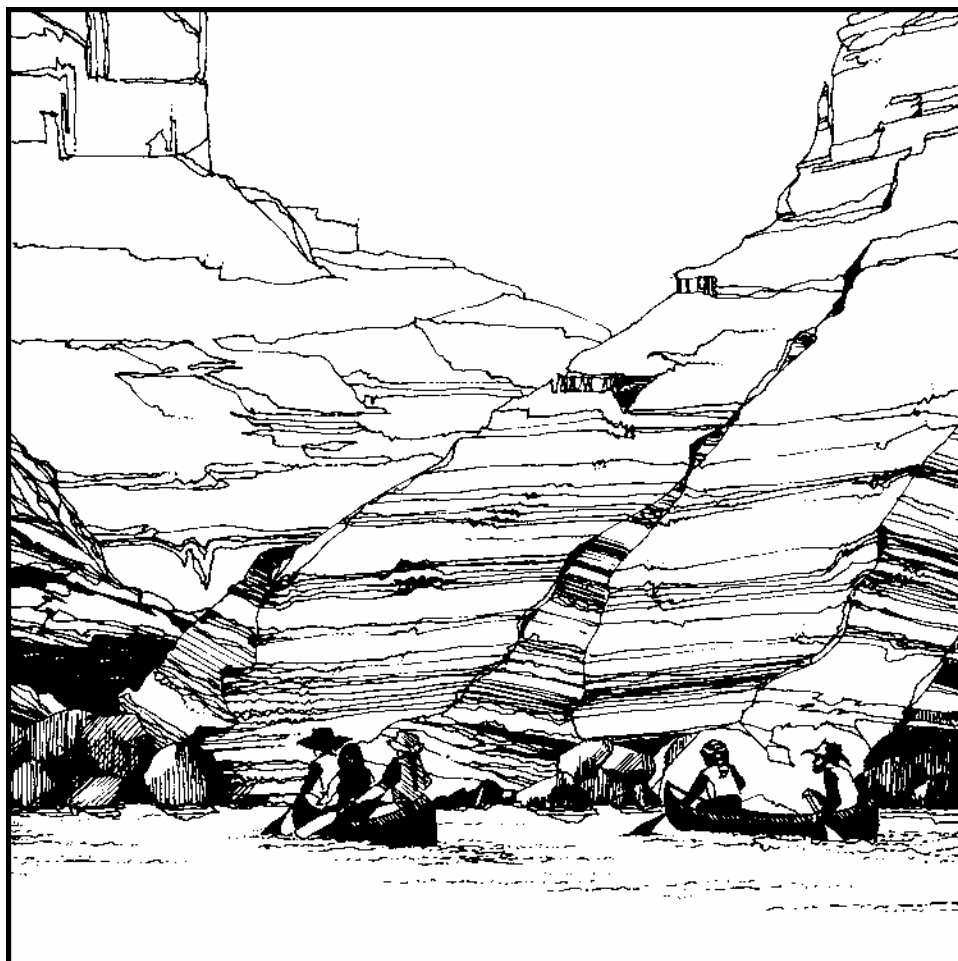


RECLAMATION

Managing Water in the West

Colorado River System Consumptive Uses and Losses Report 1996-2000



Colorado River System Consumptive Uses and Losses Report 1996-2000



**U.S. Department of the Interior
Bureau of Reclamation
Upper Colorado Region
Lower Colorado Region**

**February 2004
Revised December 2004**

**COLORADO RIVER SYSTEM
CONSUMPTIVE USES
AND
LOSSES REPORT
1996-2000**

**February 2004
(Revised December 2004)**



**United States Department of the Interior
Bureau of Reclamation
Upper Colorado Region
Lower Colorado Region**

COLORADO RIVER SYSTEM

CONSUMPTIVE USES AND LOSSES REPORT

1996-2000

FOREWORD

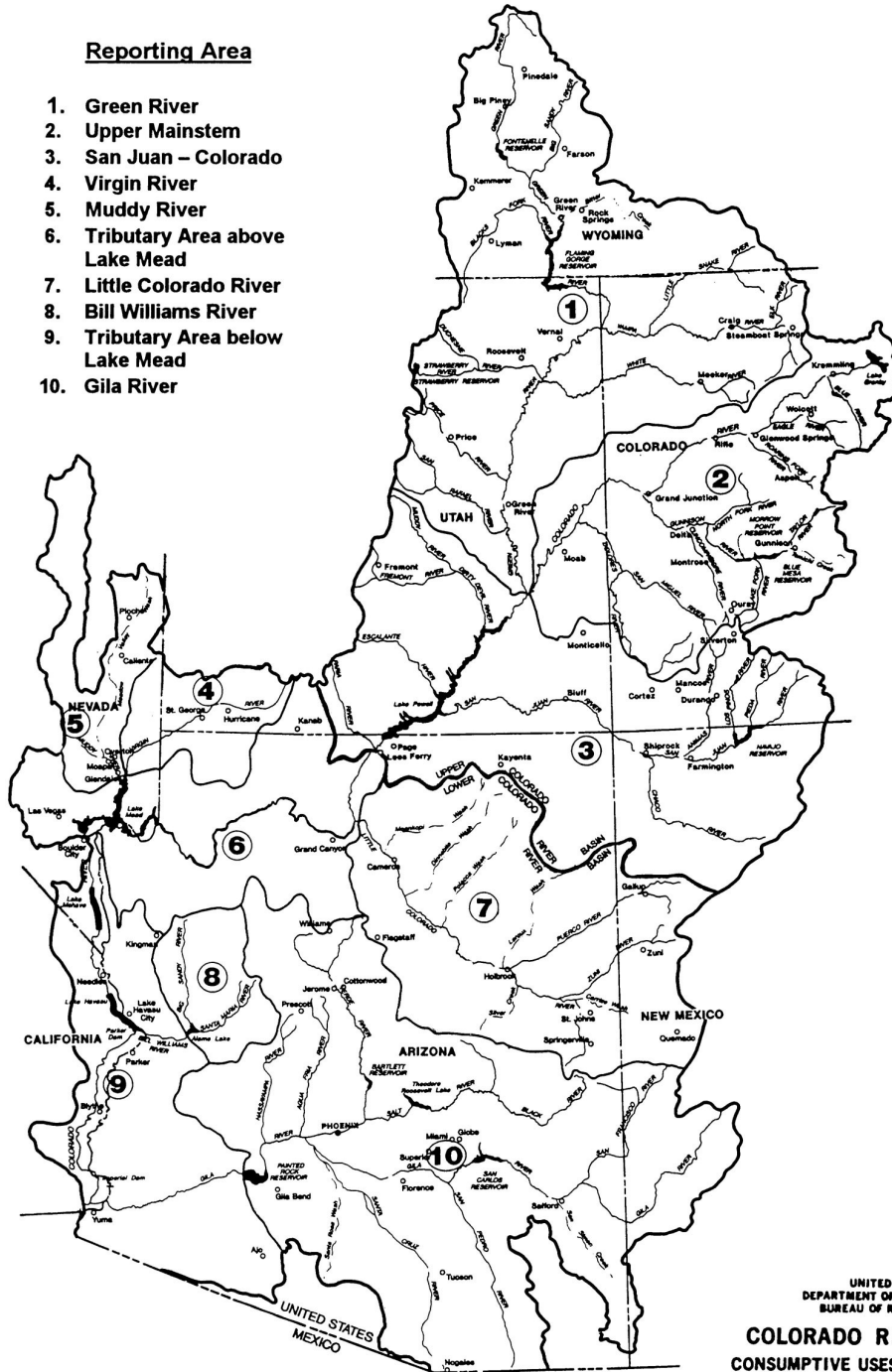
This report was prepared pursuant to the Colorado River Basin Project Act of 1968, Public Law 90-537. The act directs the Secretary of the Interior to "make reports as to the annual consumptive uses and losses of water from the Colorado River System after each successive 5-year period, beginning with the 5-year period starting October 1, 1970 Such reports will be prepared in consultation with the States of the Lower Basin individually and with the Upper Colorado River Commission and will be transmitted to the President, the Congress, and to the Governors of each State signatory to the Colorado River Compact."

This report reflects the Department of the Interior's best estimate of actual consumptive uses and losses within the Colorado River Basin. The reliability of the estimate is affected by the availability of data and the current capabilities of data evaluation.

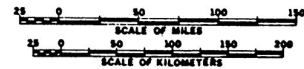
REPORTING AREA MAP

Reporting Area

1. Green River
2. Upper Mainstem
3. San Juan – Colorado
4. Virgin River
5. Muddy River
6. Tributary Area above Lake Mead
7. Little Colorado River
8. Bill Williams River
9. Tributary Area below Lake Mead
10. Gila River



UNITED STATES
 DEPARTMENT OF THE INTERIOR
 BUREAU OF RECLAMATION
COLORADO RIVER SYSTEM
 CONSUMPTIVE USES & LOSSES REPORT
 PUBLIC LAW 90-537



SUMMARY

This report presents estimates of the consumptive uses and losses from the Colorado River System for each calendar year from 1996 through 2000. It includes a breakdown of the beneficial consumptive use by major types of use, by major tributary streams, and, where possible, by individual States.

The Colorado River rises in the Rocky Mountains of Colorado, flows southwesterly about 1,400 miles and terminates in the Gulf of California. Its drainage area of 242,000 square miles in this country represents one-fifteenth of the area of the United States. Its water is used for irrigation, municipal and industrial purposes, electric power generation, mineral activities, livestock, fish and wildlife, and recreation. Large amounts are exported from the system to adjoining areas. The following table summarizes annual water use from the system by basins and States, including water use supplied by ground-water overdraft. Distribution of water use by types of use from the various reporting areas is contained within the body of the report.

Table: Summary
Colorado River System: Water Use by States, Basins, and Tributaries¹
(1,000 acre-feet)

STATE AND BASIN OF USE	1996	1997	1998	1999	2000	Average 1996-00
ARIZONA						
Upper Basin	31	31	34	36	38	34
Lower Basin Mainstem	2,553	2,697	2,423	2,580	2,643	2,578
Lower Basin Tributaries	<u>2,506</u>	<u>2,178</u>	<u>2,205</u>	<u>2,101</u>	<u>2,113</u>	<u>2,221</u>
TOTAL	5,090	4,906	4,662	4,717	4,794	4,833
CALIFORNIA						
Lower Basin Mainstem	<u>5,226</u>	<u>5,162</u>	<u>4,953</u>	<u>5,107</u>	<u>5,258</u>	<u>5,141</u>
TOTAL	5,226	5,162	4,953	5,107	5,258	5,141
COLORADO						
Upper Basin	<u>2,088</u>	<u>1,966</u>	<u>2,032</u>	<u>1,853</u>	<u>2,383</u>	<u>2,064</u>
TOTAL	2,088	1,966	2,032	1,853	2,383	2,064
NEVADA						
Lower Basin Mainstem	249	242	245	289	320	269
Lower Basin Tributaries	<u>143</u>	<u>136</u>	<u>104</u>	<u>104</u>	<u>130</u>	<u>123</u>
TOTAL	392	378	349	393	450	392
NEW MEXICO						
Upper Basin	403	452	426	402	363	383
Lower Basin Tributaries	<u>26</u>	<u>26</u>	<u>29</u>	<u>26</u>	<u>26</u>	<u>27</u>
TOTAL	385	447	417	398	347	410
UTAH						
Upper Basin	767	768	849	858	774	803
Lower Basin Tributaries	<u>152</u>	<u>148</u>	<u>127</u>	<u>137</u>	<u>123</u>	<u>137</u>
TOTAL	919	916	976	995	897	940
WYOMING						
Upper Basin	<u>496</u>	<u>442</u>	<u>390</u>	<u>415</u>	<u>421</u>	<u>433</u>
TOTAL	496	442	390	415	421	433
OTHER²						
Upper Basin	671	685	697	696	662	682
Lower Basin	<u>1,353</u>	<u>1,289</u>	<u>1,062</u>	<u>1,458</u>	<u>1,440</u>	<u>1,321</u>
TOTAL	2,024	1,974	1,759	2,154	2,102	2,003
COLORADO RIVER SYSTEM						
Upper Basin	3,759	3,633	3,702	3,538	3,953	3,717
Lower Basin Mainstem	8,028	8,101	7,621	7,977	8,222	7,989
Lower Basin Tributaries	2,827	2,488	2,465	2,368	2,391	2,508
Other	<u>2,024</u>	<u>1,974</u>	<u>1,759</u>	<u>2,154</u>	<u>2,102</u>	<u>2,003</u>
TOTAL	16,638	16,196	15,547	16,037	16,668	16,217
WATER PASSING TO MEXICO						
Treaty	1,500	1,700	1,700	1,700	1,700	1,660
Minutes 218, 241, and 242	112	89	114	79	108	100
Regulatory Waste	<u>5</u>	<u>1,173</u>	<u>3,018</u>	<u>1,194</u>	<u>337</u>	<u>1,146</u>
TOTAL	1,617	2,962	4,832	2,973	2,145	2,906
COLORADO RIVER SYSTEM GRAND TOTAL	18,256	19,158	20,379	19,010	18,813	19,123

¹ Consumptive uses and losses; includes water uses satisfied by ground-water overdraft (Tables C-2 through C-6).

² Mainstem reservoir evaporation in the Upper and Lower Basins.

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COLORADO RIVER SYSTEM CONSUMPTIVE USES AND LOSSES REPORT 1996-2000

INTRODUCTION

The Colorado River System is composed of portions of seven States--Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming. It has a drainage area of about 242,000 square miles and represents about one-fifteenth of the area of the United States.

