

TERR 1 – BOTANICAL RESOURCES INTERIM TECHNICAL MEMORANDUM

**KERN RIVER NO. 1 HYDROELECTRIC PROJECT
*FERC PROJECT NO. 1930***

PREPARED FOR:



January 2025

Table of Contents

1.0	Introduction.....	1
2.0	Study Objectives	1
3.0	Study Area.....	1
4.0	Methods.....	4
4.1	Study Plan Variances.....	4
4.2	Vegetation Alliances	4
4.2.1	Develop Preliminary Maps from Available CALVEG Data	4
4.2.2	Verify Preliminary CALVEG Data Using Aerial Photographs	5
4.2.3	Conduct Ground-Truthing of Vegetation Alliances.....	5
4.2.4	Develop Final CALVEG Vegetation Community Maps.....	5
4.3	Riparian Vegetation Alliances and Special Aquatic Features	6
4.3.1	Develop Preliminary Maps from Available Data.....	6
4.3.2	Conduct Ground-Truthing of Riparian Vegetation Alliances and Wetlands.....	6
4.3.3	Develop Final Riparian Vegetation Alliance and Special Aquatic Features.....	7
4.3.4	Characterize the Relationship Between Riparian Vegetation and Flow Conditions	7
4.4	Special-Status Plants.....	9
4.4.1	Develop Preliminary Information on Special-Status Plants in the Study Area	9
4.4.2	Conduct Special-Status Plant Surveys	9
4.4.3	Develop Final Special-Status Plant Maps.....	11
4.5	Non-Native Invasive Plants.....	11
4.5.1	Develop Preliminary Information on Non-Native Invasive Plants in the Study Area	11
4.5.2	Conduct Non-Native Invasive Plant Surveys	11
4.5.3	Develop Final Non-Native Invasive Species Maps	11
5.0	Results Summary	12
5.1	Vegetation Alliances and Wildlife Habitats.....	12
5.2	Riparian Vegetation Alliances and Special Aquatic Features	13

5.2.1	Characterize the Relationship Between Riparian Vegetation and Flow Conditions	14
5.3	Special-Status Plants.....	21
5.4	Non-Native Invasive Plants.....	22
6.0	Study Specific Consultation	25
7.0	Outstanding Study Plan Elements	26
8.0	References	27

List of Tables

Table 3-1.	Kern River No. 1 Hydroelectric Project Facilities.....	2
Table 5-1.	Summary of Riparian Data Collected at Riparian Transects	14
Table 5-2.	Dominant Woody Riparian Tree and Shrub Species Observed at Riparian Transects	16
Table 5-3.	Riparian/Wetland Herbaceous and Graminoid Plants Observed at Riparian Transects	19
Table 5-4.	Special-Status Plant Populations Identified During Botanical Surveys in the Study Area.....	21
Table 5-5.	Non-Native Invasive Plant Populations Identified During Botanical Surveys in the Study Area.	22
Table 7-1.	Schedule for Completion of Outstanding Study Plan Elements	26

List of Figures

Figure 5-1.	Average Percent Cover of Woody Species at Riparian Transects.....	17
Figure 5-2.	Frequency of Occurrence of Woody Species at Riparian Transects.....	17

List of Appendices

- Appendix A. Maps
- Appendix B. Vegetation Alliances within 1 Mile of the Kern River No. 1 FERC Project Boundary
- Appendix C. Representative Photographs of Bypass Reach Riparian Cross-Sections
- Appendix D. Special-Status Plants Known to Occur or Potentially Occurring in the Study Area
- Appendix E. Representative Photographs of Rose-Colored Larkspur (*Delphinium purpusii*) Populations in the Study Area
- Appendix F. CNDDDB Forms for Rose-Colored Larkspur (*Delphinium purpusii*) Populations in the Study Area (CONFIDENTIAL)
- Appendix G. Comprehensive List of Plants Identified During Botanical Surveys in the Study Area
- Appendix H. Non-Native Invasive Plants Potentially Occurring in the Study Area
- Appendix I. Representative Photographs of Non-Native Invasive Plant Populations in the Study Area

List of Acronyms

A3	Tilled Earth
A7	Agricultural Pond or Water Feature
BA	Barren
C1	Ultramafic Mixed Scrub Alliance
CALVEG	Classification and Assessment with Landsat of Visible Ecological Groupings
CDFW	California Department of Fish and Wildlife
CNDDDB	California Natural Diversity Database
DBH	diameter at breast height
FERC	Federal Energy Regulatory Commission
Forest Service	United States Forest Service
FSCC	Forest Service Species of Conservation Concern
GIS	Geographic Information System
GPS	Global Positioning System
HG	Annual Grasses and Forbs Alliance

IB	Urban-related Non-vegetated
IPaC	Information for Planning and Consultation
ITM	Interim Technical Memorandum
LANDSAT	land satellite
MCV	Manual of California Vegetation
ML	Baccharis (Riparian) Alliance
NNIP	non-native invasive plant
NWI	National Wetlands Inventory
NX	Interior Mixed Hardwoods Alliance
PAD	Pre-Application Document
PD	Gray Pine Alliance
QD	Blue Oak Alliance
QL	Valley Oak Alliance
QP	California Sycamore Alliance
QW	Interior Live Oak Alliance
TSP	Technical Study Plan
TWG	Technical Working Group
RSP	Revised Study Plan
SCE	Southern California Edison
SPD	Study Plan Determination
SSP	special-status plant
SQF	Sequoia National Forest
USFWS	United States Fish and Wildlife Service
W1	River/Stream/Canal

1.0 INTRODUCTION

This Interim Technical Memorandum (ITM) provides the methods and findings of field surveys associated with the TERR 1 – Botanical Resources Technical Study Plan (TERR 1 TSP) in support of Southern California Edison’s (SCE) Kern River No. 1 (KR1) Hydroelectric Project (Project) relicensing, Federal Energy Regulatory Commission (FERC) Project No. 1930. The TERR 1 TSP was included in SCE’s Revised Study Plan (RSP) filed on February 13, 2024 (SCE 2024). In its March 14, 2024, Study Plan Determination (SPD), FERC approved the TERR 1 TSP with modifications (FERC 2024).

Data for this memorandum were collected from April 2024 through October 2024. Field sampling efforts and data analysis completed to date are summarized below.

2.0 STUDY OBJECTIVES

The objectives of the botanical studies, as outlined in the TERR 1 TSP (SCE 2024), include the following:

- Document vegetation alliances adjacent to Project facilities.
- Document riparian vegetation alliances and wetlands adjacent to Project facilities and the bypass reach.
- Determine the relationship between riparian vegetation alliances and flow conditions in the bypass reach.
- Document special-status plant (SSP) populations at Project facilities.
- Document non-native invasive plant (NNIP) populations at Project facilities.

3.0 STUDY AREA

The extent of the study area for each study component is as follows:

- For vegetation alliances, the study area is 1 mile around Project facilities (see Table 3-1).
- For riparian vegetation alliances and special aquatic features,¹ the study area is the FERC Project boundary (excluding underground Project features and lands overlying the underground Project features); 10 feet on either side of Project access trails located outside the FERC Project boundary; and the bypass reach.

¹ Special aquatic features are defined as lakes, wet meadows, bogs, fens, wetlands, vernal pools, seeps, and springs.

- For the purposes of the SSP and NNIP studies, the study area is the FERC Project boundary (excluding underground Project features and lands overlying the underground Project features) and 10 feet on either side of Project access trails located outside the FERC Project boundary.

Studies were not conducted at locations where access is unsafe (e.g., where there is very steep terrain), or if areas were located on private property for which SCE was unable to obtain approval prior to implementation of the studies.

Table 3-1. Kern River No. 1 Hydroelectric Project Facilities

Diversion Dam
Democrat Dam
Impoundment
Democrat Dam Impoundment
Water Conveyance System
Sandbox
Tunnels, Flumes, Conduits, and Adits
Forebay
Forebay Overflow Spillway
Penstock
Powerhouse and Switchyard
Kern River No. 1 Powerhouse and Switchyard
Project Access Roads
Willow Spring Creek Road (also referred to as Democrat Dam Road)
Powerline Road
Flume No. 1 Road
Dougherty Creek Road
Stark Creek Road
Forebay Operations Area Road
Lower Powerhouse Road
Upper Powerhouse Road
Project Access Trails
Democrat Gage Trail ²
Conduit No. 3 Trail
Cow Flat Creek Trail
Steel Flume Trail ³
Lucas Creek Trail
Dougherty Creek Trail

² Entirety of trail is outside the FERC Project boundary.

³ A portion of the trail is outside the FERC Project boundary.

Stark Creek Trail ²
Adit 17 & 18 Trail ³
Overflow Spillway Trail ³
Skip Hoist / Forebay Trail ³
Aerial Cable Upper Access Trail ^{2, 4}
Communication and Power Lines
Intake Gatehouse to Flume No. 1 Powerline
Powerhouse to Forebay Communication / Powerline
Gages and Stilling Wells
Kern River near Democrat Springs (USGS Gage No. 11192500 / SCE Gage No. 409)
Kern River No. 1 Conduit near Democrat Springs (USGS Gage No. 11192000 / SCE Gage No. 410)
Kern River near Democrat Springs (USGS Gage No. 11192501; calculated 11192500+11192000)
Stilling Well No. 1
Stilling Well No. 2
Ancillary and Support Facilities
<i>Democrat Dam Area</i>
Buoy Line in Democrat Dam Impoundment
Democrat Dam Intake Gatehouse
Democrat Dam Drainage Tower
Democrat Dam Drainage Tunnel
Democrat Dam Drainage Tunnel Outlet
Democrat Dam Access Walkway
Sandbox Drainage Channel
Gaging Cableway
<i>Water Conveyance</i>
Flume No. 6 Access Platform
<i>Forebay Operations Area</i>
Old Admin Building
Garage No. 1
Garage No. 2
Old Ice House
Water Tank
Aerial Cable Tower
Skip Hoist House and Lower Landing
Skip Hoist Cables and Cart
Skip Hoist Upper Landing
Skip Hoist Upper Landing to Forebay Catwalk
Communication Site

⁴ Aerial Cable Upper Access Trail was not identified as a trail in the KR1 PAD. Consultation with SCE staff in 2024 confirmed that this trail is used for operation and maintenance.

Forebay Operations Area Perimeter Fence
Forebay Perimeter Fence
<i>Powerhouse Area</i>
Machine Shop
Office / Lunchroom
Restroom
Powerhouse and Switchyard Perimeter Fence

4.0 METHODS

Study implementation followed the methods described in the TERR 1 TSP (SCE 2024).

4.1 STUDY PLAN VARIANCES

There are no variances from the TERR 1 TSP approved in FERC’s SPD (FERC 2024).

4.2 VEGETATION ALLIANCES

The study approach for documenting vegetation alliances in the vicinity of the Project included development of preliminary vegetation alliances maps from available Classification and Assessment with Landsat of Visible Ecological Groupings (CALVEG) data, verification of preliminary maps based on a review of Google Earth aerial photography, implementation of ground-truthing surveys, and development of final vegetation maps. Methods for each of these steps are described below.

4.2.1 Develop Preliminary Maps from Available CALVEG Data

The best available information on vegetation alliances in the study area was used to develop preliminary maps of vegetation alliances within 1 mile of Project facilities. Mapping of vegetation alliances utilized the CALVEG data for the study area (Forest Service 2014). The CALVEG system is used to classify existing vegetation present on federally managed forestlands based on land satellite (LANDSAT) color infrared satellite imagery. Data were verified using soil-vegetation maps and professional guidance from various sources statewide.

The term “alliance” is used in the CALVEG system and is defined as a uniform group of plant associations sharing one or more dominant or diagnostic overstory species. This term corresponds closely to what plant ecologists call a “community type” and foresters call a “forest type” or “stand.” The term community is considered synonymous to the term “alliance” as defined by CALVEG.

Preliminary maps of CALVEG vegetation alliances are available in the Pre-Application Document (PAD), Section 3.6 (SCE 2023).

4.2.2 Verify Preliminary CALVEG Data Using Aerial Photographs

Pre-field verification of the preliminary vegetation community maps included a review of aerial photographs of the study area (Google 2024). CALVEG data polygons, as shown on the preliminary maps, were compared to aerial photography in Google Earth. Areas where CALVEG data did not appear to correspond to the aerial photographs were marked on hard-copy maps as areas requiring follow-up examination during ground-truthing surveys.

4.2.3 Conduct Ground-Truthing of Vegetation Alliances

Ground-truthing surveys for vegetation alliances were conducted in May 2024. Surveys were conducted in accessible areas identified for follow-up examination during pre-field verification of the preliminary maps, as described above.

Ground-truthing surveys were conducted by a team of two biologists. The following data were collected throughout the study area: date and surveyor names; coordinates and location or facility name; CALVEG vegetation community and field-assessed vegetation community (if different); general site summary; and wildlife species observed on the site. Ground-truthing surveys were not conducted in inaccessible areas. To the extent possible given the steep walls of the Kern Canyon, inaccessible areas were evaluated using aerial imagery review (Google 2024) and by scanning inaccessible areas on-the-ground from open vantage points, as appropriate.

Vegetation community type was verified by comparing dominant overstory species observed at each site with the dominant overstory species that characterize the vegetation community as described in the Vegetation Descriptions South Sierran Ecological Province CALVEG Zone 4 (Forest Service 2009a) and Vegetation Descriptions Central Valley Ecological Province CALVEG Zone 5 (Forest Service 2009b). For sites in which the CALVEG-designated vegetation community on the preliminary maps did not appear to be correct, the new vegetation community was noted, and hard-copy vegetation community maps were marked to indicate the extent of the field-corrected vegetation community.

Distinct patterns between aerial imagery characteristics and vegetation alliances observed during the ground-truthing survey were used to extrapolate vegetation alliances within 1 mile of the FERC Project boundary that were inaccessible and/or not visible from open vantage points. After returning from the field, such inaccessible areas were examined using high resolution Google Earth imagery and any vegetation alliances were corrected.

4.2.4 Develop Final CALVEG Vegetation Community Maps

Final maps of vegetation alliances were developed based on existing CALVEG data, review of Google Earth aerial photography, and ground-truth surveys. Refer to Section 5.0.

Hard-copy corrections to vegetation community maps completed during review of aerial photographs and ground-truthing surveys were digitized and incorporated into Geographic Information System (GIS) layers.

4.3 RIPARIAN VEGETATION ALLIANCES AND SPECIAL AQUATIC FEATURES

The study approach for documenting riparian vegetation alliances and special aquatic features in the vicinity of the Project included development of preliminary vegetation alliances maps, implementation of ground-truthing surveys, and development of final riparian and wetland vegetation maps. Methods for each of these steps are described below.

4.3.1 Develop Preliminary Maps from Available Data

In addition to using the CALVEG system (as described in Section 4.1 above), preliminary maps of riparian vegetation alliances and special aquatic features were compiled from the United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Data (USFWS 2024a). The National Wetlands system is the official USFWS wetland classification system and the Federal standard for wetland classification. Wetlands are classified by trained analysts at the USFWS that identify and classify wetland habitats from aerial imagery. Riparian and wetland mapping within the vicinity of the Project was based on 1985 imagery.

Preliminary maps of these riparian vegetation alliances and available in the PAD, Section 4.9 (SCE 2023).

4.3.2 Conduct Ground-Truthing of Riparian Vegetation Alliances and Wetlands

Ground-truthing included documentation of riparian alliances within the FERC Project boundary, 10 feet on either side of Project access trails located outside the FERC Project boundary, and the bypass reach. This ground-truthing was conducted in May 2024 during CALVEG ground-truthing surveys described above in Section 4.1.3. Documentation of small-scale vegetation alliances followed the Manual of California Vegetation (MCV) classification system (Sawyer et al. 2009), which defines vegetation alliances based on the dominant species present in the alliance. MCV classification is more suited to smaller-scale alliances that are associated with particular aspects and soil types, as is typically found in riparian and wetland communities.

Inaccessible areas were evaluated using aerial imagery review (Google 2024) and by scanning with binoculars from open vantage points, as appropriate.

Riparian and wetland alliances were then marked on either hard copy maps and/or were digitized on an iPad unit using the ArcGIS FieldMaps program.

4.3.3 Develop Final Riparian Vegetation Alliance and Special Aquatic Features

Final maps of riparian vegetation alliances and wetlands were developed based on existing CALVEG and NWI data, review of Google Earth aerial photography, and ground-truth surveys. Refer to Section 5.0.

Hard-copy corrections to vegetation community maps completed during review of aerial photographs and ground-truthing surveys were digitized and incorporated into GIS layers.

4.3.4 Characterize the Relationship Between Riparian Vegetation and Flow Conditions

To characterize the relationship between riparian flow conditions, the following steps have been or will be conducted. First, 10 representative riparian cross-sections along the bypass reach were sampled to obtain riparian vegetation metrics. Data collected at cross-sections will then be modeled against stage-discharge relationships over a range of flows (high to low). After this model is developed, a summary of the relationship between existing inundation characteristics (e.g., timing, frequency, depth, and width of inundation) and the distribution of the dominant riparian species will be developed. Finally, a discussion of hydrology in the bypass reach in relationship to riparian vegetation recruitment and maintenance (for both existing Project and without Project) will be developed. A discussion of the methods related to each step is provided below (note that some of these steps are still outstanding).

4.3.4.1 Select Riparian Transects and Collect Field Data

Representative transects were selected to conduct riparian cross-section sampling after completion of field riparian mapping efforts along the bypass reach. First, a desktop stream classification was conducted using Google Earth (Google Earth 2024) aerial imagery, and the bypass reach was divided into segments based on visible geomorphological characteristics (e.g., channel slope, stream width, and extent of the floodplain). Based on the initial assessment, 10 broad stream segments that captured the diversity of geomorphological conditions were selected. Riparian vegetation diversity is minimal along the bypass reach, and therefore this was a secondary consideration.

Finally, a field visit was conducted in May 2024 to determine the specific transect locations (within the broader stream segments). Transects were established in locations that exhibited appropriate hydrological conditions for flow measurement (refer to the AQ 1 ITM) and that allowed for safe access. The lower Kern River is one of the most dangerous rivers for swimmers in California because of the steep canyon walls and dangerous rapid systems (Class IV and V+), and therefore surveyor safety was prioritized. The transect start location on the river-left side was marked with iron rebar headpins and flagging. During transect establishment, the flows in the Kern River were too high to allow for safe establishment of headpins on the river-right side.

Riparian vegetation metrics were collected at each of the transects in late September and early October 2024, when flows had receded enough for surveyors to attempt to cross the Kern River. Five- by 5-meter sampling plots were then placed along the transects (i.e.,

one on each bank), or more, depending in the width of the riparian corridor along the cross-section.

The following data were collected at each transect:

- Global Positioning System (GPS) coordinates of the headpins
- Photograph of transect
- The total length of the transect (as measured by a meter tape strung between the headpins on each side of the river)
- The extent of riparian vegetation along the transect on either side of the river
- The following data was collected within each 5- by 5-meter sampling plot along the transect:
 - GPS coordinates (center point of each plot)
 - Photograph of the plot, looking towards the cross-section line
 - Percent cover for each dominant woody riparian trees/shrubs, by species
 - Age class for each dominant woody riparian trees/shrubs, by species. Age class structure was determined based on categories of shrub stem densities per individual and tree diameters, as follows:
 - Young (Y): shrubs with less than 10 stems per individual or trees with dbh less than 3 inches
 - Medium-aged (M): shrubs with between 10 and 60 stems per individual or trees with diameters at breast height (DBH) between 3 and 9 inches
 - Old/Mature (O): shrubs with more than 60 stems per individual or trees with DBH greater than 9 inches
 - Percent cover for each dominant herbaceous plants (including herbs and graminoids), by species
 - Size class of the substrate present (bedrock, boulder, cobble, gravel, sand, and silt)

A GIS map showing the location of the cross-sections and sampling plots was then developed. Lists and tables were then developed summarizing the species composition, distribution, and abundance across the bypass reach. Refer to Section 5.0.

4.3.4.2 Describe the Relationship Between Existing Inundation Characteristics and Riparian Distribution

This section will be prepared following completion of the hydrological and riparian analyses (refer to Section 7.0).

4.3.4.3 Describe Hydrology and Riparian Recruitment in the Bypass Reach

This section will be prepared following completion of the hydrological and riparian analyses (refer to Section 7.0).

4.4 SPECIAL-STATUS PLANTS

The study approach for documenting SSPs in the study area included development of preliminary information and conducting protocol SSP surveys. Each of these is described below.

4.4.1 Develop Preliminary Information on Special-Status Plants in the Study Area

Development of preliminary information on SSPs included compilation and review of relevant literature, databases and online resources, as well as consultation with resource agencies. The following sources were used to compile existing information on SSPs within the Kern River watershed:

- Kern River No. 1 Hydroelectric Project (FERC Project No. 1930) Pre-Application Document, Volume 2 (SCE 2023)
- Sequoia National Forest (SQF) Species of Conservation Concern (FSCC) List (Forest Service 2023)
- California Natural Diversity Database (CNDDDB) (CNDDDB 2024)
- USFWS Information for Planning and Conservation (IPaC) online database (USFWS 2024b)
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California online database (CNPS 2024)

Existing species lists included in the PAD (SCE 2023) provided a basis for identification of known and potentially occurring SSPs. Occurrence maps and species lists included in the PAD were updated with current information obtained from the above-listed resources.

4.4.2 Conduct Special-Status Plant Surveys

The following describes the timing and methods for field surveys conducted to document the presence of SSPs.

4.4.2.1 Survey Timing

Field surveys were conducted at the proper time of year when rare, threatened, or endangered plants are both evident and identifiable. Generally, this is when the plants are flowering. Based on the blooming periods for plants known or potentially occurring within the vicinity of the Project, an early season survey was conducted in April 2024.

The timing of surveys was verified based on reference population monitoring, which occurred immediately preceding each survey period. SCE consulted with resources agencies regarding the timing of surveys, as follows:

- The Terrestrial Technical Working Group (TWG) for the KR1 relicensing was contacted on March 28, 2024 to solicit input regarding target special-status species and potential reference populations to be monitored in advance of early season surveys. On April 16, 2024, the Terrestrial TWG was notified of the results of reference population monitoring and proposed timing of early season SSP surveys. No responses were received.
- The Terrestrial TWG was contacted again on July 8, 2024 regarding monitoring of reference populations prior to late season surveys. On July 18, 2024, an e-mail was sent providing results of reference population monitoring and proposed timing of late season surveys. On August 29, 2024, an additional e-mail was sent notifying the Terrestrial TWG that late season surveys were being postponed due to road closures, evacuations, and safety concerns associated with the Borel Fire. The SQF botanist acknowledged receipt of the August 29 email.

4.4.2.2 Survey Methods

Survey methods for SSPs followed procedures outlined in the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (California Department of Fish and Wildlife [CDFW] 2018).

Surveys were completed by two biologists implementing systematic field techniques (e.g., zigzag patterns, random meandering, and linear transects) to cover the entire study area, where accessible. Areas that could not be safely accessed (or for which permission to enter was not granted by the owner) were surveyed using binoculars, to the degree possible. Surveys were floristic in nature, that is, all species were identified to the level (i.e., genus, species, variety or subspecies) required to determine if that species is special status. Nomenclature followed *The Jepson Manual, Vascular Plants of California* (Baldwin et al. 2012), and a comprehensive list of species observed during field surveys was compiled.

Data collected for each population included: an estimate of the number of individuals' present, digital photographs, GPS location, area (square feet), and a description of associated vegetation. If a SSP population was identified on the perimeter of the study area, the study area was expanded to document the full extent of the population.

Moss specimens were collected throughout the survey area and labeled with the date and collection location. Moss specimens were sent to a qualified bryologist for identification.

California Native Species Field Survey forms were developed for all SSP populations identified and submitted to the CNDDDB.

4.4.3 Develop Final Special-Status Plant Maps

Following completion of surveys, GIS data were processed, and maps were developed to show the location of SSP populations in the study area. Refer to Section 5.0.

4.5 NON-NATIVE INVASIVE PLANTS

The approach for documenting NNIPs in the study area included development of preliminary information and conducting NNIP surveys. Each of these is described below.

4.5.1 Develop Preliminary Information on Non-Native Invasive Plants in the Study Area

A preliminary list of NNIPs potentially occurring in the vicinity of the Project was developed for the PAD (SCE 2023). This preliminary list, which included 154 species, was generated based on broad query parameters (i.e., Jepson geographic floristic province and general habitat types [grassland, riparian, woodland, and scrub habitat]). Prior to implementation of the TERR 1 botanical surveys, this list was refined based on updated information on CALVEG vegetation alliances in the study area, as well as Forest Service publications pertinent to the study area (Moore and Gerlach 2001).

The Terrestrial TWG was contacted by e-mail on March 28, 2024 to solicit input regarding target NNIPs. No responses were received.

4.5.2 Conduct Non-Native Invasive Plant Surveys

Focused NNIP surveys were conducted in conjunction with SSP surveys. The following data were collected for each NNIP population: species, location, area infested, and level of infestation. Levels of infestation were reported as: low (<5 percent cover); moderate (6–25 percent cover), and high (>25 percent cover). Areas that were surveyed and found to be weed-free were also identified. Each population was assigned a unique population ID (according to the criteria outlined above for SSPs), and areas of infestation were mapped with a hand-held GPS unit. Where possible, if an NNIP population was identified on the perimeter of the study area, the study area was expanded to document the full extent of the population.

4.5.3 Develop Final Non-Native Invasive Species Maps

Following completion of surveys, GIS data were processed, and maps were developed to show the location of NNIP populations in the study area. Refer to Section 5.0.

5.0 RESULTS SUMMARY

This section provides details on the results for documentation of vegetation alliances, riparian and wetland alliances, relationship between riparian vegetation alliances and flow conditions, SSPs, and NNIPs.

