

Tahoe Valley Groundwater Basin, Tahoe Valley North Subbasin

- Groundwater Basin Number: 6-5.03
- County: Placer
- Surface Area: 2,000 acres (4 square miles)

Basin Boundaries and Hydrology

The Tahoe Valley North Subbasin of the Tahoe Valley Groundwater Basin is located about 150 miles east of the San Francisco Bay area, and about 90 miles east of the Sacramento Valley. The Tahoe Valley Groundwater Basin is located within the larger structural feature commonly referred to as the Lake Tahoe Basin. The groundwater basin consists of three alluvial areas surrounding the California side of the lake on the south, west, and north. The Tahoe Valley North subbasin lies in the northern portion of the Tahoe Valley Groundwater Basin. The subbasin occupies a triangular area along the north shore of Lake Tahoe. The basin boundaries approximate an area in which basin-fill deposits have accumulated. From the southern boundary of Lake Tahoe, the subbasin extends north about 2 miles to the triangular apex. The triangular base is about 2.5 wide miles and lies within the area approximated by the north shore of Agate Bay. Elevations within the subbasin range from 6,225 feet at lake level to 6,500 feet in the north.

Griff Creek flows through the subbasin where it empties into the Lake near Kings Beach State Recreation Area. The towns of Tahoe Vista and Kings Beach lie within the subbasin. Average annual precipitation in the subbasin ranges from 23 inches to 40 inches, increasing from south to north.

Hydrogeologic Information

Water Bearing Formations

According to the 1997 USGS publication on hydrogeology of Lake Tahoe Basin, exposed basin-fill deposits are comprised of Quaternary age glacial and lacustrine sediments. Granitic, volcanic, and metamorphic rocks, collectively referred to as bedrock, underlie the basin-fill deposits. Geophysical surveys along the northern shore of the Lake indicate that basin-fill deposits overlying volcanic rock are less than 100 ft thick. However, a well log near Tahoe Vista indicates clay and gravel contact at 96 feet and basalt at 197 feet below sea level (Thodal 1997). DWR driller logs within the subbasin indicate a varied subsurface lithology. In addition, groundwater appears to occur in unconsolidated basin-fill sediments, in volcanic rock interbedded with the basin-fill sediments as well as in fractured rock. DWR well logs and information from North Tahoe Public Utility District (NTPUD), suggest groundwater within the subbasin is inconsistent in nature, and its occurrence may not be described accurately as a basin “aquifer”, but more so a fracture-flow system.

Basin-fill deposits Glacial outwash material is typically composed of rock ranging from fine silt to large boulders that have been sorted and stratified by the action of water flowing from the glacier (Freeze and Cherry, 1979).

Permeability of these deposits can be moderate to high. These deposits are generally unsorted, have high clay content, and are produced by the grinding glacial action. Permeability of these deposits can be moderate to high.

Lacustrine deposits. These deposits are a result of fluctuating lake levels, occurring as high as 600 feet above the current lake level (about 6,225 ft). Deposits containing well-sorted beach sand have relatively high permeability; those containing a high silt and clay content have lower permeability (Thodal 1997).

Groundwater Level Trends

Groundwater elevation changes are directly related to changes in groundwater storage. As reported by Thodal (1997), changes in groundwater storage have been minimal. Decreases in groundwater storage have resulted locally in areas of pumping.

Recharge Areas

Groundwater recharge in the study area is primarily from infiltration of precipitation into faults and fractures in bedrock, into the soil and decomposed granite that overlies much of the bedrock, and into unconsolidated basin-fill deposits. Groundwater is recharged over the entire extent of the flow path, except where the land surface is impermeable or where the groundwater table coincides with land surface. Stream flow also recharges ground water when the water-table altitude is lower than the water-surface altitude of the stream (Thodal 1997).

Groundwater Storage

Changes in ground-water storage have been minimal. Decreases in ground-water storage have resulted locally in areas of pumping, whereas increases in storage have resulted in areas where storm runoff is temporarily ponded in small basins.

Groundwater Storage Capacity. No published groundwater storage capacity data was found.

Groundwater in Storage. No published groundwater in storage data was found.

Groundwater Budget (Type C)

Due to lack of groundwater budget data, inflows, including natural, applied, and artificial recharge and outflows including urban and agricultural extraction have not been included.

Groundwater Quality

Limited published groundwater quality information for the basin was found.

Characterization. In general the inorganic quality of groundwater in the Lake Tahoe Basin is excellent (Thodal 1997). Total dissolved solids average 800 mg/L based on 1 well sampled (North Tahoe Public Utility District, 1998). Electrical conductivity averages 800 mg/L based on 1 well sampled (North Tahoe Public Utility District, 1998).

Well Production Characteristics

Well yields (gal/min)		
Domestic	Range: 15–65	Average: 39 (9 wells, Well Completion Reports)
Municipal/Irrigation	Range: NA	Average: 800 (1 well, North Tahoe PUD)
Total depths (ft)		
Domestic:	Range: 33–415	Average: 135 (11 wells, Well Completion Reports)
Municipal/Irrigation	Range: NA	Average: 900 (1 well, North Tahoe PUD)

Active Monitoring Data

Agency	Parameter	Number of wells /Measurement frequency
Department of Health Services and cooperators	Groundwater levels	No wells are monitored at this time
	Miscellaneous water quality	No wells are monitored at this time
	Title 22 water quality	1 well (North Tahoe Public Utility District)

Basin Management

Groundwater Management:	None identified
Water Agencies	
Public	North Tahoe PUD
Private	

References Cited

- Burnett, J.L. 1971. "Geology of the Lake Tahoe Basin." *California Geology* California State Water Resources Control Board (SWRCB). 1979. *Report on Water Use and Water Rights – Lake Tahoe Basin*.
- Freeze, R.A. and J.A. Cherry. 1979. *Groundwater*. Englewood Cliffs, N.J.: Prentice-Hall, Inc. 604p.
- North Tahoe Public Utility District, *Consumer Confidence Report* for 1999.
- Thodal, Carl E. 1997. *Hydrogeology of Lake Tahoe Basin, California and Nevada, and Results of a Ground-Water Quality Monitoring Network, Water Years 1990-1992*. Water-Resources Investigations Report 97-4072. USGS. 53 p.
- United States Geological Survey (USGS). 1997. *Stream and Ground-Water Monitoring Program, Lake Tahoe Basin, Nevada and California*. Fact Sheet FS-100-97. 6 p.

Additional References

- Crippen, J.R., and B.R. Pavelka. 1970. *The Lake Tahoe Basin, California-Nevada*. U.S. Geological Survey Water-Supply Paper 1972. 56p.

Errata

Changes made to the basin description will be noted here.