

GRAND WASH BASIN

The Grand Wash basin contains approximately 960 square miles in northwestern Arizona (Figure 10). The basin is located along the boundary between the Plateau uplands and the Basin and Range provinces. Most of the basin is within the Basin and Range province. The Grand Wash basin is drained by Cottonwood Wash and Grand Wash which both carry runoff south to the Colorado River. The basin is bounded on the north by the Virgin Mountains, on the east by the Grand Wash Cliffs, on the south by the Colorado River, and on the west by the Arizona-Nevada state line. Elevation in the basin varies from 2,100 feet above mean sea level along the Colorado River to about 8,000 feet above mean sea level in the Virgin Mountains.



The sediments that fill the alluvial valley are, in descending order: the alluvial sands and gravels in the ephemeral washes; the Muddy Creek Formation, a series of siltstones, sandstones, and conglomerates (Lovejoy, 1980); and the basal Cottonwood Wash Formation, composed of sandstones and siltstones (Moore, 1972). Basaltic lavas have been deposited in the northern part of the basin and are interbedded with the Muddy Creek Formation (Moore, 1972).

There are four geologic units that yield water in the Grand Wash basin: the streambed alluvium, the Muddy Creek Formation, basalts, and the Cottonwood Wash Formation. Producing wells are located in the streambed alluvium and in the Muddy Creek and Cottonwood Wash Formations (Levings and Farrar, 1979). No wells penetrate to the basement rocks in the alluvial valley, and there are no reported wells in the flat-lying sedimentary rocks northwest and east of the valley. Several springs that issue from basaltic lava flows provide small amounts of water.

Groundwater development in the Grand Wash basin is minimal. There are less than 20 wells in the basin, and their combined pumpage is between 2 and 10 acre-feet per year (U.S. Geological Survey, 1986). The wells are all low-yield stock and domestic wells. Well depths vary from 35 feet in the alluvium to 850 feet below land surface in the Cottonwood Wash Formation. Depth to water is reported to be as shallow as 5 feet in the alluvium and 650 feet below land surface in the Muddy Creek Formation (Levings and Farrar, 1979). Several wells drilled into the Muddy Creek and Cottonwood Wash Formation sandstones have been dry holes.

Water quality generally is suitable for most domestic uses. Two springs that issue from the basaltic lava flows had total dissolved solids concentrations of 287 and 317 milligrams per liter and fluoride concentrations of 0.2 and 0.4 milligrams per liter (Levings and Farrar, 1979).