

**POTENTIAL RESOURCE ISSUE:**

- Water quality compliance.

**PROJECT NEXUS:**

- Project operations could affect water quality.

**POTENTIAL LICENSE CONDITIONS:**

- Instream flow releases.
- Best management practices (BMPs).
- Spill Prevention Control Countermeasure (SPCC) Plan.

**STUDY OBJECTIVE:**

- 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.

**EXTENT OF STUDY AREA:**

- The study area will include the bypass river reaches and comparison river reaches (Table AQ 6-1, Map AQ 6-1).
- It should be noted that the majority of lands along the bypass reaches are privately owned and outside the FERC Project boundary. For the purposes of the water quality studies described herein, SCE will take the following steps to obtain approval to conduct field studies on private property:
  - Provide notification to landowner of Project relicensing and request authorization to enter property to conduct the field studies.
  - If authorization is obtained, SCE will complete field studies as described in this technical study plan.
  - If authorization is not obtained, SCE will limit field studies to only those lands where landowners have provided access.

**STUDY APPROACH:**

The following describes the water quality sampling field program which includes *in-situ* water quality measurements; general water quality sampling; fecal coliform sampling; and laboratory analysis and reporting.

**In-situ Field Measurements**

- Collect *in-situ* water quality measurements (dissolved oxygen [DO], pH, specific conductance, and water temperature) at sampling locations listed in Table AQ 6-1 using a YSI® meter. Samples will be collected once during the spring runoff (April or May, access permitting), and once during the summer low-flow or base-flow period (August or September). Pre- and post-sampling calibration of *in-situ* instrumentation will be conducted following the manufacturer's instructions.

- Document if the results of the *in-situ* monitoring meet the water quality objectives identified in the Water Quality Control Plan for the Tulare Lake Basin (CVRWQCB 2004).

### General Water Quality Sampling

- Collect general water quality samples at sampling locations listed in Table AQ 6-1 and depicted on Map AQ 6-1. Samples will be collected twice, once during the spring runoff and once during the summer low-flow or base-flow period to screen for potential water quality issues. If potential water quality issues are identified, additional follow-up sampling may be necessary. Additional sampling, if necessary, would be determined in consultation with BLM and other interested resource agencies. Collect samples using methods consistent with the Environmental Protection Agency (EPA) 1669 sampling protocol *Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria*. Water quality samples collected from streams will be analyzed for the parameters listed in Table AQ 6-2, which include general parameters, total mercury, a suite of dissolved metals, and total and fecal coliform.
- Water quality samples will be decanted into laboratory-supplied sample containers. The sample containers will be labeled with the date and time that the sample is collected and the sampling site or identification label. The sample container will be preserved (as appropriate), stored, and delivered to a State-certified water quality laboratory for analyses in accordance with maximum holding periods. A chain-of-custody record will be maintained with the samples at all times. The sampling site location will be recorded using a Global Positioning System (GPS) unit and the coordinates will be recorded in a field log book.

### Coliform Sampling

- Conduct additional total and fecal coliform sampling to determine if study waters meet objectives for contact recreational activities identified in the Water Quality Control Plan for the Tulare Lake Basin (CVRWQCB 2004). Samples will be collected at a near-shore location immediately above and below the river access area near Kaweah No. 2 Powerhouse (“Edison Beach”) where contact recreation (e.g., swimming) occurs. Fecal coliform samples will be collected no less than five times within a thirty-day period beginning approximately on July 4. Samples will be collected in the afternoon when the access area is open (Monday – Thursday; 8 am – 7 pm).

### Laboratory Analysis and Reporting

- Water quality samples collected during the field program will be processed by a State-certified laboratory approved by the State Water Resources Control Board for chemical analysis. The laboratory will report each chemical parameter analyzed with the laboratory method detection limit, reporting limit, and practical quantification limit. The laboratory will attempt to attain reporting detection limits that are at or below the applicable regulatory criteria. The parameters to be analyzed by the analytical laboratory are provided in Table AQ 6-2.

**SCHEDULE:**

<b>Date</b>	<b>Activity</b>
April/May 2018	Collect spring water quality samples
July/August 2018	Collect coliform samples
August/September 2018	Collect summer water quality samples
October 2018–January 2019	Analyze data and prepare draft report
February 2019	Distribute draft report to the stakeholders
March–May 2019	Stakeholders review and provide comments on draft report (90 days)
June–July 2019	Resolve comments and prepare final report
August 2019	Distribute final report in Draft License Application

**REFERENCES:**

Central Valley Regional Water Quality Control Board (CVRWQCB). 2004. Water Quality Control Plan for the Tulare Lake Basin, Second Edition. Revised January 2004.