This report incorporates annual estimates of consumptive uses and losses of water from the system from 1996 through 2000. Wherever available, water use reports prepared in accordance with legal requirements concerning the operation of the Colorado River were utilized. Base data needed to estimate onsite consumptive uses were taken largely from existing reports and studies and from ongoing programs. Where current data were not available, estimated values were developed by various techniques and reasoned judgment. In general, methodology followed the techniques normally used within the system for estimating water use.

Nothing in this report is intended to interpret the provisions of the Colorado River Compact (45 Stat. 1057), the Upper Colorado River Basin Compact (63 Stat. 31), the Water Treaty of 1944 with the United Mexican States (Treaty Series 994; 59 Stat. 1219), the decree entered by the Supreme Court of the United States in *Arizona vs. California, et al.* (376 U.S. 340), the Boulder Canyon Project Act (45 Stat. 1057), the Boulder Canyon Project Adjustment Act (54 Stat. 774; 43 U.S.C. 618a), the Colorado River Storage Project Act, (70 Stat. 105; 43 U.S.C. 620), or the Colorado River Basin Project Act (82 Stat. 885; 43 U.S.C. 1501).

AUTHORITY

The authority for this report is contained in Public Law 90-537, the Colorado River Basin Project Act of 1968. Title VI, Section 601(b)(1) of the Act reads as follows:

(b) The Secretary is directed to:

(1) Make reports as to the annual consumptive uses and losses of water from the Colorado River System after each successive 5-year period, beginning with the 5-year period starting October 1, 1970. Such reports will include a detailed break down of the beneficial consumptive use of water on a State-by-State basis. Specific figures on quantities consumptively used from the major tributary streams flowing into the Colorado River shall also be included on a State-by-State basis. Such reports will be prepared in

consultation with the States of the Lower Basin individually and with the Upper Colorado River Commission, and shall be transmitted to the President, the Congress, and to the Governors of each State signatory to the Colorado River Compact.

PLAN OF STUDY

The Plan of Study and Methods Manual for the Colorado River System Consumptive Uses and Losses Report 1985-1990 was prepared and submitted in July 1992. These procedures were generally followed in the preparation of this report. Any changes in methodology are presented in the Methodology and Data Adequacy section of this report.

STUDY REPORTING AREAS

The drainage area of the Colorado River System in the United States is approximately 242,000 square miles. The river originates in the Rocky Mountains of Colorado and Wyoming, flows southwest about 1,400 miles, and terminates in the Gulf of California. The system consists of portions of seven states: Arizona, California, Colorado, New Mexico, Nevada, Utah, and Wyoming. The drainage area was divided into nine subbasins for the purposes of this report.

The Colorado River Compact, signed November 24, 1922, was established because the Upper Basin States were concerned that any storage on the river would be put to use more rapidly by the Lower Basin States, thus allowing them to claim prior appropriative rights. The Upper Basin States wanted provisions for their future development.

The term "Upper Basin States" refers to the States of Colorado, New Mexico, Utah, and Wyoming. "Lower Basin States" refers to the States of Arizona, California, and Nevada. However, the Upper Colorado River Basin refers to the hydrologic boundaries. Lee Ferry is the division point between the Upper Colorado River Basin and the Lower Colorado River Basin. Therefore, the hydrologic boundaries include portions of Arizona in the Upper Colorado River Basins and portions of Utah and New Mexico in the Lower Colorado River Basin. Hydrologic boundaries are shown on the map on page ii.

The major tributary streams selected as reporting areas in the Upper Colorado River Basin are: Green River (Wyoming, Colorado, Utah), Upper Main Stem (Colorado, Utah), and San Juan-Colorado (Colorado, New Mexico, Utah, Arizona).

Five tributary areas in addition to the main stem were selected in the Lower Colorado River Basin: Little Colorado River (Arizona, New Mexico), Virgin River (Utah, Arizona), Muddy River (Nevada), Bill Williams River (Arizona), Gila River (Arizona, New Mexico), and remaining areas in Arizona, Nevada, and Utah. The outflow point and drainage area for each is shown in table C-1. The boundaries of the reporting areas are shown on the map on page ii. A brief description of each reporting area follows.

Upper Colorado River Basin

Green River (Wyoming-Colorado-Utah)

The Green River reporting area comprises approximately 44,800 square miles in southwestern Wyoming, northwestern Colorado, and northeastern and east-central Utah.

Principal tributaries of the Green River are Blacks Fork, New Fork, and Big Sandy Creek in southwestern Wyoming, Yampa and White Rivers on the western slope of the Continental Divide in northwestern Colorado, and the Price, Duchesne, and San Rafael Rivers in eastern Utah. These streams are fed by numerous headwater lakes.

The largest towns in the reporting area are Rock Springs and Green River in Wyoming, Vernal and Price in Utah, and Craig, Steamboat Springs, and Meeker in Colorado.

Mineral production is the major industry. Oil and natural gas are of primary importance, as are coal, gilsonite, asphalt, and trona (soda ash). Thermal electric power production is becoming an increasingly important industry.

Agriculture ranks near mineral production in importance to the local economy. Agricultural development is centered around livestock production, primarily beef cattle and sheep. Because of a short growing season, crop production is limited largely to small grain, hay, and pasture. These crops are used as winter livestock feed and complement the vast areas of public grazing lands.

Irrigation consumptive use accounts for about 72 percent of the total water use in the Green River reporting area exclusive of any share of main stem evaporation. Nearly 675,000 acres of land are irrigated in an average year. Large exports of water are made to the Great Basin in Utah.

Upper Main Stem (Colorado-Utah)

The Upper Main Stem reporting area is drained by the Colorado River and its tributaries above the mouth of the Green River. Principal tributaries are the Roaring Fork, Gunnison, and the Dolores Rivers. The Upper Main Stem reporting area consists of 26,200 square miles, with about 85 percent of the area in Colorado and the remainder in Utah.

Grand Junction, Montrose, and Glenwood Springs are the principal towns in the Colorado portion of the upper main stem of the Colorado River. Moab is the only major community in the Utah portion of the upper main stem of the Colorado River.

Mineral production is the predominant industry. This area is the Nation's chief source of molybdenum and is a major source of vanadium, uranium, lead, zinc, coal, and gilsonite. On the Upper Main Stem reporting area, as in that of the Green River, agriculture centers around production of livestock which feeds on irrigated lands to complement the large areas of rangeland. Somewhat increased diversification of crops occurs in the Upper Main Stem, however, with some major land areas devoted to corn, beans, potatoes, table vegetables, and fruit. This diversification is made possible by climatic and topographic conditions that create favorable air drainage and minimize frost damage.

Irrigation consumptive use accounts for about 55 percent of the water use in the Upper Main Stem reporting area exclusive of any share of main stem evaporation. In an average year approximately 540,000 acres of land are irrigated. Approximately, 28 percent of the water consumptively used is exported to serve agricultural and municipal needs on the Eastern slope of the Continental Divide in Colorado.

San Juan-Colorado (Colorado-New Mexico-Utah-Arizona)

The San Juan reporting area is drained by the Colorado River and its tributaries below the mouth of the Green River and above Lee Ferry, Arizona. The largest of the tributary streams is the San Juan River which heads on the western slope of the Continental Divide in southwestern Colorado. Principal tributaries of the San Juan River are the Navajo, Piedra, Los Pinos, Animas, and La Plata Rivers. The other main tributaries in the basin are the Dirty Devil, Escalante, and Paria Rivers, which drain a portion of the Eastern slope of the Wasatch Plateau in Utah. The reporting area includes about 38,600 square miles in portions of Utah, New Mexico, Arizona, and Colorado.

The largest towns are Durango and Cortez in Colorado, Monticello and Blanding in Utah, Farmington in New Mexico, and Page in Arizona.

Mining and agriculture form the economic base for the San Juan-Colorado reporting area. The agricultural development is similar to that of the Upper Main Stem where most of the cropland is devoted to livestock feeds except for the production of diversified market crops on lands with favorable air drainage. The main market crops are fruit, vegetables, and dry beans. Oil, natural gas, and coal are the most important minerals produced. Thermal electric power production is increasingly important to the economy of the area.

Irrigation accounts for the largest use of water, about 85 percent of the San Juan reporting area use, exclusive of any share of main stem evaporation. About 310,000 acres of land are irrigated in an average year.

Lower Colorado River Basin

Main Stem Below Lee Ferry, Arizona-California-Nevada

The Colorado River has a length of more than 700 miles and a drainage area of 132,300 square miles within the Lower Colorado River System in the United States. The dividing point between the Upper and Lower Basin is Lee Ferry. Diversions are made at Lake Mead to the rapidly expanding North Las Vegas-Las Vegas-Henderson-Boulder City area for municipal and industrial purposes. The river below Lake Mead courses through canyons and broad alluvial valleys interspersed with bordering groups of mountains. Lakes Mohave and Havasu provide flood control and regulatory storage below Lake Mead. Lake Mohave reregulates Hoover Dam releases for power production and for deliveries to Mexico. Lake Havasu also provides a forebay for pumped diversions to the Central Arizona Project (CAP) in Arizona and export to the Metropolitan Water District of Southern California.

Lesser structures downstream include Senator Wash, Laguna, Headgate Rock, Palo Verde, Imperial, and Morelos Dams. Senator Wash and Laguna Dams provide very limited amounts of reregulation capacity, while the others are used principally for diversions.

Diversions below Lake Mead for agriculture, municipal and industrial, power, export, and other purposes are of the magnitude of six million acre-feet annually. A portion of these diversions is satisfied from upstream return flows. Yuma and Lake Havasu City in Arizona and Needles and Blythe in California are the major cities along the main stem below Lake Mead. Current irrigated lands adjacent to the main stem are estimated to cover approximately 275,000 acres.

Tributary Area Above Lake Mead, Arizona-Nevada-Utah

Development away from the Colorado River main stem is limited by the availability of water and the rugged terrain.

Most of the irrigated lands in this area are located in the lower reach of the Virgin River and Las Vegas Valley in Nevada, on Kanab Creek in Arizona and Utah. Reporting period irrigated land averaged approximately 12,500 acres.

North Las Vegas, Las Vegas, Henderson, and Boulder City in Nevada, are the leading cities in the area.

Tributary Area Below Lake Mead, Arizona

As discussed above, development away from the Colorado River main stem is limited by the availability of water and the rugged terrain.

Most of the irrigated lands in this area are located in the lower portions of the Gila and Bill Williams Rivers in Arizona. Kingman and Williams in Arizona, are the leading cities.

Little Colorado River, Arizona-New Mexico

The Little Colorado River drainage area occupies a large part of northern Arizona and a portion of west-central New Mexico. It originates on the north slopes of the White Mountains about 20 miles above Springerville, Arizona. The river has a main stem length of about 356 miles and joins the Colorado River on the east boundary of Grand Canyon National Park about 78 miles downstream from Glen Canyon Dam.

A series of saline springs near the mouth of the Little Colorado River produces an estimated 160,000 acre-feet of water annually. The U.S. Geological Survey (USGS) gauging station near Cameron, Arizona, is located on the Navajo Indian Reservation about 45 miles upstream from the mouth. Streamflow is undependable and erratic and is subject to flash floods of considerable magnitude. Flow at the gauging station during the 1996-2000 period varied from 16,990 acre-feet in 1996 to 138,000 acre-feet in 1998. Only minor development of the ground water has occurred because of low yields and poor quality. Excessive erosion and sediment deposition plague the area.

Agriculture is concentrated along the main stem of the Little Colorado River in the upper reaches of the river, on Silver Creek, a southern tributary, and on the Zuni River in New Mexico. Current irrigated lands in the basin are estimated to average approximately 20,000 acres. Irrigated acreage in the basin is subject to variation because of frequent water shortages and inadequate storage facilities. Population is predominately rural with a relatively large Indian segment. Principal cities include Flagstaff, Winslow, and Holbrook in Arizona, and Gallup, Zuni, and Pueblo in New Mexico. Leading industries include tourism, recreation, manufacturing, mining, and forest management.

Virgin River, Arizona-Nevada-Utah

The Virgin River originates in western Kane County, Utah. It flows southwesterly through the southwest corner of Utah and the northwestern corner of Arizona and empties into the northern extremity of the Overton Arm of Lake Mead in Nevada. The selected outflow point is the long-term USGS gauging station at Littlefield, Arizona, which is about 36 miles upstream from Lake Mead and about 10 miles above the Arizona-Nevada State line. The river is fed chiefly from tributaries heading in the southern high plateaus and mountains in Utah. Several springs contribute water to the river at a relatively uniform rate. The two most significant of these springs are located near LaVerkin, Utah, and Littlefield, Arizona, and both are highly saline. Agricultural and municipal developments in Nevada below the selected outflow point are included in the "tributary area above Lake Mead".

The major irrigated areas are located in the LaVerkin-Hurricane-St. George-Santa Clara areas of Washington County, Utah, and in the Littlefield area of Mohave County, Arizona. Small irrigated areas are scattered throughout. Irrigated lands were estimated to average approximately 18,000 acres. Ground water has been developed to a limited degree. Population is predominately rural with St. George, Utah, being the principal city in the basin.

Muddy River, Nevada

The Muddy River, a tributary of the Virgin River prior to the existence of Lake Mead, originates from warm springs in northern Clark County, Nevada, about 10 miles northwest of Glendale. The river flows southeasterly about 30 miles and terminates at the northwestern extremity of the Overton Arm of Lake Mead near Overton, Nevada. Meadow Valley Wash, the major tributary of Muddy River, originates in northeastern Lincoln County and flows south to join the parent stream at Glendale. The USGS gauging station near Glendale is about 2.4 miles downstream from Meadow Valley Wash. The outflow varies little from year to year. Meadow Valley Wash, although perennial in the vicinity of Caliente, is normally dry in the last 50-mile reach above Glendale. Irrigated lands averaged approximately 20,000 acres. The entire basin is sparsely populated.

