

Ocotillo-Clark Valley Groundwater Basin

- Groundwater Basin Number: 7-25
- County: San Diego and Imperial
- Surface Area: 223,000 acres (348 square miles)

Basin Boundaries and Hydrology

This basin underlies Clark and Ocotillo Valleys in eastern Imperial and western San Diego Counties. The basin is bounded by the Santa Rosa Mountains on the north and northeast, the Coyote Creek and Superstition Mountain faults on the west and south, and the Salton Sea and surface drainage divides on the east. Clark Valley drains internally toward Clark (dry) Lake and the remainder of the valley drains to the Salton Sea (Strand 1962; Rogers 1965; Jennings 1967). Average annual precipitation is about 5 inches.

In Bulletin 118-75, groundwater beneath Clark Valley and Ocotillo Valley were treated as belonging to separate groundwater basins. This bulletin combines the Clark Valley Groundwater Basin (7-23) with a large portion of Ocotillo Valley Groundwater Basin (7-25) to form the Ocotillo-Clark Valley Groundwater Basin. Instead of using surface water divides, this report mostly uses groundwater divides and barriers (Moyle 1974; 1982) to define the boundaries of this basin.

Hydrogeologic Information

Water Bearing Formations

The groundwater basin is an alluvium-filled valley and is underlain by nonwater-bearing crystalline bedrock. The valley fill in Clark Valley and upper Ocotillo Valley is likely similar to that of Borrego Valley, which is more thoroughly studied. The water-bearing sediments are likely Pliocene to Holocene stream, alluvial fan, lake and eolian deposits. In the adjacent Borrego Valley Groundwater Basin, these deposits form three aquifers that can reach more than 1,800 feet thick, with specific yield ranging to 25 percent (DWR 1984).

Restrictive Structures

The northwest-trending Coyote Creek and Superstition Mountain faults bound the basin on the south. Water level differences of 100 feet on opposite sides of the Coyote Creek fault indicate the fault is a barrier to groundwater flow (Moyle 1974; 1982). The San Jacinto and San Felipe Hills faults also displace rocks in the basin; however, it is not known whether or not these faults are barriers to groundwater movement.

Recharge Areas

Groundwater recharge to the basin is likely by percolation of runoff from mountains north and east of the valley.

Groundwater Level Trends

Groundwater levels near Clark Lake did not change appreciably from 1952 through 1980; however, water levels south of Coyote Mountain declined about 30 feet during the same period (Moyle 1982). Groundwater generally flows southeastward through the basin (Moyle 1974); however, water levels suggest that some groundwater may flow southwestward out of Clark Valley and spill over the Coyote Creek fault into the Borrego Valley Groundwater Basin (Moyle 1982).

Groundwater Storage

Groundwater Storage Capacity. The storage capacity estimated for Clark Valley is about 450,000 af and the capacity estimated for Ocotillo Valley is about 5,800,000 af (DWR 1975). These estimates add to about 6,250,000 af.

Groundwater in Storage. Unknown

Groundwater Budget (Type C)

Annual recharge to the basin is estimated to be about 1,200 af/yr for the Clark Valley portion of the basin and about 1,100 af/yr for the Ocotillo Valley portion (DWR 1975). Extractions for 1952 were estimated to have been about 3 af for the Ocotillo Valley portion of the basin (DWR 1975).

Groundwater Quality

Characterization. In the groundwater near Clark Lake, in the northern part of the basin, the dominant cation is sodium or calcium and the dominant anions are sulfate and chloride. TDS content ranges from 560 to 1,983 mg/L and averages about 950 mg/L. Groundwater in the southern part of the basin has sodium chloride-sulfate or sodium chloride character. Measured TDS content ranges from 955 to 4,656 mg/L and averages about 2,500 mg/L. TDS content often increases though time for wells with multiple measurements and increases from northwest to southeast in the basin.

Impairments. High TDS, sulfate, chloride, and fluoride concentrations locally impair groundwater for domestic and irrigation use.

Well Characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range: to 3,500 gal/min	Average: 1,760 gal/min (7 Well Completion Reports)
	Total depths (ft)	
Domestic	Range: to 410 ft	Average: 240 ft.
Municipal/Irrigation	Range: to 1,000 ft.	Average: 460 ft.

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
US Geological Survey	Groundwater levels	1
Department of Health Services and cooperators	Miscellaneous water quality	2
	Title 22 water quality	

Basin Management

Groundwater management:

Water agencies

Public

Private

References Cited

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Additional References

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Errata

Changes made to the basin description will be noted here.