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**List of Acronyms**

BLM	Bureau of Land Management
CA	California
CalVeg	Classification and Assessment with LANDSAT of Visible Ecological Groupings
CFR	Code of Federal Regulations
Commission	Federal Energy Regulatory Commission
D.C.	District of Columbia
EIS	Environmental Impact Statement
FERC	Federal Energy Regulatory Commission
LANDSAT	land satellite; space-based moderate-resolution land remote sensing project, a joint initiative between the United States Geological Survey and the National Aerospace Administration
NWI	National Wetlands Inventory
RM	River Mile
SCE	Southern California Edison Company
USDA-FS	United States Department of Agriculture-Forest Service
USFWS	United States Fish and Wildlife Service

### 3.9 RIPARIAN RESOURCES

This section describes the riparian, wetland, and littoral resources along the bypass reaches, flowlines, and forebays associated with the Kaweah Project (Project). The content requirements for this section are specified in Title 18 of the Code of Federal Regulations (CFR) Chapter I § 5.6(d)(3)(vi). The Federal Energy Regulatory Commission (FERC or Commission) regulations require a description of the floodplain, wetlands, riparian, and littoral habitats in the Project vicinity, and must include: (1) a list of plant and animal species that use these habitats; (2) a map showing these habitats; and (3) estimates of the amounts of these habitats. This section also describes vegetation cover along the streambanks and reservoir shorelines, specified in § 5.6(d)(3)(ii)(C).

The bypass reaches associated with the Project include:

- Kaweah River from the Kaweah No. 2 Diversion to the Kaweah No. 2 Powerhouse Tailrace (4.1 miles); and
- East Fork Kaweah River from the Kaweah No. 1 Diversion to the confluence with the Kaweah River (4.7 miles).

For reference, riparian habitat is located in transitional areas between the aquatic and terrestrial landscapes regularly influenced by fresh water, and normally extend from the edges of waterbodies, including lakes and streams, to the edges of the upland communities. They support vegetation dependent on available water. The term 'riparian' or 'riparian zone', as referred to in this section, includes the stream bars and banks and the areas adjacent to the channel (floodplain) that are inundated or saturated by the historic dominant discharge every 1–3 years. The riparian plant community generally transitions into an upland community when the riparian community patterns are no longer controlled by the stream hydrologic conditions, including water table elevations, the annual hydrograph, and overbanking flows. Wetlands are areas that are inundated or saturated by surface or groundwater at a sufficient frequency and duration to support vegetation that is adapted to these hydrologic and saturated soil conditions. Riparian and wetland habitats may also occur around water bodies, such as reservoirs, diversion pools, or forebays. Littoral habitats occur in the near-shore areas of lakes where sunlight penetrates to the bottom of the waterbodies such that aquatic plants are able to grow.

#### 3.9.1 Information Sources

This section was prepared utilizing the following information sources:

- Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979);
- Environmental Assessment Number CA 160-07-032 Environmental consequences of managing vegetation for 3 year increments as proposed by Southern California Edison on Bureau of Land Management (BLM) property associated with the Southern California Edison - FERC 298 - Kaweah Hydroelectric Power Conduit Flowlines #1 and #3 (BLM 2010);

- Environmental Assessment. Kaweah Project (FERC Project No. 298) (FERC 1991);
- Google Earth © imagery;
- Kaweah No. 3 Diversion Dam Maintenance Project – Biological Assessment and Biological Evaluation (Southern California Edison Company [SCE] 2014);
- Recent riparian vegetation mapping in the Project vicinity by SCE in July 2015;
- The Classification and Assessment with LANDSAT (land satellite) of Visible Ecological Groupings (CalVeg) data<sup>1</sup> (USDA-FS 2015);
- The United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI)<sup>2</sup> (USFWS 2015); and
- Wild and Scenic River Suitability Report for Bakersfield Field Office, California (BLM 2011).

### 3.9.2 Plant and Wildlife Species that Use Riparian and Wetland Habitats

Riparian and wetland habitats along the bypass reaches, diversion pools, and flowlines associated with the Project provide habitat for a variety of amphibians, wildlife, and avian species (BLM 2010; BLM 2011; SCE 2014). Riparian corridors provide valuable habitat for many species, including riparian nesting birds, and provide value as cover near water sources and travel corridors for a multitude of wildlife species. Plants and wildlife that have the potential to occur in the Project vicinity and the habitats in which they occur are described in Section 3.6 Botanical and Wildlife Resources. Amphibian and aquatic species that also use or are influenced by riparian and wetland habitats are described in Section 3.5 Fish and Aquatic Resources.

### 3.9.3 Riparian and Wetland Resources Associated with the Project

A landscape-level visual assessment of riparian and wetland resources was conducted of the bypass reaches, diversion pools, and flowlines associated with the Project and immediately upstream (approximately 0.5 mile) and downstream of the Project (to Lake Kaweah) in July 2015. The riparian characteristics along the river reaches were mapped during a low-altitude helicopter flight, supplemented with ground-truthing and aerial photography review. The mapping focused on characterizing the distribution and age classes of woody riparian flow-dependent species that would be most sensitive to Project operations (e.g., cottonwoods [*Populus fremontii*], willows [*Salix* spp.], alders [*Alnus rhombifolia*], and sycamores [*Platanus racemosa*]). Observations of encroachment, riparian recruitment, unusual mortality, land use, and invasive species along the bypass reaches were made. The occurrence of riparian/wetland habitats along the flowlines were

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<sup>1</sup>Riparian and wetland vegetation information in the vicinity of the Project was last updated in 2014.

