state action is required except to retard the speed of spreading

As described above, SSWD conducted a special-status plants and NNIP study within the defined study area that included background literature reviews, desktop analyses, and field investigations. Components of the study specific to NNIP, including the results, are provided below.

Field surveys were conducted from April 2017 through July 2017 to document NNIP in the study area. The following information was collected when NNIP were documented within the study area:

- Digital photographs, if needed, to describe the occurrence
- For those species where "quantitative" data was required, if a plant population was estimated to cover an area greater than 0.1 ac, or if the occurrence was linear (e.g., as along a road) and greater than 100 ft long, surveyors delineated the approximate occurrence boundary, or end-points in the case of a linear occurrence, using a handheld GPS with an accuracy of at least 50 ft. When occurrences were smaller than those dimensions, only a single central GPS point was taken to indicate the location of the occurrence. If a single GPS point was used to map an occurrence, the area of the NNIP population was estimated using one of two acreage classes: up to 0.01 ac, and 0.01 to 0.1 ac. The NNIP cover of the occurrence was characterized as either concentrated or diffuse
- NNIP indicated with the descriptor "qualitative" were described more generally. These species tend to produce large or diffuse populations that may be unwieldy to map in detail. These "qualitative" species were mapped using a single GPS point near the center of the occurrence to indicate an occurrence. The area of the infestation was estimated into one of four acreage classes: up to 0.1 ac, 0.1-0.25 ac, 0.25-4.0 ac, and greater than 4 ac. The NNIP cover of the occurrence was characterized as either concentrated or diffuse
- Estimated distance to nearest Project facility, feature, or Project-related activity
- Activities observed in the vicinity of the NNIP population that have a potential to spread NNIP
- Estimated phenology and descriptions of reproductive state of that invasive occurrence

A total of 206 plant species was identified during the surveys. Of the plant species found, a total of 94 are native and a total of 102 are non-native. Eleven of the non-native species are currently considered invasive (Attachment 3.3.4A).

The 2017 survey found 10 NNIP species (the 11th NNIP species was located prior to the study in a section of the Proposed Project Boundary outside of the study area), comprising 487 occurrences (Attachment 3.3.4B, Figures 3.3.4B-1 to 11 for maps and Attachment 3.3.4C for a table of all NNIP occurrences), within the Proposed Project Boundary, including the following: 11 occurrences of barbed goatgrass (*Aegilops triuncialis*); 2 occurrences of cheatgrass (*Bromus tectorum*); 137 occurrences of Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*); 6 occurrences of Maltese starthistle (*Centaurea melitensis*); 73 occurrences of yellow starthistle (*Centaurea solstitialis*); 31 occurrences of rush skeletonweed (*Chondrilla juncea*); 1 occurrence of bindweed (*Convolvulus arvensis*); 25 occurrences of Bermudagrass (*Cynodon dactylon*); 81

occurrences of Medusahead (*Elymus caput-medusae*); and 120 occurrences of Klamathweed (*Hypericum perforatum*). One additional NNIP species, scarlet sesban (*Sesbania punicea*) has been reported to be recorded by a private collector at the southern margin of Camp Far West Reservoir (CCH 2018).

Each of the 11 NNIP species found in the Proposed Project Boundary is discussed in detail below.

Barbed Goatgrass *(Aegilops triuncialis)*

Barbed goatgrass is an annual, which primarily infests rangelands, pastures, grasslands, oak woodlands, and rarely, chaparral, throughout parts of California that are north of San Francisco and Modesto (Jepson Flora Project 2017). Prevention is the key in dealing with the species, because once it becomes established, controlling it is very difficult. Barbed goatgrass spread occurs only by seed dispersal, which are dormant for two or more years, and seeds may be transported on hair, fur, wool, shoes or clothes (DiTomaso and Healy 2007).

Recommended treatments for the control of barbed goatgrass include hand-pulling, mowing, burning and selected herbicides; however, mowing and burning treatments are difficult to implement in a forested setting. Nonselective herbicides, such as glyphosate, or grass-specific herbicides, such as fluazifop (Envoy II) or clethodim (Fusilade), may be applied to control infestations and should be applied in a way that minimizes the damage to native vegetation (Aigner and Woerly 2010). There are currently no biological controls for barbed goatgrass (CDFA 2018).

SSWD found 11 occurrences of barbed goatgrass, all within the NSRA. Most of these occurrences were mapped as discrete points or population lines, covering at most 20 sq ft. One population was mapped as widespread between the water line and campgrounds.

Cheatgrass (*Bromus tectorum*)

Cheatgrass is an annual that occurs throughout California (Jepson Flora Project 2017). Cheatgrass reproduces by seed, dispersing short distances by wind, animals, or on the clothing of humans. Long-distance dispersal is facilitated through recreational, agricultural, and construction activities, especially in areas of soil disturbance or overgrazing (Cal-IPC 2018a). Cheatgrass has the potential to increase the frequency and spread of wildfire in certain communities. Increased fire frequency may contribute to potential habitat conversion, as shrubs and trees killed from fire are often unable to regenerate (DiTomaso and Healy 2007).

The favored treatment methods for cheatgrass are mowing and burning; both can be effective to reduce seed production. However, with both methods, treatment timing is sensitive. Mowing

within a week after flower initiation can reduce seed production and burning should occur before spikelets break apart. Glyphosate and other readily available herbicides have also been used to effectively control populations (DiTomaso and Healy 2007).

Cheatgrass has limited distribution in the study area. SSWD found 2 occurrences, both in the southern most portion of the NSRA, in the grassy portions of the campground area outside the drip line of oak trees.

Italian Thistle *(Carduus pycnocephalus* ssp. *pycnocephalus)*

Italian thistle is an annual occurring throughout California (Jepson Flora Project 2017). Occurrences can reach nearly 100 percent cover in some areas and inhibit the recruitment and survivorship of native plant species. Plants are considered to spread aggressively by seed, which fall near the parent plant, but can travel long distances by wind, water, birds, small mammals and human activities. Seeds can persist for 7 to 10 years and germinate under drought conditions (DiTomaso and Healy 2007).

Recommended treatment strategies for Italian thistle include mowing and burning. Mowing 2 to 4 days after flowering starts is an effective way to prevent seed production; however, removal of basal portions of the plant is recommended because flower buds easily regenerate. Burning can help remove dense stands of mature Italian thistle, but is not very effective at removing plants still in the basal rosette stage (DiTomaso and Healy 2007). Clopyralid, picloram and triclopyr are common herbicides for thistles. With repeated use, Italian thistle generally shows herbicide resistance to 2, 4-D or MCPA. Grazing sheep and goats can also be effective in controlling thistle (CABI 2015).

SSWD found 137 occurrences of Italian thistle distributed throughout the entire study area within the Proposed Project Boundary. It is found typically within the dripline of large trees and adjacent to buildings and paved areas.

Maltese Starthistle (*Centaurea melitensis*)[8]

Maltese starthistle is an annual occurring throughout California, but is generally more prevalent in the southern half of the state (Jepson Flora Project 2017). It is primarily found in disturbed sites, but also known to move into annual grasslands. When this species forms dense stands, it displaces native vegetation and animals, in addition to increasing soil erosion and reducing water percolation. Maltese starthistle reproduces by seed; an individual plant can produce up to 60 or more seeds per flower head and up to 100 or more flower heads (up to 6,000 seeds per plant). Seeds fall near the parent plant and are dispersed by wind, human activities, animals, water and soil movement (DiTomaso and Healy 2007).

8 Photograph found at http://www.cal-ipc.org/?s=Maltese+Starthistle (Cal-IPC undated).

Recommended treatments for Maltese starthistle are not well documented, but the control methods recommended for yellow starthistle are assumed to be effective at control of Maltese thistle (DiTomaso and Healy 2007; CDFA 2018).

SSWD found 6 occurrences of Maltese starthistle, all within the NSRA. All occurrences of Maltese starthistle were mapped as discreet patches of approximately 5 to 20 sq ft in size.

Yellow Starthistle *(Centaurea solstitialis)*

Yellow starthistle is an annual occurring throughout California, but is generally more prevalent in the northern half of the state (Jepson Flora Project 2017). It is highly competitive and will typically develop into very dense stands, displacing native vegetation in otherwise natural areas. This species is a prolific seed producer, producing seeds at levels of 10,000 per square meter, which remain viable in soil for 3 or more years. Seeds can be transported by human vectors, including the movement of contaminated hay and infested equipment or vehicle transport. Some seeds are dispersed by wind, and birds and mammals after ingestion (DiTomaso and Healy 2007).

Recommended treatment methods include grazing, mowing and burning, all of which can prevent seed production and control infestations. However, all methods are recommended as annual treatments, ranging over a period of 2 to 3 years or more. Like those treatments described for other NNIPs, the effectiveness of the treatment is dependent upon accurate timing. Grazing is recommended when the plants have developed flowering stems, but before the spiny heads develop. Mowing is most effective when plants just begin to bloom, and it is recommended that plants are cut below the height of the lowest branches. Burning is recommended after the plants have dried, but before seed is produced. Regardless of the treatment, vigilant monitoring is recommended to curb subsequent infestations. In addition to mechanical treatments, all species of starthistle are highly susceptible to the herbicide cloppyralid (CDFA 2018).

SSWD found 73 occurrences of yellow starthistle distributed throughout the entire study area within the Proposed Project Boundary. It is found typically adjacent to buildings and paved areas or other areas of relatively high disturbance.

Rush Skeletonweed *(Chondrilla juncea)*

Rush skeletonweed is an herbaceous perennial or biennial that is localized to several regions in California (North Sierra foothills, South San Francisco Bay, San Luis Obispo, etc.) but forms large dense populations where it does occur (Jepson Flora Project 2017). This species prefers habitat in disturbed areas, such as roadsides, croplands, pastures and residential areas. The species will tolerate a wide variety of conditions, but grows best on well-drained soils, cool winters and hot, dry summers without periods of prolonged drought. Seeds are primarily wind-dispersed, but may also be vectored by water, animals and human activity (DiTomaso and Healy 2007).

A combination of methods is necessary to effectively control skeletonweed. Hand-pulling can remove small occurrences, but all parts of the plant must be removed, bagged and thrown away to prevent re-sprouting. Mechanical tillage can effectively eliminate seedlings and older plants in the short-term. However, the plants will continue to persist, due to vegetative reproduction. Mechanical tillage is not always possible in a forested setting, since tillage would damage the roots of other plants in addition to skeletonweed. Very few herbicides are known to control skeletonweed and single treatments are ineffective. Of herbicides that are labeled for use in California, tank mixes of clopyralid and MCPA (2-methyl-4-chlorophenoxyacetic acid) or two 4-D have been shown to be more effective than any of those chemicals applied alone. Glyphosate helps to control rosettes. Three forms of biological control, the skeletonweed gall mite (*Eriophyes chondrillae*), skeletonweed gall midge (*Cystiphora schmidtii*) and skeletonweed rust (*Puccinia chondrillina*) have been shown to be successful in skeletonweed control and are all approved for use in California (CDFA 2018).

SSWD found 31 occurrences of skeletonweed scattered throughout the study area within the Proposed Project Boundary. It was typically mapped as discrete clusters of variable sizes. A number of occurrences were noted to have been mowed, hiding the true extent of the population.

Bindweed (*Convolvulus arvensis*)

Bindweed is a perennial vine that occurs throughout California (Jepson Flora Project 2017). This species is known to completely carpet areas, which can inhibit native growth. It generally prefers open areas with high levels of disturbance and can be particularly damaging to grassland ecosystems. Bindweed is a serious agriculture weed that causes damages to cereal, bean, and potato crops. It also is a vector for several viruses that kill tomatoes and potatoes. This species is spread by seed and deep rhizomes (DiTomaso and Healy 2007).

Hand removal of rhizomes is recommended for the control of bindweed in small areas. For large areas, tilling or disking is recommended and exposes rhizomes to sun-drying or freezing, or summer solarization in moist soils. There are no biological controls of bindweed authorized for California (DiTomaso and Healy 2007). Chemical control of bindweed can be achieved with the use of Dicamba in the fall, Glyphosate and/or Metsulfuron during the peak bloom, or 2, 4-D in early fall or during the bud stage. Application of a wetting agent can increase the effectiveness of the control. However, chemical control is reduced in effectiveness during drought and multiple treatments will likely be needed to control bindweed (CDFA 2018).

SSWD found one occurrence of bindweed (an 800 - sq ft patch) just northwest of the Camp Far West dam, within the Proposed Project Boundary.

Bermudagrass *(Cynodon dactylon)*

Bermudagrass is a perennial herb that occurs throughout California (Jepson Flora Project 2017). The species is known to form extensive networks of creeping rhizomes and stolons. The species can form dense ground covering mats, which inhibit native vegetation and fragment habitat. Bermudagrass favors disturbed sites, gardens, agronomic crops, orchards, turf, landscaped and forested areas. It prefers moist soil types in irrigated areas, or areas that receive some warm seasonal moisture (CDFA 2018). The species can be spread vegetatively and by seed. Long distance dispersal may be achieved via contaminated hay, livestock feed, soil movement, and transport of mowing equipment and vehicles (Bossard et al. 2000).

Hand removal of rhizomes and stolons is recommended treatment for the control of Bermudagrass in small areas. For large areas, tilling or disking is recommended and exposes rhizomes to sun-drying or freezing, or summer solarization in moist soils. Herbicide application in the summer to mid-fall before plant dormancy can be effective (CDFA 2018). Weaker growth of Bermudagrass can be achieved by increasing shade from tall shrubs and trees and then repeated hand pulling for complete removal. Covering the Bermudagrass with black or clear plastic for 6 to 8 week periods have proven effective during the summer months on south and southwest facing slopes and flat areas. Grass-selective herbicides are most effective in early spring. Non-selective herbicides are most effective in the late summer. Other herbicides will simply suppress Bermudagrass, but may harm desirable vegetation (Cudney et al. 2014).

SSWD found 26 occurrences of Bermudagrass throughout the study area in the Proposed Project Boundary. It was typically mapped in patches in disturbed areas near roads and along the Camp Far West Reservoir margin.

Medusahead (*Elymus caput-medusae*)

Medusahead is an annual occurring throughout northern California (Jepson Flora Project 2017). Medusahead is unpalatable to livestock, except during the early growth stages. Senesced individuals form dense layers of litter that decompose slowly, creating fuel for wildfire and altering moisture characteristics in the soil. This species tends to colonize disturbed sites, including grassland, oak woodland and agronomic fields. A prolific seed producer, seeds are dispersed locally via wind and water, and achieve long distance dispersal through various human activities, and the movement of contaminated soil, clinging to the feet and fur of animals (DiTomaso and Healy 2007).

The recommended treatment for the control of Medusahead is burning and disking/plowing. A slow, hot burn, applied when other vegetation has dried and Medusahead seeds have not yet matured, can reduce infestations. Alternately, disking or plowing before seeds set can be an effective method to reduce stands (CDFA 2018). The application of foliar herbicides and soil active compounds can be effective, if applied with good coverage (Stannard et al. 2010).

SSWD found 83 occurrences of Medusahead throughout the study area in the Proposed Project Boundary. These were typically mapped as discrete patches along roads or as widespread populations within grassland habitats.

Klamathweed *(Hypericum perforatum)*

Klamathweed is a perennial herb found in the northern Sierra Mountain and foothills region of California (Jepson Flora Project 2017). Klamathweed spreads aggressively by rhizomatous growth and through seed dispersal, with seeds remaining viable for up to 10 years. Known long-distance vectors include vehicle tires and other heavy equipment, while wind, water and soil movement provide short-distance dispersal (CDFA 2018).

The recommended treatment for the control of Klamathweed is mowing, which can reduce seed production. A new or small infestation of Klamathweed can be hand-pulled; however, repeated pulls are necessary for complete eradication. However, plants can propagate from the rhizomes (CDFA 2018). Systematic herbicide application in the spring can be effective (DiTomaso and Healy 2007).

SSWD found 120 occurrences of Klamathweed scattered throughout the entire study area in the Proposed Project Boundary.

Scarlet Sesban (*Sesbania punicea*)[9]

Scarlet sesban typically grows along streams, lake shores, other moist sites, roadsides, and the species is often cultivated as ornamental (Jepson Flora Project 2017). Scarlet sesban grows rapidly and forms dense stands that can limit access to riparian areas. This species is known to displace native vegetation used by wildlife and contributes to bank erosion and flooding (Cal-IPC 2018b).

Recommended treatments for the control of scarlet sesban include hand-pulling, mowing, burning and selected herbicides; however, mowing and burning treatments are difficult to implement in a forested setting, such as the Project Area. Cutting scarlet sesban to ground level in spring before it flowers will reduce the number of seeds produced and will deplete the plant's energy reserves (DiTomaso and Kyser 2013). Nonselective herbicides, such as glyphosate, may be applied to control infestations and should be applied when the plants are growing rapidly. Selective herbicides may also be used, such as Triclopyr, and in cut stump treatments, the herbicide should be applied immediately after cutting. There are currently no USDA-approved biological controls for scarlet sesban (DiTomaso and Kyser 2013).

9 Photograph found at http://www.cal-ipc.org/plants/profile/sesbania-punicea-profile/ (Cal-IPC undated).

According to CCH (2018), scarlet sesban was observed in 2013 along the southern margin of the Camp Far West Reservoir. This occurrence is believed to be inside the Proposed Project Boundary.

3.3.4.2 Wildlife Resources

3.3.4.2.1 Wildlife Habitat

Based on the vegetation classifications described in Section 3.3.4.1.1, SSWD classified wildlife habitats in the proposed FERC Project Boundary and adjacent area using CDFW's California Wildlife Habitat Relationships (CWHR) system, Version 9.0 (CDFW 2015b). Table 3.3.4-5 presents the eight CWHR habitat types identified in the proposed FERC Project Boundary (CDFW 2015b). The two most common habitat types present are Lacustrine and Annual Grassland, followed by Blue Oak Woodland and then the remaining 5 habitat types

Table 3.3.4-5. Wildlife habitat types in the proposed FERC Project Boundary.[1]

CWHR Types	Area (acres)[1]	Percentage of Area (%)
Annual Grassland	324.04	12.16
Barren	4.00	0.15
Blue Oak Woodland	452.60	17.01
Blue Oak-Foothill Pine	82.09	3.06
Montane Hardwood	35.05	1.32
Mixed Chaparral	2.29	0.08
Urban	12.22	0.50
Lacustrine	1,749.61	65.72
8 CWHR Types	**2,661.90**	**100.00**

Source: CDFW 2015b

[1] The area evaluated for vegetation encompasses 2,661.9 ac (i.e., 2,674.0 ac in the Proposed Project Boundary and an additional 12.1 ac adjacent to the boundary).

In addition to classifying wildlife habitat, the CWHR model predicts wildlife use based on habitat type, age class, size class, canopy closure or cover, and occurrence of specific habitat elements (e.g., natural or manmade features such as cliffs, springs, or transmission lines) that may influence thermal cover, forage, prey availability, nesting, escape cover, and breeding.

This analysis indicates that the proposed FERC Project Boundary supports a diversity of wildlife habitats and associated wildlife species. Using the identified habitat types and the CWHR system, SSWD identified 28 special-status terrestrial vertebrate wildlife species that potentially may occur within the proposed FERC Project Boundary (CDFW 2015b). These species include 1 reptile, 21 birds, and 6 mammals (see Table 3.3.4-6).

Although CWHR-generated lists are a useful tool for predicting general species occurrence, they should be interpreted cautiously because errors of omission (e.g., excluding a species that is present) and commission (e.g., including a species that is absent) are likely when this broad-scale model is used for localized applications.

3.3.4.2.2 Special-status Wildlife Species

Table 3.3.4-6 presents information on the special-status wildlife species that occur, or have the potential to occur, in the Proposed Project Boundary. Along with CWHR, CDFW's CNDDB was used as the initial source to identify previously reported occurrences of special-status species and sensitive habitats in the Project Vicinity (CDFW 2018b). Two other sources were the Camp Far West BA (Sycamore Associates 2013a) and the USFWS' IPaC Trust Resource Report (USFWS 2018a). Potential occurrences of special-status wildlife species and their corresponding temporal and spatial information were also derived from a query of the CWHR database (CDFW 2015b). Habitat types known to occur within the Project Area (listed in Table 3.3.4-5) were used as the search criteria within CWHR (CDFW 2015b). Descriptions of suitable habitat types were synthesized from species accounts found online at NatureServe® (2017) and the CWHR life history database. Temporal data provided in Table 3.3.4-6 correspond to the seasonal occurrence of the species. Spatial data correspond to the habitat types typically supporting each species. Additional sources of information were queried for potentially occurring special-status species. These additional sources included CDFW's *State and Federally Listed Endangered and Threatened Animals of California* (CDFW 2017), and *List of State Fully Protected Animals* (CDFW undated). Table 3.3.4-6 includes 30 wildlife species: 1 reptile, 23 birds, and 6 mammals.

Table 3.3.4-6. Special-Status wildlife species (i.e., reptiles, birds, and mammals) occurring or potentially occurring in the Camp Far West Hydroelectric Project Area.

Common Name/ Scientific Name	Status[1]	Suitable Habitat Type	Temporal and Spatial Distribution[2]	Occurrence in Project Area	Known From Project
REPTILES					
Coast horned lizard *(Phrynosoma blainvillii)*	SSC	Utilization of a variety of habitats, including scrubland, grassland, coniferous woods, and broadleaf woodlands; typically it is found in areas with sandy soil, scattered shrubs, and ant colonies, such as along the edges of arroyo bottoms or dirt roads.	Yearlong: AGS, BOP, BOW, MCH	Project Vicinity: Potentially occur within suitable habitat.	There are no documented occurrences of coast horned lizard on the Project, but suitable habitat exists (Sycamore Associates 2013a).
BIRDS					
Tricolored blackbird *(Agelaius tricolor)*	SSC, SE	Fresh-water marshes of cattails, tule (*Schoenoplectus acutus*), and sedges. Nests in vegetation of marshes or thickets, sometimes nests on the ground. Historically strongly tied to emergent marshes; in recent decades much nesting has shifted to non-native vegetation.	Yearlong: AGS, URB	Project Vicinity: Potentially occur within suitable habitat.	No, and no suitable nesting habitat was observed during BA surveys (Sycamore Associates 2013a).
Grasshopper sparrow *(Ammodramus savannarum)*	SSC	Prefer grasslands of intermediate height for breeding and are often associated with clumped vegetation interspersed with patches of bare ground.	Summer: AGS	Project Vicinity: Camp Far West.	No, and no suitable nesting habitat was observed during BA surveys (Sycamore Associates 2013a).
Golden eagle *(Aquila chrysaetos)*	BGEPA, FP	Generally open country, in prairies, arctic and alpine tundra, open wooded country, and barren areas, especially in hilly or mountainous regions.	Yearlong: AGS, BAR, BOP, BOW, MHW, MCH, URB	The species was identified as having the potential to occur within the Project Vicinity (CDFW 2018b).	Yes, there were six observations during 2017 special-status raptor surveys.
Short-eared owl *(Asio flammeus)*	SSC	Broad expanses of open land with low vegetation for nesting and foraging are required.	Yearlong: AGS, URB Winter: BOP, BOW, MCH	Project Vicinity: Potentially occur within suitable habitat.	No
Long-eared owl *(Asio otus)*	SSC	Riparian bottomland forest with over story of willows (*Salix* spp.) and cottonwoods (*Populus fremontii*); riparian forest along stream corridors (often dominated by live oak trees). Wooded areas with dense vegetation needed for roosting and nesting, adjacent open areas needed for hunting.	Yearlong: AGS, BOP, BOW, MCH, MHW	Project Vicinity: Potentially occur within suitable habitat.	No, and no suitable nesting habitat was observed during BA surveys (Sycamore Associates 2013a).
Burrowing owl *(Athene cunicularia)*	SSC	Open grasslands, especially prairie, plains, and savanna, sometimes in open areas near human installations.	Yearlong: AGS, BAR, BOW, MCH, URB	Project Vicinity: Potentially occur within suitable habitat.	Yes, one individual was seen in 2018 near NSRA.
Redhead *(Aythya americana)*	SSC	Open water on lakes, ponds, and reservoirs.	Winter: LAC	Project Vicinity: Potentially occur within suitable habitat.	No

Table 3.3.4-6. (continued)

Common Name/ Scientific Name	Status[1]	Suitable Habitat Type	Temporal and Spatial Distribution[2]	Occurrence in Project Area	Known From Project
BIRDS (cont'd.)					
Swainson's hawk *(Buteo swainsoni)*	ST	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs and agricultural or ranch (CDFW 2015b).	Summer: AGS, BAR, BOP, BOW, MCH, MHW, URB	This species was found adjacent to the Project Vicinity within the Nicolaus, Sheridan, Wheatland and Verona quads (CDFW 2018b).	Yes, three individuals were observed during special-status raptor surveys in 2017.
Vaux's swift *(Chaetura vauxi)*	SSC	Found in mature forests, but also forages and migrates over open country.	Summer: BOP, LAC, MCH, MHW, URB	Project Vicinity: Potentially occur within suitable habitat.	No
Black tern *(Chlidonias niger)*	SSC	Marshes, along sloughs, rivers, lakeshores, and impoundments, or in wet meadows.	Summer: LAC	Project Vicinity: Potentially occur within suitable habitat.	No
Northern harrier *(Circus hudsonius)*	SSC	Marshes, meadows, grasslands, and cultivated fields.	Yearlong: AGS, BAR, BOP, BOW, LAC, URB Winter: MCH	Project Vicinity: Wheatland, Camp Far West.	Yes, a single individual was seen flying over the grassland area of the NSRA during 2017 surveys.
Olive-sided flycatcher *(Contopus cooperi)*	SSC	Non-breeding habitat includes a variety of forest, woodland, and open areas with scattered trees, especially where tall dead snags are present. Primary habitat is mature, evergreen montane forest. Birds breed in various forest and woodland habitats.	Migrant: BOP Summer: MCH, MHW	Project Vicinity: Potentially occur within suitable habitat.	No
Black swift *(Cypseloides niger)*	SSC	Nests in moist crevices or caves, or on cliffs near waterfalls in deep canyons. Forages widely over many habitats.	Summer: AGS, BAR, BOP, BOW, LAC, MCH, MHW, URB	Project Vicinity: Potentially occur within suitable habitat.	No
White-tailed kite *(Elanus leucurus)*	FP	Savanna, open woodland, marshes, partially cleared lands and cultivated fields, mostly in lowland situations.	Yearlong: AGS, BAR, BOP, BOW, MCH, URB	Project Vicinity: Potentially occur within suitable habitat.	This species was observed during BA surveys (Sycamore Associates 2013a).
Common loon *(Gavia immer)*	SSC	Lakes containing both shallow and deep water.	Winter: LAC	Project Vicinity: Potentially occur within suitable habitat.	No

Table 3.3.4-6. (continued)

Common Name/ Scientific Name	Status[1]	Suitable Habitat Type	Temporal and Spatial Distribution[2]	Occurrence in Project Area	Known From Project
BIRDS (cont'd)					
Bald eagle *(Haliaeetus leucocephalus)*	BGEPA, SE, FP	Breeding habitat usually includes areas close to coastal areas, bays, rivers, lakes, or other bodies of water that reflect the general availability of primary food sources. Preferentially roosts in conifers or other sheltered sites in winter in some areas.	Yearlong: AGS, BAR, BOP, BOW, LAC, MHW, Winter: MCH	The species is known to occur within the Project Vicinity (Sycamore Associates 2013a)	Two active bald eagle nests were documented on the Project during 2017 surveys, as well as some inactive nests. A total of 47 bald eagle occurrences were documented on the Project during 2017 surveys.
Loggerhead shrike *(Lanius ludovicianus)*	SSC	Open country with scattered trees and shrubs, savanna, desert scrub, and, occasionally, open woodland; often perches on poles, wires or fence posts	Yearlong: AGS, BOP, BOW, URB	Project Vicinity: Potentially occur within suitable habitat	No
California black rail (*Laterallus jamaicensis coturniculus*)	ST, FP	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays.	Yearlong: LAC	The species was found within the Project Vicinity in the Camp Far West and Wolf quads (CDFW 2018b).	Neither the species nor suitable habitat was observed during BA surveys (Sycamore Associates 2013a)
American white pelican *(Pelecanus erythrorhynchos)*	SSC	Rivers, lakes, reservoirs, estuaries, bays, marshes; sometimes inshore marine habitats.	Summer: BAR Yearlong: LAC	Project Vicinity: Potentially occur within suitable habitat	This species was observed during BA surveys (Sycamore Associates 2013a)
Purple martin *(Progne subis)*	SSC	A wide variety of open and partly open situations, frequently near water or around towns.	Summer: AGS, BOP, BOW, LAC, MHW, URB	Project Vicinity: Potentially occur within suitable habitat	No
Bank swallow *(Riparia riparia)*	ST	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert.	Summer: AGS, BAR, LAC, URB Migrant: MCH	This species was found near the Project Vicinity, within the Camp Far West, Nicolaus and Verona quads (CDFW 2018b).	Neither species nor suitable habitat was observed during BA surveys (Sycamore Associates 2013a)
Yellow warbler *(Setophaga petechial)*	SSC	Open scrub, second-growth woodland, thickets, farmlands, and gardens, especially near water; riparian woodlands, especially of willows, in the west.	Summer: BOP, BOW, MCH, MHW, URB	Project Vicinity: Camp Far West	Neither species nor suitable habitat was observed during BA surveys (Sycamore Associates 2013a)
Yellow-headed blackbird *(Xanthocephalus xanthocephalus)*	SSC	Fresh-water marshes of cattail, tule, or bulrushes. Nests in wet grasses, reeds, cattails. Also in open cultivated lands, pastures and fields.	Yearlong: LAC Summer: AGS	Project Vicinity: Potentially occur within suitable habitat	No

Table 3.3.4-6. (continued)

Common Name/ Scientific Name	Status[1]	Suitable Habitat Type	Temporal and Spatial Distribution[2]	Occurrence in Project Area	Known From Project
MAMMALS					
Pallid bat *(Antrozous pallidus)*	SSC	Arid deserts and grasslands, often near rocky outcrops and water. Less abundant in evergreen and mixed conifer woodland. Usually roosts in rock crevice or building, less often in cave, tree hollow, mine, etc.	Yearlong: AGS, BAR, BOP, BOW, MCH, MHC, URB	Project Vicinity: Potentially occur within suitable habitat.	No
Townsend's big-eared bat *(Corynorhinus townsendii)*	SSC	Maternity and hibernation colonies typically are in caves and mine tunnels. Prefers relatively cold places for hibernation, often near entrances and in well-ventilated areas.	Summer: AGS Yearlong: BAR, BOP, BOW, MCH, MHW, URB	Project Vicinity: Potentially occur within suitable habitat.	Neither species nor suitable habitat was observed during BA surveys (Sycamore Associates 2013a).
Spotted bat *(Euderma maculatum)*	SSC	Possibly occupies coniferous stands in summer and migrates to lower elevations in late summer/early fall.	Yearlong: AGS, BOP, BOW, URB	Project Vicinity: Potentially occur within suitable habitat.	No
Western mastiff bat *(Eumops perotis)*	SSC	Roosts in crevices and shallow caves on the sides of cliffs and rock walls, and occasionally buildings. Roosts usually high above ground with unobstructed approach. Most roosts are not used throughout the year. May alternate between different day roosts.	Yearlong: AGS, BAR, BOP, BOW, MCH, MHW, URB	Project Vicinity: Potentially occur within suitable habitat.	No
Western red bat *(Lasiurus blossevillii)*	SSC	Roosts in foliage, forages in open areas (sea level up through mixed conifer forests).	Yearlong: AGS, BOP, BOW, URB Summer: LAC, MCH, MHW	Project Vicinity: Potentially occur within suitable habitat.	Neither species nor suitable habitat was observed during BA surveys (Sycamore Associates 2013a).
American badger *(Taxidea taxus)*	SSC	Prefers open areas and may also frequent brushlands with little groundcover. When inactive, occupies underground burrow.	Yearlong: AGS, BAR, BOP, BOW, MCH, MHW	Project Vicinity: Potentially occur within suitable habitat.	No
Total	**30**				

Source: CDFW 2018b

[1] Status:
BGEPA = Bald and Golden Eagle Protection Act
SSC = California Species of Special Concern (CDFW 2018d)
ST = State Threatened
FP = Fully Protected
SE = State Endangered

[2] CWHR Habitat Types:
AGS = Annual Grass
BAR = Barren
BOP = Blue Oak Foothill Pine
BOW = Blue Oak Woodland
LAC = Agriculture Ponds, Water Features, General Water (i.e., lakes, ponds, reservoirs, diversion impoundments)
MCH = Mixed Chaparral
MHW = Montane Hardwood
URB = Urban

Each of the 22 wildlife species with the potential to occur in the Proposed Project Boundary that did not have further study done is discussed in detail below.

Coast Horned Lizard (*Phrynosoma blainvillii*)

The coast horned lizard is designated as SSC (CDFW 2018b). The coast horned lizard may be found along the Sierra Nevada foothills up to an elevation of 4,000 ft from Butte County south to Kern County. Habitat types occupied by the coast horned lizard include valley foothill hardwood, conifer, riparian and annual grasslands. This species will often burrow into loose sandy soil to escape from predators and extreme heat, or utilize logs, rocks, mammal burrows or crevices during periods of inactivity and winter hibernation (Zeiner et al. 1988 – 1990).

Based on information available from Zeiner et al. (1988 – 1990), habitat for coast horned lizard is present in the Project area, and as a result, this species may occur. SSWD's query of the CNDDB revealed no occurrences of coast horned lizard within the proposed FERC Project Boundary.

Tricolored Blackbird (*Agelaius tricolor*)

The tricolored blackbird is designated as a SSC and SE (CDFW 2018b). A highly gregarious species, the tricolored blackbird can be found roosting and foraging in flocks. Colonies can sometimes be found within short distances of one another (NatureServe 2017). This species can be found in herbaceous wetland areas, as well as cropland and hedgerow habitats. Tricolored blackbirds are known to breed in fresh-water marshes, consisting of cattails (*Typha* sp.), tule (*Schoenoplectus acutus*), bulrushes and sedges (*Carex* sp.) (NatureServe 2017). In addition to insects, tricolored blackbirds feed on seeds and grain in the fall and winter months.

