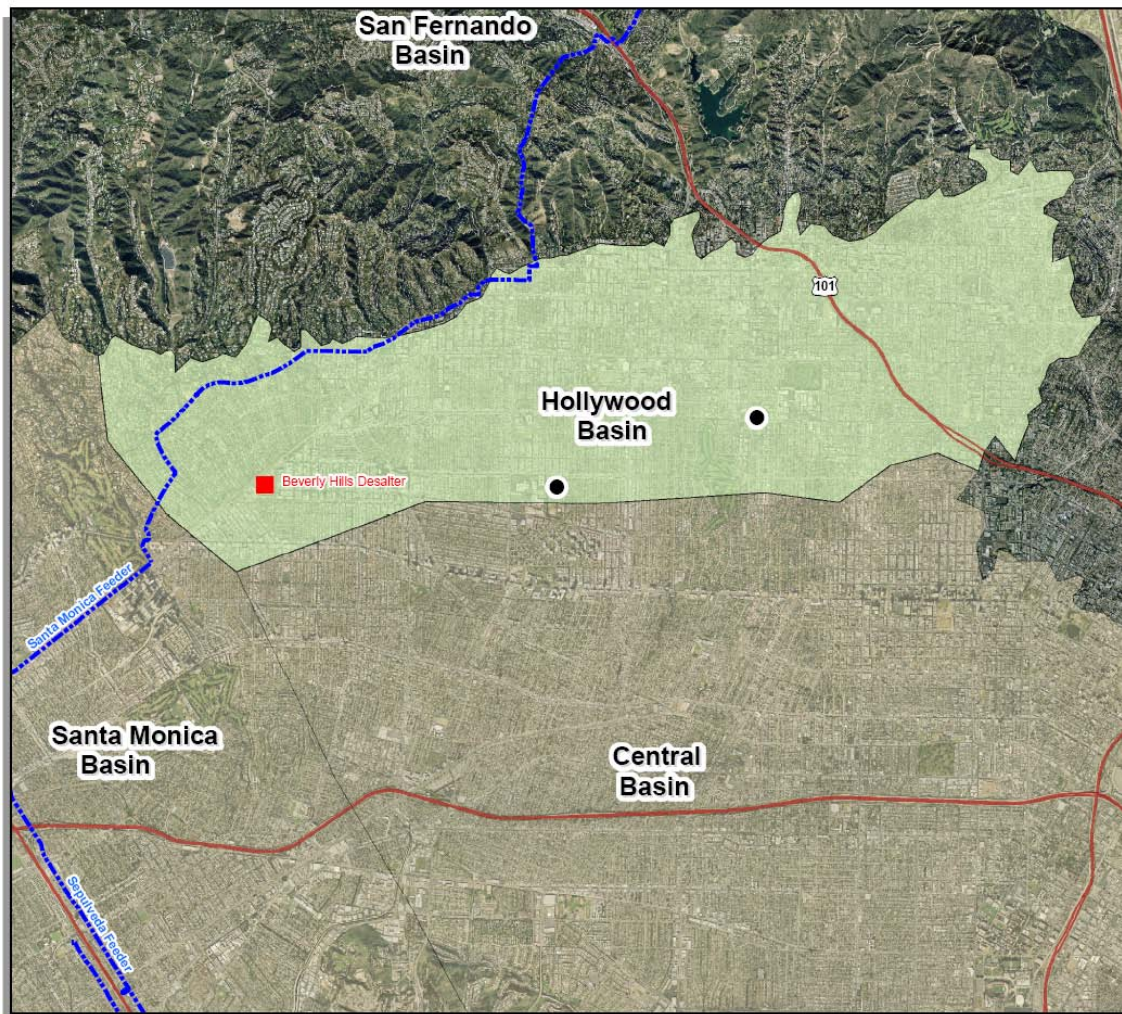


Chapter IV – Groundwater Basin Reports

Los Angeles County Coastal Plain Basins - Hollywood Basin

The Hollywood Basin is located within Los Angeles County adjacent to the Santa Monica Mountains. It underlies the service areas of Metropolitan member agencies the City of Beverly Hills, West Basin Municipal Water District (West Basin MWD) and the City of Los Angeles. Overlying cities include Beverly Hills, West Hollywood and Los Angeles. The location of the Hollywood Basin is shown in **Figure 6-1**.