<sup>2</sup>This is the official USFWS wetland classification system and the Federal standard for wetland classification. See 61 Federal Register 39465. Wetlands are classified by trained analysts at the USFWS that identify and classify wetland habitat from aerial imagery. Riparian and wetland mapping within the vicinity of the Project was based on 2009 imagery.

also noted on the maps during the surveys. Representative photographs were taken from the helicopter, as well as during the ground-truthing. Table 3.9-1 summarizes the approach for the 2015 SCE mapping. Table 3.9-2 summarizes the riparian vegetation along the bypass reaches.

Existing information from the United States Department of Agriculture-Forest Service (USDA-FS) CalVeg and USFWS NWI vegetation mapping datasets was also reviewed. Different mapping approaches were used to develop the datasets; and provide different, but complimentary information on the types of wetland and riparian vegetation in the vicinity of the Project. The mapping approaches used for these two datasets are summarized in Table 3.9-1. Appendix 3.9-A Map 1 shows the distribution of riparian vegetation in the vicinity of the Project based on the USDA-FS CalVeg and USFWS NWI mapping datasets. Appendix 3.9-A Tables 1 and 2 summarize the vegetation habitats and amount of riparian habitat mapped by these two approaches.

Riparian habitats were only identified during the 2015 field mapping along the bypass reaches and diversion pools. None of the Project forebays support riparian, wetland, or littoral habitats. The flowlines are comprised of elevated flume, concrete ditch, or pipe sections and do not support riparian or wetland habitats. No wetlands and meadows occur in areas that would be hydrologically supported by the bypass reaches, diversion pools, or flowlines. Riparian vegetation along the bypass reaches associated with the Project and diversion pools are discussed below.

### **3.9.3.1 Bypass Reaches**

The riparian community along the bypass reaches was dominated by willows and white alder, with California sycamore and Fremont cottonwood as common associate species. Other common species included Oregon ash (*Fraxinus latifolia*) and buttonbush (*Cephalanthus occidentalis*). Recent riparian recruitment was observed in the bypass reaches. The existing riparian resources along each of the bypass reaches are described below.

#### **Kaweah River – Diversion Dam No. 2 to Kaweah No. 2 Tailrace**

The Kaweah River Bypass Reach is comprised of two geomorphic sub-reaches. The riparian resources along each of these sub-reaches is described below. The vegetation upstream and downstream of the bypass reach is also described below.

##### Kaweah River from Kaweah No. 2 Diversion Dam to the East Fork Kaweah River Confluence (0.6 miles)

Riparian vegetation in this sub-reach was distributed in relatively short discontinuous narrow patches of vegetation (Table 3.9-2). The corridor was comprised primarily of mature and older white alder and willows, with scattered Fremont cottonwood and California sycamore trees (Map 3.9-1). Young willows and white alder recently established on small gravel pockets among the boulders along the channel. Figure 3.9-1a shows a representative photograph of the riparian vegetation that occurs along this bypass sub-reach.

### Kaweah River from East Fork Kaweah River Confluence to Kaweah No. 2 Tailrace (3.5 miles)

Riparian vegetation in the upper portion of the sub-reach (approximately River Mile [RM] 8.4 to RM 6.0) was distributed in a narrow discontinuous (2.2 miles) and continuous (0.3 mile) linear corridor along the channel (Map 3.9-1 and Table 3.9-2). The community was dominated by white alders and willows, with interspersed Fremont cottonwood and California sycamore trees. Young willows and white alder were observed along the gravel and cobble deposits along the channel margins.

Downstream of RM 6.0 to the Kaweah No. 2 Tailrace (RM 4.85), the riparian vegetation was distributed in wide continuous willow-dominated corridors (1.0 mile) (Map 3.9-1 and Table 3.9-2). Common woody riparian associate species included white alder, Fremont cottonwood, and California sycamore. Young willows and white alder were established on the bars and along the channel margins on gravel and cobble deposits. Figures 3.9-1b-c show a representative photographs of the riparian vegetation that occurs along this bypass sub-reach.

### Upstream and Downstream of the Kaweah River Bypass Reach

Upstream of the Kaweah No. 2 Diversion Dam (RM 9.5 to RM 9.1), riparian vegetation was similar to downstream of the diversion, with willows and white alder sparsely distributed in patches on small deposits among the large boulders (Map 3.9-1 and Table 3.9-2). Downstream from the Kaweah No. 2 Tailrace, wide riparian corridors lined the channel. The community was dominated by willows, with various sub-dominant species, including white alder, Fremont cottonwood, and California sycamore. A narrower corridor occurred in the proximity of Three Rivers for 0.5 mile.

### **East Fork Kaweah River**

The channel morphology of the East Fork Kaweah River from the Kaweah No. 1 Diversion Dam to the confluence with the Kaweah River (4.7 miles) is similar throughout the bypass reach (one reach). The riparian resources along this reach are described below. The vegetation upstream of the bypass reach is also described.

