

Las Posas Valley Groundwater Basin

- Groundwater Basin Number: 4-8
- County: Ventura
- Surface Area: 42,200 acres (66 square miles)

Basin Boundaries and Hydrology

This groundwater basin underlies the Las Posas Valley located in southern Ventura County. The basin is bounded on the south by the Camarillo and Las Posas Hills and on the north by South Mountain and Oak Ridge (CSWRB 1956). The basin is bounded on the east by the Santa Susana Mountains and on the west by the Oxnard subbasin of the Santa Clara River Valley Groundwater Basin (CSWRB 1956). Ground surface elevations range from about 200 feet in the west to about 700 feet above sea level (CSWRB 1956). Arroyo Las Posas drains surface waters westward to the Pacific Ocean (CSWRB 1956). Average annual precipitation ranges from 12 to 16 inches.

Hydrogeologic Information

Water-bearing materials in the basin include alluvium, the San Pedro Formation, and the Santa Barbara Formation. Productive aquifers in this basin include an upper unconfined aquifer, utilized locally for groundwater production, and two lower, confined aquifer systems that extend throughout the basin (CSWRB 1956).

Water Bearing Formations

Alluvium. Pleistocene to Holocene age alluvial deposits range from 40 feet to 300 feet thick and are dominated by sand and gravel in the eastern part of the basin, and by silts and clays in the western part of the basin. Near Moorpark these deposits consist of about 200 feet of sand and gravel with an average specific yield of about 8 percent and average well yield of about 400 gal/min (CSWRB 1956).

San Pedro Formation. The upper part of the lower Pleistocene San Pedro Formation consists dominantly of fine material with scattered lenses of sands and gravels. However, along the northeastern edge of the basin, a local deposit of coarse alluvial fan material up to 200 feet thick, which called the Epworth gravels, is an important aquifer. The dominant water-bearing deposit of the San Pedro Formation occurs as an extensive 100 to 300 foot thick gravel member in the lower part of the formation called the Fox Canyon Aquifer (CSWRB 1956). The water-bearing gravels in this unit have an average specific yield of 15 to 20 percent and well yield ranges from 250 to 750 gal/min (CSWRB 1956; Panaro 2000a).

Santa Barbara Formation. Up to 1,000 feet of fine gravel deposits within the upper Santa Barbara Formation, known as the Grimes Canyon Aquifer, underlies the Fox Canyon Aquifer. A layer of clay (CSWRB 1956) usually separates these aquifers. The average specific yield of the Grimes Canyon Aquifer is 10 to 20 percent (CSWRB 1956).

Restrictive Structures

East-trending folds that affect all units below the Holocene alluvium (CSWRB 1956) dominate the structural grain of the Las Posas Valley Groundwater Basin. The Las Posas and Long Canyon synclines parallel the length of the basin and the flanking anticlines bring the water-bearing formations to the surface in the Camarillo and Las Posas Hills to the south and along Oak Ridge to the north (CSWRB 1956). The Springville and Santa Rosa fault zones produce disrupted and tightly folded rocks along the edge of the basin, restricting groundwater flow to the south (CSWRB 1956). A distinct change in groundwater levels in the west-central part of the basin are likely due to a buried, unnamed, north-trending fault (Panaro 2000b).

Recharge Areas

Recharge to the basin comes dominantly from percolation of precipitation to the valley floor and minor stream flow across outcrops of the Fox Canyon and Grimes Canyon gravels. Holocene gravels receive recharge from percolation of precipitation to their surfaces and flow in Arroyo Las Posas. The Fox Canyon Aquifer appears to receive recharge from Holocene gravels along the southern edge of the basin. Some injection of imported water and a modest amount of irrigation and septic system return occur in the eastern portion of the basin (Panaro 2000a).

Groundwater Level Trends

Hydrographs from Las Posas Valley Groundwater Basin display a variety of water level histories for the past 20 years. In the eastern part of the basin, most hydrographs show a drop in water level since about 1985, typically reaching a lowest level about 1992. Most hydrographs show relatively unchanged levels or a slight rise since 1994. Hydrographs from the western part of the basin show a decline in water levels during about 1980 through about 1992 of as much as 80 feet, then rising water levels through 2000 of as much as 90 feet.

Groundwater Storage

Groundwater Storage Capacity. Total storage capacity is estimated at about 345,000 af, based on a surface area of about 37,248 acres, about 88 feet of saturated thickness, and a specific yield of about 10.5 percent (Panaro 2000a).

Groundwater in Storage. In October 1999, the basin was estimated to be about 50 to 65 percent full (Panaro 2000a), implying 173,000 to 224,000 af of groundwater in storage.

Groundwater Budget (Type A)

Estimated recharge is 18,266 af/yr for surface water seepage and 14,295 af/yr for irrigation return. Estimated subsurface inflow is 29,287 af/yr and subsurface outflow is 200 af/yr (Panaro 2000a). Annual urban and agricultural extraction averages 30,567 af/yr. Other extractions from the basin include evapotranspiration of 2,360 af/yr and exports to adjacent basins of 87,503 af/yr (Panaro 2000b).

Groundwater Quality

Characterization. Groundwater in this basin is calcium bicarbonate to sodium bicarbonate in character with an average TDS concentration of 752 mg/L and a maximum of 2,318 mg/L (Panaro 2000a). Analyses of water from 23 public supply wells show an average TDS content of 742 mg/L with a range of 338 to 1,700 mg/L.

Impairments.

Water Quality in Public Supply Wells

Constituent Group ¹	Number of wells sampled ²	Number of wells with a concentration above an MCL ³
Inorganics – Primary	22	1
Radiological	22	2
Nitrates	24	0
Pesticides	22	1
VOCs and SVOCs	22	0
Inorganics – Secondary	22	16

¹ A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).

² Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.

³ Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range:	Average: 250 to 750 gpm (Panaro 2000b)
	Total depths (ft)	
Domestic	Range:	Average:
Municipal/Irrigation	Range:	Average:

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
Department of Health Services and cooperators	Title 22 water quality	24

Basin Management

Groundwater management: Groundwater Management in the Las Posas Basin is provided by the [Fox Canyon Groundwater Management Agency](#), via the AB 2995 [groundwater management plan](#) and other ordinances. (Panaro 2000b)

Water agencies

Public [Fox Canyon Groundwater Management Agency, Ventura County Department of Public Works, United Water Conservation District](#)

Private

References Cited

- California State Water Resources Board (CSWRB). 1956. *Ventura County Investigation*. Bulletin 12. Two Volumes.
- Panaro, D. 2000a. Fox Canyon Groundwater Management Agency: Written Communication to B. C. Moniz (DWR), December 2000.
- _____. 2000b. Fox Canyon Groundwater Management Agency: Oral communication with T. M. Ross (DWR), September 29, 2000.

Additional References

- California Department of Public Works (CDPW). 1933. *Ventura County Investigation*. Division of Water Resources. Bulletin 46. 244 p.
- California Department of Water Resources (DWR). 1959. *Water Quality and Water Quality Problems, Ventura County*. Bulletin 75. 195 p.
- Jennings, C.W., and Strand, R.G. 1969. *Geologic Map of California: Los Angeles Sheet*, Olaf P. Jenkins Edition: California Division of Mines and Geology, scale 1:250,000, 1 sheet.
- United Water Conservation District (UWCD). 2001. www.unitedwater.org. October 2, 2001.

Errata

Updated groundwater management information and added hotlinks to applicable websites.
(1/20/06)