Figure 6-1
Map of the Hollywood Basin



Hollywood Basin



BASIN CHARACTERIZATION

The following section provides a physical description of the Hollywood Basin and its hydrogeologic character.

Basin Producing Zones and Storage Capacity

The Hollywood Basin underlies the northeastern portion of the Los Angeles Coastal Plain. The basin is bounded on the north by the Santa Monica Mountains and the Hollywood fault, on the east by the Elysian Hills, the west by the Newport-Inglewood Uplift and the south by the La Brea high, an area of shallow bedrock (DWR, 2004). A summary of the general hydrogeologic characteristics of the basins is provided in **Table 6-1**.

Table 6-1
Summary of Hydrogeologic Parameters of Hollywood Basin

Parameter	Description
Structure	
Aquifer(s)	<ul style="list-style-type: none"> • Alluvium • Lakewood Formation (Exposition and Gage aquifers) • San Pedro Formation (Jefferson, Lynwood, Silverado, and Sunnyside aquifers)
Depth of groundwater basin	Up to 660 feet
Thickness of water-bearing units	Alluvium (up to 60 feet) Lakewood Formation (up to 175 feet) San Pedro Formation (up to 100 feet)
Yield and Storage	
Natural Safe Yield	3,000 AFY
Total Storage	400,000 AF
Unused Storage Space	Unknown
Portion of Unused Storage Available for Storage	Unknown

Source: DWR, 2004; DWR 1961; Beverly Hills 2006.

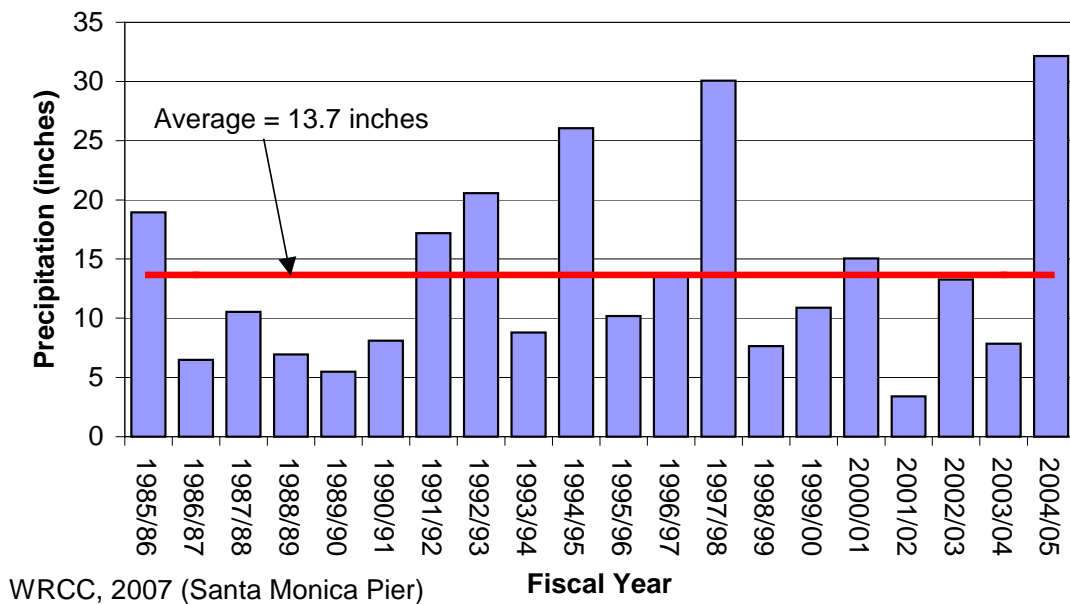
The depth of the Hollywood Basin is as much as 660 feet (DWR, 1961). Semi-perched groundwater may occur in the alluvium, which ranges in thickness from five to 35 feet and covers about half of the basin. Limited groundwater is produced from this zone but it is still an important component of basin management as water from this zone can percolate into the underlying aquifers. The main potable production aquifers include the deeper aquifers of the San Pedro Formation (including from top to bottom, the Jefferson, Lynwood, Silverado and

Sunnyside aquifers) and the shallower aquifers of the Lakewood Formation (including aquifers Exposition and Gage). The San Pedro Formation is only found in the westernmost portion of the basin in the Beverly Hills area. The Gage aquifer of the Lakewood Formation is the major water-bearing member of the Hollywood Basin (DWR, 1961). However, in general, aquifers in the Hollywood Basin are not highly transmissive and do not yield significant groundwater except in the western portion where the basin is deeper.