5.1 VEGETATION ALLIANCES AND WILDLIFE HABITATS

Preliminary vegetation alliance maps based on the existing CALVEG data for the study area were completed in 2023 and were included in the PAD (SCE 2023). Preliminary vegetation alliance maps were ground-truthed during wildlife reconnaissance surveys, and evaluated against recent aerial imagery sources (Google Earth 2024).

Ground-truthing identified several inconsistencies in the preliminary vegetation alliance maps that were corrected. Preliminary maps did not include California Sycamore (QP), Interior Live Oak (QW), Barren (BA), Urban-Related Bare Soil (IB), and Agriculture Pond or Water Feature (A7) alliances, which were subsequently identified during ground-truthing. For example, the tributary streams of Lucas Creek and Cow Flat Creek were identified as having riparian zones consisting of Baccharis Alliances (ML) and Valley Oak Alliances (QL), respectively, on preliminary maps. Ground-truthing revealed that both tributaries supported California Sycamore (QP) vegetation alliances within the riparian zones of these creeks.

The ground-truthing identified 14 CALVEG alliances in the study area, including the following:

- Herb-dominated Alliances:
 - Annual Grasses and Forbs Alliance (HG)
- Shrub-dominated Alliances:
 - Ultramafic Mixed Scrub Alliance (C1)
 - Baccharis (Riparian) Alliance (ML)
- Tree-dominated Alliances:
 - Interior Mixed Hardwoods Alliance (NX)
 - Gray Pine Alliance (PD)
 - Blue Oak Alliance (QD)
 - Valley Oak Alliance (QL)
 - California Sycamore Alliance (QP)
 - Interior Live Oak Alliance (QW)
- Non-Vegetated Areas:
 - Tilled Earth (A3)
 - Barren (BA)
 - Urban-related Non-vegetated (IB)

- Aquatic Areas
 - Agriculture Pond or Water Feature (A7)
 - River/Stream/Canal (W1)

Refer to Map 5-1 (Appendix A) for the location of vegetation alliances in the study area and Appendix B for a detailed description of each of the CALVEG alliances identified in the study area.

5.2 RIPARIAN VEGETATION ALLIANCES AND SPECIAL AQUATIC FEATURES

Preliminary riparian alliance maps based on the existing CALVEG data for the study area were completed in 2023 and were included in the PAD (SCE 2023).

Special aquatic features are defined by the Forest Service to include lakes, ponds, meadows, wetlands, springs, and seeps (Forest Service 2004). Democrat Dam is the only lake in the study area. No other special aquatic features were identified during field surveys.

Five MCV riparian alliances were identified adjacent to the FERC Project boundary, 10 feet on either side of Project access trails located outside the FERC Project boundary, and the bypass reach during field surveys, including the following:

- *Baccharis salicifolia* Shrubland Alliance (mule-fat thickets)
- *Platanus racemosa* – *Quercus agrifolia* Woodland Alliance (California sycamore – Pacific live oak riparian woodlands)
- *Salix exigua* Shrubland Alliance (sandbar willow thickets)
- *Salix lasiolepis* Shrubland Alliance (arroyo willow thickets)
- *Salix lucida* ssp. *lasiandra* Woodland Alliance (shining willow groves)

The Kern River in the study area supports primarily the California sycamore – Pacific coast live oak woodland alliance.⁵ This alliance is present along most of the bypass reach from the Kern River No. 1 Powerhouse to Democrat Dam. In addition, patches of shining willow grove mule-fat thicket were mapped along tributary creeks (Stark Creek and Dougherty Creek).

North of Democrat Dam, the riparian alliances included primarily feature mule-fat thickets intermixed with smaller patches of shining willow groves, sandbar willow thickets, and arroyo willow thickets.

⁵ Oak trees in the study area were identified as interior live oak (*Quercus wislizenii*) based on the phenology of the trees on site. However, the MCV manual does not include a California sycamore – interior live oak riparian woodland alliance: it only includes the California sycamore – Pacific coast live oak riparian woodland alliance. Furthermore, MCV online maps that California sycamore – Pacific live oak riparian woodlands are present in the study area. Therefore, we have used the *Platanus racemosa* – *Quercus agrifolia* Woodland Alliance in our study results.

Refer to Map 5-2 (Appendix A) for the location of riparian alliances and special aquatic features in the study area and Appendix B for a detailed description of each of the MCV alliances identified in the study area.

5.2.1 Characterize the Relationship Between Riparian Vegetation and Flow Conditions

A summary of the structure and composition of the riparian community along the bypass reach sampled during this study is provided below.

5.2.1.1 Select Riparian Transects and Collect Field Data

Refer to Map 5-3 (Appendix A) for the location of the riparian transects that were established to characterize riparian habitats along the bypass reach. Refer to Appendix C for representative photographs of each transect. Table 5-1 provides summary data on the total percent cover and species richness for woody riparian trees/shrubs and herbaceous/graminoid plants, as well as the age classes of woody riparian trees/shrubs, for each transect.

Table 5-1. Summary of Riparian Data Collected at Riparian Transects

Transect Number	Plot Number	Woody Riparian Trees/Shrubs			Herbaceous/ Graminoid Plants		Substrates Present
		Total Percent Cover	Species Richness	Age Class Structure ¹	Total Percent Cover	Species Richness	
KT1 ²	KT1-1	110	2	Y, O	10	2	Boulder, Cobble, Gravel, Sand, Silt
KT2 ²	KT2-1	88	2	Y, M, O	1	1	Sand
	KT2-2	102	2	Y, M	7	3	Bedrock, Boulder, Cobble, Gravel, Sand, Silt
KT3 ²	KT3-1	90	1	Y	28	6	Boulder, Cobble, Sand
KT4	KT4-1	109	2	O	1	1	Boulder, Cobble, Sand
	KT4-2	36	3	Y, O	4	3	Boulder, Cobble, Gravel, Sand
KT5	KT5-1	40	2	Y, M	79	3	Boulder, Sand, Silt
	KT5-2	85	2	M, O	73	10	Bedrock, Cobble, Gravel, Sand, Silt
KT6 ²	KT6-1	46	3	O	76	10	Boulder, Gravel, Sand
KT7	KT7-1	98	1	O	35	1	Boulder
	KT7-2	35	2	M, O	31	5	Boulder, Gravel, Sand
KT8	KT8-1	99	2	M, O	0	0	Boulder, Cobble, Sand, Silt
	KT8-2	18	2	M, O	112	7	Boulder, Sand
KT9	KT9-1	25	1	M	4	8	Boulder, Sand, Silt
	KT9-2	0	0	NA	109	5	Boulder, Sand

Transect Number	Plot Number	Woody Riparian Trees/Shrubs			Herbaceous/ Graminoid Plants		Substrates Present
		Total Percent Cover	Species Richness	Age Class Structure ¹	Total Percent Cover	Species Richness	
KT10	KT10-1	100	1	O	<1	1	Boulder, Cobble, Gravel, Sand
	KT10-2	90	2	Y, O	40	2	Boulder, Gravel, Sand
	KT10-3	40	1	O	35	10	Bedrock, Boulder, Gravel, Sand

¹ Age class structure was determined based on categories of shrub stem densities per individual and tree diameters, as follows:

- Young (Y): Shrubs with less than 10 stems per individual or trees with diameters (dbh) less than 3 inches;
- Medium-aged (M): Shrubs with between 10 and 60 stems per individual or trees with dbhs between 3 and 9 inches; and
- Old/Mature (O): Shrubs with more than 60 stems per individual or trees with dbhs greater than 9 inches.

² No plots were established on far side of river due to high flows.

Note that field biologists did not attempt to access the far (river-left) side of the Kern River at transects KT1, KT2, KT3, and KT6 due to dangerous conditions at the time of the surveys (i.e., proximity to rapids, strong currents, undercurrents, and wide river sections). Conditions on the opposite bank were observed to the extent possible using binoculars to record species present and substrate composition.

Provided below is a more detailed characterization of woody and herbaceous vegetation documented along the riparian transects.

Woody Riparian Vegetation

Refer to Table 5-2 for a list of woody riparian species observed at each transect. Refer to Figure 5-1 for the average percent cover of woody riparian species across sampling plots. Refer to Figure 5-2 for the frequency that each woody riparian species was observed within the sampling plots.

Of the 11 shrub/tree species observed, California sycamore was the most common, being observed at 10 of 22 total plots and accounting for an average of 17.5 percent cover across the 18 accessible plots. The second most abundant species was the red willow, accounting for an average of 14.3 percent of the coverage area across accessible plots, but only being observed at four plots. Mule-fat and narrowleaf willow were also abundant accounting for an average of 11.6 percent and 10.7 percent coverage, respectively. Mule fat was observed at six plots and narrowleaf willow was recorded at three plots. Goodding’s willow (*Salix gooddingii*) was the final willow species encountered appearing at only one plot and accounting for an average of 5.2 percent coverage. Other species observed included common buttonbush (*Cephalanthus occidentalis*), Fremont cottonwood (*Populus fremontii*), interior live oak (*Quercus wislizeni*), American black nightshade (*Solanum americanum*), tree tobacco (*Nicotiana glauca*), and Pacific poison oak (*Toxicodendron diversilobum*). On average, these species accounted for less than 3 percent coverage, although interestingly, common buttonbush was observed at seven plots, the second highest total. The remaining species occurred at 3 plots or less.

Table 5-2. Dominant Woody Riparian Tree and Shrub Species Observed at Riparian Transects

Species		NWI Indicator Status ¹	Riparian Transect (X = plant present at transect)									
Scientific Name	Common Name		KT1	KT2	KT3	KT4	KT5	KT6	KT7	KT8	KT9	KT10
<i>Baccharis salicifolia</i>	Mule-fat	FACW	X	X		X		X	X			
<i>Cephalanthus occidentalis</i>	Common buttonbush	OBL	X	X	X	X	X	X		X		
<i>Nicotiana glauc</i>	Tree tobacco	FAC				X						
<i>Platanus racemosa</i>	California sycamore	FACW	X		X		X	X	X		X	X
<i>Populus fremontii</i>	Fremont cottonwood	FAC+						X				
<i>Quercus wislizeni</i>	Interior live oak	NA				X		X				X
<i>Salix exigua</i>	Narrowleaf willow	FACW		X	X							
<i>Salix gooddingii</i>	Goodding's willow	FACW		X								
<i>Salix laevigata</i>	Red willow	FACW+					X			X		X
<i>Solanum americanum</i>	American black nightshade	FAC		X						X		
<i>Toxicodendron diversilobum</i>	Pacific poison oak	NI								X		
Total Number of Species			3	5	3	4	3	5	2	4	1	3

¹ National Wetlands Inventory (NWI) Wetland Indicator Status as per the National Wetland Plant List (U.S. Army Corps of Engineers, 2020)

Key: FAC = Equally likely to occur in wetlands and nonwetlands.
 FACU = Usually occur in non-wetlands but occasionally found in wetlands
 FACW = Usually occur in wetlands but occasionally found in non-wetlands.
 NI = Not included on the National Wetland Plant List.
 OBL = Obligate wetland species only found in wetlands.
 UPL = Upland species not likely to occur in wetlands.

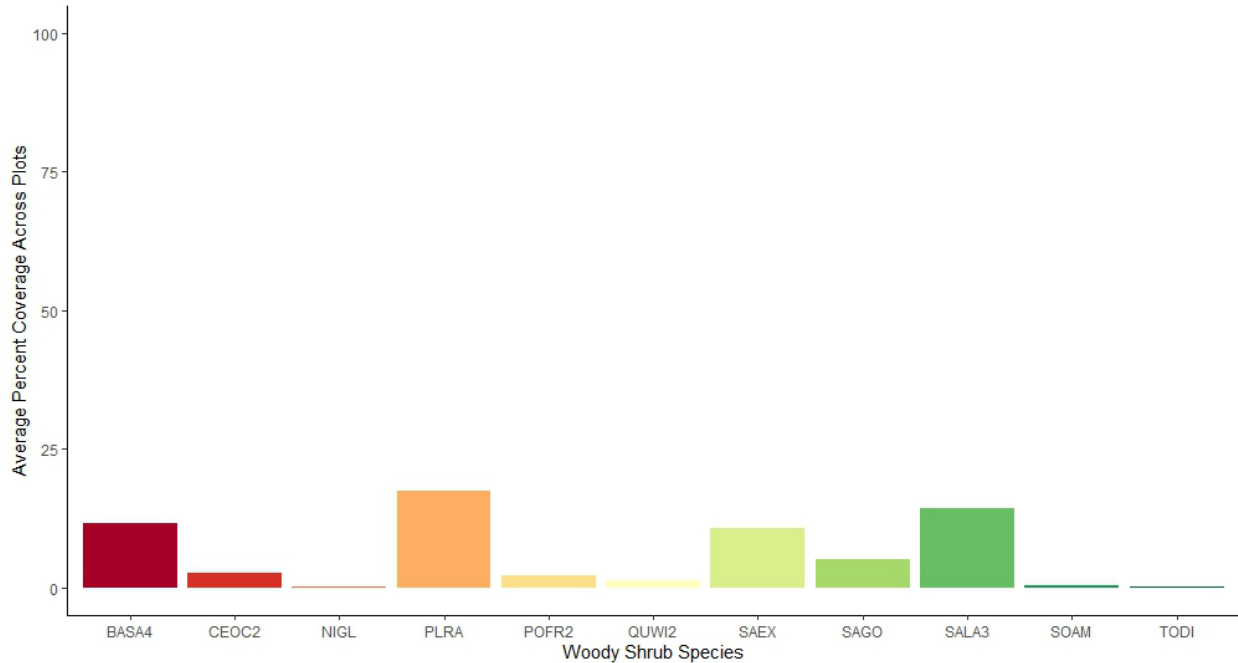


Figure 5-1. Average Percent Cover of Woody Species at Riparian Transects.

Species Codes: BASA4 = *Baccharis salicifolia*, CEOC2 = *Cephalanthus occidentalis*, NIGL = *Nicotiana glauca*, PLRA = *Platanus racemosa*, POFR2 = *Populus fremontii*, QUWI2 = *Quercus wislizeni*, SAEX = *Salix exigua*, SAGO = *Salix gooddingii*, SALA3 = *Salix laevigata*, SOAM = *Solanum americanum*, TODI = *Toxicodendron diversilobum*

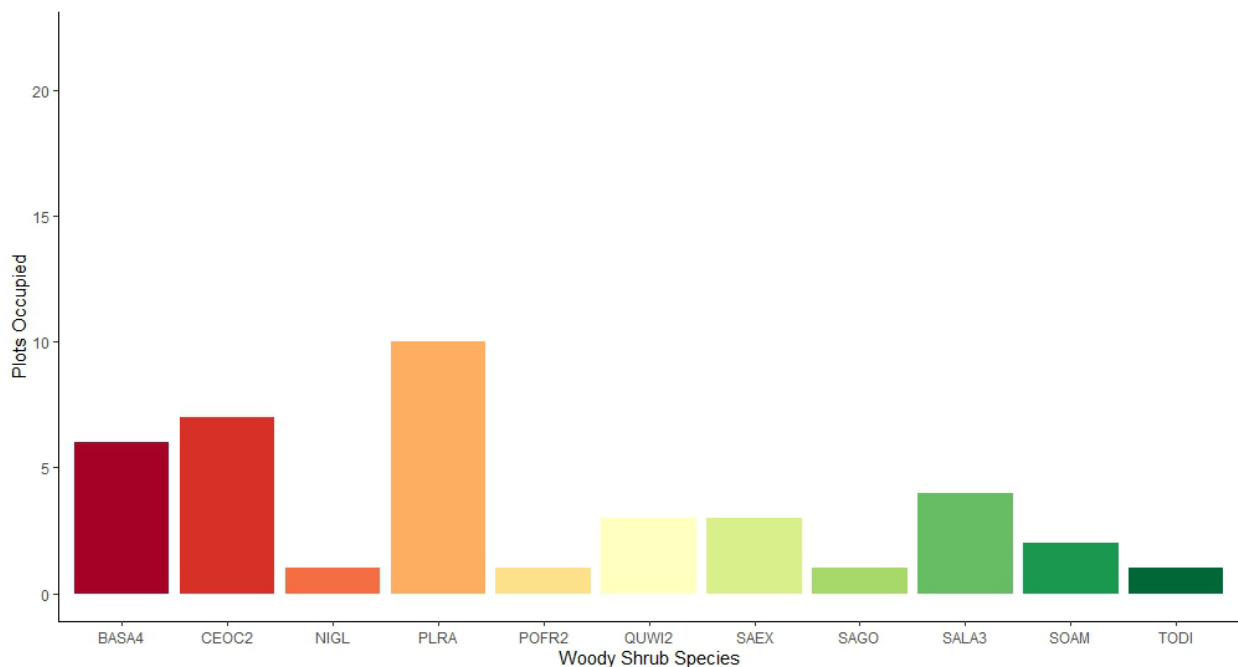


Figure 5-2. Frequency of Occurrence of Woody Species at Riparian Transects.

Species Codes: BASA4 = *Baccharis salicifolia*, CEOC2 = *Cephalanthus occidentalis*, NIGL = *Nicotiana glauca*, PLRA = *Platanus racemosa*, POFR2 = *Populus fremontii*, QUWI2 = *Quercus wislizeni*, SAEX = *Salix exigua*, SAGO = *Salix gooddingii*, SALA3 = *Salix laevigata*, SOAM = *Solanum americanum*, TODI = *Toxicodendron diversilobum*

Woody species recorded using binoculars to view in inaccessible portions of the river include mule-fat, common buttonbush (*Cephalanthus occidentalis*), and California sycamore.

Herbaceous Vegetation

Refer to Table 5-3 for a list of the herbaceous and graminoid plant species observed by transect.

Swamp smartweed (*Persicaria hydropiperoides*) was the most encountered herbaceous species, being found at ten plots and representing anywhere from 5 to 40 percent cover at these locations. Canadian horseweed (*Erigeron canadensis*) and marsh bristlegrass (*Setaria parviflora*) were both identified at eight plots. Canadian horseweed made up 60 percent of the herbaceous vegetation at KT6-1, but never represented more than 8 percent coverage at any other plots. Marsh bristlegrass represented 1 to 40 percent herbaceous cover at plots where present. Sacred thorn-apple (*Datura wrightii*) was the only other herbaceous plant to grow at more than four plots, occurring at six, but primarily being lowly represented at each site accounting for around 1 percent coverage at all present plots except for KT9-2 where it accounted for 40 percent coverage. In general, no herbaceous plants accounted for greater than 40 percent coverage at any one site, except for two instances. Lakeshore sedge (*Carex lenticularis*) represented 75 percent coverage at KT5-1 and the previously mentioned Canadian horseweed coverage at KT6-1.

5.2.1.2 Describe the Relationship Between Existing Inundation Characteristics and Riparian Distribution

This section will be prepared following the completion of hydrological and riparian analyses (refer to Section 7.0).

5.2.1.3 Describe Hydrology and Riparian Recruitment in the Bypass Reach

This section will be prepared following the completion of the AQ 1 ITM (refer to Section 7.0).

Table 5-3. Riparian/Wetland Herbaceous and Graminoid Plants Observed at Riparian Transects

Species		NWI Indicator Status ¹	Riparian Transect (X = plant present at transect)										
Scientific Name	Common Name		KT1	KT2	KT3	KT4	KT5	KT6	KT7	KT8	KT9	KT10	
<i>Artemisia douglasiana</i>	Douglas' sagewort	FAC+							X	X	X		
<i>Avena barbata</i>	Slender oat	NI						X					
<i>Bromus diandrus</i>	Ripgut brome	NI						X					X
<i>Carex lenticularis</i>	Lakeshore sedge	OBL						X	X		X		
<i>Cynodon dactylon</i>	Bermudagrass	FACU			X							X	
<i>Cyperus eragrostis</i>	Tall flatsedge	FACW						X					X
<i>Datura wrightii</i>	Sacred thorn-apple	NI		X		X			X			X	
<i>Epilobium canum</i>	Hummingbird trumpet	NI						X					X
<i>Epilobium ciliatum Raf.</i>	Fringed willowherb	FACW									X		
<i>Erigeron canadensis</i>	Canadian horseweed	NI		X	X			X	X	X		X	X
<i>Euthamia occidentalis</i>	Western goldentop	OBL		X							X		
<i>Gnaphalium palustre</i>	Western marsh cudweed	FACW			X	X							
<i>Helenium puberulum DC.</i>	Rosilla	FACW							X				
<i>Juncus</i>	Unknown juncus	NA	X										
<i>Juncus balticus</i>	Mountain rush	FACW+						X					
<i>Juncus mexicanus</i>	Mexican rush	FACW			X								
<i>Medicago lupulina</i>	Black medick	FAC	X		X				X			X	
<i>Melilotus albus</i>	sweetclover	NI											X
<i>Onopordum acanthium L.</i>	Scotch cottonthistle	NI							X				
<i>Persicaria hydropiperoides</i>	Swamp smartweed	NI	X	X	X			X	X		X	X	X
<i>Phacelia egena</i>	Kaweah River phacelia	NI										X	X

Species		NWI Indicator Status ¹	Riparian Transect (X = plant present at transect)									
Scientific Name	Common Name		KT1	KT2	KT3	KT4	KT5	KT6	KT7	KT8	KT9	KT10
<i>Polypogon maritimus</i>	Mediterranean rabbitsfoot grass	OBL					X	X			X	X
<i>Pseudognaphalium luteoalbum</i>	Jersey cudweed	NI						X			X	X
<i>Rumex crispus L.</i>	Curly dock	FACW-						X				
<i>Setaria parviflora</i>	Marsh bristlegrass	FAC		X	X		X		X		X	X
<i>Setaria viridis</i>	Green bristlegrass	NI									X	
<i>Solidago californica</i>	California goldenrod	NI		X								
<i>Urtica dioica</i>	Stinging nettle	FACU				X	X			X		
<i>Verbascum thapsus</i>	Common mullein, Woolly mullein	NI		X				X	X			X
<i>Xanthium strumarium</i>	Rough cocklebur	FAC+					X			X		
<i>Unknown plant</i>	Unknown plant ²	NA				X						
<i>Poaceae</i>	Unknown grass	NA							X		X	X
Total Number of Species			3	7	7	4	12	12	5	7	11	12

¹ National Wetlands Inventory (NWI) Wetland Indicator Status as per the National Wetland Plant List (U.S. Army Corps of Engineers, 2020)

² Plant lacked sufficient features to allow for identification.

Key: FAC = Equally likely to occur in wetlands and nonwetlands.
 FACU = Usually occur in non-wetlands but occasionally found in wetlands
 FACW = Usually occur in wetlands but occasionally found in non-wetlands.
 NI = Not included on the National Wetland Plant List.
 OBL = Obligate wetland species only found in wetlands.
 UPL = Upland species not likely to occur in wetlands.

5.3 SPECIAL-STATUS PLANTS

Based on the database and literature search, 16 SSP species were determined to have the potential to occur within the vicinity of the Project. This includes six SSPs documented as historically occurring within the FERC Project boundary, including rose-flowered larkspur (*Delphinium purpusii*), calico monkeyflower (*Diplacus [=Mimulus] pictus*), greenhorn fritillary (*Fritillaria brandegeei*), Shevock’s golden aster (*Heterotheca shevockii*), southern Sierra monardella (*Monardella lioides* ssp. *aenmonoides*), and Bakersfield cactus (*Opuntia treleasei*). These 16 species, listed in Appendix D, comprise the target species for the TERR 1 SSP surveys.

One special-status plant, rose-colored larkspur, which is a Forest Service Species of Conservation Concern with a California Rare Plant Rank of 1B.3, was identified during the early season botanical surveys within the study area. Surveyors documented nine new populations of this species, ranging between approximately 1 to 1,800 square feet and supporting collectively a total of approximately 434 individuals. The populations documented did not coincide with previously reported populations.

Table 5-4 provides the unique population ID, total number of individuals, and approximate size in square feet for each population. Refer to Map 5-4 (Appendix A) for the location of each population. Appendix E provides photographs of rose-colored larkspur and typical habitat in the study area. Appendix F provides the California Native Species Field Survey Forms to be submitted to CNDDB.⁶

Table 5-4. Special-Status Plant Populations Identified During Botanical Surveys in the Study Area.

Scientific Name	Final Map ID	Facility	Total Number of Individuals	Population Size (Square Feet)	Survey Date
Rose-colored larkspur (<i>Delphinium purpusii</i>) Forest Service Species of Conservation Concern; California Rare Plant Rank 1B.3	DEPU_01	Conduit No. 3 Trail	35	75	4/26/2024
	DEPU_02	Conduit No. 3 Trail	17	40	4/26/2024
	DEPU_03	Conduit No. 3 Trail	16	60	4/26/2024
	DEPU_04	Flume No. 3	25	1,000	4/28/2024
	DEPU_05	Lucas Creek Trail	7	250	4/28/2024
	DEPU_06	Stark Creek Trail	1	1	4/27/2024
	DEPU_07	Dougherty Creek Trail	1	1	4/27/2024
	DEPU_08	Adit 14 & 15	12	150	4/29/2024
	DEPU_09	Overflow Spillway Trail	320	1,800	4/25/2024
Totals			434	3,377	

¹ Refer to Map 5-4 (Appendix A) for the location of each population in the Study Area.

⁶ Note that, based on guidance provided by CNDDB, populations located within 0.25 mile of each other should be reported on the same California Native Species Field Survey Form. Therefore, the three populations located along the Conduit No. 3 Trail have been included on one form.

No other SSPs were observed. Refer to Appendix G for a list of all plants (including mosses) observed in the study area during the early season surveys.

5.4 NON-NATIVE INVASIVE PLANTS

Appendix H provides the refined list of 38 target NNIPs for the Project.

