

## **Castaic Lake Valley Groundwater Basin**

- Groundwater Basin Number: 5-29
- County: Kern
- Surface Area: 3,600 acres (6 square miles)

### **Basin Boundaries and Hydrology**

Castaic Lake Valley is a “Y” shaped basin with northeast and southwest arms developed along the Garlock Fault and a northwest arm developed along Grapevine Creek. The arms intersect to form the Castaic Valley, which contains Castaic Lake on its eastern side. The basin is bounded by granitic bedrock of the surrounding Tehachapi Mountains (Jennings and Rudolph 1969). Topographically, the basin is internally drained. However, Castaic Lake can “spill” into Grapevine Creek during periods of high inflow. Grapevine Creek, in turn, empties northward into the San Joaquin Valley. Average annual precipitation ranges from 12 to 14 inches.

### **Hydrogeologic Information**

#### ***Water Bearing Formations***

Erosion along the Garlock Fault is responsible for forming the basin’s northeast and southwest arms. Castaic Lake represents a structural depression or sag pond developed on the Garlock Fault (DWR 1965). A geologic map in this report portrays the area of Castaic Lake as Quaternary playa deposits of recent age, consisting of silt, clay and sandy clay. The remainder of the basin is mapped as younger alluvium with small areas of older alluvium at the basin margins.

Very little data is available for the basin. Of the two available well completion reports for wells near Castaic Lake in the northeast arm of the basin, both intercept bedrock of the Garlock Fault Zone at depths of 50 feet or less – both produced less than 3 gpm and were destroyed after drilling. The near surface material in these wells was silty sand, clayey sands, and sandy clays. Irrigation and municipal supply wells in the basin’s west side and north arm, where near the center of the basin fill, are capable of producing over 200 gpm. One log for an irrigation well in the northern arm of the basin suggested artesian conditions were encountered after completion.

#### ***Restrictive Structures***

Due to the lack of wells and water level data, it is not possible to determine if the Garlock Fault acts as a barrier to subsurface flow. There is a topographic high between the western edge of Castaic Lake and the northern portion of Castaic Valley, along the projection of the Garlock Fault. Based on the presence of bedrock at shallow depths near the lake, it is likely that a bedrock high or a limited permeability zone along the fault also exists in this area limiting subsurface flow into the northern portion of the basin.

#### ***Recharge Areas***

Groundwater recharge is assumed to be from percolation of direct precipitation, from ephemeral and spring-fed perennial streams entering the basin, and from Cuddy Creek, which enters the basin from the west. The

observation of salt accumulations along the lakeshore during periods of low water suggests the lake also acts as a discharge area.

### **Groundwater Budget (Type C)**

There are not enough data to provide an estimate of this basin's budget

### **Groundwater Quality**

Characterization of the basin is not determined. TDS values range from 570 mg/L to 605 mg/L, with an average value of 583 mg/L (based on 3 wells). EC values range from 850  $\mu$ mhos to 880  $\mu$ mhos, with an average value of 863  $\mu$ mhos (based on 3 wells). The only reported impairment is from the Lebec County Water District, where fluoride is slightly above the MCL in one well (DHS 1989).

### **Water Quality in Public Supply Wells**

<b>Constituent Group<sup>1</sup></b>	<b>Number of wells sampled<sup>2</sup></b>	<b>Number of wells with a concentration above an MCL<sup>3</sup></b>
Inorganics – Primary	7	3
Radiological	5	1
Nitrates	8	0
Pesticides	6	0
VOCs and SVOCs	6	0
Inorganics – Secondary	7	1

<sup>1</sup> 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).

<sup>2</sup> Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.

<sup>3</sup> 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**

	<b>Well yields (gal/min)</b>	
Municipal/Irrigation	Range:355 – 400	Average: 375 (2 well completion reports)
	<b>Total depths (ft)</b>	
Domestic	Range:	Average:
Municipal/Irrigation	Range:115 – 225	Average: 150 (3 well completion reports)

### **Active Monitoring Data**

<b>Agency</b>	<b>Parameter</b>	<b>Number of wells /measurement frequency</b>
Department of Health Services	Title 22 water quality	3 Varies

## Basin Management

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Groundwater management:

Water agencies

Public	Tejon-Castaic Water District; Lebec County Water District
Private	None

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### **Comments:**

Tejon-Castaic WD has 2,000 af of M&I entitlement from the State Water Project. The WD currently has no conveyance or storage facilities but they are planned (Mullins 2000).

### **References Cited**

- California Department of Health Services, Drinking Water Division (DHS). 1989. *Engineering Report. Lebec County Water District, Kern County*. Water Permit No. 03-89-011. Central California Region.
- California Department of Water Resources, San Joaquin District. Well completion report files.
- \_\_\_\_\_. 1965. *Water Wells in the Western part of the Antelope Valley Area, Los Angeles and Kern Counties, California*. Bulletin 91-11, 16 p.
- Jennings, Charles W. and Rudolph G. Strand (compilers). 1969. Los Angeles Sheet of *Geologic Map of California*. California Division of Mines and Geology (CDMG). Scale 1:250,000.
- Mullins, Dennis., 2000. Personal communication with Manager of the Tejon-Castaic Water District.

### **Errata**

Changes made to the basin description will be noted here.