

EDUCATION

- ◆ University of California, Davis
MS in Water Resources Engineering, 1996
- ◆ Loyola Marymount University, Los Angeles
BS in Civil Engineering, 1992

PROFESSIONAL LICENSES and SOCIETIES

- ◆ Registered Civil Engineer in California
- ◆ Member, American Society of Civil Engineers
- ◆ Member, California Water and Environmental Modeling Forum



PROFESSIONAL HISTORY

- 2007 – present MBK Engineers, Sacramento, CA
Supervising Water Resources Engineer (as of 2010)
- 2000 – 2006 California Department of Water Resources, Sacramento, CA
Associate Water Resources Engineer
- 1998 – 2000 University of California, Davis, CA
Post Graduate Researcher
- 1996 –1998 University of California, Davis, CA
Hydraulics Lab Teaching Assistant
- 1994 – 1995 Army Corps of Engineers – Hydrologic Engineering Center, Davis, CA
Water Resources Engineering Graduate Intern
- 1992 – 1994 Luft Environmental Consultants, Bakersfield, CA
Engineer

PROJECT HISTORY

- ◆ Los Vaqueros Module Enhancement 2– CCWD. Developed EBMUD integrated operations logic to allow CCWD and EBMUD staff to explore to possibility of a Los Vaqueros Expansion partnership. Integration of EBMUD imports and exports through the Mokelumne Intertie were coordinated with CCWD water supply and water quality operations. Model flexibility was maintained to allow CCWD and EBMUD staff to explore a wide range of alternatives.

- ◆ **Los Vaqueros Module Enhancement – CCWD.** Added a power use and cost analysis component to the Los Vaqueros Module to allow CCWD staff to develop power cost minimization strategies for operation of the CCWD system. Flexibility was incorporated into the Module design to allow CCWD staff to quickly test various operations under different power contracts.
- ◆ **Los Vaqueros Expansion Project EIR/EIS – ESA.** Simulated various LVE alternatives using CalSim II and evaluated operational impacts due to changed Delta diversions and use of the expanded reservoir. Impact metrics included water supply to SWP and CVP contractors and proposed Project partners, salinity of CCWD water supply, Delta outflow, X2, Old and Middle River flow, and CVP and SWP upstream storage.
- ◆ **SWRCB Flow Criteria – SWC.** Performed CalSim II analysis of flow criteria proposals submitted to the SWRCB Flow Criteria Proceedings by the Bay Institute, CSPA, UC Davis, PCFFA, and the California DFG. The CalSim II analysis was used to determine potential water supply, reservoir storage, stream flow and Delta water quality impacts. The study results were presented as testimony to the SWRCB in the Flow Criteria Proceedings. Reviewed SWRCB Draft Flow Criteria and performed detailed analysis of SWRCB's CalSim II simulation of the Draft Flow Criteria.
- ◆ **Los Vaqueros Module Development for CalSim – ESA.** Developed the Los Vaqueros Module (LVM) for modeling of existing Contra Costa Water District (CCWD) operations and Los Vaqueros Expansion Alternatives. LVM was designed to function as a stand-alone model or as an integrated sub-module to CalSim. The module includes complex algorithms for meeting CCWD water supply and water quality targets. Flexibility was incorporated into the LVM design to allow the user to easily change project design and rules of operation.
- ◆ **San Joaquin River Restoration Program (SJRRP) – MWH.** Assessed water supply impacts to Friant Division water users due to Restoration releases from Friant Dam. Also, studied the potential for returning Restoration releases to the Friant Division by way of the CVP and SWP Delta export pumps. The studies were performed in support of the SJRRP Programmatic EIR/EIS.
- ◆ **Upper San Joaquin River Basin Storage Investigation – MWH.** Developed operations analyses for various storage alternatives on the Upper San Joaquin River. The purpose of the analyses was to assess impacts to water supply and downstream flow. The studies were performed to support environmental documentation.
- ◆ **Friant Water Users Authority (FWUA)/Metropolitan Water District (MWD) Partnership – FWUA.** Developed a WRIMS based planning model to study water exchange opportunities between FWUA contractors and MWD. The model includes Millerton Lake, Madera Canal and Friant-Kern Canal operations. Also, SWP and CVP San Luis Reservoir, California Aqueduct and Delta-Mendota Canal operations were modeled. FWUA and the SWP are connected through various existing and proposed cross valley conveyance facilities. Several mechanisms of exchange were implemented for both water supply and quality benefits. A conjunctive use component was also added. The Partnership Model was designed as a submodule to CalSim that could be run as a stand-alone or with the full CVP/SWP system.

- ◆ **Common Assumptions Technical Team – CH2MHill.** Provided technical support for the development and review of CalSim in the Common Assumptions Common Model Package. Helped implement a representation of SWP Article 56 carryover and delivery. Provided CalSim troubleshooting expertise and study quality assurance. Assisted in the update of WRIMS1.3 in support of the Common Assumptions effort.
- ◆ **CalSim-Lite Development – CH2MHill.** Assist in the development of CalSim-Lite – a screening model for CalSim. Derive simplified SWP and CVP operational algorithms. Provide model quality assurance.
- ◆ **Water Availability Analysis Seminar – State Water Resources Control Board (SWRCB).** Prepared and delivered a presentation on the use of CalSim to determine water availability in the Sacramento and San Joaquin River basins. The presentation was delivered to SWRCB staff.
- ◆ **Water Availability Analysis & Evaluation of Potential Impacts – Sacramento Municipal Utility District.** Provide model quality assurance for the water availability analysis. Analyzed water available for appropriation, specifically relative to the potential effects to other water right holders as a result of diversions.
- ◆ **Analysis of Climate Change Impacts on California’s Water Resources – Department of Water Resources.** Performed CalSim studies to quantify potential impacts of climate change on delivery reliability and water quality for the SWP and CVP. Results and analysis of the studies were documented in the technical memorandum “Progress on Incorporating Climate Change into Management of California’s Water Resources” (DWR, 2006).
- ◆ **In-Delta Storage Program Feasibility Study – Department of Water Resources.** Developed daily time-step CalSim operation of the CVP and SWP to quantify water supply benefits of the proposed In-Delta Storage program. The daily operations included North-of-Delta CVP and SWP reservoirs, D1641 regulated Delta operations, and SWP and CVP San Luis Reservoir and South-of-Delta deliveries. The In-Delta Storage project was simulated for various operational scenarios while constrained by D1643, the Water Quality Management Plan and biological opinions. Results and analysis were documented in “In-Delta Storage Program State Feasibility Study” (DWR, 2004).
- ◆ **WRIMS Development and Technical Support – Department of Water Resources.** Developed internal functionality of the Multi-Study Runner including data transfer capabilities and data disaggregation for daily time-step modeling. Reconfigured WRIMS and added WRESL language to allow modeling at a daily time-step. Created several updates of WRIMS as CalSim users required increased functionality. Provided WRIMS troubleshooting service and developed techniques for locating model infeasibilities.
- ◆ **CalSim Training Seminars – Department of Water Resources.** Made several presentations at two CalSim training seminars. The topics discussed included SWP delivery logic, functionality and use of the Multi-Study Runner, operational modeling at a daily time-step, and WRIMS troubleshooting.
- ◆ **CalSim Technical Support for South Delta Improvement Program Gaming Sessions – Department of Water Resources.** Developed spreadsheet tool for efficient transfer of CalSim results to the daily time-step gaming model. Provided analysis and interpretation of CalSim results to facilitate gaming sessions.