Safe Yield/Long-Term Balance of Recharge and Discharge

Groundwater in the Hollywood Basin is replenished by percolation of precipitation and stream flow from the Santa Monica Mountains to the north. Historical precipitation at the nearby Santa Monica Pier is summarized in **Figure 6-2**. Urbanization in this area has decreased the surface area open to direct percolation. Therefore, natural recharge is somewhat limited. The natural safe yield of the basin is estimated to be approximately 3,000 AFY (Beverly Hills, 2006).

Figure 6-2
Historical Precipitation near the Hollywood Basin



Total storage in the Hollywood Basin has been estimated to be approximately 400,000 AF. The usable storage in the basin is unknown. However, current depths to water are generally less than 20 feet in the central and eastern portions of the basin, which suggests limited storage space available in these areas. The depth of the static water level in wells in the City of Beverly Hills in the western portion of the basin ranges from 227 feet to 313 feet from the top of the well head to the water table, indicating potential for more storage in this portion of the basin.

GROUNDWATER MANAGEMENT

The following section provides a brief description of the groundwater management activities and governing structure for the Hollywood Basin.

Basin Governance

The Hollywood Basin is unadjudicated. It is presently managed by the city of Beverly Hills through municipal ordinances. These municipal ordinances regulate the production of groundwater, prohibit waste, protect water quality and require dewatering activities to mitigate adverse impacts on the Hollywood Basin. **Table 6-2** summarizes the groundwater management structure in the Hollywood Basin.

The primary producer from the basin is the city of Beverly Hills. The city has historically produced significant quantities of groundwater from the Hollywood Basin, and in some years produced more than 7,000 AF. In 1976, the city of Beverly Hills discontinued producing groundwater from the Hollywood Basin for a variety of reasons, reserving its rights to return to groundwater as necessary to satisfy its water supply requirements. In the 1990s, the city chose to reevaluate the use of groundwater in the Hollywood Basin and elected to resume groundwater production. Since that time, four groundwater wells and a groundwater treatment facility have been activated (SA Associates, 2005).

Table 6-2
Summary of Management Agencies in the Hollywood Basin

Agency	Role
City of Beverly Hills	Manager of production, use and discharge of groundwater through a series of municipal ordinances. Primary producer in basin and operation of reverse osmosis treatment facility

Interactions with Adjoining Basins

The Hollywood Basin is adjacent to the Central Basin and the Santa Monica Basin. The USGS (USGS, 2003) has estimated that the flow from the Hollywood Basin into the Central Basin is approximately 5,900 AFY (based upon 1971 to 2000). There are no formal agreements regarding this flow. The flow into the Santa Monica Basin is restricted by the Newport-Inglewood Uplift.

WATER SUPPLY FACILITIES AND OPERATIONS

Facilities in the Hollywood Basin include four active production wells and a desalter facility. Each of these is discussed below.

Active Production Wells

The city of Beverly Hills currently owns and operates four groundwater production wells in the Hollywood Basin. These wells have a combined capacity of 2,025 gpm and are treated by the city’s reverse osmosis desalter discussed below. Details of the treated well production are summarized in **Table 6-3**. Historical treated production since the wells and treatment facility came online in 2003 is shown in **Figure 6-3**. An average of about 1,200 AFY of groundwater was used to meet local demands between 2003 and the end of fiscal year 2004/05.

