

Superior Valley Groundwater Basin

- Groundwater Basin Number: 6-49
- County: San Bernardino
- Surface Area: 120,000 acres (188 square miles)

Basin Boundaries and Hydrology

Superior Valley Groundwater Basin underlies a roughly northwest trending valley in northwest San Bernardino County. Surface elevation of the valley floor range from about 3,000 feet at Ausland (dry) Lake to 3,600 feet above mean sea level at its northern end. The basin is bounded by nonwater-bearing consolidated rocks of Robbers Mountain and Eagles Crag on the north, of the Goldstone Hills on the east, of Opal Mountain on the south, and of Slocum Mountain and Pilot Knob on the west. Eagles Crag is the highest point in the surrounding highlands at an elevation 5,512 feet. The basin lies largely within the China Lake Naval Air Weapons Center (DWR 1964; USGS 1988).

Average annual precipitation ranges from 4 to 6 inches. Runoff from the surrounding mountains drains towards three eastward-aligned dry lakes in the southcentral portion of the basin (DWR 1964).

Hydrogeologic Information

Water Bearing Formations

Quaternary alluvium is the water-bearing material that forms the basin and includes unconsolidated younger alluvial deposits and underlying unconsolidated to poorly consolidated older alluvial deposits. Maximum thickness of the alluvium is at least 368 feet (DWR 1964).

Restrictive Structures

Groundwater levels are roughly 60 feet lower on the west side of a north-trending groundwater barrier in the eastern part of the basin; the barrier is interpreted to be a fault (USGS 1956; DWR 1964).

Recharge and Discharge Areas

Replenishment of the basin is chiefly from infiltration of precipitation that falls to the valley floor and percolation of runoff from the surrounding mountains. Alluvial fan deposits fringing the valley serve as the principal areas of recharge. Groundwater in the younger and older alluvium moves towards Ausland Lake in the southcentral part of the valley (DWR 1964). The depth to water beneath Ausland Lake, however, is generally too deep to permit groundwater discharge to the playa surface. Because groundwater gradients are typically low in the basin, it is unclear where groundwater discharge occurs. Some groundwater may discharge to Harper Valley beneath Quaternary basalt flows along the southwest margins of the basin. Along the eastern part of the basin, discharge may occur into Coyote Valley across the top of the groundwater barrier (USGS 1956).

Groundwater Level Trends

For the period of record, groundwater levels have remained little changed for much of the valley. In the western portion of the basin, depth to water has ranged from 117 feet to about 105 feet at two wells during 1917 through 1968. In central portion of the basin near Ausland Lake, depth to groundwater ranged from 93 to 94 feet between 1953 and 1984 at one well. Similarly, the depth to water in another well ranged from 105 to 107 feet during 1953 through 1968 (USGS 1956; DWR 1964).

Groundwater Storage

Groundwater Storage Capacity. Total storage capacity is estimated to be about 1,750,000 af (DWR 1975).

Groundwater in Storage. Unknown.

Groundwater Budget (C)

Groundwater budget information is not available.

Groundwater Quality

Characterization. Groundwater in the basin is dominantly sodium bicarbonate in character. Groundwater of sodium chloride character occurs near the three playas (USGS 1956; DWR 1964).

Impairments. The quality of the groundwater is rated marginal to inferior for both domestic and irrigation uses, based upon elevated levels of fluoride and sodium detected in wells throughout the basin. Fluoride concentrations range between 0.1 and 7.0 mg/L; and TDS content ranges from 357 to 2,265 mg/L (USGS 1956; DWR 1964).

Well Production characteristics

Well yields (gal/min)		
Municipal/Irrigation	Range: 100-450	Average: 100 (DWR 1975)
Total depths (ft)		
Domestic		
Municipal/Irrigation		

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	

Basin Management

Groundwater management:

Water agencies

Public

Private

References Cited

- California Department of Water Resources (DWR). 1964. *Ground Water Occurrence and Quality Lahontan Region*. Bulletin No. 106-1. 439 p.
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- Jennings, C. W. *et al.* 1962. *Geologic Map of California: Trona Sheet*. Olaf P. Jenkins Edition. California Department of Conservation, Division of Mines and Geology. Scale 1: 250,000.
- U. S. Geological Survey. 1956. *Data on Water Wells in Cuddeback, Superior, and Harper Valleys, San Bernardino County, California*. Open-file Report. 73 p.
- _____. 1988. *Opal Mountain, California*. 7.5' Quadrangle. Provisional Edition. Scale 1: 24,000.
- _____. 1988. *Superior Lake, California*. 7.5' Quadrangle. Provisional Edition. Scale 1: 24,000.
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Errata

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