

BASE FROM U.S. GEOLOGICAL SURVEY 1:250,000
NOGALES, 1956-69 AND TUCSON, 1956-77

5 0 5 MILES
5 0 5 KILOMETERS
TOPOGRAPHIC CONTOUR INTERVAL 200 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

EXPLANATION

- 100 — LINE OF EQUAL WATER-LEVEL DECLINE, 1940-85—Interval 50 feet
- - - - ZONE OF SUSPECTED PERCHED GROUND WATER—Indicates shallow water table or cascading water in well
- BOUNDARY OF AQUIFER

Figure 4.--Estimated water-level declines in Avra Valley, 1940-85.

HISTORY OF GROUND-WATER DEVELOPMENT

The hydrologic system in Avra Valley was in approximate equilibrium until about 1940, and ground-water levels generally remained unchanged (Moosburner, 1972; Whallon, 1983). Ground-water pumpage for irrigation began near Marana in 1937, and, by 1954, more than 100 irrigation wells were in use in the northern and central parts of the valley (White and others, 1966; Whallon, 1983). Ground-water levels declined in many areas after 1940 because ground-water pumpage exceeded recharge.

From 1940 to 1952, water levels declined by about 25 ft near Marana, about 20 to 50 ft in the area along the Santa Cruz River south of Picacho Peak, and less than 10 ft in the central part of the basin. Water levels generally remained unchanged in the areas south of T.13 S. from 1940 to 1952 (University of Arizona, 1952). From 1952 to 1981, water levels declined by more than an additional 100 ft throughout a large part of the valley (Babcock and Hix, 1982). Ground-water levels declined 50 to 150 ft throughout much of Avra Valley from 1940 to 1985 (fig. 4). Declines of more than 150 ft occurred in the area south of Picacho Peak and in the west-central part of the valley. Declines of less than 50 ft occurred in the southern part of the valley near Three Points from 1940 to 1985.

Annual ground-water pumpage in Avra Valley increased from about 12,000 acre-ft in 1940 to 174,000 acre-ft in 1975 (Whallon, 1983) as shown in figure 5. Between 1975 and 1984, annual ground-water pumpage decreased from 174,000 to 59,000 acre-ft. Most of the ground water pumped from the aquifer during 1940 to 1984 was used for irrigation. In 1984, agricultural water use was about 85 percent of the total ground-water withdrawal. The significant reduction in pumpage from 1975 to 1984 (fig. 5) was due largely to the purchase and retirement of agricultural land by the city of Tucson (Whallon, 1983).

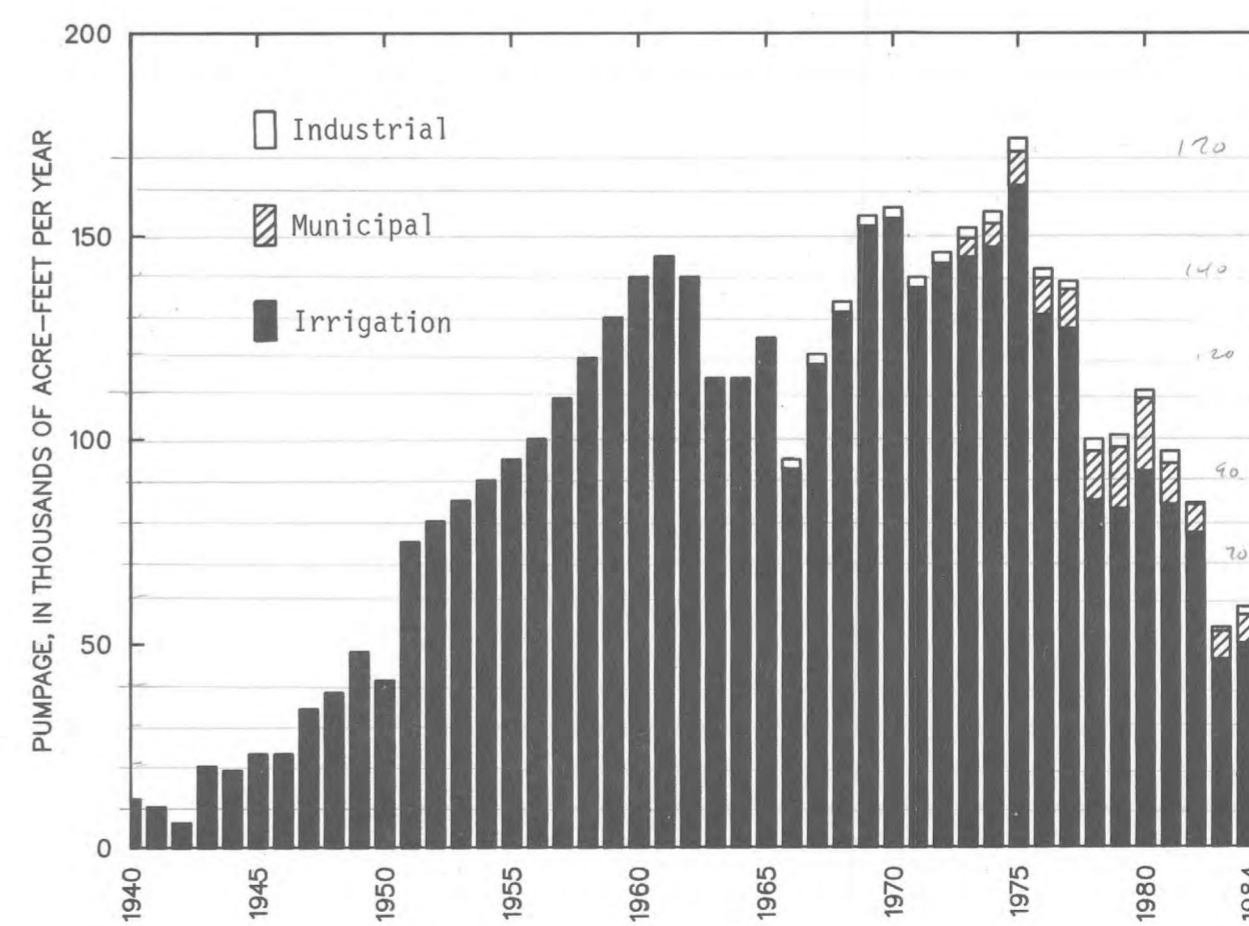


Figure 5.--Annual ground-water pumpage in Avra Valley, 1940-84.

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GROUND-WATER CONDITIONS IN AVRA VALLEY, PIMA AND PINAL COUNTIES, ARIZONA — 1985

BY

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