

Laytonville Valley Groundwater Basin

- Groundwater Basin Number: 1-12
- County: Mendocino
- Surface Area: 5,020 acres (8 square miles)

Basin Boundaries and Hydrology

Laytonville Valley, also known as Long Valley, is a narrow, northwest-trending basin located in northwest-central Mendocino County. The town of Laytonville is situated in the north-central part of the basin. The main part of the valley is about 6 miles long and averages 0.5 mile in width. The valley consists of a narrow alluvium-filled trough bounded by bedrock of the Franciscan Complex on the east side and by discontinuous, dissected alluvial terraces and bedrock on the west side. The main groundwater basin is defined primarily by the areal extent of the unconsolidated alluvial deposits within the valley. The basin also includes an area of terrace deposits along the west side and an isolated area of alluvium west of the main valley and south of Cahto Creek. Several strands of the northwest-trending Maacama Fault Zone transect the basin. The majority of the valley drains northward through Tenmile Creek to the South Fork Eel. The southern part of the valley is drained by Long Valley Creek. Both of these creeks are tributary to Eel River (Cardwell 1965). Annual precipitation ranges from 55 inches in the south to 71 inches along the western margin.

Hydrogeologic Information

Water-Bearing Formations

Water-bearing units within the basin include Quaternary alluvium and terrace deposits. Bedrock of the Franciscan Complex surrounds the basin and is considered to be non-water-bearing. The following summary of water-bearing units and groundwater conditions is taken from Farrar (1986) and Cardwell (1965).

Holocene Alluvium. The alluvial deposits cover the entire main part of the valley floor and isolated areas to the west. These deposits are Holocene in age and were deposited as floodplains, channel deposits, alluvial fans, and colluvium. They consist of uncemented gravel, sand, silt, and clay that are slightly compacted. Thickness ranges from thin veneers along the valley margins to approximately 150 feet in the central part of the valley. The alluvial materials are highly permeable and are generally saturated below a depth of 10- to 20-feet. In several deep wells tapping both the alluvial and terrace deposits, most of the water was derived from a depth of 100 feet or less indicating that the alluvium was the chief source of groundwater. Water in the alluvium occurs under unconfined and semiconfined conditions. Specific yield is estimated to be about 10 percent. Well yields from this unit range from 7- to 700-gpm.

Pleistocene Terrace Deposits. Terrace deposits are exposed to the west and northwest of the main part of the valley and underlie most of the valley basin. These deposits are Pleistocene in age and consist of gravel, sand, silt, and clay. Surface exposures are generally no greater than 50 feet thick; however, where overlain by alluvium, the deposits range up to 200 feet in thickness.

Specific yield is estimated to be approximately 5 percent. Reported yields for wells constructed in this formation range from 10- to 25-gpm. Groundwater occurs under unconfined and semiconfined conditions.

Groundwater Level Trends

Evaluation of hydrographs from four wells for the period of the early 1950's to present show typical seasonal water level fluctuations but no significant long-term changes (Farrar 1986; DWR unpublished data).

Groundwater Storage

Groundwater Storage Capacity. Different sources have estimated storage capacity in the basin. DWR (1965) estimates storage in alluvium to be 21,000 acre-feet to a depth of 120 feet based on an estimated specific yield of 12 to 16 percent. Farrar (1986) estimates storage in alluvium to be 14,000 acre-feet to a depth of 100 feet with an additional 3,000 acre-feet from terrace deposits. Cardwell (1965) estimates storage capacity to be 18,000 acre-feet to a depth of 100 feet based on a specific yield of 10 percent and an area of 3 square miles of alluvial valley.

Groundwater Budget (Type A)

Total groundwater extraction from the valley is estimated at less than 1,000 acre-feet per year (Farrar 1986).

Groundwater Quality

Characterization. Groundwater in the basin is characterized as calcium bicarbonate type waters. Total dissolved solids range from 56- to 472-mg/L, averaging 189 mg/L (DWR unpublished data).

Impairments. Impairments include high iron, manganese, and locally high boron.

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	3	2
Radiological	2	0
Nitrates	3	0
Pesticides	2	0
VOCs and SVOCs	2	0
Inorganics – Secondary	3	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)

Well yields from alluvium range from 7 to 700 gpm (Farrar 1986).

Well yields from terrace deposits range from 10 to 25 gpm (Farrar 1986).

Total depths (ft)

Domestic	Range: 12 - 621	Average: 115 (182 Well Completion Reports)
Irrigation	Range: 60 – 423	Average 221 (5 Well Completion Reports)

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
DWR	Groundwater levels	4 wells semi-annually
DWR	Miscellaneous water quality	3 wells biennial

Basin Management

Groundwater management: No known groundwater management plans, groundwater ordinances, or basin adjudications.

Water agencies

Public Laytonville WD

Private

Selected References

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Errata

Changes made to the basin description will be noted here.