As described in Section 3.3.4.3.1, wetland habitat is minimal within the Proposed Project Boundary. Eleven emergent wetlands were identified on the reservoir margin and are influenced by groundwater and dry season[10] hydrology inputs, with some surface water dependency (Sycamore Associates 2013b). Additionally, no cropland habitat is located within the Project Boundary. The CNDDB search found occurrences of tricolored blackbird in the vicinity of State Route 65 south of the Project, but no occurrences in 5 mi of the Project. According to Sycamore Associates (2013a), no suitable nesting habitat was observed during BA surveys.

Grasshopper Sparrow (*Ammodramus savannarum*)

The grasshopper sparrow is designated as SSC (CDFW 2018b). The grasshopper sparrow prefers grassland habitat, but can also be found in old fields, savannahs and shortgrass prairies. During breeding season, clumped vegetation of intermediate height, interspersed in grasslands is required (NatureServe 2017). They are an uncommon and local summer resident in foothills and lowlands west of the Cascade-Sierra Nevada crest from Mendocino and Trinity County's south to San Diego County (Zeiner et al. 1988 – 1990). They arrive at nesting areas between March

10 Dry season hydrology refers to water inputs during the non-rainy season (approximately May-November), which include artificial sources, like irrigation runoff from nearby fields and natural sources, such as nearby springs and seeps.

and June in eastern Washington, central Nevada and southern California. Departure for the wintering grounds in central California, southern Arizona and south through Mexico and Central America occurs in mid-September. The grasshopper sparrow eats insects, other small invertebrates, grain and seeds that are picked up from the ground (NatureServe 2017).

While grasshopper sparrow may occur within the Project Area, it is not known to breed or nest within the Proposed Project Boundary. Additionally, according to Sycamore Associates (2013a), no suitable nesting habitat was observed during BA surveys, nor was any seen during relicensing studies.

Short-eared Owl (*Asio flammeus*)

The short-eared owl is designated as a SSC (CDFW 2018b). According to Zeiner et al. (1988 – 1990), the short-eared owl inhabits open areas nearly absent of trees, such as annual grasslands, prairies, dunes, meadows, irrigated lands, and saline and fresh emergent wetlands. Nests are depressions on dry ground that are lined with grasses, forbs, sticks and feathers, and concealed by surrounding grasses and shrubs. This species is known to breed in the coastal areas of Del Norte and Humboldt counties, the San Francisco Bay Delta, northeastern Modoc plateau, east side of the Sierra Nevada between Lake Tahoe and Inyo counties, as well as the San Joaquin Valley. The short-eared owl migrates from breeding areas in September or October to wintering areas in the Central Valley, western Sierra Nevada foothills, and along the California coast. Numbers have declined over most of the range because of destruction and fragmentation of grassland and wetland habitats, and grazing (Zeiner et al. 1988-1990).

While short-eared owl may occur within the Project Area, it is not known to breed or nest within the proposed FERC Project Boundary.

Long-eared Owl (*Asio otus*)

The long-eared owl is designated as a SSC (CDFW 2018b). In California, this species can be found from the Sierra Nevada foothills up to dense conifer stands at higher elevations. For roosting and nesting, long-eared owls require dense riparian and live oak thickets that contain densely canopied trees (Zeiner et al. 1988-1990). Resident populations in California have been declining since the 1940s, especially in southern California (Grinnell and Miller 1944; Remsen 1978, as cited by Zeiner et al. 1988-1990). While specific reasons for their decline is unknown, habitat fragmentation of riparian habitat and live oak groves are thought to be major factors. The long-eared owl hunts in open areas for voles and other rodents (Zeiner et al. 1988-1990).

Due to their use of a wide variety of habitats, long-eared owl has the potential to occur within or adjacent to the Project. However, no occurrences of this species have been reported. Additionally, according to Sycamore Associates (2013a), no suitable nesting habitat was observed during BA surveys.

Burrowing Owl (*Athene cunicularia*)

The burrowing owl is a SSC (CDFW 2018b). A small ground dwelling owl, its habitat is associated with open grassland, open lots near human habitation, and along roadsides. Within California, the breeding range of burrowing owl includes the northeastern plateau, Central Valley, San Joaquin Valley, Imperial Valley, Mojave and Colorado deserts, the southwest corner of San Diego County, and in a few coastal counties between Los Angeles and San Francisco. Burrowing owls nest in abandoned burrows dug by small mammals, such as ground squirrels (*Spermophilus* spp.), as well as larger mammals, such as foxes (*Vulpes* spp.) and badgers (*Taxidea taxus*). If burrows are unavailable, burrowing owls may dig their own in soft soil, or utilize pipes, culverts and/or nest boxes (Zeiner et al. 1988-1990).

One burrowing owl was seen in 2018 near the NSRA. No nesting burrowing owls have been reported on the Project.

Redhead (*Aythya americana*)

The redhead is designated as SSC (CDFW 2018b). The redhead is uncommon to locally common during the winter months from Modoc County to Mono County in eastern California in lacustrine waters, where it is a common breeder during the summer months. It can also be found in the Central Valley, central California foothills and coastal lowlands and along the coast from Monterey County to Ventura County during the winter months. Breeding also occurs locally in the Central Valley, coastal Southern California and eastern Kern County (Zeiner et al. 1988 – 1990). Its habitat includes large marshes, lakes, lagoons, rivers and bays. Nesting sites can be found in dense bulrush or cattail stands that are interspersed with small areas of open water (NatureServe 2017). This species is known to lay eggs in the nest of other redheads and other duck species, as well as nests of Northern harriers (Woodin and Michot 2002). Necessary foraging habitat includes large freshwater marshes with persistent emergent vegetation (NatureServe 2017). Redheads dive for food primarily eating leaves, stems, seeds and tubers of aquatic plants with smaller amounts of aquatic insects (Zeiner et al. 1988 – 1990).

Redheads may occur in the Project, but there are no reports of this species.

Vaux's Swift (*Chaetura vauxi*)

The Vaux's swift is designated as a SSC (CDFW 2018b). The Vaux's swift can be found in mature forests, but also forages and migrates over open country (NatureServe 2017). The species prefers late seral stages of coniferous and mixed deciduous/coniferous forest and is more abundant in old-growth areas than younger stands (NatureServe 2017). The multi-layered broken overstory of old-growth forest may provide easier access to aerial insects than closed, continuous canopies of younger forests (NatureServer 2017). Nests are normally found in large-diameter hollow trees, broken-top trees, or stumps. The Vaux's swift usually locates the nest near to the bottom of the nesting cavity (NatureServer 2017).

Though Vaux's swift could potentially occur on the Project, there is no appropriate old growth forest habitat.

Black Tern (*Chlidonias niger*)

Black tern is designated as a SSC (CDFW 2018b). The black tern breeds from British Columbia south to central California. Black tern can be found in fresh emergent wetlands, moist grasslands and agricultural fields. Within California, black tern are common migrants and breeders on wetlands of the northeastern plateau and in Central Valley rice farms, which serve as surrogate habitat, due to the loss of wetlands through agricultural development. Natural lakes that experience little fluctuation in water surface elevation and have fresh emergent wetlands or marsh habitat provide nesting and foraging habitat, as well. Such lakes include Lake Tahoe and Eagle Lake. Nests are built on floating vegetation located in shallow water close to open water in stands of emergent vegetation. The black tern forages by hovering above wet meadows and fresh emergent wetlands. Insects are caught in the air and plucked from water and vegetation surfaces. They will also plunge into the water for tadpoles, crayfish, small fish and small mollusks (Zeiner et al. 1988-1990).

While the black tern was predicted to occur within the Project vicinity, it is not known to nest within the proposed FERC Project Boundary. Furthermore, no occurrences of black tern have been reported within or adjacent to the FERC Project Boundary. The absence of black tern is likely due to a lack of suitable nesting habitat (i.e. fresh emergent wetlands or water bodies that experience little fluctuation in water surface elevation) within or adjacent to the proposed FERC Project Boundary.

Northern Harrier (*Circus hudsonius*)

The Northern harrier is designated as a SSC (CDFW 2018b). In California, the Northern harrier ranges from sea level up to 5,700 ft and can be found in the Central Valley and Sierra Nevada. Suitable habitat for this species includes meadows, grasslands, open rangelands, desert sinks, and fresh and saltwater emergent wetlands (Zeiner et al. 1988 – 1990). According to NatureServe (2017), Northern harrier may also be found in wheat fields, ungrazed or lightly grazed pastures, and some croplands (alfalfa, grain, sugar beets [*Beta* spp.], tomatoes [*Solanum* spp.] and melons [*Benincasa* spp., *Citrullus* spp., *Cucumis* spp., *Momordica* spp.]). Nesting habitat includes shrubby vegetation along the edges of marshes, emergent wetlands or along rivers and lakes. They have been known to nest in grasslands, grain fields or on sagebrush (*Artemisia* spp.) flats several miles from water. Nests are constructed of a large mound of sticks in wet areas, or a smaller cup of grasses in drier areas (Zeiner et al. 1988 – 1990).

During SSWD's special-status raptor study, a single individual was seen flying over the NSRA during 2017.

Olive-sided Flycatcher (*Contopus cooperi*)

The olive-sided flycatcher is a SSC (CDFW 2018b). This species is a common to uncommon summer resident in a wide variety of forest and woodland habitats below 9,000 ft throughout California. It is not found in the deserts, the Central Valley and other lowland valleys and basins (Zeiner et al. 1988 – 1990). The olive-sided flycatcher will breed at forest edges and openings such as meadows and ponds (Audubon 2018). Nests are made of twigs, rootlets and lichens

placed out near the tip of horizontal branches of trees. Its winter habitat is also forest edges and clearings where tall trees or snags are present (Altman and Sallabanks 2000). These flycatchers forage primarily by hovering or sallying forward, concentrating on prey via aerial attack. This bird is a passive searcher as well as an active pursuer. Its diet consists of mostly flying insects, with a fondness for wild honeybees and other Hymenoptera (NatureServe 2017).

Due to their affinity towards woodland habitats, olive-sided flycatcher has the potential to occur within or adjacent to Project. However, no occurrences of this species have been reported in the Project area.

Black Swift (*Cypseloides niger*)

The black swift is designated as a SSC (CDFW 2018b). The black swift breeds locally in the Sierra Nevada and Cascade Range (Zeiner et al. 1988 – 1990). The breeding populations in the United States make long migrations to their winter range in Central America. Nests are built of mud, mosses and algae in a cup-like structure in moist locations, behind or next to waterfalls, and wet cliffs with an unobstructed flight path. These birds feed on insects that are caught in the air, often at great heights, and can be seen foraging with other swifts at the leading edges of rainstorms (NatureServe 2017).

There is no appropriate nesting habitat on the Project, though the species may be an occasional visitor to the Project area.

White-tailed Kite (*Elanus leucurus*)

The white-tailed kite is designated as a FP bird (CDFW 2018b). The white-tailed kite is a common to uncommon, yearlong resident in the Sierra Nevada foothills and adjacent valley lowlands within California. The species has increased in numbers and extended its range in recent decades (Zeiner et al. 1988-1990).

The white-tailed kite feeds mostly on voles and other small, diurnal mammals, and occasionally on birds, insects, reptiles, and amphibians. They forage in undisturbed, open grasslands, meadows, farmlands, and emergent wetlands. Trees with dense canopies provide cover, and nests are usually placed near the top of dense oaks, willows, or other tree stands near foraging areas. Breeding occurs from February to October, with the peak from May to August. The average clutch is composed of four to five eggs, and the incubation period is about 28 days. Young fledge in 35 to 40 days after hatching. The female incubates eggs and broods young exclusively, while the male supplies her with food (Zeiner et al. 1988-1990).

According to Sycamore Associates (2013a), white-tailed kite was observed during BA surveys within the proposed FERC Project Boundary.

Common Loon (*Gavia immer*)

The common loon is designated as a SSC (CDFW 2018b). The common loon breeds on remote freshwater lakes with both shallow and deep, clear water, in the northern United States and

Canada (NatureServe 2017). From May to September, the common loon can be seen in estuarine and subtidal marine habitats along the California coast, but are uncommon on large, deep lakes in valley and foothills throughout the state (Zeiner et al. 1988 – 1990). Northeastern California is considered to be within the historic breeding range of this species. Courtship begins shortly after territory reoccupation and involves shared displays, including simultaneous swimming, head posturing and short dives. Many times, a nesting pair will reuse the same site the following year. Nests are nearly always built at the water's edge in a quiet, protected hidden area and made of aquatic and terrestrial vegetation. Both the male and female build the nest together over the course of a week in May or early June. In winter and during migration, they can be found on lakes, rivers, estuaries and coastlines. Some individuals will overwinter in inland lakes and rivers. Up to 80 percent of their diet is fish, while the remaining 20 percent consists of crustaceans and aquatic plants (Zeiner et al. 1988 – 1990).

While Camp Far West Reservoir is a deep freshwater lake, the Proposed Project Boundary is not within either the current or historic breeding range of the common loon. Furthermore, no occurrences of common loon or nesting have been reported within or adjacent to the proposed FERC Project Boundary.

Loggerhead Shrike (*Lanius ludovicianus*)

The loggerhead shrike is designated as a SSC (CDFW 2018b). It is a common resident and winter visitor in lowland and foothills throughout California. This species' prefers habitats that include open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper (*Juniperus* spp.), juniper, desert riparian and Joshua tree (*Yucca brevifolia*) habitats (Zeiner et al. 1988-1990). Loggerhead shrike may often be found perched on poles, wires or fenceposts.

Due to their use of a wide variety of habitats, loggerhead shrike has the potential to occur within or adjacent to the proposed FERC Project Boundary. However, no occurrences of this species have been reported.

California Black Rail (*Laterallus jamaicensis coturniculus*)

The California black rail is designated as a ST and FP species (CDFW 2018b). California black rail are rarely seen, scarce, yearlong residents of saline, brackish, and fresh emergent wetlands in the San Francisco Bay area, Sacramento-San Joaquin Delta, coastal southern California at Morro Bay and a few other locations, the Salton Sea, and lower Colorado River area. Formerly a local resident in coastal wetlands from Santa Barbara Co. to San Diego Co.; reported to still winter there rarely. In freshwater wetlands, this species is usually found in bulrushes and cattails. The species typically inhabits the high wetland zones near the upper limit, not in low wetland areas with considerable annual and/or daily fluctuations in water levels (Zeiner et al. 1988-1990). California black rail nests are typically concealed in dense vegetation, near the upper limits of flooding. The species builds a deep, loose cup, at ground level or elevated several inches.

California black rail was found within the Project vicinity in the Camp Far West and Wolf quadrangles (CDFW 2018b). According to Sycamore Associates (2013a), neither California black rail nor suitable habitat was observed during BA surveys.

American White Pelican (*Pelecanus erythrorhynchos*)

The American white pelican is designated as a SSC (CDFW 2018b). Its habitat includes rivers, lakes, reservoirs, estuaries, bays, and open marshes (NatureServe 2017). Nesting sites require flat or gently sloped topography, without shrubs or other obstructions that would impede taking flight, are free of human disturbances and usually have loose earth suitable for constructing nest-mounds (Zeiner et al. 1988 – 1990). According to Zeiner et al. (1988 – 1990) and NatureServe (2017), this species currently nests at large lakes in the Klamath Basin of Northern California. Outside of nesting season (i.e., April to August), migrant flocks are often seen throughout California.

While the Project area does contain a large body of water (Camp Far West Reservoir) that may provide suitable habitat for American white pelicans, this area is outside of any known breeding areas for this species (Shuford and Gardali 2008). According to Sycamore Associates (2013a), American white pelican was observed during BA surveys within the proposed FERC Project Boundary. Occurrences of American white pelicans in the Project area are likely related to migratory flocks moving between nesting habitat in the Klamath Basin and wintering habitat elsewhere in California.

Purple Martin (*Progne subis*)

The purple martin is designated as a SSC (CDFW 2018b). It is a long distance migrant, arriving in California from South America in late March and departing by late September. This species is described by Zeiner et al. (1988 – 1990) as an uncommon to rare local summer resident of various wooded, low-elevation habitats comprised of montane hardwood, valley foothill and montane hardwood-conifer, and riparian habitats. Purple martin also occurs in coniferous habitats including closed-cone pine-cypress, ponderosa pine, Douglas-fir and redwood (*Sequioia sempervirens*). These habitats vary structurally and may be old growth, multi-layered or open, and may also have snags. Purple martin most often nest in old woodpecker cavities found in tall, old, isolated trees or snags in open forests or woodlands. However, they may utilize man-made structures, such as bridges and culverts for nesting.

Due to their use of a wide variety of habitats, purple martin has the potential to occur within or adjacent to the proposed FERC Project Boundary. However, no occurrences of this species have been reported.

Bank Swallow (*Riparia riparia*)

The bank swallow is designated as ST (CDFW 2018b). Bank swallows are neotropical migrants that arrive in California from South America in early March to breed. In July and August, bank swallows begin their migration back to South America. During the breeding period in California, they form nesting colonies that can range from 10 to 1,500 individuals, but most

known colonies have 100 to 200 nesting pairs. Nests are constructed by digging small burrows into vertical banks, bluffs and cliffs made of fine-textured or sandy soils, and are located in riparian habitat along rivers, ponds lakes and the ocean. According to the CDFW (CDFG 2005b), the range of the bank swallow has been reduced by 50 percent since 1900. Bank stabilization projects (use of rip-rap) and channelization of rivers have been identified as the greatest factor in the reduction of this species range.

SSWD's CWHR search identified suitable nesting habitat as occurring within the proposed FERC Project Boundary. However, according to Sycamore Associates (2013a), neither bank swallow nor suitable habitat was observed during BA surveys.

Yellow Warbler (*Setophaga petechia*)

The yellow warbler is designated as a SSC (CDFW 2018b). The yellow warbler is a migrant, found in California between April and October. Yellow warblers construct nests 2-16 ft above ground in riparian deciduous habitat along the western slope of the Sierra Nevada. These riparian deciduous habitats are comprised of cottonwoods, willows, alders, and other small trees and shrubs found in low, open-canopy woodland. This species breeds in montane shrubbery in open conifer forests. Territory occupied by yellow warbler usually contains tall trees for singing and foraging, and heavy brush in the understory for nesting (Zeiner et al. 1988-1990). Forage consists mostly of insects and spiders taken from the upper canopy of deciduous trees and shrubs. Yellow warblers have also been known to eat berries (Zeiner et al. 1988-1990). Brood parasitism by brown-headed cowbirds (*Molothrus ater*) is thought to be a major cause of population decline in lowland localities in recent decades.

Due to their affinity towards riparian deciduous habitat, yellow warbler has the potential to occur within or adjacent to the proposed FERC Project Boundary. However, no occurrences of this species have been reported.

Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*)

The yellow-headed blackbird is designated as a SSC (CDFW 2018b). This species breeds commonly, but locally, in fresh-water marshes of cattail, tule (*Schoenoplectus* sp.) or bulrush east of the Cascade Range and Sierra Nevada (Zeiner et al. 1988 – 1990). Nests are basketlike structures of wet grasses, reeds and cattails woven around stems. Nests are placed within a male's territory and always overhanging the water (Twedt and Crawford 1995). During migration and winter, open, cultivated lands, pastures and fields are used. The yellow-headed blackbird feeds on insects, seeds and grain in fields, on muddy ground near water or at the water's surface during breeding season (NatureServe 2017), while foraging outside of the breeding season takes place in upland areas, eating grains and weed seeds (Twedt and Crawford 1995).

While yellow-headed blackbird was predicted to occur within the Project vicinity, it is not known to breed or nest within the proposed FERC Project Boundary.

American Badger (*Taxidea taxus*)

The American badger is designated as a SSC species (CDFW 2018b). An uncommon, but permanent, resident found throughout most of California, except in the North Coast area (Zeiner et al. 1988-1990), the American badger is found most abundantly in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. This species' diet consists mostly of rodents: rats (*Rattus* spp.), mice, chipmunks, pocket gophers (*Geomyidae* family), and ground squirrels. The American badger will also take some reptiles, insects, earthworms, eggs, birds, and carrion as prey items when ground squirrel populations are low (NatureServe 2017). Seasonal dietary shifts in response to prey availability have been observed.

There are no reports of badgers in the proposed FERC Project Boundary, though there is suitable habitat. However, Project O&M would not alter suitable habitat, so activities would only impact badgers by way of temporary disturbance.

3.3.4.2.3 Special-Status Bat Study

In September 2015, SSWD evaluated all Project recreation facilities[11] within the NSRA and SSRA for evidence of bat activity. At each location, SSWD surveyed the exterior and interior of buildings for active bat roosts and signs of historic use via the presence of guano and staining resulting from urine and body oils. Any observed bat use (i.e., not just special-status bats, but all bat species) was documented on a standard data sheet, photographed and the location was recorded with a GPS unit (field data located in Appendix E1). Table 3.3.4-7 summarizes the Project recreation facilities that were included in the survey.

Table 3.3.4-7. List of Project facilities and recreation facilities that were surveyed by SSWD in September 2015 for evidence of bat use and results of the survey.

Project Facility	Access Point	Signs of Bat Use
CAMP FAR WEST – SOUTH SHORE RECREATION AREA		
Store	Small hole in wall	Staining – possibly from birds
Restroom 1	Open entrance doors, eaves, corrugated roof	None
Storage shed	Garage door, eaves, holes in screens	Some staining – possibly from birds
Restroom 2	Open entrance doors, holes in roof	Staining – possibly from birds
Restroom 3	Open entrance doors, corrugated roof	None
Restroom 4	Open entrance doors, holes in screens, corrugated roof	None
CAMP FAR WEST – NORTH SHORE RECREATION AREA		
Store	None	None [1]
Restroom 1	Open entrance doors, holes in screens, corrugated roof	None
Restroom 2	Open entrance doors, holes in screens, corrugated roof	None
Restroom 3	None	None [1]
Restroom 4	Open entrance doors, holes in screens, corrugated roof	Staining – possibly from birds
Old snack bar	Walls – several holes, eaves	None
ADDITIONAL STRUCTURES		
1967 bridge – Camp Far West Road	Deck	None [2]

[1] Not applicable.
[2] Observed during 2017 surveys.

11 The Camp Far West Powerhouse was not accessible during the survey, but was included in the 2017 acoustic and emergence surveys.

The following types of bat roosts were considered during SSWD's survey:

- Maternity Roosts. A maternity roost is a man-made or natural structure that provides protection from the elements and predators, and provides the correct thermal environment for young rearing. Maternity roosts tend to be warmer in temperature because breeding females need to maintain a high metabolism to aid in lactation. Juvenile bats need to keep warm to maintain a metabolic rate that allows for rapid growth. Maternity roost thermal requirements are species dependent but generally remains between 70°F and 90°F, however big-eared bat nursery roosts have been discovered in sites where ambient temperatures are as low as 60°F. Species that form large colonies can be found raising young in mines with ambient temperatures as low as 56°F, but often prefer 66°F or higher (Tuttle and Taylor 1998).
- Day Roosts. A day roost is a man-made or natural structure where bats are able to spend the non-active period of the day resting or in torpor, depending on weather conditions. Day roosts provide shelter from the elements and safety from predators (Tuttle and Taylor 1998).
- Night Roost. A night roost is a man-made or natural structure where bats may rest between foraging bouts, digest prey, escape from predators, shelter from weather, and possibly for social purposes. Night roosts are typically sites or structures that retain heat to aid the bat in maintaining the higher metabolism necessary for digestion (Tuttle and Taylor 1998).
- Winter Hibernacula. These are man-made or natural structures used by bats during colder winter months. During this time, bats enter torpor, receiving nourishment from their fat storage gained during summer months. Many species will awaken for brief periods of time to stretch, but will resume torpor. Bats, such as the Townsend's big-eared bat, will hibernate for short periods of time and will often resume feeding behavior during warm winter spells. Airflow and temperature are key determinants in use of structures, such as tunnels and adits, as hibernacula. Temperatures within these roost sites are generally below 53°F at the onset of hibernation, and remain between 34°F and 50°F by midwinter. Structures that have a varying temperature regime allow bats to find suitable temperatures during warm or cold winters (Tuttle and Taylor 1998).

No bats were seen during the survey of Project facilities. The facilities may be suitable for roosting, though there was no presence of guano and the staining seen was most likely from birds. A few of the screens that cover exterior windows of several facilities were damaged, providing possible points of entry for bats. SSWD has not installed bat exclusionary devices on any Project facilities.

In addition to the evaluation of all Project recreation facilities within the NSRA and SSRA for evidence of bat activity described above, SSWD conducted an additional bat study (Study 4.3, *Special-Status Wildlife – Bats*) to identify the location of bats, including special-status bats, in relation to two facilities not surveyed during the reconnaissance survey described above. The study was conducted consistent with Section 6.0 of the *Special-status Wildlife – Bats Study Plan* that was filed with FERC on January 9, 2017.

The study area consisted of two sites – the Camp Far West Powerhouse and the non-Project Camp Far West Road Bridge over the Camp Far West spillway.

The study methods consisted of two primary steps: 1) nighttime emergence surveys including acoustic monitoring during the surveys; and 2) quality assurance/quality control (QA/QC) review. Each step is summarized below.

Nighttime emergence surveys performed at the Camp Far West Bridge were conducted on May 11 and August 11, 2017; and nighttime emergence surveys at the Camp Far West Powerhouse were conducted on May 12 and August 7, 2017. One additional night of unattended acoustic monitoring was performed overnight on August 2, 2017 at both locations. Each survey lasted at least one or two hours, beginning 30 minutes prior to sundown. Acoustic monitoring also occurred during these nighttime emergence surveys.

Before conducting the emergence surveys, observation points were identified where surveyors could view the majority of the facility and the most likely points of egress. The surveyors were positioned so that emerging bats would be silhouetted against the sky as they exited the roost.

During the nighttime emergence surveys, the surveyors performed the following activities or recorded the following information:

- Survey start/stop times;
- An Anabat SD1 bat detector system was deployed to identify the exact timing of bats emerging and was used to help differentiate between low- and high-frequency bat species;
- Surveyors identified and recorded obvious features of bats observed (e.g., fur color, ear size);
- Surveyors recorded numbers of bats and the location of where bats were observed emerging from. Tallies of emerging bats were recorded every few minutes or as natural breaks in bat activity allowed. If no bats were seen, observations continued until it was too dark to see emerging bats (approximately one-two hours);
- Field data was collected and recorded on a data sheet developed by the USFWS; and
- Analook computer software (most recent version available) was used to analyze the acoustic data collected by the Anabat SD1 system to identify bat species.

Bat activity is affected by weather, therefore nighttime emergence surveys were conducted on clear, calm and dry evenings when bats are active and there was good visibility. Conducting the emergence surveys during windy conditions was avoided.

Following the emergence surveys, SSWD performed a QA/QC review of all data, including maps, recordings, identifications, and sightings.

SSWD observed four bats during nighttime emergence surveys: two each night at the Camp Far West Powerhouse. No bats were observed at the Camp Far West Bridge. No bats were observed emerging from Project facilities; the four bats were seen flying overhead near the powerhouse.

Two species of bat were positively identified through acoustic monitoring: California myotis (*Myotis californicus*) and Mexican free-tailed bat (*Tadarida brasiliensis*). One additional bat species was also recorded and tentatively identified as a Western pipistrelle (*Pipistrellus hesperus*). A total of 18 bat calls were recorded over three surveys at locations around the Camp Far West Powerhouse; one on May 12, 16 on August 2, and one on August 7, 2017. None of the above bat species have special-status designations.

3.3.4.2.4 Special-Status Raptor Study

SSWD conducted a special-status raptor study (Study 4.2, *Special-Status Wildlife – Raptors*) within the Proposed Project Boundary that included background literature reviews, desktop analyses, and field investigations. The study conducted was consistent with Section 6.0 of the *Special-status Wildlife – Raptors Study Plan* that was filed with FERC on January 9, 2017. The study area encompassed the Camp Far West Reservoir.

The study consisted of the following three steps: 1) identify and map known raptor nest sites and other occurrences within the study area; 2) conduct surveys following specific protocols for bald eagle, golden eagle and Swainson's hawk; and 3) perform quality assurance/quality control (QA/QC) review. Each step is summarized below and field data are provided in Appendix E1.

SSWD identified and mapped known occurrences of bald eagle, golden eagle and Swainson's hawk sightings, nests and roosts in the study area. The map was based on existing CWHR data, CNDDB data, discussions with wildlife biologists, discussions with Project Operations Staff, and incidental sightings by field staff during fieldwork on Camp Far West Reservoir.

Raptor surveys for the bald eagle consisted of winter surveys and nest surveys. Winter surveys were conducted in accordance with the *Protocol for Evaluating Bald Eagle Habitat and Populations in California* (Jackman and Jenkins 2004), and the nest surveys were conducted in accordance with the *Bald Eagle Breeding Survey Instructions* (CDFG 1999) and *Protocol for Evaluating Bald Eagle Habitat and Populations in California* (Jackman and Jenkins 2004). Nesting territories for bald eagles were checked at least three times during the nesting season (primarily February through July). Bald eagle surveys were conducted on December 20-22, 2016; January 16-18; February 15, 23-24; March 16; April 6, 25; May 2; and June 16, 2017.

SSWD conducted nesting golden eagle surveys according to the *Interim Golden Eagle Inventory and Monitoring; and Other Recommendations* (USFWS 2010) and *Protocol For Golden Eagle Occupancy, Reproduction, and Prey Population Assessment* (Driscoll 2010). Nesting territories for golden eagle surveys were checked four times during the nesting season (i.e., primarily February through July), with each survey spaced at least 30 days apart. Golden eagle surveys were conducted on January 18, February 1, March 8, April 6; and June 16, 2017.

SSWD conducted nesting Swainson's hawk surveys according to the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee [SHTAC] 2000). Swainson's hawk surveys were conducted on January 18, February 1, March 23, 31; April 6, 14, 18 and 28, 2017.

During the study, SSWD recorded any raptor sightings and nests observed looking inland within 0.25-mi from the edge of the shoreline at the Camp Far West Reservoir, photographed the nest, and recorded the location using GPS. Incidental sightings of other special-status raptors including northern harrier, short-eared owl, long-eared owl, and white-tailed kite were recorded when they were seen. If reasonably possible, SSWD made determinations as to whether the raptor nest was active or inactive during the survey year. Additionally, SSWD biologists recorded all bird species observations throughout the special-status raptor study, and these species are documented in Table 3.3.4-8.

Table 3.3.4-8. Incidental bird species observed while conducting the relicensing Special-Status Raptor Study.

Common Name~	Scientific Name[1]	Status[2]
Red-tailed hawk	*Buteo jamaicensis*	--
Bald eagle	*Haliaeetus leucocephalus*	BGEPA, CE, FP
Canada goose	*Branta Canadensis*	Harvest
Turkey vulture	*Cathartes aura*	--
American kestrel	*Falco sparverius*	--
Steller's jay	*Cyanocitta stelleri*	--
Downy woodpecker	*Picoides pubescens*	--
Hairy woodpecker	*Picoides villosus*	--
Least grebe	*Tachybaptus dominicus*	--
Double-crested cormorant	*Phalacrocorax auritus*	--
American coot	*Fulica americana*	Harvest
Ruby-throated hummingbird	*Archilochus colubris*	--
Black-chinned hummingbird	*Archilochus alexandri*	--
Mallard	*Anas platyrhynchos*	Harvest
Yellow-billed magpie	*Pica nuttalli*	--
Killdeer	*Charadrius vociferus*	--
Snow goose	*Anser caerulescens*	Harvest
Great blue heron	*Ardea herodias*	--
Blue-winged teal	*Spatula discors*	Harvest
Canvasback	*Aythya valisineria*	Harvest
Northern harrier	*Circus hudsonius*	SSC
Swainson's hawk	*Buteo swainsoni*	CT
Greater white-fronted goose	*Anser albifrons*	Harvest
Sharp-shinned hawk	*Accipiter striatus*	--
Golden eagle	*Aquila chrysaetos*	BGEPA, FP
Western meadowlark	*Sturnella neglecta*	--
Western grebe	*Aechmophorus occidentalis*	--
Common merganser	*Mergus merganser*	Harvest
Belted kingfisher	*Megaceryle alcyon*	--
American avocet	*Recurvirostra americana*	--
Osprey	*Pandion haliaetus*	--
Green heron	*Butorides virescens*	--
American crow	*Corvus brachyrhynchos*	Harvest
Common raven	*Corvus corax*	--

Table 3.3.4-8. (continued)

Common Name~	Scientific Name[1]	Status[2]
Acorn woodpecker	*Melanerpes formicivorus*	--
American white pelican	*Pelecanus erythrorhynchos*	SSC
Anna's hummingbird	*Calypte anna*	--
Total	**37**	

[1] Taxonomy derived from California Birds Record Committee (2018).

[2] CDFW 2018c
BGEPA = Bald and Golden Eagle Protection Act
CE = California Endangered
FP = California Fully Protected
SSC = California Species of Special Concern
CT = California Threatened
Harvest = Harvest Species

Following completion of the study, SSWD performed a QA/QC review of all data, including maps and sightings. Of the 37 bird species recorded during this study, two are considered SSC- northern harrier and American white pelican- and nine are considered harvest species- Canada goose, American coot, mallard, snow goose, blue-winged teal, canvasback, greater white-fronted goose, common merganser, and American crow.

Forty-seven bald eagle occurrences (including multiple bald eagles at the same site), six golden eagles, and three Swainson's hawks were observed during surveys. A map of these special-status raptor 2017 sightings within the FERC Project Boundary is included in Figure 3.3.4-7.

