

Jeffrey R. Weaver

Water Resources Manager, Sacramento Hydropower Department

EDUCATION

Bachelor of Science, Civil Engineering,
University of California Davis, 1997

REGISTRATIONS

Professional Engineer - Civil: CA No.
C61510

INDUSTRY TENURE

17 years

Mr. Weaver has 17 years of experience performing hydrologic and hydraulic analyses for water supply and hydropower projects in California. He specializes in reservoir and river systems operations simulation and hydrologic modeling. He has an extensive background in the analysis, modeling, and optimization of water supply and hydropower generation operations of California's Central Valley Project/State Water Project (CVP/SWP) system. He has experience in leading water resource evaluations in FERC Relicensing with his work on both DWR's Oroville Facilities Relicensing and YCWA's Yuba River Development Project Relicensing. In addition, Mr. Weaver has extensive experience in working with environmental resource leads in the development and use of hydrologic and water temperature model output for evaluation and analysis of both aquatic and riparian resources for NEPA, CEQA, water quality, and FERC Relicensing proceedings.

RELEVANT EXPERIENCE

Yuba River Development Project FERC Relicensing, Yuba County Water Agency, Yuba County, California.

Mr. Weaver was the modeling lead, responsible for the development of the daily operations model used to evaluate various operational scenarios effects on reservoir storage, instream flows, and water supply deliveries in support of YCWA's ongoing FERC Relicensing. The model included daily operations for power generation, flood control, instream flow requirements, and diversion demands. Additional work included developing the hydrologic period of record and diversion demands for use with the operations model. Mr. Weaver was also the modeling lead for the development of the water temperature models used to support YCWA's ongoing FERC Relicensing. Water temperature modeling included a representation of one-dimensional model of New Bullards Bar Reservoir, a two-dimensional model of Englebright reservoir, and over 50 miles of riverine models. The models were used to support environmental analysis for fisheries and riparian habitat throughout the watershed, and to compare proposed alternatives from both the licensee and the relicensing participants. Mr. Weaver also developed the power generation post-processors used to evaluate benefits from both direct generation and ancillary services.

Pump Storage Engineering Services, Bonneville Power Administration, Columbia River Basin

Mr. Weaver provided oversight and quality control during the development of models assessing various options for using existing BPA pump-generation facilities to address challenges associated with the expansion of wind generation in the Pacific Northwest.

Flow Management Standard Analysis, City and County of Sacramento Office of Municipal Planning, Sacramento County, California.

Mr. Weaver was the operations Modeling Lead, responsible for the development of modeling representation of Draft Environmental Impact Report (DEIR) alternatives in CalSim II for all of the Water Forum alternatives. Mr. Weaver also developed modeling approaches for implementing various other American River operations, such as the city of Sacramento's diversion restrictions, dry-year Folsom Reservoir storage operations, and municipal and industrial (M&I) purveyor shortage

provisions.

Folsom Reservoir Water Control Manual Update, U.S. Army Corps of Engineers, Sacramento District, California.

Mr. Weaver is the CalSim-II modeling lead for the ongoing environmental evaluation of the Folsom Reservoir Water Control Manual update associated with the construction of the Folsom Reservoir Auxiliary Spillway. Mr. Weaver has worked with the operations modeling team to identify approaches for connecting the statewide-scale model, CalSim-II, with the detailed, flood operations model used in the evaluations. Mr. Weaver was also responsible for the improvement of the representation of the lower American River flow management standard within CalSim-II to ensure compliance with NMFS biological opinions for flows and temperatures on the lower American River.

NON-HDR PROJECT EXPERIENCE

Lower Yuba River Accord (LYRA) and Supporting Efforts, Yuba County Water Agency, Yuba County, California

Mr. Weaver assisted in the formulation and negotiation of the LYRA as a settlement for the Lower Yuba River Hearings. He was Modeling Lead in charge of developing models used to evaluate LYRA alternatives for flows on the lower Yuba River, water transfers, and Delta export operations. The Yuba River model simulated the operations of the Yuba River Project for instream flows, in-basin deliveries, and water transfers. He also developed the North Yuba Index, a hydrologic index used to determine flow requirements on the lower Yuba River under LYRA. In addition, he formulated methodologies and procedures for determining and updating the North Yuba Index after implementation. To support LYRA negotiations, he developed prediction tools incorporating reservoir storage with precipitation and snow gages to make an initial determination, and updated plans for hydropower operations at New Bullards Bar Reservoir. Mr. Weaver also developed water quality temperature prediction models and hydropower generation models used in assessing environmental impacts associated with LYRA. During implementation of the LYRA, he developed the models for water transfer accounting and operations forecasting used in coordination with SWP and CVP operators.

