A HISTORY OF ANNUAL STREAMFLOWS FROM THE 21 WATER-RESOURCE REGIONS IN THE UNITED STATES AND PUERTO RICO, 1951–83

By
David J. Graczyk, William R. Krug, and Warren A. Gebert

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CONVERSION FACTORS

Factors for converting inch-pound units to the International System (SI) units are given below:

Multiply inch-pound units	By	To obtain SI units
inch (in.)	25.40	millimeter (mm)
square mile (mi^2)	2.590	square kilometer (km^2)
cubic foot (ft^3)	0.0283	cubic meter (m^3)
cubic foot per second (ft^3/s)	0.0283	cubic meter per second (m^3/s)
billion gallons per day (Bgal/d)	4.381	cubic meter per second (m^3/s)
inches per year (in/yr)	25.40	millimeter per year (mm/yr)

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ABSTRACT

Annual streamflows from the 21 water-resource regions in the United States and Puerto Rico were calculated for the period 1951–83. The total streamflow discharging to the oceans from the conterminous United States during this period averaged 1,270 billion gallons per day. The outflow from the Lower Mississippi Water-Resource Region (08), which drains 41 percent of the land area of the conterminous United States, contributes 34 percent of the total streamflow to the oceans, which is the most of any region.

A 15-year moving average of the annual streamflow was also calculated for each region. The Mid-Atlantic (Region 02) shows a decreasing trend in streamflow since the mid-1970's whereas the Upper Mississippi (Region 07), the Missouri (Region 10), the Rio Grande (Region 13), the Upper Colorado (Region 14), the Lower Colorado (Region 15), the Great Basin (Region 16), and California (Region 18) all show an increasing trend in streamflows.

Streamflow from the Upper and Lower Colorado (Regions 14 and 15) appear to be heavily affected by large storage reservoirs. Streamflow from the Upper Colorado (Region 14) shows a decreasing streamflow in 1963 and 1964, which may be due to filling of Lake Powell.

INTRODUCTION

The United States Soil Conservation Service (SCS) requested assistance from the U.S. Geological Survey in preparing a display of surface-water data for inclusion in the Department of Agriculture's assessment of the quality of the Nation's soil, land, and water resources. To provide these data, annual streamflows from the 21 water-resource regions in the United States and Puerto Rico (Seaber, Kapinos, and Knapp, 1984) were calculated.

These 21 water-resource regions are either the entire drainage area of a major river (such as the Missouri River) or the combined drainage areas of several river systems that discharge to the ocean (such as the Texas–Gulf Region, which drains into the Gulf of Mexico). Eighteen of these regions are in the conterminous United States and one region each is in Alaska, Hawaii, and the Caribbean (fig. 1). A 15-year moving average of the annual streamflows was also calculated for each water-resource region.

The regions represent the largest hydrologic limit for classification. The hierarchy of hydrologic units goes from region to subregion to accounting units to cataloging units. The cataloging unit, the smallest element in the hierarchy, is a geographic area consisting of all or part of a surface drainage basin, or a combination of drainage basins, or a distinct hydrologic feature. There are about 2,150 cataloging units in the country. Many of the streamflow calculations in this report were made at the cataloging unit level to determine streamflow for the regions.

METHODS

The method used to calculate the streamflows from the water-resource regions is:

1. The annual streamflow for each region was calculated by using the recorded streamflow from the most downstream gaging stations in the region and

adding an estimated streamflow for the remaining ungaged drainage areas. The ungaged drainage area is the area between the most downstream gaging stations and the outflow point of the region.

The annual streamflow was calculated for the 1951–83 period. The period was selected to represent a history of recent flows.

2. Streamflow for the gaged area was calculated by using mean annual discharge values from U.S. Geological Survey WATSTORE records. Gaging stations were selected from the Nation's Water Resources, 1975–2000, Volume 3, Appendix V (U.S. Water Resource Council, 1978) for each water-resource region. For stations that did not have mean annual discharge for each year the missing discharge values were estimated by linear regression with discharge data recorded at nearby gaging stations.

3. Calculation of streamflow for the ungaged areas was required for all regions because no single gage recorded the outflow from any region. The ungaged area was determined as the total drainage area of the region (Seaber and others, 1984) minus the drainage area of the most downstream gages. The average annual streamflow for this ungaged area was estimated from streamflow data calculated for preparation of a national runoff map (Krug, Graczyk, and Gebert, written commun., 1986) for the period 1951–80. In that report, streamflow data are presented for all of the 2,149 cataloging units in the country. Streamflow data for that study was based on records collected at 5,951 gaging stations. In order to use a common period of record for all stations, the streamflow records at 2,822 gaging stations were extended to the 1951–80 period by a correlation procedure.

4. The streamflow estimate for the ungaged area was an average annual value for the 1951–80 period because runoff values for the ungaged cataloging units are for this period rather than for 1951–83. Also, no estimate was available for individual years, this average annual value was used to compute an adjustment factor that was applied to the measured annual discharge to estimate the total annual discharge from the region. The adjustment factor is a ratio of total average annual streamflow to measured average annual streamflow for the 1951–80 period.

$$\text{Adjustment factor} = \frac{Q_T}{Q_m}$$

where: Q_T is the 1951–80 average annual streamflow for the measured and unmeasured drainage areas of the region, and

Q_m is the 1951–80 average annual streamflow from the measured drainage area of the region.

FIGURE 1. Location of the 21 water-resource regions.

The following is an explanation of the example in table 1 that illustrates the computation of average annual streamflow volume for the Texas–Gulf Water-Resource Region (12) (fig. 2).

The streamflow for Region 12 is measured by 12 gaging stations located in the region. The average annual streamflow for the 1951–83 period is 2.93 in/yr. In order to combine the streamflow of the measured and unmeasured area the streamflow was converted to average annual streamflow volume or 1.010×10^{12} ft^3.

The total drainage area of Region 12 consists of the drainage area of the subregions (1201–1211) of Region 12. The total drainage area is 183,140 mi^2.

There is 34,836 mi^2 of Region 12 that is not measured by the gaging stations in the region (fig. 2). The estimated unmeasured average annual streamflow value for this area is 5.92 in. or 0.479×10^{12} ft^3.

The adjustment factor was calculated by dividing the average annual streamflow values for the measured and unmeasured drainage areas of the region by the average annual streamflow value of just the measured drainage area. This resulted in an adjustment factor of 1.48. Therefore, an adjustment was made to the mean annual streamflow values recorded at the gaging stations in the region that are shown in table 16. The adjustment factors determined for the 21 water-resource regions can be found in table 2. The adjustment factors ranged from 1.00 at several regions to 13.8 for the Hawaiian Islands (Region 20).

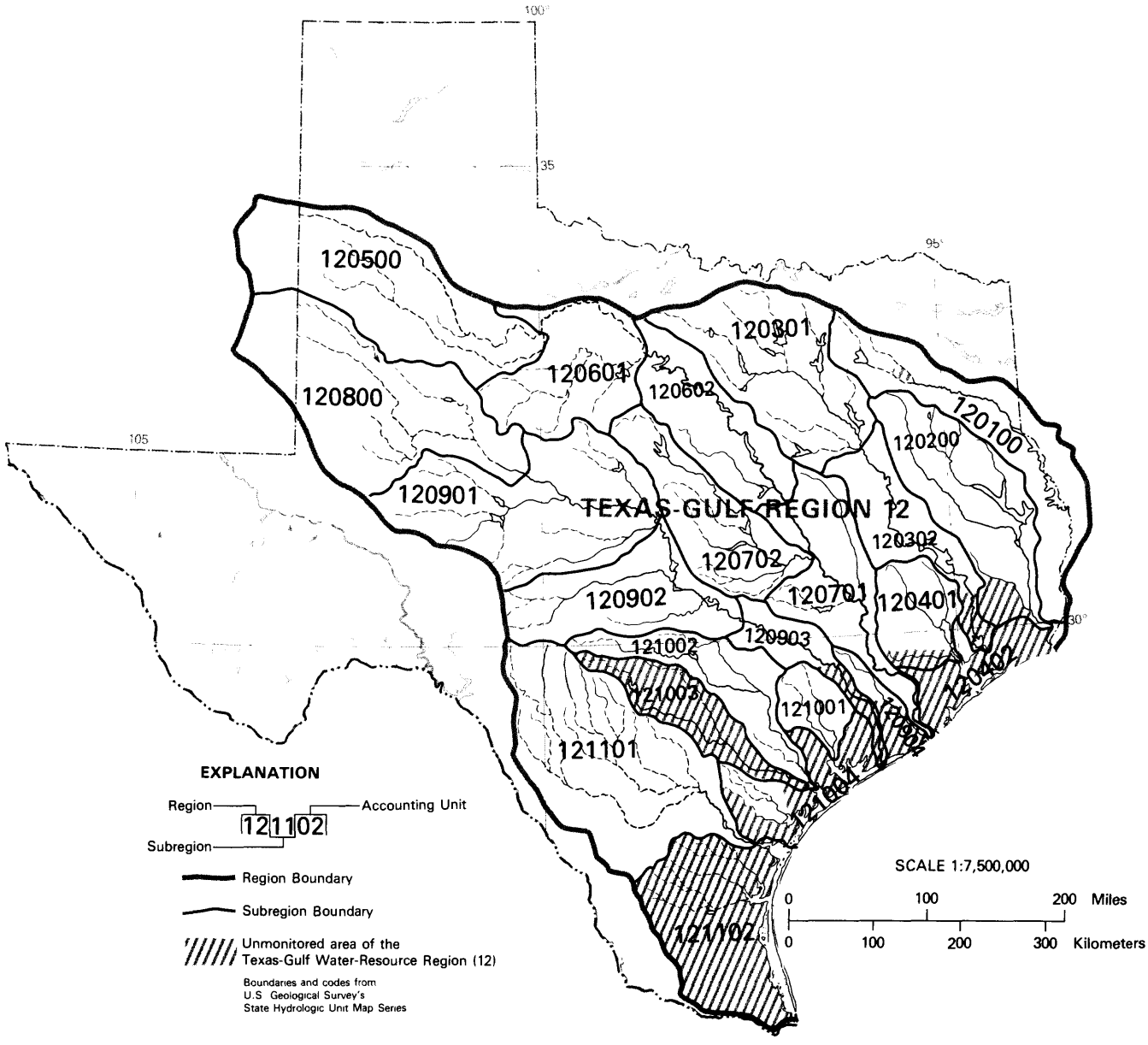

FIGURE 2. Location of the unmonitored area of the Texas–Gulf Water-Resource Region (12).

TABLE 1.—Example illustrating computation of average annual streamflow volume for the Texas–Gulf Water-Resource Region (12)

Steps 1 and 2.--Flow for gaged area--

The following 12 gages measure most of Region 12 drainage area.

Station number	Drainage area (mi^2)	Runoff (ft^3/s)	Runoff (in.)
08030500	1/9,329	2/7,248	3/10.55
08041000	7,951	5,006	8.55
08066500	17,186	6,348	5.02
08071500	2,800	795	3.86
08111500	43,880	6,120	1.89
08117500	727	460	8.62
08162500	42,240	2,433	.78
08211000	16,660	799	.65
08176500	5,198	1,792	4.68
08164500	826	580	9.54
08164000	817	329	5.47
08189500	690	128	2.52
	148,304		1/2.93

Remarks

1/ From Nation's Water Resources, 1975-2000, v. 3, Appendix V, p. 104

2/ From USGS WATSTORE file.

3/ $7{,}248\ ft^3/s \times \frac{13.58}{9{,}329\ mi^2} = 10.55$

where 13.58 is conversion factor for converting cubic feet per second per square mile to inches

4/ Weighted average of runoff in inches and drainage area in square miles

Measured average annual streamflow volume $= 2.93\ in. \times \frac{1\ ft}{12\ in.} \times 148{,}304\ mi^2 \times 27.87 \times 10^6 = 1.010 \times 10^{12}\ ft^3$

where 27.87×10^6 is a conversion factor for converting feet per square mile to cubic feet.

Step 3.--Flow for ungaged area--

Determine drainage area of region.

Subregion	Drainage area (mi^2)	
1201	9,860	From Seaber and others, 1984, State Hydrologic
1202	10,000	Unit Maps, U.S. Geological Survey Open-File
1203	18,000	Report 84-708, p. 12-1 to 12-10.
1204	7,980	
1205	14,600	
1206	15,500	
1207	15,600	
1208	16,000	
1209	28,400	
1210	18,200	
1211	29,000	
	183,140	Total drainage area of Region 12

The gaging stations from Steps 1 and 2 above measure the entire streamflow of Region 12 except fo all or part of the following cataloging units.

Cataloging unit	Cataloging unit drainage area (mi^2)	Estimated unmeasured drainage area (percent)	Unmeasured area (mi^2)	Runoff (in.)
12010005	5/ 2,640	20	528	6/14.6
12020003	1,130	20	226	9.2
12020006	1,100	100	1,100	11.6
12040201	2,140	100	2,140	6.4
12020007	670	100	670	14.1
12040202	795	100	795	11.7
12030203	815	100	815	14.1
12040104	1,130	100	1,130	14.7
12040204	1,130	100	1,130	16.4
12040205	637	100	637	17.0
12090401	1,050	30	315	8.6
12090402	865	100	865	16.0
12100401	1,300	100	1,300	12.0
12100402	922	100	922	10.0
12100403	392	100	392	12.0
12100404	155	100	155	10.0
12100405	855	100	855	5.6
12100301-304	4,270	100	4,270	3.1
12100407	863	100	863	2.3
12110201-208	12,000	100	12,000	.34
			31,108	7/5.92

Drainage area for gaged and ungaged area = 148,304 mi^2 + 31,108 mi^2 = 179,412 mi^2

Total drainage area - gaged and ungaged area = unaccounted drainage area = 183,140 mi^2 - 179,412 mi^2 = 3,728 mi^2

Average annual streamflow volume for ungaged and unaccounted drainage area =

$$5.92 \text{ in.} \times \frac{1 \text{ ft}}{12 \text{ in.}} \times (31{,}108 \text{ mi}^2 + 3{,}728 \text{ mi}^2) \times 27.88 \times 10^6 = 0.479 \times 10^{12} \text{ ft}^3$$

Step 4.--Adjustment factor

Total average annual streamflow volume = $1.010 \times 10^{12} + 0.479 \times 10^{12}$ ft^3/s = 1.49×10^{12} ft^3

$$\text{Adjustment factor} = \frac{Q_T}{Q_M}$$

where: Q_T = total average annual streamflow volume
Q_M = measured average annual runoff volume

$$\text{Adjustment factor} = \frac{1.49 \times 10^{12} \text{ ft}^3}{1.010 \times 10^{12} \text{ ft}^3} = 1.48$$

5/ From Seaber, p. 12-1 to 12-10.
6/ From Krug, Gebert, and Graczyk, written commun., 1986.
7/ Weighted average of runoff, in inches, and drainage area, in square miles.

TABLE 2.—Adjustment factors for the 21 water-resource regions

Water-resource region	Adjustment factor
New England (01)	1.67
Mid-Atlantic (02)	1.63
South Atlantic-Gulf (03)	1.55
Great Lakes (04)	2.41
Ohio (05)	1.00
Tennessee (06)	1.01
Upper Mississippi (07)	1.00
Lower Mississippi (08)	1.10
Souris-Red-Rainy (09)	1.72
Missouri (10)	1.00
Arkansas-White-Red (11)	1.00
Texas-Gulf (12)	1.49
Rio Grande (13)	6.96
Upper Colorado (14)	1.00
Lower Colorado (15)	1.01
Great Basin (16)	1.70
Pacific Northwest (17)	1.81
California (18)	1.40
Alaska (19)	4.25
Hawaii (20)	13.8
Puerto Rico (21)	3.52

RESULTS AND DISCUSSIONS

Average streamflow for the period 1951–83 for each water-resource region is presented in table 3. Table 3 also shows the percent of region monitored. The average annual streamflows for some regions include the streamflow from an upstream region. For example, the streamflow of the Lower Mississippi (Region 08) consists of the streamflow from the Ohio (Region 05), the Tennessee (Region 06), the Upper Mississippi (Region 07), the Lower Mississippi (Region 08), the Missouri (Region 10), and the Arkansas-White-Red (Region 11). No adjustments were made for exports or imports, storage, ground-water mining, or consumptive uses. The outflows from the 21 water-resources regions in the United States ranged from 1.8 Bgal/d (billion gallons per day) for the Rio Grande (Region 13) to 921 Bgal/d from Alaska (Region 19).

