



EXPLANATION

- 803(1972)  
7.2  
WELL FROM WHICH WATER SAMPLE WAS COLLECTED IN 1977-78—Upper number, 803, is specific conductance in micromhos per centimeter at 25°C [(1972), year in which water sample was collected if other than 1977-78; early specific-conductance values used only in areas where water levels are not affected greatly by pumping for irrigation]. Lower number, 7.2, is fluoride concentration in milligrams per liter.
- APPROXIMATE BOUNDARY OF THE MAIN WATER-BEARING UNIT—The main water-bearing unit is the valley-fill deposits, which consist mainly of clay, silt, sand, gravel, and weakly consolidated mudstone and sandstone. The volcanic rocks and bedrock may yield small amounts of water to wells in fractured zones. Queried where uncertain.
- ARBITRARY BOUNDARY OF GROUND-WATER AREA

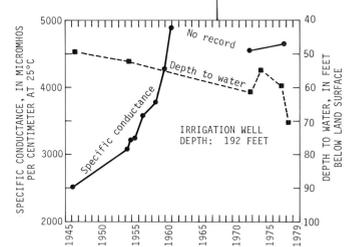
In the northern part of the Gila River drainage from Painted Rock Dam to Texas Hill area, the dissolved-solids concentrations in ground water generally range from 300 to 5,000 mg/L (milligrams per liter). Specific conductance, as shown on the map, is an indication of the dissolved-solids concentration in the water; the dissolved-solids values may be estimated by multiplying the specific conductance by 0.57, which is the average ratio of dissolved solids to specific conductance in the study area. The recommended maximum contaminant level for dissolved solids in public water supplies is 500 mg/L, as proposed in the secondary drinking-water regulations of the U.S. Environmental Protection Agency (1977b, p. 17146) in accordance with provisions of the Safe Drinking Water Act (Public Law 93-523). The U.S. Environmental Protection Agency (1977a, b) has established national regulations and guidelines for the quality of water provided by public water systems. The regulations are either primary or secondary. Primary drinking-water regulations govern those contaminants in drinking water that have been shown to affect human health. Secondary drinking-water regulations apply to those contaminants that affect esthetic quality. The primary regulations are enforceable either by the Environmental Protection Agency or by the States; in contrast, the secondary regulations are not federally enforceable. The secondary regulations are intended as guidelines for the States. The regulations express limits as "maximum contaminant levels," where contaminant means any physical, chemical, biological, or radiological substance or matter in water.

The following guidelines for dissolved-solids and specific-conductance values for irrigation water are modified from the National Academy of Sciences and National Academy of Engineering (1973, p. 335).

Classification	Dissolved solids (milligrams per liter)	Specific conductance (micromhos)
Water for which no detrimental effects are usually noticed	Less than 500	Less than 800
Water that can have detrimental effects on sensitive crops	500-1,000	880-1,600
Water that can have adverse effects on many crops; requires careful management practices	1,000-2,000	1,800-3,500
Water that can be used for tolerant plants on permeable soils with careful management practices	2,000-5,000	3,500-8,800

Dissolved solids in the ground water appear to be increasing with time and declining water levels. Several water samples are available for a well in sec. 26, T. 4 S., R. 8 W., and the graph shows a large increase in specific conductance from 1946 to 1960 during a general decline in water level. No water samples were collected between 1960 and 1972; the lower specific conductance in the 1972 and 1977 samples may be related to the pumping regimen of the well. A comparison of water samples from several other wells for which at least one early analysis and one in 1977 are available show similar increases in specific conductance. The specific conductance of water from a well in sec. 16, T. 5 S., R. 12 W., was 777 micromhos in 1954 but had increased to 2,780 micromhos by 1977; the water level was 88 ft below the land surface in 1954 and, as indicated by water levels in nearby wells, had declined to about 145 ft by 1977.

The maximum contaminant level for fluoride in public water supplies differs according to the annual average maximum daily air temperature (Bureau of Water Quality Control, 1975, p. 6). The amount of water consumed by humans and, therefore, the amount of fluoride ingested depends partly on air temperature. In the study area the annual average maximum daily air temperature is about 80°F, and the maximum contaminant level for fluoride is 1.4 mg/L. As shown on the map, fluoride concentrations in most of the water samples taken in 1977-78 are more than 1.4 mg/L.



5 0 5 10 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  
AJO 1:250,000, 1953,  
PHOENIX 1:250,000, 1954-69, AND  
SALTION SEA 1:250,000, 1959

SPECIFIC CONDUCTANCE AND FLUORIDE CONCENTRATION

MAPS SHOWING GROUND-WATER CONDITIONS IN THE NORTHERN PART OF THE GILA RIVER DRAINAGE FROM  
PAINTED ROCK DAM TO TEXAS HILL AREA, MARICOPA, PIMA, AND YUMA COUNTIES, ARIZONA—1978

BY  
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