Five target NNIP species were identified during botanical surveys in the study area, including:

- Red brome (*Bromus madritensis*) (Cal-IPC High) – 23 populations totaling approximately 498 acres.
- Cheatgrass (*Bromus tectorum*) (Cal-IPC High) – 9 populations totaling approximately 0.09 acre.
- Scotch thistle (*Onopordum acanthium*) (Cal-IPC High) – 32 populations totaling approximately 3 acres.
- Rabbitsfoot grass (*Polypogon monspeliensis*) (Cal-IPC Limited) – 11 populations totaling approximately 0.14 acre.
- Common mullein (*Verbascum thapsus*) (Cal-IPC Limited) – 11 populations totaling approximately 3.5 acres.

Table 5-5 provides a summary of the NNIP populations mapped within the study area including scientific name, common name, unique population ID, facility, level of infestation, and population size (in square feet). The location and extent of each NNIP population is depicted on Map 5-5 (Appendix A). Photographs of representative NNIP populations are also provided in Appendix I.

Table 5-5. Non-Native Invasive Plant Populations Identified During Botanical Surveys in the Study Area.

Final Map ID	Facility	Level of Infestation ²	Population Size (Square Feet)
Red brome (<i>Bromus madritensis ssp. rubens</i>) – Cal-IPC High			
BRMA_01	Kern River No. 1 Powerhouse and Switchyard	Mod	1,445,321
BRMA_02	Adit 17 & 18 Trail	Mod	202,000
BRMA_03	Adit 17 & 18 Trail	Mod	25,000
BRMA_04	Adit 18 & 19	Mod	10,000
BRMA_05	Adit 14 & 15	Mod	10,000
BRMA_06	Stark Creek Road	Mod	225,000
BRMA_07	Adit 12 & 13	Mod	10,000
BRMA_08	Stark Creek Road	Mod	0
BRMA_09	Lucas Creek Trail	Mod	68,233

Final Map ID	Facility	Level of Infestation ²	Population Size (Square Feet)
BRMA_10	Flume No. 4 Lucas Creek	Mod	9,000
BRMA_11	Steel Flume Trail	Mod	24,812
BRMA_12	Conduit No. 6	Mod	5,600
BRMA_13	Steel Flume Trail	Mod	26,300
BRMA_14	Cow Flat Creek Trail	Mod	34,500
BRMA_15	Adit 4 & 5	Mod	10,000
BRMA_16	Conduit No. 3 Trail	Mod	31,268
BRMA_17	Adit 2 & 3	Mod	5,000
BRMA_18	Democrat Gauge Trail	Mod	76,879
BRMA_19	Flume No. 1	Low	105,074
BRMA_20	Powerline Road	Mod	19,828
BRMA_21	Willow Spring Creek Road (also referred to as Democrat Dam Road)	Mod	17,978,220
BRMA_22	Democrat Dam Impoundment	Low	742,231
BRMA_23	Democrat Dam Impoundment	Low	621,348
Total Size			21,685,614 sq ft (498 acres)
Cheatgrass (<i>Bromus tectorum</i>) – Cal-IPC High			
BRTE_01	Stark Creek Road	Low	3,000
BRTE_02	Stark Creek Road	Low	450
BRTE_03	Dougherty Creek Road	Low	600
BRTE_04	Dougherty Creek Trail	Low	25
BRTE_05	Democrat Gage Trail	Low	75
BRTE_06	Willow Spring Creek Road (also referred to as Democrat Dam Road)	Low	1
BRTE_08	Willow Spring Creek Road (also referred to as Democrat Dam Road)	Low	30
BRTE_09	Democrat Dam Impoundment	Low	5
Total Size			4,186 sq ft (0.09 acre)
Scotch thistle (<i>Onopordum acanthium</i>) – Cal-IPC High			
ONAC_01	Forebay Operations Area Road	Low	750
ONAC_02	Water Tank	Low	200
ONAC_03	Kern River No. 1 Powerhouse and Switchyard	Mod	1,000
ONAC_04	Forebay Overflow Spillway	Low	1
ONAC_05	Overflow Spillway Trail	Low	20
ONAC_06	Overflow Spillway Trail	Low	4

Final Map ID	Facility	Level of Infestation ²	Population Size (Square Feet)
ONAC_07	Forebay Overflow Spillway	Low	1
ONAC_08	Overflow Spillway Trail	Low	400
ONAC_09	Overflow Spillway Trail	Low	1
ONAC_10	Stark Creek Trail	Low	300
ONAC_11	Stark Creek Trail	Low	100
ONAC_12	Stark Creek Road	Low	1
ONAC_13	Stark Creek Road	Low	1
ONAC_14	Stark Creek Road	Low	400
ONAC_16	Steel Flume Trail	Low	4
ONAC_17	Steel Flume Trail	Low	100
ONAC_18	Cow Flat Creek Trail	Low	1
ONAC_19	Adit 4 & 5	Low	100
ONAC_20	MIF Release Point	Low	1500
ONAC_21	Flume No. 1	Low	9
ONAC_22	Flume No. 1	Low	43,560
ONAC_23	Flume No. 1	Low	4
ONAC_24	Flume No. 1	Low	20
ONAC_25	Flume No. 1 Powerline	Low	25
ONAC_26	Democrat Dam Impoundment	Low	6
ONAC_27	Democrat Dam Impoundment	Low	70,000
ONAC_28	Willow Spring Creek Road (also referred to as Democrat Dam Road)	Low	25
ONAC_29	Democrat Dam Impoundment	Low	1
ONAC_30	Democrat Dam Impoundment	Low	200
ONAC_31	Democrat Dam Impoundment	Low	1
ONAC_31	Democrat Dam Impoundment	Low	300
Total Size			119,035 sq ft (3 acres)
Rabbitsfoot grass (<i>Polypogon monspeliensis</i>) – Cal-IPC Limited			
POMO_01	Kern River No. 1 Powerhouse and Switchyard	Low	150
POMO_02	Kern River No. 1 Powerhouse and Switchyard	Low	100
POMO_03	Democrat Dam Impoundment	Mod	400
POMO_04	Democrat Dam Impoundment	Low	30
POMO_05	Democrat Dam Impoundment	Low	225
POMO_06	Democrat Dam Impoundment	Low	180
POMO_07	Democrat Dam Impoundment	Low	4000
POMO_08	Democrat Dam Impoundment	Low	100

Final Map ID	Facility	Level of Infestation ²	Population Size (Square Feet)
POMO_09	Democrat Dam Impoundment	Low	60
POMO_10	Democrat Dam Impoundment	Low	660
POMO_11	Democrat Dam Impoundment	Low	100
Total Size			6,005 sq ft (0.14 acre)
Common mullein (<i>Verbascum thapsus</i>) – Cal-IPC Limited			
VETH_01	Democrat Gage Trail	Mod	1,200
VETH_02	Democrat Dam Impoundment	Low	50
VETH_03	Democrat Dam Impoundment	Low	90
VETH_04	Democrat Dam Impoundment	Low	25
VETH_05	Democrat Dam Impoundment	Mod	75,000
VETH_06	Democrat Dam Impoundment	Low	75,000
VETH_07	Democrat Dam Impoundment	Low	100
VETH_08	Democrat Dam Impoundment	Low	16
VETH_09	Democrat Dam Impoundment	Low	16
VETH_10	Democrat Dam Impoundment	Low	660
VETH_11	Democrat Dam Impoundment	Mod	360
Total Size			152,517 sq ft (3.5 acres)

¹ Refer to Map 5-5 (Appendix A) for the location of each individual/population in the Study Area.

² Level of Infestation

Key: LOW = <5% cover
 MOD = 6–25% cover
 HIGH = >25% cover

6.0 STUDY SPECIFIC CONSULTATION

The following study specific consultation has been conducted:

- **March 28, 2024:** SCE’s consultant provided an e-mail to the Terrestrial TWG to obtain resource agency input on reference population surveys and the timing of early season botanical surveys described in the TERR 1 TSP, and to request the most recent lists of SSPs and NNIPs for the SQF. No responses were received.
- **April 16, 2024:** SCE’s consultant provided an e-mail to the Terrestrial TWG providing the results of early season reference population surveys and to confirm timing of botanical surveys. No responses were received.
- **July 8, 2024:** SCE’s consultant provided an e-mail to the Terrestrial TWG to obtain resource agency input on reference population surveys and the timing of late season botanical surveys described in the TERR 1 TSP. No responses were received.

- **July 18, 2024:** SCE’s consultant provided an e-mail to the Terrestrial TWG providing the results of late season reference population surveys and to confirm timing of botanical surveys. No responses were received.
- **August 29, 2024:** SCE’s consultant provided an e-mail to the Terrestrial TWG regarding postponement of late season surveys due to the ignition of Borel Fire and associated area evacuations, road closures and public safety concerns. An acknowledgment was received from Anna Bonnette, SQF Botanist.

This ITM will be distributed to the Terrestrial TWG for review and comment in January 2025.

7.0 OUTSTANDING STUDY PLAN ELEMENTS

The outstanding study plan elements include:

- The TERR 1 TSP requires implementation of both early season and late season botanical surveys. Early season botanical surveys were completed in April 2024. Late season botanical surveys were scheduled to occur in late July 2024. However, on July 24, 2024, the Borel Fire started on the south side of State Route 178 in the vicinity of the study area. There were unusually hot temperatures and winds that led to rapid spread of the fire within a few days of ignition (U.S. Department of Agriculture – Forest Service [Forest Service], 2024). Because of the Borel Fire and associated area evacuations, road closures, and public safety concerns, the late season surveys were postponed to July 2025.
- TERR 1 studies associated with the relationship between riparian vegetation alliances and flow conditions in the bypass reach require further collaboration between the TERR 1 studies and hydrological studies described in the AQ 1 – Hydrology TSP (AQ 1 TSP). The hydrological analyses incorporating the riparian data described above were still ongoing at the time of development of this ITM. Therefore, results of the riparian vegetation–flow conditions studies were not completed.
- Review of the ITM by the Terrestrial TWG and preparation of Final Technical Memorandum.

The anticipated schedule to complete the outstanding study plan elements are identified in Table 7-1.

Table 7-1. Schedule for Completion of Outstanding Study Plan Elements

Date	Activity
January 2025	Distribute ITM to TWG
February–April 2025	TWG review and provide comments on ITM
July 2025	Conduct late season botanical surveys
July 2025	Complete hydrologic analysis associated with riparian vegetation

Date	Activity
July–August 2025	Resolve comments and prepare Final Technical Memorandum
December 2025	Distribute Final Technical Memorandum in Draft License Application

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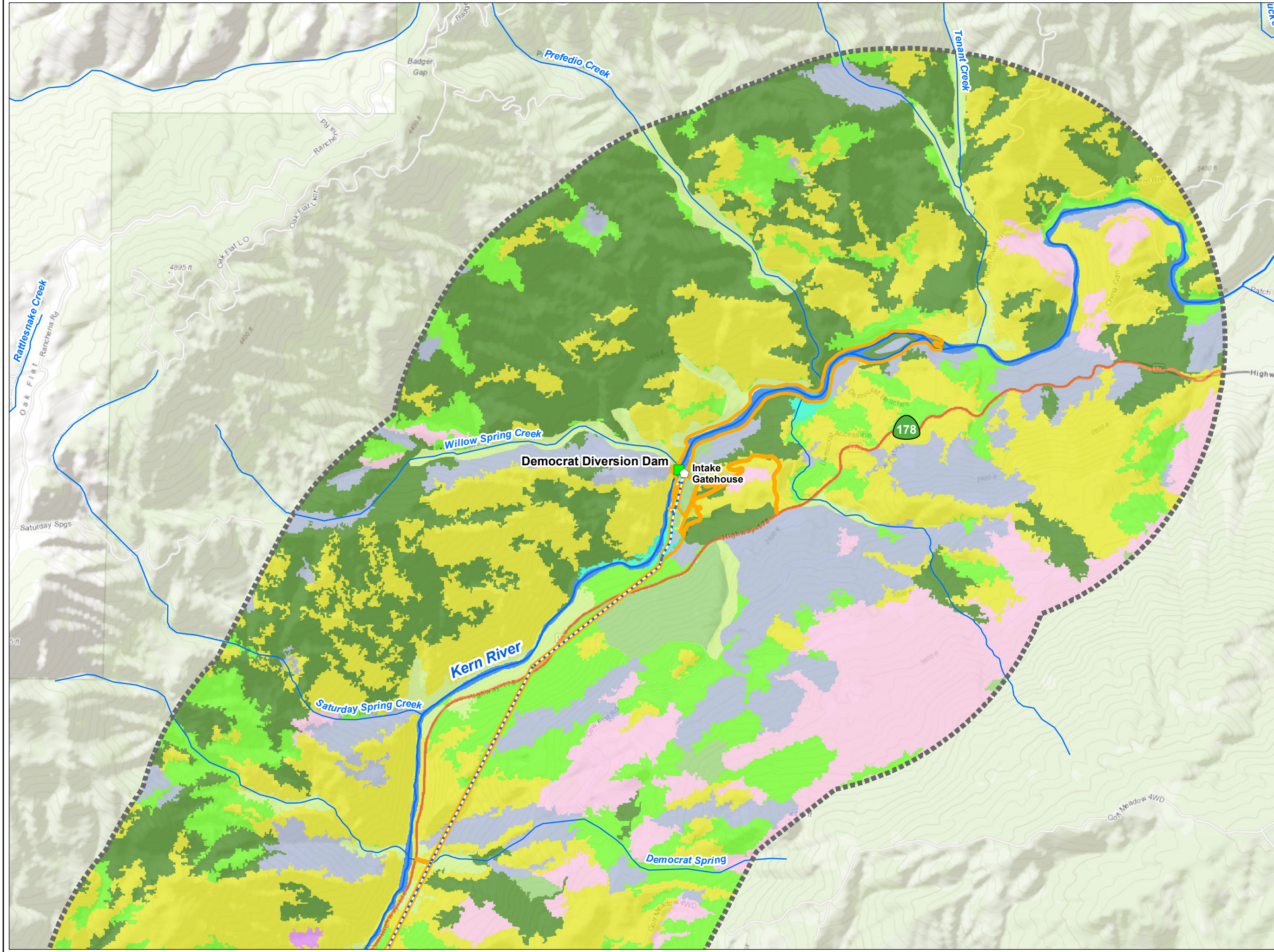
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APPENDIX A

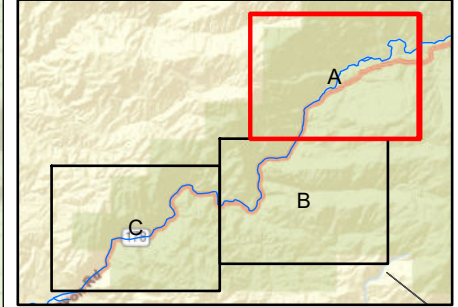
Maps



- Facilities**
- Dam
 - ▲ Powerhouse
 - Water Conveyance Feature
 - ⋯ Flowline
 - Penstock
 - FERC Boundary
- Other Features**
- Watercourse
 - 1 Mile Buffer of FERC Boundary
- CALVEG Vegetation Alliances***
- Agriculture Pond or Water Feature (A7)
 - Annual Grasses and Forbs Alliance (HG)
 - Baccharis (Riparian) Alliance (ML)
 - Barren (BA)
 - Blue Oak Alliance (QD)
 - California Sycamore (QP)
 - Gray Pine Alliance (PD)
 - Interior Live Oak (QW)
 - Interior Mixed Hardwood Alliance (NX)
 - River/Stream/Canal (W1)
 - Tilled Earth (A3)
 - Ultramafic Mixed Shrub Alliance (C1)
 - Urban-related Bare Soil (IB)
 - Valley Oak Alliance (QL)

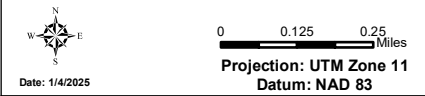
NOTE: Where terrain was visible with binoculars, biologists identified most QL polygons as being dominated by Quercus wislizeni (QW). We have changed polygons we were able to visually confirm, but it is quite likely remaining QL polygons are actually QW.

*SOURCE: Adapted from Existing Vegetation - CALVEG, USDA - FS, Region 5 - Central Valley, 2019

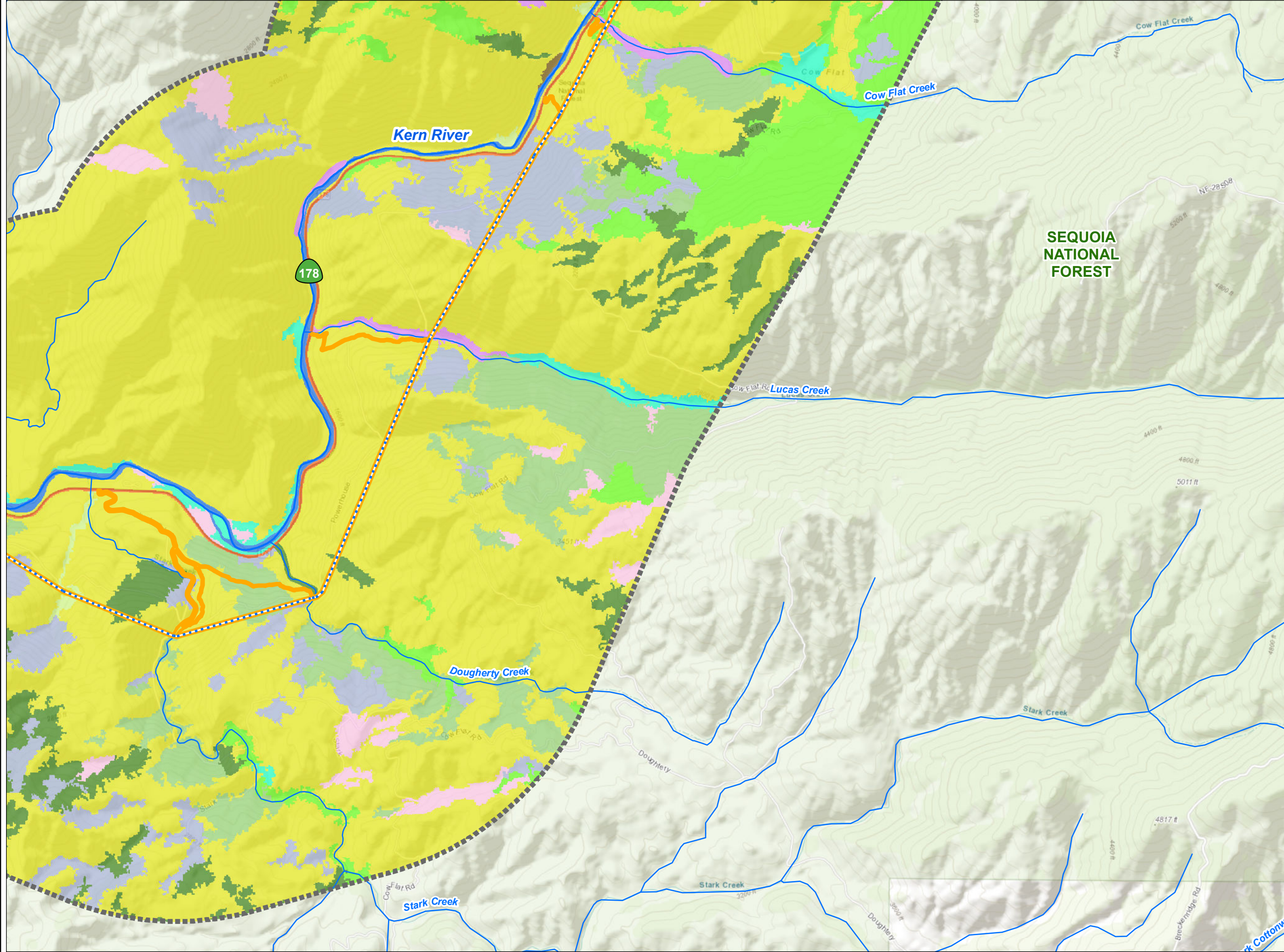


Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-1A
Vegetation Alliances within 1 Mile Around Kern No. 1 Project Facilities



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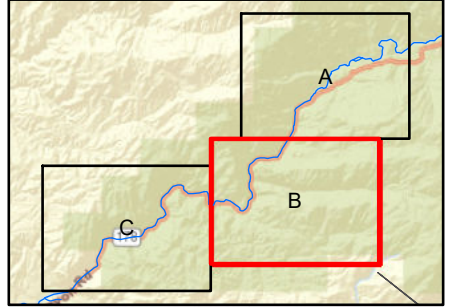
- Facilities**
- Dam
 - ▲ Powerhouse
 - Water Conveyance Feature
 - ⋯ Flowline
 - Penstock
 - FERC Boundary


- Other Features**
- Watercourse
 - 1 Mile Buffer of FERC Boundary

- CALVEG Vegetation Alliances***
- Agriculture Pond or Water Feature (A7)
 - Annual Grasses and Forbs Alliance (HG)
 - Baccharis (Riparian) Alliance (ML)
 - Barren (BA)
 - Blue Oak Alliance (QD)
 - California Sycamore (QP)
 - Gray Pine Alliance (PD)
 - Interior Live Oak (QW)
 - Interior Mixed Hardwood Alliance (NX)
 - River/Stream/Canal (W1)
 - Tilled Earth (A3)
 - Ultramafic Mixed Shrub Alliance (C1)
 - Urban-related Bare Soil (IB)
 - Valley Oak Alliance (QL)

NOTE: Where terrain was visible with binoculars, biologists identified most QL polygons as being dominated by Quercus wislizeni (QW). We have changed polygons we were able to visually confirm, but it is quite likely remaining QL polygons are actually QW.

*SOURCE: Adapted from Existing Vegetation - CALVEG, USDA - FS, Region 5 - Central Valley, 2019






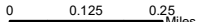
SOUTHERN CALIFORNIA EDISON
Energy for What's Ahead™

Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-1B
**Vegetation Alliances within
1 Mile Around Kern No. 1
Project Facilities**

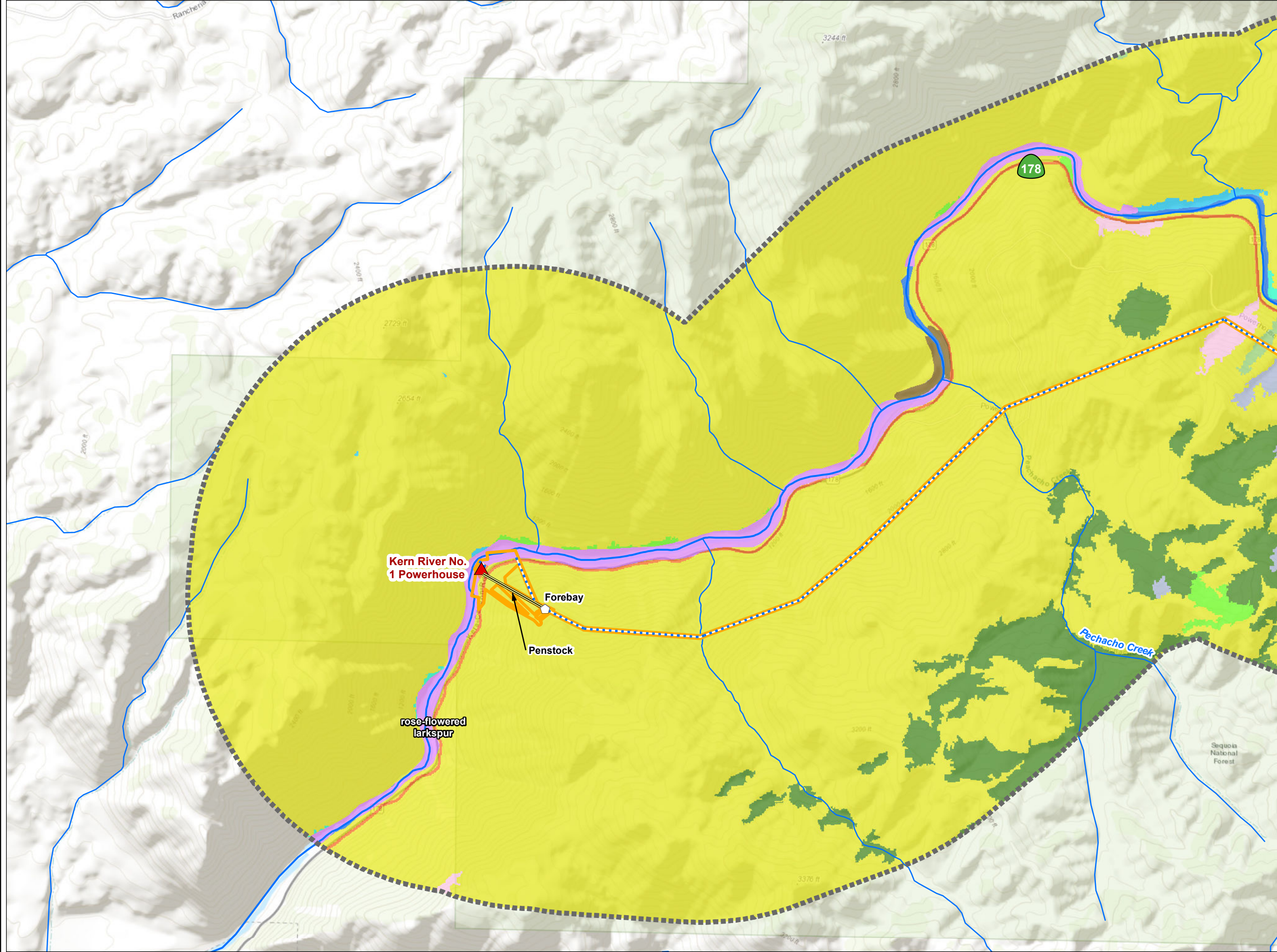


Date: 11/4/2025



Projection: UTM Zone 11
Datum: NAD 83

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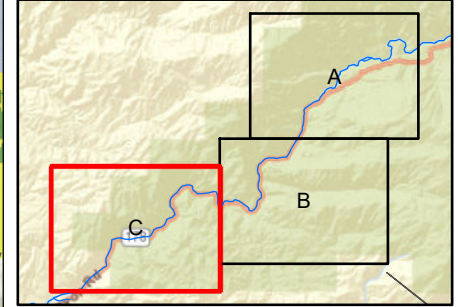
- Facilities**
- Dam
 - ▲ Powerhouse
 - ◻ Water Conveyance Feature
 - Flowline
 - Penstock
 - FERC Boundary

- Other Features**
- Watercourse
 - 1 Mile Buffer of FERC Boundary

- CALVEG Vegetation Alliances***
- Agriculture Pond or Water Feature (A7)
 - Annual Grasses and Forbs Alliance (HG)
 - Baccharis (Riparian) Alliance (ML)
 - Barren (BA)
 - Blue Oak Alliance (QD)
 - California Sycamore (QP)
 - Gray Pine Alliance (PD)
 - Interior Live Oak (QW)
 - Interior Mixed Hardwood Alliance (NX)
 - River/Stream/Canal (W1)
 - Tilled Earth (A3)
 - Ultramafic Mixed Shrub Alliance (C1)
 - Urban-related Bare Soil (IB)
 - Valley Oak Alliance (QL)

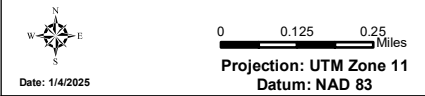
NOTE: Where terrain was visible with binoculars, biologists identified most QL polygons as being dominated by Quercus wislizeni (QW). We have changed polygons we were able to visually confirm, but it is quite likely remaining QL polygons are actually QW.