Bill Williams River, Arizona

The Bill Williams River is formed by the merngence of the Big Sandy and Santa Maria Rivers about 7.5 miles above Alamo Dam. The river above Alamo Dam drains an area of about 4,700 square miles from small, rough mountain ranges and intervening valleys in parts of Mohave, La Paz, and Yavapai Counties. Alamo Dam and Reservoir, primarily a flood

control structure completed in 1968, was built to protect downstream development along the Colorado River. A minimum pool is maintained for recreation and game management purposes. Releases up to a maximum of 2,000 ft/s from the allocated conservation pool above the minimum pool are coordinated with releases from main stem reservoirs. Releases from Alamo Dam and runoff from the intervening area flow westerly and enter at the lower end of Lake Havasu just above Parker Dam.

Irrigated lands are estimated to average approximately 5,000 acres. The limited development in the basin is dominated by copper mining at the unincorporated town of Bagdad. A large portion of the water supply in the basin is obtained from ground-water pumpage. Releases from Alamo Dam and Reservoir during the 1996-2000 period varied from 10,960 acre-feet in 1997 to 25,360 acre-feet in 1998.

Gila River, Arizona-New Mexico

The Gila River is the largest tributary to the Colorado River in the Lower Colorado River System. The drainage area extends from the Continental Divide in New Mexico to the river's mouth near Yuma, Arizona. Elevations in the basin range from nearly 12,000 feet in the Eastern mountains to about 150 feet at the mouth. The selected outflow point for the basin is at Painted Rock Dam, a flood control structure located about 20 miles west of Gila Bend, Arizona. The drainage area above Painted Rock Dam is about 50,900 square miles, of which 5,600 square miles are in New Mexico, 44,200 square miles are in Arizona, and 1,100 square miles in Mexico. The dam was constructed to protect agricultural and urban developments downstream.

Nearly three-fourths of the population of the Lower Colorado River System reside in the Gila River Basin in the metropolitan Phoenix and Tucson areas. Industry and recreation play a large part in the economy. About two-thirds of the agricultural development in the Lower Colorado River System is located in the Gila River Basin. This development is concentrated in the central area of Maricopa, Pinal, and Pima Counties and is supported to a large degree by a long-term overdraft of the ground-water resources. Estimated irrigated lands ranged between 625,000 and 718,000 acres for the reporting period and averaged 664,000 acres. Nearly all of the surface water resources in the basin have been developed for decades.

TERMINOLOGY

The Colorado River is not only one of the most highly controlled rivers in the world, but is also one of the most institutionally encompassed. A multitude of legal documents, known collectively as the "Law of the River," effect and dictate its management and operation. Major documents include:

- Colorado River Compact--1922
- Boulder Canyon Project Act--1928
- California Limitation Act--1929
- California Seven Party Agreement--1931
- Mexican Water Treaty--1944

Upper Colorado River Basin Compact--1948
Colorado River Storage Project Act--1956
United States Supreme Court Decree in Arizona vs. California--1964
Colorado River Basin Project Act--1968
Minute 242 of the International Boundary and Water Commission,
United States and Mexico--1973
Colorado River Basin Salinity Control Act--1974, amended 1984, 1995, and 1996

The Colorado River System is defined in the Colorado River Compact of 1922 as "...that portion of the Colorado River and its tributaries within the United States," whereas the Colorado River Basin is defined as "...all of the drainage area of the Colorado River System and all other territory within the United States of America to which waters of the Colorado River System shall be beneficially applied.". The compact divided the Colorado River Basin into two subbasins--the "Upper Basin" and the "Lower Basin," with Lee Ferry as the division point on the river. Lee Ferry, located in Arizona, is a point in the main stem 1 mile below the mouth of the Paria River. For the purpose of this report, the Great Divide Basin, a closed basin in Wyoming, and the White River, also a closed basin, in Nevada have not been considered as part of the Colorado River System since flows from these basins never reach the Colorado River. Diversions from the system to areas outside its drainage area are considered herein as exports and have not been classified by types of use.

Beneficial consumptive use is normally construed to mean the consumption of water brought about by human endeavors and in this report includes use of water for municipal, industrial, agricultural, power generation, export, recreation, fish and wildlife, and other purposes, along with the associated losses incidental to these uses.

The storage of water and water in transit may also act as losses on the system although normally such water is recoverable in time. Qualitatively, what constitutes beneficial consumptive use is fairly well understood; however, an inability to exactly quantify these uses has led to various differences of opinion. The practical necessity of administering the various water rights, apportionments, etc., of the Colorado River has led to definitions of consumptive use or depletions generally in terms of "how it shall be measured." The Upper Colorado River Basin Compact provides that the Upper Colorado River Commission is to determine the apportionment made to each State by "...the inflow- outflow method in terms of manmade depletions of the virgin flow at Lee Ferry...".

There is further provision that the measurement method can be changed by unanimous action of the Commission. In contrast, article I(A) of the decree of the Supreme Court of the United States in Arizona vs. California defines, for the purpose of the decree, "Consumptive use means diversions from the stream less such return flows thereto as are available for consumptive use in the United States or in satisfaction of the Mexican Treaty obligation.". Nearly all the water exported from the Upper Colorado River System is measured; however, the remaining beneficial consumptive use, for the most part, must be estimated using theoretical methods and techniques. In the Lower Colorado River System tributaries to the main stem, similar methods must be employed to determine the amount of water consumptively used.

Reservoir evaporation loss is a consumptive use associated with the beneficial use of water for other purposes. For the purpose of this report, main stem reservoir evaporation is carried as a separate item for the Upper and Lower Basins.

Channel losses within the system are normally construed to be the consumptive use by riparian vegetation along the stream channel (or conveyance route) and the evaporation from the stream's water surface and wetted materials. Seepage from the stream normally appears again downstream or reaches a ground-water aquifer where it may be usable again. A decided lack of data and acceptable methodology, along with the intermittent flow characteristics of many Southwest streams, combine to make a reasonable determination of channel loss difficult. Channel losses have not been estimated for this report within the Upper and Lower Basins.

METHODOLOGY AND DATA ADEQUACY

This report is based almost entirely on data obtained from ongoing programs and current reports. Quantitative measurements of water use were used wherever available, but the majority of the basin water use was theoretically calculated. The following sections describe these calculations for both the Lower Colorado River Main Stem and the Upper and Lower Colorado River Basin tributaries.

Colorado River Basin Tributaries

In the tributary areas of the basin, records of diversions and return flows are not complete enough to allow direct calculation of consumptive water use. Theoretical and indirect methods of estimating consumptive use must then be relied upon. In the New Mexico portion of the Colorado River Basin, the annual consumptive use of water is reported by the New Mexico Interstate Stream Commission. For the Arizona, Colorado, Nevada, Utah and Wyoming portions of the Colorado River Basin, the annual consumptive use of water was estimated using the following methodologies.

Agriculture

The percentages of irrigation consumptive use range between 56 and 86 percent for the Upper Basin tributaries and between 67 and 73 percent for the Lower Basin tributaries. Both percent ranges exclude main stem evaporation. The annual irrigated acreage of most crops grown within each reporting area was estimated from information published in the yearly State Agriculture Statistics, 1987 National Census of Agriculture (since the State statistics do not include pasture land), and from Geographic Information System (GIS) irrigated acreage data available for Colorado, Utah, and Wyoming. The total irrigated acreage values for the Upper and Lower Basins are shown in tables UC-7 and LC-9, respectively.

Since most of these data were presented on a county basis, it was necessary to separate them into smaller reporting areas for computational purposes. This was accomplished using land inventory maps and relationships developed for the comprehensive framework study.

These subbasins generally follow tributary stream basin and State boundaries. A representative climatic station was selected for each subbasin. Using historical records of temperature, precipitation, and frost dates, a consumptive use rate was computed for each major crop in each of the reporting years. For the purpose of this report, the consumptive use rates were computed using the modified Blaney-Criddle evapotranspiration formula in the version described in the Soil Conservation Service Technical Release No. 21, "Irrigation Water Requirements," revised September 1970. Irrigation consumptive rates were determined by subtracting the effective precipitation from the consumptive use rates. Effective precipitation for the Upper Basin was computed using the Soil Conservation Service method. This method is referenced in "SCS Technical Release No. 21." (It should be noted that this method estimates less effective precipitation than the Reclamation method. Previous reports used the Reclamation method of computing effective precipitation.) The values of irrigation consumptive use rates were applied to the estimates of irrigated acreage to yield the final values of irrigation consumptive use.

An exception to this procedure occurred in the Lower Basin in the "low desert" regions of Arizona where a regionally calibrated Blaney-Criddle formula was used to estimate the crop consumptive use. This departure was based on the research results of Leonard Erie, et al. Seasonal crop consumptive use factors ("K") for the lower elevation desert areas were selected from Conservation Research Report Number 29, "Consumptive Use of Water by Major Crops in the Southwestern United States", issued May 1982 by the United States Department of Agriculture. Effective precipitation was derived from criteria developed for the area by Wayne D. Criddle, former Utah State Engineer.

These theoretical consumptive use calculations were based on the assumption of full water supply during the crop growing season. However, it is estimated that in an average year, about 37 percent of the irrigated lands in the Upper Basin receive less than a full supply of water, either due to lack of distribution facilities or junior water rights. The degree to which these lands suffer shortages varies widely from year to year, depending in large part on the magnitude of runoff. For this study, an estimate of the short supply service lands was made for each subbasin, primarily on the basis of reports and investigations collected for the comprehensive framework study. A streamflow gauging station was selected within each subbasin and the magnitude of the recessional portion of the annual hydrograph was used as an index to select the date at which consumptive use calculations should be terminated for the short supply lands.

Comprehensive framework studies of the incidental consumptive use of water associated with irrigation indicated that this use varied between 5 and 29 percent of the irrigation consumptive use, depending upon the location of the study area within the Colorado Basin. These percentages were used in the Upper Basin and an average value of 20 percent was used in the Lower Basin to adjust the calculated consumptive use.

The agricultural data is generally adequate for use in this report. Each state prepared annual county irrigated acreage estimates of the harvested crops during the reporting period. These statistics are assumed to be reliable. The irrigated pasture values were based largely on the 1992 and 1997 National Census of Agriculture in the Lower Basin states since the State statistics do not include pasture land. Because of the length of time between reporting dates, this item needs to be considerably strengthened. In the Upper Basin states, GIS irrigated acreage data were used to estimate irrigated pasture lands. Other areas of agricultural data collection that need to be updated and verified are: (1) the consumptive water use of lands that receive less than a full seasonal supply of irrigation water and the areal extent of these lands, and (2) the amount of incidental seepage and phreatophytic losses associated with irrigation.

Reservoir Evaporation

A comprehensive listing was developed of all reservoirs in the Colorado River Basin which included the latitude, longitude, elevation, and surface area at total capacity for each reservoir.

Monthly content records were obtained for those reservoirs for which records are available. The average annual water-surface area was determined for each year of the reporting period. For those reservoirs lacking records, a "fullness factor" was estimated on the basis of reservoir use and historical hydrologic conditions. These "fullness factors" were then used to obtain estimates of average annual water surface area for the unreported reservoirs. For all of the basin, annual free water surface (FWS) evaporation rates were used to determine reservoir evaporation.

The FWS evaporation value was taken from NOAA Technical Report NWS 33, "Evaporation Atlas for the Contiguous 48 United States", June 1982, Map 3 of 4 : Annual FWS Evaporation based on the reservoir location information. An account was taken of precipitation and runoff salvage to determine net evaporation rates. The net evaporation rates were applied to the estimates of average annual water-surface area to yield the values of annual reservoir evaporation.

An exception to this procedure was the determination of evaporation from what are called the main stem reservoirs shown in table UC-1. Predetermined average evaporation rates were applied to historical surface areas to yield values of evaporation on a monthly basis.

Ground Water

Currently, all ground-water pumpage is counted as consumptive use charged against the Colorado River Basin. Obviously, this is not necessarily true. Depending on the location and depth of the well and what types of soils are present in the area, it is possible that little or none of the water pumped would have contributed to the Colorado River System for hundreds or even thousands of years. It has recently been proposed that an interagency study team be put together consisting of personnel from various State Engineers Offices, Bureau of Reclamation, and any other pertinent agencies. This study team would establish guidelines for computing what amounts of ground water pumped should be charged against the Colorado River Basin. These guidelines will need to be established on an area by area

basis rather than one set percentage for the entire basin. Results of this study will be incorporated in future Consumptive Uses and Losses Reports. However, until these guidelines are established, the Consumptive Uses and Losses Reports will continue to report all ground-water pumpage as depletion from the system.

Currently, the Arizona portion of the Upper Basin is the only part of the basin that reports ground-water pumpage as consumptive use. Although significant ground-water usage occurs in Arizona, Nevada, and New Mexico, for purposes of this report ground-water overdraft has not been taken into account in the computation of tributary consumptive use. It should be noted that present ground-water overdraft in Arizona has been estimated to be approximately 2.2 million acre-feet per year.

Stockpond Evaporation and Livestock

Stockpond surface areas were estimated from the May 1975 Soil Conservation Service (SCS) publication, "Livestock Water Use." The subbasin stockpond areas were subdivided by State and basin using the livestock population distribution. The same procedure used to calculate the unmeasured reservoir evaporation was used to estimate the stockpond evaporation.

Livestock population data was taken from annual State Agriculture Statistics and the 1992 and 1997 Census of Agriculture. Livestock population data included cattle, sheep, horses, and hogs. Consumption rates for the various livestock were derived from various reports, including the SCS publication, "Livestock Water Use," May 1975.

Stockpond and livestock data are adequate to prepare an estimate of this consumptive use. Considering the small amount of water use, any refuting effort would be best spent on the irrigation or evaporation categories.

