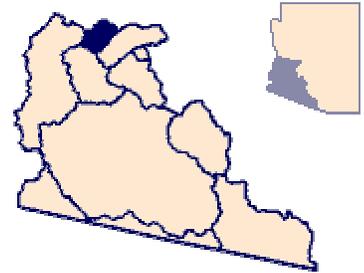


BUTLER VALLEY BASIN

Butler Valley basin is situated in the northeastern part of La Paz County, approximately 10 miles north of the Town of Wenden, and contains approximately 280 square miles (Figure 15). The U.S. Bureau of Land Management and the Arizona State Land Department own 99% of the land in Butler Valley (Dee Fuerst, Arizona State Land Department, oral commun., 1992). Butler Valley is located about nine miles south of Alamo Reservoir. There are no perennial streams or other surface water bodies within the boundaries of this basin.



The basin has a general northeast-southwest trend and the valley floor covers roughly 160 square miles. The total watershed area is about 20 miles long and 13 miles wide.

Butler Valley is almost completely surrounded by mountains, with the Harcuvar Mountains to the southeast, the Buckskin Mountains to the northwest, and the Little Buckskin Mountains to the northeast. The southwest end of the valley is nearly enclosed by the Granite Wash Mountains and the Bouse Hills, except for a 1.5 mile-wide "Narrows" where Cunningham Wash exits the basin. The land surface elevation ranges from 1,345 feet above mean sea level at the "Narrows" to 5,452 feet above mean sea level at Cunningham Peak in the Harcuvar Mountains. Except for a wash through a small gap in the Granite Wash Mountains, all surface runoff occurs through Cunningham Wash.

The Butler Valley basin is composed of basin-fill deposits. These deposits make up the principal aquifer in the basin. According to drillers logs, the thickness of these sediments ranges from 525 feet in the southwest area of the basin to 1,450 feet in the central portion of the basin. The majority of the aquifer consists of very coarse sand and gravel with clay or clay lenses. Portions of the aquifer contain calcareously-cemented sand layers (U.S. Bureau of Reclamation, 1979).

Well production studies performed on a single well by the U.S. Bureau of Reclamation (1979) determined that 10 - 15 % of the production came from the interval between the water table and a depth of 610 feet below land surface, 45 - 50 % of production came from the interval of 610 to 960 feet below land surface and 40 - 45 % of production came from a depth between 960 and 1,060 feet below land surface.

Depths to groundwater in 1986 ranged from 145 feet below land surface in the southwest end of the basin to 513 feet below land surface in the central portion of the basin (Oram, 1987). Groundwater flow generally is from the northeast to the southwest. Confined aquifer conditions exist in the area northeast of "the Narrows" located in Township 7 North, Range 15 West. The presence of clay layers as noted in the few drillers logs available, suggests the possibility of groundwater occurring elsewhere under confined conditions (Oram, 1987).

Although very few wells were measured, groundwater levels in the basin likely changed very little, if any, prior to 1975. From 1975 to 1986, groundwater level changes ranged from a decline of 14 feet in the southwest part of the basin to a rise of 1 foot in the northeast portion of the basin. The greater rate of decline in the southwest part of the basin, caused by irrigation pumpage, has developed since 1975 (Oram, 1987).

Groundwater quality in Butler Valley generally is considered to be suitable for most agricultural and industrial uses. Domestic users should be aware of locally high fluoride levels in parts (primarily along Cunningham Wash between the Buckskin Mountains and Bouse Hills) of the basin. Total dissolved solids concentrations in the valley range from 250 to 1,080 milligrams per liter and fluoride levels range from 0.0 to 9.3 milligrams per liter (Oram, 1987).

The only dependable water supply within the Butler Valley basin is groundwater. The recoverable groundwater in storage to 1,200 feet is estimated to be 6.5 million acre-feet (Arizona Department of Water Resources, 1988). Based on current data this basin is considered to be in a steady- state condition.

The primary use of groundwater in this area is for agricultural irrigation. In 1985, approximately 800 acres of land were

cultivated and groundwater pumpage was estimated at 4,000 acre-feet. Of this total, less than 500 acre-feet were used for livestock watering and domestic use.

There has also been some interest in Butler Valley as a groundwater storage basin. Close proximity to the CAP aqueduct and the Alamo Reservoir would enable water to be transported to the basin and recharged into the aquifer. This idea was explored in a master's thesis by Herndon in 1985 and again, in 1987, by Engineering Enterprises, Inc., for the Arizona State Land Department.