

History

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Pre-Kesterson Drainage Planning

The San Joaquin Valley has some of the world's most productive agricultural lands. However, much of the west side of the Valley is plagued by poor subsurface drainage conditions that impact crop production. Effective drainage management is essential to prevent shallow groundwater conditions and accumulation of salts in the root zone.

Federal and State agencies have long recognized the need for proper drainage. Historically, farmers addressed the drainage problem by installing subsurface drainage systems to collect shallow groundwater and transport it away from the fields for disposal. Lack of disposal capability, however, has limited installation of subsurface drainage systems. Because this is a regional problem and affects an area that exceeds local jurisdictions, federal and State agencies assumed a lead role in seeking a regional solution (SJVIDP, 1979).

Planning for drainage facilities to serve the Valley began in the mid-1950s. The Bureau's feasibility report, *San Luis Unit, Central Valley Project: A Report on the Feasibility of Water Supply Development, 1956*, described the proposed drain as an unlined ditch that would drain 96,000 acres. The California Legislature ordered a study in 1956 of a "comprehensive master drainage works system" (California Legislature, 1957).

In 1957, the Department of Water Resources published its *California Water Plan*, which outlined the State Water Project (DWR, 1957). This Plan included a master drain extending from near the Buena Vista lakebed in Tulare Basin to the Delta. In 1960, California voters approved the Burns-Porter Act authorizing State Water Project financing and construction of "facilities for removal of drainage water from the Valley" (SJVIDP, 1979).

Congress enacted Public Law 86-488 in 1960, mandating construction of the San Luis Unit of the Central Valley Project. The Bureau was authorized to either participate with the State in a master drain project or construct the San Luis Interceptor Drain to serve the drainage needs of the San Luis Unit. The project was revised in 1962 to a concrete-lined canal that would drain 300,000 acres. In 1964, the plans included a flow regulatory reservoir to control discharge to the Delta and to minimize the size of the drain facility. The State participated initially in joint planning of the master drain but withdrew in 1964 due to lack of funding for the program.

In 1968, the Bureau began constructing the San Luis Interceptor Drain, shortened to

the “San Luis Drain.” By 1975, an 82-mile segment of the Drain (Laguna Avenue in Fresno County to Kesterson Reservoir) and 120 miles of collector drains were completed. The first 1,280 acres of a planned 5,800-acre regulating reservoir complex was to be used for wetland habitat. When construction was interrupted in the mid-1970s because of federal budget constraints and environmental concerns, the Bureau decided to use Kesterson Reservoir to store and evaporate drainage water until the Drain to the Delta could be completed. Congress enacted PL 95-46 in 1977, authorizing \$31 million to continue constructing the distribution and collection system for the San Luis Unit.

Between 1975 and 1979, the San Joaquin Valley Interagency Drainage Program, an appointed task force of government and nongovernment members, conducted a comprehensive analysis of the drainage problem and the San Luis Unit Project (USBR, 1978). SJVIDP was a joint effort of the Bureau, DWR, and the State Water Resources Control Board to formulate a plan for agricultural drainage and salt management in the Valley. SJVIDP published a final report and first-stage environmental impact report recommending phased construction of a valleywide drain between the bed of Kern Lake in the south and Suisun Bay near Chipps Island in the north (SJVIDP, 1979).

The Bureau used the interagency report to plan for completion of the Drain and initiated discussions with SWRCB to obtain a discharge permit. SWRCB also used the interagency report in guiding the Bureau's preparation of a permit application. The application was to contain 6 study plans and 13 other related items comprising a Report of Waste Discharge.

The Bureau completed the six study plans in 1983, but the Report was never completed. In 1983, deformities and deaths of aquatic birds were discovered at Kesterson. This was attributed to selenium toxicity (SJVIDP, 1990); the finding significantly altered the perception of drainage water impacts and affected the approach to addressing drainage and related problems. The Bureau did not pursue completing the Drain.

Post-Kesterson Drainage Management

In 1984, the San Joaquin Valley Drainage Program, a joint federal/State effort involving the U.S. Fish and Wildlife Service, U.S. Geological Survey, the Bureau, and California Departments of Fish and Game and Water Resources was established to investigate drainage and drainage-related problems and to develop possible solutions (ibid). Figure 1 shows the SJVDP five study subareas. Committees and subcommittees were formed to provide technical and policy advice to SJVDP's Program Policy and Management Committee. The Citizens Advisory Committee of 14 prominent members rep-

Key components of the SJVDP recommended plan (SJVDP, 1990)

- ▶ **Source control** is improvement in on-farm irrigation practices to reduce deep percolation.
- ▶ **Drainage reuse** is drainage water progressively applied to more salt-tolerant plants to reduce drainage water volume and concentrate salts and trace elements to facilitate containment and safe disposal.
- ▶ **Evaporation systems** are ponds planned for storing and evaporating drainage water after reuse on salt-tolerant plants. Four types of ponds were identified in the recommended plan: (1) nontoxic with <2 ppb Se; (2) standard with 2 to 50 ppb Se; (3) accelerated rate; and (4) solar.
- ▶ **Land retirement** is cessation of irrigation in areas overlying shallow groundwater with elevated levels of selenium and difficulty in drainage.
- ▶ **Groundwater management** is planned pumping of the semiconfined aquifer where shallow water tables can be lowered and the pumped water is of suitable quality for irrigation or wildlife habitat.
- ▶ **Discharge to the San Joaquin River** is controlling and limiting drainage water discharge from the San Joaquin Basin portion of the study area to the San Joaquin River while meeting water quality objectives.
- ▶ **Protection, restoration, and provision of substitute water supplies for fish and wildlife habitat** is providing fresh water supplies to substitute for drainage-contaminated water previously used on wetlands and to allow protection and restoration of contaminated fisheries and wetland habitat.
- ▶ **Institutional change** is intended to aid other plan components. Changes include tiered water pricing, improved water delivery schedules, water transfers and marketing, and formation of regional drainage management organizations.

representing agricultural and environmental interests (seven each), was a key SJVDP policy advisory group.