### East Fork Kaweah River from Kaweah No. 1 Diversion Dam to the Kaweah River Confluence

Along the East Fork Kaweah River Bypass Reach, riparian vegetation was sparsely distributed along the majority of the reach (70% of the reach) due to the lack of conditions suitable to support riparian recruitment and establishment (Map 3.9-1 and Table 3.9-2). Along the remainder of the reach, riparian vegetation was distributed as narrow discontinuous corridors (1.24 miles, 27% of the reach) or wide, relatively, short corridors (0.13 miles in total length in the reach, 3%) (Map 3.9-1 and Table 3.9-2). These wide patches and discontinuous narrow linear corridors were generally observed at or near tributary confluences where smaller substrate sizes are deposited (e.g., cobbles and smaller). Colluvial material collected along the base of the hillslopes also supported riparian vegetation along the reach. The community in the upper portion of the reach

(upstream of RM 2.1) was comprised primarily of scattered willows and white alder. California sycamores were a common sub-dominant species, with white alder and willows, from approximately RM 2.1 downstream to the confluence with the Kaweah River. Young willows and alders within the reach indicate that conditions have been suitable for successful establishment in recent years. Figure 3.9-2 shows representative photographs of the riparian vegetation that occurs along this bypass reach.

#### Upstream of the Bypass Reach

Upstream of the Kaweah No. 1 Diversion, the channel morphology and distribution of riparian vegetation were similar to downstream of the diversion, with willows and white alder sparsely distributed in patches on small deposits among the large boulders.

#### **3.9.3.2 Project Diversion Pools**

The Project includes two relatively small diversion pools behind Kaweah No. 1 Diversion Dam and Kaweah No. 2 Diversion Dam (<0.03 and 1 acre-feet [ac-ft] of storage, respectively, and approximately 0.1 mile in length). The channel characteristics at the diversion pools are similar to those downstream; primarily bedrock and large boulders. Discontinuous narrow patches of willows occurred along the Kaweah No. 1 Diversion Pool (Map 3.9-1). Along the Kaweah No. 2 Diversion Pool, the riparian vegetation was distributed in discontinuous narrow patches comprised of willows and white alder, with scattered California sycamore and Fremont cottonwood. Figure 3.9-3 shows a representative photograph of the riparian vegetation that occurs at each diversion pool.

#### **3.9.3.3 Project Flowlines**

Riparian vegetation was present within many of the drainages that are crossed by the Kaweah No. 1 and No. 2 flowlines, which are supported by natural runoff. Natural springs and seeps have also been identified along the flowlines that support riparian/wetland habitats (BLM 2010).

#### **3.9.4 Land Use**

Various land use activities within the riparian corridor along the bypass reaches associated with the Project have the potential to affect the condition of the riparian resources. These land use activities include grazing (East Fork Kaweah River), and recreation use, such as beach activities on the channel bars, and development within the floodplain (Kaweah River).

#### **3.9.5 References**

Bureau of Land Management (BLM). 2010. Environmental Assessment Number CA 160-07-032 Environmental consequences of managing vegetation for 3 year increments as proposed by Southern California Edison on BLM property associated with the Southern California Edison - FERC 298 - Kaweah Hydroelectric Power Conduit Flowlines #1 and #3. BLM Bakersfield Field Office, Fresno County, CA. April 2010.

- \_\_\_\_\_. 2011. Draft Bakersfield Proposed Resource Management Plan and Final Environmental Impact Statement (EIS). Appendix J. Wild and Scenic Rivers Suitability Report. Prepared by TetraTech. 2010.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T.LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. Reprinted in 1992. FWS/OBS-79/31. Performed for the US Department of Interior, Fish and Wildlife Service Office of Biological Service. 142 pp.
- Federal Energy Regulatory Commission (FERC). 1991. Environmental Assessment. Kaweah Project (FERC Project No. 298). Dated August 16, 1991.
- Southern California Edison (SCE). 2014. Kaweah No. 3 Diversion Dam Maintenance Project – Biological Assessment and Biological Evaluation. Submittal to the National Park Service, California Department of Fish and Wildlife, Regional Water Quality Control Board, and US Army Corp of Engineers. Dated June 9, 2014.
- United States Department of Agriculture – Forest Service. 2015. Pacific Southwest Region. Vegetation Classification & Mapping. CalVeg. Available at: <http://www.fs.usda.gov/detail/r5/landmanagement/resourcemanagement/?cid=stetlprdb5347192>.
- United States Fish and Wildlife Service. 2015. National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. Available at: <http://www.fws.gov/wetlands>.



