

Round Valley Groundwater Basin

- Groundwater Basin Number: 5-36
- County: Modoc
- Surface Area: 7,270 acres (11 square miles)

Basin Boundaries and Hydrology

The Round Valley Groundwater Basin is northeast of Big Valley and surrounded entirely by mountains. The basin is bounded to the northwest by Tertiary basalt of Ryan and Barbar ridges, to the north and northeast by Tertiary pyroclastic rocks of Horsehead Mountain, and to the south and southwest by Tertiary pyroclastic rocks.

Ash Creek enters the valley from the southeast and continues to flow to the southwest entering Big Valley through a narrows in Barber Ridge. Annual precipitation ranges from 15- to 19-inches.

Hydrogeologic Information

Water-Bearing Formations

The primary water-bearing formations in Round Valley are Holocene sedimentary deposits, Pliocene lava flows, and the Plio-Pleistocene Bieber Formation. The following summary of water-bearing formations is from DWR (1963).

Holocene Sedimentary Deposits. The Holocene sedimentary deposits include basin deposits, intermediate alluvium, and alluvial fan deposits. Basin deposits, located predominately in low-lying areas in the southeast central part of the valley, consist of unconsolidated interbedded silt, clay and organic muck having low permeability. These deposits are not considered to be a significant water-bearing formation.

Intermediate alluvium, found along the perimeter and the northwest central part of the valley, consists of unconsolidated silt and sand with some clay and gravel. These deposits are generally moderately permeable with gravel zones being highly permeable.

Alluvial fan deposits consist of unconsolidated poorly stratified silt, sand, and gravel with some clay lenses. Because the fans occur in only a few small areas, they are not considered a significant source of water. Locally they may yield moderate amounts of water to wells.

Plio-Pleistocene Bieber Formation. The Bieber Formation consists of lake deposited diatomite, clay, silt, sand, and gravel. These interbedded sediments are unconsolidated to semi-consolidated and are moderately permeable. The principal water-bearing zones consist of white pumiceous sand and black volcanic sand which yield large amounts of water to wells where there's sufficient thickness and continuity.

Pliocene Volcanic Rocks. Pliocene lavas consisting of jointed and fractured basalt occur to the north and south of Round Valley on the surrounding ridges. The lavas are moderately permeable and serve primarily as recharge

areas in the uplands. They may contain unconfined and confined zones near the margins of the valley.

Recharge Areas

Groundwater within the sediments of Round Valley is recharged primarily from the upland recharge areas of Pliocene basalt northwest of Round Valley. The Turner Creek Formation of Ryan Ridge is a barrier between groundwater moving downslope through Barber Canyon and groundwater of Round Valley.

Groundwater Level Trends

Analysis incomplete.

Groundwater Storage

Groundwater Storage Capacity. Storage capacity for the basin is estimated to be 120,000 acre-feet to a depth of 200 feet (DWR 1963). DWR (1963) notes that the quantity of water that is useable in storage is unknown.

Groundwater Budget (Type B)

Estimates of groundwater extraction are based on a survey conducted by the California Department of Water Resources during 1997. The surveys included land use and sources of water. Estimates of groundwater extraction for agricultural and municipal/industrial uses are 400 and 4 acre-feet respectively. Deep percolation is estimated to be 460 acre-feet.

Groundwater Quality

Characterization. Sodium bicarbonate type waters are present in the basin. The concentration of total dissolved solids ranges between 141- to 633-mg/L, averaging 260 mg/L (DWR unpublished data).

Impairments. Locally high conductivity, calcium, adjusted sodium absorption ratio, phosphorus, and total dissolved solids levels occur in the basin.

Well Characteristics

Well yields (gal/min)		
Irrigation	Range: 50 – 2000	Average: 800 (3 Well Completion Reports)
Total depths (ft)		
Domestic	Range: 36 –500	Average: 200 (17 Well Completion Reports)
Irrigation	Range: 48 – 720	Average: 439 (10 Well Completion Reports)

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
DWR	Groundwater levels	2 wells semi-annually
	Miscellaneous Water Quality	NKD
NKD – No Known Data		

Basin Management

Groundwater management:	Modoc County adopted a groundwater management ordinance in 2000.
Water agencies	
Public	Adin Community Service District
Private	

Selected References

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Errata

Changes made to the basin description will be noted here.