Westside Groundwater Basin

- Groundwater Basin Number: 2-35
- County: San Francisco, San Mateo
- Surface Area: 25,400 acres (40 square miles)

Basin Boundaries and Hydrology

The Westside Basin is the largest groundwater basin in San Francisco. It is separated from the Lobos Basin to he north by northwest trending bedrock ridge through the northeastern part of Golden Gate Park (Phillips and others 1993). The San Bruno Mountains bound the basin on the east. The San Andreas fault and Pacific ocean form its western boundary and its southern limit is defined by a bedrock high that separates it from the San Mateo Plain Groundwater Basin (South Bay Groundwater Committee Report 2001). The basin opens to the Pacific Ocean on the northwest and San Francisco Bay on the southeast (Phillips and others 1993). Mean annual precipitation within the basin is in the range of 20 inches to 24 inches.

Hydrogeologic Information

Water Bearing Formations

Geologically the basin is comprised of two groups, bedrock and unconsolidated materials (Phillips and others 1993). The impermeable bedrock is composed of consolidated sediment of the Franciscan Complex and the Great Valley Sequence of late Jurassic and Cretaceous age (Phillips and others 1993). Unconsolidated materials overlying the bedrock comprise the water bearing formations. These consist of dune sands, the Colma formation of Pleistocene age and the Merced Formation of Pleistocene/Pliocene age (Phillips and others 1993).

The Colma Formation generally overlies the Merced Formation (Phillips and others 1993). The Merced Formation is composed of sand and thin interbedded silt and clay layers of shallow marine depositional origin (Phillips and others 1993). The Colma Formation overlies the Merced Formation consisting of fine-grained sand, silty sand, and inter-fingered clay layers, to 5 feet thick (Phillips and others 1993). Dune sands consisting of fine grained to medium-grained sand overly the Colma formation in most of the basin north of Lake Merced. The dune sands range in thickness from 0 to 150 feet (Phillips and others 1993). Aquifer storage coefficients indicate unconfined conditions at depths less than 100 feet and confined conditions at depths in excess of 100 feet (Phillips and others 1993).

Recharge Areas

Sources of recharge include infiltration of rainfall, infiltration of irrigation water, and leakage from water and sewer pipes. Average groundwater recharge in the Westside Basin for water years 1987 – 1988 was estimated to be 4,846 Acre-Feet/Year (Phillips and others 1993).

Groundwater Level Trends

A USGS study covering the period 1987-1992 showed declining water levels. This is likely the result of a concurrent drought during this period.

Onset of normal precipitation and increased recharge could possibly rectify this occurrence as depleted storage is renewed (Phillips and others 1993).

Groundwater Storage

Groundwater Storage Capacity. No estimate of groundwater storage capacity was found.

Groundwater in Storage. No estimate of groundwater in storage was found.

Groundwater Budget (Type C)

Not enough data exists presently to provide either an estimate of the Westside Basin's groundwater budget or the groundwater extraction from the basin.

Groundwater Quality

Characterization. Most wells showed no dominant cation, with more than 40% of the wells sampled being bicarbonate waters (Westside Basin Partners 2001).

Impairments. Although most dissolved constituents meet guidelines established by the US Environmental Protection Agency, nitrate-nitrogen concentrations in the groundwater commonly exceed the primary maximum contaminant level of 10 milligrams per liter (Phillips and others 1993).

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	16	3
Radiological	12	0
Nitrates	15	8
Pesticides	17	0
VOCs and SVOCs	17	2
Inorganics – Secondary	16	5

[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)

Municipal/Irrigation

Total depths (ft)

Domestic		
Municipal/Irrigation	Range: 130 – 825	Average: 604

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
	Groundwater levels	
	Miscellaneous water quality	
Department of Health Services and cooperators	Title 22 water quality	13 Wells

Basin Management

Groundwater management:	Tulare Lake Reclamation District No. 761 adopted a groundwater management plan on July 12, 1996. The City of Daly City is developing a groundwater management plan.
Water agencies	
Public	Daly City, City of San Bruno, City of Burlingame
Private	California Water Service Company

References Cited

Phillips, Steven P., Scott N. Hamlin, Eugene B. Yates. *Geohydrology, Water Quality, and Estimation of Ground-Water Recharge in San Francisco, California 1987-92.* US Geological Survey Water-Resources Investigations Report 93-4019, 1993.

USDA. *United States Average Annual Precipitation, 1961-1990: Map Layer*, 1999

South Bay Groundwater Committee Report. *Results of the April 2000 Westside Basin Twenty-Four Hour Well-Water Level Response Test, 2001.*

Errata

Updated groundwater management information and added hotlinks to applicable websites. (1/20/06)