Average annual streamflows from each water-resource region are found in table 4. Also, the average annual streamflow and the total streamflow from the United States are found in table 4. The streamflow from the United States for the period 1951–83 was 2,210 Bgal/d. This streamflow includes Alaska, Hawaii, and Puerto Rico. Also in table 4 is total streamflow from the conterminous United States, which is 1,270 Bgal/d for the period of 1951–83.

A detailed breakdown of the outflows for each water-resource region can be found in tables 5–25. The tables summarize the stations used and the unadjusted and adjusted annual streamflows for an individual water-resource region.

The totals for Puerto Rico (Region 21) do not include the Virgin Islands or other scattered territories in the Caribbean because of lack of data. Puerto Rico does not have records from 1951–59.

Several regions include flow that originates outside the United States. Flow in Region 09, the Red River, originates in Canada, flows into the United States, and returns to Canada. The total outflow from Region 17, the Columbia River, also includes the flow from Canada. In Region 19, Alaska, the total includes the flow of the Yukon River from Canada, but not the flow from several rivers crossing southeastern Alaska from Canada because no record exists for those rivers. In Region 13, the Rio Grande, the flow from Mexico that enters the south side of the Rio Grande was not included because that flow never enters the United States. Similarly, in Region 04, the Great Lakes, the flow from Canada that enters the Great Lakes and the St. Lawrence River was not included because that flow never enters the United States.

Figure 3 shows the percentage of outflow from the water-resource regions in the conterminous United States to the total outflow of the United States. The largest contribution is from the Lower Mississippi (Region 08), which includes the flow from the Ohio (Region 05), the Tennessee (Region 06), the Upper Mississippi (Region 07), the Missouri (Region 10), and the Arkansas-White-Red (Region 11). The Lower Mississippi (Region 08) contributes 34 percent of the

TABLE 3.—Total streamflow from the 21 water-resource regions, 1951–83

Water-resource region	Streamflow (billion gallons per day)	Percentage of region gaged
New England (01)	76.7	61
Mid-Atlantic (02)	94.6	59
South Atlantic-Gulf (03)	207	64
Great Lakes (04)	75.2	43
Ohio (05)	181	100
Tennessee (06)	42.9	99
Upper Mississippi (07)	128	99
Lower Mississippi (08)	433	93
Souris-Red-Rainy (09)	7.2	82
Missouri (10)	50.2	99
Arkansas-White-Red (11)	56.3	99
Texas-Gulf (12)	30.7	81
Rio Grande (13)	1.8	49
Upper Colorado (14)	8.3	99
Lower Colorado (15)	2.5	98
Great Basin (16)	4.2	29
Pacific Northwest (17)	278	82
California (18)	62.8	44
Alaska (19)	921	39
Hawaii (20)	13.6	8
Caribbean (21)	4.8	26

Tables 4–25 are at the end of the report.

total outflow while draining 41 percent of the land area of the conterminous United States. The next largest contributor is the Pacific Northwest (Region 17) with 22 percent of the total outflow.

The percentage contribution of the five water-resource regions that flow into the Lower Mississippi (Region 08) are shown in figure 4. The largest inflow to the Lower Mississippi (Region 08) is from the Ohio (Region 05), which contributes 138 Bgal/d, 33 percent. The Upper Mississippi (Region 07) contributes the next greatest amount of 128 Bgal/d, or 31 percent.

The Missouri (Region 10) has the largest drainage area (509,547 mi²) in the conterminous United States, but contributes only 12 percent of the flow to the Lower Mississippi (Region 08) and only 4 percent to the total outflow from the conterminous United States.

The streamflow from the Upper Colorado (Region 14) is 8 Bgal/d. This region flows into the Lower Colorado (Region 15). The outflow from the Lower Colorado (Region 15) is only 2 Bgal/d. A reduction indicates a loss of at least 6 Bgal/d of streamflow from the Lower Colorado (Region 15) which may be attributed to irrigation, water supply, and losses from evaporation and transpiration.

Figures 5–9 show a history of streamflows from the 21 water-resource regions for 1951–83. These figures show the annual outflow and the 15-year moving average. The 15-year, weighted moving average was calculated using the "bisquare weight function" (Mosteller and Tukey, 1977). This function gives the most weight to the years closest to the year for which the average is being calculated and gradually declining weights to years earlier and later. It also allows calculation of the moving average for years near the beginning and end of the period of record. For example, the 15-year weighted moving averages for the years 1951–58 were all calculated from the annual streamflows for 1951–65, but the

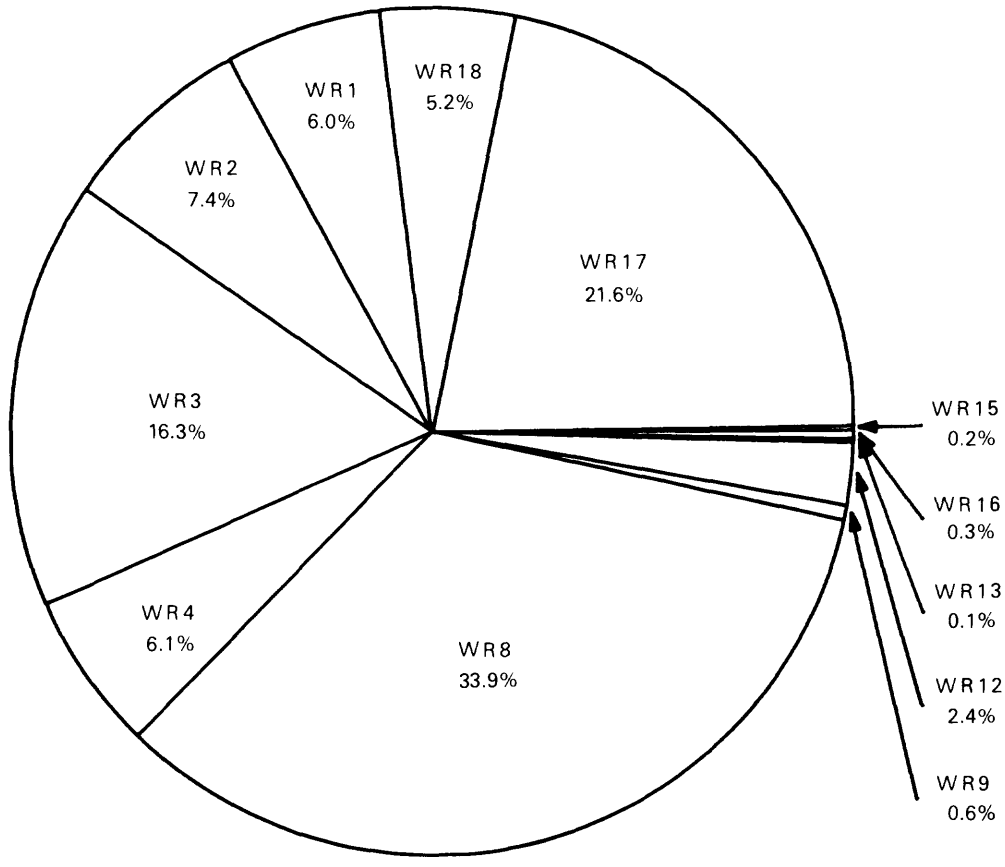

FIGURE 3. Distribution of streamflow from the conterminous United States, 1951–83.

distribution of the weights was shifted each year. The figures illustrate the cyclic nature of runoff. In general, the arid western regions show larger fluctuation in annual outflow and the more humid eastern regions have more uniform flows.

Although the 1951–83 period is too short to describe long-term trends, the figures illustrate interesting streamflow fluctuations. For example, the Mid-Atlantic (Region 02) has decreasing streamflow since the mid-1970's, while the Upper Mississippi (Region 07), the Missouri (Region 10), the Rio Grande (Region 13), the Upper Colorado (Region 14), the Lower Colorado (Region 15), the Great Basin (Region 16), and California (Region 18) all show increasing streamflow. The outflows from the Upper and Lower Colorado (Regions 14 and 15) appear to be heavily affected by large storage reservoirs. For example, streamflow from the Upper Colorado (Region 14) shows decreasing streamflow in 1963 and 1964, which may be due to filling Lake Powell. Uniform streamflows from these regions are the general pattern except during severe drought or large runoff periods.

The method used to calculate the streamflow from each region could be improved by using more gaging stations. This is especially true for regions that had large areas of unmonitored areas that may have gaging stations monitoring the streamflow.

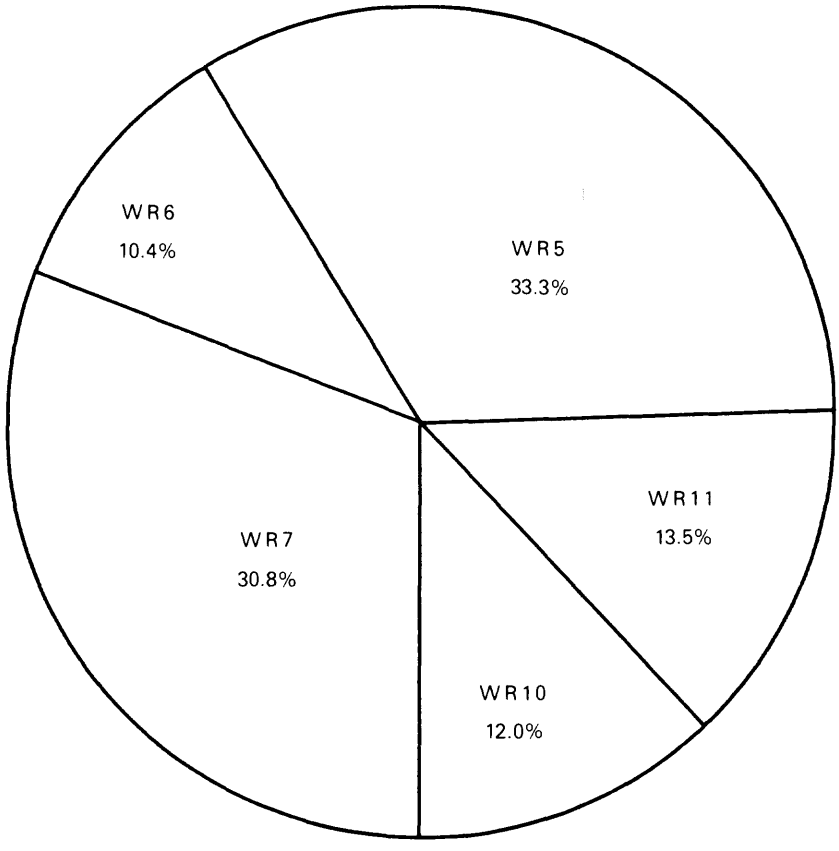

FIGURE 4. Distribution of streamflow into the Lower Mississippi Water-Resource Region (8).

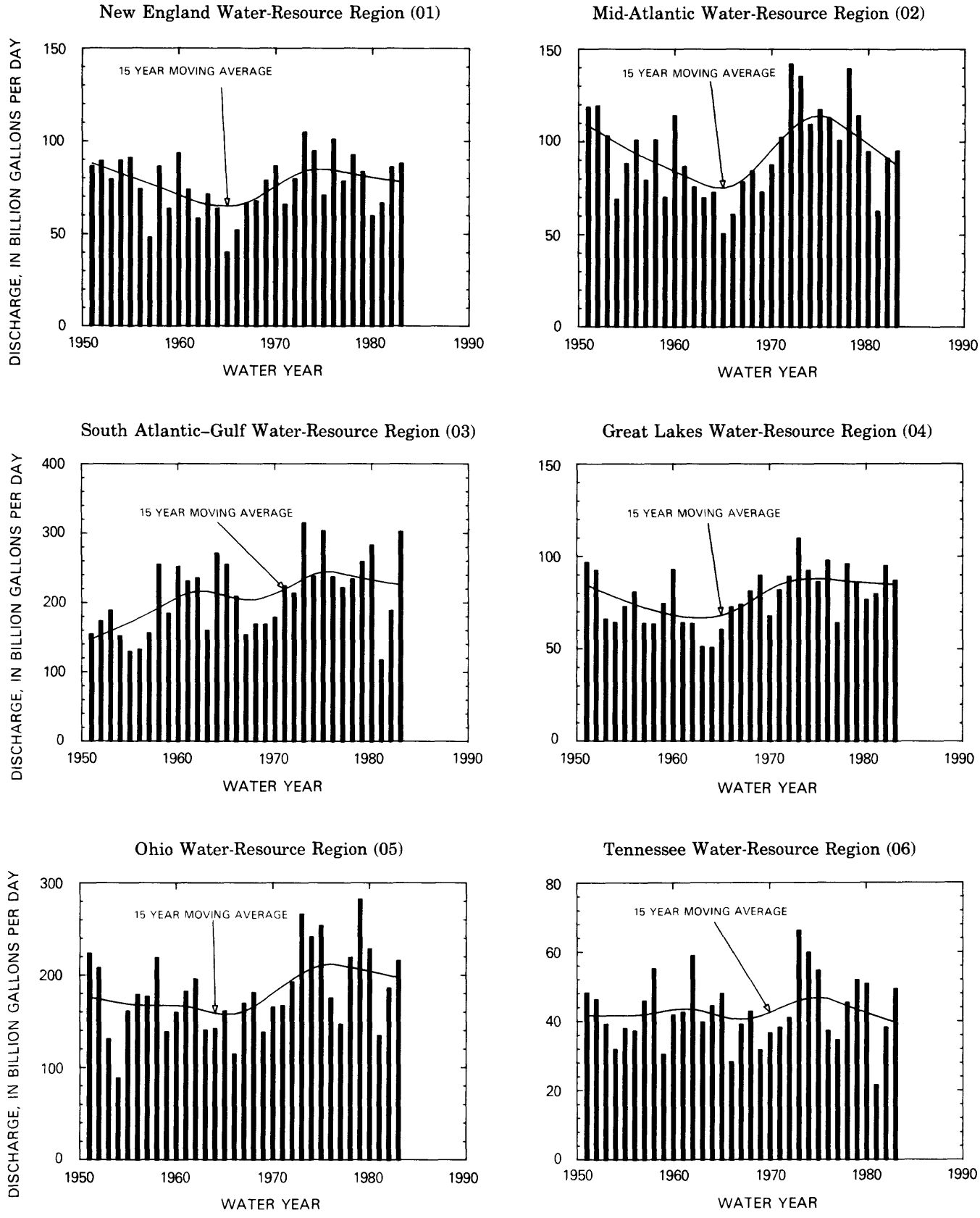

FIGURE 5. History of annual streamflow from Water-Resource Regions 1–6, 1951–83.

