

Project 184

Temperature Monitoring Plan

October 2012

Version 6.0

REVISION HISTORY

Page	Description	Date
4	Removed canal tributary sites (T-11 through T-24) from list of sample locations	10/19/12
Appendix A	Removed canal tributary sites (T-11 through T-24) from figure	10/19/12

This study plan is a collaborative effort and has been developed to satisfy the water temperature monitoring requirements set forth in the Project 184 Settlement Agreement (EID 2003), U.S. Forest Service 4(e) License Condition No. 37 (USFS 2003), and the California State Water Resources Control Board Section 401 Clean Water Act Water Quality Certification Condition No. 14 (SWRCB 2006). The Water Temperature Monitoring Plan (Plan) is created to gather water temperature information within specified stream flow segments that may be affected by Project 184 operations.

The scope of this plan has been defined by the water temperature monitoring requirements set forth in these documents and has been agreed to by El Dorado Irrigation District (EID).

1.0 Background

The major part of the project area of the Project lies within the South Fork American River portion of the Sacramento River Basin. According to the Central Valley Region Basin Plan (CVRWQCB 1998), the designated beneficial uses for this basin include municipal water supply, power supply, contact recreation, non-contact recreation, canoeing and rafting, warm water fish habitat, coldwater fish habitat, coldwater fish spawning, and wildlife habitat. The designated beneficial uses for Lake Aloha, Silver Lake, and Caples Lake include municipal water supply, irrigation, stock watering, industrial process supply, power production, contact recreation, non-contact recreation, warm water and coldwater fish habitat, coldwater fish spawning, and wildlife habitat. Echo Lake and Echo Creek lie within the Lahontan Basin. The designated beneficial uses of these facilities include municipal water supply, groundwater recharge, navigation, recreation, commercial and sport fishing, coldwater fisheries, wild trout, and fish spawning (LRWQCB 1995).

Stream flow characteristics of the watersheds in the project area exhibit large flow variations due to the variability of rainfall and an annual air temperature range producing variations in water temperature. This Plan has been designed to provide information regarding water temperature in the vicinity of the Project, identify if there are any potential temperature problems related to the Project, and control factors to protect coldwater beneficial uses.

2.0 Study Plan Goals and Objectives

Temperature monitoring is needed during spring months to evaluate breeding conditions for amphibians. Monitoring is also needed during summer to determine if the coldwater beneficial uses are being met in designated Project reaches. Therefore, the data obtained by the selected stream flow segments will be used to meet the following objectives.

The study objectives are:

1. Characterize the temperature in stream segments by directly using continuous monitoring from April to October as accessibility permits;
2. Gather and analyze data to determine if water temperatures in the Project area protects cold freshwater habitat beneficial uses; and

3. Identify any project-controllable temperature resource measures that may be necessary for the protection, mitigation, and enhancement of beneficial uses, if applicable.

3.0 Scheduling

Continuous temperature monitoring will occur beginning the first April through October following plan approval, as accessibility permits. Monitoring will repeat each consecutive year until a subsequent license is issued or until EID can demonstrate cold freshwater beneficial use protection is being met and confirm that temperature issues do not exist for each relevant stream reach.

4.0 Study Area and Sampling Locations

Continuous monitoring temperature probes and redundant probes will be installed and incorporated in locations where representative temperature data can be obtained throughout the entire monitoring period. Each site location will be GPS located and photo documented. The following stream reach locations will be used to implement the Plan:

- T1 Pyramid Creek downstream of Lake Aloha Dam
- T2 Pyramid Creek upstream of South Fork American River
- T3 Echo Creek downstream of Echo Lake Dam
- T4 Echo Creek upstream of Upper Truckee River
- T5 Caples Creek downstream of Caples Lake Dam
- T6 Silver Fork American River downstream of Silver Lake Dam
- T7 Silver Fork American River upstream of South Fork American River
- T8 South Fork American River upstream of Silver Fork Confluence
- T9 South Fork American River downstream of Kyburz Diversion
- T10 South Fork American River upstream of Powerhouse
- T25 South Fork American River at Bridalveil Picnic Area

In years requiring amphibian and/or hardhead monitoring, site location T25 at the Bridalveil picnic area will be utilized to identify the temperature between sample site locations T9 and T10 to determine amphibian breeding conditions.

It is anticipated that many of the temperature monitoring locations will correspond to water quality sampling stations or gaging stations that exist as part of the Project or have been required as part of the relicensing agreement. Locations are identified in the Temperature and Water Quality Monitoring Plan map found in Appendix A of this Plan. Due to various topography and remoteness of many of the sampling locations, not all sites can be GPS verified; therefore, general site locations will be used. .