Mineral Resources

Arizona leads the nation in the production of copper and the net water use for its production represents about 90 percent of the total water use for mineral resources in the Lower Basin. The Upper Basin uses water in the production of numerous minerals in addition to energy-related materials such as oil and natural gas.

Estimates of the water consumptively used were based largely on phone surveys conducted by the U.S. Geological Survey in 1995 and 2000 that quantified water use in the basin. Intermediate years were interpolated between 1995 and 2000.

Thermal Electric Power

The net use of water for the production of thermal electric energy from the tributaries of the Colorado River Basin was estimated from records obtained from the various power companies in the Basin. These records were complete and were judged to be accurate.

Municipal and Industrial

The basis for estimating municipal and industrial uses was the urban and rural population within the reporting areas. Preparation of annual population estimates was guided by the 2000 census, various State and county statistical reviews, and reports that included population estimates for local areas. The yearly population estimates for the Upper and Lower Basins are shown in tables UC-8 and LC-10, respectively. Water supply withdrawal for urban, rural, commercial, industrial, and public uses were taken from data collected by the USGS and summarized in "Estimated Use of Water in the United States in 1995", USGS Circular 1200 and "Estimated Use of Water in the United States in 2000", USGS Circular 1268. This information was reported by county and state for 1995 and 2000. The estimates for 1996-2000 were computed using a straight-line interpolation between the 1995 and 2000 values.

The population of the Colorado River System, estimated at nearly 5.1 million in 1990, has increased to approximately 7.5 million in 2000. A large portion of the population resides within Maricopa and Pima Counties, Arizona, and in Clark County, Nevada. Twenty percent of the Upper Basin and about 10 percent of the Lower Basin population was classified as rural with a significantly smaller per capita use of water. Both the urban and rural areas have the mutual problem of providing an adequate current and future water supply for a growing population in a water-short area. As a result of almost continuous studies concerning these problems, adequate production and effluent records are usually available to adequately assess water use.

Transbasin Diversions

Nearly all the transbasin diversions both out of and into the Colorado River System were measured and reported by the Geological Survey, or local water commissioners and users. The remainder were estimated on the basis of past records and capacity of facilities. Due to the high degree of measurement, this area of basin consumptive use is considered to be quite accurately determined.

Lower Colorado River Main Stem

The annual consumptive use of water from the Colorado River main stem by the States and exports from the system were taken from the Reclamation annual report entitled "Compilation of Records in Accordance with Article V of the Decree of the United States in Arizona vs. California."

Gross evaporation from Lake Mead is estimated by the USGS and published in its annual Water Resources Data reports. Net evaporation from Lake Mead is estimated by subtracting precipitation at nearby Boulder City, Nevada, from the gross evaporation. Net evaporation from Lake Mohave and Havasu and Senator Wash Reservoir was derived from evapotranspiration rates and evaporation factors developed by Dr. Marvin Jensen for the region.

The annual land use, water supply, and water use information being gathered for the operation, maintenance, and administration of the Colorado River main stem below Lee Ferry is believed to be generally adequate in quantity, quality, and extent. These data are under constant review and are being continually upgraded. Studies and programs are in progress to remedy a lack of data on return flows from main stem diversions.

BENEFICIAL CONSUMPTIVE USES AND LOSSES

A summary table of the Colorado River System total annual water uses, 1996 through 2000, by states and water flowing to Mexico is shown on page iv. Tables C-2 through C-6 show on a yearly basis the same information broken down by State, basin, and type of use. Water use within the selected reporting areas is discussed below.

Upper Colorado River Tributaries

Summaries of estimated annual consumptive uses and losses in the Upper Colorado River Basin for each of the reporting years, broken down by State, reporting area, and type of use are shown in tables UC-2 through UC-6.

Estimated main stem reservoir evaporation is shown in table UC-1. Technically, these are not all main stem reservoirs but are reservoirs that participate in the Colorado River Storage Project (CRSP). The Upper Colorado River Commission designates which reservoirs in the CRSP have evaporation losses charged to the State and which have losses charged to the basin as a whole. Reservoirs listed in table UC-1 are those to be charged to the basin as a whole. These reservoir evaporation losses average 682,400 acre-feet per year or approximately 15 percent of all Upper Basin uses.

Upper Basin consumptive use varied between 4.2 million and 4.6 million and averaged 4.4 million acre-feet per year for the reporting period, 1996 through 2000. Agricultural uses accounted for about 60 percent of the total Upper Basin consumptive uses and losses. Irrigated acreage fluctuated very little during this period, ranging between 1.49 million acres and 1.59 million acres, and averaged 1.54 million acres per year. Variation in consumptive use during the reporting period was largely due to year-to-year changes in climatic conditions.

Transbasin exports, the second largest Upper Basin use, on the average accounted for 16 percent of Upper Basin total use, showed year by year variation during the reporting period ranging from a high of 813,300 acre-feet in 1997 to a low of 681,900 acre-feet in 1999. Water uses for thermal electric power generation remained fairly constant, averaging about 165,200 acre-feet per year, which represents about 4 percent of consumptive use in the Upper Basin.

Lower Colorado River Main Stem

Table LC-1 shows main stem reservoir evaporation and table LC-3 shows water uses along the lower Colorado River main stem and flood plain including water passing to Mexico. Water passing to Mexico is made up of deliveries in satisfaction of the Treaty, deliveries made pursuant to Minute No. 242, Gila River flood releases, regulatory waste and anticipatory flood control releases from the main stem. The latter three are combined as excess releases in table LC-3. The total deliveries to Mexico and for this reporting period, is slightly more than 14.5 million acre-feet. Over 33 percent of this total was delivered in 1998.

Lower Colorado River Main Stem consumptive use varied between 7.6 and 8.2 million acre-feet per year for the reporting period, 1996 through 2000.

Annual average main stem reservoir evaporation consumed approximately 1.3 million acre-feet.

Transbasin diversions continued to be the single highest consumer. For the current reporting period, transbasin diversions accounted for approximately 75 percent of the Lower Colorado River main stem depletions, or 6.0 million acre-feet per year.

Lower Colorado River Tributaries

Tables LC-4 through LC-8 show annual water uses within states by tributary and type of use. Lower Basin tributaries net consumptive use was estimated to be about 2.8 million acre-feet in 1996 to 2.4 million acre-feet in 19998. The average for 1996-2000 was approximately 2.5 million acre-feet. Central Arizona Project diversions from the Lower Colorado River Main Stem satisfy an additional 1.3 million acre-feet per year of Lower Basin Tributaries consumptive use in Arizona.

Significant ground-water usage occurs in Arizona, Nevada, and New Mexico. For the purpose of this report, ground-water overdraft has not been taken into account in the computation of tributary consumptive use. Also, tributary channel loss and salvage were not evaluated. However, it should be noted that present ground-water overdraft in Arizona has been estimated to be approximately 2.2 million acre-feet per year.

Consumptive use for the irrigation of crops represents about 63 percent of the total water use in the Lower Colorado tributary areas. Estimated annual consumptive use for the Lower Basin during the 5-year period averaged about 3.34 acre-feet per acre, varying from approximately 1.1 acre-feet per acre in parts of New Mexico to more than five acre-feet in the western portion of the basin. Irrigated lands for the reporting period averaged 750,000 acres.

The consumptive use of water for municipal and industrial purposes is estimated to have averaged about 0.9 million acre-feet or 23 percent of the total water use in the Lower Colorado tributary areas over the 1996-2000 reporting period.

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**Table C-1
Drainage Area of the Colorado River System by State and Mexico by Major Tributary Streams.**

(1,000 Square Miles)

Major Tributary Streams and their Selected Outflow Points	Wyoming	Colorado	Utah	New Mexico	Arizona	Nevada	California	TOTAL	Mexico
Green River at Colorado River confluence, Utah (subbasin 1)	17.1	10.6	17.1	-	-	-	-	44.8	-
Upper Main Stem at Green River confluence, Utah (subbasin 2)	-	22.2	4.0	-	-	-	-	26.2	-
San Juan - Colorado at Lee Ferry, Arizona (subbasin 3)	-	5.8	16.2	9.7	6.9	-	-	38.6	-
Little Colorado River near Cameron, Arizona (subbasin 9)	-	-	-	5.3	21.2	-	-	26.5	-
Virgin River at Littlefield, Arizona	-	-	3.0	-	1.9	0.2	-	5.1	-
Muddy River near Glendale, Nevada (subbasin 4)	-	-	-	-	-	6.8	-	6.8	-
Bill Williams River below Alamo Dam, Arizona (subbasin 7)	-	-	-	-	4.7	-	-	4.7	-
Gila River below Painted Rock Dam, Arizona (subbasin 8)	-	-	-	5.6	44.2	-	-	49.8	1.1
Mainstream and Remaining Areas in Lower Basin (subbasin 6)	-	-	0.6	-	28.3	6.9	3.6	39.4	0.1
Colorado River System at Southerly International Boundary	17.1	38.6	40.9	20.6	107.2	13.9	3.6	241.9	1.2
Colorado River System above Lee Ferry	17.1	38.6	37.3	9.7	6.9	-	-	109.6	-
Colorado River System below Lee Ferry	-	-	3.6	10.9	100.3	13.9	3.6	132.3	1.2

Table C-2
Summary of Estimated Water Use by States and the Types of Use
1996

(1,000 acre-feet)

State	Estimated Beneficial Consumptive Uses and Losses ¹						TOTAL
	Reservoir Evaporation	Irrigated Agriculture ²	Municipal and Industrial ³	Export Outside System	Export Within System	Unmeasured Return Flow	
Arizona	208.0	4,182.2	857.7	0.0	4.0	(162.0)	5,089.9
California	0.0	601.6	2.7	4,718.4	0.0	(96.5)	5,226.2
Colorado	79.6	1,469.2	54.6	484.3	0.0	0.0	2,087.7
Nevada	13.3	120.1	263.1	0.0	(4.0)	(0.7)	391.8
New Mexico	52.0	222.9	68.7	59.3	0.0	0.0	402.9
Utah	55.7	656.5	79.7	127.3	0.0	0.0	919.2
Wyoming	33.1	396.1	47.5	18.8	0.0	0.0	495.5
Other ⁴	2,024.3	0.0	0.0	0.0	0.0	0.0	2,024.3
Colorado River System Total	2,466.0	7,648.6	1,374.0	5,408.1	0.0	(259.2)	16,637.5

¹ From Tables UC-1, UC-2, LC-1, and LC-2.

² Includes livestock water use and stockpond evaporation.

³ Includes water uses for thermal electric power generation and mineral resources.

⁴ Reservoir evaporation represents main stem reservoir evaporation in the Upper Basin and Lower Basin and main stem channel losses for the Lower Basin. Exports outside the system represent water passing to Mexico.

Table C-3
Summary of Estimated Water Use by States and the Types of Use
1997

(1,000 acre-feet)

Estimated Beneficial Consumptive Uses and Losses ¹							
State	Reservoir Evaporation	Irrigated Agriculture ²	Municipal and Industrial ³	Export Outside System	Export Within System	Unmeasured Return Flow	TOTAL
Arizona	165.2	4,008.5	885.2	0.0	4.1	(156.9)	4,906.1
California	0.0	512.4	2.5	4,735.2	0.0	(88.2)	5,161.9
Colorado	79.0	1,307.6	56.1	523.5	0.0	0.0	1,966.2
Nevada	11.8	96.7	274.7	0.0	(4.1)	(0.8)	378.3
New Mexico	41.6	199.4	67.8	143.2	0.0	0.0	452.0
Utah	51.1	657.0	75.7	132.1	0.0	0.0	915.9
Wyoming	34.5	344.0	47.7	15.9	0.0	0.0	442.1
Other ⁴	1,973.9	0.0	0.0	0.0	0.0	0.0	1,973.9
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Colorado River System Total	2,357.1	7,125.6	1,409.7	5,549.9	0.0	(245.9)	16,196.4

¹ From Tables UC-1, UC-2, LC-1, and LC-2.

² Includes livestock water use and stockpond evaporation.

³ Includes water uses for thermal electric power generation and mineral resources.

⁴ Reservoir evaporation represents main stem reservoir evaporation in the Upper Basin and Lower Basin and main stem channel losses for the Lower Basin. Exports outside the system represent water passing to Mexico.

Table C-4
Summary of Estimated Water Use by States and the Types of Use
1998

(1,000 acre-feet)

State	Estimated Beneficial Consumptive Uses and Losses ¹						TOTAL
	Reservoir Evaporation	Irrigated Agriculture ²	Municipal and Industrial ³	Export Outside System	Export Within System	Unmeasured Return Flow	
Arizona	185.7	3,702.9	912.7	0.0	4.0	(143.8)	4,661.5
California	0.0	531.1	2.0	4,512.1	0.0	(92.0)	4,953.2
Colorado	89.9	1,479.3	59.2	403.4	0.0	0.0	2,031.8
Nevada	12.2	79.4	262.1	0.0	(4.0)	(0.8)	348.9
New Mexico	46.8	212.3	69.1	97.5	0.0	0.0	425.7
Utah	56.5	716.1	78.9	125.0	0.0	0.0	976.5
Wyoming	34.3	285.5	53.9	16.7	0.0	0.0	390.4
Other ⁴	1,758.8	0.0	0.0	0.0	0.0	0.0	1,758.8
Colorado River System Total	2,184.2	7,006.6	1,437.9	5,154.7	0.0	(236.6)	15,546.8

¹ From Tables UC-1, UC-2, LC-1, and LC-2.

² Includes livestock water use and stockpond evaporation.

³ Includes water uses for thermal electric power generation and mineral resources.