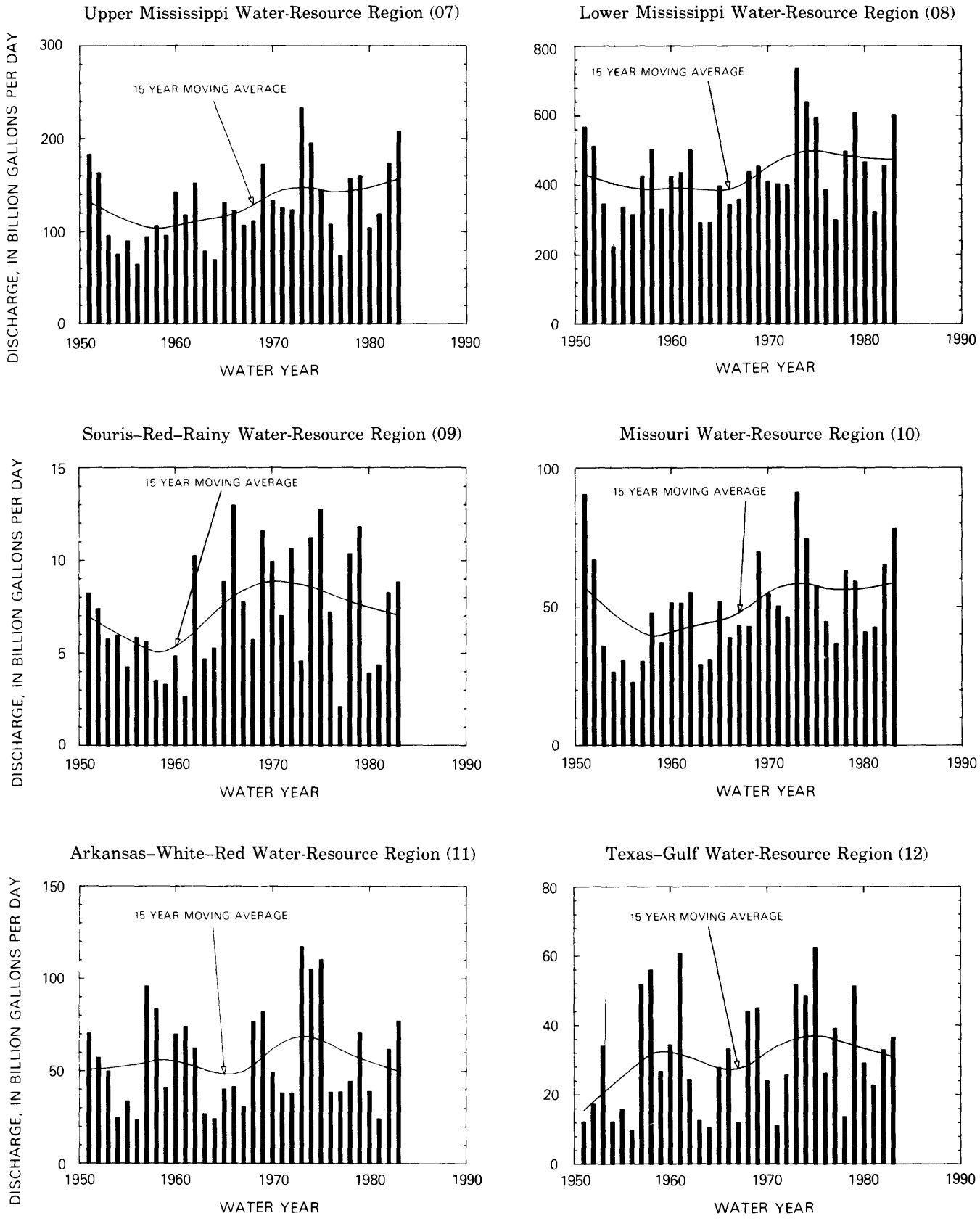

FIGURE 6. History of annual streamflow from Water-Resource Regions 7–12, 1951–83.

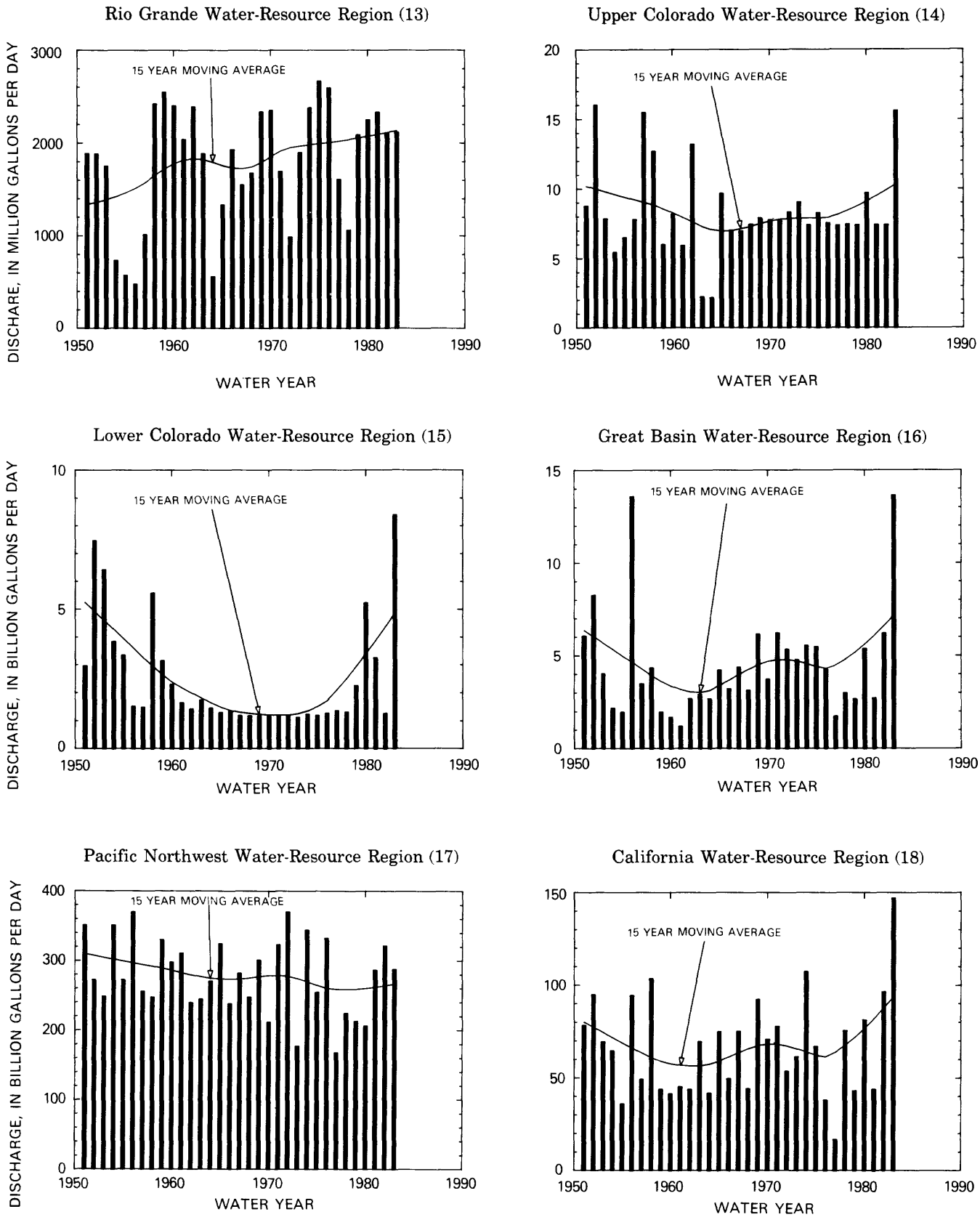

FIGURE 7. History of annual streamflow from Water-Resource Regions 13–18, 1951–83.

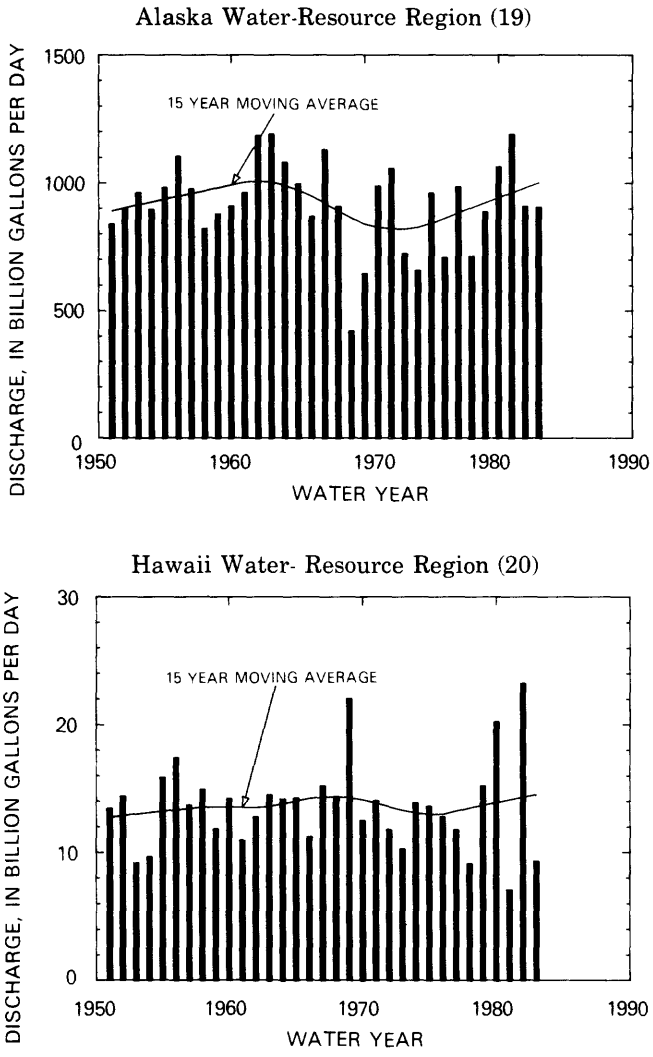

FIGURE 8. History of annual streamflow from Water-Resource Regions 19 and 20, 1951–83.

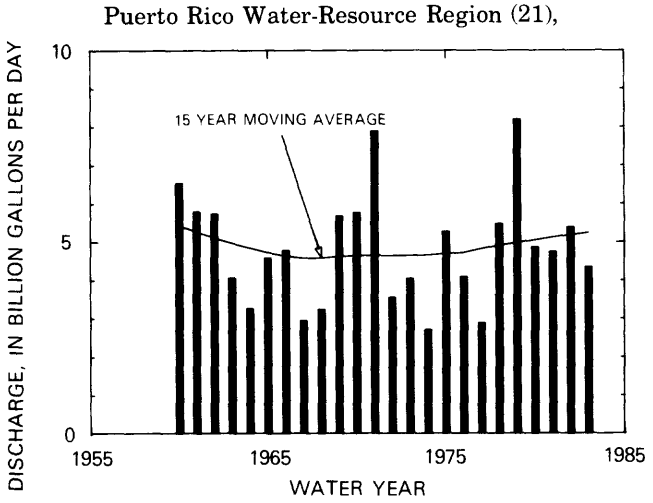

FIGURE 9. History of annual streamflow from Water-Resource Region 21, 1951–83.

SUMMARY

Annual streamflows were calculated from the 21 water-resource regions in the United States, for the period 1951–83. The total streamflow from the United States including Puerto Rico was 2,210 Bgal/d. The streamflow from the conterminous United States was 1,270 Bgal/d. The Lower Mississippi (Region 08) contributed 34 percent to the total streamflow, which is the most of any region in the conterminous United States.

The Lower Mississippi (Region 08) receives streamflows from the Ohio (Region 05), the Tennessee (Region 06), the Upper Mississippi (Region 07), the Missouri (Region 10), and the Arkansas–White–Red (Region 11). The Ohio (Region 05) contributes the most to the Lower Mississippi (Region 08), 33 percent. The Missouri (Region 10) has the largest drainage area in the conterminous United States but only contributes 12 percent of the streamflow to the Lower Mississippi (Region 08) and only 4 percent of the total streamflow from the United States.

The streamflow from the Upper Colorado (Region 14) is 8 Bgal/d, which is tributary to the Lower Colorado (Region 15). The streamflow from the Lower Colorado (Region 15) is 2 Bgal/d. This indicates a loss of at least 6 Bgal/d, which may be attributed to irrigation, water supply, and losses from evaporation and transpiration. The Upper and Lower Colorado are also affected by filling large storage reservoirs. Streamflows from the Upper Colorado (Region 14) show decreasing streamflow in 1963 and 1964, which may be due to filling of Lake Powell.

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TABLE 4.—Average annual streamflow from the 21 water-resource regions in the United States, 1951–83

Year	New England 01 (Bgal/d)	Mid-Atlantic 02 (Bgal/d)	South Atlantic Gulf 03 (Bgal/d)	Great Lakes 04 (Bgal/d)	Ohio 05 (Bgal/d)	Tennessee 06 (Bgal/d)	Upper Mississippi 07 (Bgal/d)	Lower Mississippi 08 (Bgal/d)	Souris-Red Rainy 09 (Bgal/d)	Missouri 10 (Bgal/d)	Arkansas Red-White 11 (Bgal/d)
1951	86.3	119	150	93.6	224	48.2	183	567	8.2	90.4	70.4
1952	89.2	119	169	89.3	208	46.3	163	511	7.4	68.9	57.3
1953	79.3	103	185	62.9	131	39.3	95.6	345	5.7	35.9	49.7
1954	89.5	69.0	148	61.1	88.4	31.9	75.2	222	5.9	26.5	24.9
1955	91.0	88.2	125	69.8	161	37.9	89.5	336	4.2	30.8	33.5
1956	74.1	101	128	77.8	179	37.2	64.2	314	5.6	22.7	23.6
1957	48.1	79.1	152	60.7	177	45.9	94.3	425	5.6	30.5	95.7
1956	66.4	101	251	60.3	219	55.1	106	502	3.5	47.7	63.3
1959	63.6	70.1	181	71.4	139	30.5	95.6	330	3.3	37.0	40.9
1960	93.4	114	248	89.9	160	41.9	142	424	4.8	51.3	69.9
1961	73.8	88.6	227	61.1	182	42.7	118	435	2.6	51.4	74.0
1962	56.3	75.6	232	60.5	196	56.9	152	500	10.2	55.1	62.2
1963	71.3	69.9	156	48.0	141	39.8	78.4	292	4.7	29.2	26.8
1964	63.6	72.8	267	47.6	142	44.5	69.4	292	5.3	30.8	24.3
1965	40.1	50.5	251	57.5	161	48.0	131	397	6.8	52.0	40.2
1966	52.0	60.8	205	69.5	114	26.3	122	344	13.0	36.6	41.4
1967	66.2	76.3	150	71.0	170	39.1	107	358	7.7	43.1	30.7
1966	67.7	84.3	165	76.3	181	42.9	112	437	5.7	42.9	76.6
1969	78.8	73.0	165	86.8	138	31.7	172	453	11.6	69.7	81.9
1970	88.6	87.5	175	64.8	185	36.7	133	410	9.9	54.6	49.0
1971	65.9	103	220	78.8	167	38.2	125	402	7.0	50.2	38.1
1972	79.7	142	210	86.1	193	41.0	123	400	10.6	46.3	38.0
1973	105	135	311	107	267	66.3	233	734	4.6	91.1	117
1974	94.8	109	234	69.4	241	59.9	195	636	11.2	74.3	105
1975	70.8	118	299	83.2	254	54.7	145	593	12.8	57.2	110
1976	101	113	233	94.7	175	37.3	108	366	7.2	44.7	38.5
1977	78.4	101	218	61.0	147	34.5	73.5	299	2.1	36.8	38.6
1976	92.7	140	230	92.9	219	45.3	157	495	10.4	63.0	44.7
1979	83.5	114	255	62.7	282	52.0	160	607	11.8	59.2	70.6
1980	59.7	94.8	279	73.4	229	50.8	104	466	3.9	40.8	38.9
1981	66.7	62.6	113	76.7	135	21.5	118	322	4.4	42.6	24.2
1962	86.2	91.3	165	91.7	186	38.2	173	455	8.3	65.1	61.9
1983	88.1	95.2	299	63.9	216	49.3	208	601	6.8	78.1	77.1
TOTAL	2530	3120	6620	2480	5990	1420	4230	14300	237	1660	1860
MEAN	76.7	94.6	207	75.2	181	42.9	128	433	7.2	50.2	56.3