*SOURCE: Adapted from Existing Vegetation - CALVEG, USDA - FS, Region 5 - Central Valley, 2019

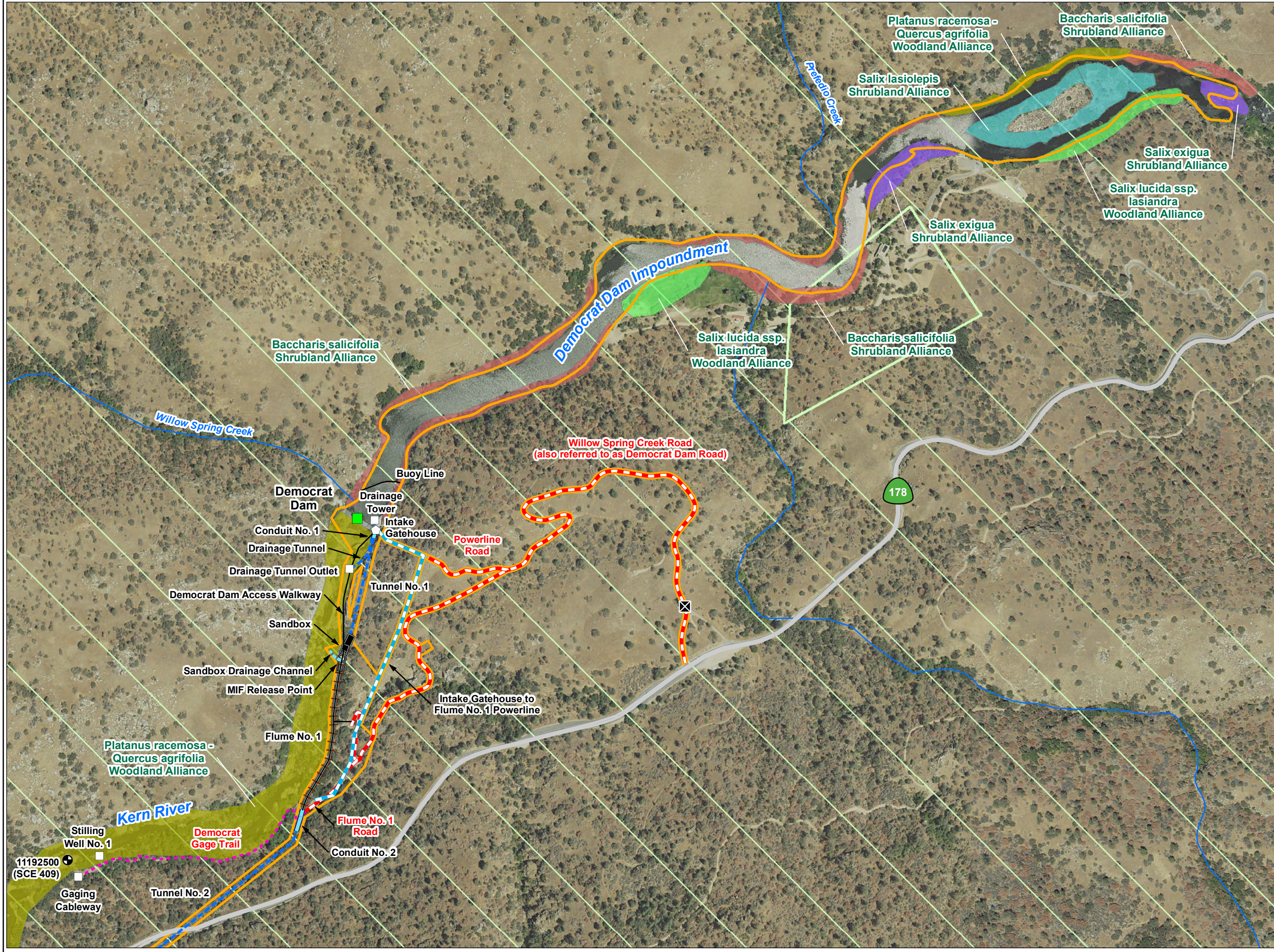


Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-1C
Vegetation Alliances within
1 Mile Around Kern No. 1
Project Facilities



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Facilities

- Dam
- Powerhouse
- Water Conveyance Feature
- Tunnel
- Flume
- Conduit
- Sandbox
- Penstock
- Spillway
- Tailrace
- Gage
- Ancillary Facility
- Ancillary Feature
- Powerline
- Communication/Powerline
- FERC Boundary

Transportation

- Project Road
- Project Trail
- Other Road
- Gate

Other Features

- Watercourse

Land Jurisdiction*

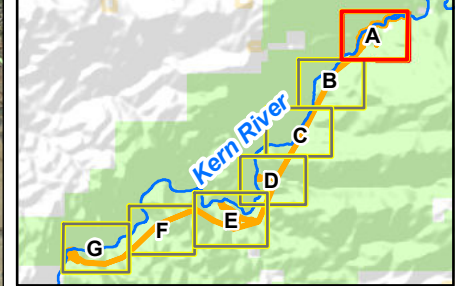
- U.S. Forest Service

*SOURCE: BLM 2021

Riparian Alliances

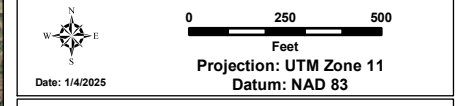
- Baccharis salicifolia Shrubland Alliance
- Platanus racemosa - Quercus agrifolia Woodland Alliance
- Salix exigua Shrubland Alliance
- Salix lasiolepis Shrubland Alliance
- Salix lucida ssp. lasiandra Woodland Alliance

Note: Other than Democrat Dam Impoundment and the Kern River, there were no Special Aquatic Features in the Study Area



Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-2A
Riparian Alliances and Special Aquatic Features Within the FERC Project Boundary, Along Project Access Trails, and Along the Kern No. 1 Project Bypass Reach.



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- Facilities**
- Dam
 - ▲ Powerhouse
 - ◻ Water Conveyance Feature
 - Tunnel
 - Flume
 - Conduit
 - Sandbox
 - Penstock
 - Spillway
 - Tailrace
 - Gage
 - Ancillary Facility
 - Ancillary Feature
 - Powerline
 - Communication/Powerline
 - FERC Boundary

- Transportation**
- Project Road
 - Project Trail
 - Other Road
 - ⊗ Gate

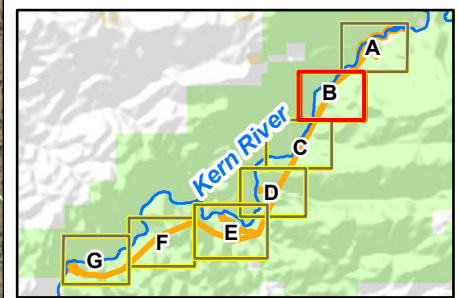
- Other Features**
- Watercourse

- Land Jurisdiction***
- U.S. Forest Service

*SOURCE: BLM 2021

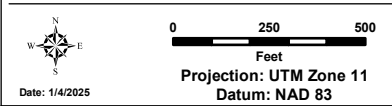
- Riparian Alliances**
- Baccharis salicifolia Shrubland Alliance
 - Platanus racemosa - Quercus agrifolia Woodland Alliance
 - Salix exigua Shrubland Alliance
 - Salix lasiolepis Shrubland Alliance
 - Salix lucida ssp. lasiandra Woodland Alliance

Note: Other than Democrat Dam Impoundment and the Kern River, there were no Special Aquatic Features in the Study Area



Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-2B
Riparian Alliances and Special Aquatic Features Within the FERC Project Boundary, Along Project Access Trails, and Along the Kern No. 1 Project Bypass Reach.



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- Facilities**
- Dam
 - ▲ Powerhouse
 - Water Conveyance Feature
 - Tunnel
 - Flume
 - Conduit
 - Sandbox
 - Penstock
 - Spillway
 - Tailrace
 - Gage
 - Ancillary Facility
 - Ancillary Feature
 - Powerline
 - Communication/Powerline
 - FERC Boundary

- Transportation**
- Project Road
 - Project Trail
 - Other Road
 - Gate

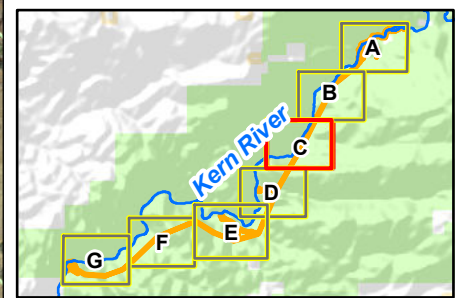
- Other Features**
- Watercourse

- Land Jurisdiction***
- U.S. Forest Service

*SOURCE: BLM 2021

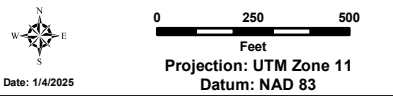
- Riparian Alliances**
- Baccharis salicifolia Shrubland Alliance
 - Platanus racemosa - Quercus agrifolia Woodland Alliance
 - Salix exigua Shrubland Alliance
 - Salix lasiolepis Shrubland Alliance
 - Salix lucida ssp. lasiandra Woodland Alliance

Note: Other than Democrat Dam Impoundment and the Kern River, there were no Special Aquatic Features in the Study Area

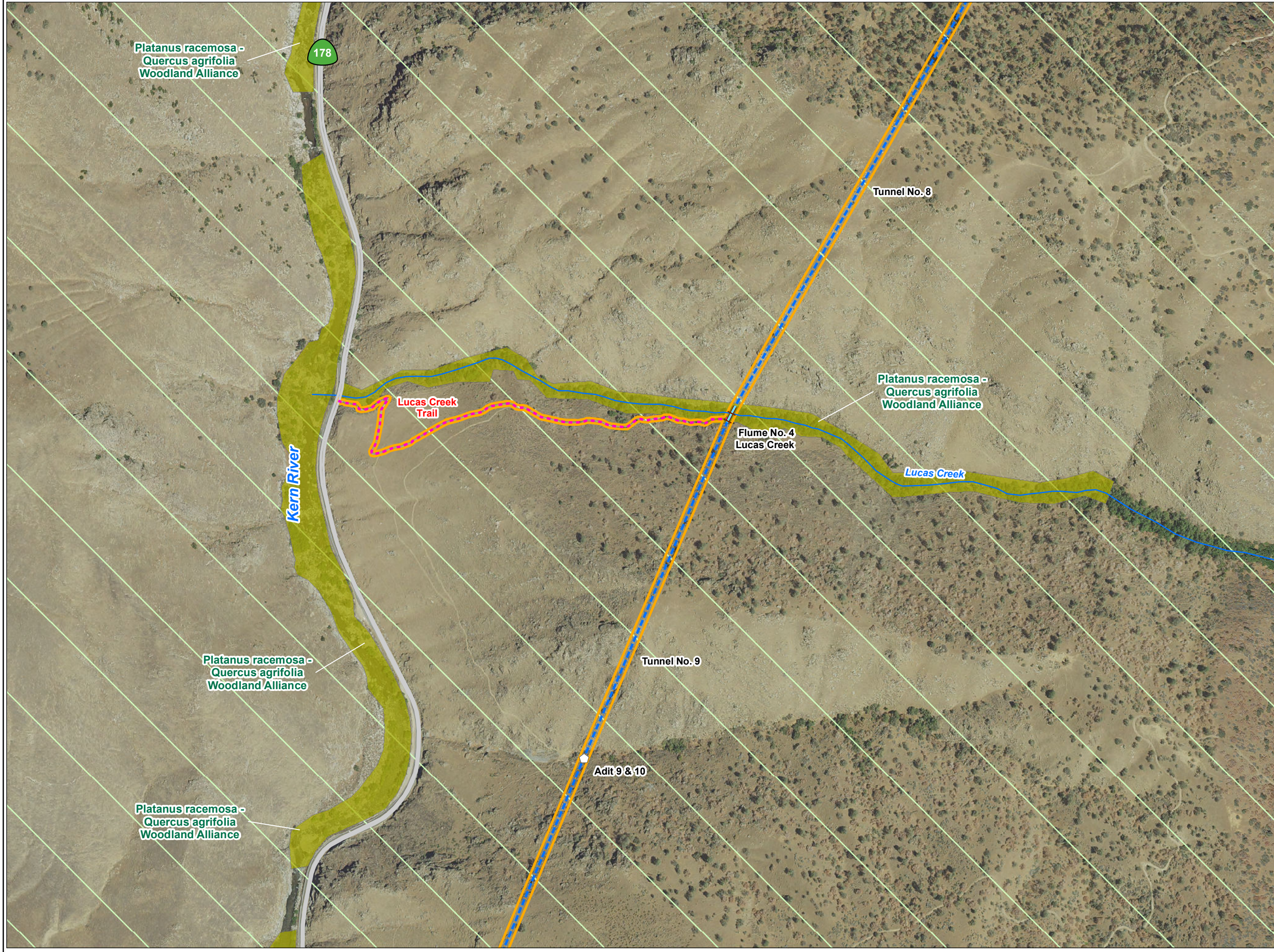


Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-2C
Riparian Alliances and Special Aquatic Features Within the FERC Project Boundary, Along Project Access Trails, and Along the Kern No. 1 Project Bypass Reach.



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- Facilities**
- Dam
 - ▲ Powerhouse
 - ◻ Water Conveyance Feature
 - Tunnel
 - Flume
 - Conduit
 - Sandbox
 - Penstock
 - Spillway
 - Tailrace
 - ⊕ Gage
 - Ancillary Facility
 - Ancillary Feature
 - Powerline
 - Communication/Powerline
 - FERC Boundary

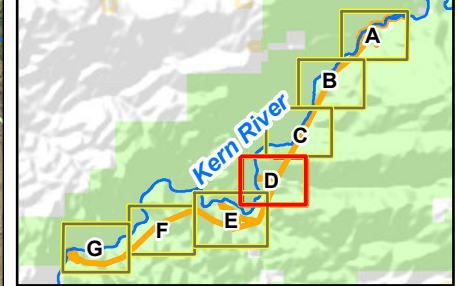
- Transportation**
- Project Road
 - Project Trail
 - Other Road
 - ⊗ Gate

- Other Features**
- Watercourse

- Land Jurisdiction***
- U.S. Forest Service
- *SOURCE: BLM 2021

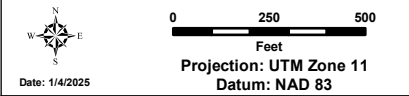
- Riparian Alliances**
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 - Platanus racemosa - Quercus agrifolia Woodland Alliance
 - Salix exigua Shrubland Alliance
 - Salix lasiolepis Shrubland Alliance
 - Salix lucida ssp. lasiandra Woodland Alliance

Note: Other than Democrat Dam Impoundment and the Kern River, there were no Special Aquatic Features in the Study Area

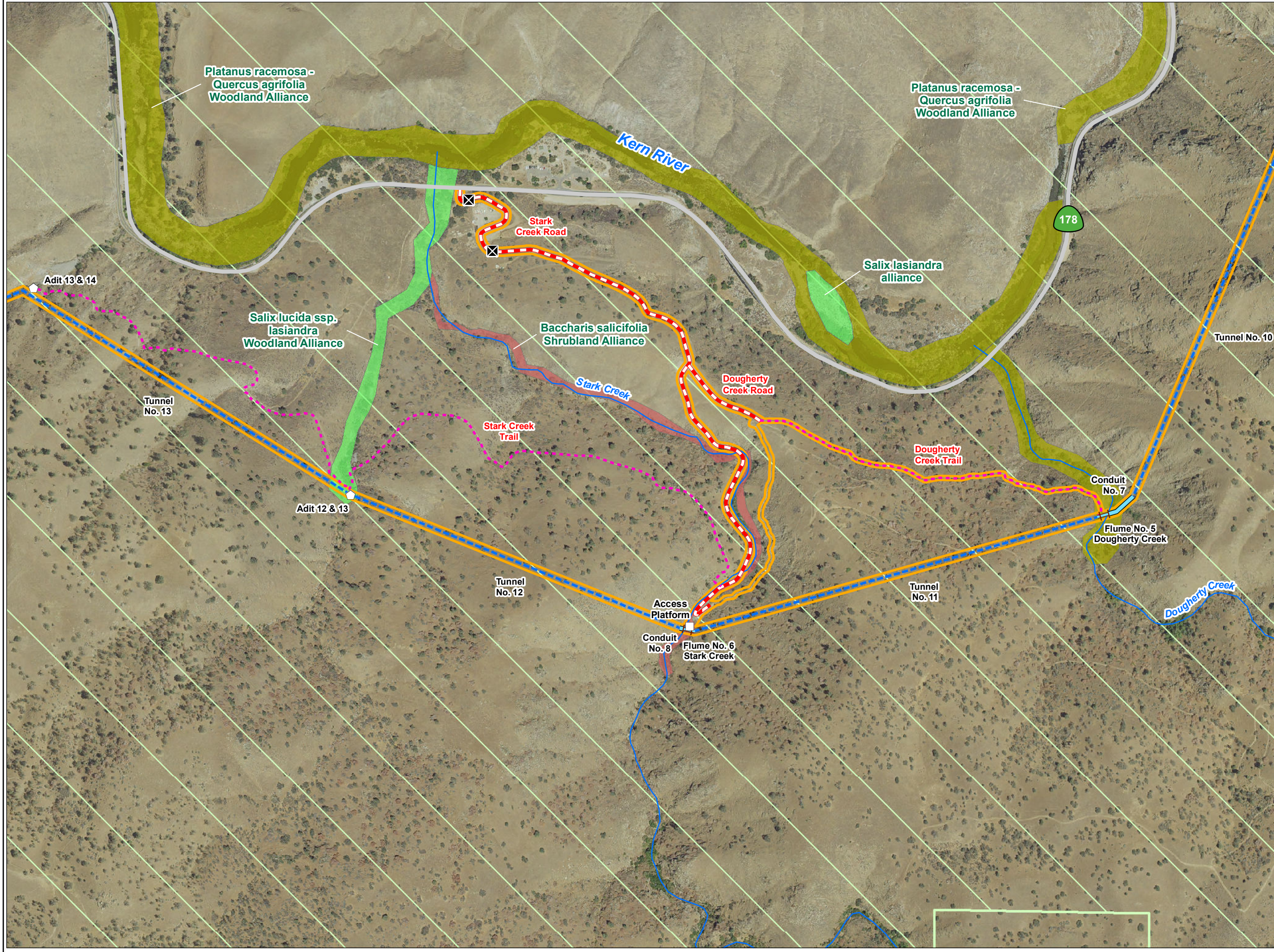


Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-2D
Riparian Alliances and Special Aquatic Features Within the FERC Project Boundary, Along Project Access Trails, and Along the Kern No. 1 Project Bypass Reach.



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- Facilities**
- Dam
 - ▲ Powerhouse
 - ◻ Water Conveyance Feature
 - Tunnel
 - Flume
 - Conduit
 - Sandbox
 - Penstock
 - Spillway
 - Tailrace
 - ⊕ Gage
 - Ancillary Facility
 - Ancillary Feature
 - Powerline
 - Communication/Powerline
 - FERC Boundary

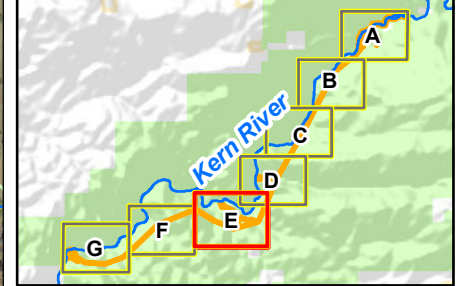
- Transportation**
- Project Road
 - Project Trail
 - Other Road
 - ⊗ Gate

- Other Features**
- Watercourse

- Land Jurisdiction***
- U.S. Forest Service
- *SOURCE: BLM 2021

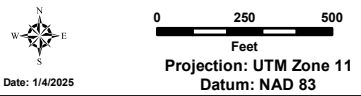
- Riparian Alliances**
- Baccharis salicifolia Shrubland Alliance
 - Platanus racemosa - Quercus agrifolia Woodland Alliance
 - Salix exigua Shrubland Alliance
 - Salix lasiolepis Shrubland Alliance
 - Salix lucida ssp. lasiandra Woodland Alliance

Note: Other than Democrat Dam Impoundment and the Kern River, there were no Special Aquatic Features in the Study Area

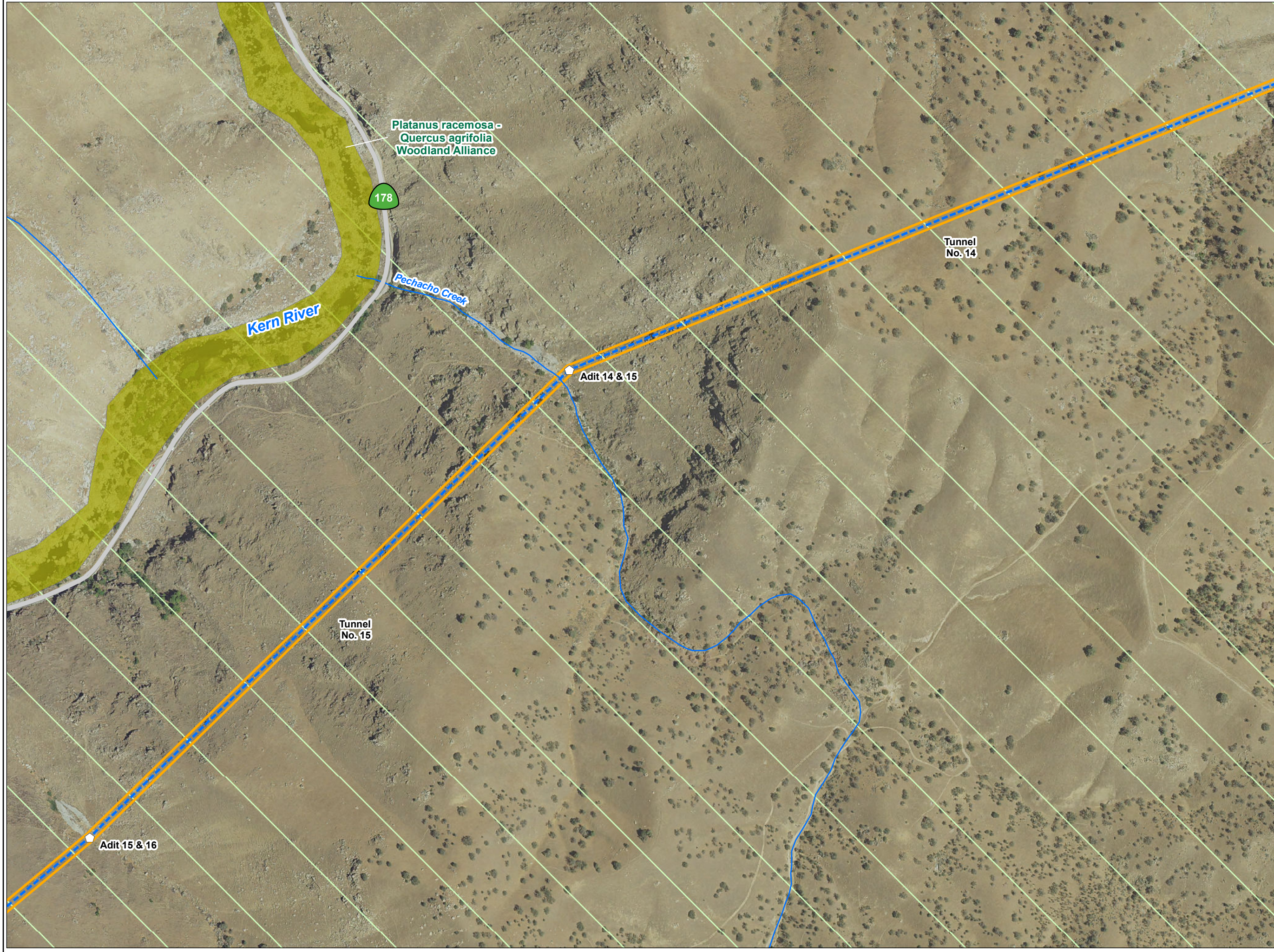


Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-2E
Riparian Alliances and Special Aquatic Features Within the FERC Project Boundary, Along Project Access Trails, and Along the Kern No. 1 Project Bypass Reach.



