

## LOWER GILA RIVER WATERSHED

The headwaters of the Gila River originate in the Mogollon Mountains of western New Mexico. The river flows east to west across southern Arizona. The entire Gila watershed drains approximately 57,900 square miles before joining the Colorado River near Yuma; 8,200 square miles of this watershed is within the Lower Colorado River planning area.

The Gila River drains the central and eastern portions of the planning area. Within the planning area boundaries, the Gila River extends from Gillespie Dam, located approximately 45 miles southwest of Phoenix, to the Colorado River confluence, a distance of about 150 miles (Figure 16). The southern portion of the planning area drains southward into Mexico as part of the Sonoyta River watershed. A small basin of 242 square miles in northern Sonora, Mexico, drains northward into Arizona, west of Sasabe. This drainage connects with Vamori Wash in Arizona which returns to Mexico south of Papago Farms (Harshbarger, 1979). Perennial flow does not exist in the southern part of the planning area.

### Streamflow Characteristics

Within the Lower Gila watershed, most of the Gila River is ephemeral and flows only in response to precipitation events or water releases from upstream dams. Flow in the lower portion of the Gila River would be intermittent if it were not controlled by dams. Historically, the river would flow in the spring due to winter rains and melting snow, and in summer following monsoon rains (U.S. Geological Survey, 1923). Since the construction of Gillespie Dam in 1921 and Painted Rock Dam in 1959, the flow has been impounded and diverted to agricultural areas or released slowly in the main channel to prevent flooding downstream (U.S. Army Corps of Engineers, 1977).

The Wellton-Mohawk Irrigation District returns surplus irrigation water to the Gila River channel near Dome, Arizona. This influx of water (U.S.G.S. streamgage #09520500) supports flow from Dome to the confluence with the Colorado River.

Table 23 lists the U.S. Geological Survey streamgages maintained on the Gila River within the planning area. The location of these gages are displayed on Figure 16. All other streams that drain into the Gila River are ephemeral and only flow in response to precipitation events (Brown and others, 1981).

### Reservoirs

Until the 1993 flood events, flow on the Gila River was controlled by two dams; Gillespie and Painted Rock. Gillespie Dam was breached in January, 1993 when a 135(+) foot section of the structure collapsed during flooding. Gillespie Dam is located about 45 miles southwest of Phoenix, at a narrow passage between the Buckeye Hills and the Gila Bend Mountains. The dam was constructed in 1921 to divert water from the Gila River into two canals that would carry irrigation water to nearby fields and to the Gila Bend area (U.S. Geological Survey, 1923). Most of the low flow in the river upstream of Gillespie Dam is sewage effluent and irrigation return flow.

Painted Rock Dam is located northwest of Gila Bend and was constructed in 1959 to control flood waters that periodically damage downstream areas. The Painted Rock Reservoir has a gross capacity of 2 1/2 million acre-feet of storage, but is designed to remain empty most of the time. The reservoir reached full capacity during the 1993 flood events and extensive damage occurred downstream as a result of the high volume of spillwater. During less severe flooding, the dam retains water and releases it relatively slowly until the reservoir is empty. The water is released at a slow rate to minimize downstream damage and still empty the reservoir as quickly as possible (U.S. Army Corps of Engineers, 1977). There is no flow below Painted Rock Dam except during flood events.

### Water Quality

The Gila River, from its confluence with the Salt River to Painted Rock Reservoir, has low dissolved oxygen and is contaminated with pesticides, metals, inorganics, and nutrients. Painted Rock and Gillespie Dams appear to act as contaminant sinks and exhibit high levels of pesticides, boron, and organochlorines (Arizona Department of Environmental Quality, 1990). Bioaccumulation of toxic substances in contaminated sediments presents a risk to fish and wildlife, and possibly human health. DDE and toxaphene found in fish tissue at Painted Rock and Gillespie Dams present a threat of

reduced viability and recruitment to wildlife resources of the lower Gila River drainage (Kepner, 1987). Pesticide contamination in the Gila River is some of the most significant in the western United States. Agricultural return flows and several municipal discharges feed the rivers.

**TABLE 23**
**ANNUAL FLOWS FOR USGS STREAMGAGING STATIONS ON THE GILA RIVER (LOWER COLORADO RIVER PLANNING AREA)**

<b>Station Name</b>	<b>Station Number</b>	<b>Period of Record</b>	<b>Mean Annual Flow (ac-ft)</b>	<b>Median Annual Flow (ac-ft)</b>	<b>Record Annual High Flow (ac-ft)</b>	<b>Record Annual Low Flow (ac-ft)</b>
<b>Gila River above Gillespie Dam</b>	9518000	1941-1971 1974-1990	285,180	56,280	2,793,870	8,690
<b>Gila River below Gillespie Dam</b>	9519500	1922-1990	260,570	27,720	2,735,960	0
<b>Gila River below Painted Rock Dam</b>	9519800	1960-1990	256,630	3,810	2,377,680	80
<b>Gila River near Mohawk</b>	9520360	1974-1990	340,910	410	2,142,450	0
<b>Gila River near Dome</b>	9520500	1906, 1930- 1990	400,990	2,750	2,113,500	0

Source: U.S. Geological Survey, 1992, National Water Information System