Year	Texas-Gulf 12 (Bgal/d)	Rio Grande 13 (Bgal/d)	Upper Colorado 14 (Bgal/d)	Lower Colorado 15 (Bgal/d)	Great Basin 16 (Bgal/d)	Pacific Northwest 17 (Bgal/d)	California 16 (Bgal/d)	Alaska 19 (Bgal/d)	Hawaii 20 (Bgal/d)	Caribbean 21 (Bgal/d)	Streamflow from the United States (Bgal/d)	Streamflow from the conterminous United States (Bgal/d)
1951	12.2	1.9	8.8	3.0	6.1	351	74.6	839	13.4	4.8	2330	1470
1952	17.2	1.9	16.0	7.5	6.3	272	91.3	900	14.4	4.6	2300	1360
1953	34.0	1.8	7.8	6.4	4.0	248	65.8	960	9.2	4.8	2120	1140
1954	12.2	0.7	5.4	3.8	2.2	351	61.0	696	9.6	4.8	1940	1030
1955	15.8	0.6	6.5	3.3	2.0	272	32.3	961	15.9	4.8	2040	1040
1956	9.6	0.5	7.8	1.5	4.7	370	90.6	1100	17.4	4.6	2300	1180
1957	51.7	1.0	15.5	1.5	3.5	256	45.5	976	13.7	4.8	2120	1130
1958	55.9	2.4	12.7	5.6	4.3	248	99.8	820	14.9	4.8	2260	1420
1959	26.6	2.5	6.0	3.2	2.0	330	40.2	678	11.8	4.8	2020	1120
1960	34.4	2.4	8.2	2.3	1.7	298	37.7	909	14.2	6.5	2280	1350
1961	60.7	2.0	5.9	1.6	1.2	311	41.5	961	10.9	5.8	2280	1300
1962	24.4	2.4	13.2	1.4	2.7	240	40.1	1160	12.8	5.7	2450	1250
1963	12.5	1.9	2.2	1.7	2.9	245	66.0	1190	14.5	4.1	2160	972
1964	10.5	0.6	2.1	1.4	2.7	271	36.1	1080	14.2	3.3	2170	1070
1965	27.8	1.3	9.7	1.3	4.2	325	71.3	997	14.2	4.6	2250	1230
1966	33.2	1.9	7.0	1.4	3.2	236	46.0	669	11.2	4.8	1950	1070
1967	11.9	1.6	7.0	1.2	4.4	282	71.6	1130	15.2	2.9	2250	1100
1966	44.1	1.7	7.4	1.2	3.1	248	40.6	906	14.4	3.2	2100	1180
1969	44.9	2.3	7.9	1.2	6.2	301	88.6	421	22.0	5.7	1760	1310
1970	24.0	2.4	7.7	1.2	3.7	212	67.3	646	12.5	5.8	1810	1140
1971	11.1	1.7	7.7	1.2	6.2	323	74.2	968	14.0	7.9	2300	1230
1972	25.7	1.0	8.3	1.2	5.3	370	50.1	1060	11.8	3.5	2450	1380
1973	51.7	1.9	9.0	1.1	4.8	177	57.9	724	10.3	4.0	2430	1690
1974	46.4	2.4	7.4	1.2	5.5	344	104	658	13.9	2.7	2360	1680
1975	62.3	2.7	6.3	1.2	5.5	255	63.5	960	13.6	5.3	2550	1570
1976	26.1	2.6	7.5	1.3	4.3	333	34.5	709	12.8	4.1	2080	1340
1977	39.1	1.6	7.4	1.4	1.8	188	13.2	966	11.8	2.9	1980	985
1978	13.6	1.1	7.5	1.3	3.0	225	72.0	713	9.1	5.5	2100	1380
1979	51.3	2.1	7.4	2.3	2.7	213	39.4	888	15.2	8.2	2380	1460
1980	29.1	2.3	9.7	5.2	5.4	207	77.8	1060	20.2	4.9	2390	1300
1981	22.7	2.3	7.4	3.2	2.7	287	40.3	1190	7.1	4.7	2210	1000
1982	32.8	2.1	7.4	1.3	8.2	322	92.9	909	23.3	5.4	2310	1370
1983	36.6	2.1	15.6	8.4	13.7	288	143	905	9.3	4.3	2590	1870
TOTAL	1010	60.0	275	82.0	140	9160	2070	30400	449	159	73000	43000
MEAN	30.7	1.8	8.3	2.5	4.2	278	62.8	921	13.6	4.8	2210	1270

TABLE 5.—Annual streamflow from the New England Water-Resource Region (01), 1951–83

Station / Year	1122500 (ft^3/s)	1127000 (ft^3/s)	1184000 (ft^3/s)	1190000 (ft^3/s)	1193500 (ft^3/s)	1198500 (ft^3/s)	1205500 (ft^3/s)	1014000 (ft^3/s)	1034500 (ft^3/s)	1046500 (ft^3/s)	1059000 (ft^3/s)	1084000 (ft^3/s)
1951	757	1364	17640	1186	190	205	2850	11940	15390	5468	7428	788
1952	679	1617	21430	1479	226	310	3878	9436	12880	4607	7330	1087
1953	900	1494	18290	1414	223	282	3363	9002	11190	4419	6479	918
1954	689	1404	16240	829	171	172	2178	12280	16340	5773	6422	707
1955	875	1726	19210	1518	223	247	3399	11660	18190	5976	7574	950
1956	998	1746	19480	1802	276	282	3698	6298	8695	3628	5568	609
1957	465	644	11710	544	118	126	1657	5912	7488	2977	4075	514
1958	744	1460	18020	1026	217	225	2542	13220	14380	5442	7371	616
1959	731	1309	13090	906	187	191	2308	8454	11300	4290	5422	581
1960	871	1445	22490	1251	212	247	3248	10700	14980	5234	8312	776
1961	697	1309	15370	1099	171	219	2634	10520	13080	4655	5549	753
1962	507	1064	12380	665	126	153	1658	7906	10270	3647	4846	447
1963	461	1019	13990	679	125	131	1671	10440	12980	4875	6625	771
1964	499	952	12500	684	144	163	1842	9111	11490	4326	5936	658
1965	337	639	7647	364	98	110	990	5667	8625	2695	3595	406
1966	369	600	11830	450	65	85	1207	8141	9220	3754	5022	301
1967	726	1260	14320	797	188	167	2365	8832	11290	3832	5406	589
1968	683	1299	14600	900	163	172	2499	8527	11120	4309	5674	586
1969	599	1103	18470	1023	163	211	2747	9220	12310	5028	7509	752
1970	868	1431	17720	1064	209	230	2550	10150	15400	6565	8221	906
1971	512	954	13230	792	121	169	2140	9782	11700	4293	5635	532
1972	1043	1800	18020	1559	275	305	3741	10350	12150	4104	5945	556
1973	1060	1930	22570	1552	326	308	3803	13140	17760	5703	8305	933
1974	861	1520	19460	1166	215	237	3041	12380	16170	7163	9444	904
1975	836	1364	16330	1287	200	242	3327	8784	10450	4335	5697	584
1976	938	1704	24630	1429	236	279	3737	13480	16430	5236	7663	773
1977	667	1165	17550	1037	171	200	2948	11240	13940	4996	6349	707
1978	1001	1650	20770	1494	242	316	3444	10350	14010	5662	8443	892
1979	666	1763	18810	1201	271	316	3136	11160	14640	4705	5909	1/691
1980	660	1265	14380	1172	179	230	2507	6775	10140	2613	4179	432
1981	442	854	14800	669	116	137	1550	11560	12340	3469	5161	424
1982	913	1773	18030	1269	254	258	2717	10480	14950	5419	6764	750
1983	900	1762	18690	1454	236	310	3139	11840	14730	5197	6839	796

Station / Year	1066000 (ft^3/s)	1100000 (ft^3/s)	1108000 (ft^3/s)	1073500 (ft^3/s)	1112500 (ft^3/s)	1116500 (ft^3/s)	1118500 (ft^3/s)	Total monitored streamflow (ft^3/s)	Total streamflow (ft^3/s)	Total streamflow (Bgal/d)
1951	3506	8949	404	327	761	333	484	79970	133550	66.3
1952	3936	10720	460	425	933	414	626	62691	136094	89.2
1953	3445	9226	503	377	808	430	666	73429	122626	79.3
1954	3672	9175	605	376	816	410	691	62952	138530	89.5
1955	2984	8612	590	306	1090	462	703	84315	140806	91.0
1956	2705	9353	685	353	1158	521	778	66635	114620	74.1
1957	1753	4652	377	152	531	216	425	44536	74375	48.1
1958	3188	6610	581	330	876	439	768	60057	133695	86.4
1959	1884	5759	536	216	768	367	627	58926	98406	63.6
1960	3619	10230	508	349	969	362	549	66572	144575	93.4
1961	2534	7053	546	277	852	415	691	68424	114268	73.8
1962	1996	5692	502	214	772	335	632	54014	90203	58.3
1963	2685	7162	536	282	778	301	567	66078	110350	71.3
1964	2453	6033	458	254	662	279	481	58927	98408	63.6
1965	1372	3068	250	137	396	160	362	37158	62054	40.1
1966	1614	4237	171	148	345	126	266	46193	60461	52.0
1967	2353	6949	452	290	715	318	534	61363	102476	66.2
1968	2480	7188	505	259	790	361	594	62709	104724	67.7
1969	3234	8393	484	302	703	282	483	73016	121937	78.8
1970	3225	8900	555	343	888	374	609	80208	133947	86.6
1971	2607	6583	390	253	604	255	497	61049	101952	65.9
1972	2651	6316	543	333	1052	410	709	73862	123350	79.7
1973	4076	11840	741	424	1112	595	871	97049	162072	105
1974	3571	6949	521	285	900	413	572	87812	146646	94.8
1975	2413	7522	421	255	739	300	510	65616	109579	70.8
1976	3337	10730	543	342	955	403	591	93636	156372	101
1977	2617	7030	421	247	640	289	469	72663	121381	78.4
1978	3661	10130	660	352	1061	513	799	65870	143403	92.7
1979	2830	7975	612	293	960	466	765	77391	129243	83.5
1960	1994	6587	431	223	681	298	541	55307	92363	59.7
1981	2331	6578	270	218	504	147	251	61621	103241	66.7
1962	2993	10130	550	368	1042	409	766	79835	133324	86.2
1983	2974	9427	649	374	1010	522	800	61669	136387	86.1
							TOTAL	2345773	3917441	2530
							MEAN	71084	118710	76.7

1/ Estimated value.

TABLE 6.—Annual streamflow from the Mid-Atlantic Water-Resource Region (02), 1951–83

Station	1481500	1846500	1389500	1391500	1407500	1408500	1463500	1358000	4273500	1474500	1576000	4282500	4290500	4292500	2037501
Year	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)
1951	485	15610	1411	123	77	185	14780	15750	907	3129	49210	1044	1773	1255	8361
1952	677	13800	2027	181	109	281	18020	17460	740	4452	43610	1199	2003	1353	8860
1953	812	13350	1458	129	86	253	14380	14130	706	3944	38810	998	1783	1134	7404
1954	252	5358	571	71	51	194	9051	13220	965	1724	26430	1124	1735	1231	4398
1955	368	12850	983	102	53	174	11150	13220	1026	2184	30320	1078	1988	1397	7951
1956	418	8817	1206	117	81	205	14570	15780	789	2795	45140	988	1638	1137	3467
1957	347	9282	740	81	41	184	8957	9672	559	2221	34640	703	1192	911	6588
1958	693	12480	1254	133	78	295	12480	12760	713	2901	40190	1031	1938	1422	8794
1959	347	5452	872	78	47	233	9248	11820	816	1788	28870	795	1458	1088	4694
1960	568	11890	1301	120	68	223	14230	17190	923	2950	48830	1302	1943	1296	8891
1961	569	11450	1129	117	90	269	10780	10900	804	2582	35080	770	1508	1144	6301
1962	368	10640	601	83	58	217	8004	10040	641	1879	27270	735	1319	1083	9736
1963	295	8254	545	82	49	184	7883	10170	852	1881	27780	748	1813	1213	5622
1964	402	9253	621	75	42	180	8175	9053	841	1997	31930	722	1185	908	4833
1965	281	8589	269	54	37	179	4708	6386	460	1014	19080	397	832	791	5540
1966	270	5500	394	50	24	134	6277	10610	795	1158	25910	815	1883	1280	3574
1967	428	10090	1028	98	84	224	9386	10040	573	2119	31720	825	1375	999	8329
1988	485	10040	1071	99	63	238	10480	12490	638	2132	34500	862	1507	1133	5372
1969	293	4900	728	90	45	233	9788	13670	920	1789	26960	1094	2048	1316	6304
1970	438	10490	890	88	66	258	10610	12080	738	2300	37010	993	1737	1150	5305
1971	871	13810	1274	105	58	221	11780	14550	1031	3125	40140	914	1688	1229	8245
1972	732	18580	1651	146	96	300	15540	18670	1042	4011	59900	1100	1972	1273	11590
1973	705	17120	2010	151	104	318	17540	19070	1119	4327	47940	1415	2751	1782	13850
1974	447	11540	1294	111	54	215	14020	18010	1050	3102	43270	1209	2358	1731	8832
1975	675	14060	1505	125	71	241	15260	18610	779	4029	48410	1049	1579	1084	9532
1976	481	10010	1213	131	48	198	13530	22100	1114	2974	43640	1878	2697	1776	8634
1977	386	10640	882	96	18	153	12010	17060	944	2554	41930	1118	1907	1322	6076
1978	748	16180	1616	151	101	335	16560	18490	1233	4519	58870	1231	2257	1758	10120
1979	800	16150	1453	120	86	305	13770	15640	845	3498	42870	1031	1578	1180	10430
1980	555	15750	1160	100	56	209	10550	11290	713	2482	35540	742	1218	988	9774
1981	228	8334	428	45	11	130	7414	9880	832	1410	26030	1008	1785	1466	3173
1982	411	10600	820	80	21	163	10230	14010	868	2491	36430	1164	1921	1353	7192
1983	558	12270	1409	118	39	219	12850	13580	821	3128	34380	1073	1972	1403	7902

Year	Total monitored streamflow (ft^3/s)	Total streamflow (ft^3/s)	Total streamflow (Bgal/d)
1951	114080	183669	119
1952	114752	184751	119
1953	99177	159675	103
1954	66375	106864	69.0
1955	84802	136531	88.2
1956	97108	156343	101
1957	76096	122515	79.1
1958	97162	156431	101
1959	87382	108485	70.1
1960	109725	176658	114
1981	83291	134098	86.6
1982	72874	117005	75.6
1963	67171	108145	69.9
1964	70017	112727	72.8
1965	48597	78241	50.5
1986	58474	94143	60.8
1987	75298	121230	78.3
1968	81088	130552	84.3
1969	70178	112986	73.0
1970	84149	135480	87.5
1971	98621	158779	103
1972	138803	219930	142
1973	130180	209590	135
1974	105243	189441	109
1975	112989	181911	118
1976	108422	174559	113
1977	97057	158261	101
1978	134185	218006	140
1979	109736	176675	114
1980	91107	146682	94.8
1981	60174	96881	82.6
1982	87752	141281	91.3
1983	91522	147351	95.2
TOTAL	3001185	4831875	3120
MEAN	90944	148420	94.8

TABLE 7.—Annual streamflow from the South Atlantic–Gulf Water-Resource Region (03), 1951–83

