AGUA FRIA WATERSHED

The Agua Fria watershed is located in central Arizona to the north and west of Phoenix. The northern reach originates within the Prescott Active Management Area (AMA) and the southern terminus, south of Lake Pleasant, is within the Phoenix AMA. The bulk of the watershed is in the Agua Fria Basin, which is within the Central highlands planning area.

The Agua Fria River drains an area of approximately 2,700 square miles in Yavapai and Maricopa counties (U.S. Army Corps of Engineers, 1982). The watershed boundaries are the Black Hills to the north and northeast, the Humboldt and Maverick Butte Mountains to the east, and the Bradshaw, Hieroglyphic and White Tank Mountains to the west.

STREAMFLOW CHARACTERISTICS

The Agua Fria River is perennial at four places above Lake Pleasant with a combined distance of approximately 21 miles. Other perennial streams that are tributary to the Agua Fria are listed in Table 7 and displayed in Figure 4.

TABLE 7
PERENNIAL STREAM REACHES IN THE AGUA FRIA WATERSHED

Perennial Stream Reaches	Length (miles)
Agua Fria River (4 reaches)	21
Ash Creek (2 reaches)	10
Big Bug (2 reaches)	6
Yellow Jacket Creek	5
Sycamore Creek (2 reaches)	10
Silver Creek	2
Black Canyon Creek	5

Source: Brown and others, 1981

There are nine streamgages on the Agua Fria River and associated tributaries that are being monitored by the U.S. Geological Survey (Figure 5). Discharges for these gages are summarized in Table 8.

Flood detention dams on New River, Skunk Creek, and Cave Creek Wash retain water and release it slowly, allowing much of it to infiltrate into the subsurface. Below Lake Pleasant the Agua Fria River flows only when water is released from the dam during major flood events. All other streams within the watershed are ephemeral and flow only in response to precipitation or snowmelt.

RESERVOIRS

Lake Pleasant has an active conservation storage capacity of 815,900 acre-feet behind the recently completed New Waddell Dam. An additional 36,700 acre-feet of inactive conservation storage capacity was created in order to maintain a minimum pool for fish and wildlife purposes. The old dam was breached in 1993 when New Waddell Dam was completed downstream. The new dam is a multipurpose structure owned by the U.S. Bureau of Reclamation. Colorado River water will be transported by the Hayden-Rhodes Aqueduct to Lake Pleasant via the Waddell Canal during the winter months. Water will then be released from behind New Waddell Dam for power generation and delivery to customers in summer months.

TABLE 8
ANNUAL FLOWS FOR USGS STREAMGAGING STATIONS IN THE AGUA FRIA RIVER WATERSHED

Station Name	Station Number	Period of Record	Mean Annual Flow (ac-ft)	Median Annual Flow (ac-ft)	Record Annual High Flow (ac-ft)	Record Annual Low Flow (ac-ft)
Agua Fria near Mayer	9512500	1941-1990	15,920	9,160	88,300	1,090
Turkey Creek near Cleator	9512600	1980-1990	8,690	3,730	34,020	190
Agua Fria near Rock Springs	9512800	1971-1973 1975-1990	59,350	22,940	256,950	1,880
Agua Fria near Waddell Dam	9513000	1915-1919	205,560	168,650	479,880	48,220
New River near Rock Springs	9513780	1966-1990	9,410	3,130	39,810	0
Skunk Creek near Phoenix	9513860	1968-1990	1,230	520	6,220	0

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

WATER QUALITY

Heavy metals contamination and turbidity in the Agua Fria River appear to be caused by abandoned mines and unpermitted sand and gravel operations (Arizona Department of Environmental Quality, 1990).