Deep Springs Valley Groundwater Basin

- Groundwater Basin Number: 6-15
- County: Inyo
- Surface Area: 29,900 acres (46.7 square miles)

Basin Boundaries and Hydrology

Deep Springs Valley Groundwater Basin underlies an elongate northeast-trending intermontane valley in northeastern Inyo County. The basin is surrounded by impermeable Cambrian marine deposits and Pre-Tertiary granitic rocks of the White and Inyo Mountains (DWR 1964; Strand 1967).

The Deep Springs Valley is a closed basin where the surrounding mountains drained by Crooked, Wyman, Birch, and Payson Canyon Creeks terminate at Deep Spring Lake. Average annual precipitation ranges from 7 inches on the valley floor to as much as 20 inches in White Mountains (DWR 1964).

Hydrogeologic Information

Water Bearing Formations

Quaternary alluvium is the water-bearing material that forms the basin and includes unconsolidated younger alluvial fan material underlain by semi-consolidated older alluvium. The thickness of the alluvium can reach about 775 feet along the margin of the basin, but the deposits gradually thin and become interbedded with layers of fine-grained lacustrine deposits toward Deep Springs Lake. Groundwater in alluvium is generally unconfined, although locally confined conditions produce flowing wells near Deep Springs Lake (Bader 1969; DWR 1964). Well yields in the basin average about 390 gpm and reach a maximum of about 700 gpm (DWR 1975).

Restrictive Structures

The Deep Springs Valley is bordered by two northeast-trending faults forming restrictive barriers on east and west sides of the basin (Strand 1967).

Recharge and Discharge Areas

Natural recharge of the basin is mostly percolation of runoff from the surrounding mountains. A small quantity of recharge comes from agricultural return. Groundwater flows southward across the basin toward Deep Springs Lake. Three springs are found on the south side of Deep Springs Lake playa and another is found at the toe of an alluvial fan emanating from the White Mountains (Murphy 2001).

Groundwater Level Trends

Before 1964, groundwater levels in the basin varied from about 260 feet below surface at the north end of the basin to flowing conditions near Deep Springs Lake (DWR 1964). There are six wells in the basin (Murphy 2001), but none of them are routinely monitored. The water level at one well is about 75 feet below the ground surface and marks discovered during recent replacement of the pump suggest that the water level has not fluctuated for many years (Murphy 2001).

Groundwater Storage

Groundwater Storage Capacity. The total storage capacity is estimated at 740,000 af (DWR 1975).

Groundwater in Storage. Unknown.

Groundwater Budget (Type C)

Information is not available to determine a groundwater budget.

Groundwater Quality

Characterization. Groundwater in the north half of the basin is calcium-bicarbonate character and in the southern part of the basin, near Deep Springs Lake, potassium-sodium bicarbonate or magnesium-calcium bicarbonate character (DWR 1964). Groundwater quality in the northern portion of the basin is generally suitable for all purposes; whereas, groundwater in the southern part of the basin is of marginal quality for domestic use (DWR 1964). Water samples from wells near Deep Springs Lake are reported to have fluoride concentration of 1.0 and 1.2 ppm (DWR 1964).

Impairments.

Well Characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range: to 700 gal/min	Average: 390 gal/min (DWR 1975)

References Cited

Bader, J.S. 1969. *Ground-Water Data as of 1967 South Lahontan Subregion California*. U.S. Geological Survey. Water Resources Division. Open-File Report. 25p.

California Department of Water Resources (DWR). 1964. *Ground Water Occurrence and Quality Lahontan Region*. p.101-105.

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Murphy, Jack. Deep Springs College. 2001. E-mail to Monica Lee, Groundwater Section, California Department Water Resources, Southern District. September 18.

Strand, Rudolf. ed. 1967. *Geologic Map of California Mariposa Sheet*. Olaf P. Jenkins Edition. California Department of Conservation, Division of Mines and Geology. Scale 1:250,000.

Errata

Changes made to the basin description will be noted here.