**TABLES**

**Table 3.9-1. Summary of the Riparian Mapping Approaches for the 2015 SCE, USDA-FS CalVeg, and USFWS-NWI Data.**

Attribute	SCE Mapping	USDA-FS CalVeg	USFWS NWI
Vegetation Characteristics Mapped	Landscape-level mapping: <ul style="list-style-type: none"> <li>• Distribution<sup>1</sup></li> <li>• Composition - dominant woody riparian (flow-dependent) species</li> <li>• Age Class structure<sup>2</sup></li> </ul>	Community types	Cowardin wetland classification system <sup>4</sup> (Cowardin et al. 1979), which includes several layers of detail for wetland classification including: a subsystem of water flow; classes of substrate types; subclasses of vegetation types and structure (tree or shrub); as well as flooding regimes (frequency of inundation) for each system.
Coverage in the Vicinity of the Project <sup>5</sup>	<ul style="list-style-type: none"> <li>• East Fork Kaweah River from Kaweah No. 1 Diversion Dam to confluence with Kaweah River</li> <li>• Kaweah River from Kaweah No. 2 Diversion Dam to Kaweah No. 2 Tailrace</li> <li>• 0.5 mile upstream of the Kaweah No. 1 and 2 diversion dams</li> <li>• Downstream from the Kaweah No. 2 Tailrace to Lake Kaweah</li> </ul>	<ul style="list-style-type: none"> <li>• East Fork Kaweah River from Kaweah No. 1 Diversion Dam to confluence with Kaweah River</li> <li>• Kaweah River from Kaweah No. 2 Diversion Dam to Kaweah No. 2 Tailrace</li> <li>• 0.5 mile upstream of the Kaweah No. 1 and 2 diversion dams</li> <li>• Downstream from the Kaweah No. 2 Tailrace to Lake Kaweah</li> </ul>	<ul style="list-style-type: none"> <li>• Kaweah River from Kaweah No. 2 Diversion Dam to Kaweah No. 2 Tailrace</li> <li>• 0.5 mile upstream of the Kaweah No. 2 Diversion Dams</li> <li>• Downstream from the Kaweah No. 2 Tailrace to Lake Kaweah</li> </ul>
Mapping Base	<ul style="list-style-type: none"> <li>• Low-altitude helicopter mapping</li> </ul>	<ul style="list-style-type: none"> <li>• LandSat color infrared satellite imagery (2014)</li> <li>• Imagery classification with on-screen manual editing with 1:24,000-scale resource photography</li> </ul>	<ul style="list-style-type: none"> <li>• 2009 aerial imagery; accurate at 1:24,000 scale</li> <li>• Focused on specific polygons of vegetation features visible on the imagery.</li> </ul>

**Table 3.9-1. Summary of the Riparian Mapping Approaches for the 2015 SCE, USDA-FS CalVeg, and USFWS-NWI Data (continued).**

Attribute	SCE Mapping	USDA-FS CalVeg	USFWS NWI
Field Verification	On the ground field verification at various locations along reaches	Field verified using soil-vegetation maps and professional guidance	Field verification

<sup>1</sup> The extent of riparian vegetation was mapped as follows: (1) Wide Corridor - Continuous wide corridor, typically several individuals in width, or large patch greater than ¼ acre in size, mapped as a wide line; (2) Narrow Continuous Corridor - Continuous linear riparian corridor within a long reach, typically one or two mature individuals in width, mapped as a narrow line; (3) Narrow discontinuous corridor - Sporadic linear corridor of vegetation within a long reach typically one or two mature individuals in width, mapped as a dashed line; and (4) Sparse - One or two isolated individuals within a long reach, mapped as a point.

<sup>2</sup> Mapping focused on woody riparian flow-dependent species that would have the greater potential to be affected by hydrologic alterations.

<sup>3</sup> The age classes of the communities were generally characterized as seedlings or young, medium-ages, or old individuals. Seedlings/Young: Shrubs < 10 stems/individual or trees with diameters at breast height (DBH) < 3 inches with individual tree canopy < 2.5 feet in width. Medium-aged: Shrubs with 10-60 stems/individual or trees with DBHs between 3 and 9 inches with individual tree canopy between 2.75 feet and 6.6 feet in width. Mature/Old: Shrubs >60 stems/individual or trees with DBHs >9 inches with individual canopy >6.6 feet in width

<sup>4</sup> The Cowardin system is hierarchical and includes several layers of detail for wetland classification including: a subsystem of water flow; classes of substrate types; subclasses of vegetation types; as well as flooding regimes for each system.

<sup>5</sup> Extent of coverage available in the vicinity of the Project.

**Table 3.9-2. Summary of Riparian Vegetation along the Bypass Reaches based on 2015 SCE Mapping.**

Dominant and Associated Riparian Species	Distribution (Percent within reach) (miles)			
	Wide Corridor	Narrow Continuous Corridor	Narrow Discontinuous Corridor	Sparse
<b>Kaweah River – Kaweah No. 2 Diversion Dam to East Fork Kaweah Confluence</b>				
Alder/willow with associated sycamore and cottonwood	--	--	100% (0.6 mi)	--
<b>Kaweah River – East Fork Kaweah Confluence to Kaweah No. 2 Tailrace</b>				
Alder/willow with associated sycamore and cottonwood	--	--	1% (0.05 mi)	--
Willow with associated alder, sycamore, and cottonwood	31% (1.0 mi)	8% (0.3 mi)	60% (2.15 mi)	--
<b>East Fork Kaweah River – Kaweah No. 1 Diversion Dam to Kaweah River Confluence</b>				
Alder	--	--	--	3% (0.16 mi)
Alder/willow with associated sycamore	3% (0.13 mi)	--	14% (0.64 mi)	21% (0.99 mi)
Alder and willow	--	--	13% (0.6 mi)	46% (2.18 mi)

## FIGURES

**Figures 3.9-1a-c. Representative Photographs of the Riparian Vegetation along the Kaweah River Bypass Reach.**

- a. Near RM 9, facing from river left across the channel to river right. Discontinuous narrow alder and willow corridor, with associated sycamore and cottonwood.