⁴ Reservoir evaporation represents main stem reservoir evaporation in the Upper Basin and Lower Basin and main stem channel losses for the Lower Basin. Exports outside the system represent water passing to Mexico.

**Table C-5
Summary of Estimated Water Use by States and the Types of Use
1999**

(1,000 acre-feet)

State	Estimated Beneficial Consumptive Uses and Losses ¹						TOTAL
	Reservoir Evaporation	Irrigated Agriculture ²	Municipal and Industrial ³	Export Outside System	Export Within System	Unmeasured Return Flow	
Arizona	178.4	3,734.8	947.4	0.0	4.2	(148.3)	4,716.5
California	0.0	556.8	2.6	4,634.8	0.0	(87.2)	5,107.0
Colorado	90.4	1,294.5	59.5	409.0	0.0	0.0	1,853.4
Nevada	13.0	77.6	308.5	0.0	(4.2)	(1.6)	393.3
New Mexico	41.0	172.9	68.5	119.8	0.0	0.0	402.2
Utah	58.7	717.7	79.2	139.5	0.0	0.0	995.1
Wyoming	34.9	316.0	49.2	15.0	0.0	0.0	415.1
Other ⁴	2,154.2	0.0	0.0	0.0	0.0	0.0	2,154.2
Colorado River System Total	2,570.6	6,870.3	1,514.9	5,318.1	0.0	(237.1)	16,036.8

¹ From Tables UC-1, UC-2, LC-1, and LC-2.

² Includes livestock water use and stockpond evaporation.

³ Includes water uses for thermal electric power generation and mineral resources.

⁴ Reservoir evaporation represents main stem reservoir evaporation in the Upper Basin and Lower Basin and main stem channel losses for the Lower Basin. Exports outside the system represent water passing to Mexico.

Table C-6
Summary of Estimated Water Use by States and the Types of Use
2000

(1,000 acre-feet)

State	Estimated Beneficial Consumptive Uses and Losses ¹						TOTAL
	Reservoir Evaporation	Irrigated Agriculture ²	Municipal and Industrial ³	Export Outside System	Export Within System	Unmeasured Return Flow	
Arizona	176.6	3,790.3	992.4	0.0	4.5	(169.4)	4,794.4
California	0.0	601.8	1.8	4,755.7	0.0	(100.9)	5,258.4
Colorado	90.8	1,650.4	56.0	585.4	0.0	0.0	2,382.6
Nevada	14.0	98.4	343.8	0.0	(4.5)	(2.1)	449.6
New Mexico	51.5	197.8	70.0	43.7	0.0	0.0	363.0
Utah	56.8	615.9	79.2	145.2	0.0	0.0	897.1
Wyoming	31.3	326.7	45.9	17.2	0.0	0.0	421.1
Other ⁴	2,102.1	0.0	0.0	0.0	0.0	0.0	2,102.1
Colorado River System Total	2,523.1	7,281.3	1,589.1	5,547.2	0.0	(272.4)	16,668.3

¹ From Tables UC-1, UC-2, LC-1, and LC-2.

² Includes livestock water use and stockpond evaporation.

³ Includes water uses for thermal electric power generation and mineral resources.

⁴ Reservoir evaporation represents main stem reservoir evaporation in the Upper Basin and Lower Basin and main stem channel losses for the Lower Basin. Exports outside the system represent water passing to Mexico.

Table UC-1
Upper Colorado River Basin
Estimated Main Stem Reservoir Evaporation ¹
1996-2000

(1,000 acre-feet)

Reservoir	Evaporation					Average
	1996	1997	1998	1999	2000	
Flaming Gorge	79.9	82.6	83.0	81.3	76.1	80.6
Blue Mesa	8.7	8.4	8.2	8.7	8.4	8.5
Morrow Point	0.8	0.8	0.8	0.8	0.8	0.8
Lake Powell	582.0	592.7	605.3	605.6	576.9	592.5
TOTAL	671.4	684.5	697.3	696.4	662.2	682.4

¹ Undistributed by States. Evaporation determined using average historical evaporation rates.

Table UC-2
Upper Colorado River Basin
Estimated Water Use within States, by Major Tributaries and Types of Use
1996

(1,000 acre-feet)												
State	Tributary	Reservoir Evaporation ¹	Agriculture			Municipal and Industrial				Export		TOTAL
			Irrigation	Stockpond Evaporation & Livestock	Subtotal	Mineral Resources	Thermal Electric Power	Other ²	Subtotal	Outside System	Within System	
Arizona	San Juan - Colorado Rivers	4.0	0.8	0.9	1.7	0.0	21.4	4.3	25.7	0.0	0.0	31.4
Colorado	Green River	5.6	168.2	3.2	171.4	0.7	16.9	2.8	20.4	0.0	2.0	199.4
	Upper Main Stem	64.9	963.1	7.9	971.0	3.2	1.6	24.2	29.0	484.0	168.3	1,717.2
	San Juan - Colorado Rivers	9.1	321.6	5.2	326.8	0.1	0.0	5.1	5.2	0.3	(170.3)	171.1
	TOTAL	79.6	1,452.9	16.3	1,469.2	4.0	18.5	32.1	54.6	484.3	0.0	2,087.7
New Mexico	San Juan - Colorado Rivers	46.2	208.2	4.4	212.6	1.2	43.5	14.5	59.2	58.5	0.0	376.5
Utah	Green River	42.6	443.9	4.9	448.8	2.6	37.8	11.0	51.4	131.3	0.0	674.1
	Upper Main Stem	1.4	12.8	0.2	13.0	0.9	0.0	1.5	2.4	0.0	0.0	16.8
	San Juan - Colorado Rivers	6.7	65.0	3.9	68.9	1.8	0.0	3.6	5.4	(4.5)	0.0	76.5
	TOTAL	50.7	521.7	9.0	530.7	5.3	37.8	16.1	59.2	126.8	0.0	767.4
Wyoming	Green River	33.1	391.7	4.4	396.1	2.8	39.3	5.4	47.5	18.8	0.0	495.5
Upper Basin	Green River	81.3	1,003.8	12.5	1,016.3	6.1	94.0	19.2	119.3	150.1	2.0	1,369.0
	Upper Main Stem	66.3	975.9	8.1	984.0	4.1	1.6	25.7	31.4	484.0	168.3	1,734.0
	San Juan - Colorado Rivers	66.0	595.6	14.4	610.0	3.1	64.9	27.5	95.5	54.3	(170.3)	655.5
	TOTAL	213.6	2,575.3	35.0	2,610.3	13.3	160.5	72.4	246.2	688.4	0.0	3,758.5

¹ Excludes reservoir evaporation from Colorado River main stem reservoirs listed in Table UC-1.

² Includes rural, urban, and other industrial uses.

Table UC-3
Upper Colorado River Basin
Estimated Water Use within States, by Major Tributaries and Types of Use
1997

(1,000 acre-feet)

State	Tributary	Reservoir Evaporation ¹	Agriculture			Municipal and Industrial			Export		TOTAL	
			Irrigation	Stockpond Evaporation & Livestock	Subtotal	Mineral Resources	Thermal Electric Power	Other ²	Subtotal	Outside System		Within System
Arizona	San Juan - Colorado Rivers	3.3	0.7	1.2	1.9	0.0	22.4	3.8	26.2	0.0	0.0	31.4
Colorado	Green River	4.3	131.4	3.0	134.4	0.6	17.5	2.9	21.0	0.0	2.2	161.9
	Upper Main Stem	65.8	835.4	7.9	843.3	3.1	1.5	25.1	29.7	520.6	142.1	1,601.5
	San Juan - Colorado Rivers	8.9	325.3	4.6	329.9	0.2	0.0	5.2	5.4	2.9	(144.3)	202.8
	TOTAL	79.0	1,292.1	15.5	1,307.6	3.9	19.0	33.2	56.1	523.5	0.0	1,966.2
New Mexico	San Juan - Colorado Rivers	35.8	183.5	4.4	187.9	0.6	45.9	13.4	59.9	142.3	0.0	425.9
Utah	Green River	39.4	442.8	4.5	447.3	2.4	33.8	11.1	47.3	137.1	0.0	671.1
	Upper Main Stem	1.3	19.9	0.3	20.2	0.9	0.0	1.5	2.4	0.0	0.0	23.9
	San Juan - Colorado Rivers	6.7	62.7	3.7	66.4	1.9	0.0	3.6	5.5	(5.5)	0.0	73.1
	TOTAL	47.4	525.4	8.5	533.9	5.2	33.8	16.2	55.2	131.6	0.0	768.1
Wyoming	Green River	34.5	339.6	4.4	344.0	2.3	40.1	5.3	47.7	15.9	0.0	442.1
Upper Basin	Green River	78.2	913.8	11.9	925.7	5.3	91.4	19.3	116.0	153.0	2.2	1,275.1
	Upper Main Stem	67.1	855.3	8.2	863.5	4.0	1.5	26.6	32.1	520.6	142.1	1,625.4
	San Juan - Colorado Rivers	54.7	572.2	13.9	586.1	2.7	68.3	26.0	97.0	139.7	(144.3)	733.2
	TOTAL	200.0	2,341.3	34.0	2,375.3	12.0	161.2	71.9	245.1	813.3	0.0	3,633.7

¹ Excludes reservoir evaporation from Colorado River main stem reservoirs listed in Table UC-1.

² Includes rural, urban, and other industrial uses.

Table UC-4
Upper Colorado River Basin
Estimated Water Use within States, by Major Tributaries and Types of Use
1998

(1,000 acre-feet)

State	Tributary	Agriculture				Municipal and Industrial				Export		TOTAL	
		Reservoir Evaporation ¹	Irrigation	Stockpond Evaporation & Livestock		Mineral Resources	Thermal Electric Power		Other ²	Subtotal	Outside System		Within System
Arizona	San Juan - Colorado Rivers	3.8	0.8	1.0	1.8	0.0	25.0	3.5	28.5	0.0	0.0	34.1	
Colorado	Green River	7.0	162.3	3.5	165.8	0.6	19.6	3.0	23.2	0.0	4.5	200.5	
	Upper Main Stem	73.1	964.5	8.2	972.7	3.1	1.3	26.0	30.4	402.1	160.4	1,638.7	
	San Juan - Colorado Rivers	9.8	335.7	5.1	340.8	0.2	0.0	5.4	5.6	1.3	(164.9)	192.6	
	TOTAL	89.9	1,462.5	16.8	1,479.3	3.9	20.9	34.4	59.2	403.4	0.0	2,031.8	
New Mexico	San Juan - Colorado Rivers	41.0	194.1	4.5	198.6	0.4	42.6	17.3	60.3	96.7	0.0	396.6	
Utah	Green River	44.4	516.3	4.7	521.0	2.3	35.7	11.1	49.1	131.4	0.0	745.9	
	Upper Main Stem	1.4	19.1	0.2	19.3	0.9	0.0	1.5	2.4	0.0	0.0	23.1	
	San Juan - Colorado Rivers	6.7	70.9	3.8	74.7	1.9	0.0	3.7	5.6	(6.9)	0.0	80.1	
	TOTAL	52.5	606.3	8.7	615.0	5.1	35.7	16.3	57.1	124.5	0.0	849.1	
Wyoming	Green River	34.3	281.3	4.2	285.5	1.8	46.8	5.3	53.9	16.7	0.0	390.4	
Upper Basin	Green River	85.7	959.9	12.4	972.3	4.7	102.1	19.4	126.2	148.1	4.5	1,336.8	
	Upper Main Stem	74.5	983.6	8.4	992.0	4.0	1.3	27.5	32.8	402.1	160.4	1,661.8	
	San Juan - Colorado Rivers	61.3	601.5	14.4	615.9	2.5	67.6	29.9	100.0	91.1	(164.9)	703.4	
	TOTAL	221.5	2,545.0	35.2	2,580.2	11.2	171.0	76.8	259.0	641.3	0.0	3,702.0	

¹ Excludes reservoir evaporation from Colorado River main stem reservoirs listed in Table UC-1.

² Includes rural, urban, and other industrial uses.

Table UC-5
Upper Colorado River Basin
Estimated Water Use within States, by Major Tributaries and Types of Use
1999

(1,000 acre-feet)

State	Tributary	Reservoir Evaporation ¹	Agriculture			Municipal and Industrial			Export		TOTAL	
			Irrigation	Stockpond Evaporation & Livestock	Subtotal	Mineral Resources	Thermal Electric Power	Other ²	Subtotal	Outside System		Within System
Arizona	San Juan - Colorado Rivers	3.6	0.7	0.9	1.6	0.0	26.7	3.8	30.5	0.0	0.0	35.7
Colorado	Green River	7.8	150.8	3.4	154.2	0.5	18.7	3.1	22.3	0.0	1.6	185.9
	Upper Main Stem	72.9	815.4	7.8	823.2	3.1	1.5	26.9	31.5	403.4	147.9	1,478.9
	San Juan - Colorado Rivers	9.7	311.9	5.2	317.1	0.2	0.0	5.5	5.7	5.6	(149.5)	188.6
	TOTAL	90.4	1,278.1	16.4	1,294.5	3.8	20.2	35.5	59.5	409.0	0.0	1,853.4
New Mexico	San Juan - Colorado Rivers	35.2	155.6	4.5	160.1	0.6	45.0	16.3	61.9	118.9	0.0	376.1
Utah	Green River	45.1	523.7	4.6	528.3	2.1	35.3	11.1	48.5	145.7	0.0	767.6
	Upper Main Stem	1.3	17.7	0.2	17.9	0.8	0.0	1.6	2.4	0.0	0.0	21.6
	San Juan - Colorado Rivers	6.7	59.5	3.8	63.3	2.0	0.0	3.7	5.7	(6.7)	0.0	69.0
	TOTAL	53.1	600.9	8.6	609.5	4.9	35.3	16.4	56.6	139.0	0.0	858.2
Wyoming	Green River	34.9	311.7	4.3	316.0	1.3	42.7	5.2	49.2	15.0	0.0	415.1
Upper Basin	Green River	87.8	986.2	12.3	998.5	3.9	96.7	19.4	120.0	160.7	1.6	1,368.6
	Upper Main Stem	74.2	833.1	8.0	841.1	3.9	1.5	28.5	33.9	403.4	147.9	1,500.5
	San Juan - Colorado Rivers	55.2	527.7	14.4	542.1	2.8	71.7	29.3	103.8	117.8	(149.5)	669.4
	TOTAL	217.2	2,347.0	34.7	2,381.7	10.6	169.9	77.2	257.7	681.9	0.0	3,538.5

¹ Excludes reservoir evaporation from Colorado River main stem reservoirs listed in Table UC-1.

