



California Water and Environmental Modeling Forum

Promoting Excellence and Consensus in Water and Environmental Modeling

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Technical Workshop on San Joaquin River Valley Modeling

**Theme: To develop a common understanding of modeling efforts
in the San Joaquin River Valley**

(Note: This workshop is not part of the ongoing External Review of the San Joaquin River Valley Representation in CalSim-II, which is jointly sponsored by the CALFED Science Program and CWEMF.)

Friday, November 4, 2005

9:30 a.m. to 3:30 p.m.

Bonderson Hearing Room, 1st Floor

901 P Street, Sacramento, CA

(Enter at 9th & P Streets, and check in at the security desk.)

Fee: No-charge for CWEMF members*; \$50 for non-members/\$10 for student non-members**
Pre-registration not required; however, if you plan on attending,
please send an email to cwemf@cwemf.org.

Agenda***

- 9:30 a.m. **Welcome and Introduction**
George Nichol, California Water and Environmental Modeling Forum.
- 9:45 a.m. [Pre-Central Valley Project \(1930's and 1940's\) Conceptualization of Sacramento-San Joaquin Delta Hydraulics and Water Quality](#)
(Power Point Presentation; 1.5 MB)
Lloyd Peterson, Chief, Reservoir System Analysis Branch, U.S. Bureau of Reclamation, Mid-Pacific Region.

In early studies, U.S Bureau of Reclamation (Reclamation) engineers estimated required Delta outflow to maintain salinity levels acceptable to irrigators and applied monthly time step mass balance models to estimate Sacramento River storage requirements. However, a more complete analysis was needed to demonstrate transfer of Sacramento water into the interior Delta. By the late 1940's Reclamation engineers had developed models that explicitly accounted for temporal and spatial variation of flow and salinity within the Delta.

* The following have current CWEMF organizational memberships: CH2M Hill, Jones & Stokes, SWRI, CCWD, EBMUD, MWDSC, CDWR, SWRCB, USBR, USCOE, USFWS, and USGS. If you are unsure whether you have a current individual membership, please contact the CWEMF.

** The workshop fee also provides CWEMF membership until the Annual Meeting in February 2006.

*** The PowerPoint presentations will be posted on the CWEMF web site after the workshop.

San Joaquin River Valley Modeling Technical Workshop Agenda, Cont.

10:15 a.m. [San Joaquin River Salmon Population Model](#) (Power Point Presentation; 2 MB)
Dean Marston, Senior Staff Environmental Scientist, California Department of Fish and Game, Fresno Office.

A simple flow-based linear regression spreadsheet salmon population prediction model is presented that predicts adult fall-run Chinook salmon abundance in the San Joaquin River basin as a function of: (1) smolt production at Mossdale as a function of prior year combined SJR east-side tributary escapement and current year spring river Delta inflow at Vernalis; (2) through Delta salmon smolt survival to Chipps Island; (3) adult salmon escaping cohort production from Chipps smolt abundance; and (4) reconstruction of adult salmon escapements via calculating multi-year percent age compositions for each production year cohort.

11:00 a.m. [U.S. Army Corps of Engineers San Joaquin River Basin Comprehensive Study Model](#)
Scott Stonestreet, Lead Hydraulic Engineer, U.S. Army Corps of Engineers, Sacramento District.

The U.S. Army Engineer District, Sacramento, completed development of system-wide, hydraulic numerical models of the San Joaquin River Basin in support of the Sacramento and San Joaquin River Basins Comprehensive Study. The models are significant tools that may be used to study alternatives for flood damage reduction and ecosystem restoration. These models include UNET, HEC-RAS, and FLO-2D.

The emphasis of this discussion is to provide and share information regarding the UNET modeling of the San Joaquin River basin conducted for this unusually large modeling effort. This model includes about 225 miles of the mainstem channel and an additional 189 miles of tributary, distributary, and bypass channels. All tallied, the UNET model consists of about 2100 cross sections, 84 storage areas, and multiple connections that link the various elements together. Given the extent of the model, impacts from alternative measures in one part of the system can be determined throughout the entire river system, thus, providing the user with a system-wide or watershed-scale result.

11:45 a.m. **Lunch**

1:00 p.m. [The State Water Resource Control Board's Geo-Referenced Water Bodies System \(GeoWBS\) Economics Module](#)
Gerald Horner, Senior Economist, State Water Resources Control Board staff.

This module contains a web-based procedure for SWRCB analysts to evaluate the economic effects of the following items in the San Joaquin Valley:

- Land use water quality control programs, such as those related to non-point source controls and to TMDL requirements
- Establishment and modifications of water quality objectives
- Water use attainability
- Water body antidegradation benefits
- Reasonably foreseeable methods of water quality compliance with new performance standards or treatment requirements

San Joaquin River Valley Modeling Technical Workshop Agenda, Cont.

