Coastal Plain of Los Angeles Groundwater Basin, Hollywood Subbasin

- Groundwater Basin Number: 4-11.02
- County: Los Angeles
- Surface Area: 10,500 acres (16.4 square miles)

Basin Boundaries and Hydrology

The Hollywood Subbasin underlies the northeastern part of the Coastal Plain of Los Angeles Groundwater Basin. The subbasin is bounded on the north by Santa Monica Mountains and the Hollywood fault, on the east by the Elysian Hills, on the west by the Inglewood fault zone, and on the south by the La Brea High, formed by an anticline that brings impermeable rocks close to the surface. Surface drainage flows southward to join Ballona Creek, then westward to the Pacific Ocean. Average annual precipitation ranges from 12 to 14 inches.

Hydrogeologic Information

Water Bearing Formations

Groundwater in the Hollywood Subbasin is mainly produced from Pleistocene age alluvial sands and gravels (DWR 1961).

Aquifers/ Aquiclude	Time	Formation	Lithology	Maximum Thickness (feet)
Semi-perched	Holocene		Sand, silt, clay	60
Bellflower Aquiclude	Pleistocene	Lakewood Formation	Silty clay, clay	35
Exposition			Sand and gravel, some clay	60
Gage			Fine to coarse-grained sand and gravel	80
Silverado	Lower Pleistocene	San Pedro Formation	Sand, gravel	50
Lynwood			Sand, gravel with small amount of clay	50

Semi-perched water may exist in the Holocene alluvium that forms a thin cover over about half of the subbasin (DWR 1961). The remainder of the subbasin has silt and clay deposits of the Bellflower aquiclude of the Lakewood Formation cropping out at the surface (DWR 1961). Historical production has come from deeper aquifers of the Lakewood and San Pedro Formations (DWR 1961). These aquifers are widespread throughout the coastal plain of Los Angeles. Unconfined groundwater conditions exist in the shallow aquifers in the northern and eastern portion of the subbasin. In the deeper aquifers and in the remainder of the subbasin, groundwater is confined, and clay members separate the aquifers over much of this subbasin. Specific yield of the sediments in this subbasin ranges up to 26 percent (DWR 1961).

Restrictive Structures

The Hollywood fault forms a restrictive subsurface boundary along the northern part of the subbasin by placing the alluvial materials against basement rocks of the Santa Monica Mountains. The Inglewood fault forms an effective barrier to groundwater flow at the southern end of the subbasin boundary, but a less effective barrier at the northern end. The Hollywood syncline plunges westward and contains thicker, more transmissive aquifer deposits that help direct subsurface flow westward. The La Brea High is formed by an anticline where most of the San Pedro Formation was eroded prior to deposition of the Lakewood Formation. Groundwater flow is restricted because of the lack of the San Pedro Formation aquifers across the high. Groundwater moves around the structure at the western end where the San Pedro Formation remains (DWR 1961).

Recharge Areas

Groundwater in the Hollywood Subbasin is replenished by percolation of precipitation and stream flow from the higher areas to the north. Paving of streets and lining of drainage channels have decreased greatly the surface area open to direct percolation. Subsurface inflow may take place to a limited extent from underflow through fractured rock of the Santa Monica Mountains and potentially from underflow around the La Brea High (DWR 1961).

Groundwater Level Trends

Groundwater flow is generally westward through the subbasin toward the Inglewood fault. Groundwater may move out of the subbasin through the northern-most section of the Inglewood fault into the Santa Monica Basin, or around the southern end of the La Brea High in aquifers of the Lakewood Formation into the Central Basin (DWR 1961). A pumping depression in the Hollywood Subbasin could cause groundwater from the Central Basin to flow around the southern end of the La Brea High.

Groundwater Storage

Groundwater Storage Capacity. Total storage capacity of the subbasin is estimated at about 200,000 af (MW 2000).

Groundwater in Storage. Unknown.

Groundwater Budget (Type A)

The amount of data available are not sufficient to produce a current water budget. Some data are available that can be used to characterize the subbasin's groundwater activity. The 23-year (1934-1956) average volume of precipitation to the subbasin was 28,700 af (DWR 1962). This amount does not take into account loss from evapotranspiration and runoff, so the actual amount recharged to the subbasin would be less. Subsurface flow in the subbasin has historically fluctuated between positive and negative flows. Between 1934 and 1949 the subbasin lost an average of 2,194 af/yr to subsurface flow. However, between 1950 and 1956 the subbasin experienced an average recharge of 2,500 af/yr due to subsurface flow (DWR 1962). Extractions from the subbasin between the years 1934 and 1956 averaged 3,300 af/yr (DWR 1962).

Groundwater Quality

Characterization. Most of the public water supply consists of imported surface water, making groundwater quality information scarce. Water from one public supply well was tested in 1998 and showed a TDS content of 526 mg/L (Truran 2001).

Impairments.

Well Production characteristics

Well yields (gal/min)	
Municipal/Irrigation	
Total depths (ft)	
Domestic	
Municipal/Irrigation	

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
City of Beverly Hills	Groundwater levels	5
City of Beverly Hills	Miscellaneous water quality	5
Department of Health Services and cooperators	Title 22 water quality	1

Basin Management

Groundwater management:	The City of Beverly Hills is currently the only major pumper in the subbasin. The city does not enforce any management plan over the subbasin, but operates it on a maximum safe yield of 4,400 af/year (DWR 1962).
Water agencies	
Public	City of Beverly Hills
Private	

References Cited

California Department of Water Resources (DWR). 1961. Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County. Bulletin No. 104.

_____. 1962. Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County. Bulletin No. 104. Appendx B, Safe Yield Determinations.

Montgomery Watson (MW). 2000. Groundwater and Surface Water in Southern California, A guide to Conjunctive Use.

Truran, Jim. 2001. City of Beverly Hills, Public Works Department. Written communication to Brian Moniz, California Department of Water Resources, Southern District. January 2001.

Errata

Changes made to the basin description will be noted here.