Monitoring at the above sites will provide continuous temperatures readings upstream of the diversion dams and again before entering the South Fork American River. By utilizing these locations a temperature comparison can be made of any increase in water temperature due to project operations. It may however, become necessary to relocate the equipment due to insufficient water levels covering a probe, natural disturbances, public interference, instrument

malfunction, and/or equipment needs. Any adjustments will be noted and included in the monitoring reports.

If in consultation with the SWRCB, USFS, Ecological Resources Committee (ERC), and the California Department of Fish and Game (CDFG) it can be determined that reservoir temperatures are a controllable factor and a temperature problem is identified then further sites may be added. Additionally, in consultation with SWRCB, USFS, ERC, and CDFG, it can be determined that operation of the Project protects cold freshwater beneficial uses temperature monitoring may be discontinued.

5.0 Data Collection

EID shall use continuous monitoring devices collecting data at 1-hour intervals, 24-hours a day and monitoring from April through October as accessibility allows. The temperature data may have periods of time with data gaps caused by insufficient water level covering a probe, natural disturbances, public interference and/or instrument malfunction. Therefore, redundant recorders will be placed at each sampling location and will be used to verify water temperatures, or replace missing data due to device malfunction. Pre and post calibration checks will be performed based on manufacturer's specifications. The accuracy of the temperature loggers will be verified by evaluating the results of pre- and post-deployment calibration checks. If the results indicate a consistent bias of more than 0.2 degrees, then the raw data may need to be corrected, flagged with the appropriate data qualifier, or deleted. All field procedures will be documented in a log sheet and attached to the annual report.

The water temperature monitoring data will be used in conjunction with the results of the water quality monitoring plan, other settlement agreement requirements, and any pertinent data available to determine the overall environmental effects of Project 184 operations.

6.0 Reporting

The raw data collected under the monitoring protocols identified in this plan will be electronically compiled and distributed annually by January 31, to the FS, ERC, and SWRCB in 1-hour increments. EID will provide annual data updates to the ERC during the annual update meeting prior to March 15. A draft annual temperature report will be circulated to the ERC for review and consideration at least two weeks prior to the annual meeting. Based on the results of the annual meeting, EID shall submit an annual report to FS, ERC, SWRCB, and FERC by June 30 of each year. The report shall summarize the results of any ongoing monitoring or study efforts, any changes to be implemented under the license, and a summary of any unresolved issues and proposed actions to resolve each issues. All ERC members and FS and SWRCB shall have 30 days to review and comment on the draft annual report prior to its submittal to FERC. The final annual report shall be distributed to FS, ERC, and SWRCB after submission to FERC.

All temperature data will be reviewed and entered into an EID database. Temperature highs, lows, and averages will be reported. If necessary, EID will include further or adjusted recommendations that may be necessary to meet the objectives and goals of the Plan. Graphs will be provided to more clearly demonstrate any changes in specific temperature levels.

Discussion appropriate to results and supportive of analyses and conclusions will be provided. All reports will be prepared in a format so that they can easily be reviewed by the ERC and filed with the FERC after approval. E-mail updates and an electronic version of all reporting information will be provided to the ERC. Additionally, EID will coordinate with other agencies to share temperature data or additional relevant information, where feasible.

7.0 Literature Cited

Central Valley Regional Water Quality Control Board. 1998. Water Quality Control Plan (Basin Plan) for the Central Valley Region. Sacramento River and San Joaquin River Basins. Published by the California Regional Water Quality Control Board, Central Valley Region and the State Water Resources Control Board, Sacramento.

EID – El Dorado Irrigation District. 2003. El Dorado Relicensing Settlement Agreement. El Dorado Project FERC Project 184.

Lahontan Regional Water Quality Control Board. 1995. Water Quality Control Plan (Basin Plan) for the Lahontan Region. Published by the California Regional Water Quality Control Board, Lahontan Region.

State Water Resources Control Board of California. 2006. Clean Water Act Section 401 Technically-Conditioned Water Quality Certification for Federal Energy Regulatory Commission El Dorado Hydroelectric Project (FERC No. 184).

United States Forest Service. 2003. Forest Service Final Terms and Conditions Provided Under 18 CFR 4.34(b)(1) In Connection With the Application for Relicensing of The El Dorado Hydroelectric Project (FERC No. 184). October 31, 2003

APPENDIX A

Temperature and Water Quality Monitoring Plan Location Map