

Ground-Water Storage Depletion In Pahrump Valley, Nevada-California, 1962-75

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Prepared in cooperation with the
Nevada Department of Conservation
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Water Resources

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Table 3. Summary of population, irrigated-land area, and ground-water withdrawals, 1962–75

[Populations and acreages rounded to nearest 10, withdrawals to nearest 100]

Year	Population ²	Irrigated land (acres) ¹			Ground-water withdrawals ¹ (acre-feet)		
		Cotton	Other ³	Total	Manse Spring	Pumpage	Total
1962	250	3,320	3,170	6,490	1,400	27,600	29,000
1963	280	3,360	4,480	7,840	1,300	31,200	32,500
1964	320	3,160	4,510	7,670	1,300	36,200	37,500
1965	430	2,950	5,300	8,250	800	35,700	36,500
1966	490	2,240	5,320	7,560	1,100	37,000	38,100
1967	510	2,230	6,000	8,230	1,100	40,400	41,500
1968	570	2,310	6,070	8,380	900	47,100	48,000
1969	750	2,220	6,180	8,400	700	40,200	40,900
1970	960	1,210	3,640	4,850	400	42,200	42,600
1971	1,050	1,370	3,180	4,550	800	37,200	38,000
1972	1,230	1,200	3,120	4,320	700	35,900	36,600
1973	1,390	2,070	5,100	7,170	600	38,800	39,400
1974	1,470	1,610	5,320	6,930	400	41,000	41,400
1975	1,480	1,530	5,010	6,540	200	40,600	40,800
Total for period (rounded)					12,000	530,000	540,000

¹From records of the Nevada State Engineer.²Populations for 1975 and 1970 reported in Nevada West and Pahrump Valley Times, May 1975, p. 4. Populations for other years

estimated by the author from data on home power and telephone hookups.

³Primarily alfalfa.

1975, irrigation remained the principal use of water, accounting for about 38,000 of the 40,800 acre-ft withdrawn for use. Of the remaining 2,800 acre-ft, about 800 acre-ft was used for self-supplied domestic purposes and about 2,000 acre-ft was used for public supply and commercial purposes. Part of the pumped water is recycled back to ground water. The percentage varies both with type of use and with individual systems. An average of about 25 percent of the agricultural pumpage, 70 percent of the self-supplied domestic pumpage, and 50 percent of the public supply and commercial pumpage was estimated to be recirculated back to ground water. The relative amount of water used for domestic, public-supply, and commercial purposes will probably increase substantially in the near future, and the amount of water recirculated will be affected accordingly. Also, agricultural water requirements could be affected by future changes in cropping patterns. For example, population increases in both Pahrump and Las Vegas Valleys could provide a significant market for certain vegetables and other diversified crops that require much less water per acre than alfalfa. A discussion of the effects of various cropping patterns on the area's water requirements and economy is beyond the scope of this study. However, this is an alternative that should be considered when evaluating means of dealing with the overdraft on the area's ground-water

resources. Figures 8 and 9 show the areal distribution of ground-water withdrawals in 1962 and 1975.

Effects of Development

As of 1975, a total of nearly 700,000 acre-ft of pumpage and about 550,000 acre-ft of spring flow had been discharged from the valley-fill reservoir in Pahrump Valley since pumping began in 1913. Of this, 530,000 acre-ft of pumpage and 12,000 acre-ft of spring flow occurred during the period 1962-75.

Response of the ground-water system to withdrawals was complex. The two most apparent effects were large water-level declines and cessation of most spring discharge. These will be discussed in the following paragraphs. Some of the more subtle responses, such as variations in ground-water evapotranspiration, probable land subsidence, and probable diminished subsurface outflow, will be discussed in later parts of this report.

Water-Level Changes

Water levels in wells generally have been declining since the first wells were constructed in 1913. The annual rate of decline and the net change between predevelopment and 1975 water levels vary at different locations,