COLORADO RIVER WATERSHED

The Colorado River watershed is located in the northern and western portions of Arizona and extends through two other planning areas known as the Plateau and the Upper Colorado River planning areas. Within the Lower Gila planning area, the Colorado River flows south from Parker Dam at Lake Havasu to the Gulf of California in Mexico.

The Colorado River flows for approximately 200 miles south of Parker Dam before leaving the United States at the Southern International Boundary. Before leaving the United States, the river encounters the Imperial, Laguna, and Morelos Dams near Yuma. Many diversions exist along the lower portion of the Colorado River for irrigation, municipal and industrial uses, as well as return flows from irrigated areas.

Streamflow Characteristics

Major diversions from the main stem of the Colorado River occur at Imperial Dam. The All-American Canal (09523000) diverts an average of 5,143,073 acre-feet per year for agricultural purposes on the California side of the river. The Gila Gravity Canal (09522500) also diverts water from the Imperial Dam for use on the Arizona side of the Colorado River. Diversions to this canal average 669,258 acre-feet per year. Table 20 lists major diversions from the main stem of the Colorado River and major return flows to the river.

TABLE 20
ANNUAL DIVERSIONS AND RETURN FLOWS ON THE COLORADO RIVER (LOWER COLORADO RIVER PLANNING AREA)

Location	Station number	Period of Record	Average Discharge (ac-ft)
DIVERSIONS			
All American Canal	09523000	1940-Present	5,143,073
Gila Gravity Canal	09522500	1944-Present	669,258
RETURN FLOWS			
Gila River near Dome	09520500	1906-1989	145,437
Yuma Mesa Outlet Drain	09530200	1972-1990	31,310
Drain 8-B	09530500	1980-1990	6,181
Pilot Knob Wasteway	09527000	1940-Present	1,123,934
Main Outlet Drain 2-AB	09531800	1970-Present	13,900

Source: U.S. Geological Survey, 1991

The drainages in the Colorado watershed portion of the planning area are ephemeral and contribute very little to the flow of the Colorado River. The Colorado River is the only perennial surface water in the Colorado watershed portion of the

planning area. Table 21 lists the U.S. Geological Survey streamgages maintained below Parker Dam on the Colorado River.

Central Arizona Project

The U.S. Bureau of Reclamation has constructed a water-delivery system for transporting Colorado River water from Lake Havasu to central and southern Arizona. The Central Arizona Project (CAP) will deliver about 1.5 million acre-feet of water per year to users in Maricopa, Pinal and Pima Counties. Cities, industries and Indian communities have first priority for the water, with agriculture receiving the surplus (Central Arizona Water Conservation District, date unknown).

The system consists of three connected aqueducts, the Granite Reef, Salt-Gila and Tucson, which convey water 335 miles across Arizona. A series of 14 pumping plants lift the water at intervals along the system to provide the elevation needed for gravity flow.

TABLE 21
ANNUAL FLOWS FOR USGS STREAMGAGING STATIONS ON THE COLORADO RIVER (LOWER COLORADO RIVER PLANNING AREA)

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)
Colorado River below Parker Dam	9427520	1936-1990	9,240,750	7,361,050	21,062,580	5,765,070
Colorado River at Palo Verde Dam	9429010	1970-1988	7,761,310	6,521,800	19,035,940	4,975,400
Colorado River below Cibola Valley	9429300	1957-1988	7,672,280	6,154,470	19,759,740	5,363,360
Colorado River below Imperial Dam	9429500	1935-1942 1961-1990	2,714,530	339,460	16,980,350	226,550
Colorado River below Laguna Dam	9429600	1973-1990	2,081,730	383,614	10,813,570	280,830
Colorado River below Main Canal Wasteway	9521100	1964-1990	1,957,020	652,870	11,399,850	500,150
Colorado River at Northerly International Boundary above Morelos Dam	9522000	1951-1990	3,586,370	1,633,980	16,546,070	1,249,280
Colorado River at Southerly International Boundary	9522200	1985-1986	9,391,310	9,391,310	10,531,290	8,251,320

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

The first 17 miles of the aqueduct has been constructed larger to act as a storage reservoir for the rest of the system. The aqueducts then become smaller in capacity as water is delivered to users along the canal (Central Arizona Water Conservation District, date unknown).

The CAP crosses three groundwater basins within the Lower Colorado River planning area (Parker, Ranegras Plain and Harquahala) before entering the Phoenix, Pinal, and Tucson Active Management Areas.

Water for the CAP system is obtained from Lake Havasu on the Colorado River. The U.S. Bureau of Reclamation maintains a gaging station (09426650) at the Havasu Pumping Plant on Lake Havasu which pumps water into the CAP canal. Table 22 lists the yearly diversions into the CAP since pumping began in 1984.

Table 22
Annual Diversions into the Central Arizona Project at Lake Havasu

Year	Acre-feet
1985	33,500
1986	107,600
1987	354,600
1988	499,300
1989	759,100
1990	779,100

Source: U.S. Bureau of Reclamation, (1985-1990)

The Central Arizona Water Conservation District measured evaporation and seepage losses from the aqueduct during tests in August and September of 1989. Water was lost at an average daily rate of 0.062 cubic feet per square foot of aqueduct (Central Arizona Water Conservation District, 1989). This translates to a relatively constant water loss of about 82,000 acre-feet per year. Approximately 17,000 acre-feet of the total were lost to evaporation and 65,000 acre-feet lost to seepage (U.S. Bureau of Reclamation, 1986).