Station	2429500	2470000	2471000	2479500	2256500	2296750	2301500	2313000	2323500	2326500	2330000	2359000	2359170	2366500
Year	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)
1951	25920	31640	226	774	84	995	201	1122	6704	32	651	868	14650	3930
1952	29540	19460	166	430	419	755	188	935	9179	242	1401	1179	25170	5541
1953	32030	24610	201	782	643	2300	532	1105	7496	220	1097	1157	27660	5656
1954	22010	14210	115	503	455	2200	477	1628	9290	164	1019	1264	24530	7259
1955	22080	19430	311	778	118	715	236	464	4291	3	315	613	14480	3493
1956	23100	20690	249	656	14	393	136	334	4640	10	640	794	14500	3454
1957	28770	21320	278	1006	251	1448	440	612	6201	284	948	1048	18340	6124
1956	35390	36120	309	1274	410	1477	423	1328	13210	830	2626	1874	28200	6986
1959	23950	20450	359	1193	416	2376	789	2328	13990	589	2109	1504	23020	6338
1960	28440	25380	315	1062	672	2571	844	3374	12930	569	2522	1822	28690	8402
1961	40830	1/28912	404	1524	175	1009	270	1621	10590	253	1810	1329	26830	7015
1962	41420	1/41160	405	1369	254	914	346	452	7142	211	766	1179	25510	6216
1963	28990	1/15826	154	364	90	908	395	645	7172	111	1153	1159	20990	5071
1964	43430	1/32769	209	694	168	979	384	1142	15050	800	2937	2247	36690	10980
1965	31380	1/25368	304	817	152	835	348	1403	19270	1471	4325	2158	34280	8769
1966	30290	1/18806	254	858	327	1248	395	1595	15040	747	2583	1597	30030	7422
1967	26550	1/13734	221	549	155	717	373	1089	9549	220	1324	1294	24730	5162
1968	33880	1/33533	141	405	283	1255	414	834	5301	36	430	759	20680	4510
1969	26330	1/24817	1/263	811	219	1052	368	1115	6335	27	1430	911	19220	4455
1970	24230	1/26483	1/271	635	490	1430	449	1773	13300	234	2060	1350	22490	7271
1971	37040	1/30039	1/290	1005	159	615	238	728	9080	106	1488	1264	29820	8362
1972	34630	1/23465	1/256	990	117	642	261	725	11920	345	1374	1235	26820	5390
1973	47630	1/44053	1/361	1066	213	1005	336	697	15560	844	3082	1952	37540	10590
1974	34490	1/42713	1/354	1/1175	416	1047	324	945	8554	237	1378	1213	26560	6801
1975	48730	1/40571	1/343	1/1133	120	471	216	522	12760	554	2413	1927	34390	10350
1976	48010	1/36852	1/324	1/1062	211	822	324	721	9546	402	1943	1511	29290	9390
1977	1/35490	1/29213	1/285	1/916	88	441	143	554	12060	522	1959	1523	27980	7610
1978	1/32252	1/29000	1/284	1/912	270	1076	256	804	10870	261	1552	1921	33410	10840
1979	1/42222	1/41235	1/347	1/1146	350	344	472	681	8657	238	1969	1861	29540	8035
1980	1/42660	1/46220	1/372	1/1242	133	763	327	1060	10760	1/467	2001	1864	34220	8231
1981	1/23034	1/14824	1/212	1/640	43	301	180	364	5612	1/100	928	806	14060	3941
1982	1/34595	1/24905	1/264	1/833	330	1362	278	1087	8234	158	1378	1192	24860	5942
1983	1/35800	1/57050	1/427	1/1449	379	1489	429	1728	13660	1/745	1/2775	2011	34150	1/9257

Station	2368000	2375500	2198500	2202500	2226000	2226000	2479000	2080500	2083000	2089500	2105500	2131000	2135000	2171500
Year	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)
1951	625	3281	8253	1424	8160	1694	8176	6994	269	1217	2520	5548	1371	520
1952	773	4653	10700	1818	12970	1418	5426	8391	502	2276	5275	9405	1652	2152
1953	921	4509	8762	2038	13040	1469	9025	6032	514	2571	5081	8276	2299	572
1954	1308	5209	8736	1435	9797	1747	6494	5087	492	2254	3570	6835	1760	513
1955	608	3601	6782	1206	5996	391	5061	7845	341	2456	4686	6509	2186	518
1956	725	3055	6975	1389	8465	681	6330	5180	420	2200	3664	5477	2384	503
1957	1279	5023	8012	1282	10920	1274	4647	7231	440	2284	4842	7260	1996	504
1958	990	5007	13970	3359	17840	2990	13210	11290	784	4238	7282	13220	5266	3623
1959	1047	5532	8917	1997	12060	3038	8062	5943	560	3613	5492	8754	3754	580
1960	1388	8435	16540	4388	17610	2687	9760	10730	838	4996	7668	16470	5695	7682
1961	1414	7913	11770	2635	13870	2198	15250	7728	474	3298	4643	9825	3461	2385
1962	1153	6156	12050	2603	14200	1388	13930	9386	569	3131	4912	10170	2426	2320
1963	888	3549	12220	2505	13660	1580	3718	6712	390	2905	4660	9215	2931	1340
1964	1585	6602	20900	4636	24980	4528	8631	4924	397	3193	5529	10700	4066	2989
1965	1108	6758	17590	3952	19180	4245	8532	6026	549	4558	7417	13980	5947	4756
1966	1010	6123	12560	2932	19030	3321	10570	4683	295	2254	3909	7994	3431	1511
1967	712	4225	10590	1734	13470	1946	4704	4765	215	1960	2899	5706	2169	1266
1968	610	2889	10940	962	8617	513	6479	5220	291	1910	3359	7514	1880	988
1969	803	3515	11730	1699	11840	2153	8349	4715	392	2222	4226	8972	3867	1488
1970	1363	6478	8743	2195	12650	3544	5160	5252	334	2123	3705	7971	2690	1544
1971	1157	7427	11800	2969	16690	2361	10450	7502	341	2612	4808	11350	3860	1460
1972	702	4467	13210	2791	14230	2766	10150	11160	521	3234	5291	12850	3518	1269
1973	1759	10350	17300	3588	19390	3968	14250	12920	823	4575	8190	15410	5174	5165
1974	1004	6708	12540	1869	11980	1989	15390	9162	384	2816	4669	11030	4004	1274
1975	2206	11690	15930	3521	22080	2893	15840	11630	671	3732	7366	15560	4015	4813
1976	1784	9857	14330	1959	14350	2411	9800	6503	383	1974	3416	8179	2567	573
1977	1130	6146	13480	2912	16600	3601	10860	5709	390	1974	3937	10220	2790	4366
1978	1746	8367	12090	2121	14090	2630	9854	12150	690	3660	6639	12350	3449	1272
1979	1307	7639	13000	2038	13110	2544	15430	10720	686	3365	6107	13230	3241	2680
1980	1330	8504	15750	2766	15730	2964	19380	10380	485	2787	4865	12460	3397	2542
1981	609	3828	7475	880	6318	334	6475	3117	148	1313	2220	5392	1411	515
1982	888	5302	8316	1753	12110	2072	6746	6837	378	2878	5602	9948	3148	3202
1983	1355	8864	13300	2801	17350	3942	1/21492	9317	636	3546	5320	12170	4540	3021

TABLE 7.—Annual streamflow from the South Atlantic –Gulf Water-Resource Region (03), 1951–83—Continued

Station	2175000	2489500	2492000	Total monitored streamflow	Total streamflow	Total streamflow
Year	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(Bgal/d)
1951	1715	8947	1760	150271	232920	150
1952	2089	4013	995	169135	262159	169
1953	1997	9801	2081	184477	285939	185
1954	1445	4770	1233	147811	229107	148
1955	1191	6907	1468	125079	193872	125
1956	1525	7734	1383	127700	197935	128
1957	1266	5678	1172	152180	235879	152
1958	2805	12340	2089	250760	388678	251
1959	2724	7191	1664	180339	279525	181
1960	5225	8450	1630	247785	384067	248
1961	3121	11290	2698	226545	351145	227
1962	2481	14500	2775	231494	358816	232
1963	2220	3412	919	155852	241571	156
1964	4792	8462	1530	266923	413731	267
1965	5019	8286	1621	250404	388126	251
1966	2910	9067	2116	204908	317607	205
1967	2054	4278	1241	149601	231882	150
1968	1518	7859	1069	165079	255873	165
1969	2733	7244	1425	164726	255326	165
1970	2319	5035	928	174700	270785	175
1971	3244	10160	1684	220111	341172	220
1972	3038	10340	2282	209989	325483	210
1973	4337	15320	3184	310632	481480	311
1974	2466	17540	2954	233986	362678	234
1975	3186	16330	3141	299104	463611	299
1976	2477	10770	1453	233194	361451	233
1977	2778	10310	1943	217930	337792	218
1978	2387	10700	2102	230005	356508	230
1979	3358	16880	2519	254971	395205	255
1980	3311	18830	3081	278882	432267	279
1981	1326	5603	1317	113326	175655	113
1982	1990	6572	1426	184586	286108	185
1983	2940	22560	3697	298200	462210	299
			TOTAL	6810685	10556562	6820
			MEAN	206384	319896	207

1/ Estimated value.

TABLE 8.—Annual streamflow from the Great Lakes Water-Resource Region (04), 1951–83

Station / Year	4093000 (ft³/s)	4045500 (ft³/s)	4059000 (ft³/s)	4067000 (ft³/s)	4101500 (ft³/s)	4119000 (ft³/s)	4126000 (ft³/s)	4133500 (ft³/s)	4149000 (ft³/s)	4156000 (ft³/s)	4176500 (ft³/s)	4024000 (ft³/s)	4213500 (ft³/s)	4232000 (ft³/s)	4249000 (ft³/s)
1951	103	1/1096	1226	3703	4293	4306	1/2156	503	1139	1652	1209	2726	842	3666	9007
1952	120	1/1096	1063	3773	4683	5019	2277	611	975	2289	1070	3034	724	2686	6386
1953	56	1/1073	965	3438	2349	2664	2147	435	553	1490	297	3592	587	2328	5199
1954	64	869	868	3215	2717	2740	2020	413	543	1361	466	3268	588	2446	5045
1955	102	754	793	3188	3513	3415	1994	463	532	1546	614	1973	582	2062	6037
1956	72	758	686	2739	3375	4165	1887	361	848	1621	817	2162	989	4237	8894
1957	75	863	542	2171	2339	3004	1838	445	688	1369	452	2267	616	2716	5461
1958	85	779	705	2478	2727	2497	1644	320	410	1190	584	1833	669	2166	6514
1959	127	866	665	2498	3240	3034	1981	391	661	1609	719	1912	755	2744	6796
1960	149	1281	1385	4586	3976	4247	2133	578	886	2009	921	2159	812	3606	8536
1961	86	783	821	2944	2810	2172	1854	386	433	1111	586	1684	618	2444	5993
1962	93	837	690	2921	2835	2830	1979	496	669	1556	465	1622	547	1718	4302
1963	35	616	506	2200	1886	1767	1746	446	294	975	259	1326	569	2092	4538
1964	36	739	596	1905	1464	1621	1681	315	180	699	178	2082	577	2201	5357
1965	105	908	799	3232	2590	3066	1878	440	510	1678	477	2562	564	1666	3433
1966	131	963	944	3079	3329	3006	2030	403	425	1660	564	3949	671	2273	5582
1967	110	1068	863	3394	3285	3769	2235	614	793	2112	699	2199	649	2181	4672
1968	129	945	986	3589	4028	3974	1910	476	848	1589	1169	2174	758	3028	6965
1969	109	1120	976	3573	4132	3807	2169	574	730	1765	975	3507	901	2916	8150
1970	120	965	607	2641	3158	3017	1997	468	438	1414	514	2203	729	2543	6111
1971	81	1294	983	3546	2965	3609	2109	568	653	1807	501	3138	796	3309	8515
1972	100	1039	986	3696	2717	3975	1950	538	610	1566	479	4276	768	3865	10320
1973	190	949	1102	4714	4329	5856	2064	599	1254	2670	1095	2531	805	3735	9293
1974	116	959	680	2947	4204	5814	2047	650	1138	2455	1014	3239	734	2956	7723
1975	144	948	836	3294	3394	4985	2127	476	1260	2299	745	2816	818	3326	7618
1976	120	920	849	3124	3956	5694	2314	600	1460	2998	939	1589	911	3991	11030
1977	52	910	535	1923	2650	2248	1664	353	427	882	506	996	1030	3290	7573
1978	116	1155	1021	3094	3750	3148	1942	417	765	1530	878	3755	874	4426	10760
1979	137	1184	1200	4349	3468	3249	2081	532	541	1471	605	3322	852	3162	7585
1980	111	911	707	3261	3922	3131	2141	406	733	1287	932	1488	673	2869	6176
1981	168	818	758	3588	4419	3636	1830	1/503	938	1844	1045	2070	793	2820	5023
1962	147	920	865	1/3228	4929	4541	2008	1/550	1157	2166	1036	3286	746	3764	7518
1983	172	1014	1034	1/3705	4184	4618	2150	1/575	626	2345	979	3256	613	2722	5694

Station / Year	4260500 (ft³/s)	4269000 (ft³/s)	4193500 (ft³/s)	4198000 (ft³/s)	4201500 (ft³/s)	4212000 (ft³/s)	4027000 (ft³/s)	4084500 (ft³/s)	4087000 (ft³/s)	Total monitored streamflow (ft³/s)	Total streamflow (ft³/s)	Total streamflow (Bgal/d)
1951	4468	1154	8587	1391	328	919	917	4269	471	60133	144921	93.6
1952	4048	867	7016	1314	314	849	917	5277	735	57363	138245	89.3
1953	3868	1051	2302	382	118	392	875	3880	382	40423	97419	62.9
1954	4268	1305	2270	364	205	607	743	2643	242	39270	94641	61.1
1955	3734	1366	4699	782	268	732	710	4292	474	44845	108076	69.8
1956	3545	939	5266	959	323	1035	593	3374	308	49953	120366	77.6
1957	3329	719	4547	952	262	696	422	2777	219	38969	93963	60.7
1958	3473	859	5293	940	226	650	468	2102	112	36724	93326	60.3
1959	4149	946	6452	1343	418	820	486	2923	353	45888	110590	71.4
1960	4618	991	5160	738	266	875	777	6403	647	57739	139151	89.9
1961	2926	815	3930	860	249	560	554	4233	369	39241	94572	61.1
1962	3193	663	3407	743	142	416	473	5631	417	36845	93617	60.5
1963	3490	1030	1996	712	201	377	395	3185	169	30810	74253	48.0
1964	3045	774	2733	748	201	549	532	2127	204	30544	73611	47.6
1965	2715	601	3594	667	155	615	608	3568	486	36917	88970	57.5
1966	3654	930	3323	710	164	508	670	5066	580	44636	107573	69.5
1967	2923	791	6370	1340	232	738	653	3579	314	45583	109855	71.0
1968	3783	892	6297	1014	258	642	620	3921	281	50276	121165	78.3
1969	4689	1102	5856	1219	359	962	662	5126	382	55781	134432	86.8
1970	3377	839	4894	1109	218	505	444	3077	213	41601	100258	64.8
1971	4625	1272	3620	918	263	699	706	3952	469	50620	121994	78.8
1972	4674	1150	5065	915	340	804	802	4223	455	55315	133309	86.1
1973	5125	1348	8463	1908	416	893	786	7544	833	68522	165138	107
1974	5002	1316	6197	1176	332	663	576	4494	760	57396	138324	89.4
1975	4521	1008	5332	1153	393	1/950	531	3907	547	53432	126771	63.2
1976	6405	1310	5623	862	237	1/650	667	4099	482	60810	146552	94.7
1977	5344	1061	3419	704	213	1/604	429	1919	223	39155	94364	61.0
1978	5571	1388	6904	1558	353	1/873	711	4012	619	59640	143732	92.9
1979	4507	1019	4376	1218	288	1/748	697	5876	661	53150	128092	62.7
1980	3856	892	6271	1375	303	1/777	472	4051	430	47177	113697	73.4
1981	4317	1135	5996	1359	287	1/746	634	3909	441	49279	116762	76.7
1982	4452	1059	7956	1557	326	1/821	635	4594	638	58907	141966	91.7
1983	3997	1053	5316	727	370	1/905	942	6059	637	53893	129862	83.9
									TOTAL	1594657	3843606	2480
									MEAN	46329	116473	75.2

1/ Estimated value.