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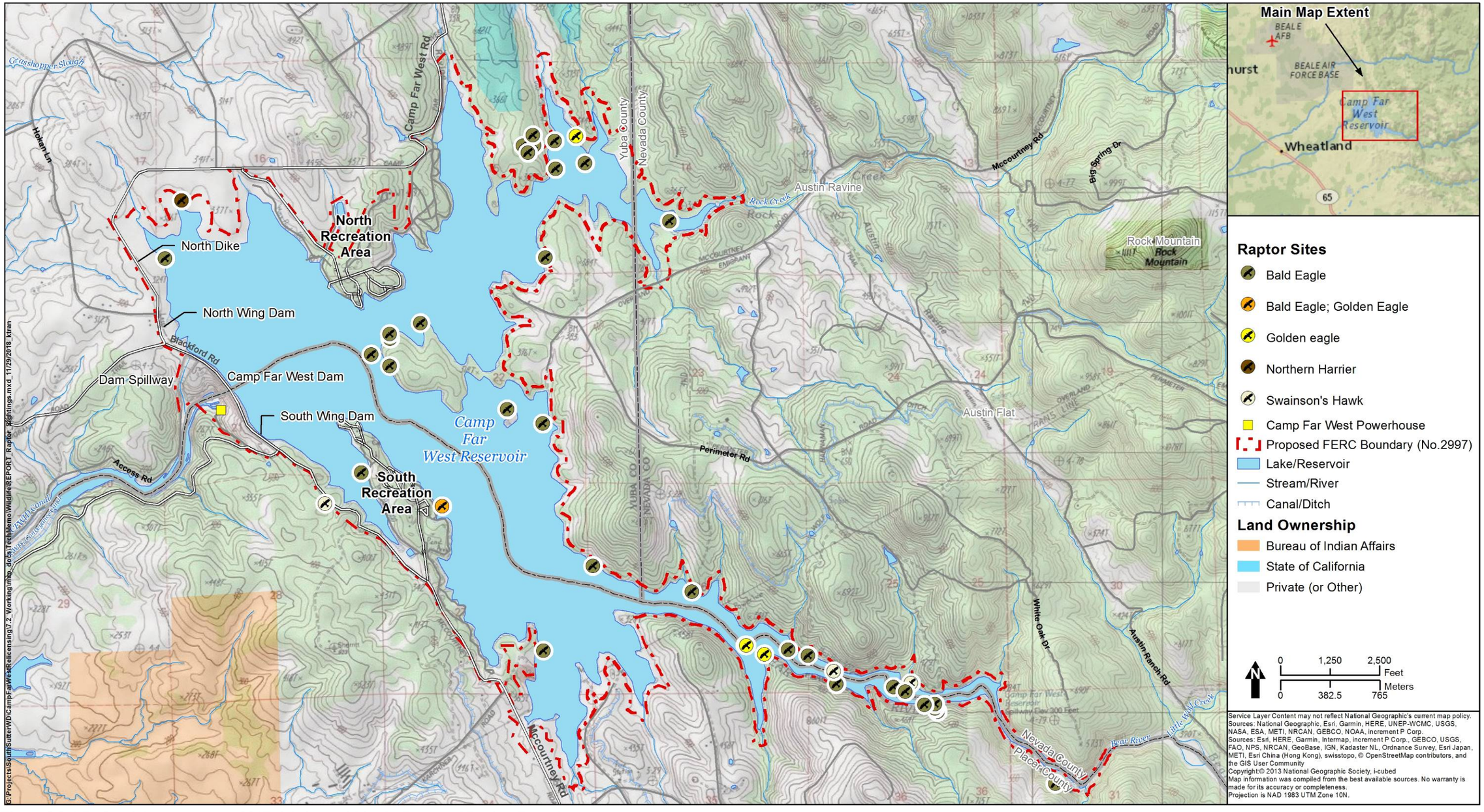

Figure 3.3.4-7. Special-status raptor 2017 sightings within the Proposed Project Boundary.

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Two active bald eagle nests were found within the Proposed Project Boundary in 2017. One nest is historic, previously found on the Bear River Arm of Camp Far West Reservoir in adjacent trees. It was previously documented in a 2013 report by Sycamore Associates. A second active bald eagle nest was found on the Rock Creek Arm of the reservoir, east of the NSRA boat ramp. Both active bald eagle nests and the three osprey (*Pandion haliaetus*) nests found within the FERC Project Boundary are identified on the map included in Figure 3.3.4-8. A great blue heron (*Ardea herodias*) rookery was also located in the SSRA, near the site location of the bald and golden eagles, as shown on Figure 3.3.4-9.

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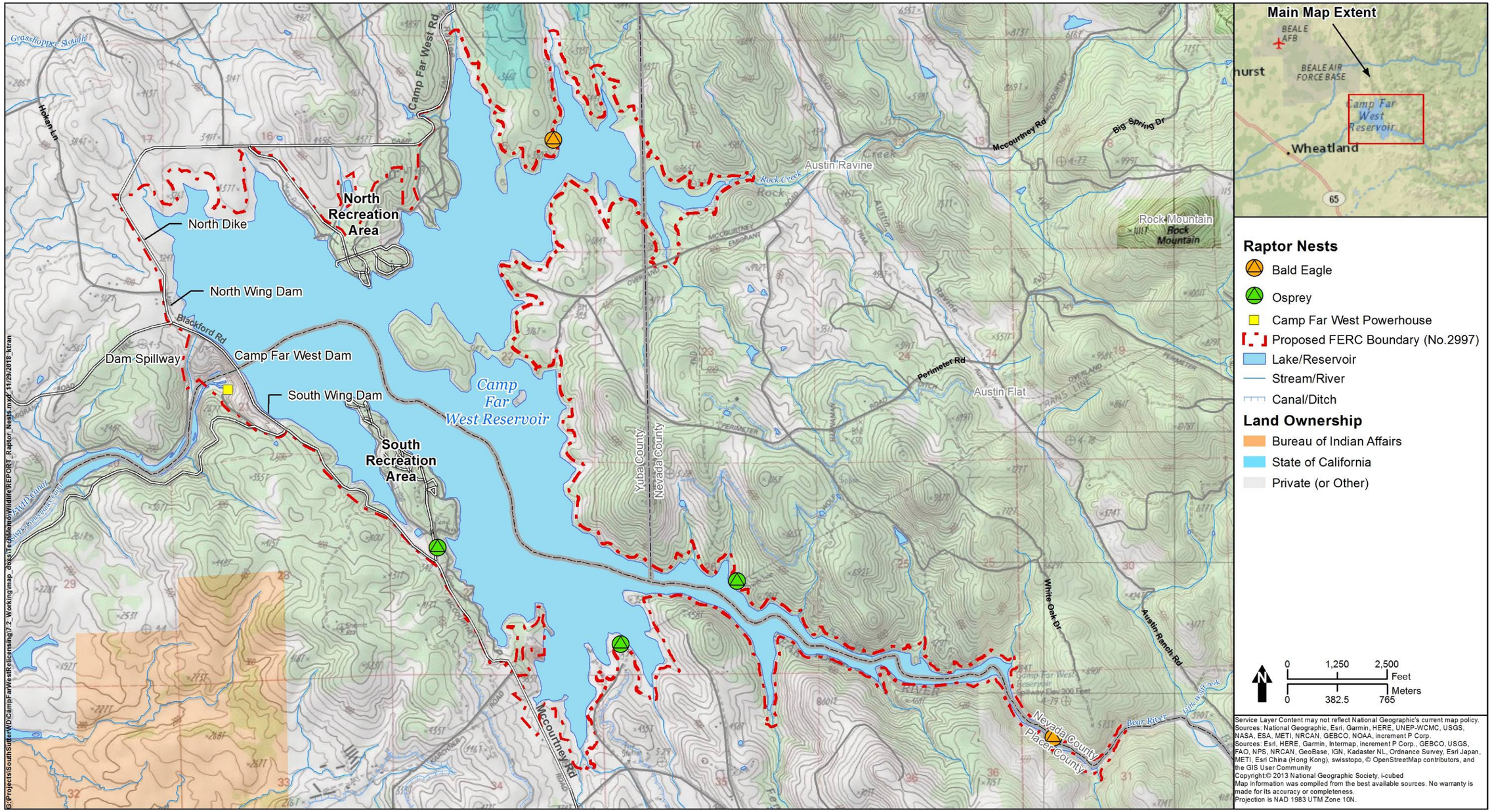

Figure 3.3.4-8. Active bald eagle nests and osprey nests found within the Proposed Project Boundary.

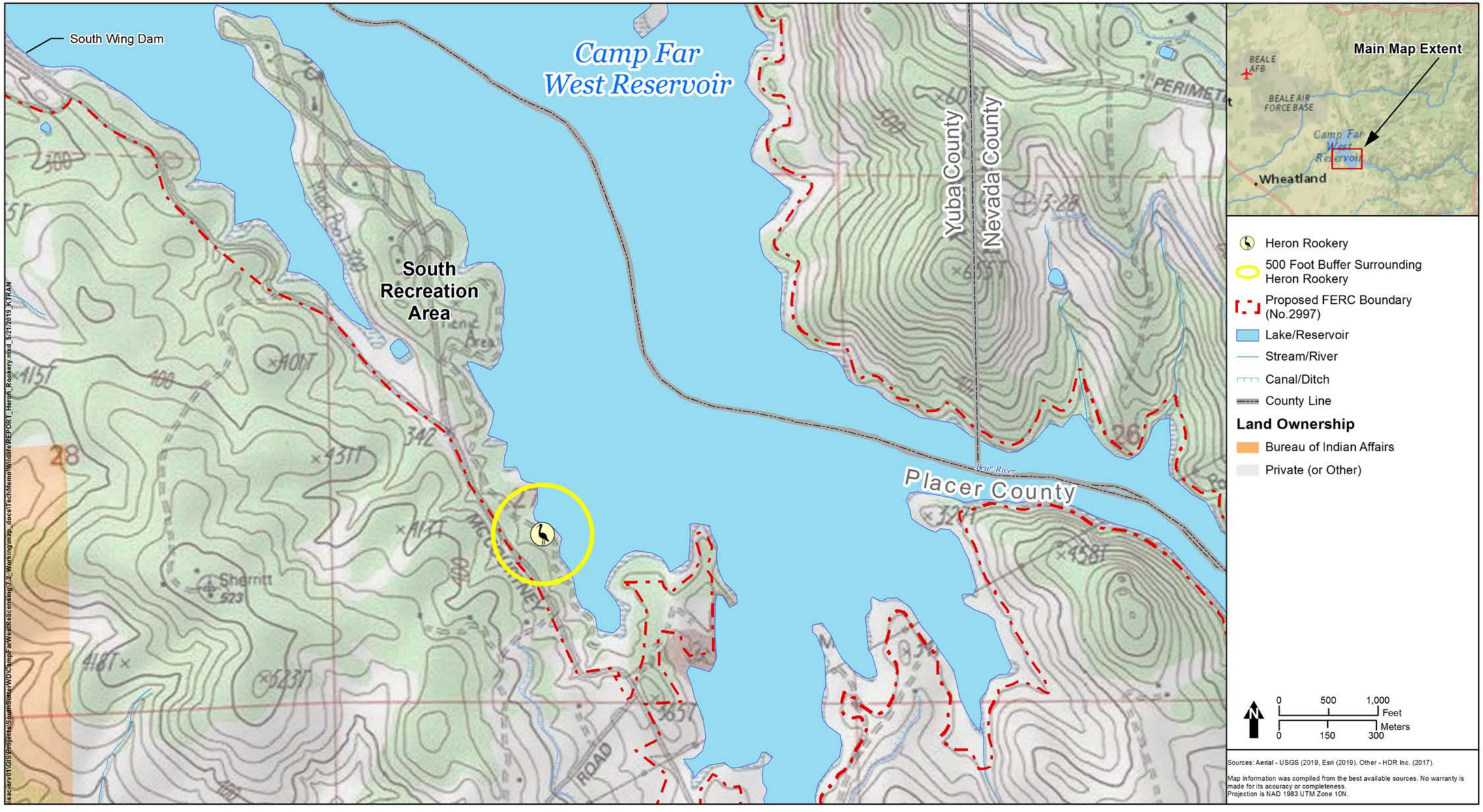

Figure 3.3.4-9. Blue heron rookery at South Shore Recreation Area with proposed 500 foot buffer

Additional information on the three special-status raptor species that were the focus of the surveys is below.

Golden Eagle (*Aquila chrysaetos*)[12]

The golden eagle is protected under the BGEPA and listed as a FP species (CDFW 2018b). It ranges from sea level up to 11,500 ft and can be found throughout California, except the center of the Central Valley (Zeiner et al. 1988-1990). Throughout the Sierra Nevada and foothills adjacent to the Central Valley, golden eagle may be found in sparse woodlands, grasslands, savannas, lower successional forest stages, and shrubland. Cliffs, large trees, and man-made structures (e.g., electric transmission towers) with a commanding view are used for nesting.

During SSWD's special-status raptor study, six occurrences of golden eagle were observed at Camp Far West Reservoir. None of these occurrences include nesting birds or evidence of nesting activities, nor are any known historically at the Project, which suggests that golden eagles are occasional visitors to the Project.

Swainson's Hawk (*Buteo swainsoni*)[13]

The Swainson's hawk is listed as ST species (CDFW 2018b). According to the last available California Swainson's Hawk Inventory (CDFG 2005a), Swainson's hawk inhabit the flat portions of California's Central Valley, lower elevation Great Basin in Northeastern California, Owen's Valley and portions of the Mojave Desert. Typical breeding habitat consists of trees within mature riparian forest, lone trees and oak groves, and mature roadside trees. It forages in native grasslands, lightly-grazed dryland pasture, and suitable grain or alfalfa (*Medicago sativa*) fields that are adjacent to nesting habitat. Historically, Swainson's hawks were found throughout California, except in the Sierra Nevada. The current range of Swainson's hawk, while similar to the historic range, has become fragmented and irregularly distributed. Yolo, San Joaquin and Sacramento counties are inhabited by 85 percent of the Central Valley breeding pairs (CDFG 1993). This concentration of breeding pairs is attributed to compatible land use practices (irrigated farmland, such as alfalfa). North and south of those three counties, the number of nesting pairs falls dramatically, which is likely due to incompatible crop-types such as cotton (*Gossypium* spp.), vineyards and orchards. Furthermore, no significant foothill region breeding populations have been discovered (CDFG 1993).

During SSWD's special-status raptor study, three individuals were observed within the FERC Project Boundary, but no nests were observed. However, Swainson's hawk may nest in the vicinity of the Project given their affinity for the Central Valley.

12 Photo source: < https://gfp.sd.gov/outdoor-learning/bald-eagle-awareness-days/golden_eagle.aspx>.
13 Photo source: Tony Hisgett - Flickr: Swainson's Hawk, CC BY 2.0, Wikimedia Commons

Bald Eagle (*Haliaeetus leucocephalus*)[14]

The bald eagle is a SE and FP species and protected under the BGEPA (CDFW 2018b). The bald eagle is a large raptor with a wingspan between 6 and 8 ft and can weigh up to 14 pounds. They typically nest within 1 mi of water bodies. The bald eagle breeds and winters throughout California, except for the desert areas, and the number of breeding pairs known to be occupying territories in California is steadily growing (CDFW 2018c). Most breeding in the state occurs in the northern Sierra Nevada, Cascades, and north Coast Ranges. California's breeding population is resident year-round in most areas where the climate is relatively mild (Jurek 1988). Between mid-October and December, migratory birds from areas north and northeast of California arrive in the state. Wintering populations remain through March or early April. Breeding generally occurs from February to July, but can be initiated as early as January via courtship, pair bonding, and territory establishment. The breeding season normally ends around August 31, as the fledglings are no longer attached to their nest area. According to the CDFW (2018c), California's winter population appears to be at least stable, although varying from year to year, exceeding 1,000 birds some winters. The results of Midwinter Bald Eagle Surveys conducted from 1986-2005 estimates a 1.2 percent increase in California's wintering bald eagle population.

During SSWD's 2017 special-status raptor study, 47 bald eagles (including multiple birds at the same site), were observed during surveys within the FERC Project Boundary. Additionally, two active bald eagle nests were found within the Proposed Project Boundary. One nest is historic, previously found on the Bear River Arm of Camp Far West Reservoir in adjacent trees (Sycamore Associates 2013a). A second active bald eagle nest was found on the Rock Creek Arm of the reservoir, east of the NSRA boat ramp.

3.3.4.2.4 Commercially-Valuable Wildlife Species

One amphibian, 34 birds, and 21 mammal species that have been designated as commercially valuable by the CDFW have the potential to occur within the proposed FERC Project Boundary (CDFW 2018b). Table 3.3.4-9 lists these species and includes temporal and spatial information and descriptions of suitable habitat used by each of the species. CWHR system habitat types listed in Table 3.3.4-4 were used to obtain temporal and spatial information for each species (CDFW 2018b). Descriptions of suitable habitat types were synthesized from species accounts found online at NatureServe (2017) and the CDFW's CWHR life history database (CDFW 2015b).

14 Photo source: Pacific Southwest Region USFWS from Sacramento, US - A lone Bald eagle, Public Domain.

Table 3.3.4-9. Commercially-valuable wildlife species occurring or potentially occurring in the Camp Far West Hydroelectric Proposed Project Boundary.

Common Name/ Scientific Name	Suitable Habitat Type	Temporal and Spatial Distribution[1]	Known From Project
AMPHIBIANS			
American bullfrog (*Lithobates catesbeianus)*	Ponds, swamps, lakes, reservoirs, marshes, brackish ponds. May disperse from water in wet weather and sometimes are found in temporary waters hundreds of meters from permanent water. Non-native.	Yearlong: AGS, BOP, BOW, LAC, MCH, MHW, URB	Located at multiple places on the Project.
BIRDS			
Chukar *(Alectoris chukar)*	Rocky hillsides, mountain slopes with grassy vegetation, open and flat desert with sparse grasses, and barren plateaus. Non-native.	Yearlong: AGS	Potentially occur within suitable habitat.
Wood duck *(Aix sponsa)*	Inland waters near woodlands such as swamps and marshes.	Yearlong: BOP, BOW, LAC, MHW, URB	Potentially occur within suitable habitat.
Northern pintail *(Anas acuta)*	Lakes, rivers, marshes and ponds in grasslands, barrens, dry tundra, open boreal forest, or cultivated fields. Most breeding associated with seasonal and semi-permanent wetlands.	Yearlong: AGS, LAC, URB Winter- LAC	Potentially occur within suitable habitat.
American wigeon *(Anas americana)*	Open water on lakes, ponds, reservoirs and backwaters.	Yearlong: AGS, LAC, URB	Potentially occur within suitable habitat.
Northern shoveler *(Anas clypeata)*	Open water on lakes, ponds and reservoirs.	Yearlong: AGS, LAC	Potentially occur within suitable habitat.
Green-winged teal *(Anas crecca)*	Open water on lakes, ponds, reservoirs and in marshes.	Yearlong: AGS Winter- LAC, URB	Potentially occur within suitable habitat.
Cinnamon teal *(Anas cyanoptera)*	Shallow open water on lakes, ponds, reservoirs and in marshes.	Yearlong: AGS, LAC	Potentially occur within suitable habitat.
Blue-winged teal *(Anas discors)*	Open water on lakes, ponds, reservoirs and in marshes.	Summer: AGS Yearlong- LAC	Potentially occur within suitable habitat.
Eurasian wigeon *(Anas penelope)*	Winters primarily in freshwater (marshes, lakes) and brackish situations in coastal areas, but migrates extensively through inland regions; occurs in shallow water and fields and meadows.	Winter: AGS, LAC, URB	Potentially occur within suitable habitat.
Mallard *(Anas platyrhynchos)*	Primarily shallow waters such as ponds, lakes, marshes, and flooded fields.	Yearlong: AGS, LAC, URB	Observed on Camp Far West Reservoir.
Gadwall *(Anas strepera)*	Open water on lakes, ponds, reservoirs and backwaters.	Yearlong: AGS, LAC	Potentially occur within suitable habitat.
Greater white-fronted goose[2] *(Anser albifrons)*	Wetlands, grain fields, grassy fields, marshes, lakes and ponds. Breeds on arctic tundra on edge of marshes, lakes, sloughs, rivers.	Winter: AGS, LAC	Observed on Camp Far West Reservoir.
Lesser scaup *(Aythya affinis)*	Open water on lakes, ponds and reservoirs.	Summer: AGS Yearlong: LAC	Potentially occur within suitable habitat.
Redhead[3] *(Aythya americana)*	Open water on lakes, ponds and reservoirs.	Winter: LAC	Potentially occur within suitable habitat.
Ring-necked duck *(Aythya collaris)*	Open water on lakes, ponds, and reservoirs.	Yearlong: LAC	Potentially occur within suitable habitat.
Greater scaup *(Aythya marila)*	Open water and on emergent wetlands. Breeds primarily in tundra and northern borders of the taiga.	Winter: LAC	Potentially occur within suitable habitat.

Table 3.3.4-9. (continued)

Common Name/ Scientific Name	Suitable Habitat Type	Temporal and Spatial Distribution[1]	Occurrence in Project Area
BIRDS (cont'd)			
Canvasback *(Aythya valisineria)*	Open water on lakes, ponds, reservoirs, and marshes.	Winter: LAC	Potentially occur within suitable habitat.
Canada goose *(Branta canadensis)*	Overhead while migrating, marshes with tall grass and sedges near water.	Yearlong: AGS, LAC, URB	Observed on Camp Far West Reservoir.
Bufflehead *(Bucephala albeola)*	Lakes, ponds, rivers and seacoasts. Breeds in tree cavities in mixed coniferous-deciduous woodland near lakes and ponds.	Yearlong: LAC	Potentially occur within suitable habitat.
Common goldeneye *(Bucephala clangula)*	Open water on lakes, ponds and reservoirs.	Winter: LAC	Potentially occur within suitable habitat.
California quail[2] *(Callipepla californica)*	Lower elevations and transition zone of mixed conifer forest between 1,200 and 7,000 ft elevation.	Yearlong: AGS, BOP, BOW, MCH, MHW, URB	Potentially occur within suitable habitat.
Snow goose *(Chen caerulescens)*	Freshwater wetlands, wet prairies and extensive sandbars, foraging in pastures, cultivated lands and flooded fields.	Winter: AGS, LAC	Observed on Camp Far West Reservoir.
Ross's goose *(Chen rossii)*	Marshy lakes, wet prairies, foraging in grassy areas, pastures and cultivated fields.	Winter: AGS, LAC	Potentially occur within suitable habitat.
Band-tailed pigeon *(Columba fasciata)*	Lower elevations and transition zone of mixed conifer forest between 1,200 and 5,500 ft elevation.	Winter: BOP, BOW, MCH Yearlong: MHW, URB	Potentially occur within suitable habitat.
American crow *(Corvus brachyrhynchos)*	Open and partly open country: agricultural lands, suburban areas, orchards, and tidal flats.	Yearlong: AGS, BOP, BOW, LAC, MHW, URB	Observed at recreation areas.
American coot *(Fulica americana)*	Open water areas, along lake shores and stream edges, and in marshes.	Winter: AGS Yearlong: LAC, URB	Observed on Camp Far West Reservoir.
Common gallinule *(Gallinula galeata)*	Freshwater marshes, canals, quiet rivers, lakes, ponds, mangroves, primarily in areas of emergent vegetation and grassy borders. Nests usually among marsh plants over water, occasionally in shrub in or near water.	Yearlong: LAC, URB	Potentially occur within suitable habitat.
Wild turkey *(Meleagris gallopavo)*	Pinyon-Juniper woodlands. Non-native.	Yearlong: AGS, BOP, BOW, MCH, MHW	Potentially occur within suitable habitat.
Hooded merganser *(Mergus cucullatus)*	Open water on lakes, ponds and reservoirs.	Winter: LAC, URB	Potentially occur within suitable habitat.
Common merganser *(Mergus merganser)*	Open water on lakes, ponds and reservoirs.	Yearlong: LAC Winter: URB	Potentially occur within suitable habitat.
Red-breasted merganser *(Mergus serrator)*	Open water on lakes, ponds and reservoirs.	Winter: LAC	Potentially occur within suitable habitat.
Ruddy duck *(Oxyura jamaicensis)*	Open water on lakes, ponds, reservoirs and Marshes.	Yearlong: LAC	Potentially occur within suitable habitat.
Ring-necked pheasant *(Phasianus colchicus)*	Open country (especially cultivated areas, scrubby wastes, open woodland and edges of woods), grassy steppe, desert oases, riverside thickets, swamps and open mountain forest. Non-native.	Yearlong: AGS, BOP, MCH, URB	Potentially occur within suitable habitat.
Mourning dove *(Zenaida macroura)*	Lower elevations and transition zone of mixed conifer forest between 1,200 and 5,500 ft elevation.	Yearlong: AGS, BOP, BOW, MCH, MHW, URB	Observed at recreation areas.

Table 3.3.4-9. (continued)

Common Name/ Scientific Name	Suitable Habitat Type	Temporal and Spatial Distribution[1]	Occurrence in Project Area
MAMMALS			
Coyote *(Canis latrans)*	Wide range of habitats in its extensive range, from open prairies of the west to the heavily forested areas of the Northeast; sometimes found in cities.	Yearlong: AGS, BAR, BOP, BOW, MCH, MHW, URB	Potentially occur within suitable habitat.
American beaver *(Castor canadensis)*	Readily occupy artificial ponds, reservoirs, and canals, if food is available.	Yearlong: AGS, BOW, LAC	Potentially occur within suitable habitat.
Virginia opossum *(Didelphis virginiana)*	Very adaptable; may be found in most habitats. Prefers wooded riparian habitats. Also in suburban areas. Abandoned burrows, buildings, hollow logs, and tree cavities are generally used for den sites.	Yearlong: AGS, BOP, BOW, MCH, MHW, URB	Potentially occur within suitable habitat.
Bobcat *(Felis rufus)*	Various habitats including deciduous-coniferous woodlands and forest edge, hardwood forests, swamps, forested river bottomlands, brushlands, deserts, mountains, and other areas with thick undergrowth.	Yearlong: AGS, BOP, BOW, MCH, MHW	Potentially occur within suitable habitat.
Black-tailed jackrabbit[3] *(Lepus californicus)*	Open plains, fields, and deserts; open country with scattered thickets or patches of shrubs.	Yearlong: AGS, BOP, BOW, MCH, MHW, URB	Potentially occur within suitable habitat.
Striped skunk *(Mephitis mephitis)*	Semi-open country with woodland and meadows interspersed, brushy areas, bottomland woods. Frequently found in suburban areas.	Yearlong: AGS, BOP, BOW, MCH, MHW, URB	Potentially occur within suitable habitat.
Long-tailed weasel *(Mustela frenata)*	Wide variety of habitats, usually near water. Favored habitats include brushland and open woodlands, field edges, riparian grasslands, swamps, and marshes.	Yearlong: AGS, BOP, BOW, MCH, MHW, URB	Potentially occur within suitable habitat.
American mink *(Mustela vison)*	Favors forested permanent or semi-permanent wetlands with abundant cover, marshes, and riparian zones.	Yearlong: LAC	Potentially occur within suitable habitat.
Mule deer *(Odocoileus hemionus)*	Early to intermediate successional stages of most forest, woodland, and brush habitats interspersed with herbaceous openings, dense brush or tree thickets, riparian areas, and abundant edge.	Yearlong: AGS, BOP, BOW, MCH, MHW, URB	Observed at Camp Far West Reservoir.
Common muskrat *(Ondatra zibethicus)*	Fresh or brackish marshes, lakes, ponds, swamps, and other bodies of slow-moving water. Rare or absent in artificial impoundments with fluctuating water levels.	Yearlong: LAC	Potentially occur within suitable habitat.
Raccoon *(Procyon lotor)*	Various habitats; usually in moist situations, often along streams and shorelines.	Yearlong: AGS, BOP, BOW, LAC, MCH, MHW, URB	Potentially occur within suitable habitat.
Western gray squirrel *(Sciurus griseus)*	Dependent upon mature stands of mixed conifer and oak habitats, closely associated with oaks.	Yearlong: BOP, BOW, MCH, MHW	Potentially occur within suitable habitat.
Western spotted skunk[2] *(Spilogale gracilis)*	Brushy canyons, rocky outcrops (rimrock) on hillsides and walls of canyons. When inactive or bearing young, occupies den in rocks, burrow, hollow log, brush pile, or under building,	Yearlong: AGS, BOP, BOW, MCH, MHW, URB	Potentially occur within suitable habitat.
Audubon's cottontail *(Sylvilagus audubonii)*	Various habitats; dry uplands as well as low valleys and canyons. May inhabit open grasslands, brushlands, edges of foothill woodlands, willow thickets, sometimes in cultivated fields or under buildings.	Yearlong: AGS, BOP, BOW, MCH, URB	Potentially occur within suitable habitat.
Wild pig *(Sus scrofa)*	Densely forested mountainous terrain, brushlands, dry ridges, swamps; sometimes in fields, marshes. Often in mixed hardwood forest with permanent water source. Seasonal changes in habitat use are linked to food availability. Non-native	Yearlong: AGS, BOP, BOW, MCH, MHW	Potentially occur within suitable habitat.

Table 3.3.4-9. (continued)

Common Name/ Scientific Name	Suitable Habitat Type	Temporal and Spatial Distribution[3]	Occurrence in Project Area
MAMMALS (cont'd)			
Brush rabbit[2] *(Sylvilagus bachmani)*	Dense scrub and brushy edges of habitats, chaparral, and cactus. Also brushy areas on sand dunes and in bramble thickets. Usually near dense vegetative cover. Seldom uses burrows.	Yearlong: AGS, BOP, BOW, MCH, MHW	Potentially occur within suitable habitat.
Douglas' squirrel *(Tamiasciurus douglasii)*	Coniferous forests, in upper pine belt and in fir, spruce, and hemlock forests.	Yearlong: MHW	Potentially occur within suitable habitat.
American badger[3] *(Taxidea taxus)*	Prefers open areas and may also frequent brushlands with little groundcover. When inactive, occupies underground burrow.	Yearlong: AGS, BAR, BOP, BOW, MCH, MHW	Potentially occur within suitable habitat.
Gray fox *(Urocyon cinereoargenteus)*	Often found in woodland and shrubland in rough, broken country.	Yearlong: AGS, BOP, BOW, MCH, MHW, URB	Potentially occur within suitable habitat.
Black bear *(Ursus americanus)*	Occur in fairly dense, mature stands of many forest habitats mostly above 3,000 ft elevation, and feed in a variety of habitats including brushy stands of forest, valley foothill riparian and wet meadows.	Yearlong: AGS, BOP, MCH, MHW Summer: LAC	Potentially occur within suitable habitat.
Red fox[2] *(Vulpes vulpes)*	Various open and semi-open habitats. Usually avoids dense forest, although open woodlands frequently are used.	Yearlong: AGS, BAR, MCH	Potentially occur within suitable habitat.
Total	**56**		

Sources: CDFW 2015b; NatureServe 2017

[1] CWHR Habitat Types:
AGS = Annual Grass
BAR = Barren
BOP = Blue Oak Foothill Pine
BOW = Blue Oak Woodland
LAC = Agriculture Ponds, Water Features, General Water (i.e., lakes, ponds, reservoirs, diversion impoundments)
MCH = Mixed Chaparral
MHW = Montane Hardwood
URB = Urban

[2] Subspecies designated as special-status

[3] Species designated as special-status

Of the commercially-valuable (i.e., harvestable) species that are known to occur or have the potential to occur in the Proposed Project Boundary, eight are also designated as special-status wildlife species (Table 3.3.4-9). According to the CDFW (2015b), the special-status designation of six of those species is assigned to subspecies, and they are unlikely to occur within the Proposed Project Boundary, as the Project is outside the subspecies' range. These subspecies include: tule greater white-fronted goose (*Anser albifrons elgasi*) (SSC); Catalina California quail (*Callipepla californica catalinensis*) (SSC); San Diego black-tailed jackrabbit (*Lepus californicus bennettii*) (SSC); Sierra Nevada red fox (*Vulpes necator*) (ST); Channel Islands spotted skunk (*Spilogale gracilis amphiala*) (SSC); and riparian brush rabbit (*Sylvilagus bachmani riparius*) (FE and SE). The two remaining commercially-valuable species that have also been given a special-status designation are redhead (*Aythya americana*) (SSC) and American badger (*Taxidea taxus*) (SSC) (CDFW 2015b), which have the potential to occur within the Project Area.

SSWD does not allow hunting within the Proposed Project Boundary.

Mule Deer (*Odocoileus hemionus*)

California mule (*Odocoileus hemionus californicus*) and black-tailed deer (*Odocoileus hemionus columbianus*) are among the most visible and widespread species found in most habitats throughout California. Deer are California's most popular game mammal, with most hunting opportunities occurring on public lands (CDFG 1998). Deer are free-ranging animals whose habitat requirements can result in conflicts with humans. Deer are an integral component in the food chain from their role as grazers to prey species to California's top carnivores. Deer inhabit about 70 percent of California's wildlands in a variety of habitats (CDFW 2015c). Approximately 50 percent of the deer range is public land administered by the federal government and 45 percent of the range is privately-owned (CDFG 1998). The deer population in California has fallen in the years between 1991 and 2014 from approximately 850,000 to approximately 450,000 (CDFW 2015c).

The deer living in the Project Area were classified as part of the Camp Beale Herd in 1952 and included in the 1983 Mother Lode Deer Herd Management Plan (CDFG 1983). Both subspecies inhabit and are considered residents in the area and do not migrate like other herds in California. The Mother Lode Deer Herd occupies approximately 3,660 sq mi over an elevation range from sea level to 3,000 ft in the foothills of the Sierra Nevada.

In the past forty years, CDFW has developed and updated deer management strategies in California. In 1976, CDFG developed *A Plan for California Deer* (CDFG 1976). The primary goal of the plan was to restore deer populations to the record high numbers of the 1960s, and the plan included habitat and management goals for deer populations by herd units. In the plan, 79 deer herd plans were identified with separate management objectives for each herd and plans were completed and implemented by the mid-1980s. The herd units were based primarily on administrative boundaries (e.g., county lines, regional boundaries, and roads), deer behavior (i.e., migratory or resident), and subspecies (i.e., mule deer or black-tailed deer) (CDFW 2015c). The Mother Lode Deer Herd Management Plan, one of the 79 separate plans, was completed in July 1983.

At the end of a meeting in January 1997 and at the request of the California Fish and Game Commission, CDFG, the Forest Service, and the USDOI, Bureau of Land Management concluded with a collective recommendation that an overall assessment of deer populations and deer habitat conditions was needed to help identify key problems on an area-by-area basis. In 1998, CDFG combined the 45 hunt zones in California into 11 Deer Assessment Units based on similarities in habitat and environmental and ecological factors rather than the artificial boundaries of the hunt zones. The Central Sierra Deer Assessment Units covers the area of the Project and includes about 10,500 sq mi from the Feather River drainage south to Yosemite National Park. The reported deer herd in the area in 1998 was between 50,000 to 90,000 (CDFG 1998).