- 1:45 p.m. **[Stockton Ship Channel Dissolved Oxygen Modeling Status](#)**
Russ Brown, Consulting Engineer, Jones & Stokes Associates.
- The status of the Stockton Deep Water Ship Channel dissolved oxygen modeling and the San Joaquin River Data Atlas will be discussed.
- 2:30 p.m. **[DSM2-SJR Model](#)**
Tara Smith, Chief, Delta Modeling Section, California Department of Water Resources.
Jim Wilde, Engineer, California Department of Water Resources.
- DSM2-SJR is an extension of DSM2, which is a one-dimensional hydrodynamic, water quality, and particle-tracking model that normally models flows and water quality in the Delta. DSM2-SJR extends the model to simulating flows and water quality in the San Joaquin River from Vernalis to Bear Creek. The presentation will focus on the development, calibration, and validation of the SJR portion of DSM2, extending from Vernalis to Bear Creek.
- 3:00 p.m. **[San Joaquin River Salinity Management Model, SANMAN](#)**
Paul Hutton, Senior Engineer, Metropolitan Water District of Southern California.
- The purpose of the San Joaquin River Salinity Management Model (SANMAN) is to provide reconnaissance-level decision support in the development of a San Joaquin River Salinity Management Plan (part of the Delta Improvements Package) by: (1) identifying coordinated management actions that meet the Vernalis salinity objective, and (2) estimating water costs of actions. SANMAN is an Excel-based spreadsheet model that is designed to layer potential salinity management actions on top of a baseline CalSim hydrology and operations. Actions being considered include: real-time coordination of tributary releases; drainage reduction; re-timing drainage releases; DMC re-circulation through the Newman Wasteway; strategic water purchases; and re-operation of New Melones Reservoir.
- 3:30 p.m. **Adjourn**

Biographical Sketches

Lloyd Peterson has a B.S degree from Syracuse University in Forest Engineering and an M.S. degree from Utah State University in Civil Engineering. Since 1976 he has worked as a hydraulic engineer for three federal agencies (USGS, Corps of Engineers and US Bureau of Reclamation) working in Tennessee, West Germany, and California.

Dean Marston – Dean Marston is a staff environmental scientist with the California Department of Fish and Game where he has worked for 23 years. For the past 12 years he has worked on San Joaquin River basin water development related issues. For five years he served as the Department's Vernalis Adaptive Management Plan Hydrology and Biology Technical Advisory Group representative. From 1999 to 2005 he supervised the Department's San Joaquin River Anadromous Fish Research and Restoration Project. He is currently working on San Joaquin River regional water projects planning and coordination, and is the Department's lead scientist in the Stanislaus River and lower San Joaquin River basin water temperature modeling projects.

Scott Stonestreet is a registered professional engineer with over 19 years experience with the Corps, including both the Los Angeles and Sacramento Districts. Scott was the Corps' lead hydraulic engineer for the basin-wide hydraulic modeling efforts in support of the Sacramento and San Joaquin River Basins Comprehensive Study. In addition, Scott has been involved with various research activities at the Corps' Waterways Experiment Station as well as within the Los Angeles District, and has written numerous papers documenting these research activities. Scott is a member of the Corps' Committee on Channel Stabilization, consulting on water resource projects throughout the United States. Scott received his BS degree in Civil Engineering from California State Polytechnic University, Pomona and his MS degree in Civil Engineering from California State University at Long Beach.)

Gerald Horner is currently a Senior Economist with the SWRCB. He has the following degrees:

- Ph.D. Resources and Agricultural Economics, Washington State University, 1970
- M.S. Agricultural Economics, North Dakota State University, 1967
- B.S. Agricultural Economics, North Dakota State University, 1962

His experience includes environmental economics, economics of water use, agricultural economics, and economics of natural hazards. He has consulted to many agencies, including the U.S. EPA, FEMA, USBR, CALFED, UCD Agricultural Issues Center, and the UC Cooperative Extension.

Russ Brown has worked as a consulting engineer for Jones and Stokes Associates for about 15 years, and has done much modeling in the Delta. Russ is currently involved in the oxygenation-testing program for the Stockton Deep Water Ship Channel. Russ holds a PhD degree in engineering from the Massachusetts Institute of Technology.

Tara Smith has 15 years experience in hydrodynamic and water quality modeling of the Sacramento-San Joaquin Delta estuary. Currently she is Chief of the Delta Modeling Section in DWR's Bay-Delta Office, and responsible for leading the development, maintenance and application of mathematical models for the Bay-Delta system. She has BS in Engineering, May 1985, Trinity University, Texas and a MS in Civil Engineering, December 1990, University of California, Davis.

Paul Hutton is a Senior Engineer with Metropolitan Water District in their Sacramento office. While with MWD, Paul has been involved with a variety of Bay-Delta and State Water Project issues. Prior to joining MWD, Paul served 12 years with the Department of Water Resources and CALFED in a variety of capacities, the last being chief of the Bay-Delta office's Delta Modeling Section. Paul holds a PhD degree in Civil Engineering from U.C. Davis.