

Water Temperature Modeling Study **SUMMARY**

Consistent with Section 6.0 of the *Water Temperature Modeling Study Plan* (Plan) that was filed with FERC on January 9, 2017,¹ the SSWD provides the following summary for the *Water Temperature Modeling Study* (Study). The summary includes a description of the work completed to date, key findings, variances, and remaining work. Links to associated data files are also included. SSWD considers these data to be public.

Work Completed as of 3/1/18:

SSWD has completed Step 1 (select water temperature model platform). Step 2 (develop and calibrate the model) has been completed for two of three water bodies; 1) Camp Far West Reservoir and 2) the non-Project diversion dam. SSWD has completed Step 3 (develop a relicensing period of record input data set). Step 4 (validate the model) has not been completed, pending collection of additional water temperature data through June of 2018. Step 5 (develop period of record Base Case model scenario) will be completed once all three water bodies have been calibrated and validated. A second period of record model will be developed to simulate Proposed Project conditions, including a 5-foot pool raise. Step 6 (prepare final report) has not been completed, pending completion of model calibration, validation, and Base Case development.

Key Findings:

CE-QUAL-W2 was selected as the modeling platform to simulate all three water bodies because:

- of its flexibility to be customized to represent the complexities of the Project, including reservoir outlets at different elevations;
- of its ability to simulate the entire Study Area (See Section 5.1) using a single model platform;
- of its ability to simulate water temperature at an hourly time step to adequately characterize diurnal water temperature variability;
- of its ability to simulate the entire period of record; and
- Relicensing Participants are familiar with this modeling platform, and have agreed on the validity of the model results in other similar studies.

Camp Far West Reservoir was successfully calibrated to simulate water-temperature profiles and releases. The lack of gaged inflow hydrology for the Bear River and Rock Creek made calibration challenging.

The downstream non-Project diversion dam was successfully calibrated to simulate water-temperature releases. A static water level was assumed because water level data were not available. Powerhouse flows were adjusted, as needed, to preserve mass balance of the non-Project diversion dam. Adjusted powerhouse flows were also used in the calibration of Camp Far West Reservoir.

¹ The Plan is available on SSWD's public relicensing website (www.sswdrelicensing.com) under 'Study Plans.'

National Oceanic and Atmospheric Administration (NOAA) weather data measured at Beale Air Force Base were used to develop calibration and validation input data sets.

Model calibration periods were generally from April 2015 through July 2017, depending on input data availability by water body, and covers a range of hydrologic conditions.

The models are sensitive to reservoir operations, inflows and outflows, and meteorological conditions.

Associated Data Files:

SSWD has not provided any model files at this time. Model files will be provided, as appropriate, with the final model results and documentation.

Variations from Study:

There is one variance to the Study. The Study is anticipated to be completed in August 2018, two months later than stated in the Plan (June 2018). This additional time is needed to validate the model with additional observed data being collected through June 2018.

Remaining Work:

Study requirements remaining include 1) completion of the lower Bear River temperature model development and calibration; 2) validation of all three water bodies once additional water temperature model collection is complete (Spring 2018); 3) development of the Base Case and Proposed Project simulations with all three water bodies run in series; and 4) complete model documentation.

SSWD anticipates that the Study will be completed by August 2018, which is two months later than what is shown in the Plan. Extra time is needed to validate the models with observed data that is being collected through the month of June.