



Ground Water Basins in California

A Report to the Legislature
in Response to
Water Code Section 12924

Basins With Special Problems

Only one basin with special problems has been identified in the Sacramento Basin Hydrologic Study Area.

Sierra Valley Basin. In the Sierra Valley, which is primarily a cattle area, Sierra Valley ground water is threatened by the drilling of large agricultural wells and an impending population growth. Pressures for housing subdivisions because of population growth in Nevada have increased. Some existing wells have lost considerable artesian head. In fact, artesian head in some areas has dropped below ground surface, thereby severely complicating the problem of providing winter water for cattle. The basin is situated in Sierra and Plumas Counties.

San Joaquin Basin Hydrologic Study Area

Figure 10 presents the 39 ground water basins in the San Joaquin Basin Hydrologic Study Area. Table 6 shows those basins and identifies eight basins now indicated to be in overdraft.

Ground Water Basin Boundaries

The Sacramento County Basin extends into this hydrologic study area but is discussed under the Sacramento Basin Hydrologic Study Area.

Local views included both leaving the San Joaquin Valley as one basin and identifying each existing water agency boundary as a ground water basin boundary.

The San Joaquin Valley is divided into 15 separate basins, largely based on political considerations. Division into these basins is essential for ground water management, since management of the valley as a whole is impractical. Division along all existing water agency boundaries would result in basins with technical problems in the conduct of management activities.

Eastern San Joaquin County Basin. The boundaries are the county line on the north, the San Joaquin River on the west, the county line and the Stanislaus River on the south, and the edge of the alluvium on the east. The basin includes a portion of Stanislaus County in the southeast portion. The specific boundaries were endorsed by local water agency personnel.

Modesto Basin. The Modesto Basin lies between the Stanislaus and Tuolumne Rivers, from the San Joaquin River on the west to the Sierra Nevada foothills on the east. The basin comprises land in the Modesto Irrigation District, the southern two-thirds of the Oakdale Irrigation District, and lands to the east in the unincorporated area called Cooperstown.

Tule Basin. The Tule Basin is generally bounded on the west by the Tulare County line, excluding those portions of Tulare Lake Basin Water Storage District and Sections 29 and 30 of Township 23 South, Range 23 East, that are west of Homeland Canal. The northern boundary of the basin follows the northern boundaries of Lower Tule Irrigation District and Porterville Irrigation District and the southern boundary of Lindmore Irrigation District, the eastern boundary is at the edge of the alluvium, and the southern boundary is the Tulare-Kern County Line.

Pleasant Valley Basin. This basin includes the older and younger alluvium of the San Joaquin Valley north of the Kern County line and west of the Tulare Lake Basin and the Westside Basin.

Westside Basin. The Westside Basin consists mainly of lands in the Westlands Water District. Heavy pumping occurred prior to construction of the San Luis Unit of the Central Valley Project, causing ground subsidence as much as 8.5 metres (28 feet) in one area and lower ground water levels.

Kern County Basin. The Kern County Basin consists of that portion of the San Joaquin Valley in Kern County and includes the contiguous older and younger alluvium.

Basins Subject to Critical Conditions of Overdraft

Eight basins have been identified as subject to critical conditions of overdraft in the San Joaquin Basin Hydrologic Study Area.

Eastern San Joaquin County Basin. This basin for many years has experienced overdraft, the adverse effects of which include declining water levels that have induced the movement of poor quality water from the Delta sediments eastward near the City of Stockton. Migration of these saline waters has severely impacted the utility of ground water in the vicinity of Stockton. Wells have been abandoned and replacement water supplies have been obtained by drilling additional wells generally to the east. For partial mitigation of these adverse impacts, supplemental water from the Calaveras River through the Stockton-East Water District Aqueduct is being substituted for ground water.

To stop the easterly migration of poor quality water would require maintaining higher water levels in the basin and other measures, which, in turn, would probably reduce ground water inflow from the south. Under those higher water level conditions, the estimated supplemental water requirement would be materially greater than at the present. The exact amount of overdraft and supplemental water requirement is presently under study.

The identification of the Eastern San Joaquin County Basin as subject to critical conditions of overdraft is based on the existing overdraft and the adverse effects described above.

Chowchilla Basin. Overdraft in the basin was estimated at 62 000 cubic dekametres (50,000 acre-feet) annually in 1975, based upon the DWR Mid-Valley Canal Areal Study. Chowchilla Water District, which lies in the eastern portion of the basin, presently has a balanced water budget due to CVP deliveries from the Madera Canal and an estimated 29 600 cubic-dekametre (24,000 acre-foot) annual new water yield from the recently completed Buchanan Dam on the Chowchilla River.

However, ground water meets nearly all applied water demands in the areas to the southwest and to the north of Chowchilla Water District, and maximum ground water level declines amounted to over 2 metres (6 feet) per year during the period 1970-75. These areas are experiencing a rapid growth in irrigated agriculture. Ground water level lowering in these areas of heavy pumping is expected to induce greater subsurface flows from the Chowchilla Water District area and cause water levels there to drop.

A water quality problem has developed over the years in the southwest portion of the basin due to the reclamation of lands for agricultural expansion. The heavy pumping and application of water for leaching of salts from the soils has apparently carried those salts to the ground water.

Adverse effects from the overdraft include increasing ground water pumping lifts, costs, and energy usage, and the water quality problems. The Chowchilla Basin is identified as subject to critical conditions of overdraft, as present water management practices would probably result in adverse environmental, social or economic impacts, particularly in the western portion of the basin.

Madera Basin. Overdraft in the basin was estimated at 123 000 cubic dekametres (100,000 acre-feet) annually in 1975, based upon the DWR Mid-Valley Canal Areal Study. Madera Irrigation District, which lies in the central portion of the basin, presently has a balanced water budget due to CVP deliveries from the Madera Canal and an estimated 29 600 cubic-dekametre (24,000 acre-foot) annual new water yield from the recently completed Hidden Dam on the Fresno River. However, ground water meets nearly all applied water demands in the area west of Madera Irrigation District, where agricultural development is growing rapidly and maximum ground water level declines amounted to over 2 metres (6 feet) per year for the period 1970-75. Heavy pumping is also occurring to the east of Madera Irrigation District, where cropped acreage has increased by 10 100 hectares (25,000 acres) during the period 1958-74 and where only minor amounts of surface water are available. The