DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
ARIZONA WATER COMMISSION

WATER-RESOURCES INVESTIGATIONS
OPEN-FILE REPORT 80-584
SHEET 1 OF 2
ALTITUDE OF THE WATER LEVEL,
DEPTH TO WATER, AND WELL DEPTH

EXPLANATION

DEPTH TO WATER, IN FEET BELOW LAND SURFACE

- Less than 100
- 100 to 300
- 300 to 600
- More than 600
- Insufficient data

2200 — WATER-LEVEL CONTOUR—Shows approximate altitude of the water level. Contour interval 50 and 100 feet. Datum is mean sea level

2220 / 790R / 880 — WELL IN WHICH DEPTH TO WATER WAS MEASURED IN 1977-78—Upper number, 2220, is altitude of the water level in feet above mean sea level. Middle number, 790R, is depth to water in feet below land surface (R, depth to water reported; F, flowing). Lower number, 880, is depth of well in feet

5850 — SPRING—Number, 5850, is altitude of the land surface in feet above mean sea level

APPROXIMATE BOUNDARY OF THE MAIN WATER-BEARING UNIT—The main water-bearing unit is the alluvial deposits, which consist of gravel, sand, silt, and clay. Other water-bearing units are mainly crystalline and consolidated sedimentary rocks that yield small amounts of water where fractured

ARBITRARY BOUNDARY OF GROUND-WATER AREA

CONVERSION FACTORS

For readers who prefer to use metric units rather than inch-pound units, the conversion factors for the terms used in this report are listed below:

Multiply inch-pound unit	By	To obtain metric unit
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
square mile (mi^2)	2.590	square kilometer (km^2)
acre	0.004047	square kilometer (km^2)
acre-foot (acre-ft)	0.001233	cubic hectometer (hm^3)
gallon per minute (gal/min)	0.06309	liter per second (L/s)

The Hassayampa area includes about 1,300 mi^2 in Maricopa and Yavapai Counties in west-central Arizona. The area consists of basins filled with alluvial deposits and mountains composed of crystalline and consolidated sedimentary rocks. The Hassayampa River drains the area and flows from north to south. The Date Creek, Weaver, and Bradshaw Mountains form the north boundary of the area, and the Belmont Mountains are along the southwest boundary. The Vulture and Wickenburg Mountains are near the center of the area. Two alluvial basins—an unnamed basin to the north and Hassayampa Plain to the south—are adjacent to the Vulture Mountains. Another area of alluvial deposits is north of Wagoner between the Weaver and Bradshaw Mountains. The main water-bearing unit is the alluvial deposits, which consist of gravel, sand, silt, and clay and occupy about half the Hassayampa area. Other water-bearing units consist of a complex assemblage of crystalline and consolidated sedimentary rocks found mainly in the mountains. Outcrops of crystalline rocks that are too small to show on the map may be present within the boundaries of the main water-bearing unit.

In the basin north of the Vulture Mountains the main water-bearing unit is from a few tens of feet thick near the mountains to about 1,100 ft thick near Congress. In a 1,400-foot-deep well in the southeastern part of sec. 2, T. 9 N., R. 6 W., granite was tapped at 1,060 ft; however, in the southwestern part of sec. 2, T. 9 N., R. 5 W., a 1,330-foot-deep well penetrated coarse gravel to a depth of 1,275 ft; the gravel is underlain by hard basalt. Near the center of Hassayampa Plain, crystalline rocks are not present at a depth of 800 ft. The main water-bearing unit may yield a few tens to several hundred gallons per minute. In the Wagoner area, most wells drilled in the main water-bearing unit are near the Hassayampa River, where drillers' logs show 5 to 135 ft of alluvial deposits underlain by crystalline rocks. Well depths and depth to water in the Wagoner area generally are less than in the basins adjacent to the Vulture Mountains, and wells yield a few gallons to several hundred gallons per minute.

The crystalline rocks include intrusive, metamorphic, and volcanic rocks. Where present, volcanic rocks generally overlie intrusive and metamorphic rocks, but in places they overlie alluvial deposits. The sedimentary rocks include breccias and well-cemented conglomerates. Near the mountain fronts and along drainages in the mountains, a few tens of feet of alluvial deposits may overlie the crystalline rocks. Where fractured, the crystalline and sedimentary rocks generally yield less than 10 gal/min; the reported yield of a flowing well in the northwestern part of sec. 4, T. 11 N., R. 3 W., was 50 gal/min.

In several areas along the Hassayampa River, where crystalline rocks are covered by thin alluvial deposits, ground water is near the surface. In one such area about 4.5 mi downstream from Wickenburg the depth to water in wells generally is less than 50 ft below land surface.

Water levels range from a few feet above the land surface in two flowing wells north of Wagoner to 1,000 ft below the land surface east of Congress. In general, the depth to water in wells in the basins adjacent to the Vulture Mountains is greater than that in other parts of the area. Few water-level measurements have been made in the area in the past, but available data indicate little or no regional change in water levels; however, well owners report that large short-term changes in water levels occur in shallow wells near the river and in upland draws because of variations in precipitation and streamflow. Recharge to the alluvial deposits is mostly from the infiltration of streamflow and from the infiltration of precipitation along the mountain fronts.

In 1978 about 3,000 acre-ft of ground water was withdrawn in the area. About half the water was used for domestic, stock, and public supplies. About 800 acres of land was under irrigation, mostly along the Hassayampa River near Wagoner and Wickenburg. Many wells were used to supplement surface-water irrigation.

Because of the high well density in the central part of the area along the Hassayampa River, only selected wells are shown on the map. The hydrologic data on which these maps are based are available, for the most part, in computer-printout form and may be consulted at the Arizona Water Commission, 222 North Central Avenue, Suite 850, Phoenix, and at U.S. Geological Survey offices in: Federal Building, 301 West Congress Street, Tucson, and Valley Center, Suite 1880, Phoenix. Material from which copies can be made at private expense is available at the Tucson and Phoenix offices of the U.S. Geological Survey.

SELECTED REFERENCES

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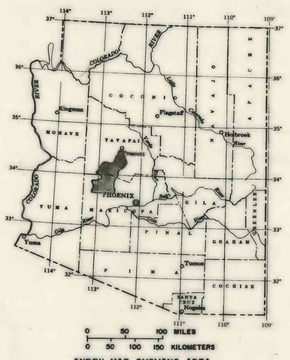

5 0 5 MILES
5 0 5 10 KILOMETERS

CONTOUR INTERVAL 200 FEET
WITH SUPPLEMENTARY CONTOURS AT 100-FOOT INTERVALS
DATUM IS MEAN SEA LEVEL

BASE FROM U.S. GEOLOGICAL SURVEY
PHOENIX 1:250,000, 1954-69
AND PRESCOTT 1:250,000, 1954

ALTITUDE OF THE WATER LEVEL, DEPTH TO WATER, AND WELL DEPTH

MAPS SHOWING GROUND-WATER CONDITIONS IN THE HASSAYAMPA AREA, MARICOPA AND YAVAPAI COUNTIES, ARIZONA—1978

BY

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