TABLE 9.—Annual streamflow from the Ohio Water-Resource Region (05), 1951–83

Station Year	3611500 (ft^3/s)	3612000 (ft^3/s)	Total monitored streamflow (ft^3/s)	Total monitored (Bgal/d)
1951	346000	337	346337	224
1952	321200	397	321597	208
1953	202700	107	202807	131
1954	136800	73	136873	88.4
1955	248900	196	249096	161
1956	277000	164	277164	179
1957	273600	379	273979	177
1958	338000	567	338567	219
1959	214600	206	214806	139
1960	247100	184	247284	160
1961	281800	374	282174	182
1962	302600	394	302994	196
1963	217400	129	217529	141
1964	219800	160	219960	142
1965	249300	206	249506	161
1966	176900	233	177133	114
1967	262300	167	262467	170
1968	280200	310	280510	181
1969	213900	414	214314	138
1970	255400	363	255763	165
1971	258300	171	258471	167
1972	298000	212	298212	193
1973	412000	540	412540	267
1974	373400	361	373761	241
1975	392600	411	393011	254
1976	271300	199	271499	175
1977	227500	193	227693	147
1978	339300	216	339516	219
1979	436600	490	437090	282
1980	353600	181	353781	229
1981	208300	193	208493	135
1982	287900	293	288193	186
1983	333300	601	333901	216
		TOTAL	9267021	5990
		MEAN	280819	181

TABLE 10.—Annual streamflow from the Tennessee Water-Resource Region (06), 1951–83

Station 3609500 Year	Total monitored streamflow (ft^3/s)	Total streamflow (ft^3/s)	Total streamflow (Bgal/d)
1951	73980	74646	48.2
1952	71080	71720	46.3
1953	60250	60792	39.3
1954	48940	49380	31.9
1955	58180	58704	37.9
1956	57120	57634	37.2
1957	70410	71044	45.9
1958	84610	85371	55.1
1959	46820	47241	30.5
1960	64260	64838	41.9
1961	65500	66090	42.7
1962	90390	91204	58.9
1963	61070	61620	39.8
1964	68220	68834	44.5
1965	73690	74353	48.0
1966	43450	43841	28.3
1967	59980	60520	39.1
1968	65810	66402	42.9
1969	48700	49138	31.7
1970	56280	56787	36.7
1971	58640	59168	38.2
1972	62920	63486	41.0
1973	101700	102615	66.3
1974	91880	92707	59.9
1975	83880	84635	54.7
1976	57250	57765	37.3
1977	52990	53467	34.5
1978	69570	70196	45.3
1979	79730	80448	52.0
1980	77950	78652	50.8
1981	33040	33337	21.5
1982	58600	59127	38.2
1983	75700	76381	49.3
TOTAL	2172590	2192143	1420
MEAN	65836	66429	42.9

TABLE 11.—Annual streamflow from the Upper Mississippi Water-Resource Region (07), 1951–83

Station 7022000 Year	Total monitored streamflow (ft^3/s)	Total streamflow (ft^3/s)	Total streamflow (Bgal/d)
1951	282300	282836	183
1952	251400	251878	163
1953	147700	147981	95.6
1954	116200	116421	75.2
1955	138300	138563	89.5
1956	99190	99378	64.2
1957	145700	145977	94.3
1958	164000	164312	106
1959	147700	147981	95.6
1960	220000	220418	142
1961	181900	182246	118
1962	234700	235146	152
1963	121200	121430	78.4
1964	107300	107504	69.4
1965	202600	202985	131
1966	188800	189159	122
1967	164600	164913	107
1968	172300	172627	112
1969	265600	266105	172
1970	205700	206091	133
1971	193800	194168	125
1972	190800	191163	123
1973	359800	360484	233
1974	301000	301572	195
1975	223600	224025	145
1976	166300	166616	108
1977	113600	113816	73.5
1978	242000	242460	157
1979	247500	247970	160
1980	160500	160805	104
1981	182900	183248	118
1982	267600	268108	173
1983	321300	321910	208
TOTAL	6527890	6540293	4220
MEAN	197815	198191	128

TABLE 12.—Annual streamflow from the Lower Mississippi Water-Resource Region (08), 1951–83

Station Year	7367000 (ft^3/s)	7376000 (ft^3/s)	7378500 (ft^3/s)	8012000 (ft^3/s)	8015500 (ft^3/s)	7269000 (ft^3/s)	7292500 (ft^3/s)	7295000 (ft^3/s)	Total monitored streamflow (ft^3/s)	Total streamflow (ft^3/s)	Total streamflow (Bgal/d)
1951	16560	341	1858	283	1322	775700	1/1050	214	797328	877061	567
1952	9820	177	929	477	1968	704800	520	120	718811	790692	511
1953	23260	453	2781	1169	4589	451700	1683	367	486002	534602	345
1954	6972	275	1202	330	1470	301700	348	80	312377	343615	222
1955	10290	354	1880	1166	2609	454700	967	296	472262	519488	336
1956	9798	287	1548	343	1463	427300	769	200	441708	485879	314
1957	20990	196	1146	666	2098	572000	710	164	597992	657791	425
1958	34890	413	2218	985	2568	663300	1385	377	706136	776750	502
1959	15050	321	1794	778	2146	443400	763	176	464430	510673	330
1960	14160	268	1405	533	1762	577700	906	151	596885	656573	424
1961	19330	442	2341	1280	2690	584300	1508	337	612226	673451	435
1962	22180	521	2342	646	2507	673600	1507	258	703561	773917	500
1963	5847	150	669	364	1220	401900	618	96	410684	451972	292
1964	9393	354	1813	769	1731	394800	1145	235	410240	451264	292
1965	10740	329	1859	603	1540	541700	1155	268	558194	614013	397
1966	11240	465	2445	762	2249	465600	1107	245	484113	532524	344
1967	8457	266	1485	551	1921	490700	688	229	504297	554727	358
1966	23720	177	965	635	2230	586400	764	141	615032	676535	437
1969	17470	285	1584	916	2279	614500	696	262	637992	701791	453
1970	16560	148	970	323	788	557600	565	133	577087	634796	410
1971	7330	262	1430	792	1790	553700	865	244	566413	623054	402
1972	8029	419	2224	958	2317	546700	1308	348	562303	616533	400
1973	25300	551	3063	1639	4517	995100	1796	530	1032498	1135746	734
1974	21945	571	2600	1302	3407	866300	1664	495	898284	988112	638
1975	39370	499	3158	1222	3832	784800	1830	425	835136	916650	593
1976	12830	181	1343	522	1963	525300	995	269	543403	597743	386
1977	22760	466	2713	706	1707	391600	965	260	421179	463297	299
1976	20630	475	2446	719	2012	669000	1425	363	697270	766997	495
1979	25600	546	3104	1302	3337	617500	1899	343	853633	936996	607
1960	29070	603	3582	1245	3555	615800	1687	345	655887	721476	466
1961	12420	207	1267	359	1052	436900	784	166	453175	498493	322
1982	13150	368	1387	575	1145	622700	634	168	640127	704140	455
1983	35240	707	4433	1412	4979	796500	1/2400	1/570	846241	930865	601
								TOTAL	20113108	22124419	14300
								MEAN	609468	670437	433

1/ Estimated value.

TABLE 13.—Annual streamflow from the Souris–Red–Rainy Water-Resource Region (09), 1951–83

Station Year	5127500 (ft^3/s)	5131500 (ft^3/s)	5092000 (ft^3/s)	5124000 (ft^3/s)	Total monitored streamflow (ft^3/s)	Total streamflow (ft^3/s)	Total streamflow (Bgal/d)
1951	1633	1117	4065	562	7397	12723	8.2
1952	1726	950	3797	167	6640	11421	7.4
1953	1455	906	2472	332	5167	6667	5.7
1954	1856	1224	1906	357	5343	9190	5.9
1955	774	628	1771	635	3606	6550	4.2
1956	1338	644	2613	443	5238	9009	5.8
1957	1367	954	2649	78	5048	8662	5.6
1958	557	510	2052	36	3157	5431	3.5
1959	886	754	1300	9	2949	5072	3.3
1960	1120	764	2212	264	4360	7499	4.6
1961	799	725	849	9	2382	4098	2.6
1962	1433	1540	6237	5	9215	15849	10.2
1963	724	785	2662	22	4193	7212	4.7
1964	1131	1037	2529	36	4733	6141	5.3
1965	1428	1123	5256	146	7953	13679	6.8
1966	2196	1912	7376	174	11660	20055	13.0
1967	1130	611	4939	83	6963	11977	7.7
1968	1798	1104	2211	25	5138	6836	5.7
1969	2004	1838	5693	693	10426	17936	11.6
1970	1716	1635	4973	620	6944	15364	9.9
1971	2102	1407	2532	255	6296	10829	7.0
1972	1823	1536	5666	532	9559	16441	10.6
1973	1373	762	1874	83	4112	7073	4.6
1974	1946	1537	5666	936	10089	17353	11.2
1975	1340	1523	7527	1090	11480	19746	12.8
1976	1256	644	2686	1697	6465	11154	7.2
1977	664	665	536	25	1890	3251	2.1
1978	2179	1808	5206	133	9326	16041	10.4
1979	1518	1186	7076	660	10640	18301	11.8
1960	737	656	2087	36	3520	6054	3.9
1981	1751	926	1140	100	3919	6740	4.4
1982	1411	1307	4366	323	7427	12774	8.3
1983	1817	1146	4437	548	7948	13671	8.8
				TOTAL	213406	367059	237
				MEAN	6467	11123	7.2

TABLE 14.—Annual streamflow from the Missouri Water-Resource Region (10), 1951–83

Station 6934500 Year	Total unadjusted discharge (ft^3/s)	Total adjusted discharge (ft^3/s)	Total adjusted discharge (Mgal/d)
1951	139400	139958	90.4
1952	103100	103512	66.9
1953	55300	55521	35.9
1954	40820	40983	26.5
1955	47200	47389	30.6
1956	35060	35200	22.7
1957	46990	47178	30.5
1958	73520	73814	47.7
1959	57100	57328	37.0
1960	79170	79487	51.3
1961	79180	79497	51.4
1962	84920	85260	55.1
1963	44980	45160	29.2
1964	47450	47640	30.8
1965	60110	80430	52.0
1966	59650	60089	38.8
1967	66460	66726	43.1
1968	66110	66374	42.9
1969	107500	107930	69.7
1970	84190	84527	54.6
1971	77380	77690	50.2
1972	71460	71746	46.3
1973	140500	141062	91.1
1974	114600	115058	74.3
1975	68140	88493	57.2
1976	68850	69125	44.7
1977	56670	58897	36.6
1978	97160	97549	63.0
1979	91310	91675	59.2
1980	62980	83232	40.8
1981	65670	65933	42.6
1982	100400	100802	85.1
1983	120400	120882	78.1
TOTAL	2553930	2564146	1680
MEAN	77392	77701	50.2

TABLE 15.—Annual streamflow from the Arkansas–White–Red Water-Resource Region (11), 1951–83

Station	7074500	7263450	7355500	Total monitored streamflow	Total streamflow	Total streamflow
Year	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(Bgal/d)
1951	25710	52490	30550	108750	108902	70.4
1952	26800	38730	23110	88640	88764	57.3
1953	17440	24940	34520	76900	77008	49.7
1954	9782	12470	16190	38442	38496	24.9
1955	12540	19150	20140	51830	51903	33.5
1956	11780	11100	13550	36430	36481	23.6
1957	30880	71120	45970	147970	148177	95.7
1958	28840	49240	50610	128690	128870	83.3
1959	15570	28900	18720	63190	63278	40.9
1960	18920	62390	26810	108120	108271	89.9
1961	25500	53930	34890	114320	114480	74.0
1962	18850	42870	34470	96190	96325	62.2
1963	10720	17060	13680	41460	41518	26.8
1964	13110	12920	11480	37510	37563	24.3
1965	14250	29050	18780	62080	62167	40.2
1966	22520	19450	22030	64000	64090	41.4
1987	11410	17350	18630	47390	47456	30.7
1968	26490	47710	44220	118420	118586	76.6
1969	31860	54210	40580	126650	126827	81.9
1970	16600	35270	23820	75690	75796	49.0
1971	18640	26800	13460	58900	58982	38.1
1972	13100	24360	21220	58680	58762	38.0
1973	43020	88920	49100	181040	181293	117
1974	35450	76940	49460	161850	162077	105
1975	31140	77370	61680	170190	170428	110
1976	17400	25110	17020	59530	59613	38.5
1977	13780	22630	23200	59610	59693	38.6
1978	21280	34430	13320	69030	69127	44.7
1979	33190	39830	36140	109160	109313	70.6
1980	13900	23410	22870	60180	60264	38.9
1981	8073	12880	16470	37423	37475	24.2
1982	16240	44650	34740	95630	95764	61.9
1983	31970	47120	40080	119170	119337	77.1
			TOTAL	2873065	2877087	1860
			MEAN	87063	87184	56.3

TABLE 16.—Annual streamflow from the Texas–Gulf Water-Resource Region (12), 1951–83

Station	8030500	8041000	8066500	8071500	8111500	8117500	8162500	8164000	8164500	8176500	8189500	8211000	Total monitored streamflow	Total streamflow	Total streamflow
Year	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(Bgal/d)
1951	4374	2042	2387	237	1480	121	700	47	130	542	38	583	12681	18870	12.2
1952	6415	3718	2779	777	1735	237	616	162	273	819	99	244	17874	26596	17.2
1953	12340	8177	5511	1372	4007	285	1273	163	377	1074	42	741	35362	52618	34.0
1954	4097	2114	1694	314	2666	86	651	23	29	548	20	455	12706	18907	12.2
1955	5574	3149	2935	511	2205	169	1014	140	172	374	7	135	16385	24381	15.8
1956	3421	1608	1211	224	2298	38	840	6	19	132	8	184	9989	14864	9.6
1957	9645	4607	12690	1052	14580	414	5980	244	544	1973	105	1962	53796	80048	51.7
1958	12290	8465	11690	1404	10910	685	6200	514	751	3541	146	1538	58134	86503	55.9
1959	6723	5162	4909	664	3751	561	2491	306	661	1580	56	829	27693	41207	26.6
1960	6545	4728	6621	640	8123	707	4827	278	815	1764	87	602	35737	53177	34.4
1961	12410	10410	10440	1420	14190	1159	5743	966	1508	3865	198	847	63156	93976	60.7
1962	7500	5174	4469	767	4137	189	1525	234	280	914	42	111	25342	37709	24.4
1963	2831	2153	3495	146	2702	151	705	63	122	565	11	109	13053	19423	12.5
1964	3250	2603	1612	202	1726	223	375	74	175	568	14	104	10926	16258	10.5
1965	4081	1659	7333	312	9737	293	2051	349	448	1812	46	787	28908	43015	27.8
1966	7553	3354	8946	774	8156	587	2081	280	634	1551	126	452	34494	51327	33.2
1967	1959	1612	1771	30	1822	151	544	178	374	1225	531	2167	12364	18398	11.9
1968	4560	5126	11520	376	12590	848	4900	516	1043	2921	203	1232	45835	68202	44.1
1969	12320	9378	10390	1408	7546	513	2000	440	721	1817	83	136	46752	69566	44.9
1970	4132	2362	4657	319	6286	242	3523	289	556	1797	80	718	24961	37142	24.0
1971	2635	1128	730	120	1466	558	929	221	363	860	371	2139	11520	17142	11.1
1972	6465	2461	5377	629	3703	577	1808	493	779	2410	233	1780	26715	39752	25.7
1973	13340	9634	11290	1544	8186	1147	2641	856	1557	2667	247	714	53823	80089	51.7
1974	12100	10400	9970	1379	6776	658	3088	564	1001	2844	279	1244	50303	74851	48.4
1975	14210	9905	14660	1859	12450	798	5862	412	722	3506	30	552	64766	96372	62.3
1976	5941	4432	5317	560	5400	259	1785	209	327	2199	190	550	27169	40427	26.1
1977	5988	4742	7977	566	9958	469	3974	573	798	3937	235	1455	40672	60520	39.1
1978	3681	2325	2472	259	1564	316	866	329	541	1461	78	307	14199	21128	13.6
1979	12060	10260	9968	1373	9722	995	3056	766	1096	3460	135	499	53390	79444	51.3
1980	9010	7282	5611	968	3741	306	936	175	318	1020	118	771	30256	45021	29.1
1981	2890	2342	4393	154	4541	435	3012	473	770	3028	279	1268	23585	35094	22.7
1982	4251	3513	11630	335	7360	382	2400	556	1211	1814	241	479	34172	50648	32.8
1983	11800	8637	6818	1339	4491	752	1623	409	793	1124	109	146	38041	56605	36.6
												TOTAL	1054757	1569479	1010
												MEAN	31962	47560	30.7

TABLE 17.—Annual streamflow from the Rio Grande Water-Resource Region (13), 1951–83