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- Facilities**
- Dam
 - Powerhouse
 - Water Conveyance Feature
 - Tunnel
 - Flume
 - Conduit
 - Sandbox
 - Penstock
 - Spillway
 - Tailrace
 - Gage
 - Ancillary Facility
 - Ancillary Feature
 - Powerline
 - Communication/Powerline
 - FERC Boundary

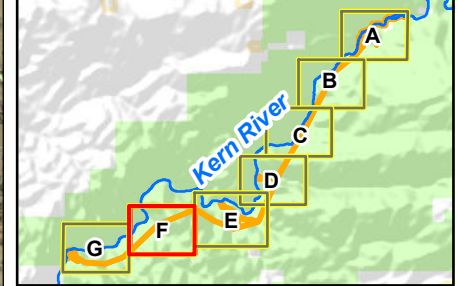
- Transportation**
- Project Road
 - Project Trail
 - Other Road
 - Gate

- Other Features**
- Watercourse

- Land Jurisdiction***
- U.S. Forest Service
- *SOURCE: BLM 2021

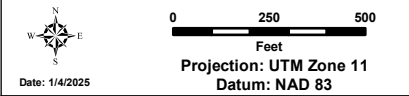
- Riparian Alliances**
- Baccharis salicifolia Shrubland Alliance
 - Platanus racemosa - Quercus agrifolia Woodland Alliance
 - Salix exigua Shrubland Alliance
 - Salix lasiolepis Shrubland Alliance
 - Salix lucida ssp. lasiandra Woodland Alliance

Note: Other than Democrat Dam Impoundment and the Kern River, there were no Special Aquatic Features in the Study Area

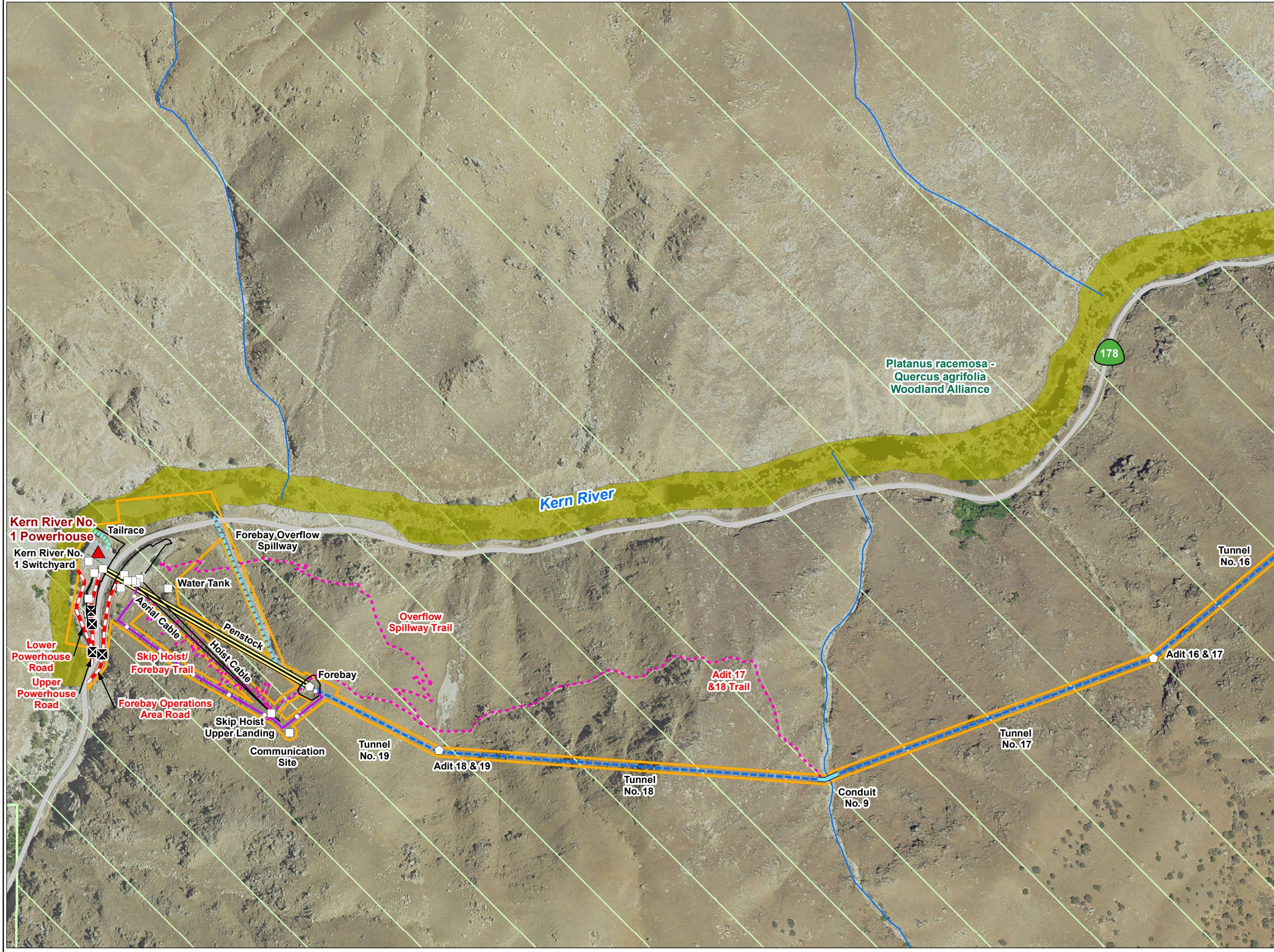


Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-2F
Riparian Alliances and Special Aquatic Features Within the FERC Project Boundary, Along Project Access Trails, and Along the Kern No. 1 Project Bypass Reach.



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- Facilities**
- Dam
 - ▲ Powerhouse
 - ◻ Water Conveyance Feature
 - Tunnel
 - + Flume
 - Conduit
 - Sandbox
 - Penstock
 - Spillway
 - Tailrace
 - Gage
 - Ancillary Facility
 - Ancillary Feature
 - Powerline
 - Communication/Powerline
 - FERC Boundary

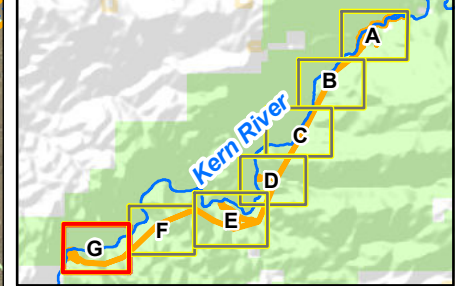
- Transportation**
- Project Road
 - Project Trail
 - Other Road
 - ⊗ Gate

- Other Features**
- Watercourse

- Land Jurisdiction***
- U.S. Forest Service
- *SOURCE: BLM 2021

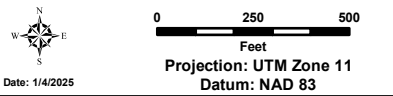
- Riparian Alliances**
- Baccharis salicifolia Shrubland Alliance
 - Platanus racemosa - Quercus agrifolia Woodland Alliance
 - Salix exigua Shrubland Alliance
 - Salix lasiolepis Shrubland Alliance
 - Salix lucida ssp. lasiandra Woodland Alliance

Note: Other than Democrat Dam Impoundment and the Kern River, there were no Special Aquatic Features in the Study Area



Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-2G
Riparian Alliances and Special Aquatic Features Within the FERC Project Boundary, Along Project Access Trails, and Along the Kern No. 1 Project Bypass Reach.



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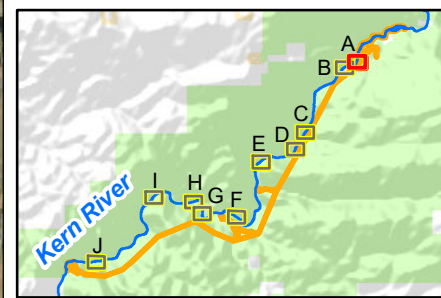
- Facilities**
- Gage
 - Conduit
 - Flume
 - Powerline
 - Sandbox
 - Ancillary Facility
 - Spillway
 - Tailrace
 - Tunnel
 - FERC Boundary

- Transportation**
- Project Road
 - Project Trail
 - Other Road

- Other Features**
- River Mile (1/10th Mile)
 - Watercourse

- Transects/Sampling Plots**
- Plots
 - Transect

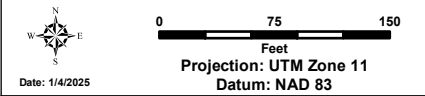
- Riparian Alliances**
- Platanus racemosa - Quercus agrifolia Woodland Alliance
 - Salix lasiandra alliance



Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-3A

**Riparian Transects Along the
Kern River No. 1
Project Bypass Reach**



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**Democrat
Gage Trail**



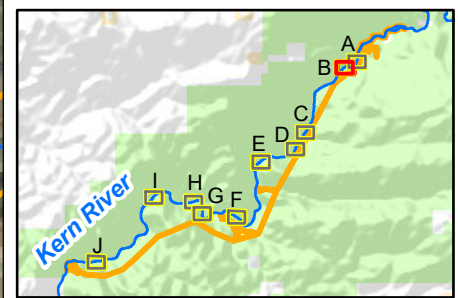
- Facilities**
- Gage
 - Conduit
 - Flume
 - Powerline
 - Sandbox
 - Ancillary Facility
 - Spillway
 - Tailrace
 - Tunnel
 - FERC Boundary

- Transportation**
- Project Road
 - Project Trail
 - Other Road

- Other Features**
- River Mile (1/10th Mile)
 - Watercourse

- Transects/Sampling Plots**
- Plots
 - Transect

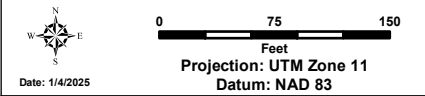
- Riparian Alliances**
- Platanus racemosa - Quercus agrifolia Woodland Alliance
 - Salix lasiandra alliance



Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-3B

**Riparian Transects Along the
Kern River No. 1
Project Bypass Reach**



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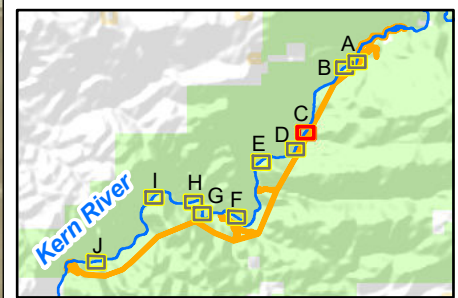
- Facilities**
- Gage
 - Conduit
 - Flume
 - Powerline
 - Sandbox
 - Ancillary Facility
 - Spillway
 - Tailrace
 - Tunnel
 - FERC Boundary

- Transportation**
- Project Road
 - Project Trail
 - Other Road

- Other Features**
- River Mile (1/10th Mile)
 - Watercourse

- Transects/Sampling Plots**
- Plots
 - Transect

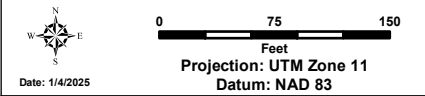
- Riparian Alliances**
- Platanus racemosa - Quercus agrifolia Woodland Alliance
 - Salix lasiandra alliance



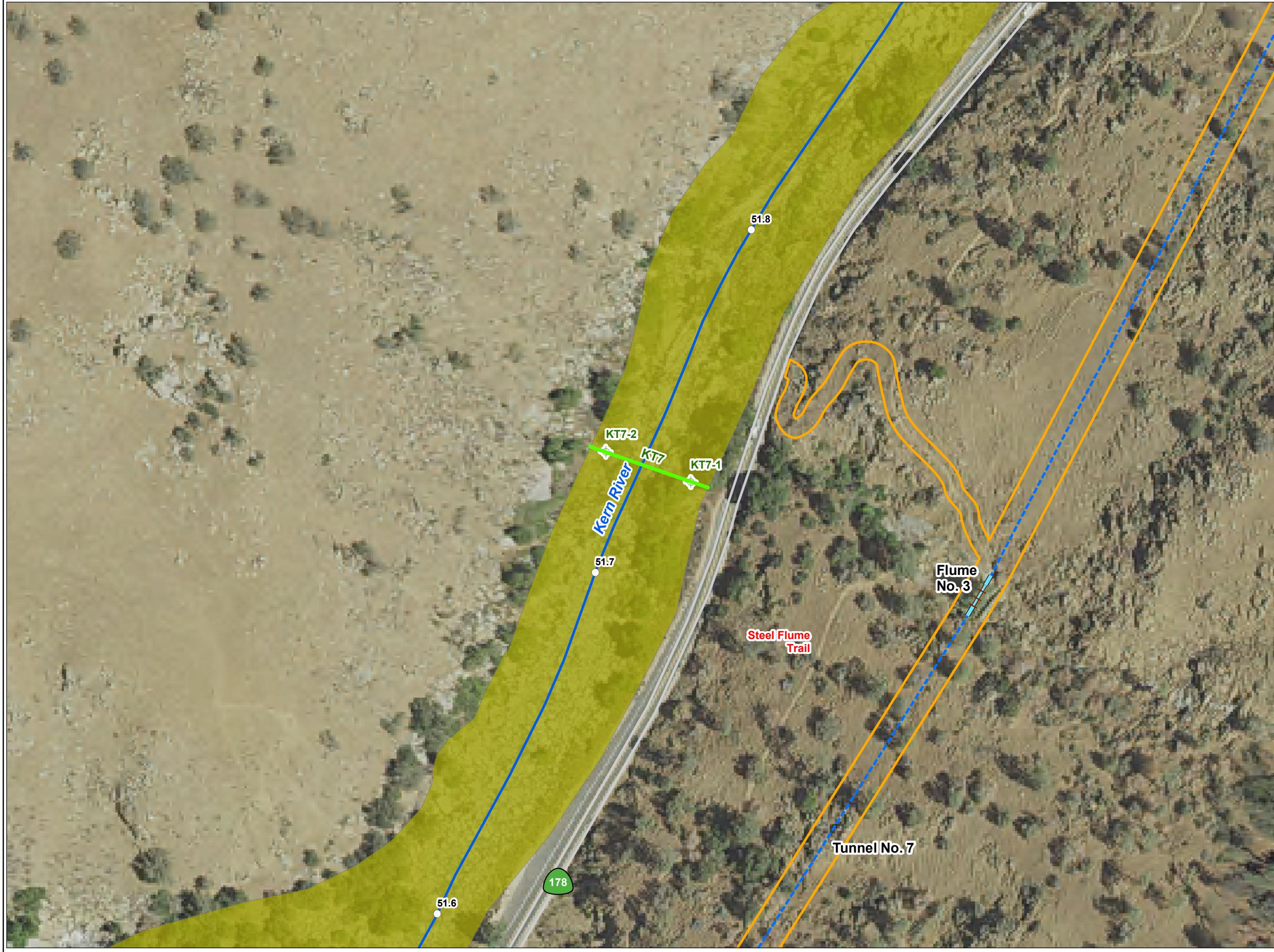
Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-3C

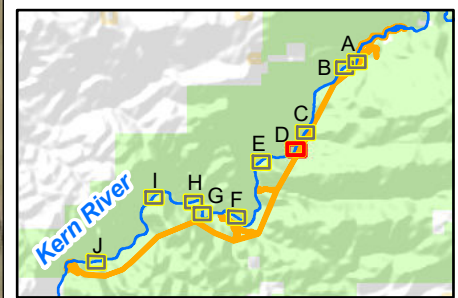
**Riparian Transects Along the
Kern River No. 1
Project Bypass Reach**



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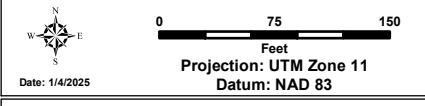
- Facilities**
- Gage
 - Conduit
 - Flume
 - Powerline
 - Sandbox
 - Ancillary Facility
 - Spillway
 - Tailrace
 - Tunnel
 - FERC Boundary
- Transportation**
- Project Road
 - Project Trail
 - Other Road
- Other Features**
- River Mile (1/10th Mile)
 - Watercourse
- Transects/Sampling Plots**
- Plots
 - Transect
- Riparian Alliances**
- Platanus racemosa - Quercus agrifolia Woodland Alliance
 - Salix lasiandra alliance



Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-3D

**Riparian Transects Along the
Kern River No. 1
Project Bypass Reach**



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The Kern River flows during the time of the survey made crossing too dangerous; therefore, a plot was only taken on one side of the river.

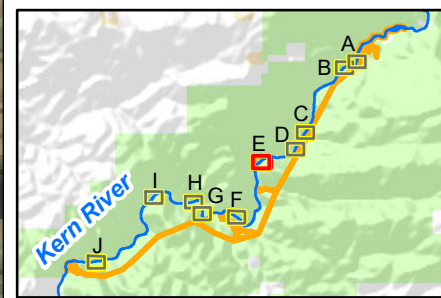
- Facilities**
- Gage
 - Conduit
 - Flume
 - Powerline
 - Sandbox
 - Ancillary Facility
 - Spillway
 - Tailrace
 - Tunnel
 - FERC Boundary

- Transportation**
- Project Road
 - Project Trail
 - Other Road

- Other Features**
- River Mile (1/10th Mile)
 - Watercourse

- Transects/Sampling Plots**
- Plots
 - Transect

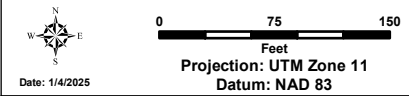
- Riparian Alliances**
- Platanus racemosa - Quercus agrifolia Woodland Alliance
 - Salix lasiandra alliance



Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-3E

Riparian Transects Along the Kern River No. 1 Project Bypass Reach



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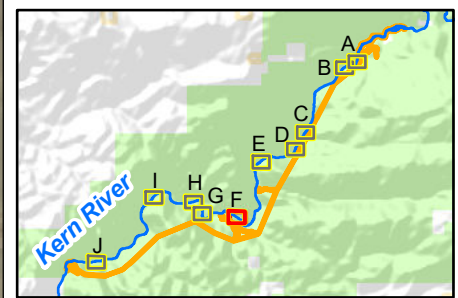
- Facilities**
- Gage
 - Conduit
 - Flume
 - Powerline
 - Sandbox
 - Ancillary Facility
 - Spillway
 - Tailrace
 - Tunnel
 - FERC Boundary

- Transportation**
- Project Road
 - Project Trail
 - Other Road

- Other Features**
- River Mile (1/10th Mile)
 - Watercourse

- Transects/Sampling Plots**
- Plots
 - Transect

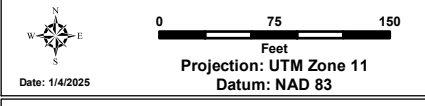
- Riparian Alliances**
- Platanus racemosa - Quercus agrifolia Woodland Alliance
 - Salix lasiandra alliance



Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-3F

**Riparian Transects Along the
Kern River No. 1
Project Bypass Reach**



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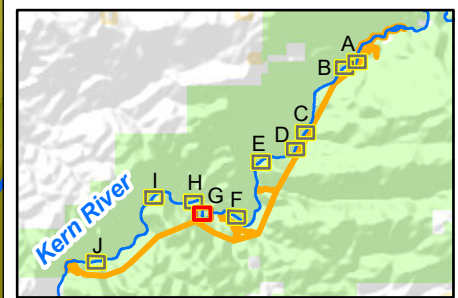
- Facilities**
- Gage
 - Conduit
 - Flume
 - Powerline
 - Sandbox
 - Ancillary Facility
 - Spillway
 - Tailrace
 - Tunnel
 - FERC Boundary

- Transportation**
- Project Road
 - Project Trail
 - Other Road

- Other Features**
- River Mile (1/10th Mile)
 - Watercourse

- Transects/Sampling Plots**
- Plots
 - Transect

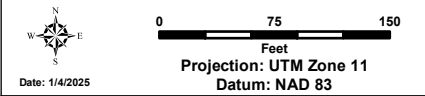
- Riparian Alliances**
- Platanus racemosa - Quercus agrifolia Woodland Alliance
 - Salix lasiandra alliance



Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-3G

**Riparian Transects Along the
Kern River No. 1
Project Bypass Reach**



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The Kern River flows during the time of the survey made crossing too dangerous; therefore, a plot was only taken on one side of the river.

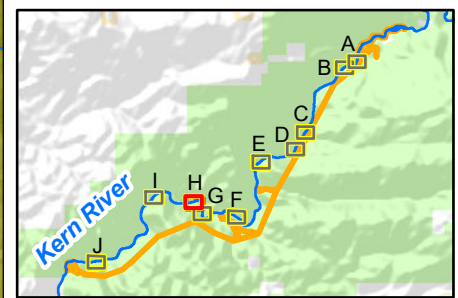
- Facilities**
- Gage
 - Conduit
 - Flume
 - Powerline
 - Sandbox
 - Ancillary Facility
 - Spillway
 - Tailrace
 - Tunnel
 - FERC Boundary

- Transportation**
- Project Road
 - Project Trail
 - Other Road

- Other Features**
- River Mile (1/10th Mile)
 - Watercourse

- Transects/Sampling Plots**
- Plots
 - Transect

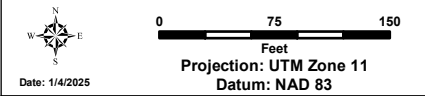
- Riparian Alliances**
- Platanus racemosa - Quercus agrifolia Woodland Alliance
 - Salix lasiandra alliance



Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-3H

Riparian Transects Along the Kern River No. 1 Project Bypass Reach



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The Kern River flows during the time of the survey made crossing too dangerous; therefore, a plot was only taken on one side of the river.

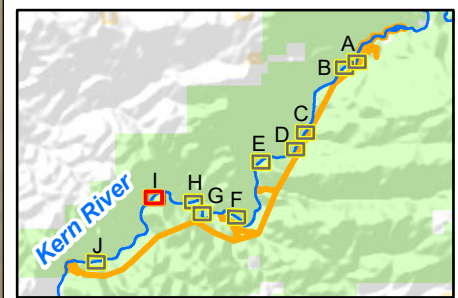
- Facilities**
- Gage
 - Conduit
 - Flume
 - Powerline
 - Sandbox
 - Ancillary Facility
 - Spillway
 - Tailrace
 - Tunnel
 - FERC Boundary

- Transportation**
- Project Road
 - Project Trail
 - Other Road

- Other Features**
- River Mile (1/10th Mile)
 - Watercourse

- Transects/Sampling Plots**
- Plots
 - Transect

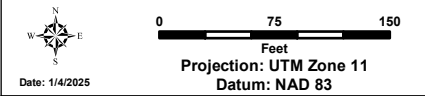
- Riparian Alliances**
- Platanus racemosa - Quercus agrifolia Woodland Alliance
 - Salix lasiandra alliance



Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-31

**Riparian Transects Along the
Kern River No. 1
Project Bypass Reach**

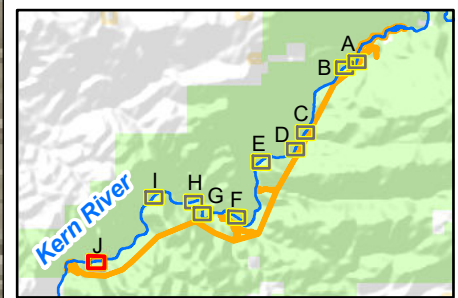


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The Kern River flows during the time of the survey made crossing too dangerous; therefore, a plot was only taken on one side of the river.