In March of 2015, the California Deer Conservation and Management Plan was developed by the CDFW. To determine how changing conditions may be impacting deer, the CDFW planned to assess habitat conditions and populations based on population data and current habitat assessments. A goal of the 2015 California Deer Conservation and Management Plan is to develop Deer Conservation Units (DCU) by taking a landscape level approach to deer planning categorizing California deer herd units into 10 DCUs. The Project is located on the boundary of the Sierra Nevada and Central Valley DCUs. The development of the Sierra Nevada DCU was scheduled for November 2015 and implementation for March 2016. The development of the Central Valley DCU was in March 2016 and was to be implemented in July 2016, but there is no updated information about this plan (CDFW 2015c).

3.3.4.3 Wetlands, Riparian, and Littoral Habitats of the Project Area

USFWS' National Wetlands Inventory (NWI) maps (USFWS 2018b) show the distribution, extent, and types of Palustrine and Riverine wetlands, and Lacustrine littoral zones within the FERC Project Boundary and downstream. However, NWI maps are based on aerial imagery and are typically not verified by ground surveys. A jurisdictional delineation was performed by Sycamore and Associates in 2013 (Sycamore Associates 2013b) in the proposed five foot raise around the reservoir south east edge. Information from these field efforts is discussed below.

Figure 3.3.4-10, contains a map showing NWI-mapped wetlands, riparian, and littoral habitats within the Proposed Project Boundary.

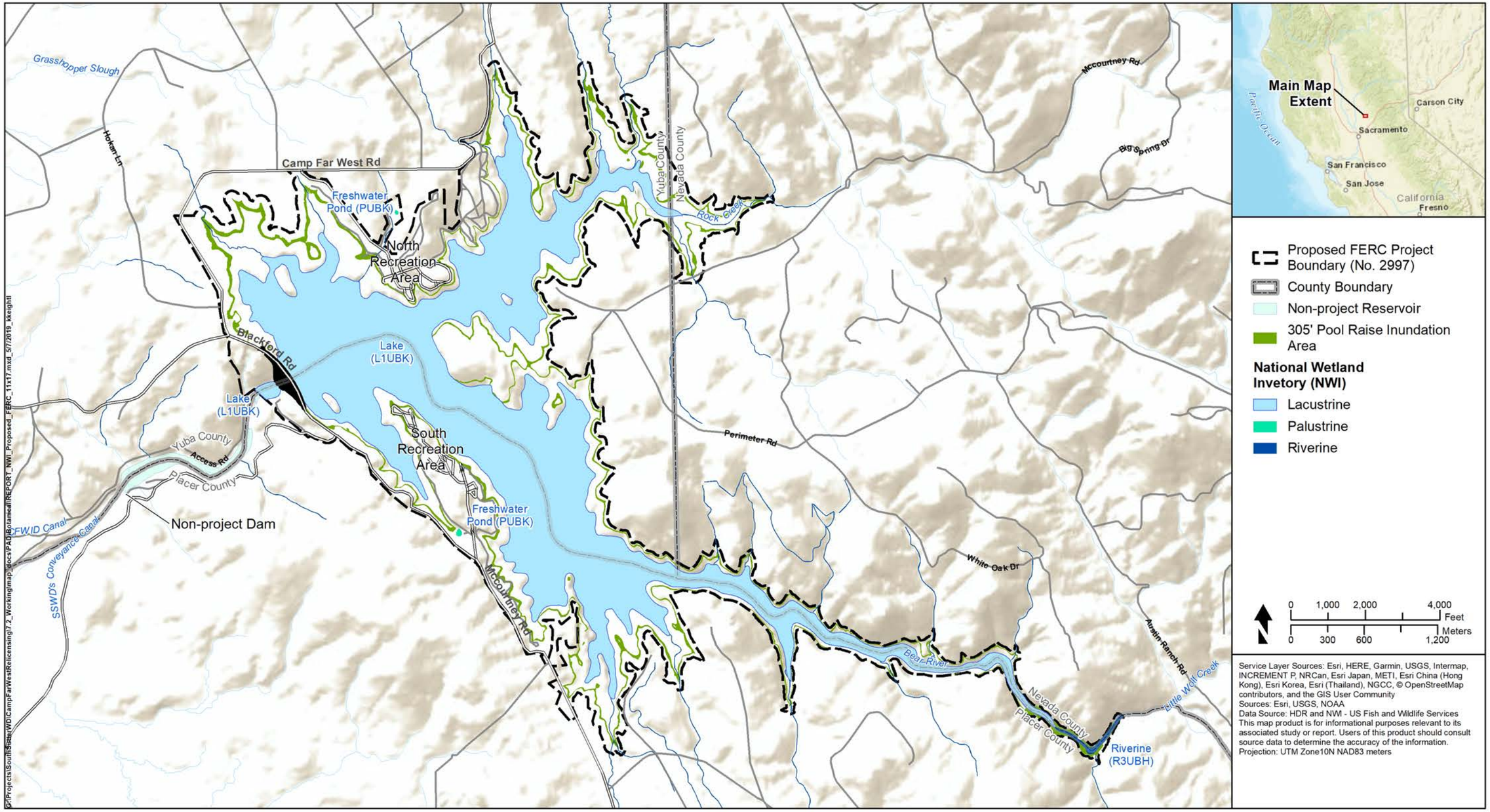

Figure 3.3.4-10. NWI-mapped wetlands, riparian, and littoral habitats within the proposed Camp Far West Hydroelectric Project Boundary.

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3.3.4.3.1 Wetlands

Wetlands are transitional lands that occur between uplands and aquatic systems. However, wetlands also may include certain shallow aquatic areas and are more accurately defined according to the following attributes (Cowardin et al. 1979):

- at least periodically, the land supports predominantly hydrophytes (i.e., vegetation associated with moist soil conditions);
- the substrate is predominantly un-drained hydric soil (i.e., soil characterized by anaerobic conditions); and
- the substrate is non-soil (i.e., boulder, bedrock or similar substrate) and is saturated with water or covered by shallow water at some time during the growing season of each year.

Areas of deep, permanent water are not included under the definition of wetland. Ponds, swamps, marshes, bogs, springs, fens, and wet meadows are examples of wetlands.

All wetlands discussed in this section are categorized as Palustrine, Riverine, or Lacustrine by Cowardin et al. (1979). Eight major classes of Palustrine wetlands have been described, and one of these is found within the Proposed Project Boundary (Figure 3.3.4-10). Additionally, seven major classes of Riverine wetlands have been described, and one of these is found within the Proposed Project Boundary. Nine classes of Lacustrine wetlands have been described, and one of these occurs within the proposed FERC Project Boundary.

The three NWI wetland classes that may be found in the Proposed Project Boundary are listed in Table 3.3.4-10. This table also provides the total linear ft of the three NWI-mapped wetland classes within the Proposed Project Boundary. Following Table 3.3.4-10, more detailed descriptions of the three defined NWI wetland classes are provided, including their known occurrence within the Proposed Project Boundary, based on mapping of wetland types by NWI.

Table 3.3.4-10. NWI palustrine, riverine, and lacustrine wetland classes within the proposed Camp Far West proposed FERC Project Boundary.

Type	Definition	Acres
RIVERINE UNCONSOLIDATED BOTTOM		
R3UBH	Riverine upper perennial, unconsolidated bottom, permanently flooded	69.56
PALUSTRINE UNCONSOLIDATED BOTTOM		
PUBK	Palustrine, unconsolidated bottom, artificially flooded	0.79
LACUSTRINE UNCONSOLIDATED BOTTOM		
L1UBK	Lacustrine limnetic, unconsolidated bottom, artificially flooded	1,202.4
Totals	--	**1,272.75**

Source: USFWS 2018b

Riverine Unconsolidated Bottom (RUB)

Riverine unconsolidated bottom wetlands are characterized by 25 percent or more exposed sand, gravel, or small stones, and 30 percent or less vegetative cover contained within an open conduit either naturally or artificially created which periodically or continuously contains moving water (Cowardin et al. 1979). NWI mapped RUB wetlands cover approximately 69.56 ac within the Proposed Project Boundary (Table 3.3.4-10), and occurs at one location: on the southern tip of Camp Far West Reservoir just north of Little Wolf Creek (Figure 3.3.4-10).

Palustrine Unconsolidated Bottom (PUB)

Palustrine unconsolidated bottom wetlands are characterized by 25 percent or more exposed sand, gravel, or small stones, and 30 percent or less vegetative cover in nontidal wetlands dominated by trees, shrubs, and persistent emergents (Cowardin et al. 1979). NWI mapped PUB wetlands cover approximately 0.79 ac within the Proposed Project Boundary (Table 3.3.4-10), and occurs at two locations: one occurrence is roughly centered between Camp Far West Road and the NSRA, the second occurrence is settled between McCourtney Road and west of the turnoff for the SSRA (Figure 3.3.4-10).

Lacustrine Unconsolidated Bottom (LUB)

Lacustrine unconsolidated bottom wetlands are characterized by 25 percent or more exposed sand, gravel, or small stones, and 30 percent or less vegetative cover in permanently flooded lakes and reservoirs (Cowardin et al. 1979). NWI mapped Lacustrine wetlands cover approximately 1,202.4 ac within the Proposed Project Boundary (Table 3.3.4-10), and occurs at two locations: one small area downstream of the Camp Far West Dam and Camp Far West Reservoir (Figure 3.3.4-10).

3.3.4.3.2 Additional Information for Wetlands

2013 Wetland Delineation

A formal USACE's wetland delineation was performed for the entirety of the Camp Far West Reservoir in 2013, which identified 5 seasonal wetlands (0.077-ac), 10 seasonal wetland swales (0.22-ac), 9 seeps (0.457-ac), 11 emergent wetlands (1.018 ac), 6 irrigated wetlands (1.484 ac) and 1 scrub-shrub wetland (0.236-ac). None of the identified wetlands were determined to be caused by or receiving water from the reservoir or any other Project-related sources (Sycamore Associates 2013b).

The seasonal wetlands were scattered around the margin of the reservoir, but their water was provided by runoff during the rainy season. Three of the wetlands were in ditches related to ground disturbance. Plant species located in the seasonal wetlands included dallisgrass (*Paspalum dilatatum*), dock (*Rumex* spp.), Italian ryegrass (*Festuca perennis*), and English plantain (*Plantago lanceolata*), all non-native species. There were hydric soils present (Sycamore Associates 2013b).

The ten seasonal swales were also scattered around the reservoir margin and derived their water from surface runoff. The most common plant species in the swales included spiny-fruit buttercup (*Ranunculus muricatus*), common toad rush (*Juncus bufonius*), Italian ryegrass, whitetip clover (*Trifolium variegatum*), beardstyle (*Pogogyne* spp.), water chickweed (*Montia fontana*), and Buenos Aires buttercup (*Ranunculus bonariensis* var. *trisepalus*). Hydric soils were located at the swale sites (Sycamore Associates 2013b).

The nine seeps were all groundwater-dependent and scattered around the reservoir margins. They were dominated by perennial rushes (*Juncus* spp.) and pennyroyal (*Mentha pulegium*), as well as annuals such as seep-spring monkeyflower and Italian ryegrass. Hydric soils were also present (Sycamore Associates 2013b).

The eleven emergent wetlands on the reservoir margin are influenced by groundwater and dry season hydrology inputs, with some surface water dependency. Sedges (*Carex* spp.), longstem spikerush (*Eleocharis macrostachya*), small mannagrass (*Glyceria declinata*), rushes, and pennyroyal were the most common vegetation at these sites. Indicators for hydric soils were located at the emergent wetlands (Sycamore Associates 2013b).

All of the irrigated wetlands receive water from non-Project sources, including the Wolf Hannaman Ditch, rural residence and livestock pastures and a Nevada Irrigation District ditch. These areas would not be wetlands without the presence of water from man-made irrigation (Sycamore Associates 2013b).

Finally, the scrub-shrub wetland is located near Lakeview Lane on the southernmost arm of the Camp Far West Reservoir. Willows (*Salix* spp.) and Himalayan blackberry (*Rubus armeniacus*) makeup the majority of the vegetation. Water may be provided by a retention pond just uphill of the site (Sycamore Associates 2013b).

2018 Aquatic Resources Delineation

An aquatic resources delineation was performed for the north western portion of the existing FERC Project Boundary in 2018 for the Spillway Modification. (South Sutter District 2018). A total of 83 aquatic features, comprising 4.40 ac (3.35 ac are inside the Proposed Project Boundary), were detected during the delineation and are itemized in Table 3.3.4-11 below.

Table 3.3.4-11. Aquatic resources located during 2018 delineation.

Feature Class	Number of Features	Acreage
Ephemeral channel	1	0.02
Intermittent channel	1	0.09
Reservoir	5	0.80
Seasonal swale	19	0.37
Seasonal wetland	2	0.09
Seep	22	0.93
Spillway	1	1.15
Vernal pool	32	0.95
Total	**83**	**4.40**

The location of these features, and the associated survey area, within the Proposed Project Boundary is depicted on Figure 3.3.4-11.

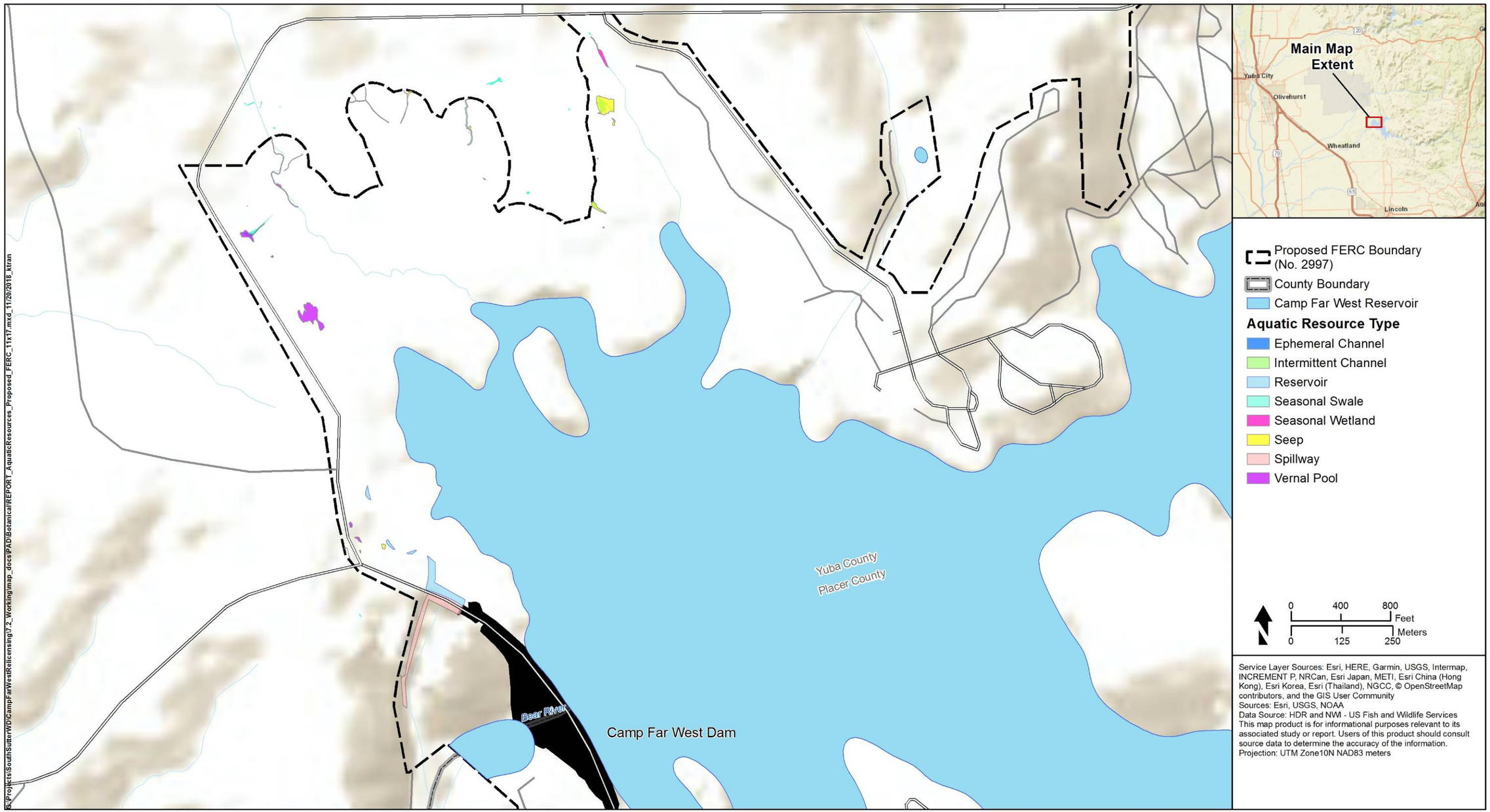

Figure 3.3.4-11. Aquatic resources located during 2018 delineation.

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Each of these features is described in detail below.

Ephemeral Channel

Ephemeral features have flowing water for only a short duration after precipitation in a normal year. The beds of ephemeral streams are located above the water table year round; therefore, groundwater is not a source of water for these features, and runoff from rainfall and snowmelt are the primary water sources. Given the short hydroperiod, the vegetation within the ephemeral channel in the survey area is characteristic of the surrounding grasslands. The ephemeral channel is a mix of scoured, unvegetated channel segments and segments characterized by herbaceous vegetation similar to the surrounding grasslands. There were 0.02-ac located during aquatic resources delineation, including 0.001-ac in the Proposed Project Boundary.

Intermittent Channel

Intermittent channels have flowing water during portions of the year when groundwater provides water for stream flow. Runoff from rainfall is a supplemental source of water for stream flows. During the dry months, these features typically do not have flowing water. The intermittent channel in the survey area is fed by a mix of an upstream, off-site impoundment and on-site seeps (groundwater). Like the ephemeral channel, some portions of the intermittent channel are scoured bare by water movement. Other portions of the channel support herbaceous vegetation such as seaside barley (*Hordeum marinum*), Carter's buttercup (*Ranunculus bonariensis*), and coyote thistle (*Eryngium* sp.). There were 0.09-ac located during aquatic resources delineation, including 0.056-ac in the Proposed Project Boundary.

Reservoir

Reservoir habitat in the survey area includes Camp Far West Reservoir, which is a wide and shallow man-made storage reservoir that is impounded by Camp Far West dam. At the time of surveys, the reservoir elevation was at full pool and was spilling. Camp Far West Reservoir's shoreline is predominantly bare soil or rock. Sparse willows and cottonwoods are scattered along the shoreline, while the groundcover consists of invasive weeds consistent with species found in annual grasslands. There were 0.80-ac located during aquatic resources delineation, all inside the Proposed Project Boundary.

Seasonal Swale

Seasonal swales in the survey area are defined as linear drainage features that fall somewhere between ephemeral channel and wetland. These linear features support hydrophytic vegetation similar to that found in vernal pools and seep features in the survey area. Most of the swales are adjacent to and associated with the drainage of other aquatic features in the survey area. There were 0.37-ac located during aquatic resources delineation, including 0.183-ac inside the Proposed Project Boundary.

Seasonal Wetland

Seasonal wetlands in the survey area are features located adjacent to linear channels or the reservoir, and function as a floodplain. Hydrologically, seasonal wetlands in the survey area differ from vernal pools and seeps (described below) because seasonal wetlands are dependent on adjacent features. Vegetatively, seasonal wetlands are similar to other wetland features, with the exception of the wetland bordering the northern portion of the reservoir, which is covered in a dense layer of woody debris and does not support plant cover. There were 0.09-ac located during aquatic resources delineation, including 0.088-ac inside the Proposed Project Boundary.

Seep

Seeps differ from vernal pools in the survey area by having different topography, water source, and vegetation. For example, seeps in the survey area are located on slopes and are not depressional like vernal pools. Because of this, the hydrology of seeps is not driven by surface water flow from rainwater. Instead, the seeps are fed solely by groundwater. Plant species associated with seeps are slightly different from vernal pools and include rush (*Juncus* spp.), spike rush (*Eleocharis macrostachya*), rabbit's-foot grass (*Polypogon monspeliensis*), seep monkey flower (*Mimulus guttatus*), dallis grass (*Paspalum dilatatum*), and dock (*Rumex* spp.). There were 0.93-ac located during aquatic resources delineation, including 0.486-ac inside the Proposed Project Boundary.

Spillway

This feature is characterized by the rock spillway associated with the existing dam. The area is devoid of vegetation, has sheer rock slopes on either side, and experiences perennial flows contingent on the release volumes from the reservoir. There were 1.144 ac located during aquatic resources delineation, all inside the Proposed Project Boundary.

Vernal Pool

Vernal pools are areas that are ephemerally wet as a result of the accumulation of surface water flow from rainwater in depressional areas. Several vernal pools are scattered throughout the grassland portions of the survey area, as well as along the edges of roads and the reservoir. These features are dominated by low-growing hydrophytic vegetation and seasonal hydrology. Species observed during surveys include seaside barley, annual hairgrass (*Deschampsia danthonioides*), Italian ryegrass, spike rush, Carter's buttercup, watercress (*Nasturtium officianale*), coyote thistle, and fiddle dock (*Rumex pulcher*). There were 0.95-ac located during aquatic resources delineation, including 0.590-ac inside the Proposed Project Boundary. Discussion of ESA-listed species that live in vernal pools is included in Section 3.3.5.

3.3.4.3.3 Wetlands Downstream of Camp Far West Dam

The NWI identified the following 12 wetland classes on the Bear River downstream of Camp Far West Reservoir to the confluence of the Feather River: L1UBK, PUBK, PABFx, PEM1A, PFOA, PFO1A, PSS1A, PSS/EM1C, R2UBH, R5UBF, R2USA, and R2USC (USFWS 2018b).

Two of these wetland classes (L1UBK and PUBK) were also found within the proposed FERC Project Boundary. Table 3.3.4-12 includes a definition of each additional class of wetland found along the Bear River. Figures 3.3.4-12 and 3.3.4-13, contain maps showing NWI-mapped wetlands, riparian, and littoral habitats within the Bear River from Camp Far West Dam to the Feather River confluence.

Table 3.3.4-12. NWI palustrine, riverine, and lacustrine wetland classes found along the Bear River from Camp Far West Dam to the Feather River.

Type	Definition	Area (acres)
Palustrine Unconsolidated Bottom		
PUBF	Palustrine, unconsolidated bottom, semi-permanently flooded	0.13
Lacustrine Unconsolidated Bottom		
L1UBK	Lacustrine limnetic, unconsolidated bottom, artificially flooded	1,254.25
Palustrine Emergent		
PEM1/USC	Palustrine, emergent, persistent/ unconsolidated shore, seasonally flooded	11.8
PEM1A	Palustrine, emergent, persistent, temporary flooded	16.8
Palustrine Forested		
PFOA	Palustrine, forested, temporary flooded	6.64
PFOC	Palustrine, forested, seasonally flooded	12.97
PFO1A	Palustrine, broad-leafed deciduous forested, temporary flooded	164.73
PFO1C	Palustrine, forested, broad-leaved deciduous, seasonally flooded	106.14
Palustrine Scrub-Shrub		
PSSA	Palustrine, scrub-shrub, temporarily flooded	0.36
PSSC	Palustrine, scrub-shrub, seasonally flooded	0.63
PSS1A	Palustrine, scrub-shrub, broad-leafed deciduous, temporary flooded	34.26
PSS1C	Palustrine, scrub-shrub, broad-leaved deciduous, seasonally flooded	8.47
PSS/EM1C	Palustrine, scrub-shrub, emergent, persistent, seasonally flooded	84.92
Riverine Unconsolidated Bottom		
R2AB3Hx	Riverine, lower perennial, aquatic bed, rooted vascular, permanently flooded, excavated	1.14
R2UBH	Riverine, lower perennial, unconsolidated bottom, permanently flooded	58.37
R2UBHx	Riverine, lower perennial, unconsolidated bottom, permanently flooded, excavated	17.98
R3UBH	Riverine, upper perennial, unconsolidated bottom, permanently flooded	88.84
R2UBF	Riverine, lower perennial, unconsolidated bottom, semi-permanently flooded	20.18
R5UBF	Riverine, unknown perennial, unconsolidated bottom, semi-permanently flooded	5.13
Riverine Unconsolidated Shore		
R2USA	Riverine, lower perennial, unconsolidated shore, temporary flooded	16.57
R2USC	Riverine, lower perennial, unconsolidated shore, seasonally flooded	38.24
R4SBC	Riverine, intermittent, streambed, seasonally flooded	0.19
	Total:	**1,948.74**

Source: USFWS 2018b

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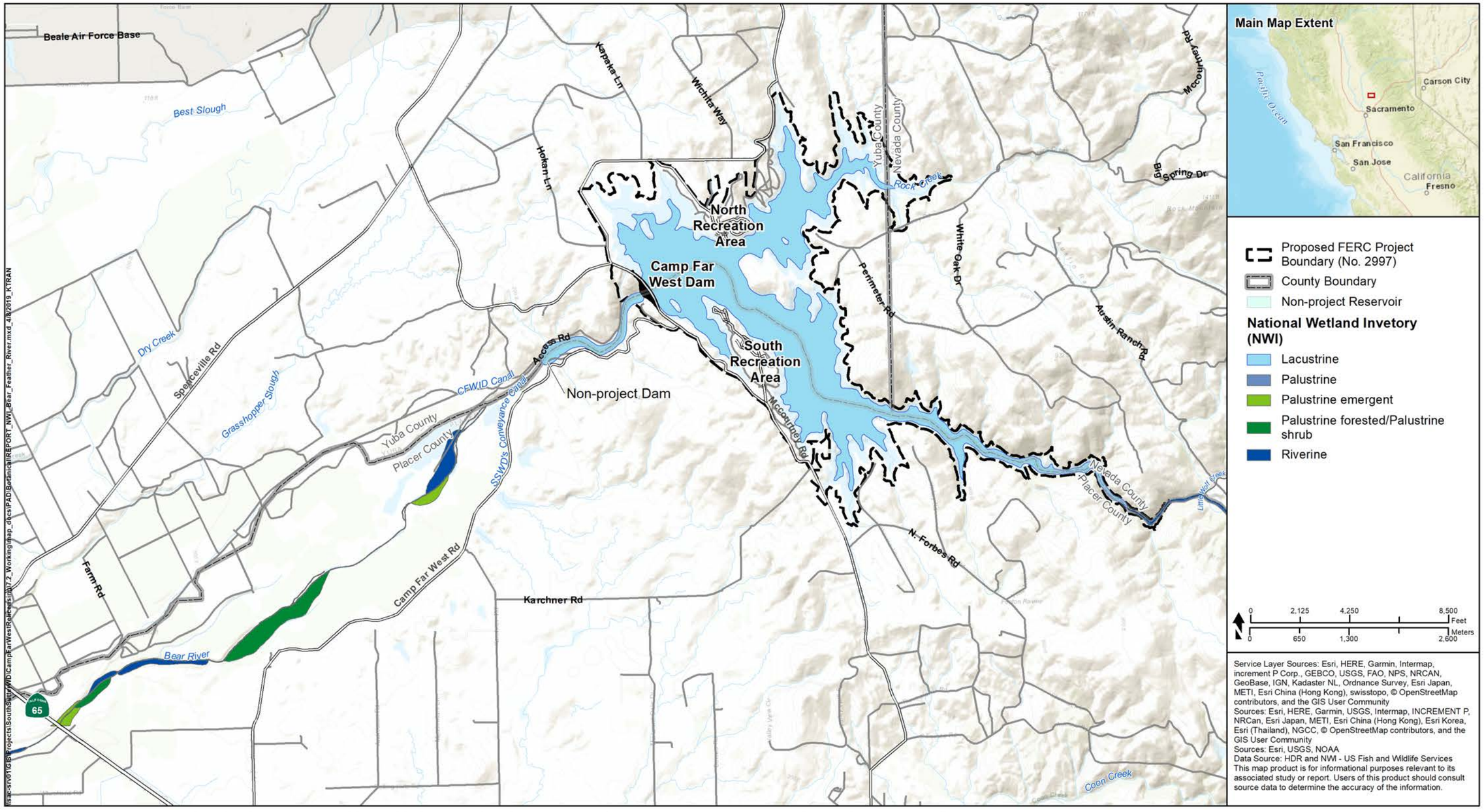

Figure 3.3.4-12. NWI-mapped wetlands, riparian, and littoral habitats within the Bear River from Camp Far West Dam to the Feather River confluence

Figure 3.3.4-13. NWI-mapped wetlands, riparian, and littoral habitats within the Bear River from Camp Far West Dam to the Feather River confluence.

3.3.4.3.4 Riparian Habitat Within the Camp Far West Reservoir

The term "riparian" applies to the vegetation and other biological resources *"…contiguous to and affected by surface and subsurface hydrologic features of perennial or intermittent lotic [rivers, streams, or drainage ways] and lentic [lakes] water bodies..."* (USFWS 1997). Although the term has traditionally been applied only to lotic systems, in the western U.S. "riparian" is also used to describe the distinctive vegetation associated with the moister conditions around lentic reservoirs. Wetlands and riparian areas may overlap (e.g., riparian wetlands), but not all riparian areas are wetlands and not all wetlands are riparian areas.

No riparian habitat was identified in the proposed FERC Project Boundary in the NWI (USFWS 2018b). A 2013 wetland delineation of Camp Far West identified riparian vegetation only on Rock Creek, upstream of the reservoir, where it would not be affected by water fluctuations. Vegetation in that area included white alder, California button willow (*Cephalanthus occidentalis*), Himalayan blackberry, and torrent sedge (*Carex nudata*). The area of the Bear River was specifically noted as having little to no riparian vegetation (Sycamore Associates 2013b).

3.3.4.3.5 Riparian Habitat in the Bear River Downstream of the Project

As part of the instream flow study (Study 3.3 *Instream Flow Study*), HDR biologists created a riparian vegetation map in April 2018 at the two study sites that were selected along the lower Bear River (Figures 3.3.4-14 and 3.3.4-15). The limits of the mapping were set to approximately 50 ft outside of the instream flow markers and between the levee banks. For the purposes of this section, this creates a downstream and an upstream vegetation study area

Vegetation was mapped in the field on an aerial photograph at a scale of 1 in. equals 250 ft (1″=250′). Where vegetation overlaps another type of mapping unit (e.g., a tree canopy over water or roads), the area was mapped according to the uppermost layer of vegetation. A minimum mapping unit of 0.01-ac was used when differentiating vegetation types. For each vegetation type observed in the field, species composition and percent cover were recorded on vegetation mapping data forms. Nomenclature of vegetation types generally followed that of the Manual of California Vegetation (Manual) (Sawyer et al. 2009). When a vegetation type was recorded that did not easily conform to a described vegetation type, a new name was created conforming to the general format of the Manual. The associated field data are provided in Appendix E1.

The vegetation mapping represents a snapshot of the riparian vegetation at two sites along the Bear River. Table 3.3.4-13 depicts the vegetation types mapped, whether they are dominated by native or non-native vegetation, and whether or not it is a riparian vegetation type.

Table 3.3.4-13. Vegetation types, origin, and riparian status in the relicensing Special-Status Plants and Non-Native Invasive Plants Study area.

Vegetation Type	Vegetation Origin	Riparian Status
Agriculture	Non-Native	Not Riparian
Annual Brome Grasslands	Non-Native	Not Riparian
Arroyo Willow Thicket/Himalayan Blackberry Thicket	Native	Riparian

Table 3.3.4-13. (continued)

Vegetation Type	Vegetation Origin	Riparian Status
Bare Ground	N/A	Sometimes Riparian
Bermudagrass Thicket	Non-Native	Sometimes Riparian
Cobble Plain	N/A	Sometimes Riparian
Disturbed Coyote Bush Scrub	Native	Not Riparian
Disturbed Deer Grass Beds	Native	Riparian
Disturbed Hind's Walnut Stand	Native	Sometimes Riparian
Fremont Cottonwood-Boxelder Forest	Native	Riparian
Fremont Cottonwood Forest/Himalayan Blackberry Thicket	Native	Riparian
Giant Reed Thicket	Non-Native	Riparian
Himalayan Blackberry Thicket	Non-Native	Sometimes Riparian
Non-Native Woodland	Non-Native	Not Riparian
Open Water	N/A	Riparian
Partially Vegetated Channel	Native	Riparian
Ruderal Thicket	Non-Native	Sometimes Riparian
Sandbar Willow Thicket	Native	Riparian
Sandbar Willow Thicket (Mature Variant)	Native	Riparian
Valley Oak-Interior Live Oak Woodland	Native	Sometimes Riparian
Valley Oak-Interior Live Oak Woodland (Young Variant)	Native	Sometimes Riparian
Total	**21**	

One special-status plant species, Northern California black walnut (*Juglans hindsii*), a California Rare Plant Rank (CRPR) 1B.1 species, was observed primarily within an instream island surrounded by giant reed (*Arundo donax*) in the western vegetation study area. The walnuts were at sufficient cover to form their own vegetation type, called Disturbed Hind's Walnut Stand per the nomenclature of the Manual (Figures 3.3.4-14 and 3.3.4-15). The total number of individuals observed in this area was six. Approximately 10 to 15 additional Northern California black walnuts were observed mixed within the Valley Oak-Interior Live Oak Woodland on the southern bank of both vegetation study areas. No other special status plant species were observed during the surveys. Four NNIP species were observed, including; Bermudagrass, bull thistle (*Cirsium vulgare*), Italian thistle, and yellow starthistle.

Figure 3.3.4-14. Riparian VegCamp Vegetation Classification Map (downstream site).

Figure 3.3.4-15. Riparian VegCamp Vegetation Classification Map (upstream site).

3.3.4.3.6 Littoral Habitat

In Lacustrine or lake systems, the littoral habitat corresponds to the shallow water area beginning at the lowest depth at which rooted aquatic plants can occur, regardless of whether plants are present. Cowardin et al. (1979) describes the littoral zone as the wetland habitats which extend to a depth of 6.6 ft below the low water line. Submerged bars, beaches, and flats are examples of littoral habitats. Emergent wetlands along the shallow edges of lakes are technically littoral, but are classified in the NWI system as Palustrine.

As stated above, 11 emergent wetlands on the reservoir margin were identified during wetland delineation. These are influenced by groundwater and dry season hydrology inputs, with some surface water dependency. Sedges, creeping spikerush, small mannagrass, rushes, and pennyroyal were the most common vegetation at these sites. Indicators for hydric soils were located at the emergent wetlands (Sycamore Associates 2013b).