Figure 6-3
Historical Groundwater Production in the Hollywood Basin

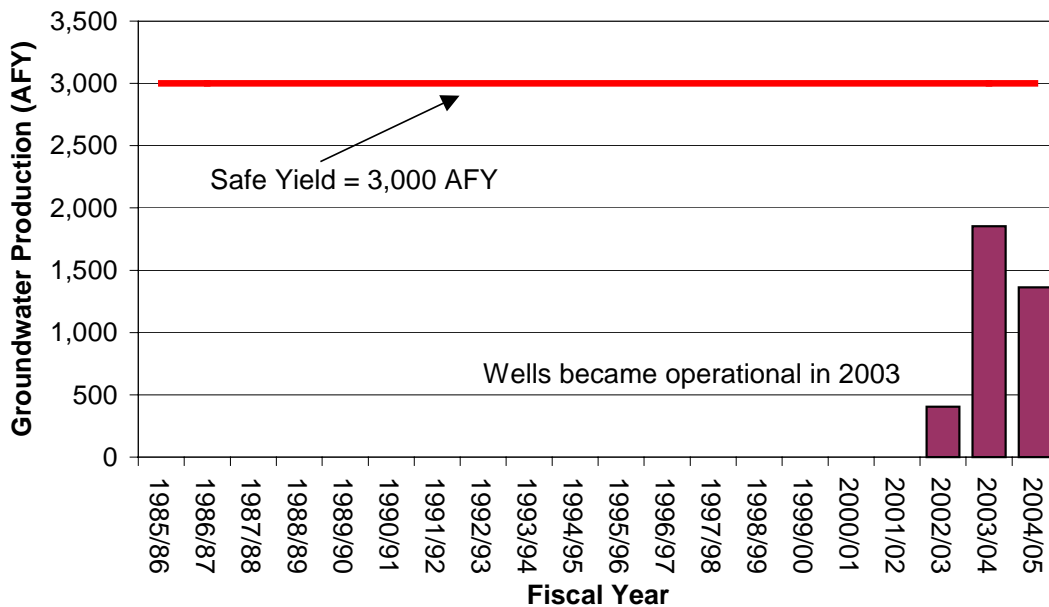


Table 6-3
Summary of Production Wells in the Hollywood Basin

Category	Number of Active Wells	Estimated Production Capacity ¹ (AFY)	Average Production 2002/3-2004/5 (AFY)	Well Operation Cost (\$/AF)
Municipal	4	1,850	1,207	Data not available

Note: 1. Production capacity is based upon maximum annual production since 2003.
Source: SA Associates, 2005.

Other Production

There is no other documented production in the Hollywood Basin.

ASR Wells

There are no ASR wells in the Hollywood Basin.

Spreading Basins

There are no spreading basins in the Hollywood Basin.

Seawater Intrusion Barriers

There are no seawater intrusion barriers in the Hollywood Basin.

Desalters

The City of Beverly Hills currently treats up to 3 mgd of groundwater via reverse osmosis from the Hollywood Basin at the Beverly Hills Desalter. The project pumps and treats brackish water from the City of Beverly Hills. The desalter facilities include extraction wells, a collector pipeline, a treatment plant and a brine line to deliver waste to the Hyperion Wastewater Treatment Plant. This facility is designed to produce about 2,600 AFY of treated water and discharge about 336 AFY to the brine line (Metropolitan, 2006).

GROUNDWATER LEVELS

Groundwater generally flows from east to west across the Hollywood Basin. Representative hydrographs are shown for inactive wells in **Figure 6-4**. These data suggest that the inflows and outflows in the Hollywood Basin are generally balanced and there is limited effect from natural recharge (i.e. annual variations are only a few feet). Limited production has occurred in the basin during this 20-year period.

GROUNDWATER QUALITY

The following section describes the water quality issues in the Hollywood Basin. Water quality is generally fair with TDS concentrations ranging from 519 to 788 mg/L.

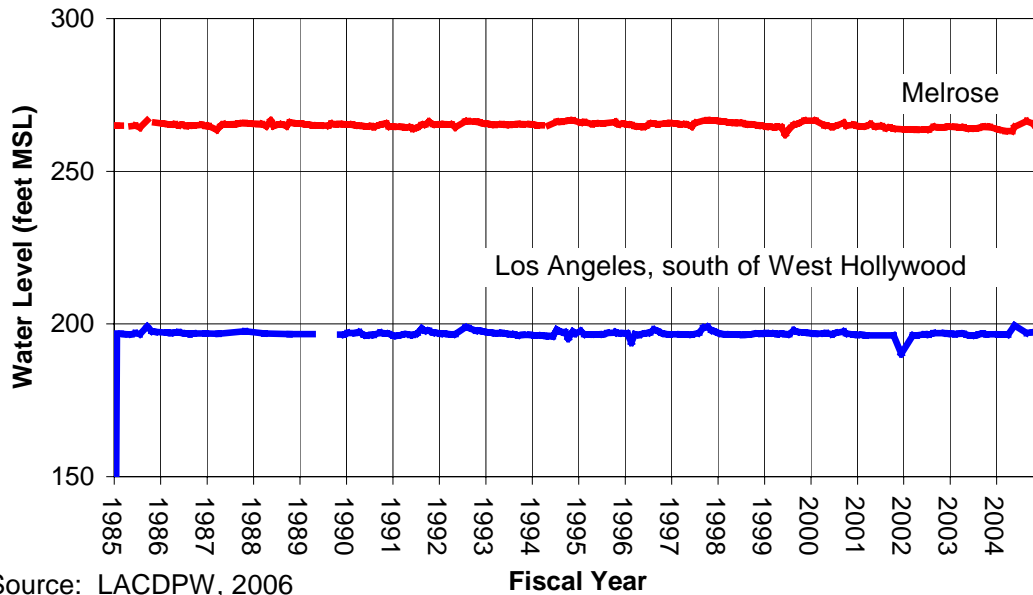
Groundwater Quality Monitoring

Water quality not been measured on a regular basis because the production wells have been inactive since the 1970s. Current production wells are sampled in accordance with Title 22.