- b. Near RM 6.5, facing upstream. Discontinuous narrow corridor. Riparian community dominated by willows, with alder, sycamore, and cottonwood interspersed. Young willows and alders on bar surfaces.



**Figures 3.9-1a-c. Representative Photographs of the Riparian Vegetation along the Kaweah River Bypass Reach (continued).**

- c. Near RM 5.2, facing upstream. Continuous wide riparian corridor dominated by willows, with alder, sycamore, and cottonwood interspersed. Young willows and alders on bar surfaces.**





**Figure 3.9-2. Representative Photographs of the Riparian Vegetation along the East Fork Kaweah River Bypass Reach.**

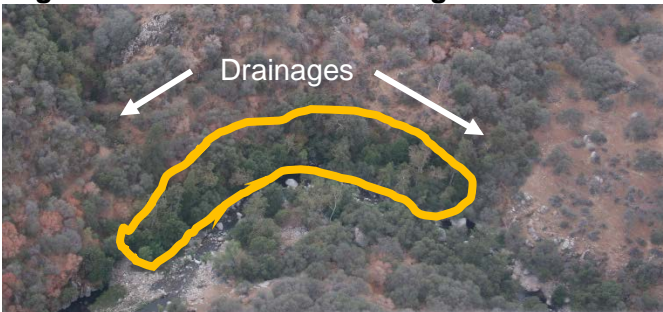
**Example of channel morphology and sparse riparian distribution along the East Fork Kaweah River.**



**Example of discontinuous willow and alder corridor downstream from the Kaweah No. 1 Diversion**



**Example of a wide corridor of riparian vegetation between two drainages.**



**Willow and alder established on small deposits at the base of the hillslopes.**





**Figure 3.9-2. Representative Photographs of the Riparian Vegetation along the East Fork Kaweah River Bypass Reach (continued).**

**Example of sparse patches of riparian vegetation, near RM 4.35 looking downstream.**

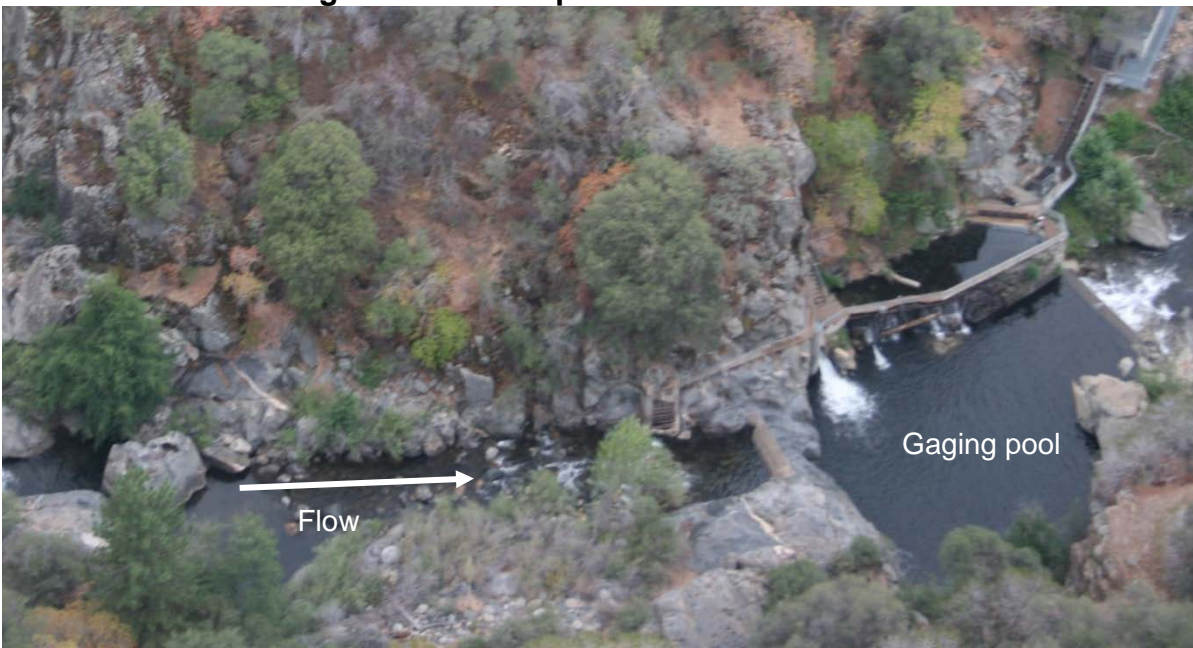


**Figure 3.9-3. Representative Photographs of the Riparian Vegetation along the Diversion Pools.**

**Kaweah No. 2 Diversion Pool, facing towards the diversion from upstream. Patches of willows, white alder, and California sycamore occur along the diversion pool.**