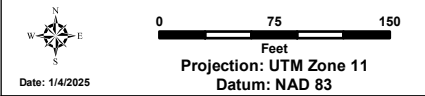
- Facilities**
- Gage
 - Conduit
 - Flume
 - Powerline
 - Sandbox
 - Ancillary Facility
 - Spillway
 - Tailrace
 - Tunnel
 - FERC Boundary
- Transportation**
- Project Road
 - Project Trail
 - Other Road
- Other Features**
- River Mile (1/10th Mile)
 - Watercourse
- Transects/Sampling Plots**
- Plots
 - Transect
- Riparian Alliances**
- Platanus racemosa - Quercus agrifolia Woodland Alliance
 - Salix lasiandra alliance



Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-3J

**Riparian Transects Along the
Kern River No. 1
Project Bypass Reach**



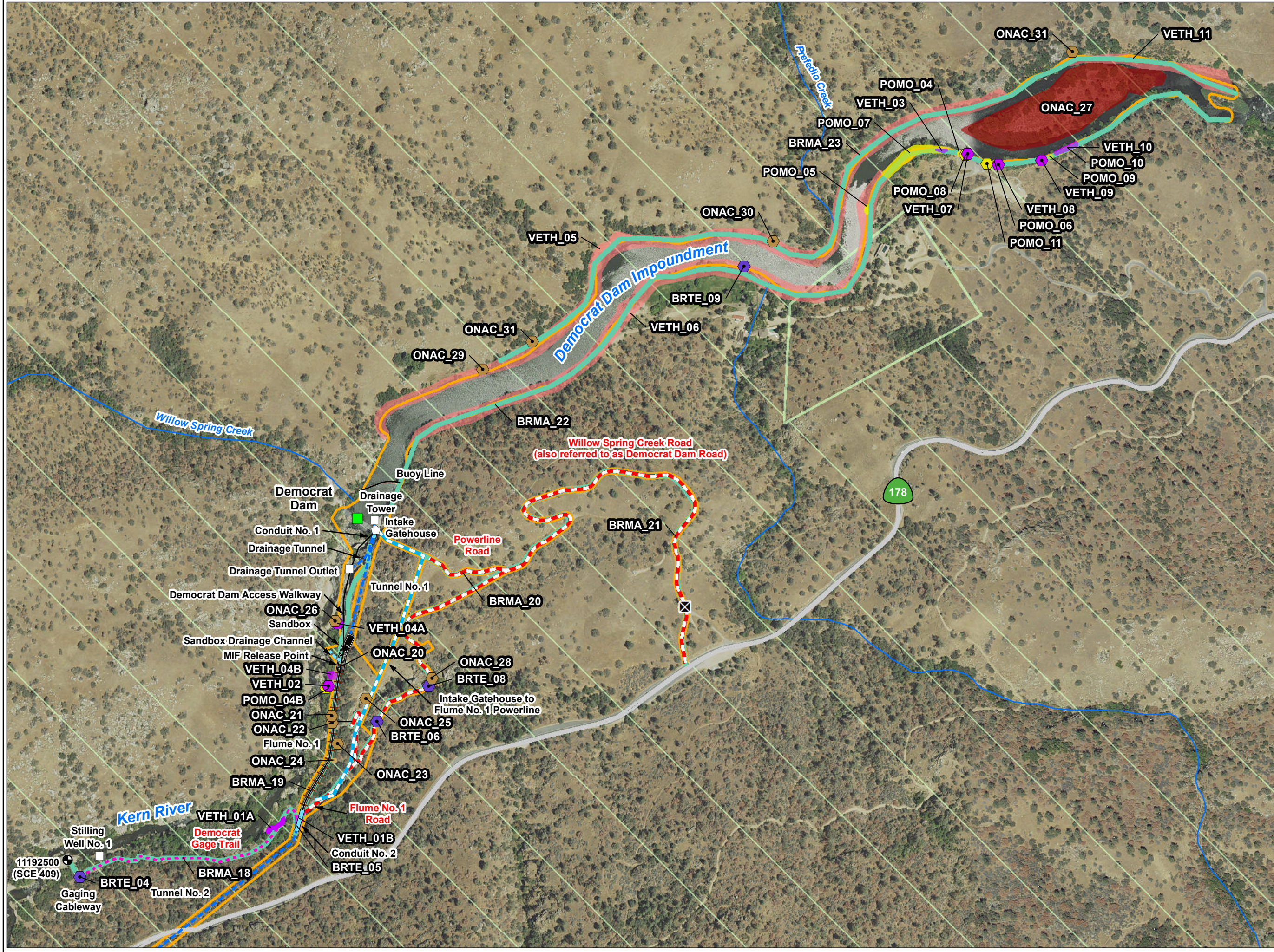
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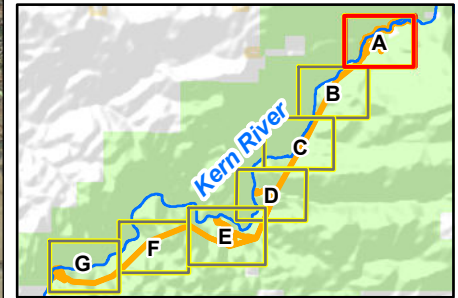
Map 5-4a–g Special-Status Plants Within the FERC Project Boundary, Along Project Access Trails and the Kern River No. 1 Project Bypass Reach (Confidential)

Map 5.4a–g will not be distributed to the general public. Documents containing Confidential Information may be requested by entities and organizations with jurisdiction over these resources. To request copies, please contact Meg Richardson, SCE Relicensing Project Manager at (626) 238-2902 or mary.m.richardson@sce.com.



- Facilities**
- Dam
 - ▲ Powerhouse
 - ◻ Water Conveyance Feature
 - Tunnel
 - Flume
 - Conduit
 - Sandbox
 - Penstock
 - Spillway
 - Tailrace
 - Gage
 - Ancillary Facility
 - Ancillary Feature
 - Powerline
 - Communication/Powerline
 - FERC Boundary
- Transportation**
- Project Road
 - Project Trail
 - Watercourse
 - Other Road
 - ⊗ Gate
- Other Features**
- Watercourse
- Land Jurisdiction***
- U.S. Forest Service

- *SOURCE: BLM 2021
- Non-Native Invasive Plants**
- BRMAR, red brome
 - BRTE, cheatgrass
 - ONAC, scotch thistle
 - POMO, rabbitsfoot grass
 - VETH, common mullein
 - POMO & VETH
 - ONAC, BRTE, BRMAR, POMO & VETH



SOUTHERN CALIFORNIA EDISON
 Energy for What's Ahead™

Kern River No. 1 Hydroelectric Project
 FERC Project No. 1930

Map 5-5A

Non-Native Invasive Plants Within the FERC Project Boundary, Along Project Access Trails, and Along the Kern No. 1 Project Bypass Reach.

Date: 1/4/2025

Projection: UTM Zone 11
Datum: NAD 83

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- Facilities**
- Dam
 - ▲ Powerhouse
 - Water Conveyance Feature
 - Tunnel
 - Flume
 - Conduit
 - Sandbox
 - Penstock
 - Spillway
 - Tailrace
 - Gage
 - Ancillary Facility
 - Ancillary Feature
 - Powerline
 - Communication/Powerline
 - FERC Boundary

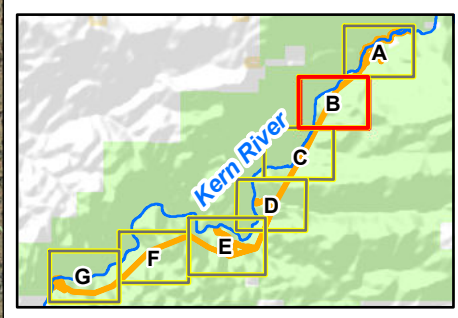
- Transportation**
- Project Road
 - Project Trail
 - Other Road
 - Gate

- Other Features**
- Watercourse

- Land Jurisdiction***
- U.S. Forest Service

*SOURCE: BLM 2021

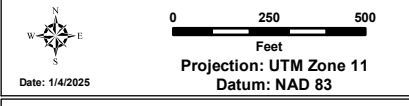
- Non-Native Invasive Plants**
- BRMAR, red brome
 - BRTE, cheatgrass
 - ONAC, scotch thistle
 - POMO, rabbitsfoot grass
 - VETH, common mullein
 - POMO & VETH
 - ONAC, BRTE, BRMAR, POMO & VETH



Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-5B

Non-Native Invasive Plants Within the FERC Project Boundary, Along the Project Access Trails, and Along the Kern No. 1 Project Bypass Reach.



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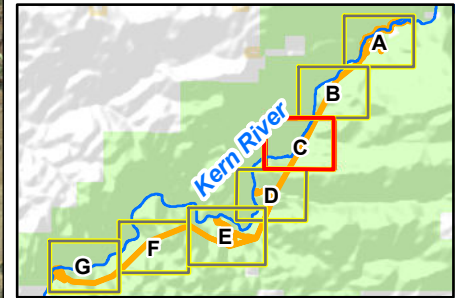
- Facilities**
- Dam
 - ▲ Powerhouse
 - ◻ Water Conveyance Feature
 - Tunnel
 - Flume
 - Conduit
 - Sandbox
 - Penstock
 - Spillway
 - Tailrace
 - Gage
 - Ancillary Facility
 - Ancillary Feature
 - Powerline
 - Communication/Powerline
 - FERC Boundary

- Transportation**
- Project Road
 - Project Trail
 - Other Road
 - ⊗ Gate

- Other Features**
- Watercourse

- Land Jurisdiction***
- U.S. Forest Service

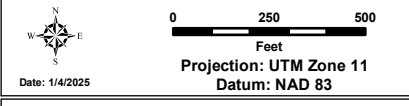
- Non-Native Invasive Plants**
- BRMAR, red brome
 - BRTE, cheatgrass
 - ONAC, scotch thistle
 - POMO, rabbitsfoot grass
 - VETH, common mullein
 - POMO & VETH
 - ONAC, BRTE, BRMAR, POMO & VETH



Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-5C

Non-Native Invasive Plants Within the FERC Project Boundary, Along Project Access Trails, and Along the Kern No. 1 Project Bypass Reach.



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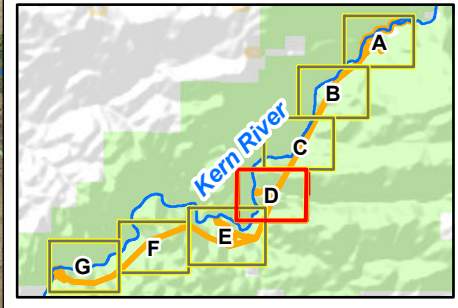
- Facilities**
- Dam
 - ▲ Powerhouse
 - ◻ Water Conveyance Feature
 - Tunnel
 - + Flume
 - Conduit
 - Sandbox
 - Penstock
 - Spillway
 - Tailrace
 - ⊕ Gage
 - Ancillary Facility
 - Ancillary Feature
 - Powerline
 - Communication/Powerline
 - FERC Boundary

- Transportation**
- Project Road
 - Project Trail
 - Other Road
 - ⊗ Gate

- Other Features**
- Watercourse

- Land Jurisdiction***
- U.S. Forest Service

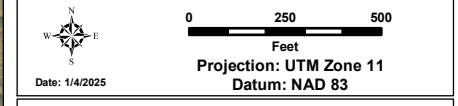
- *SOURCE: BLM 2021
- Non-Native Invasive Plants**
- ⬢ BRMAR, red brome
 - ⬢ BRTE, cheatgrass
 - ⬢ ONAC, scotch thistle
 - ⬢ POMO, rabbitsfoot grass
 - ⬢ VETH, common mullein
 - ⬢ POMO & VETH
 - ⬢ ONAC, BRTE, BRMAR, POMO & VETH



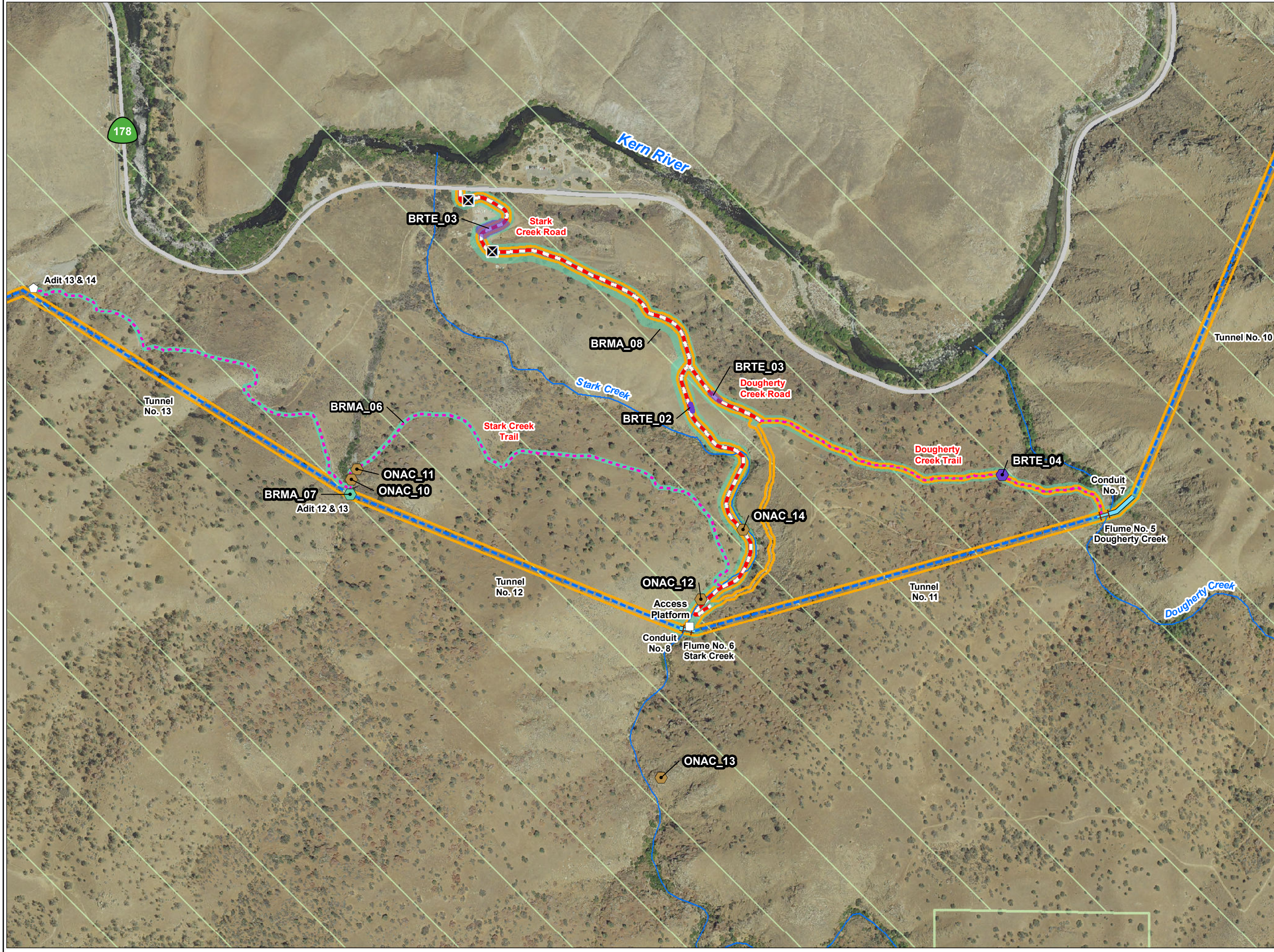
Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-5D

Non-Native Invasive Plants Within the FERC Project Boundary, Along Project Access Trails, and Along the Kern No. 1 Project Bypass Reach.



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- Facilities**
- Dam
 - ▲ Powerhouse
 - ◻ Water Conveyance Feature
 - Tunnel
 - Flume
 - Conduit
 - Sandbox
 - Penstock
 - Spillway
 - Tailrace
 - Gage
 - Ancillary Facility
 - Ancillary Feature
 - Powerline
 - Communication/Powerline
 - FERC Boundary

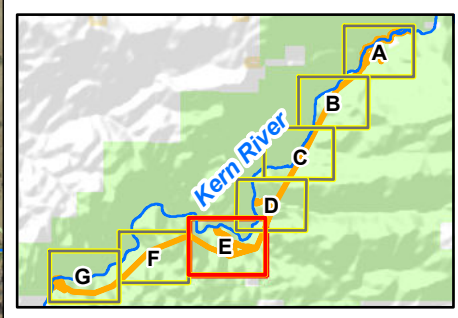
- Transportation**
- - - Project Road
 - - - Project Trail
 - Other Road
 - ⊗ Gate

- Other Features**
- Watercourse

- Land Jurisdiction***
- U.S. Forest Service

*SOURCE: BLM 2021

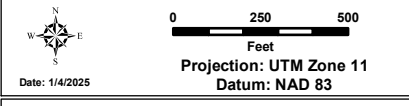
- Non-Native Invasive Plants**
- BRMAR, red brome
 - BRTE, cheatgrass
 - ONAC, scotch thistle
 - POMO, rabbitsfoot grass
 - VETH, common mullein
 - POMO & VETH
 - ONAC, BRTE, BRMAR, POMO & VETH



Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-5E

Non-Native Invasive Plants Within the FERC Project Boundary, Along the Project Access Trails, and Along the Kern No. 1 Project Bypass Reach.



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- Facilities**
- Dam
 - ▲ Powerhouse
 - ◻ Water Conveyance Feature
 - Tunnel
 - + Flume
 - Conduit
 - Sandbox
 - Penstock
 - Spillway
 - Tailrace
 - Gage
 - Ancillary Facility
 - Ancillary Feature
 - Powerline
 - Communication/Powerline
 - FERC Boundary

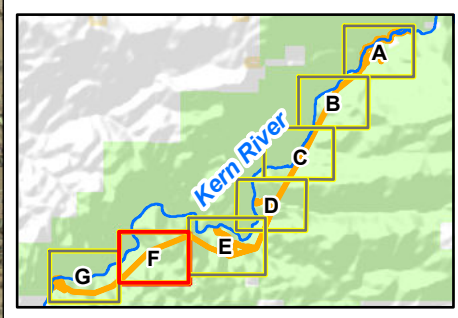
- Transportation**
- Project Road
 - Project Trail
 - Other Road
 - ⊗ Gate

- Other Features**
- Watercourse

- Land Jurisdiction***
- U.S. Forest Service

*SOURCE: BLM 2021

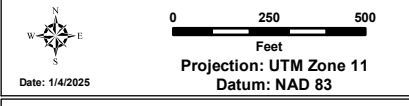
- Non-Native Invasive Plants**
- BRMAR, red brome
 - BRTE, cheatgrass
 - ONAC, scotch thistle
 - POMO, rabbitsfoot grass
 - VETH, common mullein
 - POMO & VETH
 - ONAC, BRTE, BRMAR, POMO & VETH



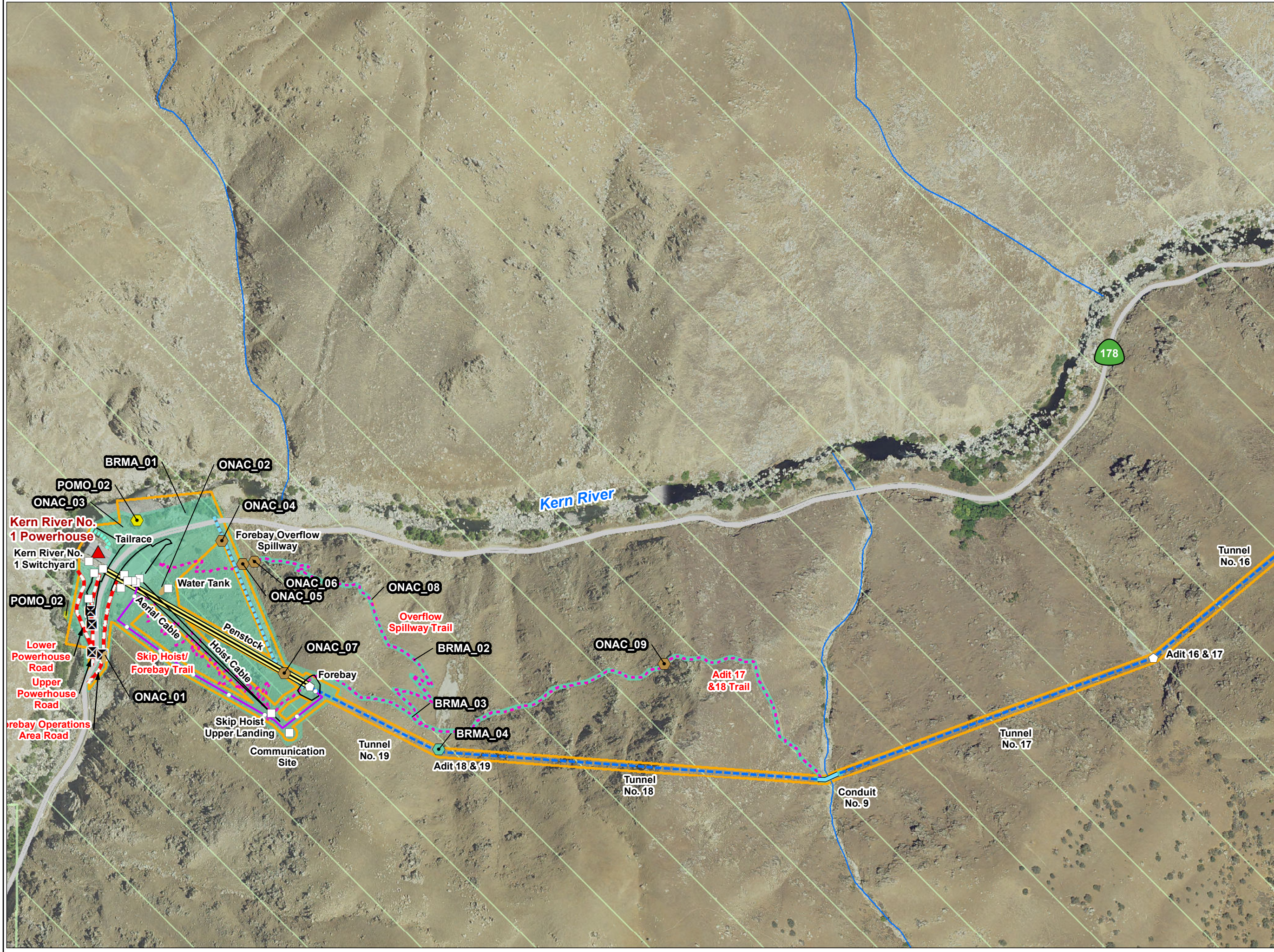
Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-5F

Non-Native Invasive Plants Within the FERC Project Boundary, Along the Project Access Trails, and Along the Kern No. 1 Project Bypass Reach.



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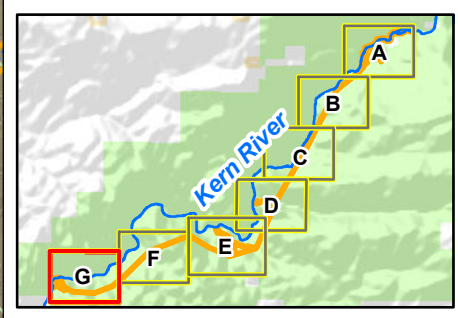
- Facilities**
- Dam
 - ▲ Powerhouse
 - ◻ Water Conveyance Feature
 - Tunnel
 - Flume
 - Conduit
 - Sandbox
 - Penstock
 - Spillway
 - Tailrace
 - Gage
 - ◻ Ancillary Facility
 - Ancillary Feature
 - Powerline
 - Communication/Powerline
 - FERC Boundary

- Transportation**
- Project Road
 - Project Trail
 - Other Road
 - ⊗ Gate

- Other Features**
- Watercourse

- Land Jurisdiction***
- U.S. Forest Service
- *SOURCE: BLM 2021

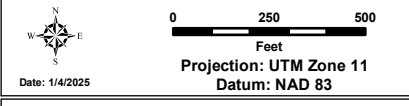
- Non-Native Invasive Plants**
- BRMAR, red brome
 - BRTE, cheatgrass
 - ONAC, scotch thistle
 - POMO, rabbitsfoot grass
 - VETH, common mullein
 - POMO & VETH
 - ONAC, BRTE, BRMAR, POMO & VETH



Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map 5-5G

Non-Native Invasive Plants Within the FERC Project Boundary, Along Project Access Trails, and Along the Kern No. 1 Project Bypass Reach.



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APPENDIX B

Vegetation Alliances within 1 Mile of the Kern River No. 1 FERC Project Boundary

The following vegetation alliance descriptions are excerpted from *Vegetation Descriptions, South Sierran Ecological Province, CALVEG Zone 4* (U.S. Department of Agriculture – Forest Service, Region 5; April 27, 2009) and *Central Valley Ecological Province, CALVEG Zone 5* (U.S. Department of Agriculture – Forest Service, Region 5; March 12, 2009).

HERB-DOMINATED ALLIANCES

ANNUAL GRASSES AND FORBS ALLIANCE (HG)

Throughout the low elevations of the western slopes of the southern Sierra Nevada, annual grasses such as bromes (*Bromus* spp.), needlegrass (*Achnatherum* spp.) and wild oats (*Avena* spp.) may dominate rolling hills. Dominant forbs in this alliance include owl's clover (*Orthocarpus* spp.), fiddleneck (*Amsinckia intermedia*) and stork's bill (*Erodium* spp.). They may occur in pure stands or contain an overstory of scattered oaks (*Quercus* spp.) or California buckeye (*Aesculus californica*). Associated westside species include hardwoods growing in sheltered areas and conifers such as gray pine (*Pinus sabiniana*) or Ponderosa pine (*Pinus ponderosa*) in the Upper Foothills Metamorphic Belt and Lower Batholith subsections. In some areas, this alliance may dominate a vast array of slopes and aspects due to wildfires, xeric conditions and other factors; on eastside slopes in the Eastern Slopes and Kern Plateau Subsections, recent wildfires have created large grass patches at elevations up to 8,000 feet (ft) (2440 meter [m]) or more. Great Basin species such as big sagebrush (*Artemisia tridentata*), rabbitbrush (*Chrysothamnus* spp.), singleleaf pinyon pine (*Pinus monophylla*) and Jeffrey pine (*Pinus jeffreyi*) are often found adjacent to these patches.

Shrub-Dominated Alliances

ULTRAMAFIC MIXED SCRUB ALLIANCE (C1)

This type is found on ultramafic soils and has been mapped very sparsely in the Ranges and Foothills Sections at elevations generally below about 2,400 ft (732 m) in this zone. The Ultramafic Mixed Shrub Alliance consists of a mixture of shrubs such as wedgeleaf ceanothus (*Ceanothus cuneatus* var. *cuneatus*), leather oak (*Quercus durata*), musk brush (*Ceanothus jepsonii*), California coffeeberry (*Rhamnus californica* ssp. *occidentalis*), silk-tassel (*Garrya elliptica*, *Garrya congdonii*), and Siskiyou mat (*Ceanothus pumilus*).

BACCHARIS (RIPARIAN) ALLIANCE (ML)

This Alliance identifies one or more species of *Baccharis* that dominate riparian areas and wetlands. It has been mapped in a limited area along Caliente Creek and other sites in the Foothills Section at elevations between 1,000–2,200 ft (305–670 m). Species that may be in this Alliance include mule mat (*Baccharis salicifolia*), marsh Baccharis (*Baccharis douglasii*), and squaw waterweed (*Baccharis sergiloides*). This Alliance is found adjacent to upland species such as interior live oak, gray pine, California buckeye, chaparral yucca (*Yucca whipplei*), and rabbitbrush in this area.

Tree-Dominated Alliances

INTERIOR MIXED HARDWOODS ALLIANCE (NX)

A mixture of upland hardwoods with no clearly dominant species occurs very commonly in the Lower Batholith and Tehachapi - Piute Mountains Subsections and more rarely in five other subsections. This type has been mapped most often in the elevation range of about 1,000–6,000 ft (305–1830 m). The mixture includes any combination of interior live oak (*Quercus wislizenii*), canyon live oak (*Quercus chrysolepis*), blue oak (*Quercus douglasii*), and/or California buckeye (*Aesculus californica*), with Valley oak (*Quercus lobata*) or black oak (*Quercus kelloggii*) occurring less frequently. The occasional overstory conifers may include gray pine or Ponderosa pine. Lower-elevation shrubs in canopy openings such as wedgeleaf ceanothus and birchleaf mountain mahogany (*Cercocarpus betuloides*) may also be present onsite or in the vicinity.