Station	8364000	8447700	Total monitored streamflow	Total streamflow	Total streamflow
Year	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(Bgal/d)
1951	374	46	420	2923	1.9
1952	390	29	419	2916	1.9
1953	370	20	390	2714	1.8
1954	141	23	164	1141	0.7
1955	96	32	128	891	0.6
1956	81	26	107	745	0.5
1957	188	38	226	1573	1.0
1958	500	38	538	3744	2.4
1959	540	26	566	3939	2.5
1960	510	24	534	3717	2.4
1961	420	34	454	3160	2.0
1962	503	28	531	3696	2.4
1963	383	37	420	2923	1.9
1964	107	18	125	870	0.6
1965	274	23	297	2067	1.3
1966	408	21	429	2986	1.9
1967	327	18	345	2401	1.6
1968	354	19	373	2596	1.7
1969	490	30	520	3619	2.3
1970	495	28	523	3640	2.4
1971	354	23	377	2624	1.7
1972	186	32	220	1531	1.0
1973	397	26	423	2944	1.9
1974	496	33	529	3682	2.4
1975	510	83	593	4127	2.7
1976	549	28	577	4016	2.6
1977	333	25	358	2492	1.6
1978	216	20	236	1643	1.1
1979	419	46	465	3286	2.1
1980	476	25	501	3487	2.3
1981	465	54	519	3612	2.3
1982	445	25	470	3271	2.1
1983	453	18	471	3276	2.1
		TOTAL	13248	92206	60
		MEAN	401	2794	1.8

TABLE 18.—Annual streamflow from the Upper Colorado Water-Resource Region (14), 1951–83

Station	90380000	Total monitored streamflow	Total streamflow	Total streamflow
Year		(ft^3/s)	(ft^3/s)	(Bgal/d)
1951		13560	13560	8.8
1952		24740	24740	16.0
1953		12140	12140	7.8
1954		8427	8427	5.4
1955		10070	10070	6.5
1956		12040	12040	7.8
1957		23930	23930	15.5
1958		19640	19640	12.7
1959		9311	9311	6.0
1960		12650	12650	8.2
1961		9177	9177	5.9
1962		20400	20400	13.2
1963		3453	3453	2.2
1964		3325	3325	2.1
1965		14950	14950	9.7
1966		10850	10850	7.0
1967		10770	10770	7.0
1968		11480	11480	7.4
1969		12190	12190	7.9
1970		11980	11980	7.7
1971		11670	11670	7.7
1972		12830	12830	8.3
1973		13960	13960	9.0
1974		11420	11420	7.4
1975		12780	12780	8.3
1976		11680	11680	7.5
1977		11410	11410	7.4
1976		11540	11540	7.5
1979		11460	11460	7.4
1980		15030	15030	9.7
1981		11460	11460	7.4
1982		11470	11470	7.4
1983		24160	24160	15.6
	TOTAL	426153	426153	275
	MEAN	12914	12914	8.3

TABLE 19.—Annual streamflow from the Lower Colorado Water-Resource Region (15), 1951–83

Station Year	9522000 (ft^3/s)	Total monitored streamflow (ft^3/s)	Total streamflow (ft^3/s)	Total streamflow (ft^3/s)
1951	4561	4561	4584	3.0
1952	11500	11500	11558	7.5
1953	9897	9897	9946	6.4
1954	5909	5909	5939	3.8
1955	5157	5157	5183	3.3
1956	2345	2345	2357	1.5
1957	2288	2288	2299	1.5
1958	8601	8601	8644	5.6
1959	4860	4860	4884	3.2
1960	3541	3541	3559	2.3
1961	2536	2536	2549	1.6
1962	2208	2208	2219	1.4
1963	2682	2682	2695	1.7
1964	2227	2227	2238	1.4
1965	2008	2008	2018	1.3
1966	2087	2087	2097	1.4
1967	1838	1838	1847	1.2
1968	1823	1823	1832	1.2
1969	1810	1810	1819	1.2
1970	1787	1787	1796	1.2
1971	1813	1813	1822	1.2
1972	1814	1814	1823	1.2
1973	1726	1726	1735	1.1
1974	1918	1918	1928	1.2
1975	1830	1830	1839	1.2
1976	1963	1963	1973	1.3
1977	2091	2091	2101	1.4
1978	2017	2017	2027	1.3
1979	3467	3467	3484	2.3
1980	8058	8058	8098	5.2
1981	5002	5002	5027	3.2
1982	1950	1950	1960	1.3
1983	12920	12920	12985	8.4
	TOTAL	126234	126865	82.0
	MEAN	3825	3844	2.5

TABLE 20.—Annual streamflow from the Great Basin Water-Resource Region (16), 1951–83

Station Year	10301500 (ft^3/s)	10312000 (ft^3/s)	10335000 (ft^3/s)	10351700 (ft^3/s)	10126000 (ft^3/s)	10141000 (ft^3/s)	10142000 (ft^3/s)	10171000 (ft^3/s)	10224000 (ft^3/s)	Total monitored streamflow (ft^3/s)	Total streamflow (ft^3/s)	Total streamflow (Bgal/d)
1951	217	585	172	792	2502	912	17	143	181	5521	9385	6.1
1952	517	808	563	1542	2445	1285	19	164	178	7521	12786	8.3
1953	166	332	188	553	1487	546	14	142	232	3660	6222	4.0
1954	59	244	142	178	842	175	7	169	182	1998	3397	2.2
1955	47	158	29	91	945	217	9	145	162	1803	3066	2.0
1956	379	735	190	898	1335	444	11	168	121	4281	7278	4.7
1957	121	309	170	351	1469	465	14	149	118	3166	5382	3.5
1958	314	471	187	719	1392	508	17	136	208	3952	6719	4.3
1959	98	150	142	34	890	140	7	168	175	1804	3066	2.0
1960	36	82	62	35	878	170	8	145	133	1549	2633	1.7
1961	33	61	30	25	639	84	5	113	103	1092	1857	1.2
1962	52	301	174	65	1284	290	17	95	168	2446	4158	2.7
1963	234	467	138	442	947	202	11	102	117	2660	4521	2.9
1964	71	188	189	58	1290	430	16	92	109	2443	4154	2.7
1965	170	528	186	604	1633	466	16	109	121	3833	6516	4.2
1966	149	236	247	212	1594	160	9	144	175	2926	4975	3.2
1967	327	620	168	884	1456	242	14	133	134	3978	6762	4.4
1968	125	224	125	332	1459	291	14	135	159	2864	4869	3.1
1969	557	775	199	1345	1679	680	18	151	198	5602	9524	6.2
1970	186	445	202	652	1210	323	14	155	205	3392	5767	3.7
1971	129	408	514	704	2856	686	20	148	196	5661	9624	6.2
1972	88	258	288	317	2852	719	19	146	173	4860	8262	5.3
1973	144	381	279	485	2051	623	18	155	202	4338	7375	4.8
1974	168	489	220	950	2079	732	22	152	236	5048	8582	5.5
1975	228	444	438	769	2012	773	22	124	184	4994	8490	5.5
1976	65	111	215	380	2230	487	12	171	200	3871	6581	4.3
1977	25	36	129	68	952	107	8	137	135	1597	2715	1.8
1978	38	356	183	142	1303	421	20	115	162	2721	4625	3.0
1979	142	325	182	117	1097	275	13	126	159	2436	4141	2.7
1960	335	595	275	556	2034	707	16	151	221	4890	8313	5.4
1961	92	167	178	220	1172	238	11	183	234	2475	4208	2.7
1982	332	762	234	1273	1928	746	18	160	202	5655	9613	6.2
1983	832	1102	1089	2609	3992	1371	25	185	1229	12434	21138	13.7
									TOTAL	127472	216703	140
									MEAN	3863	6567	4.2

TABLE 21.—Annual streamflow from the Pacific Northwest Water-Resource Region (17), 1951–83

Station / Year	10393500 (ft^3/s)	10396000 (ft^3/s)	10403000 (ft^3/s)	14198000 (ft^3/s)	12017000 (ft^3/s)	12039500 (ft^3/s)	12041200 (ft^3/s)	12117500 (ft^3/s)	12207200 (ft^3/s)	14144700 (ft^3/s)	Total monitored streamflow (ft^3/s)	Total streamflow (ft^3/s)	Total streamflow (Bgal/d)
1951	233	124	52	35570	1215	3309	2800	806	1/1710	1/254113	299932	542877	351
1952	373	201	85	29570	817	2596	2200	555	1/1330	1/195030	232757	421290	272
1953	252	125	53	28360	926	3006	2540	604	1/1430	1/175160	212456	384545	248
1954	134	100	32	32560	1175	3561	3010	816	1/1890	1/256800	300078	543141	351
1955	73	97	19	23970	901	3111	2630	675	1/1880	1/199640	232796	421360	272
1956	291	151	65	43870	1310	3523	2960	874	1/1790	1/261630	316484	572837	370
1957	261	174	65	25810	893	2793	2370	716	1/1470	1/184020	218572	395614	256
1958	324	150	72	29860	822	2634	2230	535	1/1310	1/173810	211747	383262	248
1959	70	62	12	26680	1102	3255	2750	906	1/1800	1/245790	282426	511192	330
1960	149	102	31	25380	1055	2956	2500	865	1/1565	1/220275	254898	461365	298
1961	70	65	15	31190	1158	3569	2903	801	1/1735	1/224570	266096	481633	311
1962	128	86	35	24490	761	2423	2014	591	1/1450	1/173010	204969	371029	240
1963	200	100	53	25930	694	2825	2447	637	1/1545	1/174620	209251	378744	245
1964	98	107	21	25940	1021	3120	2857	818	1/1825	195600	231407	418846	271
1965	392	139	72	31410	956	2378	2159	762	1489	237800	277557	502378	325
1966	90	55	17	22190	811	2716	2319	596	1521	173300	203614	368542	238
1967	183	113	43	22870	1091	3393	2768	713	1683	208500	241357	436855	282
1968	47	57	8	20690	1141	3798	3269	727	2043	179900	211879	383501	248
1969	147	154	46	32260	940	3104	2641	733	1663	215900	257586	466235	301
1970	199	110	40	25180	815	2447	1937	637	1293	1/148730	181388	328312	212
1971	275	164	55	33710	1223	3363	2845	806	1776	1/232090	276307	500116	323
1972	223	146	59	38340	1310	3576	3018	1015	2136	1/266735	316560	572973	370
1973	70	90	15	1/16670	699	2430	2174	513	1255	1/127600	151516	274244	177
1974	344	122	65	1/42050	1383	3981	3429	907	1861	1/240420	294562	533157	344
1975	210	161	41	1/27400	803	2551	2019	708	1438	1/182680	218011	394600	255
1976	157	124	37	1/30060	1312	3774	3176	686	1/1890	1/243100	284516	514974	333
1977	27	67	8	1/10860	491	1895	1645	443	1/1205	1/126840	143500	259735	168
1978	202	160	71	1/27100	1030	3035	2292	703	1/1537	1/156010	192140	347773	225
1979	224	162	60	1/21260	679	1976	1689	584	1/1180	1/154530	182346	330047	213
1980	205	157	49	1/21810	880	3029	2696	546	1/1440	1/145830	178642	319721	207
1981	123	124	16	1/20940	790	3105	2881	656	1/1580	1/214900	245115	443658	287
1982	405	170	42	1/33670	1205	3440	2878	722	1/1720	1/230750	275202	498116	322
1983	591	245	45	1/32850	1165	3584	2998	617	1/1740	1/202280	246115	445468	288
										TOTAL	7849802	14208141	9180
										MEAN	237873	430550	278

1/ Estimated value.

TABLE 22.—Annual streamflow from the California Water-Resource Region (18), 1951–83

Station / Year	10286000 (ft^3/s)	10287400 (ft^3/s)	10287900 (ft^3/s)	11078000 (ft^3/s)	11114000 (ft^3/s)	11118500 (ft^3/s)	11134500 (ft^3/s)	11141000 (ft^3/s)	11152500 (ft^3/s)	11159000 (ft^3/s)	11162500 (ft^3/s)	11169000 (ft^3/s)
1951	2	66	73	0	0	0	1/0	0	49	213	36	31
1952	34	115	91	23	264	172	1/297	155	921	387	92	102
1953	4	72	60	1	5	12	1/16	1	158	74	44	5
1954	8	54	35	2	17	13	1/0	2	98	23	23	1
1955	1	62	40	0	1	1	0	0	3	14	22	2
1956	16	115	78	5	20	14	33	6	543	366	92	83
1957	10	78	63	0	8	3	0	0	2	17	18	2
1958	24	97	70	27	385	223	177	184	923	468	103	101
1959	1	58	47	0	27	8	18	0	170	82	17	7
1960	0	43	39	1	0	2	0	0	34	41	10	1
1961	0	43	37	0	1	0	0	0	1	4	5	1
1962	19	88	63	6	310	82	115	34	168	80	23	13
1963	16	91	87	2	9	4	8	0	243	160	66	91
1964	1	59	45	1	7	0	0	0	37	19	10	5
1965	9	90	78	1	11	2	3	0	77	93	52	12
1986	1	81	53	29	213	51	1/0	1	40	33	18	5
1967	31	127	89	47	158	39	210	44	765	262	70	91
1968	5	69	51	10	14	8	1	0	16	22	22	14
1969	63	139	106	537	1229	345	852	248	2040	463	86	127
1970	4	76	70	3	72	14	7	1	225	183	42	22
1971	5	68	66	6	92	16	4	0	51	44	26	22
1972	1	65	49	6		4	1	1/0	11	9	6	8
1973	18	87	71	19	277	65	105	14	588	263	72	88
1974	10	95	79	14	87	19	22	0	470	167	65	58
1975	6	80	70	9	72	19	79	0	362	93	36	27
1976	1	44	35	4	24	2	1/0	0	14	6	4	6
1977	0	34	26	4	9	1	1/0	0	2	1	2	3
1978	78	115	72	305	926	328	1/470	69	1393	248	63	77
1979	22	94	60	38	246	43	1/23	3	177	51	23	13
1980	1/47	1/113	1/79	558	563	181	1/398	29	1195	249	57	61
1981	1/47	1/113	1/79	21	43	11	1/0	1	87	41	13	10
1982	1/11	1/77	1/60	25	44	5	1/68	0	355	398	99	132
1983	1/47	1/113	1/81	386	893	297	1/1100	209	3105	905	164	270

Table 22 is continued on p. 26 →

TABLE 22.—Annual streamflow from the California Water-Resource Region (16), 1951–83—Continued

Year	11303500 (ft³/s)	11325500 (ft³/s)	11337500 (ft³/s)	11447500 (ft³/s)	11454000 (ft³/s)	11458000 (ft³/s)	11467000 (ft³/s)	11477000 (ft³/s)	11481000 (ft³/s)	11530500 (ft³/s)	11532500 (ft³/s)	11013500 (ft³/s)
1951	6545	1247	1/28	29940	536	1/186	2603	9638	1956	23760	5423	0
1952	9841	1424	1/32	38710	810	1/363	3351	10770	1922	25920	4679	27
1953	2612	493	1/9	25040	585	1/120	2550	9631	2039	24420	4688	0
1954	2371	386	1	23430	393	1/111	2075	9323	1650	22370	4815	4
1955	1347	245	1	14670	128	1/113	1095	4169	943	9999	2683	0
1956	8685	1307	22	30870	1186	1/316	4297	13800	2273	30290	5736	0
1957	1992	492	1	18220	32	1/113	1417	5776	1354	16990	3604	0
1958	8366	1111	28	35700	47	1/360	4761	15850	2377	33360	5206	3
1959	1718	175	2	16460	42	1/127	1293	5513	1132	14330	3102	0
1960	757	62	2	14820	132	98	1520	6243	1062	13360	3340	0
1961	604	75	0	15740	177	55	1696	7152	1310	14700	4141	0
1962	2054	302	4	17930	187	146	1937	5199	978	11340	2963	0
1963	3885	777	17	28020	214	292	2801	9507	1761	20390	4323	0
1964	1549	124	1	16020	245	44	1031	4586	1267	13500	3454	0
1965	5242	795	15	27530	562	242	2989	12770	1943	22320	3796	0
1966	2343	486	2	18490	353	142	2159	6855	1221	14070	3774	1
1967	7681	628	18	33380	758	354	3097	8850	1271	16530	4318	3
1968	1968	234	1	18440	393	139	1619	5801	854	12250	2883	0
1969	13920	1102	20	32060	621	372	3803	11670	1749	20920	4121	5
1970	4232	674	12	27890	955	350	3729	10120	1430	19900	4168	0
1971	2452	463	7	31590	429	203	2478	10710	1905	25700	5406	0
1972	1535	163	0	17250	365	37	771	6218	1610	21730	5335	0
1973	3278	465	19	28520	391	321	3209	8854	1110	13200	2661	0
1974	3826	851	10	42340	851	350	4305	16320	2478	35020	7027	0
1975	3888	501	5	27450	465	196	2351	9562	1668	19110	3849	0
1976	2110	173	0	15180	408	8	379	3721	947	11860	3029	1
1977	575	22	0	7608	315	1	89	563	151	4036	975	0
1978	6187	297	18	24360	304	309	3490	10720	1706	21840	5140	93
1979	3611	472	5	17950	314	117	1350	4158	715	10980	2614	56
1980	8253	1064	23	1/32130	329	303	3092	9424	1462	20690	3891	809
1981	2439	131	2	1/21070	374	79	1267	4328	728	10900	2553	15
1982	7562	1490	43	1/30820	785	576	4504	14520	2266	31970	6458	0
1983	21280	2170	55	1/56910	1580	693	5898	17300	2471	36100	5475	1/0