## TABLES

**Table AQ 6-1. Water Quality Monitoring and Sampling Locations.**

Study River Segment	No. of Water Quality Sampling Sites	Water Quality Monitoring and Sampling Locations
<b>Kaweah River</b>		
Kaweah River Upstream of Kaweah No. 3 Powerhouse	2	K3 Flowline Above PH3 KR Upstream of PH3
Kaweah River Downstream of Kaweah No. 3 Powerhouse and Upstream of the East Fork Kaweah River Confluence	3	K2 Flowline Below PH3 KR Downstream of PH3 KR Upstream of the Conf. with EF
Kaweah River Downstream of East Fork Kaweah Confluence and Upstream of Kaweah No. 1 Powerhouse	3	KR Downstream of the Conf. with EF KR Upstream of PH1 K1 Flowline Above PH1
Kaweah River Downstream of Kaweah No. 1 Powerhouse and Upstream of Kaweah No. 2 Powerhouse	3	KR Downstream of PH1 K2 Flowline Above PH2 KR Upstream of PH2
Kaweah River Downstream of Kaweah No. 2 Powerhouse	1	KR Downstream of PH2
<b>East Fork Kaweah River</b>		
East Fork Kaweah River Upstream of the Kaweah No. 1 Diversion	1	EF Upstream of PH1 Div.
East Fork Kaweah River Downstream of the Kaweah No. 1 Diversion	2	EF Downstream of PH1 Div. K1 Flowline Below PH1 Div.
East Fork Kaweah River Upstream of Confluence with Kaweah River	1	EF Upstream of the Conf. with KR

**Table AQ 6-2. Parameters for Water Quality Monitoring and Laboratory Analysis.**

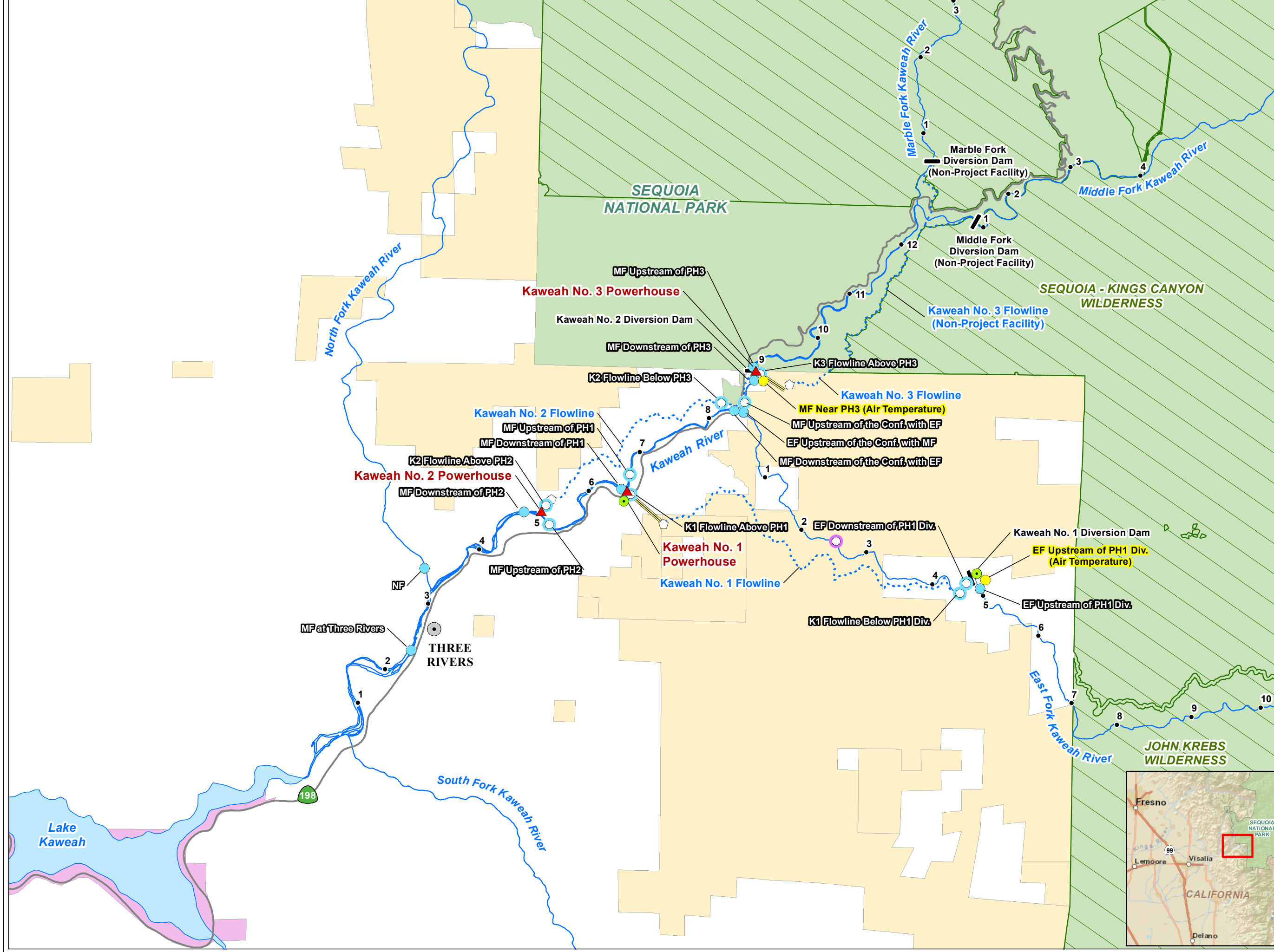
Parameter	Analysis Method	Sample Holding Times	Sample Locations to be Analyzed
<b>Water Quality Monitoring Parameter</b>			
<i>In-Situ</i> Measurements			
Dissolved Oxygen (DO)	Water Quality Meter	Not Applicable	All
Secchi Depth	Secchi Disk	Not Applicable	Reservoir
PH	Water Quality Meter	Not Applicable	All
Water Temperature	Water Quality Meter	Not Applicable	All
Specific Conductance	Water Quality Meter	Not Applicable	All
<b>Laboratory Analysis Parameter</b>			
General Parameters			
Calcium	EPA - 200.7	180 days	All
Chloride	EPA - 300.0	28 days	All
Hardness	EPA - 130.2	180 days	All
Magnesium	EPA - 200.7	180 days	All
Nitrate/Nitrite	EPA - 353.2	48 hours	All
Ammonia as N	EPA - 350.1	28 days	All
Total Kjeldahl Nitrogen	EPA - 351.2	28 days	All
Total Phosphorus	EPA - 365.2	28 days	All
Ortho-phosphate	EPA - 365.1	48 hours	All
Potassium	EPA - 200.7	180 days	All
Sodium	EPA - 200.7	180 days	All
Sulfate	EPA - 300.0	180 days	All
Total Dissolved Solids	EPA - 160.1	7 days	All
Total Suspended Solids	EPA - 160.2	7 days	All
Turbidity	EPA - 180.1		All
TOC	EPA - 415.1	28 days	All
Total Alkalinity	EPA - 310.1	14 days	All
Metals – Dissolved			
Arsenic	EPA - 1638	48 hours	All
Cadmium	EPA - 1638	48 hours	All
Copper	EPA - 1638	48 hours	All
Iron	EPA - 1638	48 hours	All
Lead	EPA - 1638	48 hours	All

