

Round Valley Groundwater Basin

- Groundwater Basin Number: 1-11
- County: Mendocino
- Surface Area: 16,400 acres (26 square miles)

Basin Boundaries and Hydrology

Round Valley Groundwater Basin, located in the northeast-central portion of Mendocino County, is a down-faulted block partially filled with alluvium and continental deposits. The town of Covello is located in the west-central portion of the valley and the Round Valley Indian Reservation encompasses the northern third of the valley. The basin is approximately 8 miles long and averages 4 miles in width. The contact between alluvium/continental deposits and deposits of the Jurassic-Cretaceous Franciscan and Knoxville formations constitutes the basin boundary (Cardwell 1965). The valley is drained to the east and southeast by Mill Creek, a tributary of the Middle Fork of the Eel River. Several tributaries that join Mill Creek include Short, Town, Grist, and Turner Creeks. Annual precipitation ranges from about 43- to 45-inches per year.

Hydrogeologic Information

Water-Bearing Formations

Water-bearing formations include Quaternary Holocene alluvial deposits and Plio-Pleistocene continental deposits. The following information on water-bearing units and groundwater conditions in the basin is taken primarily from Cardwell (1965).

Holocene Alluvium. Alluvium of Holocene age forms the principal aquifer in the basin. Along the margins of the valley, the deposits are lenticular and consist primarily of coarse and poorly sorted gravel and sand. With increasing distance from the margins of the valley, the deposits grade into fine gravel, sand, silt, and clay. Also included in this unit are deposits of deltaic sand and silt and lakebed clay. Well logs indicate that the maximum thickness of the alluvium is approximately 600 feet (Muir 1977). The upper 200 feet yields most of the water pumped from wells in the basin. Well yields range from 100- to 1,000-gpm from wells installed along the margins of the valley. Unconfined groundwater is found in the heads of alluvial fans and in a belt of unconsolidated sediments, approximately 1 mile in width, around the perimeter of the valley. Groundwater is mainly confined in the central part of the basin.

Plio-Pleistocene Continental Deposits. Continental basin deposits dated as Pliocene to Pleistocene in age underlie younger alluvium and are exposed over an area of approximately 2 square miles at the south end of the valley. The maximum thickness of the beds in this region is 200 feet. The exact age of these deposits is unknown. The deposits are eroded remnants of old valley fill that has been elevated and tilted to the west. The deposits consist of silty gravel, sand, sandy silt, silty clay, and siltstone and includes several clay beds ranging from 4- to 6-feet in thickness. The maximum thickness of the continental deposits in other parts of the valley is not known but may exceed 400 feet. Due to the predominantly fine-grained nature of this unit, wells that tap into this deposit are generally expected to have low yields. Permeability

of the exposed beds is low; however, that may not be indicative of the entire deposit.

Recharge Areas

Recharge in the basin is primarily from infiltration and deep penetration of precipitation and intercepted runoff in stream channels and permeable soils of alluvial fan areas along the western and northern margins of the valley.

Groundwater Level Trends

Evaluation of selected hydrographs from the period of the early 1950's to present show typical seasonal water level fluctuations but no significant long-term trends (Muir 1977; DWR unpublished data). Water levels indicate that the basin fills to capacity each spring.

Groundwater Storage

Groundwater Storage Capacity. Storage capacity has been estimated to be about 230,000 acre-feet based on an average specific yield of 8 percent for alluvial aquifer materials between the depths of 10 to 200 feet below ground surface (Cardwell 1965). The surface area was estimated to be approximately 15,000 acres.

Groundwater Budget

Published information was not available.

Groundwater Quality

Characterization. Groundwater in the basin is characterized as calcium-magnesium bicarbonate type waters. Total dissolved solids (TDS) range from 116- to 38-mg/L, averaging 239 mg/L (DWR unpublished data).

Impairments. Groundwater impairments include high hardness, iron and calcium concentrations and localized high manganese.

Water Quality in Public Supply Wells

Constituent Group ¹	Number of wells sampled ²	Number of wells with a concentration above an MCL ³
Inorganics – Primary	4	0
Radiological	0	0
Nitrates	6	0
Pesticides	1	0
VOCs and SVOCs	2	0
Inorganics – Secondary	4	2

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 Production characteristics

Well yields (gal/min)		
Municipal/Irrigation	Range: 20 – 850	Average: 193 (7 Well Completion Reports)
DWR (1975) estimates the average yield to be 400 gpm with a maximum yield of 1,300 gpm.		
Total depths (ft)		
Domestic	Range: 32 – 300	Average: 99 (99 Well Completion Reports)
Municipal/Irrigation	Range: 60 – 630	Average: 202 (35 Well Completion Reports)

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
DWR	Groundwater levels	12 wells semi-annually
DWR	Miscellaneous water quality	5 wells biennial
Department of Health Services and cooperators	Miscellaneous water quality	5

Basin Management

Groundwater management:	No known groundwater management plans, groundwater ordinances, or basin adjudications.
Water agencies	
Public	Mendocino County Water Agency
Private	

Selected References

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Errata

Changes made to the basin description will be noted here.