

Johnson Valley Groundwater Basin, Soggy Lake Subbasin

- Groundwater Basin Number: 7-18.01
- County: San Bernardino
- Surface Area: 76,800 acres (120 square miles)

Basin Boundaries and Hydrology

Soggy Lake Subbasin underlies Johnson and Fry Valleys in the southern Mojave Desert. Crystalline rocks of the Fry Mountains bound the subbasin on the north and of the San Bernardino Mountains on the south. Much of the subbasin on the east and west are bounded by impermeable crystalline rock, but the Johnson Valley fault forms part of the eastern boundary and surface drainage divides form part of the western boundary. Average annual precipitation for the valley ranges from about 4 to 6 inches.

Ephemeral streams in the northwest part of the valley drain to Soggy (Dry) Lake. Streams emanating from the San Bernardino Mountains flow northeastward across the valley toward Melville (Dry) Lake in the adjacent Upper Johnson Valley Subbasin and Means (Dry) Lake in Means Valley Groundwater Basin. Several springs occur in the valley associated with faults.

Hydrogeologic Information

Water Bearing Formations

The main water-bearing materials in the subbasin are Quaternary age alluvial deposits consisting predominately of sand and gravel. Data from Well Completion Reports and from a gravity survey indicate that the alluvial deposits may be as much as 700 feet thick in the southern part of the subbasin (French 1978). Specific yields for the coarser grained deposits are as high as 25 percent (French 1978).

Restrictive Structures

Three major northwest trending faults zones, the Old Woman Springs, Lenwood, and Johnson Valley faults, form partial barriers to groundwater flow (French 1978; Mendez and Christensen 1997). Other smaller faults within the subbasin appear to disturb groundwater level contours, suggesting that they also form partial barriers to groundwater movement (French 1978).

Groundwater Level Trends

Water levels measured in the central part of the subbasin east of the Lenwood fault fluctuated about two feet during 1950 through 1999 (Mendez and Christensen 1997; MWA 2000). Groundwater generally flows from the south toward the center of the subbasin, then eastward to exit across the Johnson Valley fault in to the adjacent basins.

Groundwater Storage

Groundwater Storage Capacity. The amount of unsaturated alluvium that was available to store water in 1978 was estimated to be about 250,000 af, and the groundwater in storage in 1978 was estimated to be 250,000 af (French 1978). The sum of dry storage capacity and groundwater in storage suggest about 500,000 af for total storage capacity.

Groundwater in Storage. Groundwater in storage in 1978 was estimated to be 250,000 af (French 1978). Because hydrographs for wells in the central part of the subbasin indicate stable groundwater levels during 1950 through 1999 (Mendez and Christensen 1997; MWA 2000), groundwater in storage in 2000 was likely near the 250,000 af estimate of French (1978).

Groundwater Budget (Type C)

Groundwater budget information is not available.

Groundwater Quality

Characterization. Water type varies widely throughout the subbasin, ranging from sodium chloride to magnesium sulfate type. TDS concentrations also vary widely ranging from 300 to 2,000 mg/L. TDS content is highest in the northern part of the subbasin (French 1978). One public supply well has a TDS content of 1,670 mg/L.

Impairments. High concentrations of TDS and fluoride were found in water from wells in Johnson Valley (French 1978).

Water Quality in Public Supply Wells

Constituent Group¹	Number of wells sampled²	Number of wells with a concentration above an MCL³
Inorganics – Primary	1	0
Radiological	1	0
Nitrates	1	0
Pesticides	1	0
VOCs and SVOCs	1	0
Inorganics – Secondary	1	1

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

Total depths (ft)

Domestic

Municipal/Irrigation

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
USGS	Water Levels	6
Department of Health Services	Title 22 Water Quality	1

Basin Management

Groundwater management:

Water agencies

Public

Private

References Cited

- French, J.J. 1978. *Ground-Water Storage in the Johnson Valley Area San Bernardino County, California*. U.S. Geological Survey Water-Resources Investigations 77-130. 35 p.
- Mendez, M.O., and A.H. Christensen. 1997. *Regional Water Table (1996) and Water-Level Changes in the Mojave River, the Morongo, and the Fort Irwin Ground-Water Basin, San Bernardino County, California*. U.S. Geological Survey Water-Resources Investigations Report 97-4160. 34 p.
- Mojave Water Agency (MWA). 2000. *Annual Ground Water Level Monitoring Program for 1999*. Apple Valley California. 129 p.

Additional References

- Chapman, R.H. 1966. *Gravity Base Station Network*. California Division of Mines and Geology Special Report No. 90. 49 p.
- Jones and Stokes Associates, Inc. 1973. *Initial Draft Report, Environmental Impact Analysis for the Lucerne Valley Water Pipeline Project*. Report for Mojave Water Agency. 188 p.
- Koebig and Koebig, Inc. 1962. *Mojave Water Agency Supplemental Water Report*. 92 p.
- Moyle, W.R., Jr. 1974. *Geohydrologic Map of Southern California*. U.S. Geological Survey Water-Resources Investigations Report. 48-73.
- Riley, F.S. 1956. *Data on Water Wells in Lucerne, Johnson, Fry, and Means Valleys, San Bernardino County, California*. U.S. Geological Survey Open-File Report. 150 p.

Errata

Changes made to the basin description will be noted here.