Various Yuba County Water Agency (YCWA) Hydrologic Analyses, YCWA, Yuba County, California

Mr. Weaver helped develop and receive State Water Resources Control Board approval for single-year transfers between YCWA and California Department of Water Resources in 2001, 2002, and 2003, including groundwater substitution transfers in 2001 and 2002. He assisted in the development and negotiations of the Yuba River Accord water purchase agreement for a long-term water transfer between YCWA and DWR. He was a key author of the Scheduling and Accounting Principles section of the water purchase agreement. Served as an expert witness in hearings before the SWRCB regarding approval of the Yuba River Accord. Developed tools to forecast, schedule, and account for a total of 291 thousand acre-feet (TAF) of transfers over 2 years, including more than 40 TAF of groundwater substitution transfers. Coordinated with SWP and CVP operations staff to ensure successful recognition of all transfers by all parties. In addition to these focused efforts, Mr. Weaver has conducted several hydrologic analyses for YCWA. Additionally, Mr. Weaver lead the development of water supply forecasting methodologies relying on satellite data for snow pack water content. Other efforts have been used to support YCWA's water rights, operational negotiations with the Pacific Gas and Electric Company (PG&E), and general project operations

planning.

Shasta Lake Water Resources Investigation, Bureau of Reclamation, California

Mr. Weaver led hydrologic and hydraulic analyses for feasibility study evaluating enlarging Shasta Dam and reservoir by up to 18.5 and 634,000 acre-feet, respectively. Mr. Weaver worked with project leadership to define the modeling alternatives, including various combinations of enlargements of Shasta Dam, anadromous fisheries operations, and Sacramento Valley conjunctive management operations, and then directed model simulations of alternatives. Evaluated the impacts of additional Shasta Reservoir storage on the CVP/SWP operations and Delta hydrology and hydrodynamics using a suite of modeling tools, including CalSim-II, the Sacramento River Water Quality Model (SRWQM), the Delta Hydrodynamic Model (DSM2), and Salmod. The output of these models was used to assess effects to statewide water supply reliability and upper Sacramento River fisheries resulting from both an enlarged Shasta Reservoir and changes in operational strategies. Supported evaluation of flow and temperature effects on the upper Sacramento River fisheries (Keswick to Red Bluff) of various Shasta enlargements and operations scenarios through the application of the Salmod salmon mortality model. Mr. Weaver developed the reporting metrics and evaluation criteria used for alternatives comparison, including assessing impacts to CVP/ SWP system-wide water supply, fishery conditions in the Sacramento River, conjunctive management operations in the Sacramento Valley, Delta flow conditions, and hydropower generation.

Oroville Facilities Relicensing Program, California Department of Water Resources, California

Mr. Weaver was the coordinator for modeling efforts for flow and water temperature management on the lower Feather River, supporting DWR's Federal Energy Regulatory Commission (FERC) application, subsequent settlement negotiation between DWR and the interested stakeholders, and for the Draft Environmental Impact Report (DEIR). Mr. Weaver worked with DWR management to develop the strategy for alternatives modeling, and directed the modeling team in executing the strategy. Operations models used for the evaluations included CALSIM II; Hydrops, a local operations model simulating the Oroville Facilities operations, including hydropower generation; and the Oroville Temperature Model, a model simulating water temperatures in Oroville Facility reservoirs and the Feather River from Oroville Reservoir to its confluence with the Sacramento River. In addition to coordinating all modeling efforts, Mr. Weaver did the local operations modeling optimizing hydropower generation for the Oroville Facilities. Mr. Weaver also led modeling to analyze the effects of the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) CVP/ SWP Operations Criteria and Plan (OCAP) Biological Opinions (BO) and NMFS Oroville Facilities FERC Relicensing BO on Oroville Facilities operations for power generation and water temperature.

Slab Creek Reservoir Unimpaired Flow Development, Sacramento Metropolitan Utilities District, Sacramento, California.

Mr. Weaver was the technical lead and project manager for the development of a period of record (1922 through 2010) of unimpaired flow for the South Fork American River, the Silver Fork of the South Fork of the American River, and other tributaries contributing to flow above SMUD's Slab Creek Reservoir.