3.3.4.4 Environmental Effects

This section discusses the potential terrestrial resources effects of SSWD's Proposed Project, as described in Section 2.2 of this Exhibit E. As part of the Project relicensing, SSWD proposes a Pool Raise, modifications of existing recreation facilities, and modification of the existing Project boundary. SSWD proposes to include in the new license two measures related to terrestrial resources. Measure TR1 includes a *Bald Eagle Management Plan*, being developed in collaboration with CDFW and USFWS. Measure TR2 includes a Limited Operating Period (LOP) and buffer to reduce disturbance to great blue heron rookeries.

3.3.4.4.1 Effects of Construction-Related Activities

Recreation Construction

The recreation construction would occur in already developed areas and may affect wildlife by way of temporary disturbance. No habitat would be modified. The known bald eagle nesting sites are not in the construction areas. Per measure TR2, a LOP would be in place within a 500ft buffer of great blue heron rookeries to mitigate for any potential impacts. Direct effects to special-status birds could result from disturbances that disrupt breeding birds or cause nest abandonment. Indirect effects could result from the reduction of perching, foraging, and potential nesting habitat.

Many of the recreation buildings have openings that bats can access to roost, though none were observed in 2015. However, if bats are roosting in the recreation buildings, their reconstruction would impact them. Prior to SSWD reconstructing a Project recreation facility a qualified biologist would inspect the facility for bats. If bats are found to be present, reconstruction would be held until bats are clear from the structure, per the California Code of Regulations (251.1).

Pool Raise

Some 161.24 ac will be inundated by the Pool Raise, as detailed in Table 3.3.4-14.

Table 3.3.4-14. Acreages of VegCAMP habitat inundated by Pool Raise.

Vegetation Type	Sensitive Natural Community	Area To Be Covered by Water (acres)
Aesculus californica	Y	0.36
Built-up and Urban Disturbance	N	1.07
California Annual and Perennial Grassland	N	42.74
Californian Warm Temperate Marsh/Seep Group	Y	0.61
Irrigated Pasture Lands	N	2.70
Mediterranean California naturalized annual and perennial grassland	N	11.00
Perennial Stream Channel	N	0.06
Pinus sabiniana	N	0.62
Populus fremontii	Y	0.18
Quercus douglasii	N	60.04
Quercus lobata	Y	0.36
Quercus wislizeni	N	15.93
Reservoirs	N	24.58
Salix laevigata	Y	0.99
	Total	**161.24**

Five of the vegetation types that will be partially inundated are Sensitive Natural Communities - *Aesculus californica*, California Warm Temperate Marsh/Seep Group, *Populus fremontii*, *Quercus lobata*, and *Salix laevigata*. Of these, all but *Quercus lobata*, are riparian or wetland/marsh habitat types, which may shift uphill with the change in water level. However, the *Aesculus californica* and *Quercus lobata*'s inundated area would likely result in the permanent loss of this bit of habitat. A total of 0.36-ac of the 1.42 ac of *Aesculus californica* will be inundated, representing a loss of 25 percent of the vegetation type within the Proposed Project Boundary. There are 2.99 ac of *Quercus lobata* within the Proposed Project Boundary and a loss of 0.36-ac would represent 12 percent of that total. However, the loss of 0.36 ac of this VegCAMP type represents a *de minimus* amount of the overall acreage within California, so it would not be a significant effect.

The Brandegee's clarkia occurrences are above the raise and impacts to hydrology, but the Sierra foothills brodiaea will at least be seasonally inundated, potentially leading to the loss of this occurrence. The seep identified containing Mexican mosquito fern will be covered by the rising reservoir, and the occurrence may be lost as its habitat includes ponds, but not larger reservoirs or lakes. However, both of these occurrences are small and the species are rated as Watchlist, either moderately or not very threatened in California, so they will not represent a significant effect on the species. None of the special-status populations are in the recreation areas, so recreation construction will not affect special-status plants.

Some occurrences of NNIP may also be inundated and drown due to the Pool Raise, but seeds from NNIP occurrences, along with pieces from species that spread vegetatively, may also be carried to new areas of the Project shoreline by the higher waterline. Additionally, there are hundreds of NNIP occurrences in the recreation areas, and construction there could spread NNIP

both on and off the Project. Adherence to the conditions in the necessary permits for this construction work would minimize the spread of NNIP.

Raising the NMWSE of the Camp Far West Reservoir would have a less than significant effect on wildlife resources, since the inundation area will be relatively small (a total of 161.24 ac), and effects on habitat overall will be minimal. Minor and localized reductions in the various habitat types bordering the reservoir could occur. These changes could affect individuals, but would not be expected to reduce the capability of the remaining habitat to support wildlife over the long-term. Inundation associated with raising the reservoir elevation could cause individuals to leave the immediate area; however, similar habitats types located adjacent to the inundation area are abundant, thus, these effects would be localized and would not preclude wildlife from using the Project area. Additionally, individual animals that could be displaced during inundation should continue to use habitats along the new reservoir margins.

Raising the NMWSE of the Camp Far West Reservoir would result in the extended inundation along the shoreline of the reservoir that are only seasonally or never inundated under current conditions. In the area being inundated, 3.3 ac support herbaceous wetland, 0.2-ac support scrub-shrub wetland, and 1.53 ac support tree dominated riparian habitat. A total of 28 NWI mapped riverine features, comprising 6.44 ac, will be converted into lacustrine features by the Pool Raise. These NWI mapped features occur throughout the proposed FERC Project Boundary in narrow riparian crevices, particularly at the south eastern corner of the proposed FERC Project Boundary (Figure 3.3.4-10).

All of the wetlands mapped in 2018 occur at the north-west corner of the proposed FERC Project Boundary directly west of the North Recreation Area (Figure 3.3.4-10). A total of 14 of these wetlands, totaling 0.19-ac, will be inundated by the Pool Raise. These features are composed of the following components: 1 intermittent channel (0.04-ac); 5 seasonal swales (0.06-ac); 2 seasonal wetlands (0.03-ac) and 6 seeps (0.06-ac).

Some of the shallower inundated areas may continue to support or develop herbaceous or scrub-shrub wetland vegetation after raising the normal maximum surface elevation of the reservoir. Fringe riparian scrub may also develop along the new waterline; therefore, any loss of wetlands and riparian habitat may be temporary. The increase in the water elevation may enable herbaceous wetland vegetation to dominate on benches that currently support upland species. There are no wetland or riparian resources in the area of recreation construction.

SSWD will obtain all necessary permits and approvals for the proposed changes to the NMWSE of the Camp Far West Reservoir, including FERC's approval. Adherence to the terms and conditions of these construction-related permits and approvals would provide protection and mitigation for terrestrial resources.

3.3.4.4.2 Effects of Proposed Project Operations and Maintenance

SSWD routinely clears vegetation in the immediate vicinity of Project structures, including the powerhouse, recreation areas, and Project access roads. Clearing is performed by mechanical and hand means (e.g., chain saws), and occurs only in those areas needed by SSWD to maintain

the structure. SSWD also applies herbicides on an annual basis at Project Facilities supervised by a Qualified Applicator with direction of a licensed PCA. SSWD does not use ground-disturbing equipment for vegetation clearing. SSWD also removes hazard trees are necessary on the Project.

SSWD restricts vegetation management to areas where it is mandated by law and/or necessary to maintain facilities. Although the majority of vegetation is cleared from these locations, the total area affected represents a small portion of the overall Project.

No Project facilities are located in or around sensitive vegetation associations; the majority of managed vegetation is comprised of common plant communities and only a small proportion of their acreage is affected. SSWD will continue the current vegetation management efforts throughout the life of the Project, however, the effects are minor (less than significant) and site-specific.

The occurrences of special-status plants are along the riverine area (Bear River arm) of the reservoir and in seeps near the reservoir edge. All are outside of areas with Project O&M, though occasional recreation may occur in the general area. However, there were no signs of disturbance at the occurrences, including from dispersed recreation.

NNIP occurrences are widespread throughout the FERC Project Boundary and areas adjacent to the FERC Project Boundary also appear to have similar concentrations of NNIP. Project O&M in the area of NNIP occurrences includes mowing in the recreation areas around campsites, herbicide application on the dam face, and maintenance of Project roads. The other Project activity in the areas of NNIP occurrences is recreation, which is year-round at the NSRA and at dispersed sites around the reservoir and seasonal at the SSRA. The Project and associated O&M can promote the spread of NNIP, and the potential for NNIP to be spread into new areas both inside and outside of the Project. NNIP can be transported during Project activities, including into non-infested areas, on equipment, tires, and clothing. Areas that have been disturbed by Project activities are also easier for NNIP to invade than undisturbed areas. However, as described above, most Project activities that have the potential to spread NNIP are confined to areas around already developed Project facilities and in a narrow band around the reservoir where dispersed recreation occurs. Additionally, the Project and surrounding areas are already significantly disturbed by human activities and heavily invaded by non-native plant species. Therefore, Project activity effects are not significant in and of themselves, but could be potentially significant when combined with other reasonably foreseeable projects or activities that overlap or are adjacent to the Project area and the effects of other public and private projects in the Project vicinity. SSWD will utilize Best Management Practices (BMP) for Project O&M to prevent the introduction and spread of NNIP and managing the most invasive species.

Project O&M has the potential to impact special-status wildlife by way of temporary disturbance and modification of habitat. Project O&M is kept to already developed areas, including the Powerhouse, roads, and recreation areas, and the work is done by hand and small mechanical implements, which limits the amount of disturbance to special-status wildlife. If any vegetation management requires removal of vegetation during nesting bird season, SSWD will conduct surveys and erect buffers to prevent impacts to nesting birds. Three osprey nests, two bald eagle

nests and one heron rookery were observed during relicensing studies on the Project. Project effects on bald eagles will be reduced to less than significant through the implementation of the *Bald Eagle Management Plan* (TR1). As part of the plan, SSWD will implement a LOP for each occupied nest and will install water and land barriers and appropriate signage around known active bald eagle nests in order to delineate a buffer for the LOP. The buffer will also serve to restrict recreation activities in the vicinity of the nests.

A great blue heron rookery is known at SSRA and could be impacted by recreation activities in the area. Measure TR2 will implement a *Limited Operating Period for Great Blue Heron Rookeries* at this location between March 15 and July 31 of every year where the rookery is active. Water and land barriers, with appropriate signage, will be erected around the rookery to provide a buffer of 500 feet for the nesting herons. This buffer should be sufficient to protect nests from impacts from the infrequent recreation use (the area is only open on some weekends) at SSRA. The buffer will not extend beyond the proposed FERC Project Boundary, though signage will be placed along it, so McCourtney Road will remain open.

The proposed measures include changes to water year types (WR1), minimum instream flows (AR1), pulse flows (AR2), and ramping rates (AR3) all of which effect the Bear River downstream of the Project. The proposed changes to Project operations are not anticipated to change vegetation communities downstream. As the communities will remain similar or the same as currently occur, wildlife would be expected to continue to utilize that habitat in the same fashion.

The wetland resources associated with the Project have developed under the current conditions and were generally found to be stable. There was no observed evidence of any ongoing adverse effects to wetland resources due to Project operations. The wetlands associated with the Camp Far West Reservoir, and the downstream reach of the Bear River below the Camp Far West Dam were found to be healthy, and appeared to be in a state of equilibrium with the existing frequency, duration, and magnitude of inundation. The species richness and diversity of all wetland types observed in the study area generally reflect natural community expectations for this area. There are neither excessive nor insufficient water levels in the Camp Far West Reservoir or the downstream reach of the Bear River below Camp Far West Dam for a duration to cause any significant impact to the structure, composition, or function of the wetland communities that have developed within the study area.

SSWD identified potential stressors, which may or may not be Project induced, to the riparian habitat in Project affected reaches as NNIPs, changes in substrates from altered sediment, changes in flow timing and duration between With- and Without-Project flows, and reduced LWM recruitment. The potential effects of NNIPs are addressed below.

Changes in substrates, due to an altered sediment supply, have the potential to significantly affect the germination and distribution of riparian species due to the capillary fringe potential associated with various substrates. Capillary fringe is a zone immediately above the water table in which water is drawn upward into soil pores by forces of adhesion and surface tension. Finely textured soils tend to have greater capillary potential than coarser sands due to a wicking action that allows plant roots to use water in the soil above the ground-water depth. Capillary action is

a key factor in supporting germination, as it allows plants access to water in the soils even as the water table drops (rootfollow) (Naiman et al. 2005). Larger substrates, such as cobble, boulder and bedrock, may not provide capillary action due to a reduced attraction between the substrate particles and the water molecules (Raven et al. 2005). According to literature sources, several woody riparian species found in the Project area are adapted to fine, medium and coarse soil textures rather than larger particles, such as gravels and cobbles. Changes in fine sediment input in Project-affected reaches downstream of the Camp Far West Reservoir, changes in substrate size, and effects from historical disturbances in the Bear River downstream of the Camp Far West Dam may affect the vegetative spread of Hind's willow, which is the dominant woody riparian species along the downstream water margin. No changes of sediment transport due to the Proposed Project are expected.

Changes in flow timing and inundation duration between With- and Without-Project flows may alter the distribution or abundance of woody riparian vegetation. The magnitude and frequency, and the seasonal and inter-annual timing of flows are important determinants in composition, turnover, and ecological functioning of riparian areas. The magnitude of flow can determine where seeds are distributed laterally in the channel. Some woody riparian vegetation, such as cottonwood seedlings, must be located within the floodprone zone close enough to the channel so that roots can reach ground water or capillary fringe during the growing season but enough above the base flow level in order to avoid being scoured out during high flows. The timing of peak flows may be critical to distribute riparian seeds as they are dispersed from the parent plants, so that they may be deposited in nursery sites adequate to support germination. Riparian vegetation is strongly influenced by prolonged periods of inundation, which create anoxic soil conditions and contribute to seed germination conditions. The duration and frequency of inundation influences lateral distribution of plant species in the channel, depending on a plant's anaerobic or drought tolerance and germination adaptations.

However, the riparian habitats within the Project-affected reaches appear healthy, based on the distribution of plants in the channel, the richness and vigor of the plants, and the full suite of age classes of woody riparian vegetation (i.e., indicates that germination is continuing to occur). NNIPs are considered a potential threat to the riparian areas. There is not currently evidence of a reduced functioning of the riparian communities. The topographic sequence, or lateral stratification, in the channel is within expected parameters in Project-affected reaches, with willows and younger (shorter) trees nearer the wetted channel or accessed by lower flows. This indicates an availability of water, either through flows, groundwater availability, and/or capillary fringe which supports successful recruitment; but also indicates vegetation may be removed by peak flow events. Willows have short rooting depths, and germinating seedlings need shallow root access to water; willows and younger trees were found near the low-flow wetted edge of most Project-affected reaches. More mature (taller) trees, as well as a greater abundance of cottonwoods, were observed in areas accessed by higher flows, generally farther from the wetted channel. Seedlings germinate in these areas following higher flows (Mahoney and Rood 1998) and grow to maturity without being scoured out of the channel, while still accessing water using deep root systems. In the Bear River downstream of the Camp Far West Dam, white alder and box elder provided canopy cover in the mid-ranges of flows, with rooting depths intermediate between willows and cottonwoods. There are no proposed changes to flow that would be anticipated to have a negative impact on the riparian communities.

3.3.4.5 Unavoidable Adverse Effects

The Proposed Project would have both short-term and long-term minor unavoidable impacts on terrestrial resources. However, none of these effects would be considered adverse to any of the resources.

The main effects to terrestrial resources would be from the Pool Raise, which will inundate an additional 5 ft above the NMWSE. One occurrence of a special-status plant species, Sierra foothills brodiaea, will most likely be drowned by the raise. Approximately 12.67 ac of NWI mapped riverine features will be converted into lacustrine feature by the Pool Raise, as well as one 0.004 ac wetland mapped in 2018. Additionally, 2.50 ac of Sensitive Natural Communities will be covered by water. Some spread of NNIP may also occur due to this Pool Raise.

Continued Project O&M and recreation use has the potential to contribute to the spread of NNIPs. However, many of these weeds are ubiquitous throughout the region, and Project activities would constitute a small piece of the vectors spreading NNIPs in the area.

Project O&M activities and recreation would have the potential to affect special-status wildlife species. However, these affects are considered to be minor. Additionally, two active bald eagle nests were found within the Proposed Project Boundary - on the Bear River Arm and on the Rock Creek Arm of the reservoir, east of the NSRA boat ramp. The continued use of the Bear River arm nest and the presence of a second nest suggests that the Project is a benefit to bald eagles by providing valuable nesting habitat and wintering habitat. Further, SSWD's proposed Bald Eagle Management Plan would assure an additional level of protection.

Impacts to special-status wildlife resulting from Project O&M and construction would, in general, be short in duration and restricted to existing disturbed areas in recreation areas and near the existing spillway. Temporary impacts include noise and an increase in human presence. Implementation of SSWD's proposed Bald Eagle Management Plan (TR1) and great blue heron rookery limited operating period (TR2) would reduce the effects of construction.

3.3.4.6 List of Attachments

Attachment 3.3.4A	SSWD's Complete Floristic List
Attachment 3.3.4B	Map of NNIP Occurrences
Attachment 3.3.4C	NNIP Data Table

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Attachment 3.3.4A

SSWD's Complete Floristic List

Species	Common Name	Native or NN or NNIP?	NSRA	SSRA	CFW Dam, Dikes, & Spillway	CFW Dam Powerhouse	Family
Achillea millefolium	thousand-leaved yarrow	Native		X	X	X	ASTERACEAE – SUNFLOWER FAMILY
Achyrachaena mollis	soft blow-wives	Native			X	X	ASTERACEAE – SUNFLOWER FAMILY
Aegilops triuncialis*	barbed goat grass	NNIP (High)	X				POACEAE – GRASS FAMILY
Aesculus californica	California buckeye	Native		X	X	X	SAPINDACEAE – SOAPBERRY FAMILY
Aira caryophyllea*	silver hair grass	NN	X	X			POACEAE – GRASS FAMILY
Alisma sp.	water plantain	Native		X			ALISMATACEAE – WATER–PLANTAIN FAMILY
Amsinckia intermedia	common fiddleneck	Native	X	X	X	X	BORAGINACEAE – BORAGE FAMILY
Amsinckia menziesii	common fiddleneck	Native		X			BORAGINACEAE – BORAGE FAMILY
Anthemis cotula*	mayweed	NN	X				ASTERACEAE – SUNFLOWER FAMILY
Artemisia douglasiana	mugwort	Native	X	X	X	X	ASTERACEAE – SUNFLOWER FAMILY
Avena barbata*	slender wild oat	NNIP (Moderate)	X	X	X	X	POACEAE – GRASS FAMILY
Avena fatua*	wild oat	NNIP (Moderate)	X	X	X	X	POACEAE – GRASS FAMILY
Baccharis pilularis ssp. consanguinea	coyote brush	Native	X	X	X	X	ASTERACEAE – SUNFLOWER FAMILY
Brassica nigra*	black mustard	NNIP (Moderate)		X	X	X	BRASSICACEAE – MUSTARD FAMILY
Brassica rapa*	field mustard	NNIP (Limited)			X	X	BRASSICACEAE – MUSTARD FAMILY
Briza maxima*	rattlesnake grass	NNIP (Limited)	X	X	X	X	POACEAE – GRASS FAMILY
Briza minor*	annual quaking grass	NN	X	X	X	X	POACEAE – GRASS FAMILY
Brodiaea elegans ssp. elegans	harvest brodiaea	Native		X			THEMIDACEAE – BRODIAEA FAMILY
Bromus diandrus*	ripgut grass	NNIP (Moderate)	X	X	X	X	POACEAE – GRASS FAMILY
Bromus hordeaceus*	soft chess	NNIP (Limited)	X	X	X	X	POACEAE – GRASS FAMILY
Bromus madritensis ssp. madritensis*	foxtail chess	NN	X	X	X	X	POACEAE – GRASS FAMILY
Bromus madritensis ssp. rubens*	red brome	NNIP (High)		X			POACEAE – GRASS FAMILY
Bromus sterilis*	poverty brome	NN		X			POACEAE – GRASS FAMILY
Calandrinia menziesii	red maids	Native	X	X			MONTIACEAE – MINER'S–LETTUCE FAMILY
Calochortus luteus	yellow mariposa-lily	Native	X	X	X		LILIACEAE – LILY FAMILY
Calystegia sp.	morning-glory	Native	X				CONVOLVULACEAE – MORNING–GLORY FAMILY
Canna sp.*	canna lily	NN	X				CANNABACEAE – HEMP FAMILY
Capsella bursa-pastoris*	shepherd's purse	NN	X				BRASSICACEAE – MUSTARD FAMILY
Cardamine oligosperma	few-flowered bitter-cress	Native	X				BRASSICACEAE – MUSTARD FAMILY
Carduus pycnocephalus ssp. pycnocephalus*	Italian thistle	NNIP (Moderate)	X	X	X	X	ASTERACEAE – SUNFLOWER FAMILY
Castilleja affinis ssp. affinis	related paintbrush	Native		X			OROBANCHACEAE – BROOM–RAPE FAMILY
Castilleja attenuata	valley tassels	Native			X	X	OROBANCHACEAE – BROOM–RAPE FAMILY
Castilleja campestris ssp. campestris	field paintbrush	Native	X				OROBANCHACEAE – BROOM–RAPE FAMILY
Castilleja lineariloba	linear-lobed paintbrush	Native	X	X			OROBANCHACEAE – BROOM–RAPE FAMILY
Ceanothus cuneatus var. cuneatus	buckbrush	Native	X	X	X		RHAMNACEAE – BUCKTHORN FAMILY
Centaurea melitensis*	Maltese star-thistle	NNIP (Moderate)	X	X			ASTERACEAE – SUNFLOWER FAMILY
Centaurea solstitialis*	yellow star-thistle	NNIP (High)	X	X	X	X	ASTERACEAE – SUNFLOWER FAMILY
Cephalanthus occidentalis	California button willow	Native	X	X			RUBIACEAE – COFFEE FAMILY
Cerastium glomeratum*	sticky mouse-ear chickweed	NN		X	X	X	CARYOPHYLLACEAE – PINK FAMILY
Chlorogalum pomeridianum var. pomeridianum	afternoon soap plant	Native	X	X			AGAVACEAE – AGAVE FAMILY
Chondrilla juncea*	skeleton weed	NN	X	X			ASTERACEAE – SUNFLOWER FAMILY
Cichorium intybus*	chicory	NN		X			ASTERACEAE – SUNFLOWER FAMILY
Cicuta maculata var. angustifolia	narrow-leaved spotted water-hemlock	Native	X				APIACEAE – CARROT FAMILY
Clarkia purpurea ssp. quadrivulnera	four-spot purple clarkia	Native		X			ONAGRACEAE – EVENING PRIMROSE FAMILY
Claytonia parviflora ssp. parviflora	small-flowered spring beauty	Native	X	X	X	X	MONTIACEAE – MINER'S–LETTUCE FAMILY

Species	Common Name	Native or NN or NNIP?	NSRA	SSRA	CFW Dam, Dikes, & Spillway	CFW Dam Powerhouse	Family
Claytonia perfoliata	miner's lettuce	Native	X	X			MONTIACEAE – MINER'S–LETTUCE FAMILY
Cordylanthus pilosus ssp. trifidus	tripartite hairy bird's-beak	Native	X	X			OROBANCHACEAE – BROOM–RAPE FAMILY
Cynodon dactylon*	bermuda grass	NNIP (Moderate)	X	X	X	X	POACEAE – GRASS FAMILY
Cynosurus echinatus*	bristly dogtail grass	NNIP (Moderate)	X	X			POACEAE – GRASS FAMILY
Cyperus eragrostis	lovegrass flatsedge	Native		X	X	X	CYPERACEAE – SEDGE FAMILY
Dactylis glomerata*	orchard grass	NNIP (Limited)		X			POACEAE – GRASS FAMILY
Daucus pusillus	small wild carrot	Native		X			APIACEAE – CARROT FAMILY
Delphinium variegatum ssp. variegatum	royal larkspur	Native	X				RANUNCULACEAE – BUTTERCUP FAMILY
Dichelostemma capitatum ssp. capitatum	blue dicks	Native	X				THEMIDACEAE – BRODIAEA FAMILY
Dichelostemma multiflorum	wild hyacinth	Native		X			THEMIDACEAE – BRODIAEA FAMILY
Dichelostemma volubile	twining brodiaea	Native	X	X			THEMIDACEAE – BRODIAEA FAMILY
Elymus caput-medusae*	medusa head	NNIP (High)	X	X	X	X	POACEAE – GRASS FAMILY
Erodium botrys*	long-beaked filaree	NN	X				GERANIACEAE – GERANIUM FAMILY
Erodium cicutarium*	redstem filaree	NNIP (Limited)	X	X	X	X	GERANIACEAE – GERANIUM FAMILY
Erodium moschatum*	greenstem filaree	NN		X			GERANIACEAE – GERANIUM FAMILY
Eryngium castrense	great valley coyote-thistle	Native		X			APIACEAE – CARROT FAMILY
Erythranthe guttata	red-dotted monkeyflower	Native	X	X	X	X	PHRYMACEAE – LOPSEED FAMILY
Eschscholzia lobbii	Lobb's poppy	Native	X	X			PAPAVERACEAE – POPPY FAMILY
Festuca myuros*	rattail sixweeks grass	NNIP (Moderate)	X	X	X		POACEAE – GRASS FAMILY
Festuca perennis*	rye grass	NNIP (Moderate)	X	X	X	X	POACEAE – GRASS FAMILY
Ficus carica*	edible fig	NNIP (Moderate)			X	X	MORACEAE – MULBERRY FAMILY
Foeniculum vulgare*	fennel	NNIP (High)		X	X	X	APIACEAE – CARROT FAMILY
Frangula californica ssp. tomentella	woolly haired California coffee berry	Native		X			RHAMNACEAE – BUCKTHORN FAMILY
Fraxinus latifolia	Oregon ash	Native		X			OLEACEAE – OLIVE FAMILY
Galium aparine	goose grass	Native		X	X		RUBIACEAE – COFFEE FAMILY
Galium divaricatum*	Lamarck's bedstraw	NN		X			RUBIACEAE – COFFEE FAMILY
Galium murale*	tiny bedstraw	NN		X			RUBIACEAE – COFFEE FAMILY
Galium parisiense*	wall bedstraw	NN	X				RUBIACEAE – COFFEE FAMILY
Geranium dissectum*	dissected geranium	NNIP (Limited)	X	X	X	X	GERANIACEAE – GERANIUM FAMILY
Geranium molle*	soft geranium	NN	X	X	X	X	GERANIACEAE – GERANIUM FAMILY
Gnaphalium palustre	marsh cudweed	Native	X				ASTERACEAE – SUNFLOWER FAMILY
Gratiola ebracteata	bractless hedge-hyssop	Native	X		X		PLANTAGINACEAE – PLANTAIN FAMILY
Grindelia camporum	field gumplant	Native	X				ASTERACEAE – SUNFLOWER FAMILY
Hirschfeldia incana*	shortpod mustard	NNIP (Moderate)		X			BRASSICACEAE – MUSTARD FAMILY
Hordeum marinum ssp. gussoneanum*	Mediterranean barley	NN	X	X			POACEAE – GRASS FAMILY
Hordeum murinum ssp. leporinum*	hare barley	NN	X	X			POACEAE – GRASS FAMILY
Hypericum perforatum ssp. perforatum*	Klamathweed	NN	X	X	X	X	HYPERICACEAE – ST JOHN'S WORT FAMILY
Hypochaeris glabra*	smooth cat's-ear	NNIP (Limited)		X	X	X	ASTERACEAE – SUNFLOWER FAMILY
Hypochaeris radicata*	rough cat's-ear	NNIP (Moderate)	X			X	ASTERACEAE – SUNFLOWER FAMILY
Iris hartwegii	Hartweg's iris	Native	X				IRIDACEAE – IRIS FAMILY
Juncus balticus ssp. ater	Baltic rush	Native		X	X	X	JUNCACEAE – RUSH FAMILY
Juncus bufonius var. occidentalis	western toad rush	Native	X				JUNCACEAE – RUSH FAMILY
Juncus capitatus*	dwarf rush	NN	X	X			JUNCACEAE – RUSH FAMILY
Juncus tenuis	poverty rush	Native	X	X	X		JUNCACEAE – RUSH FAMILY
Juncus xiphioides	iris-leaved rush	Native	X				JUNCACEAE – RUSH FAMILY

Species	Common Name	Native or NN or NNIP?	NSRA	SSRA	CFW Dam, Dikes, & Spillway	CFW Dam Powerhouse	Family
Lamium amplexicaule*	henbit	NN	X				LAMIACEAE – MINT FAMILY
Layia fremontii	Fremont's layia	Native	X	X			ASTERACEAE – SUNFLOWER FAMILY
Lemna sp.	duckweed	Native	X				ARACEAE – ARUM FAMILY
Leontodon saxatilis*	hairy hawkbit	NN			X	X	ASTERACEAE – SUNFLOWER FAMILY
Lepidium campestre*	field peppergrass	NN		X			BRASSICACEAE – MUSTARD FAMILY
Lepidium nitidum	shining peppergrass	Native	X	X			BRASSICACEAE – MUSTARD FAMILY
Leptosiphon bicolor	bi-colored leptosiphon	Native	X				POLEMONIACEAE – PHLOX FAMILY
Leptosiphon ciliatus	whisker brush	Native	X				POLEMONIACEAE – PHLOX FAMILY
Leptosiphon filipes	thread leptosiphon	Native	X				POLEMONIACEAE – PHLOX FAMILY
Linum bienne*	bi-annual flax	NN	X	X			LINACEAE – FLAX FAMILY
Lithophragma bolanderi	Bolander's woodland star	Native			X	X	SAXIFRAGACEAE – SAXIFRAGE FAMILY
Ludwigia peploides ssp. montevidensis*	montevidean false loosestrife	NN	X	X			ONAGRACEAE – EVENING PRIMROSE FAMILY
Lupinus bicolor	miniature lupine	Native	X	X	X	X	FABACEAE – LEGUME FAMILY
Lupinus nanus	little lupine	Native		X	X	X	FABACEAE – LEGUME FAMILY
Lysimachia arvensis*	scarlet pimpernel	NN	X	X	X	X	MYRSINACEAE – MYRSINE FAMILY
Madia exigua	small tarweed	Native			X	X	ASTERACEAE – SUNFLOWER FAMILY
Marrubium vulgare*	common horehound	NNIP (Limited)	X	X			LAMIACEAE – MINT FAMILY
Matricaria discoidea*	pineapple weed	Native	X	X	X		ASTERACEAE – SUNFLOWER FAMILY
Medicago arabica*	Arabian medick	NN		X			FABACEAE – LEGUME FAMILY
Medicago polymorpha*	variable burclover	NNIP (Limited)	X	X			FABACEAE – LEGUME FAMILY
Melilotus indicus*	indian sweetclover	NN			X	X	FABACEAE – LEGUME FAMILY
Mentha canadensis	Canadian cornmint	Native	X				LAMIACEAE – MINT FAMILY
Mentha pulegium*	pennyroyal	NNIP (Moderate)	X				LAMIACEAE – MINT FAMILY
Micropus californicus var. californicus	California cottontop	Native	X	X			ASTERACEAE – SUNFLOWER FAMILY
Microseris nutans	nodding microseris	Native	X				ASTERACEAE – SUNFLOWER FAMILY
Microsteris gracilis	slender microsteris	Native	X				POLEMONIACEAE – PHLOX FAMILY
Morus alba*	white mulberry	NN	X				MORACEAE – MULBERRY FAMILY
Nasturtium officinale	water cress	Native	X	X			BRASSICACEAE – MUSTARD FAMILY
Navarretia intertexta	intertwined navarretia	Native	X				POLEMONIACEAE – PHLOX FAMILY
Navarretia pubescens	downy navarretia	Native		X	X		POLEMONIACEAE – PHLOX FAMILY
Opuntia sp.	prickly-pear	NN			X		CACTACEAE – CACTUS FAMILY
Oxalis micrantha*	dwarf wood-sorrel	NN	X	X			OXALIDACEAE – OXALIS FAMILY
Parentucellia viscosa*	sticky parentucellia	NNIP (Limited)	X	X	X	X	OROBANCHACEAE – BROOM–RAPE FAMILY
Pellaea mucronata var. mucronata	bird's-foot fern	Native			X	X	PTERIDACEAE – BRAKE FAMILY
Pentagramma triangularis	goldback fern	Native	X	X	X	X	PTERIDACEAE – BRAKE FAMILY
Perideridia kelloggii	Kellogg's yampah	Native	X				APIACEAE – CARROT FAMILY
Petrorhagia dubia*	doubtful petrorhagia	NN	X	X	X	X	CARYOPHYLLACEAE – PINK FAMILY
Pinus sabiniana	ghost pine	Native	X	X	X	X	PINACEAE – PINE FAMILY
Plagiobothrys fulvus var. campestris	field popcornflower	Native	X				BORAGINACEAE – BORAGE FAMILY
Plagiobothrys greenei	Greene's spiny-nut popcornflower	Native			X	X	BORAGINACEAE – BORAGE FAMILY
Plagiobothrys nothofulvus	rusty popcornflower	Native	X	X	X	X	BORAGINACEAE – BORAGE FAMILY
Plagiobothrys stipitatus var. micranthus	small-flowered great valley popcornflower	Native		X			BORAGINACEAE – BORAGE FAMILY
Plagiobothrys tenellus	Pacific popcornflower	Native			X	X	BORAGINACEAE – BORAGE FAMILY
Plantago coronopus*	cleft-leaved plantain	NN	X	X			PLANTAGINACEAE – PLANTAIN FAMILY
Plantago erecta	erect plantain	Native	X	X			PLANTAGINACEAE – PLANTAIN FAMILY