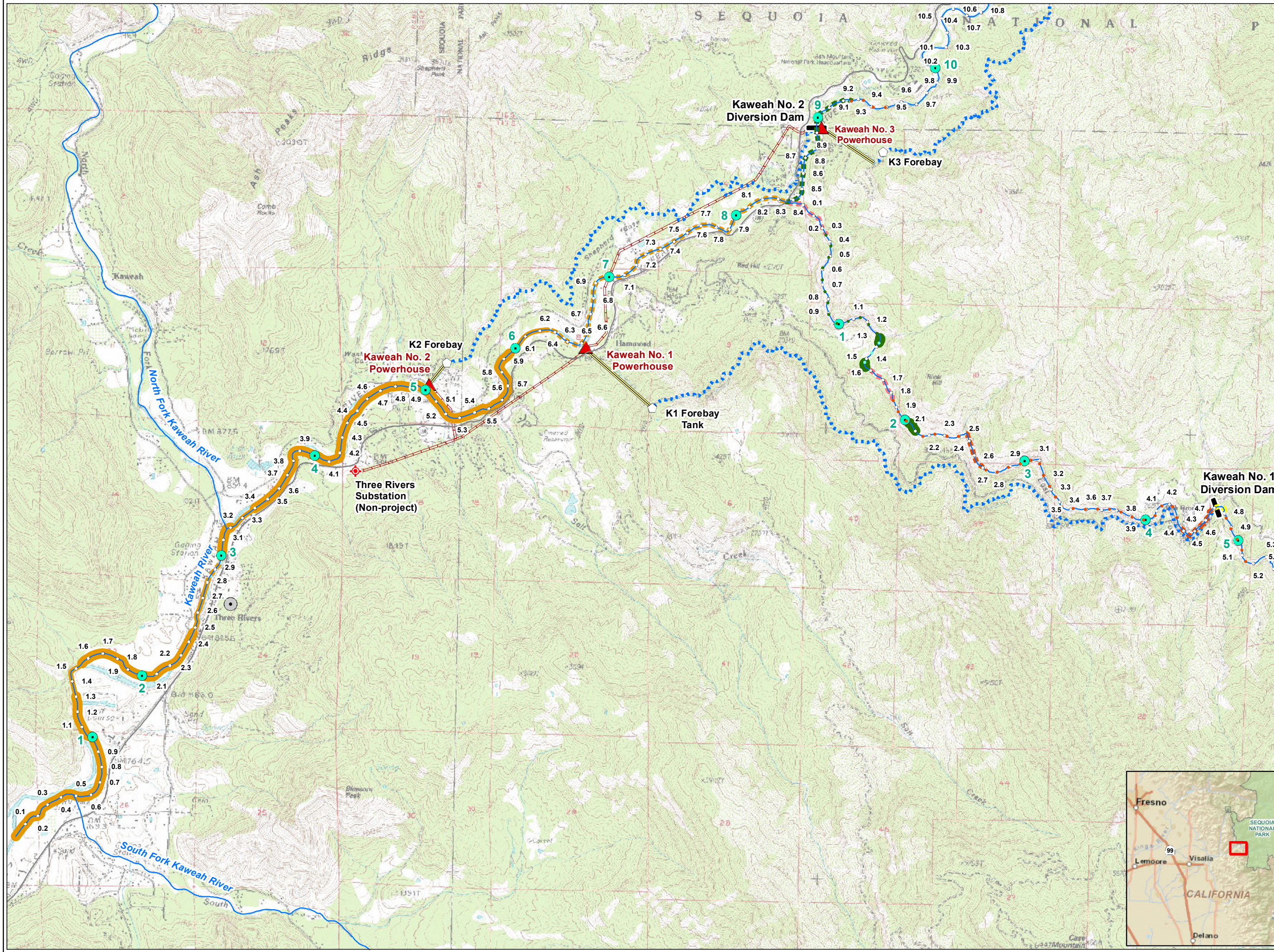


**Kaweah No. 1 Diversion Pool, from river right facing to the river left. Patches of willow occurred along the diversion pool.**



**MAPS**





### Facilities

- ▲ Powerhouse
- ▬ Diversion
- ◻ Forebay
- ⋯ Flowline
- ▬ Penstock
- ▬ Transmission Line

### Other Features

- City/Town
- ▬ Highway/Road
- ▬ Watercourse
- ▭ Water Body
- River Mile
- River Mile (1/10th)

### Riparian Community Types and Distribution Patterns

**Alder**

- ⋯ Sparse
- ▬ Discontinuous Narrow Corridor
- ▬ Continuous Narrow Corridor
- ▬ Continuous Wide Corridor

**Alder and Willow**

- ⋯ Sparse
- ▬ Discontinuous Narrow Corridor
- ▬ Continuous Narrow Corridor
- ▬ Continuous Wide Corridor

**Alder and Willow with Sycamore**

- ⋯ Sparse
- ▬ Discontinuous Narrow Corridor
- ▬ Continuous Narrow Corridor
- ▬ Continuous Wide Corridor

**Alder and Willow with Sycamore and Cottonwood**

- ⋯ Sparse
- ▬ Discontinuous Narrow Corridor
- ▬ Continuous Narrow Corridor
- ▬ Continuous Wide Corridor

**Willow**

- ⋯ Sparse
- ▬ Discontinuous Narrow Corridor
- ▬ Continuous Narrow Corridor
- ▬ Continuous Wide Corridor