² Includes rural, urban, and other industrial uses.

Table UC-6
Upper Colorado River Basin
Estimated Water Use within States, by Major Tributaries and Types of Use
2000

(1,000 acre-feet)

State	Tributary	Agriculture				Municipal and Industrial				Export		TOTAL
		Reservoir Evaporation ¹	Stockpond Evaporation &		Mineral Resources	Thermal Electric		Other ²	Subtotal	Outside System	Within System	
			Irrigation	Livestock		Subtotal	Power					
Arizona	San Juan - Colorado Rivers	3.5	0.9	0.9	1.8	0.0	28.7	4.1	32.8	0.0	0.0	38.1
Colorado	Green River	7.7	190.5	3.5	194.0	0.5	14.1	3.2	17.8	0.0	1.8	221.3
	Upper Main Stem	73.8	1,080.5	7.7	1,088.2	3.1	1.4	27.8	32.3	584.9	174.9	1,954.1
	San Juan - Colorado Rivers	9.3	362.9	5.3	368.2	0.2	0.0	5.7	5.9	0.5	(176.7)	207.2
	TOTAL	90.8	1,633.9	16.5	1,650.4	3.8	15.5	36.7	56.0	585.4	0.0	2,382.6
New Mexico	San Juan - Colorado Rivers	45.7	181.1	4.5	185.6	0.8	44.4	17.9	63.1	42.7	0.0	337.1
Utah	Green River	43.6	429.2	4.6	433.8	2.0	34.8	11.1	47.9	150.4	0.0	675.7
	Upper Main Stem	1.3	13.9	0.2	14.1	0.8	0.0	1.6	2.4	0.0	0.0	17.8
	San Juan - Colorado Rivers	6.7	70.2	3.8	74.0	2.0	0.0	3.7	5.7	(5.7)	0.0	80.7
	TOTAL	51.6	513.3	8.6	521.9	4.8	34.8	16.4	56.0	144.7	0.0	774.2
Wyoming	Green River	31.3	322.4	4.3	326.7	0.7	40.0	5.2	45.9	17.2	0.0	421.1
Upper Basin	Green River	82.6	942.1	12.4	954.5	3.2	88.9	19.5	111.6	167.6	1.8	1,318.1
	Upper Main Stem	75.1	1,094.4	7.9	1,102.3	3.9	1.4	29.4	34.7	584.9	174.9	1,971.9
	San Juan - Colorado Rivers	65.2	615.1	14.5	629.6	3.0	73.1	31.4	107.5	37.5	(176.7)	663.1
	TOTAL	222.9	2,651.6	34.8	2,686.4	10.1	163.4	80.3	253.8	790.0	0.0	3,953.1

¹ Excludes reservoir evaporation from Colorado River main stem reservoirs listed in Table UC-1.

² Includes rural, urban, and other industrial uses.

Table UC-7
Upper Colorado River Basin
Irrigated Acreage
1996-2000

		(1,000 acres)				
State	Tributary	Irrigated Acreage				
		1996	1997	1998	1999	2000
Arizona	San Juan - Colorado Rivers	0.4	0.4	0.4	0.4	0.4
Colorado	Green River	135.0	126.5	115.5	121.3	123.2
	Upper Main Stem	556.7	546.5	519.6	529.1	512.9
	San Juan - Colorado Rivers	215.1	218.8	208.9	211.3	206.4
	TOTAL	906.8	891.8	844.0	861.7	842.5
New Mexico	San Juan - Colorado Rivers	82.7	80.6	77.3	76.4	75.2
Utah	Green River	247.6	255.3	251.2	248.9	242.4
	Upper Main Stem	6.5	7.9	7.7	7.7	7.1
	San Juan - Colorado Rivers	35.2	35.1	34.6	34.6	33.9
	TOTAL	289.3	298.3	293.5	291.2	283.4
Wyoming	Green River	313.0	314.1	293.3	314.2	285.7
Upper Basin	Green River	695.7	695.9	660.0	684.4	651.3
	Upper Main Stem	563.2	554.4	527.3	536.8	520.0
	San Juan - Colorado Rivers	333.4	334.9	321.2	322.7	315.9
	TOTAL	1,592.3	1,585.2	1,508.5	1,543.9	1,487.2

Table UC-8
Upper Colorado River Basin
Population Estimates
1996-2000

		(1,000's)				
State	Tributary	Population				
		1996	1997	1998	1999	2000
Arizona	San Juan - Colorado Rivers	53.9	54.5	55.2	55.8	56.4
Colorado	Green River	35.7	36.5	37.3	38.1	38.9
	Upper Main Stem	298.4	309.2	320.0	330.8	341.6
	San Juan - Colorado Rivers	69.4	71.6	73.8	76.0	78.2
	TOTAL	403.5	417.3	431.1	444.9	458.7
New Mexico	San Juan - Colorado Rivers	121.3	123.9	126.6	129.3	132.0
Utah	Green River	71.0	71.2	71.4	71.6	71.8
	Upper Main Stem	8.2	8.4	8.5	8.7	8.8
	San Juan - Colorado Rivers	19.0	19.2	19.5	19.7	19.9
	TOTAL	98.3	98.8	99.4	100.0	100.5
Wyoming	Green River	58.5	58.1	57.8	57.4	57.0
Upper Basin	Green River	165.2	165.8	166.5	167.1	167.7
	Upper Main Stem	306.6	317.6	328.5	339.6	350.4
	San Juan - Colorado Rivers	263.6	269.3	275.0	280.8	286.5
	TOTAL	735.4	752.7	770.0	787.5	804.6

Table LC-1
Lower Colorado River Basin
Colorado River Main Stem Estimated Reservoir Evaporation
1996-2000

(1,000 acre-feet)						
Reservoir	Evaporation					Average
	1996	1997	1998	1999	2000	
Lake Mead	1086.9	1028.9	800.7	1228.6	1193.7	1067.8
Lake Mohave	121.1	125.7	138.4	115.4	129.2	126.0
Lake Havasu	115.3	108.2	95.0	89.8	92.8	100.2
Senator Wash	2.0	1.6	1.9	1.8	1.6	1.8
Diversion Dams ¹	27.6	25.0	25.5	22.2	22.6	24.6
TOTAL	1352.9	1289.4	1061.5	1457.8	1439.9	1320.3

¹ Includes Palo Verde, Headgate Rock, Imperial, Laguna, and Morelos Diversion Dams.

Table LC-2
Lower Colorado River Basin
Estimated Water Use including Colorado Main Stem by States and Types of Use ¹
1996-2000

(1,000 acre-feet)

Year	State	Reservoir Evaporation	Agriculture			Municipal and Industrial				Unmeasured Return Flow	Export		TOTAL
			Irrigation	Stockpond Evaporation & Livestock	Subtotal	Mineral Resources	Thermal Electric Power	Other ²	Subtotal		Outside System	Within System	
1996	Arizona	204.0	4,140.8	39.7	4,180.5	122.8	89.8	619.4	832.0	(162.0)	0.0	4.0	5,058.5
	California	0.0	601.6	0.0	601.6	0.0	0.0	2.7	2.7	(96.5)	4,718.4	0.0	5,226.2
	Nevada	13.3	118.5	1.6	120.1	4.0	20.4	238.7	263.1	(0.7)	0.0	(4.0)	391.8
	New Mexico	5.8	6.2	4.1	10.3	7.4	0.0	2.1	9.5	0.0	0.8	0.0	26.4
	Utah	5.0	122.7	3.1	125.8	0.0	0.0	20.5	20.5	0.0	0.5	0.0	151.8
	TOTAL	228.1	4,989.8	48.5	5,038.3	134.2	110.2	883.4	1,127.8	(259.2)	4,719.7	0.0	10,854.7
1997	Arizona	161.9	3,969.3	37.3	4,006.6	123.4	92.3	643.3	859.0	(156.9)	0.0	4.1	4,874.7
	California	0.0	512.4	0.0	512.4	0.0	0.0	2.5	2.5	(88.2)	4,735.2	0.0	5,161.9
	Nevada	11.8	95.3	1.4	96.7	4.0	19.8	250.9	274.7	(0.8)	0.0	(4.1)	378.3
	New Mexico	5.8	7.3	4.2	11.5	5.8	0.0	2.1	7.9	0.0	0.9	0.0	26.1
	Utah	3.7	120.0	3.1	123.1	0.0	0.0	20.5	20.5	0.0	0.5	0.0	147.8
	TOTAL	183.2	4,704.3	46.0	4,750.3	133.2	112.1	919.3	1,164.6	(245.9)	4,736.6	0.0	10,588.8
1998	Arizona	181.9	3,664.0	37.1	3,701.1	124.2	93.9	666.1	884.2	(143.8)	0.0	4.0	4,627.4
	California	0.0	531.1	0.0	531.1	0.0	0.0	2.0	2.0	(92.0)	4,512.1	0.0	4,953.2
	Nevada	12.2	78.1	1.3	79.4	4.0	23.3	234.8	262.1	(0.8)	0.0	(4.0)	348.9
	New Mexico	5.8	9.4	4.3	13.7	6.7	0.0	2.1	8.8	0.0	0.8	0.0	29.1
	Utah	4.0	98.4	2.7	101.1	0.0	0.0	21.8	21.8	0.0	0.5	0.0	127.4
	TOTAL	203.9	4,381.0	45.4	4,426.4	134.9	117.2	926.8	1,178.9	(236.6)	4,513.4	0.0	10,086.0
1999	Arizona	174.8	3,693.6	39.6	3,733.2	124.9	99.3	692.7	916.9	(148.3)	0.0	4.2	4,680.8
	California	0.0	556.8	0.0	556.8	0.0	0.0	2.6	2.6	(87.2)	4,634.8	0.0	5,107.0
	Nevada	13.0	76.1	1.5	77.6	4.0	22.9	281.6	308.5	(1.6)	0.0	(4.2)	393.3
	New Mexico	5.8	8.7	4.1	12.8	4.6	0.0	2.0	6.6	0.0	0.9	0.0	26.1
	Utah	5.6	105.4	2.8	108.2	0.0	0.0	22.6	22.6	0.0	0.5	0.0	136.9
	TOTAL	199.2	4,440.6	48.0	4,488.6	133.5	122.2	1,001.5	1,257.2	(237.1)	4,636.2	0.0	10,344.1
2000	Arizona	173.1	3,744.7	43.8	3,788.5	125.7	103.6	730.3	959.6	(169.4)	0.0	4.5	4,756.3
	California	0.0	601.8	0.0	601.8	0.0	0.0	1.8	1.8	(100.9)	4,755.7	0.0	5,258.4
	Nevada	14.0	96.8	1.6	98.4	4.0	28.6	311.2	343.8	(2.1)	0.0	(4.5)	449.6
	New Mexico	5.8	8.1	4.1	12.2	4.8	0.0	2.1	6.9	0.0	1.0	0.0	25.9
	Utah	5.2	91.1	2.9	94.0	0.0	0.0	23.2	23.2	0.0	0.5	0.0	122.9
	TOTAL	198.1	4,542.5	52.4	4,594.9	134.5	132.2	1,068.6	1,335.3	(272.4)	4,757.2	0.0	10,613.1

¹ A portion of the consumptive uses shown herein are satisfied by groundwater overdraft.

² Includes rural, urban, and other industrial uses.

**Table LC-3
Lower Colorado River Basin
Colorado Main Stem Water Use and Exports within States and Mexico ¹
1996-2000**

(1,000 acre-feet)

Year	State	Estimated Consumptive Use					Unmeasured Return Flow ²	ADJUSTED TOTAL	Water Passing to Mexico			
		Irrigated Agriculture	Municipal and Industrial	Thermal Electric Power	Exports	TOTAL			Scheduled (Treaty)	Minute 242	Excess Releases	TOTAL
1996	Arizona	1,464.8	53.2	0.7	1,196.1	2,714.8	(162.0)	2,552.8				
	California	601.6	2.7	0.0	4,718.4	5,322.7	(96.5)	5,226.2				
	Nevada	0.0	236.1	13.1	0.0	249.2	(0.7)	248.5				
	TOTAL	2,066.4	292.0	13.8	5,914.5	8,286.7	(259.2)	8,027.5	1,500.0	112.4	5.3	1,617.7
1997	Arizona	1,387.8	51.5	0.7	1,413.9	2,853.9	(156.9)	2,697.0				
	California	512.4	2.5	0.0	4,735.2	5,250.1	(88.2)	5,161.9				
	Nevada	0.0	229.7	13.1	0.0	242.8	(0.8)	242.0				
	TOTAL	1,900.2	283.7	13.8	6,149.1	8,346.8	(245.9)	8,100.9	1,700.0	89.2	1,172.5	2,961.7
1998	Arizona	1,289.3	48.6	0.6	1,228.2	2,566.7	(143.8)	2,422.9				
	California	531.1	2.0	0.0	4,512.1	5,045.2	(92.0)	4,953.2				
	Nevada	0.0	232.4	12.9	0.0	245.3	(0.8)	244.5				
	TOTAL	1,820.4	283.0	13.5	5,740.3	7,857.2	(236.6)	7,620.6	1,700.0	113.8	3,018.4	4,832.2
1999	Arizona	1,289.5	49.5	0.8	1,388.2	2,728.0	(148.3)	2,579.7				
	California	556.8	2.6	0.0	4,634.8	5,194.2	(87.2)	5,107.0				
	Nevada	0.0	279.0	12.1	0.0	291.1	(1.6)	289.5				
	TOTAL	1,846.3	331.1	12.9	6,023.0	8,213.3	(237.1)	7,976.2	1,700.0	78.7	1,194.1	2,972.8
2000	Arizona	1,326.7	61.4	0.6	1,424.1	2,812.8	(169.4)	2,643.4				
	California	601.8	1.8	0.0	4,755.7	5,359.3	(100.9)	5,258.4				
	Nevada	0.0	308.6	13.4	0.0	322.0	(2.1)	319.9				
	TOTAL	1,928.5	371.8	14.0	6,179.8	8,494.1	(272.4)	8,221.7	1,700.0	107.4	337.1	2,144.5

¹ From the Bureau of Reclamation calendar year reports "Compilation of Records in Accordance with Article V of the Decree of the Supreme Court of the United States in Arizona vs. California, dated March 9, 1965". California consumptive use for 1991 & 1992 were revised in 1993. Nevada consumptive use for 1993 revised in 1994.

