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UNITED STATES  
DEPARTMENT OF THE INTERIOR  
US GEOLOGICAL SURVEY  
Ground Water Branch

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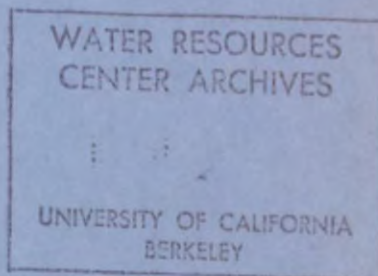
STATEMENT ON GROUND-WATER CONDITIONS IN SANTA ROSA, PETALUMA,  
AND SONOMA VALLEYS, SONOMA COUNTY, CALIFORNIA

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Prepared in cooperation with the  
California Division of Water Resources

Open-file report

Sacramento, California  
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2929 Fulton Avenue  
Sacramento 21, California

Statement on Ground-Water Conditions in Santa Rosa, Petaluma,  
and Sonoma Valleys, Sonoma County, California

By A. R. Leonard and G. T. Cardwell

Prepared in cooperation with the  
California Division of Water Resources

February 1955

At the request of local agencies, this brief summary of ground-water conditions has been prepared using data from reports on geology and ground-water conditions of Santa Rosa and Petaluma Valleys and Napa and Sonoma Valleys now being prepared by the Geological Survey in cooperation with the California Division of Water Resources.

The source of ground water in the Santa Rosa Valley area is rainfall, part of which infiltrates the soil and penetrates to the ground-water body. In Santa Rosa Valley the direction of ground-water movement is toward the Laguna de Santa Rosa, and northward toward the Russian River. Movement in the vicinity of Windsor is southwestward toward the Russian River. The Russian River is entrenched below the level of Santa Rosa Valley and no water moves from the river toward the valley.

In the spring the depth to water in the flat-lying portions of Santa Rosa Valley is generally 5 to 20 feet. Because of the summer dry season, autumn water levels are generally 5 to 20 feet below the spring levels. Locally this seasonal fluctuation has increased somewhat as a result of intensified pumping, but the recovery of spring water levels generally reflects the rainfall regimen and does not suggest any overdraft. The ground-water storage capacity of the uppermost 200 feet of deposits under the flat-lying part of the valley is estimated to be about 1 million acre-feet. Total pumpage of ground water in 1949 was about 13,000 acre-feet.

Ground water in the Santa Rosa area is a moderately hard bicarbonate water of good quality for most uses. High boron occurred in the water between depths of 300 and 400 feet in one well about 1.5 miles southwest of Windsor but is not known to occur in amounts injurious to crops elsewhere in the main valley area.

Ground water in Petaluma Valley moves toward Petaluma Creek and down valley toward the tidal area. Water levels in the spring are near the land surface in the tidal portion and 10 to 25 feet below the land surface in the upper part of the valley. The maximum seasonal decline of water level is about 20 feet. Analysis of water-level fluctuations suggests that there is no general overdraft of ground water in Petaluma Valley, but local overdevelopment occurs in the heavily pumped area near Petaluma. The total pumpage in Petaluma Valley in 1949 was about 2,000 acre-feet. Ground-water storage capacity down to 200 feet below the land surface is estimated to be 200,000 acre-feet.

Ground water in the principal ground-water body in upper Petaluma Valley is of good quality. In the southern part of the valley some contamination by brackish water occurs locally as far north as Petaluma. East of the valley, waters high in boron and sodium chloride occur locally in rocks older than those containing the principal water body.

The direction of movement of ground water in Sonoma Valley is toward Sonoma Creek and southward toward the tidal marsh north of San Pablo Bay. The depth to water ranges from about 5 to 25 feet below the land surface. The maximum seasonal fluctuation is about 20 feet and, in the spring, water levels generally return about to previous spring levels, thus suggesting no overdraft of ground water at the present stage of development. Pumpage in 1949 is estimated to have been 2,400 acre-feet.

Shallow water in the tidal part of Sonoma Valley is generally brackish and some contamination by brackish water occurs adjacent to this area. Water of high boron content occurs in several deep wells in the vicinity of Glen Ellen, in a well 150 feet deep about  $1\frac{1}{2}$  miles southwest of Sonoma, and in a deep well about a mile southwest of Schellville.

Except in the lower parts of Petaluma and Sonoma Valleys where contamination of the fresh-water body by brackish water is threatened, the ground-water resources of the areas described are capable of further development.