**Willow with Alder, Sycamore and Cottonwood**

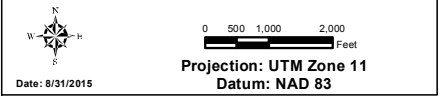
- ⋯ Sparse
- ▬ Discontinuous Narrow Corridor
- ▬ Continuous Narrow Corridor
- ▬ Continuous Wide Corridor



Eastern Hydro Generation

Map 3.9-1

**Distribution of Riparian Vegetation along the Bypass Reaches (based on 2015 SCE Field Mapping).**



Date: 8/31/2015

Southern California Edison (SCE) has no reason to believe that there are any inaccuracies or defects with information incorporated in this work and make no representations of any kind, including, but not limited to, the warranties of merchantability or fitness for a particular use, nor are any such warranties to be implied, with respect to the information or data, furnished herein. No part of this map may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording system, except as expressly permitted in writing by SCE.





**APPENDIX 3.9-A**

**USDA-FS CalVeg and USFWS NWI Riparian and Wetland Summaries and Map**

**Appendix 3.9-A Table 1. Riparian and Wetland Community Types Mapped along the Bypass Reaches (based on USDA-FS CalVeg and USFWS NWI mapping efforts).**

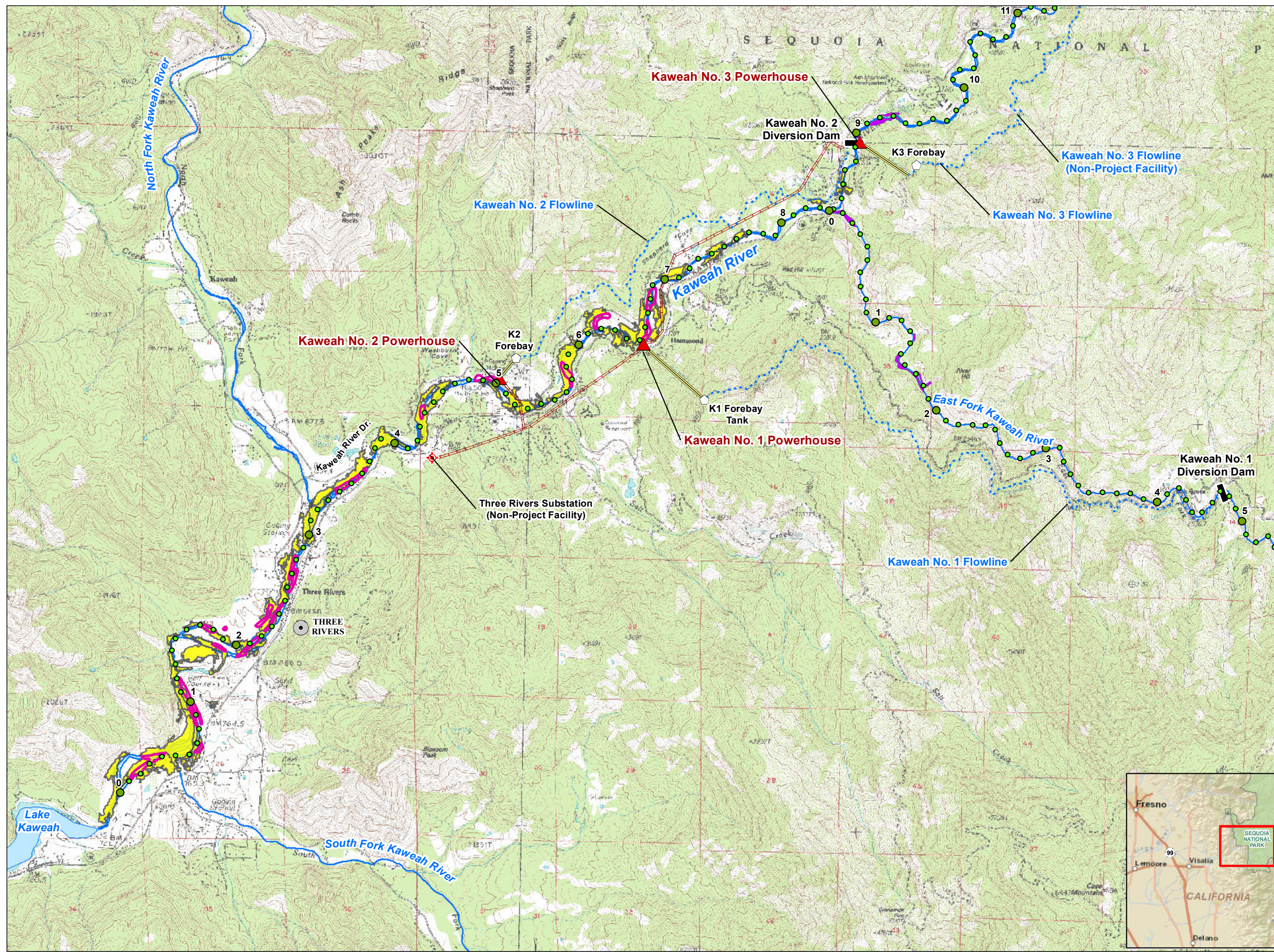
Riparian/Wetland Community Type and Description	
<b>USDA-FS CalVeg Community Types</b>	
<b>RIPARIAN MIXED HARDWOOD ALLIANCE (NR)</b>	
Riparian areas often are a mixture of hardwoods with some shrubs rather than areas of monotypic species. Such sites have been mapped sparsely in all three sections of this zone at elevations generally below about 4200 ft (1280 m). Typical hardwoods species mixtures in the Central Valley include Willows ( <i>Salix</i> spp.), Valley Oak ( <i>Quercus lobata</i> ), Fremont Cottonwood ( <i>Populus fremontii</i> ), California Sycamore ( <i>Platanus racemosa</i> ), and White Alder ( <i>Alnus rhombifolia</i> ). Blue Oak ( <i>Q. douglasii</i> ) is a closely associated upland hardwood that may occasionally be found in this mixture.	
<b>CALIFORNIA SYCAMORE ALLIANCE (QP)</b>	
California Sycamore ( <i>Platanus racemosa</i> ) reaches its northernmost limit in the eastern sectors of this zone. Although it usually mixes with other riparian hardwood species it may occasionally become dominant along springs, streams, and arroyos which have an underground water supply. The alliance has been mapped, for example, very sparingly along the Deer Creek drainage in the Foothills Section generally at elevations below about 2000 ft (610 m). Associated species include Willows ( <i>Salix</i> spp.), White Alder ( <i>Alnus rhombifolia</i> ), Bigleaf Maple ( <i>Acer macrophyllum</i> ), and a variety of forbs and perennial grasses. Upland Blue Oaks ( <i>Quercus douglasii</i> ) are closely associated with this type.	
<b>USFWS NWI Cowardin Riparian Type</b>	
<b>FRESHWATER FORESTED/SHRUB WETLAND</b>	
<b>PFOA</b>	<p><b>P System PALUSTRINE:</b> The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, emergents, mosses or lichens.</p> <p><b>FO Class FORESTED:</b> Characterized by woody vegetation that is 6 m tall or taller.</p> <p><b>Modifier:</b></p> <p><b>A WATER REGIME Temporary Flooded:</b> Surface water is present for brief periods during growing season, but the water table usually lies well below the soil surface for most of the growing season. Plants that grow both in uplands and wetlands may be characteristic of this water regime.</p>
<b>PFOC</b>	<p><b>Modifier:</b></p> <p><b>C WATER REGIME Seasonally Flooded:</b> Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface.</p>
<b>PSSC</b>	<p><b>SS Class SCRUB-SHRUB:</b> Includes areas dominated by woody vegetation less than 6 m (20 feet) tall. The species include true shrubs, young trees (saplings), and trees or shrubs that are small or stunted because of environmental conditions.</p> <p><b>Modifier:</b></p> <p><b>C WATER REGIME Seasonally Flooded:</b> Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface.</p>