² Total unmeasured return flows in 1991-93 for Arizona and California are estimated to be 200,000 acre-feet and were proportioned between the states based on the irrigated agriculture diversions.

Table LC-4
Lower Colorado River Basin
Estimated Water Use within States, by Major Tributaries and Types of Use¹
1996

(1,000 acre-feet)												
State	Tributary	Reservoir Evaporation ²	Agriculture			Municipal and Industrial				Export		TOTAL
			Irrigation	Livestock	Stockpond Evaporation & Subtotal	Mineral Resources	Thermal Electric Power	Other ³	Subtotal	Outside System	Within System	
Arizona	Tributary Area above Lake Mead	0.8	0.9	2.5	3.4	0.0	0.0	3.4	3.4	0.0	0.0	7.6
	Tributary Area below Lake Mead	0.0	58.5	3.9	62.4	16.5	0.0	1.6	18.1	0.0	0.0	80.5
	Gila River	164.4	2,555.8	25.1	2,580.9	82.2	59.5	530.1	671.8	(1,196.1)	(2.1)	2,218.9
	Little Colorado River	28.7	35.6	7.1	42.7	3.9	29.6	29.9	63.4	0.0	6.1	140.9
	Bill Williams River	10.1	17.9	1.0	18.9	20.2	0.0	0.9	21.1	0.0	0.0	50.1
	Virgin River	0.0	7.3	0.1	7.4	0.0	0.0	0.3	0.3	0.0	0.0	7.7
	TOTAL	204.0	2,676.0	39.7	2,715.7	122.8	89.1	566.2	778.1	(1,196.1)	4.0	2,505.7
Nevada	Tributary Area above Lake Mead	4.2	46.5	0.7	47.2	0.0	0.0	0.0	0.0	0.0	0.0	51.4
	Tributary Area below Lake Mead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(4.0)	(4.0)
	Virgin River	0.1	2.3	0.1	2.4	2.6	0.0	1.4	4.0	0.0	0.0	6.5
	Muddy River	9.0	69.7	0.8	70.5	1.4	7.3	1.2	9.9	0.0	0.0	89.4
	TOTAL	13.3	118.5	1.6	120.1	4.0	7.3	2.6	13.9	0.0	(4.0)	143.3
New Mexico	Gila River	0.6	5.2	2.4	7.6	6.2	0.0	0.2	6.4	0.8	0.0	15.4
	Little Colorado River	5.2	1.0	1.7	2.7	1.2	0.0	1.9	3.1	0.0	0.0	11.0
	TOTAL	5.8	6.2	4.1	10.3	7.4	0.0	2.1	9.5	0.8	0.0	26.4
Utah	Tributary Area above Lake Mead	0.2	14.3	0.5	14.8	0.0	0.0	1.2	1.2	0.0	0.0	16.2
	Virgin River	4.8	108.4	2.6	111.0	0.0	0.0	19.3	19.3	0.5	0.0	135.6
	TOTAL	5.0	122.7	3.1	125.8	0.0	0.0	20.5	20.5	0.5	0.0	151.8
Lower Basin	Tributary Area above Lake Mead	5.2	61.7	3.7	65.4	0.0	0.0	4.6	4.6	0.0	0.0	75.2
	Tributary Area below Lake Mead	0.0	58.5	3.9	62.4	16.5	0.0	1.6	18.1	0.0	(4.0)	76.5
	Gila River	165.0	2,561.0	27.5	2,588.5	88.4	59.5	530.3	678.2	(1,195.3)	(2.1)	2,234.3
	Little Colorado River	33.9	36.6	8.8	45.4	5.1	29.6	31.8	66.5	0.0	6.1	151.9
	Bill Williams River	10.1	17.9	1.0	18.9	20.2	0.0	0.9	21.1	0.0	0.0	50.1
	Virgin River	4.9	118.0	2.8	120.8	2.6	0.0	21.0	23.6	0.5	0.0	149.8
	Muddy River	9.0	69.7	0.8	70.5	1.4	7.3	1.2	9.9	0.0	0.0	89.4
	TOTAL	228.1	2,923.4	48.5	2,971.9	134.2	96.4	591.4	822.0	(1,194.8)	0.0	2,827.2

¹ Excludes Colorado River main stem and flood plain. A portion of the consumptive uses shown herein are satisfied by groundwater overdraft.

² Excludes reservoir evaporation from Colorado River main stem reservoirs listed in Table LC-1.

³ Includes rural, urban, and other industrial uses.

**Table LC-5
Lower Colorado River Basin
Estimated Water Use within States, by Major Tributaries and Types of Use ¹
1997**

		(1,000 acre-feet)										
State	Tributary	Agriculture				Municipal and Industrial				Export		TOTAL
		Reservoir Evaporation ²	Stockpond Evaporation & Irrigation	Livestock	Subtotal	Mineral Resources	Thermal Electric Power	Other ³	Subtotal	Outside System	Within System	
Arizona	Tributary Area above Lake Mead	0.6	1.6	2.2	3.8	0.0	0.0	3.5	3.5	0.0	0.0	7.9
	Tributary Area below Lake Mead	0.0	67.7	3.7	71.4	16.5	0.0	1.6	18.1	0.0	0.0	89.5
	Gila River	132.6	2,442.3	23.9	2,466.2	82.9	60.3	555.3	698.5	(1,413.9)	(10.3)	1,873.1
	Little Colorado River	19.4	40.6	6.5	47.1	3.9	31.3	30.2	65.4	0.0	14.4	146.3
	Bill Williams River	9.3	19.6	0.9	20.5	20.1	0.0	0.9	21.0	0.0	0.0	50.8
	Virgin River	0.0	9.7	0.1	9.8	0.0	0.0	0.3	0.3	0.0	0.0	10.1
	TOTAL	161.9	2,581.5	37.3	2,618.8	123.4	91.6	591.8	806.8	(1,413.9)	4.1	2,177.7
Nevada	Tributary Area above Lake Mead	3.9	29.0	0.6	29.6	0.0	0.1	0.0	0.1	0.0	0.0	33.6
	Tributary Area below Lake Mead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(4.1)	(4.1)
	Virgin River	0.1	1.5	0.1	1.6	2.6	0.0	1.3	3.9	0.0	0.0	5.6
	Muddy River	7.8	64.8	0.7	65.5	1.4	6.6	19.9	27.9	0.0	0.0	101.2
	TOTAL	11.8	95.3	1.4	96.7	4.0	6.7	21.2	31.9	0.0	(4.1)	136.3
New Mexico	Gila River	0.6	6.1	2.4	8.5	4.7	0.0	0.2	4.9	0.9	0.0	14.9
	Little Colorado River	5.2	1.2	1.8	3.0	1.1	0.0	1.9	3.0	0.0	0.0	11.2
	TOTAL	5.8	7.3	4.2	11.5	5.8	0.0	2.1	7.9	0.9	0.0	26.1
Utah	Tributary Area above Lake Mead	0.2	11.7	0.5	12.2	0.0	0.0	1.2	1.2	0.0	0.0	13.6
	Virgin River	3.5	108.3	2.6	110.9	0.0	0.0	19.3	19.3	0.5	0.0	134.2
	TOTAL	3.7	120.0	3.1	123.1	0.0	0.0	20.5	20.5	0.5	0.0	147.8
Lower Basin	Tributary Area above Lake Mead	4.7	42.3	3.3	45.6	0.0	0.1	4.7	4.8	0.0	0.0	55.1
	Tributary Area below Lake Mead	0.0	67.7	3.7	71.4	16.5	0.0	1.6	18.1	0.0	(4.1)	85.4
	Gila River	133.2	2,448.4	26.3	2,474.7	87.6	60.3	555.5	703.4	(1,413.0)	(10.3)	1,888.0
	Little Colorado River	24.6	41.8	8.3	50.1	5.0	31.3	32.1	68.4	0.0	14.4	157.5
	Bill Williams River	9.3	19.6	0.9	20.5	20.1	0.0	0.9	21.0	0.0	0.0	50.8
	Virgin River	3.6	119.5	2.8	122.3	2.6	0.0	20.9	23.5	0.5	0.0	149.9
	Muddy River	7.8	64.8	0.7	65.5	1.4	6.6	19.9	27.9	0.0	0.0	101.2
	TOTAL	183.2	2,804.1	46.0	2,850.1	133.2	98.3	635.6	867.1	(1,412.5)	0.0	2,487.9

¹ Excludes Colorado River main stem and flood plain. A portion of the consumptive uses shown herein are satisfied by groundwater overdraft.

² Excludes reservoir evaporation from Colorado River main stem reservoirs listed in Table LC-1.

³ Includes rural, urban, and other industrial uses.

Table LC-6
Lower Colorado River Basin
Estimated Water Use within States, by Major Tributaries and Types of Use ¹
1998

		(1,000 acre-feet)										
State	Tributary	Agriculture				Municipal and Industrial				Export		TOTAL
		Reservoir Evaporation ²	Irrigation	Stockpond Evaporation & Livestock	Subtotal	Mineral Resources	Thermal Electric Power	Other ³	Subtotal	Outside System	Within System	
Arizona	Tributary Area above Lake Mead	0.5	0.8	2.5	3.3	0.0	0.0	3.5	3.5	0.0	0.0	7.3
	Tributary Area below Lake Mead	0.0	77.0	3.7	80.7	16.5	0.0	1.7	18.2	0.0	0.0	98.9
	Gila River	145.7	2,228.4	23.5	2,251.9	83.7	61.5	580.5	725.7	(1,228.2)	(4.5)	1,890.6
	Little Colorado River	19.0	39.1	6.3	45.4	3.8	31.8	30.6	66.2	0.0	8.5	139.1
	Bill Williams River	16.7	19.8	1.0	20.8	20.2	0.0	0.9	21.1	0.0	0.0	58.6
	Virgin River	0.0	9.6	0.1	9.7	0.0	0.0	0.3	0.3	0.0	0.0	10.0
	TOTAL	181.9	2,374.7	37.1	2,411.8	124.2	93.3	617.5	835.0	(1,228.2)	4.0	2,204.5
Nevada	Tributary Area above Lake Mead	4.0	24.8	0.6	25.4	0.0	2.6	0.0	2.6	0.0	0.0	32.0
	Tributary Area below Lake Mead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(4.0)	(4.0)
	Virgin River	0.1	1.3	0.0	1.3	2.6	0.0	1.3	3.9	0.0	0.0	5.3
	Muddy River	8.1	52.0	0.7	52.7	1.4	7.8	1.1	10.3	0.0	0.0	71.1
	TOTAL	12.2	78.1	1.3	79.4	4.0	10.4	2.4	16.8	0.0	(4.0)	104.4
New Mexico	Gila River	0.6	8.2	2.5	10.7	5.6	0.0	0.2	5.8	0.8	0.0	17.9
	Little Colorado River	5.2	1.2	1.8	3.0	1.1	0.0	1.9	3.0	0.0	0.0	11.2
	TOTAL	5.8	9.4	4.3	13.7	6.7	0.0	2.1	8.8	0.8	0.0	29.1
Utah	Tributary Area above Lake Mead	0.2	10.6	0.3	10.9	0.0	0.0	1.3	1.3	0.0	0.0	12.4
	Virgin River	3.8	87.8	2.4	90.2	0.0	0.0	20.5	20.5	0.5	0.0	115.0
	TOTAL	4.0	98.4	2.7	101.1	0.0	0.0	21.8	21.8	0.5	0.0	127.4
Lower Basin	Tributary Area above Lake Mead	4.7	36.2	3.4	39.6	0.0	2.6	4.8	7.4	0.0	0.0	51.7
	Tributary Area below Lake Mead	0.0	77.0	3.7	80.7	16.5	0.0	1.7	18.2	0.0	(4.0)	94.9
	Gila River	146.3	2,236.6	26.0	2,262.6	89.3	61.5	580.7	731.5	(1,227.4)	(4.5)	1,908.5
	Little Colorado River	24.2	40.3	8.1	48.4	4.9	31.8	32.5	69.2	0.0	8.5	150.3
	Bill Williams River	16.7	19.8	1.0	20.8	20.2	0.0	0.9	21.1	0.0	0.0	58.6
	Virgin River	3.9	98.7	2.5	101.2	2.6	0.0	22.1	24.7	0.5	0.0	130.3
	Muddy River	8.1	52.0	0.7	52.7	1.4	7.8	1.1	10.3	0.0	0.0	71.1
	TOTAL	203.9	2,560.6	45.4	2,606.0	134.9	103.7	643.8	882.4	(1,226.9)	0.0	2,465.4

¹ Excludes Colorado River main stem and flood plain. A portion of the consumptive uses shown herein are satisfied by groundwater overdraft.