GRAY PINE ALLIANCE (PD)

This alliance, dominated by gray pine, grows primarily in the foothills of the Sierra Nevada on steep, dry rocky canyons with south aspects, below about 4,200 ft. In the northern Sierra, it is found mainly in the Upper Foothill Metamorphic Belt and the Granitic and Metamorphic Foothills subsections. These sites are typically diverse in structure, with a mixture of hardwoods such as canyon live oak, interior live oak, and blue oak; and low-elevation chaparral shrubs such as wedgeleaf ceanothus and whiteleaf and common manzanitas. Patches of annual grasses are often found adjacent to gray pine stands.

BLUE OAK ALLIANCE (QD)

The Blue Oak Alliance occurs on shallow upland soils in foothill savannas adjacent to the western slopes of the Sierra Nevada. It has been mapped in five ecological units, most commonly in the Tehachapi – Piute Mountains, Lower Batholith and Upper Foothills Metamorphic Belt Subsections. Elevations where mapped are often in the 1000–5800 ft (305–1768 m) range, highest towards the south. Blue oak naturally occurs in an oak-grass association on well drained, gentle slopes. Gray pine is the most common tree associate in this hillside type; interior live oak may also be a major hardwood occurring in close proximity to this type. Non-stump sprouting chaparral shrubs such as wedgeleaf ceanothus, manzanitas (*Arctostaphylos* spp.), coffeeberry, California buckwheat (*Eriogonum fasciculatum*) and poison oak (*Toxicodendron diversilobum*) are scattered throughout this Alliance, and chamise (*Adenostoma fasciculatum*) often occurs adjacent to these sites.

VALLEY OAK ALLIANCE (QL)

This alliance is dominated by Valley oak, a deeply rooting hardwood, which formerly occurred in pure stands of large trees with limited woody understory. These stands occurred on valley bottoms and in rolling slopes, generally below 2,000 ft (610 m) in the north. The present distribution pattern of Valley Oak is along major stream courses and on the deep, rich loamy soils of their alluvial deposits in areas within and along the eastern and western fringes of this zone. It has been mapped occasionally as a dominant hardwood in the three

sections up to an elevation of about 5,000 ft (1,524 m) and more rarely as an understory hardwood in Ponderosa pine and gray pine forests and woodlands. A few scattered interior and/or canyon live oaks can be found throughout this Alliance.

CALIFORNIA SYCAMORE ALLIANCE (QP)

California sycamore (*Platanus racemosa*) is a tall, fast-growing riparian tree that occurs from California to Baja California. Pure stands of it have been mapped sparsely in eight subsections of both the Coast and Ranges Sections in this zone and is found at low elevations, usually less than 1800 ft (548 m). Common hardwood and shrub associates along these streams include Fremont cottonwood (*Populus fremontii*), willows (*Salix* spp.), white alder (*Alnus rhombifolia*), and coast live oak (*Quercus agrifolia*).

INTERIOR LIVE OAK ALLIANCE (QW)

Interior live oak (*Quercus wislizenii*), an evergreen, shade-tolerant upland hardwood, occurs from northern California to Baja California in two recognized varieties as a shrub (*Q. w. var. frutescens*) and a tree (*Q. w. var. wislizenii*). As a dominant hardwood in this alliance, it occurs both in interior valleys and seaward sides of the Coast Ranges, but generally is found in pure stands inland from the Coast Live Oak Alliance. Interior live oak typically associates with chamise (*Adenostoma fasciculatum*), blue oak (*Quercus douglasii*), and gray pine (*Pinus sabiniana*) in savanna-like stands on these sites. It has been mapped only sparsely in the Suisan Hills and Valleys and East Bay Hills – Mt. Diablo Subsections of the Coast Section at elevations below about 3600 ft (1098 m).

Non-Vegetated Areas

TILLED EARTH (A3)

Agricultural lands may be mapped as barren and lacking vegetation on occasion, such as after harvesting and during seasons prior to crop growth. Some areas may be kept fallow during and after the growing season for various reasons such as conservation of moisture and nutrients in a crop rotation schedule.

BARREN (BA)

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 does not include areas considered as modified or developed, as in urban areas but quarries and open pit mine sites are included in the Barren category.

URBAN-RELATED BARE SOIL (IB)

Urban development in California occurs in phases. When land is cleared prior to being paved, this category 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. These sites have been mapped extensively in the Santa Maria Valley and adjoining sections of the South Coastal San Lucia Ranges Subsections, usually adjacent to agricultural areas, already established urbanized centers or paved areas of the landscape. California Sagebrush (*Artemisia californica*) and annual grasses and forbs may be present in the immediate vicinity of these sites.

Aquatic Areas

AGRICULTURE POND OR WATER FEATURE (A7)

Some artificially constructed water features on otherwise agricultural sites on farms, ranches and the like, are large enough to map and document. These sites include stock ponds, small reservoirs, large ditches and other utilitarian or recreational water features.

RIVER/STREAM/CANAL (W1)

Water is labeled in CalVeg mapping 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 within water bodies may be mapped according to their terrestrial dominant vegetation types. In addition, surface water bodies have recently been mapped separately in some parts of this zone under the following categories: W1: Rivers and Streams (natural, flowing surface waters) W2: Perennial Lakes and Ponds (natural lacustrine bodies) W3: Reservoirs (man-made lakes and ponds) W5: Playas (desert basin features) W6: Intermittent Stream Channel (seasonally flowing channeled waters) W8: Intermittent or Seasonal Lake or Pond (occasionally drained surface waters) W9: Exposed non-water features such as gravel, sand bars, etc.

APPENDIX C

Representative Photographs of Bypass Reach Riparian Cross-Sections



Photo 1. Representative photograph of riparian transect KT1 on the Kern River. Approximately 0.5 mile upstream of the Kern 1 power station.



Photo 2. Representative photograph of riparian transect KT2 on the Kern River. Approximately 2.7 miles upstream of the Kern 1 power station.



Photo 3. Representative photograph of riparian transect KT3 on the Kern River. Approximately 3.7 miles upstream of the Kern 1 power station.



Photo 4. Representative photograph of riparian transect KT4 on the Kern River. Approximately 4 miles upstream of the Kern 1 power station.



Photo 5. Representative photograph of riparian transect KT5 on the Kern River. Approximately 5 miles upstream of the Kern 1 power station.



Photo 6. Representative photograph of riparian transect KT6 on the Kern River. Approximately 6.7 miles upstream of the Kern 1 power station.



Photo 7. Representative photograph of riparian transect KT7 on the Kern River. Approximately 7.5 miles upstream of the Kern 1 power station.



Photo 8. Representative photograph of riparian transect KT8 on the Kern River. Approximately 7.9 miles upstream of the Kern 1 power station.



Photo 9. Representative photograph of riparian transect KT9 on the Kern River. Approximately 9.6 miles upstream of the Kern 1 power station.



Photo 10. Representative photograph of riparian transect KT10 on the Kern River. Approximately 9.9 miles upstream of the Kern 1 power station.

APPENDIX D

Special-Status Plants Known to Occur or Potentially Occurring in the Study Area

Scientific/Common Name	Federal/State Status	Sequoia National Forest Status	California Rare Plant Rank (CRPR)	Blooming Period/Fertile	Habitat	Likelihood for Occurrence
Known to Occur in the Vicinity of the Project						
<i>Delphinium purpusii</i> rose-flowered larkspur	—	FSCC	1B.3	April–May	A perennial herb that grows on rocky, often carbonate soils in chaparral, cismontane woodland, and pinyon and juniper woodland. Elevation: 1,000–4,470 feet.	<p>Known to occur.</p> <ul style="list-style-type: none"> Nine populations of rose-colored larkspur were identified in the study area during TERR 1 early season botanical surveys in April 2024. This includes: <ul style="list-style-type: none"> Three small populations along the Conduit No. 3 Trail (DEPU_01–03); One population along Flume No. 3 between Conduit No. 4 and 5 (DEPU_04); One small population along the Lucas Creek Trail (DEPU_05); A single individual along Stark Creek Trail (DEPU_06); A single individual along Dougherty Creek Trail (DEPU_07) A small population near Adit 14 & 15 (DEPU_08); and A large population adjacent to the Overflow Spillway Trail east of the Kern No. 1 Forebay (DEPU_09). CNDDDB includes six additional prior records for rose-flowered larkspur located along Kern River in the vicinity of the Project¹. An additional occurrence was recorded within the 1-mile buffer of the Project. These occurrences were recorded in 1933, 1969, 1972, 1982, 2005, and two occurrences in 2010.
<i>Diplacus pictus (Mimulus pictus)</i> calico monkeyflower	—	FSCC	1B.2	March–May	An annual herb found in granitic, disturbed areas in broad-leaved upland forest and cismontane woodland. Elevation: 330–4,770 feet.	<p>Known to occur. Based on review of FERC and Forest Service 1998, individuals were found north side of Kern River across from Democrat Hot Springs and near Richbar Day Use Area (<i>no GIS data available for this occurrence</i>).</p> <p>A CNDDDB query yielded two records for this species in the vicinity of the Project:</p> <ul style="list-style-type: none"> A large polygon (1956) (generalized occurrence) encompassing Project facilities from the Lucas Creek Trail and downstream to Tunnel No. 14 northeast of Pacheco Creek; and A 1983 detection adjacent to Democrat Dam Impoundment.
<i>Fritillaria brandegeei</i> Greenhorn fritillary	—	FSCC	1B.3	April–June	A perennial herb (bulbiferous) that found on granitic areas in lower montane coniferous forest. Elevation: 4,430–7,000 feet.	<p>Known to occur. A CNDDDB query yielded one occurrence located near the confluence of Dougherty Creek and Kern River, in the vicinity of the Project. This occurrence was recorded in 1982.</p>
<i>Heterotheca shevockii</i> Shevock’s golden aster	—	FSCC	1B.3	August–November	A perennial herb that grows in chaparral and cismontane woodland. Elevation: 760–3,000 feet.	<p>Known to occur. The query of NRIS/CNDDDB query yielded two occurrences within the vicinity of the Project:</p> <ul style="list-style-type: none"> A 1996 detection adjacent to the Steel Flume trail (NRIS); and A continuous polygon encompassing both sides of the Kern River from Conduit No 2 downstream to Tunnel No. 14 northeast of Pacheco Creek (CNDDDB). <p>NRIS records one additional occurrence along SR 178 approximately 0.25 mile east of the Kern River No. 1 Powerhouse.</p>
<i>Monardella linoides</i> ssp. <i>anemonoides</i> southern Sierra monardella	—	—	1B.3	June–August	A perennial herb found in chaparral, cismontane woodland, and lower montane coniferous forest. Elevation: 2,200–8,040 feet.	<p>Known to occur. A CNDDDB query yielded one occurrence in the vicinity of the Project, a generalized polygon encompassing the Democrat Diversion Dam impoundment and the Willow Spring Creek Road (also referred to as Democrat Dam Road). This occurrence was recorded in 1935.</p>
<i>Opuntia treleasei</i> Bakersfield cactus	FE/CE	—	1B.1	April–May	A perennial cactus that grows on sandy or gravelly soils in chenopod scrub, cismontane woodland, and valley and foothill grassland. Elevation: 400–4,830 feet.	<p>Known to occur. A CNDDDB query yielded one occurrence in the vicinity of the Project along the Kern River approximately 0.25 mile west of Stark Creek Road. This occurrence was recorded in 2010.</p>

Scientific/Common Name	Federal/State Status	Sequoia National Forest Status	California Rare Plant Rank (CRPR)	Blooming Period/Fertile	Habitat	Likelihood for Occurrence
May Potentially Occur in the Vicinity of the Project						
<i>Calochortus striatus</i> alkali mariposa lily	—	FSCC	1B.2	April–June	A perennial bulbiferous herb that grows on alkaline and mesic soils in chaparral, chenopod scrub, Mojavean desert scrub, and meadows and seeps. Elevation: 230–5,235 feet.	May potentially occur. The Project is within the geographic range and contains suitable habitat for this species.
<i>Camissonia integrifolia</i> Kern River evening-primrose	—	FSCC	1B.3	April (May)	An annual herb that grows in chaparral and Mojavean desert scrub. Elevation: 2,295–3,935 feet.	May potentially occur. The Project is within the geographic range and contains suitable habitat for this species.
<i>Clarkia springvillensis</i> Springville clarkia	FT/CE	—	1B.2	April–July	An annual herb that grows on granitic soils in chaparral, cismontane woodland, and valley and foothill grassland. Elevation: 805–4,005 feet.	May potentially occur. The Project is within the geographic range and contains suitable habitat for this species.
<i>Hesperocyparis nevadensis</i> Piute cypress	—	FSCC	1B.2	N/A	A perennial evergreen tree that grows in closed-cone coniferous forest, chaparral, cismontane woodland, and pinyon and juniper woodland. Elevation: 2,360–6,005 feet.	May potentially occur. The Project is within the geographic range and contains suitable habitat for this species.
<i>Pseudobahia peirsonii</i> San Joaquin adobe sunburst	FT/CE	—	1B.1	February–April	An annual herb that grows on adobe clay soils in cismontane woodland and valley and foothill grassland. Elevation: 295–2,670 feet.	May potentially occur. The Project supports suitable habitat and is within the elevational range of this species. A CNDDDB query yielded three records within a 5-mile buffer of the Project.
<i>Eriastrum tracyi</i> Tracy's eriastrum	—	FSCC	3.2	May–July	An annual herb found in chaparral, cismontane woodland, and valley and foothill grassland. Elevation: 1,035–5,840 feet.	May potentially occur. The Project supports suitable habitat and is within the elevational range of this species.
<i>Eschoscholzia lemmonii</i> Tejon poppy	—	—	1B.1	March–May	An annual herb that grows in chenopod scrub and valley and foothill grassland. Elevation: 530–3,330 feet.	May potentially occur. The Project is within the geographic range and contains suitable habitat for this species. A CNDDDB query yielded one record of this species located approximately 3 miles northwest of Kern River No. 1 Powerhouse.
<i>Fritillaria striata</i> striped adobe lily	CT	FSCC	1B.1	February–April	A perennial herb (bulbiferous) that grows on clay soils in cismontane woodland and valley and foothill grassland. Elevation: 450–4,850 feet.	May potentially occur. The Project is within the geographic range and contains suitable habitat for this species. A CNDDDB query yielded seven records within a 5-mile buffer of the Project.
<i>Navarretia setiloba</i> Piute Mountains navarretia	—	—	1B.1	April–July	An annual herb that grows on clay or gravelly loam soils in cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland. Elevation: 950–7,000 feet.	May potentially occur. The Project supports suitable habitat and is within the elevational range of this species. A CNDDDB query yielded three records of this species within a 5-mile buffer of the Project.
<i>Stylocline citreolum</i> oil neststraw	—	—	1B.1	March–April	An annual herb that grows on clay soils in chenopod scrub, coastal scrub, and valley and foothill grassland. Only known extant populations are from the interior coast ranges. Elevation: 170–1,330 feet.	May potentially occur. The Project supports suitable habitat and is within the elevational range of this species.
Unlikely to Occur in the Vicinity of the Project						
<i>Caulanthus californicus</i> California jewelflower	FE/CE	—	1B.1	February–May	An annual herb that grows on sandy soils in chenopod scrub, pinyon and juniper woodland, and valley and foothill grassland. Extirpated from the San Joaquin Valley, now known only from Santa Barbara canyon, Carrizo Plain, and the Kreyenhagen Hills. Elevation: 200–3,300 feet.	Unlikely to occur. The Project is outside of the geographic range for this species.
<i>Cordylanthus eremicus</i> ssp. <i>kernensis</i> Kern Plateau bird's-beak	—	FSCC	1B.3	July–September	A hemiparasitic annual herb that grows in Great Basin scrub, Joshua tree “woodland”, pinyon and juniper woodland, and upper montane coniferous forest. Elevation: 5,495–9,845 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.

Scientific/Common Name	Federal/State Status	Sequoia National Forest Status	California Rare Plant Rank (CRPR)	Blooming Period/Fertile	Habitat	Likelihood for Occurrence
<i>Eremalche parryi</i> ssp. <i>kernensis</i> Kern mallow	FE	—	1B.2	January–May	An annual herb that grows on dry and open sandy to clay soils in chenopod scrub, pinyon and juniper woodland, and valley and foothill grassland; often found at edge of balds. Elevation: 230–4,300 feet.	Unlikely to occur. The Project is outside of the geographic range for this species.
<i>Layia leucopappa</i> Comanche Point layia	—	—	1B.1	March–April	An annual herb that grows in chenopod scrub and valley and foothill grassland, found only in Kern County. Elevation: 330–1,170 feet.	Unlikely to occur. The Project is outside of the geographic range for this species.
<i>Monolopia (=Lembertia) congdonii</i> San Joaquin woolly-threads	FE	—	1B.2	February–May	An annual herb that grows in chenopod scrub and sandy valley and foothill grassland. Elevation: 200–2,670 feet.	Unlikely to occur. The Project is outside of the geographic range for this species. Populations in the lower Kern River are believed to be extirpated (USFWS 1998).
<i>Streptanthus cordatus</i> var. <i>piutensis</i> Piute Mountains jewel-flower	—	FSCC	1B.2	May–July	A perennial herb that grows on clay and metamorphic soils in broad-leaved upland forest, closed-cone coniferous forest, and pinyon and juniper woodland. Elevation: 3,595–5,990 feet.	Unlikely to occur. The Project does not contain suitable habitat and is outside of the elevational range of this species.
<i>Symphotrichum defoliatum</i> San Bernardino aster	—	FSCC	1B.2	July–November	A perennial rhizomatous herb that grows on streambanks in cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, and valley and foothill grassland (vernally mesic). Elevation: 5–6,695 feet.	Unlikely to occur. The Project is outside of the geographic range for this species.
<i>Astragalus erfterae</i> Walker Pass milk-vetch	—	FSCC	1B.3	April–May	A perennial herb that grows on granitic, sandy soils in pinyon and juniper woodland. Elevation: 5,595–6,235 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Astragalus lentiginosus</i> var. <i>kernensis</i> Kern Plateau milk-vetch	—	FSCC	1B.2	June–July	A perennial herb that grows on sandy soils in meadows and seeps, and subalpine coniferous forest. Elevation: 7,350–9,025 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Astragalus shevockii</i> Little Kern (Shevock’s) milk-vetch	—	FSCC	1B.3	June–July	A perennial herb that grows on granitic and sandy soils in upper montane coniferous forest. Elevation: 6,200–6,445 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Astragalus subvestitus</i> Kern County milk-vetch	—	FSCC	4.3	June–July	A perennial herb that grows on gravelly and sandy soils in Great Basin scrub, meadows and seeps, and pinyon and juniper woodland. Elevation: 7,645–9,025 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Atriplex tularensis</i> Bakersfield saltbush	CE	—	1A	June–October	An annual herb that grows in chenopod scrub. Elevation: 295–655 feet.	Unlikely to occur. The Project is outside of the geographic range for this species.
<i>Boechera evadens</i> hidden rockcress	—	FSCC	1B.3	May–August	A perennial herb that grows on rocky soils in upper montane coniferous forest. Elevation: 8,400–9,350 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Boechera tularensis</i> Tulare rockcress	—	FSCC	1B.3	June–July	A perennial herb that grows along slopes and roadsides on rocky soils in subalpine coniferous forest and upper montane coniferous forest. Elevation: 5,990–10,990 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Botrychium crenulatum</i> scalloped moonwort	—	FSCC	2B.2	June–September	A perennial rhizomatous herb that grows in bogs and ferns, lower montane coniferous forest, meadows and seeps, marshes and swamps (freshwater), and upper montane coniferous forest. Elevation: 4,160–10,760 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Calochortus westonii</i> Shirley Meadows star-tulip (mariposa lily)	—	FSCC	1B.2	May–June	A perennial herb (bulbiferous) that grows on granitic soils in broad-leaved upland forest, lower montane coniferous forest, and meadows and seeps. Elevation: 4,920–6,905 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.

Scientific/Common Name	Federal/State Status	Sequoia National Forest Status	California Rare Plant Rank (CRPR)	Blooming Period/Fertile	Habitat	Likelihood for Occurrence
<i>Calyptidium pygmaeum</i> Pygmy pussypaws	—	FSCC	1B.2	June–August	An annual herb that grows on gravelly and sandy soils in subalpine coniferous forest and upper montane coniferous forest. Elevation: 6,495–10,205 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Carlquistia muirii</i> Muir's tarplant	—	FSCC	1B.3	July–August	A perennial rhizomatous herb that grows on granitic soils in chaparral (montane), lower montane coniferous forest, and upper montane coniferous forest. Elevation: 2,475–8,205 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Cirsium crassicaule</i> slough thistle	—	—	1B.1	May–August	An annual/perennial herb that grows in chenopod scrub, marshes, and swamps (sloughs), and riparian scrub. Elevation: 10–330 feet.	Unlikely to occur. The Project does not contain suitable habitat for this species.
<i>Clarkia tembloriensis</i> ssp. <i>calientensis</i> Vasek's Clarkia	—	—	1B.1	April	An annual herb that grows in valley and foothill grassland. Elevation: 900–1,640 feet.	Unlikely to occur. The Project is outside of the geographic range for this species.
<i>Deinandra mohavensis</i> Mojave tarplant	—	FSCC	1B.3	June–October	An annual herb that grows on mesic soils in chaparral, coastal scrub, and riparian scrub. Elevation: 2,100–5,250 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Dicentra nevadensis</i> Sierra (Tulare County) bleeding heart	—	FSCC	4.3	June–August	A perennial rhizomatous herb that grows in alpine boulder and rock fields, and subalpine coniferous forest (gravelly, sandy, openings). Elevation: 7,220–10,005 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Erigeron aequifolius</i> Hall's daisy (fleabane)	—	FSCC	1B.3	June–August	A perennial rhizomatous herb that grows on granitic and rocky soils in broad-leaved upland forest, lower montane coniferous forest, pinyon and juniper woodland, and upper montane coniferous forest. Elevation: 4,920–8,005 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Erigeron multiceps</i> Kern River daisy	—	FSCC	1B.2	June–September	A perennial herb that grows in meadows and seeps and upper montane coniferous forest (openings). Elevation: 4,920–8,315 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Eriogonum breedlovei</i> var. <i>breedlovei</i> Breedlove's (Piute) buckwheat	—	FSCC	1B.2	June–August	A perennial herb that grows on carbonate soils in pinyon and juniper woodland and upper montane coniferous forest. Elevation: 6,200–8,500 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Eriogonum ovalifolium</i> var. <i>monarchense</i> monarch buckwheat	—	FSCC	1B.1	June–August	A perennial herb that grows on carbonate, rocky, and sandy soils in Mojavean desert scrub and pinyon and juniper woodland. Elevation: 5,905–5,955 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Gilia yorkii</i> Boyden Cave gilia	—	FSCC	1B.1	May–July	An annual herb that grows on carbonate soils in chaparral and cismontane woodland. Elevation: 4,230–6,005 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Githopsis tenella</i> tube flower bluecup	—	FSCC	1B.3	April–June	An annual herb that grows on mesic and serpentinite soils in chaparral and cismontane woodland. Elevation: 1,065–6,235 feet.	Unlikely to occur. The Project does not contain suitable habitat for this species.
<i>Helodium blandowii</i> Blandow's bog moss	—	FSCC	2B.2	N/A	A moss that grows on damp soil in meadows and seeps and subalpine coniferous forest. Elevation: 6,110–8,860 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Heterotheca monarchensis</i> Monarch golden aster	—	FSCC	1B.1	May–October	A perennial herb that grows on carbonate soils in cismontane woodland. Elevation: 3,595–6,070 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.

Scientific/Common Name	Federal/State Status	Sequoia National Forest Status	California Rare Plant Rank (CRPR)	Blooming Period/Fertile	Habitat	Likelihood for Occurrence
<i>Horkelia tularensis</i> Kern Plateau horkelia	—	FSCC	1B.3	June–August	A perennial herb that grows on rocky soils in upper montane coniferous forest. Elevation: 7,400–9,435 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Hulsea brevifolia</i> short-leaved hulsea	—	FSCC	1B.2	May–August	A perennial herb that grows on granitic, gravelly, sandy, and volcanic soils in lower montane and upper montane coniferous forest. Elevation: 4,920–10,500 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Ivesia campestris</i> field ivesia	—	FSCC	1B.2	May–August	A perennial herb that grows in meadows and seeps (edges), subalpine coniferous forest, and upper montane coniferous forest. Elevation: 6,480–11,140 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Leptosiphon serrulatus</i> [= <i>Linanthus serrulatus</i>] Madera leptosiphon	—	—	1B.2	April–May	An annual herb that grows in cismontane woodland and lower montane coniferous forest. Elevation: 985–4,265 feet.	Unlikely to occur. The Project does not contain suitable habitat for this species.
<i>Lewisia disepala</i> Yosemite Lewisia	—	FSCC	1B.2	March–June	A perennial herb that grows on granitic and sandy soils in lower montane coniferous forest, pinyon and juniper woodland, and upper montane coniferous forest. Elevation: 3,395–11,485 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Madia radiata</i> showy madia	—	—	1B.2	March–May	An annual herb that grows in cismontane woodland and valley and foothill grassland. Elevation: 80–3,985 feet.	Unlikely to occur. The Project is outside of the geographic range for this species.
<i>Meesia uliginosa</i> Meesia moss	—	FSCC	2B.2	July–October	A moss that grows in bogs and fens, meadows and seeps, subalpine coniferous forest, and upper montane coniferous forest. Elevation: 3,970–9,200 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Mielichhoferia shevockii</i> Shevock’s copper moss	—	FSCC	1B.2	N/A	A moss that grows in cismontane woodland (mesic, metamorphic, rock). Elevation: 2,460–4,595 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Navarretia peninsularis</i> Baja navarretia	—	FSCC	1B.2	June–August	An annual herb that grows on mesic soils in chaparral (openings), lower montane coniferous forest, meadows and seeps, and pinyon and juniper woodland. Elevation: 4,920–7,545 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Nemacladus calcaratus</i> Chimney Creek nemacladus	—	FSCC	1B.2	May–June	An annual herb that grows on flats and granitic soils in pinyon and juniper woodland. Elevation: 6,235–6,890 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Nemacladus twisselmannii</i> Twisselmann’s nemacladus	—	FSCC	1B.2	July	An annual herb that grows on granitic, sandy, or rocky soils in upper montane coniferous forest. Elevation: 7,350–8,040 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Oreonana purpurascens</i> purple mountain-parsley	—	FSCC	1B.2	May–June	A perennial herb that grows on metamorphic soils in broad-leaved upland forest, subalpine coniferous forest, and upper montane coniferous forest. Elevation: 7,860–9,400 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Oreonana vestita</i> Woolly mountain-parsley	—	FSCC	1B.3	March–September	A perennial herb that grows on gravelly and talus soils in lower montane coniferous forest, subalpine coniferous forest, and upper montane coniferous forest. Elevation: 5,300–11,485 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Orthotrichum spjutii</i> Spjut’s bristle moss	—	FSCC	1B.3	N/A	A moss that grows on granitic and rocky soils in lower montane coniferous forest, pinyon and juniper woodland, subalpine coniferous forest, and upper montane coniferous forest. Elevation: 6,890–7,875 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.

