

San Luis Rey Valley Groundwater Basin

- Groundwater Basin Number: 9-7
- County: San Diego
- Surface Area: 29,700 acres (46 square miles)

Basin Boundaries and Hydrology

San Luis Rey Valley Groundwater Basin underlies an east-west-trending alluvium-filled valley located along the western coast of San Diego County. The major hydrologic feature is the San Luis Rey River, which drains the valley overlying the basin. The basin is bounded on the east, northeast and southeast by the contact of alluvium with impermeable Mesozoic granitic and Pre-Cretaceous metamorphic rocks. In the northwest and southwest of the lower portion of the basin, alluvium is in contact with the semi-permeable Eocene marine deposits and Tertiary non-marine deposits. The basin is bounded on the west by the Pacific Ocean. Average annual precipitation ranges from 7 to 21 in.

Hydrogeologic Information

Water Bearing Formations

Alluvium. The principal water bearing deposits within the basin are Quaternary and younger alluvium. The most productive materials are the sands and gravels. Well yields can exceed 2,000 gpm and average 500 gpm (Moyle 1971). Thickness of these deposits varies in the basin with an average thickness of 200 feet. Specific yield values range from 12 percent near the ocean to 16 percent farther inland (Izbicki 1985).

La Jolla Group. Another less important water bearing unit in the basin is the Eocene age La Jolla Group, which underlies the alluvial aquifer. This group consists of marine terrace deposits of partly consolidated sandstone, mudstone, siltstone and shale. Total thickness is estimated at 1,650 feet, and well yields range from 10 to 20 gallons per minute (DWR 1967). Some wells in this unit are artesian and leakage from this formation may be a significant recharge source to the alluvial aquifer (Izbicki 1985).

Restrictive Structures

Unnamed faults exist on the eastern border of the basin, but have little affect, if any, on groundwater movement (Moyle 1974).

Recharge Areas

The basin is recharged by imported irrigation water applied on upland areas and by storm-flow in the San Luis Rey River and its tributaries. Movement of groundwater in the alluvial aquifer is westward towards the Pacific Ocean (Izbicki 1985).

Groundwater Level Trends

Water levels in the basin declined drastically in the 1950's and 1960's due to ground-water development and over pumping. Since the advent of imported water sources, groundwater levels have risen to near pre-development levels and averages range from 0 to 20 feet below land surface (DWR 1984).

Groundwater Storage

Groundwater Storage Capacity. The estimated total storage capacity for this basin is 240,000 af (DWR 1975).

Groundwater in Storage.

Groundwater Budget (Type C)

Information is not available to construct a budget.

Groundwater Quality

Characterization. Water in this basin is of calcium-bicarbonate, calcium-sulfate-bicarbonate, and calcium-sulfate types (Luhndorff and Scalmanini 1995). The Department of Health Services data for 19 wells show a TDS content of 530 to 7,060 mg/L, with an average of approximately 1,258 mg/L. Values for total dissolved solids ranged from 960 to 3,090 mg/L in 1983 (Izbicki 1985). Electrical conductivity readings for the basin range from 500 to 1,300 µmho (Luhndorff and Scalmanini 1995).

Impairments.

Water Quality in Public Supply Wells

Constituent Group¹	Number of wells sampled²	Number of wells with a concentration above an MCL³
Inorganics – Primary	27	10
Radiological	23	3
Nitrates	24	2
Pesticides	19	0
VOCs and SVOCs	19	1
Inorganics – Secondary	27	17

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: to 2,000 gal/min	Average: 500 gal/min
	Total depths (ft)	
Domestic	Range:	Average:
Municipal/Irrigation	Range:	Average:

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
	Groundwater levels	
	Miscellaneous water quality	
Department of Health Services and cooperators	Title 22 water quality	28

References Cited

- California Department of Water Resources, (DWR). 1967. *Ground Water Occurrence and Quality, San Diego Region*. Bulletin 106-2. 233 p.
- _____. 1971. *Water Wells in the San Luis Rey river Valley Area, San Diego County, California*. California Bulletin 91-18. 347 p.
- _____. 1975. *California's ground water*. Bulletin 118. 135 p.
- _____. Southern District. 1984. *San Diego County Cooperative Ground Water Studies, Reclaimed Water Use, Phase II*. 95 p.
- Izbicki, J. A. 1985. *Evaluation of the Mission, Santee, and Tijuana Hydrologic Subareas for Reclaimed-Water Use, San Diego County, California*. U.S. Geological Survey Water-Resources Investigations Report 85-4032. 99 p.
- Moyle, W.R., Jr. 1974. *Geohydrologic Map of Southern California*. U.S. Geological Survey. Water Resources Investigations 48-73, open file.
- Luhndorff and Scalmanini, Joseph C. 1995. *Yuima Municipal Water District's Protests SWRCB Applications 30083, 30160, 30165, 30175, 30178, and 30260*. Letter Report. 11 p.

Additional References

- California Department of Public Works, Division of Water Resources (DPW). 1934. *Estimate of Storage Capacity of Mission Valley and Upper San Diego River Groundwater Basins*. Unnumbered report. 16 p.
- _____. 1936. *Study to determine Water Available: San Luis Rey River*. Unnumbered report. 63 p.

Errata

Substantive changes made to the basin description will be noted here.