SJVDP initially investigated all drainage management options, including out-of-valley drainage water disposal. In 1987, an SJVDP-commissioned report (Brown and Caldwell, 1987) presented possible areas for drainage water disposal. Strong objections arose from environmental interest groups and coastal communities. The Citizens Advisory Committee recommended, and the Program Policy and Management Committee adopted, a policy / management decision to limit studies to in-valley drainage management measures. SJVDP thereafter adopted the approach that agriculture should strive to correct, to the extent feasible, the drainage problem in-valley before resorting to out-of-valley disposal options.

Figure 2—San Joaquin Valley Drainage Implementation Program Organizational Chart

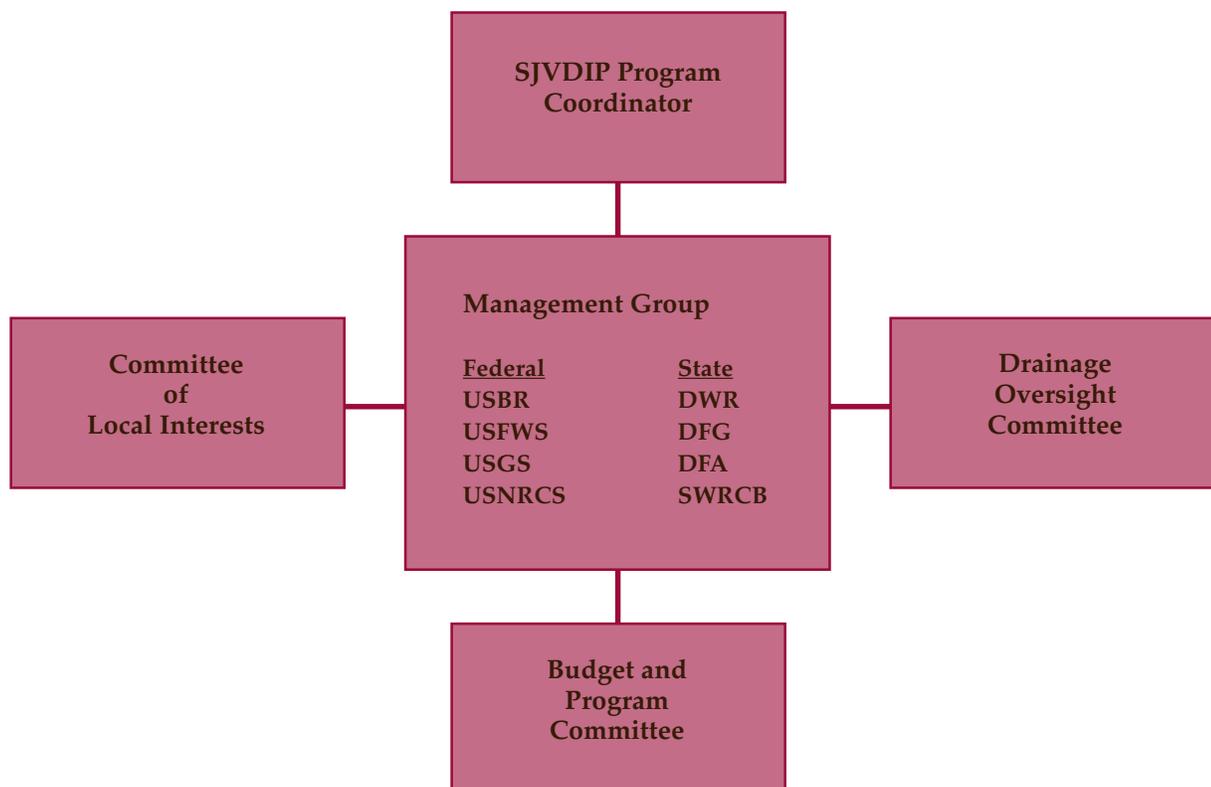


Table 2—San Joaquin Valley Drainage Implementation Program

Management Group Members	
Raymond D. Hart (DWR)	Mike Schulters (USGS)
Bill Luce (USBR)	A.J. Yates (DFA)
George Nokes (DFG)	Walt Pettit (SWRCB)
Joel Medlin (USFWS)	John Beyer (USNRCS)
Program Coordinator	
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Committee of Local Interests Members	
Alex Hildebrand (SDWA)	John Diener (V & A Farms)
Ed Smith (DFG)	Doug Davis (TLDD)
Don Marchiochi (GWD)	Phil Nixon (LHWD)
Dennis Falaschi (PWD)	Jim Beck (KCWA)
Red Martin (WRCD)	Sarge Green (TID)
Budget and Program Committee Members	
Mike Delamore (USBR)	Dan Johnson (NRCS)
Frank Wernette (DFG)	Walt Shannon (SWRCB)
Ted Bell (DFA)	Steve Schwarzbach (USFW)
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