Scientific/Common Name	Federal/State Status	Sequoia National Forest Status	California Rare Plant Rank (CRPR)	Blooming Period/Fertile	Habitat	Likelihood for Occurrence
<i>Phacelia nashiana</i> Charlotte's phacelia	—	FSCC	1B.2	March–June	An annual herb that grows on granitic and sandy soils in Joshua tree “woodlands”, Mojavean desert scrub, and pinyon and juniper woodland. Elevation: 1,970–7,220 feet.	Unlikely to occur. The Project does not contain suitable habitat for this species.
<i>Phacelia novemmillensis</i> Nine Mile Canyon phacelia	—	FSCC	1B.2	May–June	An annual herb that grows on gravelly and sandy soils in broad-leaved upland forest, cismontane woodland, pinyon and juniper woodland, and upper montane coniferous forest. Elevation: 5,395–8,660 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Ribes menziesii</i> var. <i>ixoderme</i> aromatic canyon gooseberry	—	—	1B.2	April	A perennial deciduous scrub that grows in chaparral and cismontane woodland. Elevation: 2,000–3,805 feet.	Unlikely to occur. The Project does not contain suitable habitat for this species.
<i>Sidalcea multifida</i> cut-leaf checkerbloom	—	FSCC	2B.3	May–September	A perennial herb that grows in Great Basin scrub, lower montane coniferous forest, meadows and seeps, and pinyon and juniper woodland. Elevation: 5,740–9,185 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Streptanthus fenestratus</i> Tehipite Valley jewel-flower	—	FSCC	1B.1	May–July	An annual herb that grows in lower montane coniferous forest and upper montane coniferous forest. Elevation: 3,495–5,740 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Trifolium kingii</i> ssp. <i>dedeckerae</i> (<i>T. dedeckerae</i>) Dedecker's clover	—	FSCC	1B.3	May–July	A perennial herb that grows on granitic and rocky soils in lower montane coniferous forest, pinyon and juniper woodland, subalpine coniferous forest, and upper montane coniferous forest. Elevation: 6,890–11,485 feet.	Unlikely to occur. The Project does not contain suitable habitat and is out of the elevational range of this species.
<i>Viburnum ellipticum</i> oval-leaved viburnum	—	FSCC	2B.3	May–June	A perennial deciduous shrub that grows in chaparral, cismontane woodland, and lower montane coniferous forest. Elevation: 705–4,595 feet.	Unlikely to occur. The Project does not contain suitable habitat for this species.

KEY:

Federal Status

FC = Federal Candidate Species
 FE = Federal Endangered
 FT = Federal Threatened
 FPD = Federal Proposed for Delisting
 FPT, FPE = Federal Proposed Threatened/Endangered

Forest Service Status

FSCC = Sequoia National Forest Species of Conservation Concern

State Status

CFP = California Fully Protected
 CSC = California Species of Special Concern
 CCT, CCE = State Candidate Threatened/Endangered
 CE = California Endangered
 CT = California Threatened

CRPR = California Native Plant Society Rare Plant Rank

CRPR 1B = rare, threatened or endangered in California and elsewhere
 CRPR 2B = rare in California but more common elsewhere
 3 = need more information
 4 = plants of limited distribution; a 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% occurrences threatened)
 __.3 = Not very threatened in California (<20% of occurrences threatened or no current threats known)

APPENDIX E

Representative Photographs of Rose-Colored Larkspur (*Delphinium purpusii*) Populations in the Study Area



Photo 1. Rose flowered larkspur (*Delphinium purpusii*) growing along a granite slope from population DEPU_01.



Photo 2. Rose flowered larkspur (*Delphinium purpusii*) growing along a granite slope below a conduit from population DEPU_03.



Photo 3. Rose flowered larkspur (*Delphinium purpusii*) growing along a granite slope from population DEPU_05.



Photo 4. Rose flowered larkspur (*Delphinium purpusii*) growing along a granite slope from population DEPU_06.



Photo 5. Rose flowered larkspur (*Delphinium purpusii*) growing on a rock wall from populations DEPU_07.



Photo 6. Rose flowered larkspur (*Delphinium purpusii*) growing on a rock wall near a flume from population DEPU_08.



Photo 7. Rose flowered larkspur (*Delphinium purpusii*) growing in granite cobble from population DEPU_09.

APPENDIX F

CNDDDB Forms for Rose-Colored Larkspur (*Delphinium purpusii*) Populations in the Study Area (CONFIDENTIAL)

CONFIDENTIAL INFORMATION

The following appendix is being withheld from public disclosure in accordance with applicable regulations. It contains details on the locations of special-status biological resources and qualifies as Confidential Information (18 Code of Federal Regulations § 385.1112). Disclosure of such information could be harmful to these resources. To further understand the Federal Energy Regulatory Commission's regulations regarding confidential filings, visit: <https://www.ferc.gov/foia>.

TERR 1, Appendix F California Natural Diversity Database Forms (Confidential)

TERR 1, Appendix F will not be distributed to the general public. Documents containing Confidential Information may be requested by entities and organizations with jurisdiction over these resources. To request copies, please contact Meg Richardson, SCE Relicensing Project Manager at (626) 238-2902 or mary.m.richardson@sce.com.

APPENDIX G

Comprehensive List of Plants Identified During Botanical Surveys in the Study Area

Scientific Name	Common Name	Native/Non-Native	Family	Status
Special Status Species				
<i>Delphinium purpusii</i>	Kern county larkspur	Native	Ranunculaceae	California Rare Plant Rank 1B.3
Target Non-native Plant Species				
<i>Bromus rubens</i>	Red brome	Non-native	Poaceae	Cal-IPC rating: high
<i>Bromus tectorum</i>	Cheatgrass	Non-native	Poaceae	Cal-IPC rating: high
<i>Onopordum acanthium</i>	Scotch thistle	Non-native	Asteraceae	Cal-IPC rating: high
<i>Polypogon monspeliensis</i>	Rabbit foot grass	Non-native	Poaceae	Cal-IPC rating: limited
<i>Verbascum thapsus</i>	Common mullein	Non-native	Scrophulariaceae	Cal-IPC rating: limited
All Other Plant Species				
<i>Achillea millefolium</i>	Yarrow	Native	Asteraceae	-
<i>Achyrachaena mollis</i>	Blow wives	Native	Asteraceae	-
<i>Acmipson procumbens</i> var. <i>procumbens</i>	Silky California broom	Native	Fabaceae	-
<i>Acmispon americanus</i> var. <i>americanus</i>	Spanish lotus	Native	Fabaceae	-
<i>Acmispon brachycarpus</i>	Short podded lotus	Native	Fabaceae	-
<i>Aesculus californica</i>	California buckeye	Native	Sapindaceae	-
<i>Allium peninsulare</i>	Mexicali onion	Native	Alliaceae	-
<i>Alnus rhombifolia</i>	White alder	Native	Betulaceae	-
<i>Amsinckia intermedia</i>	Common fiddleneck	Native	Boraginaceae	-
<i>Anemopsis californica</i>	Yerba mansa	Native	Saururaceae	-
<i>Artemisia douglasiana</i>	California mugwort	Native	Asteraceae	-
<i>Asclepias californica</i>	California milkweed	Native	Apocynaceae	-
<i>Avena barbata</i>	Slim oat	Non-native	Poaceae	Cal-IPC rating: Moderate

Scientific Name	Common Name	Native/Non-Native	Family	Status
<i>Baccharis salicifolia</i>	Mule fat	Native	Asteraceae	-
<i>Balsamorhiza deltoidei</i>	Deltoid balsam root	Native	Asteraceae	-
<i>Boechera arcutata</i>	Arching rockcress	Native	Brassicaceae	-
<i>Bowlesia incana</i>	Bowelesia	Native	Apiaceae	-
<i>Brassica nigra</i>	Black mustard	Non-native	Brassicaceae	Cal-IPC rating: High
<i>Brickellia californica</i>	California brickellia	Native	Asteraceae	-
<i>Brodiaea elegans</i>	Harvest brodiaea	Native	Themidaceae	-
<i>Bromus diandrus</i>	Ripgut brome	Non-native	Poaceae	Cal-IPC rating: Moderate
<i>Calandrinia menziesii</i>	Red maids	Native	Montiaceae	-
<i>Calandrinia menziesii</i>	Calandrinia	Native	Montiaceae	-
<i>Calochortus venustus</i>	Butterfly mariposa lily	Native	Liliaceae	-
<i>Calystegia longipes</i>	Piute morning glory	Native	Convolvulaceae	-
<i>Camissonia contorta</i>	Contorted sun cup	Native	Onagraceae	-
<i>Capsella bursa-pastoris</i>	Shepards purse	Native	Brassicaceae	-
<i>Castilleja attenuata</i>	Narrow-leaved owl's clover	Native	Fabaceae	-
<i>Castilleja exerta</i>	Owl's clover	Native	Fabaceae	-
<i>Castilleja subinclusa</i> ssp. <i>subinclua</i>	Long leaf paintbrush	Native	Fabaceae	-
<i>Caulathus coulteri</i> var. <i>coulteri</i>	Coulter's jewel flower	Native	Brassicaceae	-
<i>Celtis reticulata</i>	Western hackberry	Native	Cannabaceae	-
<i>Chenopodium californicum</i>	California goosefoot	Native	Chenopodiaceae	-
<i>Clarkia unguolata</i>	Woodland clarkia	Native	Orobanchaceae	-
<i>Claytonia parviflora</i>	Narrow-leaved miner's lettuce	Native	Montiaceae	-
<i>Claytonia perfoliate</i>	Miner's lettuce	Native	Montiaceae	-
<i>Collinsia concolor</i>	Chinese houses	Native	Plantaginaceae	-
<i>Collinsia heterophylla</i>	Purple Chinese houses	Native	Plantaginaceae	-

Scientific Name	Common Name	Native/Non-Native	Family	Status
<i>Collinsia tinctora</i>	Tincture plant	Native	Plantaginaceae	-
<i>Cryptantha muricata</i> var. <i>muricata</i>	Showy prickly nut cryptantha	Native	Boraginaceae	-
<i>Cucurbita palmata</i>	Coyote melon	Native	Cucurbitaceae	-
<i>Cylindropuntia echinocarpa</i>	Silver cholla	Native	Cactaceae	-
<i>Cyperus esculentus</i>	Nut sedge	Native	Cyperaceae	-
<i>Datura wrightii</i>	Sacred datura	Native	Solanaceae	-
<i>Delphinium graciletum</i>	Meadow larkspur	Native	Ranunculaceae	-
<i>Delphinium gypsonphilum</i>	Gypsum loving larkspur	Native	Ranunculaceae	-
<i>Diplacus grandiflorus</i>	Sticky monkeyflower	Native	Phrymaceae	-
<i>Dipterostemon capitatus</i>	Blue dicks	Native	Themidaceae	-
<i>Dudleya cymosa</i>	Rock lettuce	Native	Crassulaceae	-
<i>Encelia actoni</i>	Acton brittlebush	Native	Asteraceae	-
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	Willow herb	Native	Onagraceae	-
<i>Eriophyllum lanatum</i>	Wooly sunflower	Native	Asteraceae	-
<i>Erysimum capitatum</i> var. <i>capitatum</i>	Sand dune wallflower	Native	Onagraceae	-
<i>Erythranthe guttata</i>	Seep spring monkeyflower	Native	Phrymaceae	-
<i>Eschscholzia caespitosa</i>	Tufted poppy	Native	Papaveraceae	-
<i>Eschscholzia californica</i>	California poppy	Native	Papaveraceae	-
<i>Eschscholzia lobbii</i>	Frying pan poppy	Native	Papaveraceae	-
<i>Eucalyptus camaldulensis</i>	Red gum	Non-native	Myrtaceae	Cal-IPC rating: Limited
<i>Fraxinus latifolia</i>	Oregon ash	Native	Oleaceae	-
<i>Gallium aparine</i>	Common bedstraw	Native	Apiacaea	-
<i>Gilia capitata</i> ssp. <i>abrotanifolia</i>	Ball gilia	Native	Polemoniaceae	-
<i>Gilia tricolor</i> ssp. <i>diffus</i>	Birds eye gilia	Native	Polemoniaceae	-
<i>Gnaphalium pulstre</i>	Lowland cudweed	Native	Asteraceae	-

Scientific Name	Common Name	Native/Non-Native	Family	Status
<i>Heliotropium curassavicum</i> ssp. <i>oculatum</i>	Alkali heliotrope	Native	Heliotropiaceae	-
<i>Hesperoyucca whipplei</i>	Chaparral yucca	Native	Asparagaceae	-
<i>Juncus balticus</i>	Baltic rush	Native	Juncaceae	-
<i>Juncus bufonius</i>	Common toad rush	Native	Juncaceae	-
<i>Lactuca serriola</i>	Prickly lettuce	Non-native	Asteraceae	-
<i>Lasthenia debilis</i>	Greene's goldfields	Native	Asteraceae	-
<i>Leptosiphon bicolor</i>	True babystars	Native	Polemoniaceae	-
<i>Leptosiphon ciliates</i>	Whiskerbrush	Native	Polemoniaceae	-
<i>Leptosiphon monatus</i>	Mustang clover	Native	Polemoniaceae	-
<i>Lithophragma affine</i>	Common woodland star	Native	Saxifragaceae	-
<i>Lithophragma heterophyllum</i>	Woodland star	Native	Saxifragaceae	-
<i>Lupinus albifrons</i> var. <i>albifrons</i>	Silver bush lupine	Native	Fabaceae	-
<i>Lupinus microcarpus</i>	Chick lupine	Native	Fabaceae	-
<i>Marah horrida</i>	Sierra man-root	Native	Cucurbitaceae	-
<i>Matricaria discoidea</i>	Pineappleweed	Native	Asteraceae	-
<i>Melilotus albus</i>	White sweetclover	Non-native	Fabaceae	-
<i>Melilotus indicus</i>	Annual yellow sweetclover	Non-native	Fabaceae	-
<i>Micranthes californica</i>	California saxifrage	Native	Saxifragaceae	-
<i>Mirabilis laevis</i> var. <i>cedrosensis</i>	California four O' Clock	Native	Nyctaginaceae	-
<i>Nastrium officinale</i>	Watercress	Native	Brassicaceae	-
<i>Nemophila pulchilla</i> var. <i>fremontii</i>	Fremont's nemophila	Native	Boraginaceae	-
<i>Nicotiana glauca</i>	Indian tobacco	Non-native	Solanaceae	Cal-IPC rating: Moderate

Scientific Name	Common Name	Native/Non-Native	Family	Status
<i>Oenothera californica</i>	California primrose	Native	Onagraceae	-
<i>Oenothera californicum</i>	California evening primrose	Native	Onagraceae	-
<i>Opuntia basilaris</i>	Beavertail cactus	Native	Cactaceae	-
<i>Orobanche uniflora</i>	Single-leaved broomrape	Native	Orobanchaceae	-
<i>Oxalis corniculata</i>	Yellow sorrel	Non-native	Oxalidaceae	-
<i>Papaver heterophyllum</i>	Wind poppy	Native	Papaveraceae	-
<i>Pellaea andromedifolia</i>	Coffee fern	Native	Pteridaceae	-
<i>Pellaea mucronata</i> var. <i>californica</i>	Bird's foot fern	Native	Pteridaceae	-
<i>Penstemon grinnelli</i> var. <i>scrophulinoides</i>	Grinnell's beardtongue	Native	Plantaginaceae	-
<i>Phacelia cicutaria</i> var. <i>cicutaria</i>	Caterpillar phacelia	Native	Boraginaceae	-
<i>Phacelia distens</i>	Common phacelia	Native	Boraginaceae	-
<i>Phacelia egena</i>	Rock phacelia	Native	Boraginaceae	-
<i>Pholistoma auritum</i> var. <i>auritum</i>	Blue fiesta flower	Native	Hydrophyllaceae	-
<i>Pinus sabiniana</i>	Grey pine	Native	Pinaceae	-
<i>Pinus sabiniana</i>	Gray pine	Native	Pinaceae	-
<i>Plagiobothrys tenellus</i>	Slender popcorn flower	Native	Boraginaceae	-
<i>Plantago lanceolata</i>	English plantain	Non-native	Plantaginaceae	Cal-IPC rating: Limited
<i>Plantago major</i>	Common plantain	Non-native	Plantaginaceae	-
<i>Platanus racemosa</i>	California sycamore	Native	Platanaceae	-
<i>Populus fremontii</i> ssp. <i>fremontii</i>	Fremont cottonwood	Native	Salicaceae	-
<i>Pseudognaphalium californicum</i>	California cudweed	Native	Asteraceae	-
<i>Punica granatum</i>	Pomegranate	Non-native	Lythraceae	-

Scientific Name	Common Name	Native/Non-Native	Family	Status
<i>Quercas douglasii</i>	Blue oak	Native	Fagaceae	-
<i>Quercus agrifolia</i>	Live oak	Native	Fagaceae	-
<i>Quercus wislizeni</i>	Interior live oak	Native	Fagaceae	-
<i>Rafinesquia californica</i>	California chicory	Native	Asteraceae	-
<i>Ribes californicum</i>	California gooseberry	Native	Grossulariaceae	-
<i>Ribes roezlii</i>	Sierra gooseberry	Native	Grossulariaceae	-
<i>Ricinus communis</i>	Castor	Non-native	Euphorbiaceae	Cal-IPC rating: Limited
<i>Rorippa curvisiliqua</i>	Curvepod yellowcress	Native	Brassicaceae	-
<i>Rubus californica</i>	California blackberry	Native	Rosaceae	-
<i>Rumex conglomeratus</i>	Green dock	Non-native	Polygonaceae	-
<i>Salix exigua</i>	Sandbar willow	Native	Salicaceae	-
<i>Salvia columbariae</i>	Chia	Native	Lamiaceae	-
<i>Schoenoplectus californicus</i>	Bullrush	Native	Cyperaceae	-
<i>Scrophularia californica</i>	California bee plant	Native	Scrophulariaceae	-
<i>Solanum xanti</i>	Purple nightshade	Native	Solanaceae	-
<i>Sonchus asper</i>	Spiny sow thistle	Non-native	Asteraceae	-
<i>Stellaria media</i>	Chickweed	Non-native	Caryophyllaceae	-
<i>Stephanomeria pauciflora</i>	Wire lettuce	Native	Asteraceae	-
<i>Thalictrum fendleri</i>	Meadow rue	Native	Ranunculaceae	-
<i>Thyanocarpus curvipes</i>	Lace pods	Native	Brassicaceae	-
<i>Torilis arvensis</i>	Hedge parsley	Non-native	Apiaceae	Cal-IPC rating: Moderate
<i>Toxicodendron diversilobum</i>	Poison oak	Native	Anacardiaceae	-
<i>Trifolium albopurpureum</i>	Indian clover	Native	Fabaceae	-
<i>Trifolium graciletum</i>	Pin point clover	Native	Fabaceae	-
<i>Trifolium oliganthum</i>	Tomcat clover	Native	Fabaceae	-

Scientific Name	Common Name	Native/Non-Native	Family	Status
<i>Triteleia laxa</i>	Ithuriel spears	Native	Themidaceae	-
<i>Uropappus lindleyi</i>	Silver puffs	Native	Asteraceae	-
<i>Urtica dioica</i>	Stinging nettle	Native	Urticaceae	-
<i>Verbascum blattaria</i>	Moth mullein	Non-native	Scrophulariaceae	-
<i>Veronica anagallis-aquatica</i>	Water speedwell	Non-native	Plantaginaceae	-
<i>Xanthium strumarium</i>	Cocklebur	Native	Asteraceae	-

APPENDIX H

Non-Native Invasive Plants Potentially Occurring in the Study Area

Scientific Name	Common Name(s)	Cal-IPC Rating ¹	Species Code
<i>Aegilops triuncialis</i>	barb goatgrass	High	AETR
<i>Arundo donax</i>	giant reed	High	ARDO4
<i>Brassica tournefortii</i>	Sahara mustard	High	BRT0
<i>Bromus madritensis ssp. rubens</i>	red brome	High	BRMA
<i>Bromus tectorum</i>	cheatgrass	High	BRTE
<i>Carduus pycnocephalus</i>	Italian thistle	Moderate	CAPY2
<i>Carthamus lanatus</i>	woolly distaff thistle	High	CALA20
<i>Centaurea solstitialis</i>	yellow starthistle	High	CESO3
<i>Centaurea stoebe ssp. micranthos</i>	spotted knapweed	High	CESTM
<i>Cirsium vulgare</i>	bull thistle	Moderate	CIVU
<i>Cortaderia jubata</i>	jubatagrass	High	COJU2
<i>Cortaderia selloana</i>	pampasgrass	High	COSE4
<i>Cytisus scoparius</i>	Scotch broom	High	CYSC4
<i>Delairea odorata</i>	Cape-ivy	High	DEOD
<i>Digitalis purpurea</i>	foxglove	Limited	DIPU
<i>Ehrharta calycina</i>	purple veldtgrass	High	EHCA
<i>Elymus caput-medusae</i>	medusahead	High	ELCA13
<i>Euphorbia virgata</i>	Leafy spurge	Moderate	EUVI7
<i>Genista monspessulana</i>	French broom	High	GEMO2
<i>Hedera helix</i>	English ivy	High	HEHE
<i>Lathyrus latifolius</i>	Perennial pea	Watch	LALA4
<i>Lepidium latifolium</i>	perennial pepperweed	High	LELA2
<i>Lythrum salicaria</i>	purple loosestrife	High	LYSA2
<i>Olea europaea</i>	olive	Limited	OLEU
<i>Oncosiphon pilulifer</i>	stinknet	High	ONPI
<i>Onopordum acanthium</i>	Scotch thistle	High	ONAC
<i>Poa pratensis</i>	Kentucky bluegrass	Limited	POPR
<i>Polypogon monspeliensis</i>	rabbitsfoot grass	Limited	POMO5
<i>Rubus armeniacus</i>	Himalayan blackberry	High	RUAR9
<i>Sesbania punicea</i>	Rattlebox	High	SEPU7
<i>Silybum marianum</i>	milk thistle	Limited	SIMA3
<i>Spartium junceum</i>	Spanish broom	High	SPJU2
<i>Tamarix chinensis</i>	Chinese tamarisk	High	TACH2
<i>Tamarix gallica</i>	French tamarisk	High	TAGA

Scientific Name	Common Name(s)	Cal-IPC Rating ¹	Species Code
<i>Tamarix parviflora</i>	smallflower tamarisk	High	TAPA4
<i>Tamarix ramosissima</i>	saltcedar	High	TARA
<i>Ulex europaeus</i>	Gorse	High	ULEU
<i>Verbascum thapsus</i>	woolly mullein	Limited	VETH

NOTES:

¹ The Cal-IPC Invasive Plant Inventory categorizes plants as High, Moderate, or Limited, according to the degree of ecological impact in California (Cal-IPC 2022).

- **High** – Severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
- **Moderate** – Substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.
- **Limited** – Invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.
- **Watch** – These species have been assessed as posing a high risk of becoming invasive in the future in California.

² The Cal-IPC Invasive Plant Inventory creates a query based on generalized habitat types. There is no crosswalk available between Cal-IPC habitat types and CALVEG alliances. Therefore, the habitat types that most closely matched CALVEG vegetation alliances in the Project vicinity were selected. These included the following: 1) grassland, vernal pools, meadows, and other herb communities; 2) riparian and bottomland habitat; 3) woodland habitat, and 4) scrub and chaparral.

APPENDIX I

Representative Photographs of Non-Native Invasive Plant Populations in the Study Area



Photo 1. Cheatgrass (*Bromus tectorum*) along the side of Stark Creek Road.



Photo 2. Scotch thistle (*Onopordum acanthium*) along the Cow Flat Creek Trail



Photo 3. Scotch thistle (*Onopordum acanthium*) near Flume No. 1



Photo 4. Rabbitsfoot grass (*Polypogon monspeliensis*) along the riverbank near the Kern River No. 1 Powerhouse and Switchyard.



Photo 5. Rabbitsfoot grass (*Polypogon monspeliensis*) near the Democrat Dam Impoundment.



Photo 6. Common mullein (*Verbascum Thapsus*) near Democrat Dam Impoundment.



Photo 7. Common mullein (*Verbascum Thapsus*) near Flume No. 1