**Table AQ 6-2. Parameters for Water Quality Monitoring and Laboratory Analysis (continued).**

<b>Parameter</b>	<b>Analysis Method</b>	<b>Sample Holding Times</b>	<b>Sample Locations to be Analyzed</b>
<b>Laboratory Analysis Parameter (continued)</b>			
Manganese	EPA - 1638	48 hours	All
Nickel	EPA - 1638	48 hours	
Chromium	EPA - 1638	48 hours	
<b>Metals – Total</b>			
Mercury	EPA - 1631e	48 hours	All
<b>Hydrocarbons</b>			
Methyl-tertiary Butyl Ether (MtBE)	EPA - 8260	14 days	Reservoir
Total Petroleum Hydrocarbons	EPA - 8020	14 days	Reservoir
Oil and Grease	EPA - 1664	48 hours	Reservoir
<b>Bacteria</b>			
Total Coliform	EPA - SM9222B	24 hours	All
Fecal Coliform	EPA - SM922B	24 hours	All

**MAP**





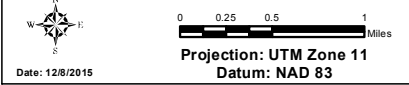
- ### Facilities
- ▲ Powerhouse
  - Diversion
  - Forebay
  - ⋯ Flowline
  - Penstock
- ### Other Features
- City/Town
  - Highway/Road
  - Watercourse
  - Water Body
  - River Mile
- ### Land Jurisdiction\*
- Bureau of Land Management
  - U.S. Army Corps of Engineers
  - National Park Service
  - Private
- \*SOURCE: BLM 2012
- ### Land Management
- National Wilderness Area
- ### Monitoring Locations
- Water Quality and Water Temperature Monitoring (existing water temperature data site)
  - Water Quality and Water Temperature Monitoring
  - Water Temperature Monitoring (only)
  - Meteorological Monitoring Location
  - Air Temperature Monitoring Location



Eastern Hydro Generation

Map AQ 6-1

**Kaweah Project**  
**Water Quality, Water Temperature and**  
**Meteorological Monitoring Locations**



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