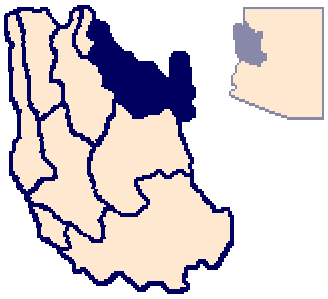
PEACH SPRINGS BASIN



The Peach Springs basin, located in northwestern Arizona, contains approximately 1,400 square miles (Figure 13). The basin is bounded on the west by the Grand Wash Cliffs and Music Mountains, on the north by the Colorado River, and on the east by the Aubrey Cliffs. The western part of the basin is made up of the Hualapai Plateau, composed of flat-lying interbedded limestones, shale, and sandstones. Aubrey and Truxton Valleys are east and south of the Hualapai Plateau respectively, and are major drainages that are filled with recent lava flows and alluvial sands, silts, and gravels.

Elevations in Peach Springs basin vary from 1,000 feet above mean sea level, where Quartermaster Canyon meets the Colorado River, to 6,800 feet above mean sea level in the Music Mountains. Elevations on the Hualapai Plateau are 4,000 to 6,000 feet above mean sea level.

There are no perennial streams in the Peach Springs basin and groundwater is the only reliable source of water supply. Truxton Wash drains runoff from the Truxton Valley area into the Hualapai Valley and eventually into the Red Lake Playa. Numerous ephemeral washes on the Hualapai Plateau drain water to the northeast and into the Colorado River. Several of the larger washes on the plateau follow major faults.

The Peach Springs basin can be divided into two separate geomorphic areas, an upland area comprising the Hualapai Plateau, and a lowland area consisting of Truxton and Aubrey Valleys. Each of these areas has its own distinct geology and hydrologic characteristics.

The Hualapai Plateau is made up of interbedded limestones, shales, and sandstones that dip gently to the northeast. The main water- bearing unit on the Plateau is the Muav Limestone. Groundwater moves downward and northeast along fractures and bedding planes in the sedimentary rocks. The groundwater is eventually trapped in fractures and solution channels in the Muav Limestone by the underlying Bright Angel Shale. The water then exits the basin by numerous springs that issue from the Muav Limestone in the Grand Canyon. Hutoon (1977) estimated annual spring flow from the Plateau to be approximately 2,900 acre-feet of water.

Water levels on the Hualapai Plateau vary from 100 feet below land surface near Peach Springs to over 1,300 feet below land surface in the central basin area (Myers, 1987). Well yields from the Muav Limestone are variable depending on the degree of fracturing in the limestone. Representative well yields are from 5 to 40 gallons per minute, with 146 gallons per minute the highest reported (Twenter, 1962; Myers, 1987). The rest of the Paleozoic rocks are dry, except where local structural or stratigraphic conditions may trap small amounts of water.

In addition to the Muav Limestone, groundwater also occurs in Tertiary-Quaternary sedimentary deposits. In the northern Aubrey Valley around Frazier Wells, water is found in gravel beds. Depth to water generally is shallow, 12 to 100 feet below surface level, and well yields of 10 to 30 gallons per minute have been reported (Myers, 1987). In the Truxton Valley area, lake-bed deposits are a locally-dependable source of groundwater. Small domestic and stock wells yield up to 10 gallons per minute (Myers, 1987). Depth to water ranges from 125 to 535 feet below surface level in the Truxton area (Myers, 1987).

The Precambrian rocks, isolated volcanic, and local alluvial sands in washes can provide minor amounts of water to local low-yield wells in some areas of the basin; however, the ability of these aquifers to provide water is extremely variable and dependent on local geologic conditions. The amount of groundwater available in the Peach Springs basin is unknown. Groundwater on the Hualapai Plateau generally is deep, and the saturated thickness of the limestone aquifer is difficult to determine. In Aubrey and Truxton Valleys, water is limited to a few permeable layers in the sequence of basin-fill deposits. The U.S. Geological Survey has estimated that there are approximately 1,000,000 acre-feet of recoverable water

to 1,200 feet in the Truxton Valley area (Freethey and Anderson, 1986). No estimate is available for the amount of water in Aubrey Valley, however, there is probably a similar amount in storage in the valley's aquifers.

Because population is sparse, groundwater development in the basin is slight. The U.S. Geological Survey (1986) estimates that pumpage from the basin is less than 500 acre-feet per year. Only one well with historic water levels occurs in the basin; therefore, any water-level changes that may have occurred in the basin have not been recorded. Water quality in most wells in the basin generally is good. Total dissolved solids and fluoride levels are below maximum contaminant levels in most wells tested (Myers, 1987).