Groundwater Contaminants

Constituents of concern for the Hollywood Basin include total dissolved solids (TDS). These constituents are summarized in **Table 6-4**. In addition, constituents of regional concern (nitrate, volatile organic compounds, or VOCs, and perchlorate) are also included for reference.

Figure 6-4
Historical Water Levels in the Hollywood Basin



Limited historical data are available because wells have not been active. TDS concentrations in the Hollywood Basin generally ranged from 357 to 970 mg/L between 2002 and 2006 (Regional Board, 2007). Based upon data from the four active wells between 2002 and 2006, about 85 percent of the samples collected exceeded the secondary standard of 500 mg/L for TDS.

Blending Needs

There is no information related to blending needs in the Hollywood Basin.

Groundwater Treatment

As discussed above, wells are treated by reverse osmosis at the Beverly Hills Desalter. All groundwater pumped in the Hollywood Basin is treated.

CURRENT GROUNDWATER STORAGE PROGRAMS

There are no current groundwater storage programs in the Hollywood Basin.

Table 6-4
Summary of Constituents of Concern in Hollywood Basin

Constituent	Units	Range 2002/03-2005/06	Description
TDS Secondary MCL = 500	mg/L	357 to 970	Based upon data collected between 2002 and 2006, 85 percent of all samples collected had TDS concentrations above 500 mg/L.
Nitrate (as N) Primary MCL = 10	mg/L	ND	Nitrate has not been detected in the Hollywood Basin
VOCS (TCE and PCE) Primary MCL for TCE = 5 Primary MCL for PCE = 5	µg/L	ND	TCE and PCE have not been detected in the Hollywood Basin
Perchlorate Notification level = 6	µg/L	ND	Perchlorate has not been detected in the Hollywood Basin.

Source: Regional Board, 2007

BASIN MANAGEMENT CONSIDERATIONS

Management considerations in the Hollywood Basin include:

- Shallow groundwater may limit ability to store water. As discussed above, depth to groundwater is less than 20 feet in central and eastern portions of the basin, which would limit the ability to store water.
- Groundwater must be treated to meet drinking water standards. As discussed above, TDS concentrations exceed the secondary standard of 500 mg/L.
- Basin receives limited natural recharge because of urbanization. The safe yield is only about 3,000 AFY.

References:

California Department of Water Resources (DWR), 1961. Bulletin 104 - Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County. Appendix A, Ground Water Geology.

California Department of Water Resources (DWR), 2004. Bulletin 118 – Coastal Plain of Los Angeles Groundwater Basin, Hollywood Subbasin. Updated 2/27/04. Website: http://www.dpla2.water.ca.gov/publications/groundwater/bulletin118/basins/pdfs_desc/4-11.02.pdf Accessed 6/27/07.

California Regional Water Quality Control Board. 2007. Geotracker database. Website: http://www.geotracker.swrcb.ca.gov/reports/well_search.asp Accessed June 27, 2007.

Los Angeles County Department of Public Works (LACDPW). Water level data for wells 2671A and 2642M. Accessed at: <http://ladpw.org/wrd/wellinfo/well.cfm>. November 6, 2006.

Metropolitan Water District of Southern California (Metropolitan), 2006. Local Resource Program, Recycled Water and Groundwater Recovery Projects, Summary Report August 2006.

SA Associates, 2005. City of Beverly Hills 2005 Urban Water Management Plan – December 2005. Prepared for the City of Beverly Hills.

United States Geological Survey (USGS). 2003. Water Resource Investigation Report 03-4065. Geohydrology, geochemistry, and ground-water simulation – Optimization of the Central and West Coast Basins, Los Angeles County, California.

Western Regional Climate Center, 2007. Santa Monica Pier Station 47953. Website: <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7953> Accessed 6/27/07