

Kaweah Project (FERC Project No. 298)
Proposed Study Plan
Study Objectives

AQUATIC RESOURCES

AQ-1 Instream Flow

- The overall study objective is to characterize aquatic and riparian habitat as a function of flow using ecological principles and site-specific hydraulic and habitat modeling (e.g., Bovee et al. 1998). The information developed from this study, in combination with other resource studies (e.g., water temperature, fish passage, fish population, and special-status amphibian and reptile studies), will provide a basis for streamflow-related resource management decisions.
- The specific objectives of the study include:
 - Delineate the bypass rivers into segments with similar hydrology and channel characteristics (e.g., slope, channel dimensions, channel pattern);
 - Map the mesohabitat types (e.g., pool, run, riffle) in the bypass river segments;
 - Quantify the habitat versus flow relationships for fish, special-status amphibian, benthic macroinvertebrate, and riparian resources in the bypass river segments;
 - Use the habitat versus flow relationships to develop a time series analysis of aquatic habitat under existing and unimpaired flow scenarios for the bypass river segments;
 - Identify the time periods, flow conditions, and life stages when habitat may be a limiting factor for fish, benthic macroinvertebrate, special-status amphibian, and riparian populations for the existing and unimpaired scenarios; and
 - Provide information necessary to quantify the potential effects of other alternative flow scenarios on aquatic and riparian habitat.

AQ-2 Fish Population

- Document fish species composition, distribution, and abundance in the bypass river reaches.
- Characterize fish growth, condition factor, and population age structure in the bypass river reaches.

AQ-3 Macroinvertebrates

- Document the density and size distribution of drifting macroinvertebrates in selected bypass river reaches for input to bioenergetics growth analysis.
- Document the benthic macroinvertebrate community in the bypass reaches and reference reaches to characterize general habitat conditions.

AQ-4 Water Temperature

- Characterize the relationship between flow and water temperature in bypass river reaches using an appropriate model supported by existing water temperature data.
- Assess the potential effects of increased air temperature due to global warming on water temperatures over the term of the new Federal Energy Regulatory Commission (FERC) license.
- Document the availability of cold water temperature refugia in bypass river reaches.

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AQ-5 Geomorphology

- Document sediment conditions in the bypass river reaches.
- Characterize sediment capture in diversion pools.
- Develop information to assist in the identification of flows necessary to maintain geomorphic processes in the bypass river reaches.
- Identify sources of sediment (major gullies, areas of vegetation and soil loss, and hillslope destabilization and erosion), including documentation of erosion resulting from spills from Project forebays and historic flume failures.

AQ-6 Water Quality

- Characterize physical, chemical, and bacterial water quality conditions in the bypass river reaches and comparison reaches, and compare to the Water Quality Control Plan for the Tulare Lake Basin (CVRWQCB 2004) objectives and water quality standards.

AQ-7 Special-status Amphibian and Aquatic Reptiles

- Identify and map potential habitat for FYLF in the study area.
- Document the distribution and abundance of FYLF populations in the study area.
- Document the timing and length of FYLF breeding season, if FYLF are present.
- Characterize the water stage, velocity, and temperature of various flow regimes as it relates to FYLF habitat through coordination with the instream flow and water temperature studies.
- Document the presence of WPT during FYLF surveys.
- Document the presence of potential WPT nesting habitat.

AQ-8 Fish Passage

- Document the location, nature, and characteristics of fish barriers in bypass river reaches.
- Identify Project facilities and operations (e.g., diversion structures, instream flow releases) that may affect fish passage.

AQ-9 Entrainment

- Characterize Project diversions, flowlines, powerhouse turbines, and operations in relation to factors that may affect entrainment or mortality.
- Directly estimate the potential for entrainment and mortality by sampling fish entrainment in the Project flowlines.
- Develop the information necessary to assess the potential fish population/production effects of entrainment.

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CULTURAL RESOURCES

CUL-1 Cultural Resources

- Identify all known and currently undiscovered cultural resources that could potentially be affected by Project operation and maintenance activities.
- Evaluate newly discovered cultural resources to determine if they are eligible for listing in the NRHP.

LAND MANAGEMENT

LAND-1 Transportation System

- Inventory and assess condition of Project roads and trails.
- Characterize SCE's use of Project roads and trails, including season of use and level of use.
- Characterize SCE's current maintenance practices and responsibilities.
- Identify existing agreements related to Project roads and trails (e.g., maintenance agreements, easements, rights of way, special use permits).
- Identify the location, condition, use, and maintenance of helicopter landing sites utilized for routine operation and maintenance of the Project.

LAND-2 Aesthetic Resources

- Identify and map visual resources in the vicinity of the Kaweah Project, including visual management objectives established by the Bureau of Land Management (BLM), Tulare County, and/or the National Park Service (NPS), as appropriate.
- Document the existing visual condition (EVC) of Project facilities from Key Observation Points (KOPs) established in consultation with the BLM, Tulare County, and/or the NPS, as appropriate.
- Determine whether the Project facilities meet established BLM, Tulare County, and/or NPS visual resource management objectives and assess compatibility of Project facilities with surrounding landscape.
- Assess helicopter noise associated with routine operation and maintenance of the Project.
- Assess visual condition and noise associated with spills from the Kaweah No. 3 Forebay.

LAND-3 Land Use

- Identify the location, condition, use, and maintenance of existing fences, gates, cattle guards, bridges, watering troughs, and escape ramps in the immediate vicinity of Project facilities.
- Characterize SCE's maintenance practices and responsibilities for all exclusionary fencing regardless of land ownership.
- Assess potential safety issues and the resultant impacts to livestock grazing opportunities on adjacent lands and the surrounding livestock management areas which support those lands and operations.
- Identify measures to reduce or avoid impacts to public health and safety.

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RECREATION

REC-1 Recreation Resources

- Identify, map and describe all developed recreation facilities (public and private) in the vicinity of the Kaweah Project, including capacity and ownership.
- Identify, map and describe any existing Project-related recreation facilities/area (i.e., “Edison Beach”), including capacity, condition, user conflicts, consistency with applicable accessibility requirements, and operation and maintenance responsibilities.
- Characterize recreation use and opportunities in the immediate vicinity of the Project facilities and in the bypass reaches, including along the Kaweah No. 2 Flowline.
- Document recreation needs identified in current relevant State or local recreation plans and determine whether those needs can be accommodated by existing recreation facilities.
- Document potential safety issues and existing features or measures that are implemented to protect the public.

REC-2 Whitewater Boating

- Characterize commercial and private whitewater boating opportunities and use levels in the bypass reaches.
- Identify the range of flows in the bypass reaches that accommodate whitewater boating.
- Identify opportunities for disseminating real-time flow information to the public.

TERRESTRIAL RESOURCES

TERR-1 Botanical Resources

- Document vegetation alliances and wildlife habitats adjacent to Project facilities.
- Document riparian vegetation alliances along bypass reaches and Project diversion pools and forebays.
- Document special-status plant and moss populations at Project facilities.
- Document NNIPs at Project facilities.

TERR-2 Wildlife Resources

- Identify special-status wildlife species potentially occurring in California Wildlife Habitat Relationships (CWHHR) habitats documented as part of the TERR 1 – Botanical Resources Technical Study Plan (TSP).
- Determine whether Project transmission line, transmission tap line, and power line configurations are consistent with guidelines for the avoidance of avian mortalities.
- Document use of Project facilities by special-status bats during reproduction or other seasonal use.
- Evaluate the use of wildlife bridges and escape ramps by mule deer and other animals, including livestock.
- Document mortality of wildlife/livestock in Project flowlines.