² Excludes reservoir evaporation from Colorado River main stem reservoirs listed in Table LC-1.

³ Includes rural, urban, and other industrial uses.

Table LC-7
Lower Colorado River Basin
Estimated Water Use within States, by Major Tributaries and Types of Use ¹
1999

(1,000 acre-feet)

State	Tributary	Agriculture				Municipal and Industrial				Export		TOTAL
		Reservoir Evaporation ²	Stockpond		Mineral Resources	Thermal		Other ³	Subtotal	Outside System	Within System	
			Irrigation	Evaporation & Livestock		Electric	Subtotal					
Arizona	Tributary Area above Lake Mead	0.7	0.5	2.7	3.2	0.0	0.0	3.6	3.6	0.0	0.0	7.5
	Tributary Area below Lake Mead	0.0	79.7	3.8	83.5	16.5	0.0	1.7	18.2	0.0	0.0	101.7
	Gila River	138.8	2,266.5	25.2	2,291.7	84.4	64.4	605.8	754.6	(1,388.2)	(5.4)	1,791.5
	Little Colorado River	24.7	36.1	6.8	42.9	3.8	34.1	30.9	68.8	0.0	9.6	146.0
	Bill Williams River	10.6	18.3	1.0	19.3	20.2	0.0	0.9	21.1	0.0	0.0	51.0
	Virgin River	0.0	3.0	0.1	3.1	0.0	0.0	0.3	0.3	0.0	0.0	3.4
	TOTAL	174.8	2,404.1	39.6	2,443.7	124.9	98.5	643.2	866.6	(1,388.2)	4.2	2,101.1
Nevada	Tributary Area above Lake Mead	0.0	27.9	0.7	28.6	0.0	3.5	0.0	3.5	0.0	0.0	32.1
	Tributary Area below Lake Mead	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(4.2)	0.0
	Virgin River	0.1	1.5	0.1	1.6	2.6	0.0	1.6	4.2	0.0	0.0	5.9
	Muddy River	8.7	46.7	0.7	47.4	1.4	7.3	1.0	9.7	0.0	0.0	65.8
	TOTAL	13.0	76.1	1.5	77.6	4.0	10.8	2.6	17.4	0.0	(4.2)	103.8
New Mexico	Gila River	0.7	6.6	2.3	8.9	3.4	0.0	0.1	3.5	0.9	0.0	14.0
	Little Colorado River	5.1	2.1	1.8	3.9	1.2	0.0	1.9	3.1	0.0	0.0	12.1
	TOTAL	5.8	8.7	4.1	12.8	4.6	0.0	2.0	6.6	0.9	0.0	26.1
Utah	Tributary Area above Lake Mead	0.2	11.4	0.3	11.7	0.0	0.0	1.4	1.4	0.0	0.0	13.3
	Virgin River	5.4	94.0	2.5	96.5	0.0	0.0	21.2	21.2	0.5	0.0	123.6
	TOTAL	5.6	105.4	2.8	108.2	0.0	0.0	22.6	22.6	0.5	0.0	136.9
Lower Basin	Tributary Area above Lake Mead	0.9	39.8	3.7	43.5	0.0	3.5	5.0	8.5	0.0	0.0	52.9
	Tributary Area below Lake Mead	4.2	79.7	3.8	83.5	16.5	0.0	1.7	18.2	0.0	(4.2)	101.7
	Gila River	139.5	2,273.1	27.5	2,300.6	87.8	64.4	605.9	758.1	(1,387.3)	(5.4)	1,805.5
	Little Colorado River	29.8	38.2	8.6	46.8	5.0	34.1	32.8	71.9	0.0	9.6	158.1
	Bill Williams River	10.6	18.3	1.0	19.3	20.2	0.0	0.9	21.1	0.0	0.0	51.0
	Virgin River	5.5	98.5	2.7	101.2	2.6	0.0	23.1	25.7	0.5	0.0	132.9
	Muddy River	8.7	46.7	0.7	47.4	1.4	7.3	1.0	9.7	0.0	0.0	65.8
	TOTAL	199.2	2,594.3	48.0	2,642.3	133.5	109.3	670.4	913.2	(1,386.8)	(0.0)	2,367.9

¹ Excludes Colorado River main stem and flood plain. A portion of the consumptive uses shown herein are satisfied by groundwater overdraft.

² Excludes reservoir evaporation from Colorado River main stem reservoirs listed in Table LC-1.

³ Includes rural, urban, and other industrial uses.

Table LC-8
Lower Colorado River Basin
Estimated Water Use within States, by Major Tributaries and Types of Use ¹
2000

		(1,000 acre-feet)										
State	Tributary	Agriculture				Municipal and Industrial				Export		TOTAL
		Reservoir Evaporation ²	Stockpond Irrigation	Evaporation & Livestock	Subtotal	Mineral Resources	Thermal Electric	Other ³	Subtotal	Outside System	Within System	
Arizona	Tributary Area above Lake Mead	0.7	0.6	2.8	3.4	0.0	0.0	3.7	3.7	0.0	0.0	7.8
	Tributary Area below Lake Mead	0.0	76.5	4.0	80.5	16.5	0.0	1.7	18.2	0.0	0.0	98.7
	Gila River	133.0	2,268.5	27.9	2,296.4	85.2	68.0	631.0	784.2	(1,424.1)	(2.0)	1,787.5
	Little Colorado River	24.9	45.3	8.0	53.3	3.8	35.0	31.3	70.1	0.0	6.5	154.8
	Bill Williams River	14.4	18.5	1.0	19.5	20.2	0.0	0.9	21.1	0.0	0.0	55.0
	Virgin River	0.1	8.6	0.1	8.7	0.0	0.0	0.3	0.3	0.0	0.0	9.1
	TOTAL	173.1	2,418.0	43.8	2,461.8	125.7	103.0	668.9	897.6	(1,424.1)	4.5	2,112.9
Nevada	Tributary Area above Lake Mead	0.0	29.9	0.7	30.6	0.0	4.7	0.0	4.7	0.0	0.0	35.3
	Tributary Area below Lake Mead	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(4.5)	(0.1)
	Virgin River	0.1	1.6	0.1	1.7	2.6	0.0	1.7	4.3	0.0	0.0	6.1
	Muddy River	9.5	65.3	0.8	66.1	1.4	10.5	0.9	12.8	0.0	0.0	88.4
	TOTAL	14.0	96.8	1.6	98.4	4.0	15.2	2.6	21.8	0.0	(4.5)	129.7
New Mexico	Gila River	0.6	6.7	2.3	9.0	3.7	0.0	0.2	3.9	1.0	0.0	14.5
	Little Colorado River	5.2	1.4	1.8	3.2	1.1	0.0	1.9	3.0	0.0	0.0	11.4
	TOTAL	5.8	8.1	4.1	12.2	4.8	0.0	2.1	6.9	1.0	0.0	25.9
Utah	Tributary Area above Lake Mead	0.2	12.6	0.3	12.9	0.0	0.0	1.4	1.4	0.0	0.0	14.5
	Virgin River	5.0	78.5	2.6	81.1	0.0	0.0	21.8	21.8	0.5	0.0	108.4
	TOTAL	5.2	91.1	2.9	94.0	0.0	0.0	23.2	23.2	0.5	0.0	122.9
Lower Basin	Tributary Area above Lake Mead	0.9	43.1	3.8	46.9	0.0	4.7	5.1	9.8	0.0	0.0	57.6
	Tributary Area below Lake Mead	4.4	76.5	4.0	80.5	16.5	0.0	1.7	18.2	0.0	(4.5)	98.6
	Gila River	133.6	2,275.2	30.2	2,305.4	88.9	68.0	631.2	788.1	(1,423.1)	(2.0)	1,802.0
	Little Colorado River	30.1	46.7	9.8	56.5	4.9	35.0	33.2	73.1	0.0	6.5	166.2
	Bill Williams River	14.4	18.5	1.0	19.5	20.2	0.0	0.9	21.1	0.0	0.0	55.0
	Virgin River	5.2	88.7	2.8	91.5	2.6	0.0	23.8	26.4	0.5	0.0	123.6
	Muddy River	9.5	65.3	0.8	66.1	1.4	10.5	0.9	12.8	0.0	0.0	88.4
	TOTAL	198.1	2,614.0	52.4	2,666.4	134.5	118.2	696.8	949.5	(1,422.6)	0.0	2,391.4

¹ Excludes Colorado River main stem and flood plain. A portion of the consumptive uses shown herein are satisfied by groundwater overdraft.

² Excludes reservoir evaporation from Colorado River main stem reservoirs listed in Table LC-1.

³ Includes rural, urban, and other industrial uses.

Table LC-9
Lower Colorado River Basin
Irrigated Acreage ¹
1996-2000

		(1,000 acres)				
State	Tributary	Irrigated Acreage				
		1996	1997	1998	1999	2000
Arizona	Tributary Area above Lake Mead	0.5	0.4	0.5	0.5	0.4
	Tributary Area below Lake Mead	12.7	12.1	12.3	11.4	10.7
	Gila River	661.5	639.0	622.1	670.0	716.0
	Little Colorado River	18.0	18.1	18.7	16.0	14.7
	Bill Williams River	6.7	6.0	5.2	3.9	2.9
	Virgin River	3.0	2.4	1.7	1.4	0.9
	TOTAL	702.4	678.0	660.5	703.2	745.6
Nevada	Tributary Area above Lake Mead	6.8	9.5	9.5	9.5	9.5
	Virgin River	0.4	0.4	0.4	0.4	0.4
	Muddy River	18.4	17.7	19.4	21.0	22.0
	TOTAL	25.6	27.6	29.3	30.9	31.9
New Mexico	Gila River	2.7	2.2	2.5	1.6	2.3
	Little Colorado River	2.6	2.7	2.8	2.9	2.9
	TOTAL	5.3	4.9	5.3	4.5	5.2
Utah	Tributary Area above Lake Mead	2.9	3.0	2.9	3.1	3.1
	Virgin River	15.4	16.3	16.4	17.8	17.1
	TOTAL	18.3	19.3	19.3	20.9	20.2
Lower Basin	Tributary Area above Lake Mead	10.2	12.9	12.9	13.1	13.0
	Tributary Area below Lake Mead	12.7	12.1	12.3	11.4	10.7
	Gila River	664.2	641.2	624.6	671.6	718.3
	Little Colorado River	20.6	20.8	21.5	18.9	17.6
	Bill Williams River	6.7	6.0	5.2	3.9	2.9
	Virgin River	18.8	19.1	18.5	19.6	18.4
	Muddy River	18.4	17.7	19.4	21.0	22.0
	TOTAL	751.6	729.8	714.4	759.5	802.9

¹ Irrigated acreage includes all irrigated croplands harvested as well as irrigated pasture. Double-cropping is accounted. Excludes Decree Accounting irrigated acreage.

Table LC-10
Lower Colorado River Basin
Population Estimates
1996-2000

		(1,000'S)				
State	Tributary	Estimated Population				
		1996	1997	1998	1999	2000
Arizona	Tributary Area above Lake Mead	46.3	47.3	48.3	49.3	50.3
	Tributary Area below Lake Mead	19.5	19.8	20.0	20.3	20.5
	Decree Accounting Area	221.7	226.5	231.2	236.0	240.8
	Gila River	3,819.7	4,001.6	4,183.5	4,365.4	4,547.3
	Little Colorado River	188.9	191.2	193.4	195.7	197.9
	Bill Williams River	13.0	13.1	13.3	13.4	13.6
	Virgin River	3.6	3.7	3.7	3.8	3.8
	TOTAL	4,312.8	4,503.1	4,693.5	4,883.8	5,074.2
California	Decree Accounting Area	28.0	28.2	28.4	28.6	28.8
Nevada	Tributary Area above Lake Mead	1,043.8	1,131.4	1,219.1	1,306.7	1,394.4
	Decree Accounting Area	8.1	8.4	8.8	9.1	9.5
	Virgin River	3.8	4.0	4.3	4.5	4.7
	Muddy River	8.4	7.8	7.3	6.7	6.2
	TOTAL	1,064.0	1,151.7	1,239.4	1,327.1	1,414.8
New Mexico	Gila River	10.1	10.3	10.4	10.6	10.7
	Little Colorado River	55.6	56.7	57.9	59.0	60.2
	TOTAL	65.7	67.0	68.3	69.6	70.9
Utah	Tributary Area above Lake Mead	4.2	4.4	4.5	4.7	4.8
	Virgin River	72.7	75.2	77.6	80.1	82.5
	TOTAL	77.0	79.6	82.1	84.7	87.3
Lower Basin	Tributary Area above Lake Mead	1,094.3	1,183.1	1,271.9	1,360.7	1,449.5
	Tributary Area below Lake Mead	19.5	19.8	20.0	20.3	20.5
	Decree Accounting Area	257.7	263.1	268.4	273.8	279.1
	Gila River	3,829.8	4,011.9	4,193.9	4,376.0	4,558.0
	Little Colorado River	244.5	247.9	251.3	254.7	258.1
	Bill Williams River	13.0	13.1	13.3	13.4	13.6
	Virgin River	80.2	82.9	85.6	88.3	91.0
	Muddy River	8.4	7.8	7.3	6.7	6.2
	TOTAL	5,547.4	5,829.6	6,111.7	6,393.9	6,676.0