Species	Common Name	Native or NN or NNIP?	NSRA	SSRA	CFW Dam, Dikes, & Spillway	CFW Dam Powerhouse	Family
Plantago lanceolata*	English plantain	NNIP (Limited)	X	X	X		PLANTAGINACEAE – PLANTAIN FAMILY
Plantago major*	common plantain	NN	X		X	X	PLANTAGINACEAE – PLANTAIN FAMILY
Poa bulbosa*	bulbous blue grass	NN	X				POACEAE – GRASS FAMILY
Polypogon interruptus*	ditch beard grass	NN			X		POACEAE – GRASS FAMILY
Populus fremontii ssp. fremontii	fremont cottonwood	Native	X	X			SALICACEAE – WILLOW FAMILY
Portulaca oleracea*	purslane	NN	X	X			PORTULACACEAE – PURSLANE FAMILY
Potamogeton diversifolius	diverse-leaved pondweed	Native		X			POTAMOGETONACEAE – PONDWEED FAMILY
Psilocarphus brevissimus var. brevissimus	dwarf woolly-marbles	Native		X			ASTERACEAE – SUNFLOWER FAMILY
Quercus douglasii	blue oak	Native	X	X	X	X	FAGACEAE – OAK FAMILY
Quercus lobata	valley oak	Native	X	X	X	X	FAGACEAE – OAK FAMILY
Quercus wislizeni var. wislizeni	interior live oak	Native	X	X	X	X	FAGACEAE – OAK FAMILY
Ranunculus aquatilis var. aquatilis	water buttercup	Native	X		X	X	RANUNCULACEAE – BUTTERCUP FAMILY
Ranunculus hebecarpus	pubescent-fruited buttercup	Native		X			RANUNCULACEAE – BUTTERCUP FAMILY
Ranunculus muricatus*	sharp-point buttercup	NN	X	X	X	X	RANUNCULACEAE – BUTTERCUP FAMILY
Ranunculus occidentalis var. occidentalis	western buttercup	Native	X				RANUNCULACEAE – BUTTERCUP FAMILY
Raphanus raphanistrum*	jointed charlock	NN			X	X	BRASSICACEAE – MUSTARD FAMILY
Robinia pseudoacacia*	black locust	NNIP (Limited)			X	X	FABACEAE – LEGUME FAMILY
Rosa californica	California rose	Native			X	X	ROSACEAE – ROSE FAMILY
Rubus armeniacus*	Himalayan blackberry	NNIP (High)	X	X	X	X	ROSACEAE – ROSE FAMILY
Rumex crispus*	curly dock	NNIP (Limited)	X	X	X	X	POLYGONACEAE – BUCKWHEAT FAMILY
Rumex pulcher*	fiddle dock	NN			X	X	POLYGONACEAE – BUCKWHEAT FAMILY
Salix exigua var. exigua	narrow-leaved willow	Native	X		X	X	SALICACEAE – WILLOW FAMILY
Salix lasiolepis	arroyo willow	Native			X	X	SALICACEAE – WILLOW FAMILY
Sambucus nigra ssp. caerulea	blue elderberry	Native			X	X	ADOXACEAE – MUSKROOT FAMILY
Sanicula bipinnatifida	purple sanicle	Native	X				APIACEAE – CARROT FAMILY
Sanicula crassicaulis	thick-stemmed sanicula	Native	X	X			APIACEAE – CARROT FAMILY
Schoenoplectus californicus	California bulrush	Native	X				CYPERACEAE – SEDGE FAMILY
Selaginella hansenii	Hansen's spike-moss	Native		X			SELAGINELLACEAE – SPIKE–MOSS FAMILY
Senecio vulgaris*	common groundsel	NN	X	X	X	X	ASTERACEAE – SUNFLOWER FAMILY
Sesbania punicea*	scarlet sesban	NNIP (High)	X	X			FABACEAE – LEGUME FAMILY
Sherardia arvensis*	field madder	NN		X			RUBIACEAE – COFFEE FAMILY
Silene gallica*	small-flower catchfly	NN	X	X	X	X	CARYOPHYLLACEAE – PINK FAMILY
Silybum marianum*	blessed milk thistle	NNIP (Limited)	X	X			ASTERACEAE – SUNFLOWER FAMILY
Sisymbrium officinale*	hedge mustard	NN	X	X			BRASSICACEAE – MUSTARD FAMILY
Soliva sessilis*	sessile-leaved soliva	NN		X			ASTERACEAE – SUNFLOWER FAMILY
Sonchus asper ssp. asper*	prickly sow thistle	NN	X	X			ASTERACEAE – SUNFLOWER FAMILY
Spergula arvensis*	starwort	NN	X				CARYOPHYLLACEAE – PINK FAMILY
Spergularia rubra*	red sand-spurrey	NN			X		CARYOPHYLLACEAE – PINK FAMILY
Spiranthes porrifolia	leek-leaved ladies tresses	Native	X				ORCHIDACEAE – ORCHID FAMILY
Stellaria media*	common chickweed	NN	X	X			CARYOPHYLLACEAE – PINK FAMILY
Stellaria nitens	shining chickweed	Native		X			CARYOPHYLLACEAE – PINK FAMILY
Stipa lemmonii var. lemmonii	Lemmon's needle grass	Native	X				POACEAE – GRASS FAMILY
Taraxacum officinale*	common dandelion	NN	X	X	X		ASTERACEAE – SUNFLOWER FAMILY
Torilis arvensis*	tall sock-destroyer	NNIP (Moderate)	X	X	X	X	APIACEAE – CARROT FAMILY
Toxicodendron diversilobum	western poison oak	Native	X	X	X	X	ANACARDIACEAE – SUMAC FAMILY

Species	Common Name	Native or NN or NNIP?	NSRA	SSRA	CFW Dam, Dikes, & Spillway	CFW Dam Powerhouse	Family
Trifolium angustifolium*	narrow-leaved clover	NN	X				FABACEAE – LEGUME FAMILY
Trifolium campestre*	hop clover	NN		X	X	X	FABACEAE – LEGUME FAMILY
Trifolium depauperatum var. depauperatum	dwarf sack clover	Native	X		X		FABACEAE – LEGUME FAMILY
Trifolium dubium*	little hop clover	NN	X	X			FABACEAE – LEGUME FAMILY
Trifolium glomeratum*	clustered clover	NN	X	X			FABACEAE – LEGUME FAMILY
Trifolium hirtum*	rose clover	NNIP (Moderate)	X	X	X	X	FABACEAE – LEGUME FAMILY
Trifolium repens*	white clover	NN	X				FABACEAE – LEGUME FAMILY
Trifolium subterraneum*	subterranean clover	NN	X	X			FABACEAE – LEGUME FAMILY
Trifolium tomentosum*	woolly clover	NN			X	X	FABACEAE – LEGUME FAMILY
Trifolium variegatum	variagated clover	Native	X				FABACEAE – LEGUME FAMILY
Trifolium willdenovii	tomcat clover	Native			X	X	FABACEAE – LEGUME FAMILY
Triphysaria eriantha ssp. eriantha	butter-and-eggs	Native	X	X	X		OROBANCHACEAE – BROOM–RAPE FAMILY
Triphysaria pusilla	small owl's-clover	Native		X			OROBANCHACEAE – BROOM–RAPE FAMILY
Triteleia hyacinthina	hyacinth triplet lily	Native	X	X	X	X	THEMIDACEAE – BRODIAEA FAMILY
Triteleia ixioides	corn lily-like triplet lily	Native			X	X	THEMIDACEAE – BRODIAEA FAMILY
Triteleia laxa	loose triplet lily	Native	X	X	X	X	THEMIDACEAE – BRODIAEA FAMILY
Typha angustifolia*	narrow-leaved cattail	NN	X	X	X	X	TYPHACEAE – CATTAIL FAMILY
Urtica urens*	dwarf nettle	NN	X				URTICACEAE – NETTLE FAMILY
Valerianella locusta*	locust corn salad	NN	X		X		VALERIANACEAE – VALERIAN FAMILY
Verbena litoralis*	seashore vervain	NN		X	X	X	VERBENACEAE – VERVAIN FAMILY
Veronica persica*	Persian speedwell	NN	X				PLANTAGINACEAE – PLANTAIN FAMILY
Vicia hirsuta*	hairy vetch	NN		X	X	X	FABACEAE – LEGUME FAMILY
Vicia sativa*	garden vetch	NN	X	X	X	X	FABACEAE – LEGUME FAMILY
Vicia villosa*	hairy vetch	NN	X	X	X	X	FABACEAE – LEGUME FAMILY
Vitis californica	California wild grape	Native			X	X	VITACEAE – GRAPE FAMILY
Xanthium strumarium	cocklebur	Native		X			ASTERACEAE – SUNFLOWER FAMILY

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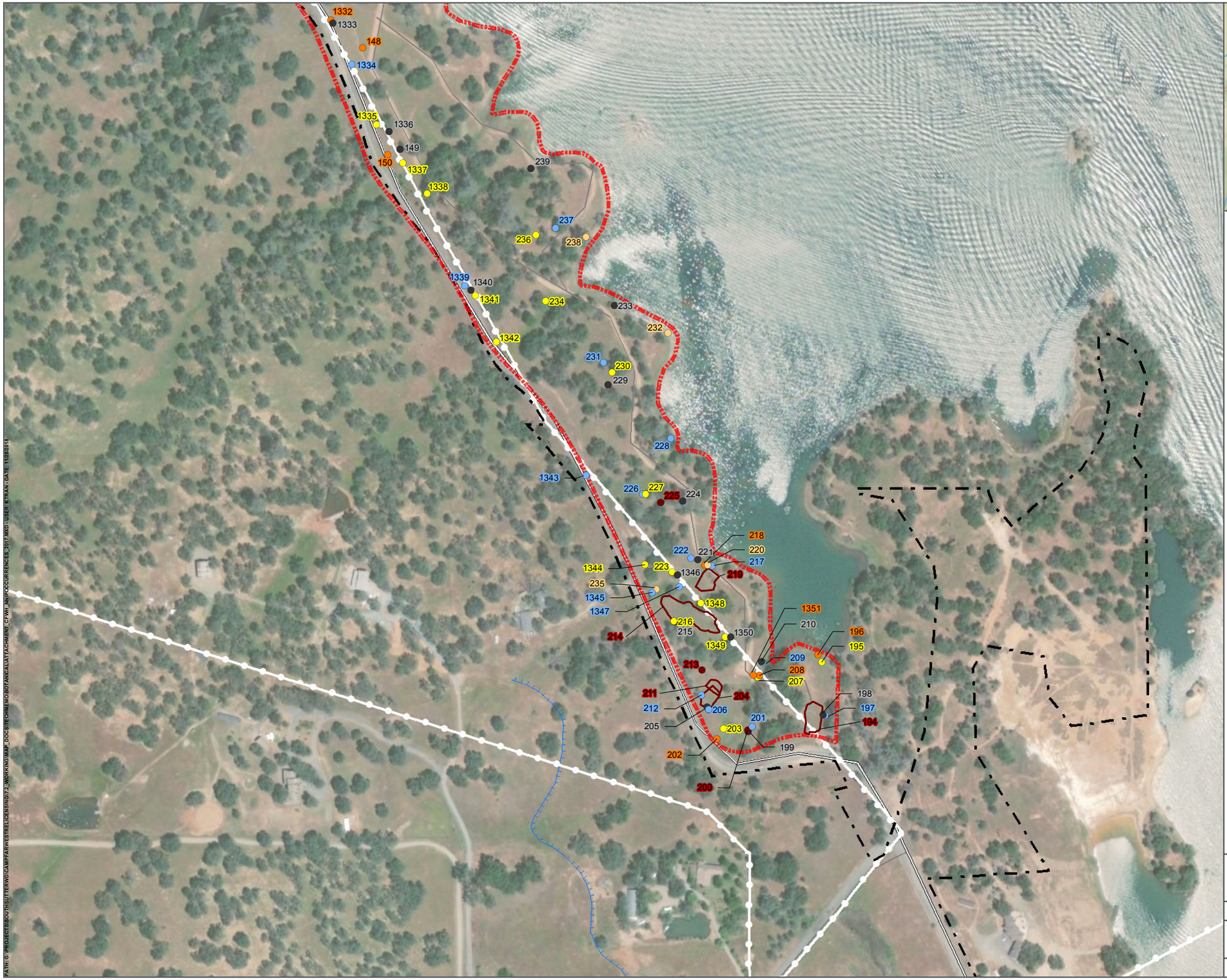
Attachment 3.3.4B

Maps of NNIP Occurrences



Project Features

Proposed FERC Boundary (No.2997)

Non-Project Features

Transmission Line

Base Map

Study Area
County Line
Major Road
Minor Road
Canal/Ditch

Non-native Plant Species (NNIP)

Carduus pycnocephalus (CARPYC)
Centaurea solstitialis (CENSOL)
Chondrilla juncea (CHOJUN)
Cynodon dactylon (CYNDAC)
Elymus caput-medusae (ELYCAP)
Hypericum perforatum (HYPPER)
Chondrilla juncea (CHOJUN)

0 150 300 600 Feet
0 45 90 180 Meters

NON-NATIVE INVASIVE PLANT SPECIES
CAMP FAR WEST HYDROELECTRIC PROJECT
FERC NO. 2997

Data Sources: Base Map - ArcGIS Online Streaming Layer (Imagery); Ferc Boundary - Yuba and Placer Counties GIS; Land Ownership - Yuba and Placer Counties CD-Data; Botanical Survey Area, Non-native Plant Species - HDR. Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness.

Map Prepared by: HDR | © 2018 South Sutter Water District

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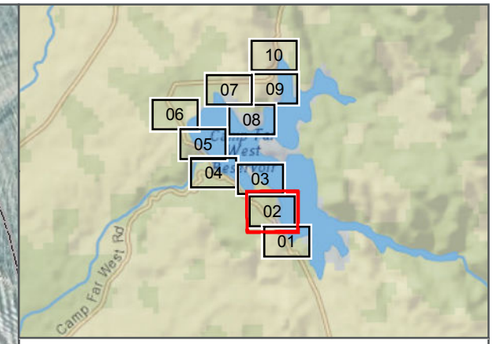

Project Features

Proposed FERC Boundary (No.2997)

Non-Project Features

Transmission Line

Base Map

Study Area

County Line

Major Road

Minor Road

Non-native Plant Species (NNIP)

Carduus pycnocephalus (CARPYC)

Centaurea solstitialis (CENSOL)

Cynodon dactylon (CYNDAC)

Elymus caput-medusae (ELYCAP)

Hypericum perforatum (HYPPER)

Carduus pycnocephalus (CARPYC)

Cynodon dactylon (CYNDAC)

Hypericum perforatum (HYPPER)

Elymus caput-medusae (ELYCAP)

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0 150 300 600 Feet

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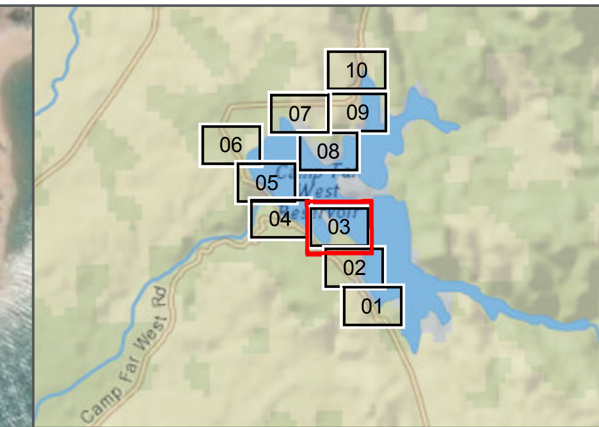
NON-NATIVE INVASIVE PLANT SPECIES CAMP FAR WEST HYDROELECTRIC PROJECT FERC NO. 2997

Data Sources: Base Map - ArcGIS Online Streaming Layer (Imagery); Ferc Boundary - Yuba and Placer Counties GIS; Land Ownership - Yuba and Placer Counties CD-Data; Botanical Survey Area, Non-native Plant Species - HDR. Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness.



Project Features

Proposed FERC Boundary (No.2997)

Non-Project Features

Transmission Line

Base Map

Study Area

County Line

Major Road

Minor Road

Non-native Plant Species (NNIP)

Carduus pycnocephalus (CARPYC)

Elymus caput-medusae (ELYCAP)

Hypericum perforatum (HYPPER)

Carduus pycnocephalus (CARPYC)

Cynodon dactylon (CYNDAC)

Hypericum perforatum (HYPPER)

Centaurea solstitialis (CENSOL)

Elymus caput-medusae (ELYCAP)

Hypericum perforatum (HYPPER)

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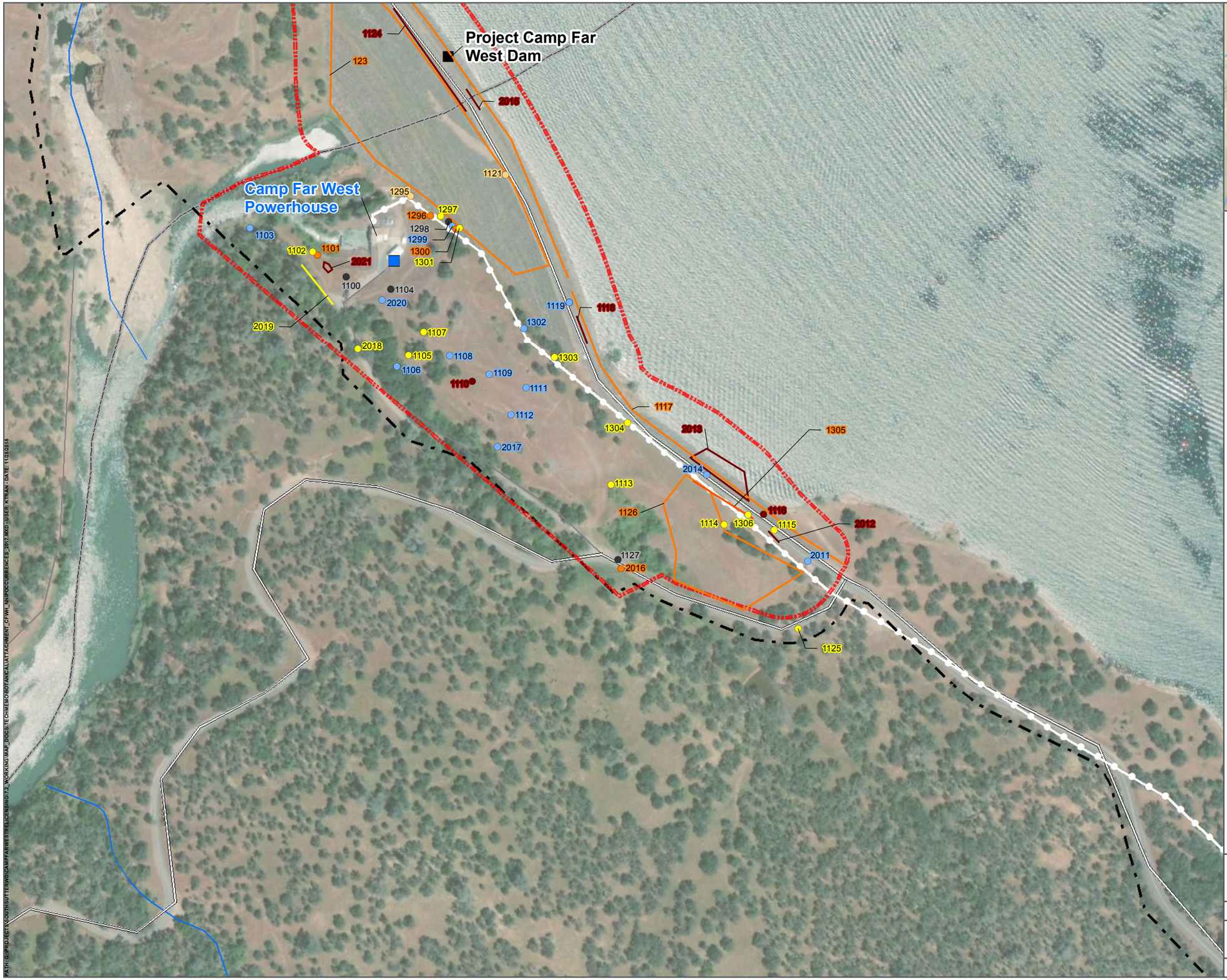
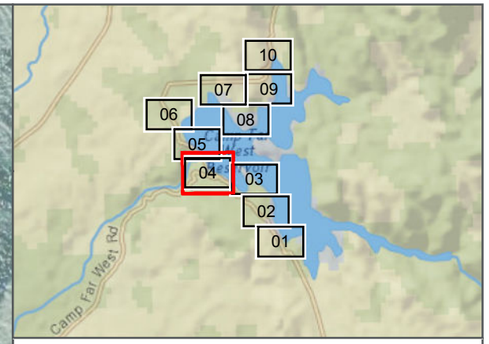
NON-NATIVE INVASIVE PLANT SPECIES
CAMP FAR WEST HYDROELECTRIC PROJECT
FERC NO. 2997

Data Sources: Base Map - ArcGIS Online Streaming Layer (Imagery); Ferc Boundary - Yuba and Placer Counties GIS; Land Ownership - Yuba and Placer Counties CD-Data; Botanical Survey Area, Non-native Plant Species - HDR. Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness.





Project Features

- Proposed FERC Boundary (No.2997)
- Dam
- PowerHouse

Non-Project Features

- Transmission Line

Base Map

- Study Area
- County Line
- Major Road
- Minor Road
- StreamRiver

Non-native Plant Species (NNIP)

- *Carduus pycnocephalus* (CARPYC)
- *Centaurea solstitialis* (CENSOL)
- *Chondrilla juncea* (CHOJUN)
- *Cynodon dactylon* (CYNDAC)
- *Elymus caput-medusae* (ELYCAP)
- *Hypericum perforatum* (HYPPER)

- *Carduus pycnocephalus* (CARPYC)
- *Centaurea solstitialis* (CENSOL)
- *Chondrilla juncea* (CHOJUN)

- *Centaurea solstitialis* (CENSOL)
- *Chondrilla juncea* (CHOJUN)

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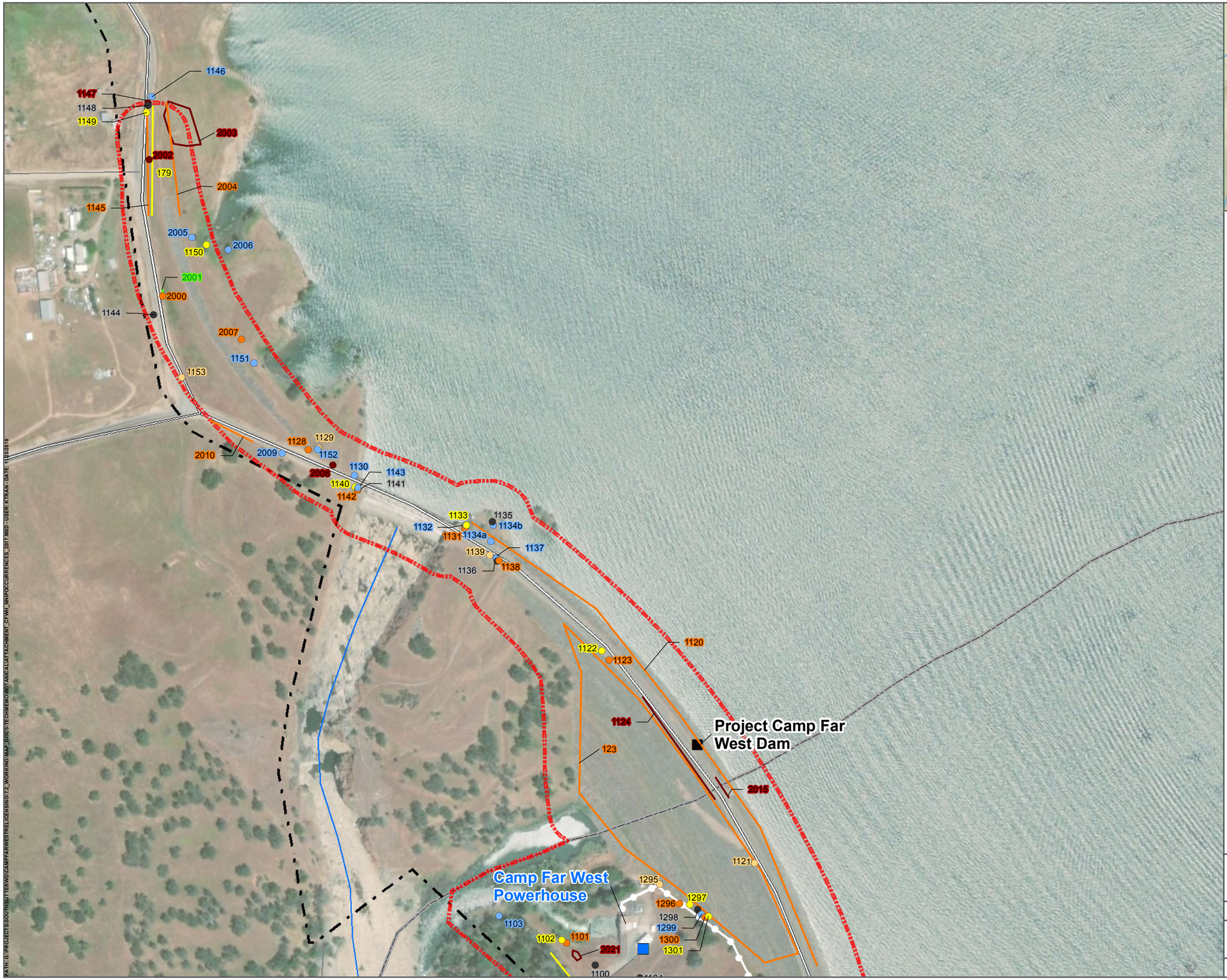
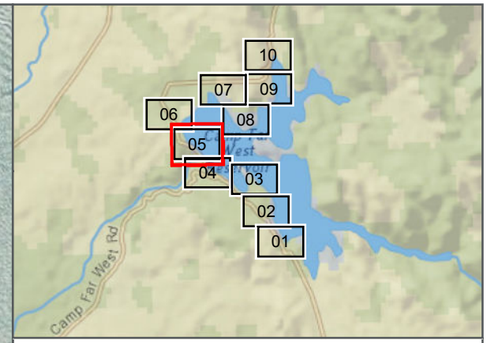
NON-NATIVE INVASIVE PLANT SPECIES CAMP FAR WEST HYDROELECTRIC PROJECT FERC NO. 2997

Data Sources: Base Map - ArcGIS Online Streaming Layer (Imagery); Ferc Boundary - Yuba and Placer Counties GIS; Land Ownership - Yuba and Placer Counties CD-Data; Botanical Survey Area, Non-native Plant Species - HDR. Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness.





Project Features

- Proposed FERC Boundary (No.2997)
- Dam
- PowerHouse

Non-Project Features

- Transmission Line

Base Map

- Study Area
- County Line
- Major Road
- Minor Road
- StreamRiver

Non-native Plant Species (NNIP)

- *Carduus pycnocephalus* (CARPYC)
- *Centaurea solstitialis* (CENSOL)
- *Chondrilla juncea* (CHOJUN)
- *Cynodon dactylon* (CYNDAC)
- *Elymus caput-medusae* (ELYCAP)
- *Hypericum perforatum* (HYPPER)
- *Carduus pycnocephalus* (CARPYC)
- *Centaurea solstitialis* (CENSOL)
- *Chondrilla juncea* (CHOJUN)
- *Convolvulus arvensis* CONARV

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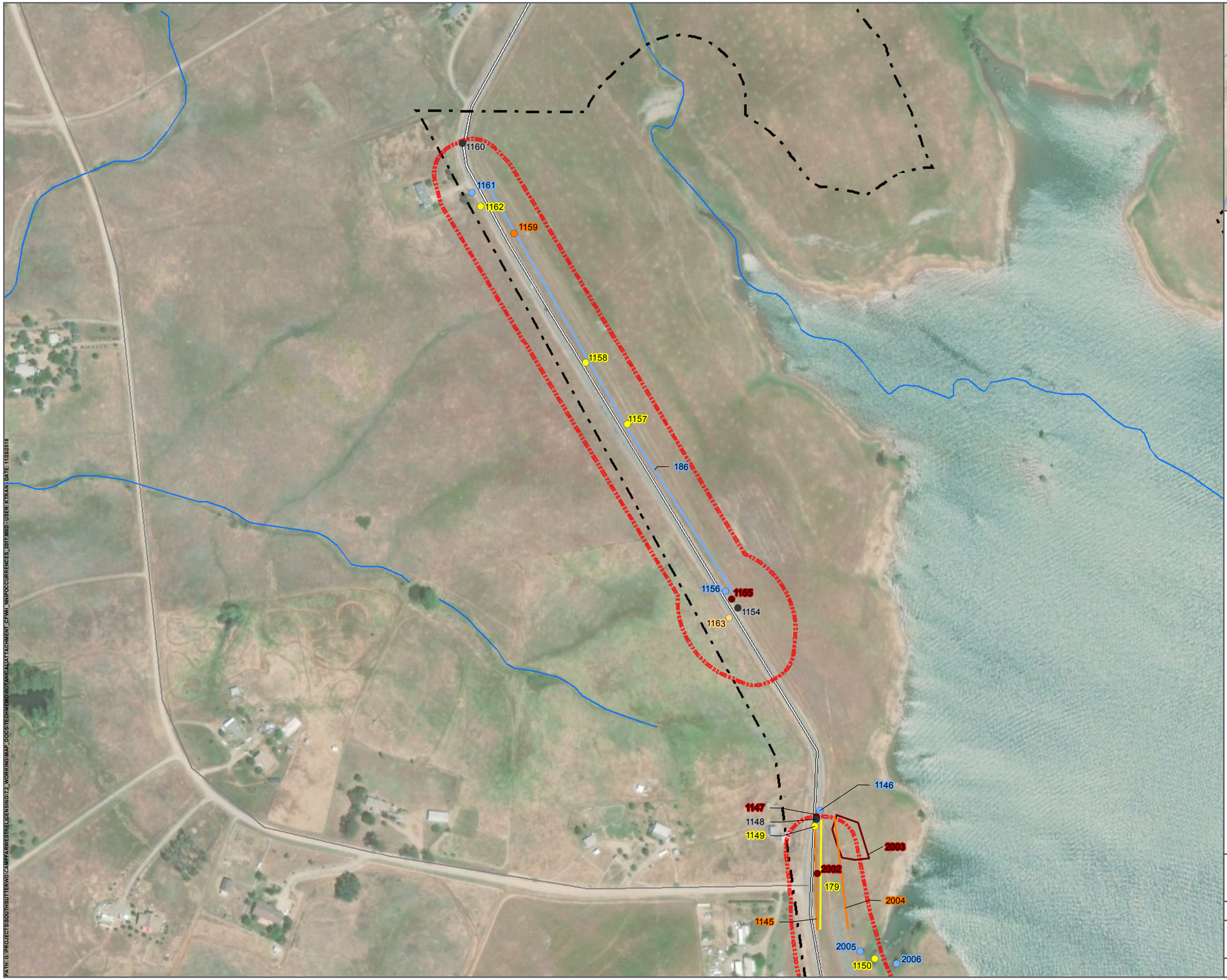
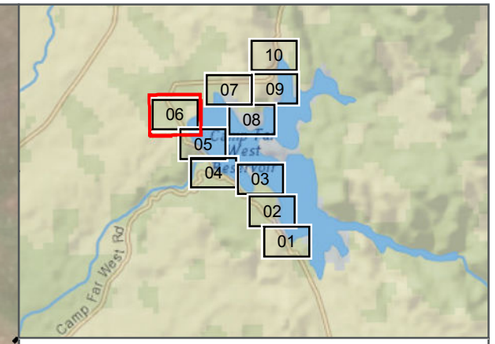
NON-NATIVE INVASIVE PLANT SPECIES
CAMP FAR WEST HYDROELECTRIC PROJECT
FERC NO. 2997

Data Sources: Base Map - ArcGIS Online Streaming Layer (Imagery); Ferc Boundary - Yuba and Placer Counties GIS; Land Ownership - Yuba and Placer Counties CD-Data; Botanical Survey Area, Non-native Plant Species - HDR. Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness.





Project Features

Proposed FERC Boundary (No.2997)

Base Map

Study Area
County Line
Major Road
Minor Road
StreamRiver

Non-native Plant Species (NNIP)

Carduus pycnocephalus (CARPYC)
Chondrilla juncea (CHOJUN)
Centaurea solstitialis (CENSOL)
Chondrilla juncea (CHOJUN)
Cynodon dactylon (CYNDAC)
Elymus caput-medusae (ELYCAP)
Hypericum perforatum (HYPPER)
Carduus pycnocephalus (CARPYC)
Centaurea solstitialis (CENSOL)
Hypericum perforatum (HYPPER)

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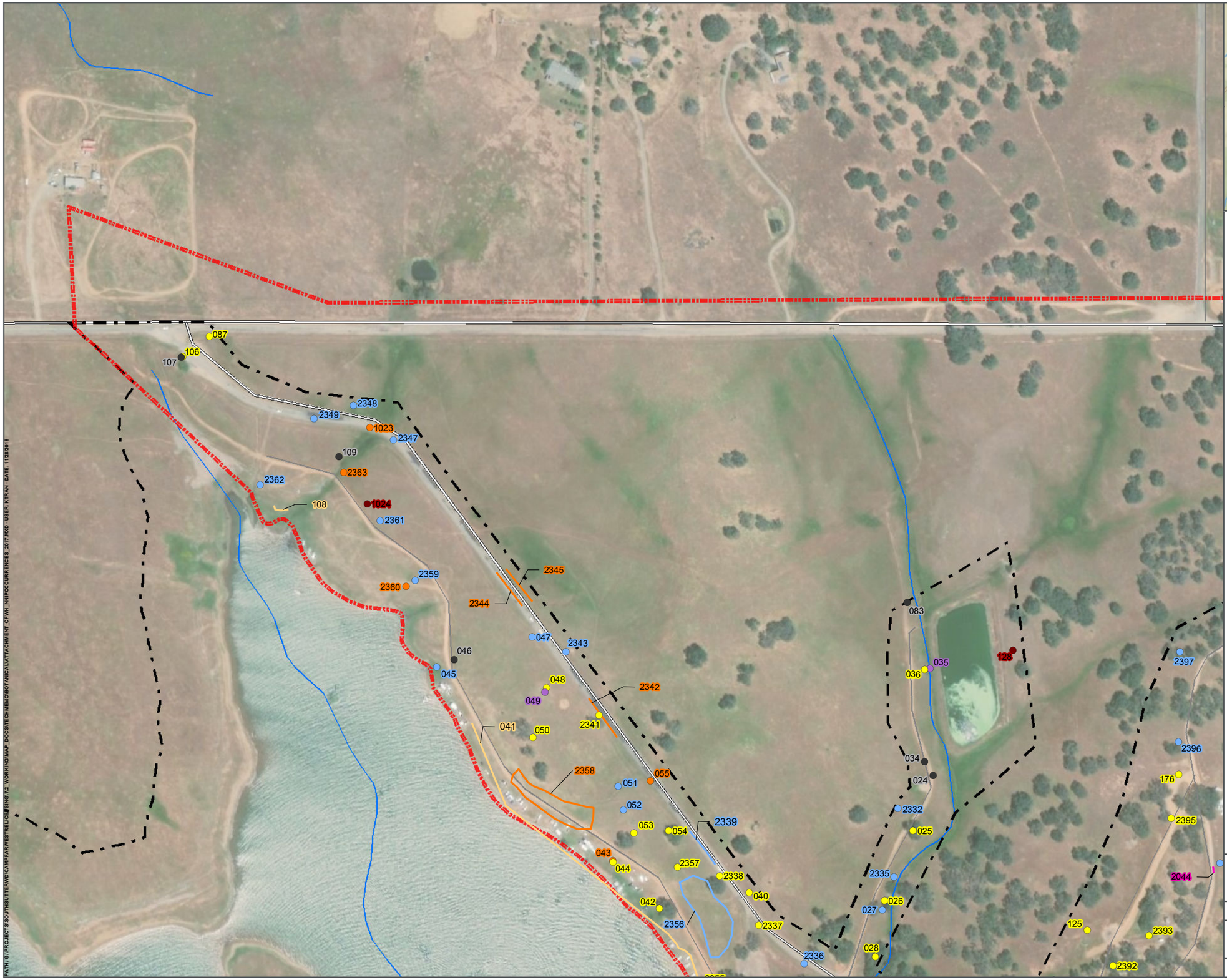
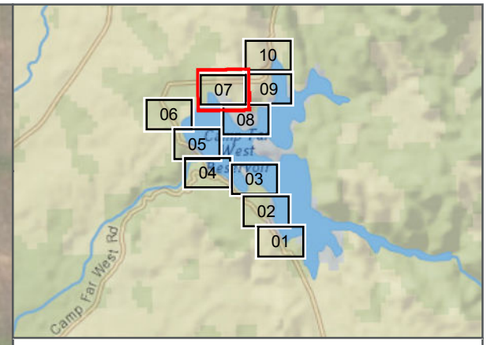
0 150 300 600 Feet
0 45 90 180 Meters

NON-NATIVE INVASIVE PLANT SPECIES CAMP FAR WEST HYDROELECTRIC PROJECT FERC NO. 2997

Data Sources: Base Map - ArcGIS Online Streaming Layer (Imagery); Ferc Boundary - Yuba and Placer Counties GIS; Land Ownership - Yuba and Placer Counties CD-Data; Botanical Survey Area, Non-native Plant Species - HDR. Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness.