**Appendix 3.9-A Table 2. Acreages of Riparian Habitats along the Bypass Reaches (based on USDA-FS CalVeg and USFWS NWI mapping efforts).**


Location	Community Type <sup>1</sup>	Acreage
<b>USDA-FS CalVeg Mapping</b>		
<b>Kaweah River – Kaweah Diversion Dam No. 2 to East Fork Kaweah River Confluence</b>		
Kaweah River	California Sycamore Alliance	0.9
	Riparian Mixed Hardwood Alliance	96.0
<b>Kaweah River – East Fork Kaweah River Confluence to Kaweah No. 2 Tailrace</b>		
Kaweah River	Riparian Mixed Hardwood Alliance	3.0
<b>East Fork Kaweah River – Kaweah Diversion Dam No. 1 to Kaweah River Confluence</b>		
East Fork Kaweah River	California Sycamore Alliance	8.4
<b>USFWS NWI Mapping</b>		
<b>Kaweah River – Kaweah Diversion Dam No. 2 to East Fork Kaweah River Confluence</b>		
Kaweah River	Freshwater Forested/Shrub Wetland - PFOA	3.8
	Freshwater Forested/Shrub Wetland - PFOC	1.1
	Freshwater Forested/Shrub Wetland - PSSC	9.7

<sup>1</sup> See Appendix 3.9-A Table 1 for descriptions of the community types. USFWS data are only available for the Kaweah River.






- ### Facilities
- Powerhouse
  - Diversion
  - Dam
  - Utility
  - Forebay
  - Flowline
  - Penstock
  - Transmission Line
- ### Other Features
- City/Town
  - Highway/Road
  - Watercourse
  - Water Body
  - River Miles
  - River Miles (1/10th Mile)
- ### Riparian Communities
- #### National Wetlands Inventory\*
- Freshwater Forested / Shrub Wetland
- \*NWI Data (2009)
- #### CALVEG Central Valley Zone 5\*
- Riparian Mixed Hardwood Alliance (NR)
  - California Sycamore Alliance (QP)
- \*\*CALVEG Data (Updated May, 2014)

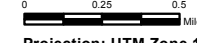


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### Appendix 3.9-A Map 1 Riparian Vegetation along the Bypass Reaches (Based on 2015 SCE Mapping)





Projection: UTM Zone 11  
Datum: NAD 83

Date: 8/24/2015

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