

EDUCATION

- ◆ California State University, San Jose
BS in Civil Engineering, 1966



PROFESSIONAL LICENSES, SOCIETIES and HONORS

- ◆ Registered Civil Engineer, California, 20486, Nevada, 8086
- ◆ Member, American Society of Civil Engineers
- ◆ Award of Distinction, San Jose State University, College of Engineering
- ◆ Diplomate, Water Resources Engineer, American Academy of Water Resource Engineers

EXPERIENCE

- 1988 - Present **MBK Engineers, Sacramento, CA**
Principal
Practice in the fields of hydrology, hydraulics, flood control, water supply, and water resources development. Projects have included development of improved flood operations plans for Folsom Dam including forecast based operations, and development of modification plans for Folsom Dam to provide improved flood protection for Sacramento. Develop preliminary concepts for improved flood control and water supply operation of New Don Pedro and Friant dams Led hydrology and hydraulic design efforts for Yuba County Water Agency plans for improved flood protection along the Yuba, Feather, and Bear Rivers. Currently developing Coordinate operation plans for Oroville and New Bullards Bar reservoirs. Participated in completion of feasibility, environmental impact (EIR), and design studies for the Natomas Basin, including hydraulic impact analyses. Supervised Hydraulic analysis studies of flood capacity and flow dynamics along the San Joaquin, Tuolumne, Sacramento, American, Napa, and Russian Rivers. Developed FEMA flood plain studies for cities of Sacramento, Stockton, Woodland, and Fairfield. Hydraulic studies have included steady, unsteady, 1D, and 2D hydraulic modeling. Provided expert consulting services on numerous flood claim cases in California and Nevada. The flood cases were located in the jurisdictions of Yuba, Sacramento, Lake, Napa, Solano, Merced, Inyo, Monterey, and Santa Cruz counties in California, and Las Vegas in Nevada. This work included an analysis of design, construction, and operation of flood control facilities.
- 1966 - 1987 **US Army Corps of Engineers, Sacramento, CA**
Flood Control Planning, Design and Operation
Responsibility for the engineering analysis of flood problems, the design of engineering solutions, and the operation of flood control projects throughout parts of California, Nevada, Utah, and Colorado. During periods of flooding, organized and directed flood fighting and flood rehabilitation

activities. Responsible for flood operation of 17 Corps reservoirs in California and the monitoring of 25 partnership reservoirs in California, Nevada, and Colorado. Management responsibility for the water resources engineering studies for the planning and design of flood control and multiple purpose projects. Hydrology, hydraulic design, flood plain management, and reservoir control sections were major areas of responsibility.

PROJECT HISTORY

2000 to Present

- ◆ Team member for planning and evaluation of modifications to Folsom Dam to improve flood operation. Included operational analysis of various alternatives to provide Sacramento at least 200-year flood protection and spillway improvements to pass the PMF.
- ◆ Review 1997 flood on Sacramento, Feather, American, and San Joaquin River basins. Develop model of San Joaquin River systems and reproduce flood event. Work included both hydraulic model calibration of this great flood and also reservoir operation analysis.
- ◆ Development of Hydraulic and Hydrology support for feasibility and design studies for the Natomas basin as a member of the SAFCA design team. Work included development of Risk Analysis data compatible with Corps of Engineers criteria.
- ◆ Engineering analysis of Yuba River flood capacity study of flood control measures for improved flood protection. Developed Forecast Coordinated Operations plan for Oroville and New Bullards Bar reservoirs. Work included feasibility studies, environmental impact analysis (EIR) and design support. Utilization of 1D and 2D hydraulic modeling.
- ◆ Napa River review of 1995 flooding and establishment of hydraulic models for St. Helena area and support for flood management alternatives. Efforts included development of community consensus on flood project plan.
- ◆ Analysis of flood operations at Friant Dam on the San Joaquin River and New Don Pedro on the Tuolumne River. Developed preliminary criteria for improved flood control operation.
- ◆ Hydraulic capacity studies for Cache Creek including depth, velocity and spill potential - Yolo to Highway 505. Provided hydraulic modeling support to Corps feasibility study.
- ◆ Led hydraulic modeling efforts for San Joaquin River system unsteady flow model and documentation of model. Determine hydraulic impacts of River Islands project in Lathrop. Analyze project alternatives, including a new bypass.

1988 through 1999

- ◆ Analysis of Folsom Dam water supply pump capacity, including resolution of flow differences between various measuring locations (including a Venturi meter in 84" line). Support design of the modification of the Folsom Dam water supply pumping facilities.

- ◆ Develop operation criteria for Folsom Dam to optimize utilization of flood space, including use of upstream storage and variable flood space requirements of Folsom Dam.
- ◆ Analysis of Russian River hydraulics and potential for "Pit Capture".
- ◆ Flood Operation Studies of Clear Lake Dam relative to 1983 and 1986 floods.
- ◆ Oversee and coordinate construction of flood control facilities for 12 Delta reclamation districts.
- ◆ Flood plain analysis, City of Fairfield.
- ◆ Determine hydraulic capacity West Magnesia Flood Channel, Rancho Mirage, California.

1983-1987

- ◆ Design studies on Cache Creek erosion problems and Clear Lake operational impacts.
- ◆ Sacramento River Basin - Sacramento River Bank Protection Project -- construction of protective works from Collinsville to Colusa.
- ◆ Sacramento and American River flood system analysis in vicinity of Sacramento.
- ◆ Responsible for flood operations during 1983 and 1986 floods. Reservoir operations for largest flood of record in many areas. Post flood design and reconstruction were of primary importance also. Area of efforts included most of Northern California and Great Salt Lake in Utah.
- ◆ Completion of design documents and initiation of construction for Fairfield streams to provide 100-year level of protection to this area.
- ◆ Completion of design documents and initiation of construction of Redbank and Fanchers Creeks Flood Control Project in Fresno, California.
- ◆ Completion of design documents and initiation of construction of Wildcat and San Pablo Creeks Flood Control Project in Richmond, California.
- ◆ Development of operational criteria for the multiple purpose Warm Springs Dam and Coyote Valley Dams located in the Russian River Basin, California.
- ◆ Completion of design studies and initiation of construction for the multiple purpose Little Dell Dam Project near Salt Lake City, Utah.
- ◆ Completion of design studies for Corte Madera Creek Project in Marin County, California.
- ◆ Design studies for final segment of the Walnut Creek Project in Contra Costa County, California.

- ◆ Design studies, plans and specifications for Sacramento and Stockton Deep Water Ship Channel projects.

1978-1983

- ◆ Hydrologic studies in support of the New Melones Dam Project on the Stanislaus River, California. Development of flood control manual for the completed dam.
- ◆ Development of operating criteria for the Truckee River Basin Reservoirs (Martis, Stampede, Prosser, Boca Reservoirs).
- ◆ Completion of flood control studies for Reno, Nevada. Work culminated in the authorization of the Truckee Meadows Flood Control Project.
- ◆ System flood control operation studies for the San Joaquin River.
- ◆ Development of flood control operational criteria for Pine Flat Dam on the Kings River in California.
- ◆ Overview of flood insurance studies throughout California.
- ◆ Development of hydrologic studies in support of the Merced County Steams Project.
- ◆ Coordinated operation of Tulare Basin Flood Control Reservoirs. Record floods on the San Joaquin River occurred during this period.