Project Features

Proposed FERC Boundary (No.2997)

Base Map

Study Area
County Line
Major Road
Minor Road
StreamRiver

Non-native Plant Species (NNIP)

- *Carduus pycnocephalus* (CARPYC)
- *Centaurea melitensis* (CENMEL)
- *Centaurea solstitialis* (CENSOL)
- *Chondrilla juncea* (CHOJUN)
- *Elymus caput-medusae* (ELYCAP)
- *Hypericum perforatum* (HYPPER)
- *Aegilops triuncialis* (AEGTRI)
- *Centaurea solstitialis* (CENSOL)
- *Cynodon dactylon* (CYNDAC)
- *Hypericum perforatum* (HYPPER)
- *Centaurea solstitialis* (CENSOL)
- *Hypericum perforatum* (HYPPER)

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0 150 300 600 Feet
0 45 90 180 Meters

NON-NATIVE INVASIVE PLANT SPECIES
CAMP FAR WEST HYDROELECTRIC PROJECT
FERC NO. 2997

Data Sources: Base Map - ArcGIS Online Streaming Layer (Imagery); Ferc Boundary - Yuba and Placer Counties GIS; Land Ownership - Yuba and Placer Counties CD-Data; Botanical Survey Area, Non-native Plant Species - HDR. Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness.

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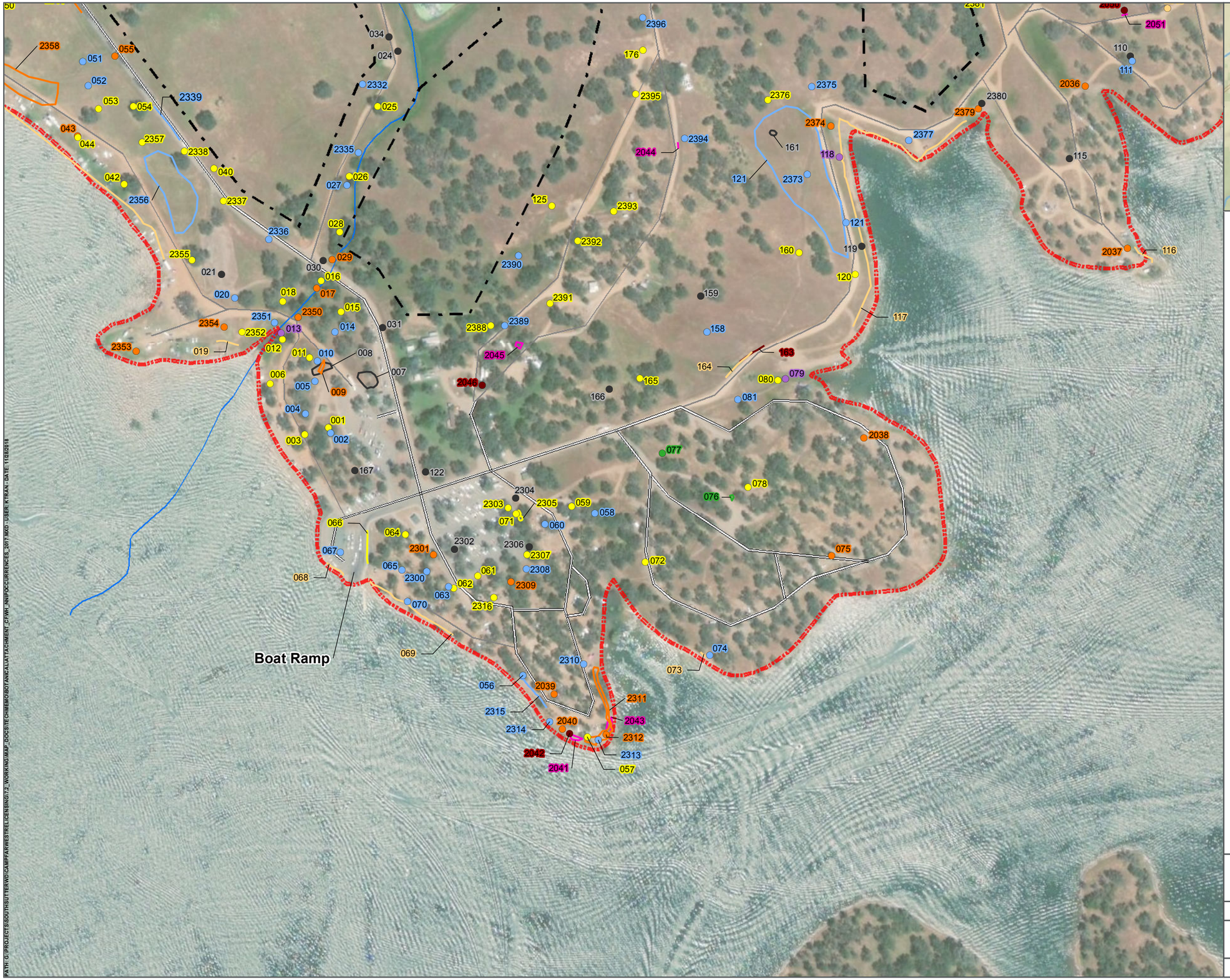

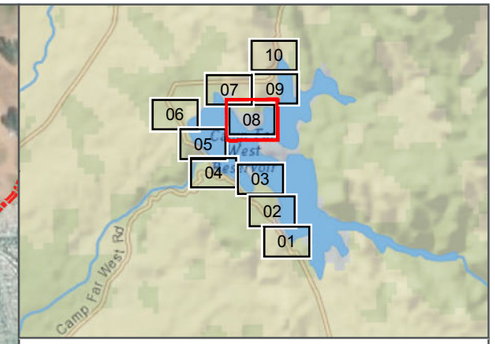

Project Features

Proposed FERC Boundary (No.2997)

Base Map

Study Area
County Line
Major Road
Minor Road
StreamRiver

Non-native Plant Species (NNIP)

- *Bromus tectorum* (BROTEC)
- *Carduus pycnocephalus* (CARPYC)
- *Centaurea melitensis* (CENMEL)
- *Centaurea solstitialis* (CENSOL)
- *Chondrilla juncea* (CHOJUN)
- *Cynodon dactylon* (CYNDAC)
- *Elymus caput-medusae* (ELYCAP)
- *Hypericum perforatum* (HYPPER)
- *Aegilops triuncialis* (AEGTRI)
- *Carduus pycnocephalus* (CARPYC)
- *Centaurea solstitialis* (CENSOL)
- *Chondrilla juncea* (CHOJUN)
- *Cynodon dactylon* (CYNDAC)
- *Hypericum perforatum* (HYPPER)
- *Aegilops triuncialis* (AEGTRI)
- *Bromus tectorum* (BROTEC)
- *Carduus pycnocephalus* (CARPYC)
- *Centaurea solstitialis* (CENSOL)
- *Elymus caput-medusae* (ELYCAP)
- *Hypericum perforatum* (HYPPER)

N

0 150 300 600 Feet

0 45 90 180 Meters

NON-NATIVE INVASIVE PLANT SPECIES
CAMP FAR WEST HYDROELECTRIC PROJECT
FERC NO. 2997

Data Sources: Base Map - ArcGIS Online Streaming Layer (Imagery); Ferc Boundary - Yuba and Placer Counties GIS; Land Ownership - Yuba and Placer Counties CD-Data; Botanical Survey Area, Non-native Plant Species - HDR. Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness.

Map Prepared by: HDR | © 2018 South Sutter Water District

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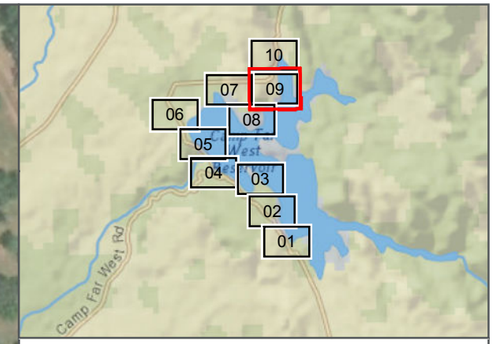

Project Features

Proposed FERC Boundary (No.2997)

Base Map

Study Area
County Line
Major Road
Minor Road
StreamRiver

Non-native Plant Species (NNIP)

- *Aegilops triuncialis* (AEGTRI)
- *Carduus pycnocephalus* (CARPYC)
- *Centaurea melitensis* (CENMEL)
- *Centaurea solstitialis* (CENSOL)
- *Chondrilla juncea* (CHOJUN)
- *Cynodon dactylon* (CYNDAC)
- *Elymus caput-medusae* (ELYCAP)
- *Hypericum perforatum* (HYPPER)

Aegilops triuncialis (AEGTRI)
Cynodon dactylon (CYNDAC)
Elymus caput-medusae (ELYCAP)

Carduus pycnocephalus (CARPYC)
Chondrilla juncea (CHOJUN)
Elymus caput-medusae (ELYCAP)
Hypericum perforatum (HYPPER)

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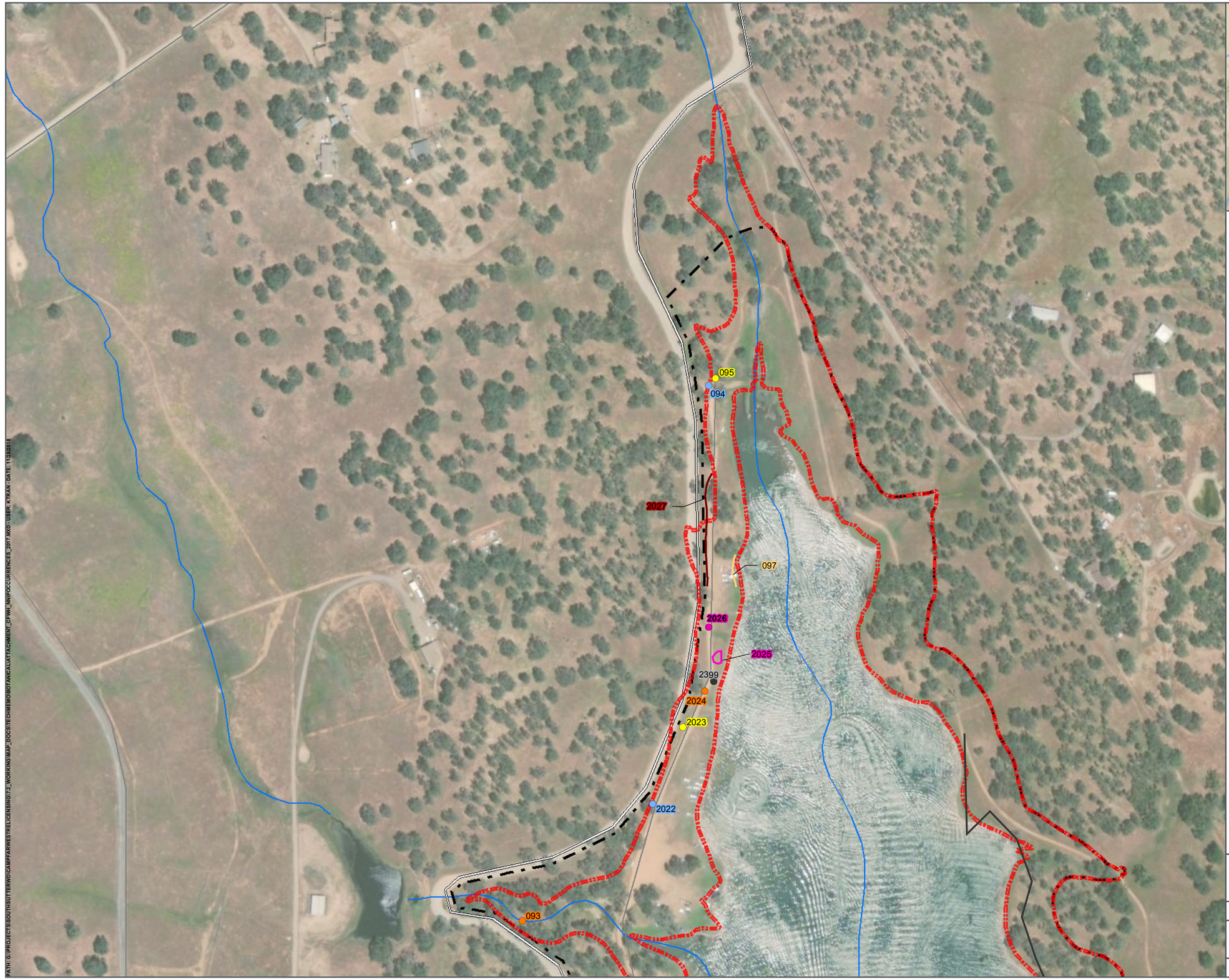
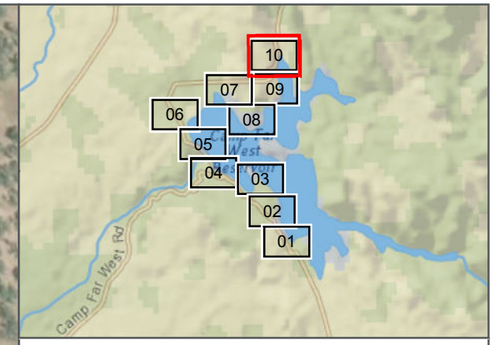
0 150 300 600 Feet
0 45 90 180 Meters

NON-NATIVE INVASIVE PLANT SPECIES
CAMP FAR WEST HYDROELECTRIC PROJECT
FERC NO. 2997

Data Sources: Base Map - ArcGIS Online Streaming Layer (Imagery); Ferc Boundary - Yuba and Placer Counties GIS; Land Ownership - Yuba and Placer Counties CD-Data; Botanical Survey Area, Non-native Plant Species - HDR. Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness.





Project Features

Proposed FERC Boundary (No.2997)

Base Map

- Study Area
- County Line
- Major Road
- Minor Road
- StreamRiver

Non-native Plant Species (NNIP)

- *Aegilops triuncialis* (AEGTRI)
- *Aegilops triuncialis* (AEGTRI)
- *Carduus pycnocephalus* (CARPYC)
- *Centaurea solstitialis* (CENSOL)
- *Elymus caput-medusae* (ELYCAP)
- *Hypericum perforatum* (HYPPER)
- *Chondrilla juncea* (CHOJUN)
- *Cynodon dactylon* (CYNDAC)
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0 150 300 600 Feet

0 45 90 180 Meters

NON-NATIVE INVASIVE PLANT SPECIES
CAMP FAR WEST HYDROELECTRIC PROJECT
FERC NO. 2997

Data Sources: Base Map - ArcGIS Online Streaming Layer (Imagery); Ferc Boundary - Yuba and Placer Counties GIS; Land Ownership - Yuba and Placer Counties CD-Data; Botanical Survey Area, Non-native Plant Species - HDR. Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness.

Attachment 3.3.4C

NNIP Data Table

NNIP Species Code	Occurrence Number	Discrete / Widespread (D / W)	Concentrated / Diffuse (C / D)	Percent Cover (%)	Percent Phenology (Vegetative | Flower | Fruit | Senescent) (V | Flw | Frt | S)	Description	AR EA
barbed goatgrass (*Aegilops triuncialis*)	2025	D	D	15	100 Flw	heavy rec use in area; from access road edge to OHWM; diffuse throughout; may extend beyond polygon.	NSRA
	2026	D	C	30	100 Flw	2 ft. x 2 ft. Small patch near seep at access road edge; heavy rec use.	NSRA
	2035	D	C	<1	100 Flw	small patch at piont, heavy rec use, rock outcrop adjacent.	NSRA
	2041	D	D	5	100 Flw	polygon has been mowed; small stature plants; heavy rec use.	NSRA
	2043	W	D	5	100 V	At OHWM and up into campsites; rec use throughout.	NSRA
	2044	D	D	<1	100 Flw	along access road, incorporated private area of campground.	NSRA
	2045	D	C	15	100 Flw	private mowed area into rec but facility uses area may be more widespread but because of mowing unable to see extent.	NSRA
	2051	D	C	5	100 Flw	1 ft. x 7 ft. Small patch along road; growing w/ CHOJUN 2050.	NSRA
	2052	D	C	5	100 Flw	1 ft. x 20 ft. narrow swath along road; heavy rec; both sides.	NSRA
	2054	D	C	5	100 Flw	1 ft. x 2 ft. small patch along road; heavy rec use.	NSRA
	2382	D	C	2	100 Frt/Dead	2 ft. x 2 ft. 3 individual plants.	NSRA
cheatgrass (*Bromus tectorum*)	076	D	C	10	75 Flw 25 V	5 ft. x 5 ft. growing around oak tree within shade/drip line adjacent to bathroom	NSRA
	077	D	D	2	75 Flw 25 V	throughout grass area of campground, within full sun areas, not under oaks	NSRA
Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*)	001	D	D	5	100 V	camping/ parking lot/restrooom	NSRA
	003	D	C	<1	100 V	camping/ parking lot/restrooom, clustered under oak	NSRA
	006	D	D	5	100 V	fairly larger number near shoreline, under oaks, rec disturbance	NSRA
	011	D	C	<1	100 V	under oak tree in grassy area with heavy rec use	NSRA
	012	D	C	5	100 V	under oak tree at water edge with heavy rec use	NSRA

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Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*). (cont'd)	015	W	D	5	100 V	patches under every oak on hillslope, heavy rec use	NSRA
	016	D	C	5	100 V	patch at edge of drainage from under road, some rec use	NSRA
	018	W	D	<1	100 V	patches under every oak in area, rec use common	NSRA
	023	D	C	5	100 V	under oaks and around roads in shage in grassy area, roads, rec use, grazing	NSRA
	025	D	C	<1	100 V	3 plants, under oak in grassy area with rec use, road and cattle grazing	NSRA
	026	D	C	<1	100 V	more under oad and rec use, grazing and road	NSRA
	028	D	C	<1	100 V	under additional oaks near road; cattle grazing, rec use	NSRA
	032	D	C	20	100 V	5 ft. x 30 ft. adjacent to ditch, disturbed area	NSRA
	036	D	C	50	100 V	10 ft. x 10 ft.surrounding raised manhole, adjacent to waste pond	NSRA
	038	D	D	10	100 V	20 ft. x 10 ft. growing around rock outcrop	NSRA
	039	W	D	10	100 V	40 ft. x 40 ft. growing around oak tree within shade/drip line	NSRA
	040	D	D	5	100 V	10 ft. x 20 ft. parallel to paved access road and ditch	NSRA
	042	D	C	30	100 V	20 ft. x 30 ft. growing around oak tree within shade/drip line	NSRA
	044	D	C	25	95 V 5 Flw	3 ft. x 8 ft. rock outcrop in day use area	NSRA
	048	D	D	5	100 V	20 ft. x 20 ft. near snag and rock outcrop	NSRA
	050	D	C	10	100 V	growing around most oak in grassland within drip/shade	NSRA
	053	D	D	15	50 Flw 50 V	growing around most oak in grassland within drip/shade	NSRA
	054	D	C	5	100 V	growing around most oak in grassland within drip/shade	NSRA
	057	D	C	50	100 V	5 ft. s 5 ft. growing around most oak in grassland within drip/shade	NSRA
	059	D	C	100	100 V	1 ft. x 2 ft. at base of oak, within campground	NSRA
	061	D	C	100	100 V	edge of campground, adjacent to asphault parking lot	NSRA

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Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*). (cont'd)	062	W	C	15	100 V	under oaks and adjacent to asphault parking lot	NSRA
	064	W		10	100 V	in camprgound, adjacent to boak ramp and restroom bldg.	NSRA
	066	W	C	30	100 V	2 ft. x 150 ft. adjacent to sidewalk leading to boatramp, in landscape area within rocks and along ramp edges	NSRA
	071	W	C	5	100 V	small strip in asphalt parking lot, within other islands in parking lot	NSRA
	072	D	D	10	100 V	rock outcrops throughout campground, concentrated patches but otherwise diffuse, also growing at base of oak trees in shade/drip line	NSRA
	078	D	C	25	100 V	4 ft. x 10 ft. adjacent to restroom building	NSRA
	080	D	C	5	90 V 10 Flw	both sides of drainage	NSRA
	082	D	C	1	100 V	under large oaks shade/drip, at top of grassy hill, growing with another similar thistle.	NSRA
	085	D	C	5	95 V 5 Flw	growing around rock outcrop and dead tree and stumps	NSRA
	087	D	C	5	100 V	at wire fence on rock outcrop and between barbed fence and outside project road	NSRA
	091	D	C	40	100 V	single point for entire area; within dripline of most oaks; denser patches at some oaks	NSRA
	095	D	C	2	100 V	on edges of dirt road and uder oaks to end of path; patchy throughout area	NSRA
	101	D	C	5	100 V	in oak stand, within drip lines at base of most oaks	NSRA
	106	D	C	10	100 V	at edge of entrance gate to NSRA, along landscape bolders and edge of road; rock outcrops and drainages.	NSRA
	112	D	C	15	100 V	10 ft. x 5 ft. associated with ground squirrel burrows	NSRA
	114	D	C	20	90 V 10 Flw	15 ft. x 15 ft. under drip line of oaks	NSRA
	120	D	C	15	90 V 10 Flw	20 ft. x 10 ft. rock outcrop on edge of dirt road	NSRA
	125	D	C	5	90 V 10 Flw	burn pile area; within dripline of oaks in open areas; concentrated patches	NSRA

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Italian thistle (*Carduus pycnocephalus* ssp. *Pycnocephalus*). (cont'd)	130	D	D	2	100 V	under tree dripline of oaks adjacent to tank	NSRA
	147	W	C	5	5 V 95 Flw	mostly under trees or disturbed mounds/piles; common throughout grassland; grazing; can be thick in patches	SSRA
	155	D	C	60	5 V 95 Flw	Thick patch near reservoir edge in area with CARPYC, CENSOL; rec use	SSRA
	156	W	C	25	5 V 95 Flw	present under oaks at point and most oaks in view; concentrated patches with same rec use disturbance	SSRA
	160	D	C	30	90 V 10 Flw	within oak woodland dripline of trees,	NSRA
	165	D	C	1	90 V 10 Flw	under blue oak in dripline/shade	NSRA
	168	D	C	2	90 V 10 Flw	under blue oak in dripline/shade	NSRA
	171	D	C	5	80 V 20 Flw	along paved portion of road btwn road and barbed fence; adjacent ot culvert; 40x20	NSRA
	176	D	C	7	80 V 20 Flw	incorporation waste area from campground	NSRA
	179	W	D	75	100 Frt	Extended population via line, along road	DAM
	195	D	C	2	80 V 20 Flw	concentrated patches under blue oak trees and along reservoir edge	SSRA
	203	C	D	2	70 V 30 Flw	concentrated patches throughout area; adjacent to drainage and CFW Road	SSRA
	207	D	C	2	70 V 30 Flw	concentrated patches adj to drainage on both sides and under oaks	SSRA
	216	W	D	5	80 V 20 Flw	diffuse throughout grassland; concentrated patches	SSRA
	223	D	C	<1	80 V 20 Flw	concentrated patches under oaks and in middle of meadow	SSRA
	227	D	C	<1	90 V 10 Flw	concentrated patches under oaks and random individualsin middle of meadow and at CFW Road edge	SSRA
	230	D	C	5	60 V 40 Flw	within drip line of large oak trees in concentrated patches	SSRA
	234	W	D	5	80 V 20 Flw	concentrated patches, but diffuse throughout	SSRA
	236	D	C	1	70 V 30 Flw	concentrated patches within oak tree drip lines	SSRA

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Italian thistle (*Carduus pycnocephalus* ssp. *Pycnocephalus).* (cont'd)	242	D	C	5	60V 40 Flw	under trees	SSRA
	243	D	C	5	60V 40 Flw	concentrated under trees	SSRA
	245	D	C	8	50 V 50 Flw	under large group of oaks	SSRA
	248	D	C	2	50 V 50 Flw	under trees near road	SSRA
	251	D	C	5	60 V 40 Flw	another occurrence concentrated under oaks	SSRA
	252	D	C	5	50 V 50 Flw	under oaks near road	SSRA
	257	D	C	4	50 V 50 Flw	along opposite side of road under trees	SSRA
	258	D	C	5	50 V 50 Flw	near shoreline under trees, opposite of boat ramp	SSRA
	260	D	C	1	30 V 70 Flw	small patch under trees near to shoreline	SSRA
	263	D	C	5	50 V 50 Flw	another patch under trees near shoreline	SSRA
	264	D	C	6	60 V 40 Flw	concentrated under band of oaks	SSRA
	267	D	C	4	50 V 50 Flw	larger patch under oaks near shoreline	SSRA
	269	W	D	2	70 V 30 Flw	spread throughout oaks in area near shoreline	SSRA
	273	D	C	2	60 V 40 Flw	small patch under trees near to shoreline	SSRA
	274	D	C	1	50 V 50 Flw	under trees near shore	SSRA
	275	D	C	1	70 V 30 Flw	small patch in open at shoreline	SSRA
	278	D	C	1	50 V 50 Flw	under trees near shore	SSRA
	279	D	C	1	50 V 50 Flw	under trees near shore	SSRA
	280	D	C	3	60 V 40 Flw	patches under tree and in open near road	SSRA
	282	D	C	5	50 V 50 Flw	small patch under oak tree	SSRA
	283	D	C	5	60 V 40 Flw	small patch in open near trails	SSRA
	284	D	C	1	50 V 50 Flw	under a large oak	SSRA
	285	W	D	10	70 V 30 Flw	spread along a trail, mostly under trees	SSRA
	289	D	C	1	60 V 40 Flw	small patch under oaks	SSRA
	290	D	C	1	60 V 40 Flw	little patch under small oak	SSRA
	294	W	D	2	70 V 30 Flw	spread throughout grassland between t-line and road	SSRA
	296	D	C	5	60 V 40 Flw	patch under larger patch of oaks	SSRA
	1102	D	D	5	50 V 50 Flw	Along hill slope	PH
	1107	W	D	30	50 V 50 Flw	20' x 20'	DAM
	1113	D	D	10	50 V 50 Flw	20' X 20'; under tree, around rocks	DAM
	1114	W	D	10	50 V 50 Flw	10' X 10'	DAM
	1115	W	D	5	50 V 50 Flw	10' X 50'+; along roadside	DAM
	1122	W	D	10	50 V 50 Flw	5' x entire roadway; continues down dam face	DAM

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Italian thistle (*Carduus pycnocephalus* ssp. *Pycnocephalus).* (cont'd)	1125	W	D	5	50 V 50 Flw	Along dam access road	DAM
	1133	D	C	10	90 V 10 Flw	Rock outcrops on east side of bridge; concentrated patches throughout fenced off area north of road	DAM
	1140	D	C	20	80 V 20 Flw	Densely concentrated population in rock outcrop, south side of road and west of bridge	DAM
	1149	D	C	3	70 V 30 Flw	CFW Road, east side, adjacent to barbed fence and other side of fence (towards reservoir); none found towards the reservoir	DAM
	1150	D	C	2	75 V 25 Flw	In rock outcrops, close to edge of water	DAM
	1157	D	C	<1	90 V 10 Flw	1' x 3'; discrete patch	DAM
	1158	W	D	1	75 V 25 Flw	Concentrated patches, widespread throughout from this point towards curve in road	DAM
	1162	C	D	<1	90 V 10 Flw	Concentrated patches, diffuse throughout	DAM
	1297	D	D	10	50 V 50 Flw	At the base of the dam, approx 100 feet from the Power House	PH
	1301	D	C	1	100 V	Throughout lower field; Hydro station	PH
	1303	D	D	1	100 V	near small seasonal drainage	DAM
	1304	W	D	5	100 V	hillslope adjacent to the dam	DAM
	1306	D	C	5	100 V	small 10x10 population adjacent to McCourtney Road	DAM
	1318	W	C	50	50 V 50 Flw	Adjacent to TL and under drip line of oaks	SSRA
	1321	D	D	15	50 V 50 Flw	Small 5x5 patch under TL	SSRA
	1323	D	D	5	50 V 50 Flw	Small 5x5 patch under TL and within open ELYCAP area	SSRA
	1325	D	D	10	50 V 50 Flw	10x10 patch under the dripline of oaks and adjacent to small stock pond	SSRA
	1330	D	D	15	50 V 50 Flw	large 30x20 population at the intersection of McCourtney Road and SSRA entrance	SSRA
	1331	D	D	10	50 V 50 Flw	very large population 80x10 just south of intersection of McCourtney Road and SSRA entrance	SSRA
	1335	W	D	10	100% S	large 25x25 population adjacent to McCourtney Road	SSRA
	1337	D	D	10	100% S	adjacent to McCourtney Road	SSRA
	1338	D	D	5	100% S	adjacent to McCourtney Road	SSRA

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Italian thistle (*Carduus pycnocephalus* ssp. *Pycnocephalus).* (cont'd)	1341	D	D	5	100% S	adjacent to McCourtney Road	SSRA
	1342	D	D	5	100% S	adjacent to McCourtney Road	SSRA
	1344	D	D	10	100 V	small 5x5 population under the dripline of oaks	SSRA
	1348	D	C	15	50 V 50 Flw	large 10x20 population directly under the TL	SSRA
	1349	W	D	40	50 V 50 Flw	Very large 70x30 population under the dripline of oaks	SSRA
	2018	D	C	30	100 S	50 ft. x 50 ft. larger dead, seeded population under oak near road.	DAM
	2019	W	D	20	100 Frt/S	160 ft. line, in ditch along road, x 1 ft.	PH
	2023	D	C	<1	100 Frt/S	2 ft. x 2 ft. Sm patch @ road outcrop @ access road edge; heavy rec use; extends along road.	NSRA
	2047	W	C	20-40	100 Flw/S	under all oaks in shade line - little rec use in area	NSRA
	2201	W	C	60	100 Flw	concentrated under shoreline oak trees	NSRA
	2303	D	D	5	100 S	5 ft. x 5 ft.	NSRA
	2305	D	D	15	100 Frt/S	24.88 square meters.	NSRA
	2307	D	D	10	100 Frt/S	5 ft. x 5 ft.	NSRA
	2316	D	C	20	50 Frt 50 S	10 ft. x 10 ft. under oak.	NSRA
	2318	D	D	20	50 Frt 50 S	5 ft. x 5 ft.	NSRA
	2322	D	C	50	50 Frt 50 Dead	10 ft. x 4 ft.	NSRA
	2324	D	C	50	50 Frt 50 Dead	30.3 meter line along fenceline	NSRA
	2328	D	C	15	100 Frt	30 ft. x 30 ft. Under oak tree.	NSRA
	2330	D	C	5	100 Frt	5 ft. x 5 ft. Under oak tree.	NSRA
	2331	D	C	30	100 Frt/Dead	30 ft. x 30 ft.	NSRA
	2334	D	C	20	100 Frt/Dead	25 ft. x 25 ft.	NSRA
	2337	D	D	10	100 Frt/Dead	10 ft. x 10 ft.	NSRA
	2338	D	C	35	100 Frt/Dead	20 ft. x 20 ft.	NSRA
	2340	D	C	30	100 Frt/Dead	30 ft. x 30 ft. Under 3 oaks.	NSRA
	2341	D	D	15	100 Frt/Dead	20 ft. x 20 ft.	NSRA
	2352	D	D	1	100 Frt/Dead	10 ft. x 10 ft. 1 plant.	NSRA
	2355	D	C	20	100 Frt/Dead	20 ft. x 15 ft. Under oak.	NSRA
	2357	D	D	5	100 Frt/Dead	30 ft. x 10 ft.	NSRA
	2366	D	C	--	100 Frt/Dead	33.66 meters along road, in patches.	NSRA
	2367	D	C	50	100 Frt/Dead	20 ft. x 20 ft. Under oaks.	NSRA
	2368	D	C	50	100 Frt/Dead	20 ft. x 20 ft. Under oaks.	NSRA
	2371	D	C	--	100 Frt/Dead	25.19 meters along road in patches.	NSRA
	2376	D	C	25	100 Frt/Dead	25 ft. x 25 ft.	NSRA

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	2381	D	C	5	100 Frt/Dead	30 ft. x 10 ft. Under oaks - small populations.	NSRA
	2383	D	C	5	100 Frt/Dead	10 ft. x 10 ft. ~ 10 individuals.	NSRA
	2385	D	C	15	100 Frt/Dead	25 ft. x 25 ft. ~ 50 individuals.	NSRA
	2387	D	C	15	100 Frt/Dead	50 ft. x 50 ft.	NSRA
	2388	D	C	10	100 Frt/Dead	1 ft. x 1 ft. 1 individual plant.	NSRA
	2391	D	C	30	100 Frt/Dead	5 ft. x 5 ft.	NSRA
	2392	D	C	25	100 Frt/Dead	25 ft. x 20 ft.	NSRA
	2393	D	C	20	100 Frt/Dead	5 ft. x 20 ft. Along fence line, between oaks.	NSRA
	2395	D	C	90	100 Frt/Dead	2 ft. x 2 ft. ~ 3 individuals.	NSRA
Maltese starthistle (*Centaurea melitensis*)	035	D	D	20	100 V	5 ft. x 20 ft. at culvert near ditch, adj to waste pond, on both sides of culvert crossing	NSRA
	049	D	D	1	100 V	near snag and rock outcrop	NSRA
	079	D	C	10	100 V	both sides of drainage	NSRA
	113	D	C	15	100 V	5 ft. x 5 ft. at water line	NSRA
	118	D	C	5	100 V	discrete patches on edge of dirt oradk; mostly basal leaves	NSRA
	013	D	C	<1	100 V	scatterd at the waters edge, heavy rec use	NSRA
yellow starthistle (*Centaurea solstitialis*)	009	D	C	<1	100 V	small patch in grassy area, heavy rec use	NSRA
	017	D	C	<1	100 V	small patch near small drainage, with rec use, <10 plants	NSRA
	029	D	C	<1	100 V	small patch just below road and above drainage in grassland, grazing, rec use, road	NSRA
	043	D	C	5	100 V	5 ft. x 5 ft. rock outcrop in day use area	NSRA
	055	D	C	?	100 V	early veg (basal veg only seen), adjacent to paved road	NSRA
	075	D	C	2	100 V	at edge of paved campground, diffuse throughout ditch at edge of road	NSRA
	093	D	C	5	100 V	2 ft. x 5 ft. next to drainage; localized in one spot; several patches along creek edge	NSRA
	099	D	C	2	100 V	along edge or reservoir; diescret and concentrated patches between dirt road and reseroir edge.	NSRA

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yellow starthistle (*Centaurea solstitialis*). (cont'd)	123	W	D	80	50 V 50 Flw	6.1 ac. Remapped polygon, entire dam face.	DAM
	148	D	C	<1	100 V	small ptach near raised mond I ngrassland; evidence of grazing; roads, rec use; approx 50 plants	SSRA
	150	D	C	30	100 V	motly on side of fence next to road, but gegin to spread into rec area, roaduse, some CARPYC	SSRA
	154	D	C	<1	100 V	a few plants in patch near edge of reservoir in grassland; rec use	SSRA
	172	D	C	5	100 V	overlap with CARPYC171; larger area; previously mowed.	NSRA
	196	D	C	1	100 V	concentrated patches ; esp at edge of reservoir	SSRA
	202	C	D	50	50 V 50 Flw	btwn barbed fence and CFW Road	SSRA
	208	D	C	1	100 V	concentrated patches adj to drainage on both sides and under oaks	SSRA
	218	D	C	<1	100 V	concentrated patches; along drainage; also concentrated patches along edge of CFW Road	SSRA
	266	W	d	<1	100 V	scattered in an occurrence near shoreline	SSRA
	1023	D	C	5	100 V	culvert on lakeside of road; 5x5 area surroundingculvert	NSRA
	1101	D	C	1	100 V	Along hill slope	PH
	1105	W	D	75	50 V 50 Flw	Extended population via line, along road	DAM
	1117	W	D	20	50 V 50 Flw	2 ac along hillside, remapped old point.	DAM
	1118	W	D	25	50 V 50 Flw	Line 1,257 ft. extended point via line, along all road.	DAM
	1120	W	D	25	50 V 50 Flw	remapped/expanded via line	DAM
	1123	W	D	10	100 V	5' x entire roadway; continues down dam face	DAM
	1128	W	D	5	100 V	Along roadside - throughout west of bridge to bridge north side of road	DAM
	1131	W	D	20	100 V	From bridge going east along roadside, north of road	DAM
	1138	W	D	2	100 V	Dense patches along roadside on south side, east of bridge	DAM

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yellow starthistle (*Centaurea solstitialis*). (cont'd)	1142	C	D	10	100 V	Densely concentrated population in rock outcrop, south side of road and west of bridge, more along roadside, concentrated patches, widespread throughout	DAM
	1145	W	D	75	50 V 50 Flw	change to line; concentrated along access road; heavy rec use.	DAM
	1159	C	D	5	75 V 25 Flw	Concentrated patchfrom this point towards curve in the road	DAM
	1296	D	C	1	100 V	small concentrated patches between edge of reservoir and dirt road	NSRA
	1300	W	D	10	100 V	Found throughout the lowerfield adjacent to the Power House	PH
	1305	W	D	25	50 V 50 Flw	230 ft, remapped as a line	DAM
	1329	D	D	10	--	area at the junction of McCourtney road and SSRA entrance	SSRA
	1332	D	D	10	100 V	large 80x10 population along the roadside	SSRA
	1351	D	D	10	100 V	small 10x10 population under the drip line of oaks	SSRA
	2000	D	C	70	100 V	15 ft x 60 ft. Concentrated patch along roadside/fence	DAM
	2004	W	D	20	100 V	10 ft. x 362 ft. Mapped via line, along back side of levee.	DAM
	2004	W	C	20	100 V	extend point into line - concentrated along access road.	DAM
	2007	W	D	10	100 V	lines 2 track/cow trail.	DAM
	2010	W	D	25	50 V 50 Flw	230 ft. x 2 ft.	DAM
	2016	D	D	16	50 V 50 Flw	50 ft. x 50 ft. small patch along road.	DAM
	2024	D	C	30	95 V 5 Flw	15 ft. x 15 ft. At rock outcrop; disturbed area; heavy rec use. ELYCAP throughout.	NSRA
	2033	D	C	50	100 V	Concentrated patch at backwater cove. ELYCAP surrounds heavy rec use.	NSRA
	2036	D	C	30	95 V 5 Flw	mixed with CENMEL, heavy rec use at backwater cove.	NSRA
	2037	D	C	40	100 V	concentrated patch, heavy rec use.	NSRA
	2038	D	C	20	100 V	patch at water and scattered throughout campsite, rec use.	NSRA

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yellow starthistle (*Centaurea solstitialis*). (cont'd)	2039	D	C	<1	95 V 5 Flw	2 ft. x 2 ft. Small patch in between mowed area and campsites; heavy rec use; all campsites mowed.	NSRA
	2040	D	C	15	100 V	extends around point ~ 20 ft. from OHWM. Diffuse, patchy; heavy rec use - area mowed; new CENSOL growth since mowing.	NSRA
	2301	D	D	3	50 Flw 50 Frt	80 ft. x 10 ft.	NSRA
	2309	D	D	5	50 Flw 50 Frt	5 ft. x 10 ft.	NSRA
	2311	D	C	20	50 Flw 50 Frt	20 ft. x 15 ft.	NSRA
	2312	W	C	30	50 Flw 50 Frt	213.6 square meters. In Ipad.	NSRA
	2325	D	C	25	50 Flw 50 Frt	16.4 meter line along fenceline.	NSRA
	2342	W	D	--	50 Flw 50 Frt	46.62 meter line along roadside	NSRA
	2344	W	D	--	50 Flw 50 Frt	41.08 meter line one side of entrance road.	NSRA
	2345	W	D	--	50 Flw 50 Frt	40.82 meter line other side of entrance road.	NSRA
	2350	W	C	50	50 Flw 50 Frt	80 ft. x 40 ft.	NSRA
	2353	D	C	40	50 Flw 50 Frt	10 ft. x 15 ft.	NSRA
	2354	D	D	10	50 Flw 50 Frt	40 ft. x 40 ft.	NSRA
	2358	W	C	40	50 Flw 50 Frt	1551 square meters.	NSRA
	2360	D	D	10	50 Flw 50 Frt	15 ft. x 10 ft.	NSRA
	2032	D	C	5	100 V	Small area, diffuse. Heavy rec use.	NSRA
	2042	D	C	<1	100 V	1 plant. Single plant at rock outcrop - area previously mowed.	NSRA
	2046	D	C	<1	100 V	1 plant in mowed private area - may be more widespread	NSRA
	2050	D	C	<1	100 V	1 ft. x 1 ft. single plant growing w/ AEGTRI 2051.	NSRA
	2053	D	C	15	100 V	small patch; diffuse throughout; heavy use.	NSRA
	2327	D	C	5	100 Dead	50 ft. x 30 ft.	NSRA
bindweed (*Convolvulus arvensis*)	2001	W	D	30	100 Flw	8 ft x 100 ft. Woven throughout grass on roadside.	DAM
Bermudagrass (*Cynodon dactylon*).	019	W	D	<1	100 V	line along shoreline edge, rec use heavy	NSRA

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Bermudagrass (*Cynodon dactylon*). (cont'd)	041	W	C	5	100 V	extend line along arm of reservoir.	NSRA
	068	D	C	100	100 V	at edge of road to boatramp, between road and waterline, between boat ramp and waterline	NSRA
	069	W	D	40	100 V	at edge of boatramp, throughout edge of campground to reservoir edge, at OHWM and below	NSRA
	073	D	C	7	100 V	along wateredge	NSRA
	097	D	C	25	100 V	in area at edge of water; open area with recreation; occurs along most of reservoir edge at OHWM and lower	NSRA
	108	D	D	2	100 V	adjacent to edge of reservoir at jetski cove and barbed wire boundary	NSRA
	116	D	C	10	100 V	reserved site; at water edge	NSRA
	117	D	C	5	100 V	edge of grassland	NSRA
	117	D	D	5	100 V	extend line around cove. High water and below.	NSRA
	151	W	C	<1	100 V	disturbed soil	SSRA
	157	W	D	60	100 V	rec use, veg management	SSRA
	164	D	C	7	100 V	drainage; both sides of road	NSRA
	220	D	C	<1	100 V	middle of dirt road	SSRA
	232	D	C	1	100 V	along water's edge w/ no other vegetation	SSRA
	235	D	C	5	100 V	areas surrounding drainage, associated with Carex sp. and large Juncus, curly doc	SSRA
	238	D	C	<1	100 V	competitors; near edge of water	SSRA
	250	W	C	<1	100 Fr	all along the shoreline in a thin band	SSRA
	1121	W	D	50	100 V	3' x 1000'+; along edge of entire road	DAM
	1129	D	C	10	95 V 5 Flw	Rock outcrops in fenced off area north side of road	DAM
	1139	W	D	5	50 V 50 Flw	Dense in rip-rap and slope east of bridge, south side of roadside	DAM
	1153	D	C	1	80 V 20 Flw	Along roadside at edge of asphalt	DAM
	1163	C	D	<1	90 V 10 Flw	At edge of asphalt of Camp Far West Road (west side); 1 foot wide at edge	DAM
	1295	D	D	30	100 V	At base of the dam, just beyond the powerhouse	DAM
	2049	D	C	<1	100 V	1 ft. x 1 ft. Small patch at access road edge; heavy rec in area.	NSRA

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Medusahead (*Elymus caput-medusae*).	007	D	D	<1	100 Flw	spread into grassy area near store and parking lot, rec disturbance	NSRA
	008	D	D	5	50 V 50 Flw	in grassy area with lots of rec use	NSRA
	021	W	D	20	50 V 50 Flw	rec use, roads, throughout grass area near rec site, grassy	NSRA
	024	W	D	20	50 V 50 Flw	large numbe rin grassland near old road and t-line, grazing	NSRA
	030	D	C	<1	100 Flw	small pacth (10 plants) road, grazing, rec use	NSRA
	031	D	C	<1	100 Flw	few plants on roadside, rec use, road use, grazing, grassy	NSRA
	034	W	D	22	50 V 50 Flw	in veg in center of road	NSRA
	046	W	D	32	50 Flw 50 V	throughout grassland, between dirt and paved road	NSRA
	083	W	D	15	50 V 50 Flw	widespread throughout grassland/slope area	NSRA
	086	W	D	2	80 V 20 Flw	throughout open grassland	NSRA
	088	W	D	5	80 V 20 Flw	throughout open grassland	NSRA
	092	W	D	2	70 V 30 Flw	single point for entire area; along side of dirt road of overflow camping	NSRA
	100	W	D	7	70 V 30 Flw	overflow camp dirt road intersection, in island where two roads meet.	NSRA
	103	W	D	2	70 V 30 Flw	diffuse overall with concentrated patches in openings of oaks	NSRA
	104	D	C	2	70 V 30 Flw	concentrated patches in open areas of oak woodland	NSRA
	107	D	C	50	60 V 40 Flw	concentrated patches throughout area	NSRA
	109	W	D	6	70 V 30 Flw	open grassland adjacent to drainage and below main road to NSRA	NSRA
	110	W	C	5	70 V 30 Flw	throughout grassland ; difffuse overall with concentrated patches	NSRA
	115	W	C	15	60 V 40 Flw	throughout grassland; generally widespread; concentrated intermittent patches	NSRA
	119	D	C	2	80 V 20 Flw	discrete patches in widspread area	NSRA
	122	D	C	2	80 V 20 Flw	rock outcrop in front of residental area and main NSRA access road	NSRA
	127	W	D	2	80 V 20 Flw	discrete patches throughout open grassland	NSRA

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Medusahead (*Elymus caput-medusae*). (cont'd).	145	W	D	25	100 Flw	rec area grassland along old roads/tracks; signs of grazing; widespread throughout area	SSRA
	149	W	D	10	100 Flw	continues into grassland of rec area; blue heron rookery nearby	SSRA
	153	W	D	10	100 Flw	in grassland of rec area, fairly heavy presence; some disturbance	SSRA
	159	W	D	1	70 V 30 Flw	concentrated patches in/near drainages	NSRA
	161	D	C	30	70 V 30 Flw	20 ft. x 30 ft. adjacent to drainage and oak stand in open grassland; discrete and concentrated patches	NSRA
	162	W	D	2	70 V 30 Flw	concentrated patches in widespread grassland; btwn oaks	NSRA
	166	D	C	5	70 V 30 Flw	concentrated patches in widespread grassland; btwn oaks	NSRA
	167	W	D	10	70 V 30 Flw	day use area adjacent oto boatramp	NSRA
	169	D	C	5	70 V 30 Flw	patchy, conentrated areas throughout grassland	NSRA
	175	W	D	2	70 V 30 Flw	concentrated patches in widespread grassland	NSRA
	198	C	D	1	70 V 30 Flw	concentrated patches; diffuse throughout	SSRA
	199	C	D	5	70 V 30 Flw	btwn line and interior oak and drainage; concentrated patches; diffuse throughout	SSRA
	205	W	D	10	70 V 30 Flw	concentrated patches throughout widespread grassland	SSRA
	210	D	D	5	70 V 30 Flw	concentrated patches; widesprread throughout	SSRA
	215	W	D	15	70 V 30 Flw	diffuse throughout grassland; possible camping area	SSRA
	221	W	D	5	70 V 30 Flw	meadow north of drainage and west of edge of reservoir; adjacent to dirt road	SSRA
	224	W	D	5	70 V 30 Flw	continuous from fence to edge of water with some concentrated patches	SSRA
	229	W	D	5	70 V 30 Flw	concentrated patches but widespread throughout meadow	SSRA
	233	D	C	10	70 V 30 Flw	concentrated patch between dirt road and edge of water. Also in concentrated patches in meadow between dirt road and fence on CFW Road	SSRA
	239	W	D	5	70 V 30 Flw	concentrated patches, diffuse throughout	SSRA
	241	D	C	10	70 V 30 Flw	concentrated patch under oaks	SSRA

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Medusahead (*Elymus caput-medusae*). (cont'd).	246	D	C	10	70 V 30 Flw	concentrated patch under oaks	SSRA
	247	W	D	5	70 V 30 Flw	concentrated patches, diffuse throughout area	SSRA
	253	W	D	5	70 V 30 Flw	more ELYCAP through area	SSRA
	255	W	D	5	70 V 30 Flw	more ELYCAP through area	SSRA
	256	W	D	5	80 V 20 Flw	along roadside	SSRA
	261	W	D	10	70 V 30 Flw	spread throughout grasslands in areas	SSRA
	262	W	D	10	70 V 30 Flw	spread throughout grasslands in areas	SSRA
	268	W	D	10	70 V 30 Flw	spread throughout grasslands in area	SSRA
	270	D	C	1		small patch of grass	SSRA
	271	D	D	5	60 V 40 Flw	occurrence right near the tip of the recreation area	SSRA
	276	W	D	5	70 V 30 Flw	spread throughout open area along shoreline	SSRA
	277	D	C	1	70 V 30 Flw	concetrated under oaks	SSRA
	281	W	D	5	70 V 30 Flw	spread throughout open area along shoreline	SSRA
	286	W	D	5	70 V 30 Flw	spread throughout open area along shoreline	SSRA
	287	D	C	1	60 V 40 Flw	small patches under trees	SSRA
	288	W	D	5	70 V 30 Flw	spread throughout open area in interior grasslands	SSRA
	291	D	W	5	70 V 30 Flw	occurrence on interior along edge of rec area	SSRA
	292	W	D	5	70 V 30 Flw	spread under the transmission lines	SSRA
	293	W	D	2	70 V 30 Flw	spread throughout grasslands in area	SSRA
	1100	W	D	10	100 V	Throughout lower field; Hydro station	PH
	1104	W	D	5	100 V	Hill slope adjacent to dam	PH
	1127	W	D	10	100 V	Along dam access road	DAM
	1135	W	D	10	80 V 20 Flw	Entire area east of bridge and north of road	DAM
	1136	W	D	10	80 V 20 Flw	Concentrated patches, diffuse throughout, east and south of road	DAM
	1141	W	D	20	70 V 30 Flw	Densely concentrated population in rock outcrop, south side of road and west of bridge	DAM
	1144	W	D	30	100 V	CFW Road, west side, adjacent to residential; recently mowed along road	DAM

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Medusahead (*Elymus caput-medusae*). (cont'd).	1148	W	D	20	75 V 25 Flw	CFW Road, east side, adjacent to barbed fence and other side of fence (towards reservoir); all the way to the reservoir	DAM
	1154	W	D	10	75 V 25 Flw	Entire east side of Camp Far West Road	DAM
	1160	W	D	10	70 V 30 Flw	West side of Camp Far West Road (from curve)	DAM
	1298	W	D	15	100 V	widespread throughout grassland/slope area	PH
	1324	D	D	5	100 V	adjacent to stock pond	SSRA
	1326	D	D	10	80 V 20 Flw	large 100x20 area adjacent to stock pond	SSRA
	1333	D	D	5	80 V 20 Flw	along roadside, just south of McCourtney Road and SSRA entance intersection	SSRA
	1336	D	D	5	80 V 20 Flw	adjacent to McCourtney Road	SSRA
	1340	D	D	15	80 V 20 Flw	adjacent to McCourtney Road	SSRA
	1346	W	D	30	80 V 20 Flw	large 50x20 area under the TL	SSRA
	1350	D	D	40	80 V 20 Flw	very large 120x70 area under the TL	SSRA
	2030	W	C	60	100 Flw	Clarkia revisit within population; nearby rec use.	NSRA
	2203	W	D	20	100 Frt	spread along shoreline.	NSRA
	2302	D	D	5	100 Frt	10 ft. x 10 ft.	NSRA
	2304	D	C	10	100 Frt	30 ft. x 10 ft.	NSRA
	2306	D	D	5	100 Frt	5 ft. x 10 ft.	NSRA
	2380	W	D	70	100 Frt/Dead	200 ft. x 100 ft.	NSRA
	2399	D	C	5	100 V	20 ft. x 20 ft. throughout area between water edge and road	NSRA
Klamathweed (*Hypericum perforatum).*	002	D	C	<1	100 V	camping/ parking lot/restrooom, previous years blooms	NSRA
	004	D	C	<1	100 V	in grasses behind restroom, camping, fishing, rec. etc.	NSRA
	005	D	C	<1	100 V	in same field, same disturbances	NSRA
	010	D	C	<1	100 V	a few in small area of grass, heavy rec use	NSRA
	014	W	D	<1	100 V	scattered throughout grassy hillslope with heavy rec use	NSRA
	020	W	D	<1	100 V	scattered in grassy slope above small ????, <50 plants, rec use heavy, also old pavement	NSRA

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Klamathweed (*Hypericum perforatum).* (cont'd).	022	W	D	<1	100 V	scattered in grassy area across road from shoreline, rec use , grazing	NSRA
	027	D	C	<1	100 V	scattered in grassland and under oak, cattle grazing, rec use, road	NSRA
	033	W	D	20	100 V	throughout grassland, grazing	NSRA
	037	W	C	15	100 V	10 ft. x 20 ft. dead stocks, growing around rock outcrop	NSRA
	045	D	D	5	100 V	10 ft. x 20 ft. in ditch flowing into reservoir, backwater	NSRA
	047	W	D	5	100 V	throughout grassland area	NSRA
	051	W	D	10	100 V	growing throughout grassland, adjacent to culvert, grassy area	NSRA
	052	D	C	25	100 V	rock outcrop in distubed rec area	NSRA
	056	D	D	10	100 V	at campground, near campsites at edge of water	NSRA
	058	D	C	100	100 V	20 ft. x 5 ft. at campground, between oaks and throughout oak stand	NSRA
	060	D	C	100	100 V	edge of campground	NSRA
	063	W	D	100	100 V	groing within oak stand, adjacent to boat ramp area	NSRA
	065	W	D	50	100 V	in camprgound, adjacent to boak ramp and restroom bldg.	NSRA
	067	D	C	50	100 V	2 ft. x 2 ft. in rock landscape at boat ramp	NSRA
	070	W	C	35	100 V	in dayuse area at waterline, between dirt road and waterline	NSRA
	074	W	C	5	100 V	throughout peninsula, concentrated patches throughout grassland	NSRA
	081	W	C	2	100 V	concentrated at mappped point to diffuse or no cover throughout campground	NSRA
	084	W	D	1	100 V	patchy and diffuse throughout grassland	NSRA
	089	D	C	5	100 V	5 ft. x 5 ft. small concentrated population	NSRA
	090	W	D	2	100 V	overflow camping area; dense patches along drainage edge, parking areas, dirt road edges	NSRA
	094	D	C	5	100 V	along campground dirt road at end of property; diffuse along road edge	NSRA
	1299	D	D	10	100 V	small 5x5 area at the base of the dam approx 100 feet from the Power House	PH

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Klamathweed (*Hypericum perforatum).* (cont'd).	102	W	C	8	100 V	adjacent ot CFW road and barbed wire fence border	NSRA
	105	D	C	3	100 V	along edge of access roadks; concentrated patches, diffuse overall. Open grassy areas in oak woodland	NSRA
	111	W	C	5	100 V	throughout grassland ; difffuse overall with concentrated patches	NSRA
	1320	D	C	20	100 V	15x15 area within a grove of oaks	SSRA
	121	W	D	1	100 V	concentrated patches at edge of road, widespread throughout	NSRA
	126	W	D	2	100 V	discrete patches throughout open grassland	NSRA
	1327	W	D	15	--	large 100x20 area between poles AO-14 and AO-13	SSRA
	129	W	D	1	100 V	underdripline of oak stand	NSRA
	1334	D	D	5	100 S	adjacent to McCourtney Road	SSRA
	1339	D	D	5	100 S	adjacent to McCourtney Road	SSRA
	1343	D	D	10	100 V	small 5x5 area adjacent to McCourtney Road	SSRA
	1345	D	D	10	100 V	small 5x5 area adjacent to McCourtney Road	SSRA
	146	W	D	30	100 V	in rec area grasslands along with ELYCAP and CARPYC; grazing	SSRA
	1347	D	D	2	100 V	large 40x20 area beneath TL	SSRA
	152	W	D	<1	100 V	more found in grassland of SSRA; grassland	SSRA
	158	W	D	1	100 V	grassy area; some concentrated patches; new growth in oak stand	NSRA
	173	D	C	5	100 V	overlap with CARPYC171; larger area; CENSOL 172.	NSRA
	174	D	C	10	95 V 5 Flw	rock outcrop in middle of grassland; concentrated patches in widespread area	NSRA
	197	D	C	<1	80 V 20 Flw	concentrated patched under pine treees	SSRA
	201	C	D	<1	100 V	adjacent to CHOJUN 200	SSRA

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Klamathweed (*Hypericum perforatum).* (cont'd).	206	D	C	1	90 V 10 Flw	concentrated patches throughout	SSRA
	209	D	C	<1	100 V	small concentated populations near drainage and edge of water	SSRA
	212	D	D	1	100 V	concentrated pacht but spreds diffusly throughout	SSRA
	217	D	C	1	90 V 10 Flw	concentrated patches at reservoir edge; in and around drainage	SSRA
	222	D	C	<1	80 V 20 Flw	concentrated patches in middle of meadow describedin ELYCAP 221 and below road and water's edge	SSRA
	226	D	C	1	95 V 5 Flw	concentrated patches in meadow on both sides of drainage and along CFW Road	SSRA
	228	D	C	<1	100 V	at water's edge in concentrated patches or individual plants; in meadow in small patches	SSRA
	231	D	C	2	80 V 20 Flw	concentrated patches; diffuse throughout meadow	SSRA
	237	D	C	<1	90 V 10 Flw	concentrated patches, diffuse throughout	SSRA
	240	D	C	<1	90 V 10 Flw	small patch in open grassland	SSRA
	244	D	C	<1	90 V 10 Flw	a few patches under oaks	SSRA
	249	W	D	2	80 V 20 Flw	strung along near roadside	SSRA
	254	D	C	<1	90 V 10 Flw	small patch under oaks	SSRA
	259	W	D	2	80 V 20 Flw	strung along near roadside	SSRA
	265	W	D	1	80 V 20 Flw	strung along near roadside	SSRA
	272	D	W	2	90 V 10 Flw	occurrence near tip of the rec area	SSRA
	295	W	D	1	80 V 20 Flw	spread along the road in rec area	SSRA
	1302	D	D	5	50 V 50 Flw	found along the hillslope adjacent to the Power House	PH
	1103	D	D	1	100 V	Near water	PH
	1106	D	C	5	100 V	10' x 10'	PH
	1108	D	C	10	100 V	5' x 5'	DAM
	1109	D	D	1	100 V	2' x 2'	DAM
	1111	D	C	20	50 V 50 Flw	5' X 5'	DAM
	1112	D	D	3	50 V 50 Flw	10' X 20'	DAM
	1119	D	C	5	50 V 50 Flw	5' x 50'+; along roadside	DAM
	1130	D	C	15	85 V 15 Flw	15 ft. x 5 ft. Along fenced area between bridge and gate north of road	DAM
	1132	D	C	30	95 V 5 Flw	2 ft. x 3 ft. Rock outcrop east of bridge, along roadside, north of road	DAM

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Klamathweed (*Hypericum perforatum).* (cont'd).	1134	W	D	5	95 V 5 Flw	Concentrated patches, diffuse throughout	DAM
	1137	W	D	10	95 V 5 Flw	Concentrated patches, diffuse throughout, east and south of road; concentrated in rock outcrops	DAM
	1143	C	D	2	80 V 20 Flw	Concentrated patch near rock outcrop	DAM
	1146	W	D	5	70 V 30 Flw	CFW Road, east side, adjacent to barbed fence and other side of fence (towards reservoir); in concentrated patches, diffuse throughout; east side and other side of fence (towards reservoir)	DAM
	1151	D	C	5	75 V 25 Flw	At water's edge, in cove	DAM
	1152	D	C	2	75 V 25 Flw	Rock outcrops in fenced off area north side of road; concentrated patches in rock outcrop	DAM
	1156	D	C	2	70 V 30 Flw	Concentrated patches along roadside, widespread throughout	DAM
	1161	C	D	1	70 V 30 Flw	Concentrated patches, diffuse throughout	DAM
	2005	D	C	6	100 Flw	10 ft. x 10 ft. 6 individuals tucked in blackberry.	DAM
	2006	W	D	8	100 Flw	50 ft. x 100 ft. just on edge of project boundary.	DAM
	2009	D	C	10	100 Flw	6 ft. x 6 ft. 3 plants.	DAM
	2011	D	C	5	100 Flw	5 ft. x 5 ft. Small patch near tailrace and large rocks on road.	DAM
	2014	W	D	67	100 Flw	adjacent to the lake side of the road	DAM
	2017	D	C	5	100 Flw	10 ft. x 10 ft. 5 individuals on drop off.	DAM
	2020	D	C	15	100 Flw	~10 plants up access road to powerplant.	PH
	2022	W	C	50	100 Flw	10 ft. x 20 ft. Along access road, both sides. Rec use heavy in area. CENSOL other side of boundary fence.	NSRA
	2028	W	D	10	100 Flw	diffuse to concentrated throughout grasslands; heavy rec use.	NSRA
	2029	W	D	20	100 Flw	Throughout grassland; heavy rec use in area, mixed with ELYCAP.	NSRA
	2034	W	D	60	5 V 95 Flw	Entire hillslope covered. Heavy rec use. ELYCAP throughout.	NSRA
	2048	W	D	20-60	5 V 95 Flw	throughout all grasslands; heavy rec in area.	NSRA

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Klamathweed (*Hypericum perforatum).* (cont'd).	2200	W	D	40	100 Flw	50 ft x 300 ft	NSRA
	2202	W	D	50	100 Flw	30 ft x 300 ft. Occurs along majority of shoreline.	NSRA
	2300	D	D	2	50 Frt 50 S	80 ft. x 10 ft. Along parking lot on mower tracks.	NSRA
	2308	D	D	2	100 Frt/S	50 ft x. 30 ft.	NSRA
	2310	D	D	10	50 Flw 50 Frt	5 ft. x 5 ft.	NSRA
	2313	D	D	10	50 Frt 50 S	20 ft. x 20 ft.	NSRA
	2314	D	D	5	50 Frt 50 S	15 ft. x 10 ft.	NSRA
	2315	D	D	15	50 Frt 50 S	38.94 meter long line.	NSRA
	2317	W	D	5	50 Frt 50 S	250 ft. x 60 ft.	NSRA
	2319	W	D	10	20 Flw 80 Frt	200 ft. x 150 ft.	NSRA
	2320	D	D	5	50 Frt 50 Dead	25 ft. x 30 ft.	NSRA
	2321	D	D	2	50 Frt 50 Dead	30 ft. x 30 ft.	NSRA
	2323	W	D	3	10 Flw 90 Frt/Dead	100 ft. x 10 ft. Along fenceline.	NSRA
	2326	D	D	1	50 Frt 50 Dead	100 ft. x 40 ft.	NSRA
	2329	D	D	5	100 Frt/Dead	60 ft. x 20 ft.	NSRA
	2332	D	D	2	100 Frt/Dead	40 ft. x 10 ft.	NSRA
	2333	W	D	10	100 Frt/Dead	300 ft. x 200 ft.	NSRA
	2335	D	D	2	100 Frt/Dead	100 ft. x 30 ft.	NSRA
	2336	D	D	2	100 Frt/Dead	30 ft. x 10 ft. Under/near oaks.	NSRA
	2339	D	D	3	100 Frt/Dead	41.14 meter line along roadside.	NSRA
	2343	D	D	2	100 Frt/Dead	25 ft. x 10 ft.	NSRA
	2346	D	D	2	100 Frt/Dead	60 ft. x 10 ft.	NSRA
	2347	D	D	1	100 Frt/Dead	100 ft. x 20 ft.	NSRA
	2348	D	D	5	100 Frt/Dead	20 ft. x 20 ft.	NSRA
	2349	D	D	10	100 Frt/Dead	10 ft. x 15 ft.	NSRA
	2351	D	D	5	100 Frt/Dead	20 ft. x 30 ft.	NSRA
	2356	D	D	5	100 Frt/Dead	2016 square meters.	NSRA
	2359	D	D	5	100 Frt/Dead	40 ft. x 40 ft.	NSRA
	2361	D	D	2	100 Frt/Dead	150 ft. x 50 ft.	NSRA
	2362	D	D	2	100 Frt/Dead	50 ft. x 50 ft.	NSRA
	2364	W	D	--	15 Flw 85 Frt/Dead	43.73 meters along road	NSRA
	2370	W	D	--	100 Frt/Dead	35.63 meters along road	NSRA
	2372	W	D	--	20 Flw 80 Frt/Dead	42.24 meters along road.	NSRA
	2373	W	D	10	100 Frt/Dead	0.5914 HA (hectares). Associated with HYPPER 121	NSRA
	2375	W	D	5	100 Frt/Dead	200 ft. x 75 ft.	NSRA
	2377	D	C	5	100 Frt/Dead	10 ft. x 10 ft. ~ 10 plants.	NSRA
	2378	W	D	15	100 Frt/Dead	0.7436 HA.	NSRA
	2384	W	D	<5	100 Frt/Dead	1213 square meters.	NSRA

NNIP Species Code	Occurrence Number	Discrete / Widespread (D / W)	Concentrated / Diffuse (C / D)	Percent Cover (%)	Percent Phenology (Vegetative | Flower | Fruit | Senescent) (V | Flw | Frt | S)	Description	AREA
Klamathweed (*Hypericum perforatum).* (cont'd).	2386	W	D	<10	100 Frt/Dead	1703 square meters.	NSRA
	2389	D	C	75	100 Frt/Dead	120 ft. x 30 ft.	NSRA
	2390	D	C	60	100 Frt/Dead	35 ft. x 50 ft. Under oak.	NSRA
	2394	W	D	<5	100 Frt/Dead	50 ft. x 50 ft. Open areas adjacent to oaks into road.	NSRA
	2396	W	D	20	100 Frt/Dead	20 ft. x 15 ft. ~ 10 plants.	NSRA
	2397	W	D	10	100 Frt/Dead	30 ft. x 30 ft.	NSRA
	2398	W	D	15	100 Frt/Dead	30 ft. x 30 ft.	NSRA
	186	W	D	10	100 Flw	remapped extent as line along road.	DAM