Year	11103000 (ft³/s)	Total monitored streamflow (ft³/s)	Total streamflow (ft³/s)	Total streamflow (Bgal/d)
1951	51	82384	115503	74.6
1952	292	100795	141314	91.3
1953	61	72699	101925	65.8
1954	98	67302	94357	61.0
1955	83	35623	49943	32.3
1956	133	100287	140602	90.8
1957	67	50260	70464	45.5
1958	265	110217	154524	99.8
1959	68	44397	62244	40.2
1960	67	41655	58400	37.7
1961	44	45788	64194	41.5
1962	245	44263	62057	40.1
1963	76	72819	102092	66.0
1964	65	42070	58983	38.1
1965	106	78737	110389	71.3
1966	343	50764	71171	46.0
1967	237	79057	110836	71.6
1968	173	44788	62793	40.6
1969	1072	97869	137213	88.6
1970	127	74305	104175	67.3
1971	197	81937	114876	74.2
1972	107	55281	77504	50.1
1973	254	63949	89656	57.9
1974	190	114654	160745	104
1975	159	70058	98221	63.5
1976	100	38055	53354	34.5
1977	140	14556	20408	13.2
1978	923	79531	111502	72.0
1979	379	43514	61006	39.4
1980	865	85865	120383	77.8
1981	172	44524	62423	40.3
1982	248	102535	143754	92.9
1983	1/865	158367	222031	143
	TOTAL	2288903	3209042	2070
	MEAN	69361	97244	62.8

1/ Estimated value.

TABLE 23.—Annual streamflow from the Alaska Water-Resource Region (19), 1951–83

Year	15052500 (ft³/s)	15054200 (ft³/s)	15056100 (ft³/s)	15212000 (ft³/s)	15266300 (ft³/s)	15284000 (ft³/s)	15292000 (ft³/s)	15292400 (ft³/s)	15292700 (ft³/s)	15294500 (ft³/s)	15300500 (ft³/s)	15302000 (ft³/s)
1951	1/1099	1/569	1/540	1/36521	1/5724	4323	9106	1/8361	3909	1/3537	1/17555	1/
1952	1/1125	1/574	1/568	1/37241	1/5921	3684	9529	1/8565	4067	1/3600	1/18285	1/
1953	1/1160	1/581	1/603	1/38195	1/6182	4582	10090	1/8834	4276	1/3683	1/19254	1/
1954	1/1135	1/576	1/577	1/37500	1/5992	4134	9681	1/8638	4124	1/3622	1/18548	4236
1955	1/1171	1/583	1/614	1/38485	1/6262	3732	10260	1/8916	4340	1/3709	1/19548	6740
1956	1/1245	1/597	1/690	32910	1/6816	3966	11450	1/9487	4783	1/3886	1/21604	5568
1957	1/1179	1/584	1/622	46410	1/6318	4815	10380	1/8973	4384	1/3726	1/19755	4857
1958	1/1122	1/573	1/564	39300	1/5897	3531	9476	1/8539	4047	1/3592	1/18194	7948
1959	1/1190	1/586	1/633	36020	1/6401	3757	10560	8376	4452	1/3753	1/20066	4857
1960	1/1136	1/576	1/578	36590	1/5996	3959	9690	8363	4127	3196	1/18563	6261
1961	1/1205	1/589	1/649	36010	1/6518	3664	10810	9451	4545	3717	1/20498	6575
1962	1/1253	1/599	1/698	41580	1/6872	4542	11570	8818	4828	3669	1/21811	5579
1963	1/1222	1/592	1/666	37380	1/6639	3637	11070	8268	4642	3513	1/20947	5768
1964	1/1141	1/577	497	34730	1/6035	4384	9774	9312	4158	3520	1/18708	5305
1965	1/1165	1/582	487	32740	1/6220	3628	10170	9365	4749	3512	1/19393	6895
1966	1043	1/573	467	35030	5834	3439	9432	8648	4221	3489	1/18118	5884
1967	1309	612	610	37930	6812	3941	11220	11110	4470	4497	1/21206	5484
1968	1081	542	573	40140	5198	3947	9789	9172	4468	3741	19840	4444
1969	1025	523	367	31080	4562	2562	5597	6110	2249	3179	12820	5875
1970	1044	568	492	26790	6284	3065	7591	8736	3500	3106	17550	6837
1971	1039	585	520	40340	5958	4196	10250	8406	5299	4658	18040	6113
1972	1049	1/590	522	40070	4783	4072	10860	8340	4479	3586	21410	5602
1973	1030	1/556	451	34900	4002	2909	8087	1/7872	3851	1/3385	16440	6223
1974	978	1/551	410	37890	4902	1/3239	7630	1/7652	3325	1/3316	12760	4792
1975	1252	1/583	734	38640	5317	1/3976	10260	1/8925	4336	1/3712	15000	5604
1976	1032	1/557	495	34620	5094	1/3389	8169	1/7911	3398	1/3397	15410	5239
1977	1394	1/581	727	45170	8810	1/3929	10110	1/8844	4344	1/3686	21450	9470
1978	985	1/558	554	35060	5471	1/3396	8194	1/7923	3301	1/3401	17560	6659
1979	1218	1/573	789	41900	5975	1/3756	9490	1/8546	4446	1/3594	17250	7460
1980	1236	1/588	654	38920	8298	1/4098	10720	1/9137	4345	1/3777	23160	8209
1981	1475	1/603	973	47510	7976	1/4443	11960	10410	4408	1/3962	25750	6698
1982	981	1/576	482	37420	5716	1/3818	9712	8455	4204	1/3627	17270	6817
1983	1148	1/579	611	37600	5327	1/3877	9924	8224	3635	1/3658	17190	6694

Year	15304000 (ft³/s)	15565200 (ft³/s)	Total monitored streamflow (ft³/s)	Total streamflow (ft³/s)	Total streamflow (Bgal/d)
1951	1/39505	1/174672	305421	1298956	839
1952	44780	1/189572	327510	1392899	900
1953	42530	1/209332	349305	1485592	960
1954	36490	1/194926	325941	1386228	896
1955	43950	1/215321	356889	1517847	981
1956	46940	1/257238	401612	1708057	1100
1957	40620	207400	355167	1510523	976
1958	37560	166000	298395	1269073	820
1959	39220	184400	319415	1358472	878
1960	44280	193800	330854	1407121	909
1961	44870	207400	349927	1488238	961
1962	53100	272100	431439	1834910	1180
1963	62120	272500	433396	1843233	1190
1964	47020	253300	393157	1672096	1080
1965	46830	224000	362840	1543160	997
1966	41820	184000	316113	1344430	869
1967	58450	1/249136	411303	1749273	1130
1968	33370	1/198730	330591	1406003	908
1969	32180	1/51069	153323	652084	421
1970	35100	1/121307	235133	1000019	646
1971	45270	1/214968	359529	1529078	988
1972	48690	1/236455	384906	1637006	1060
1973	41250	1/138778	263511	1120711	724
1974	34140	1/122680	239474	1018484	658
1975	40640	1/216025	349420	1486082	960
1976	33090	1/141666	258229	1098247	709
1977	39650	1/210037	358731	1525684	986
1978	30620	1/142547	259569	1103949	713
1979	37550	1/188198	323285	1374931	888
1980	51070	1/231524	387527	1648153	1060
1981	39130	1/275202	433802	1844961	1190
1982	42530	1/196018	330809	1406929	909
1983	34100	1/203485	329358	1400761	905
		TOTAL	11065881	47063192	30400
		MEAN	335330	1426157	921

1/Estimated value.

TABLE 24.—Annual streamflow from the Hawaii Water-Resource Region (20), 1951–83

Year	Station 16031000 (ft³/s)	16036000 (ft³/s)	16049000 (ft³/s)	16052500 (ft³/s)	16071000 (ft³/s)	16069000 (ft³/s)	16103000 (ft³/s)	16108000 (ft³/s)	16213000 (ft³/s)	16216000 (ft³/s)	16247000 (ft³/s)	16303000 (ft³/s)	16330000 (ft³/s)
1951	167	85	75	1/6	1/106	17	1/247	1/124	1/43	1/49	1/11	1/29	1/23
1952	125	104	115	1/12	1/147	20	1/246	1/154	1/39	1/34	1/5	1/21	1/20
1953	36	35	31	1/0	57	17	1/122	96	21	12	4	7	1/5
1954	65	56	52	1/5	99	16	1/151	117	19	14	4	10	1/10
1955	130	83	64	1/4	127	22	1/190	157	61	46	9	21	1/21
1956	210	171	123	1/12	180	37	1/301	1/203	53	29	5	19	1/29
1957	137	101	83	1/7	150	29	1/203	1/152	45	19	5	14	1/15
1956	113	78	64	1/4	97	22	1/188	1/142	46	38	8	12	1/19
1959	86	57	47	1/3	98	19	1/151	119	34	19	3	13	13
1960	75	60	48	1/1	115	26	1/155	130	36	20	4	6	12
1961	58	59	54	1/4	106	22	1/187	118	21	16	4	7	9
1962	199	128	100	1/10	160	27	1/287	141	26	14	4	10	9
1963	158	127	122	1/13	135	25	1/293	147	55	38	9	19	21
1964	98	90	99	7	144	21	217	141	35	23	4	13	9
1965	231	161	120	16	188	42	333	179	56	47	7	30	30
1966	75	58	59	5	116	24	227	126	58	39	10	21	21
1967	156	114	97	7	213	44	276	171	57	52	9	17	19
1968	249	135	90	8	132	27	218	154	54	49	8	21	23
1969	1/173	129	119	12	165	56	271	211	77	81	9	22	24
1970	81	56	51	3	82	13	153	135	33	29	4	12	13
1971	142	119	101	10	141	20	213	177	52	50	6	20	20
1972	115	102	83	8	149	22	192	115	41	23	4	23	10
1973	1/54	51	59	1/4	60	9	139	111	20	14	2	13	7
1974	1/205	158	137	1/16	174	25	299	166	52	56	6	26	22
1975	1/104	91	89	1/7	120	17	194	139	37	31	5	18	16
1976	96	75	73	1/5	116	20	193	138	40	34	4	15	17
1977	59	60	57	1/3	77	16	142	101	20	18	4	15	9
1978	45	44	67	1/7	97	17	187	106	23	20	4	18	14
1979	80	60	71	1/4	118	20	195	120	40	36	9	23	23
1980	91	71	70	1/4	135	27	234	145	55	74	1/8	27	34
1981	62	50	48	1/5	76	19	164	111	25	20	1/5	19	9
1982	297	204	169	1/19	262	44	406	243	77	81	1/11	35	50
1983	129	103	91	1/11	105	23	207	146	38	18	1/4	18	15

Year	16400000 (ft³/s)	16404000 (ft³/s)	16414000 (ft³/s)	16508000 (ft³/s)	16570000 (ft³/s)	16620000 (ft³/s)	16704000 (ft³/s)	16717000 (ft³/s)	16717800 (ft³/s)	Monitored streamflow Kauai (ft³/s)
1951	34	29	5	22	31	35	270	1/120	1/21	828
1952	26	14	1	21	36	37	337	1/134	1/25	922
1953	26	10	0	15	27	32	205	1/91	1/25	396
1954	26	14	0	18	35	34	156	1/86	1/24	582
1955	30	21	2	33	47	47	324	1/149	1/36	777
1956	34	18	3	30	44	46	375	1/148	1/31	1238
1957	25	1/12	0	22	33	38	329	1/128	1/29	861
1958	34	1/16	1	28	51	46	301	1/135	1/34	708
1959	27	1/17	1	27	44	45	191	1/108	1/30	581
1960	31	1/14	0	29	42	40	342	1/144	1/36	610
1961	39	1/14	1	22	33	37	202	1/99	1/28	608
1962	40	1/18	3	18	25	30	286	1/110	1/21	1052
1963	40	1/13	1	17	31	30	350	1/127	23	1020
1964	29	1/12	0	22	34	33	368	1/142	26	817
1965	47	1/16	3	24	37	39	209	1/92	22	1269
1966	24	1/18	3	16	36	34	193	1/89	19	690
1967	29	1/14	2	26	36	34	338	1/126	28	1080
1968	28	1/18	2	27	37	35	283	116	30	1013
1969	34	1/18	3	53	70	55	476	190	52	1135
1970	23	1/16	1	23	41	41	269	116	30	575
1971	24	1/20	2	32	36	38	253	125	27	923
1972	20	13	1	14	24	24	298	122	22	786
1973	20	15	0	17	33	29	238	106	23	486
1974	24	15	2	22	27	26	287	117	23	1180
1975	17	12	0	19	1/28	26	389	144	25	760
1976	23	14	0	17	1/25	26	344	136	30	716
1977	23	14	0	18	1/31	32	305	131	29	515
1978	21	12	0	13	1/29	33	164	78	19	569
1979	34	20	4	29	1/46	46	349	130	32	668
1980	43	25	3	51	1/67	60	382	214	1/52	777
1981	20	14	2	9	1/23	27	93	53	1/12	534
1982	46	25	5	49	1/66	60	421	191	1/40	1646
1983	26	13	1	15	1/29	32	110	73	1/15	815
									TOTAL	27139
									MEAN	822

TABLE 24.—Annual streamflow from the Hawaii Water-Resource Region (20), 1951–83—Continued

Year	Monitored streamflow Oahu (ft^3/s)	Monitored streamflow Molokai (ft^3/s)	Monitored streamflow Maui (ft^3/s)	Monitored streamflow Hawaii (ft^3/s)	Total streamflow 5 islands (ft^3/s)	Total streamflow (Bgal/d)
1951	155	68	87	411	20776	13.4
1952	120	41	94	496	22238	14.4
1953	49	36	74	322	14160	9.2
1954	56	40	88	266	14899	9.6
1955	158	53	126	509	24527	15.9
1956	136	54	120	553	26928	17.4
1957	96	37	91	486	21166	13.7
1958	123	51	127	471	23030	14.9
1959	82	45	115	329	18276	11.8
1960	82	45	110	524	21951	14.2
1961	57	54	91	330	16887	10.9
1962	63	61	72	416	19752	12.8
1963	141	54	78	500	22397	14.5
1964	84	42	89	539	21893	14.2
1965	169	67	100	323	22016	14.2
1966	148	45	88	300	17318	11.2
1967	153	45	96	492	23518	15.2
1968	154	48	100	429	22225	14.4
1969	213	55	177	718	34103	22.0
1970	91	39	105	415	19301	12.5
1971	148	46	108	405	21728	14.0
1972	100	33	62	442	18194	11.8
1973	55	36	80	367	15879	10.3
1974	163	41	76	427	21473	13.9
1975	106	30	74	558	21061	13.6
1976	109	37	68	510	19768	12.8
1977	67	38	80	465	18183	11.8
1978	79	34	75	260	14074	9.1
1979	130	58	121	511	23534	15.2
1980	198	71	178	648	31307	20.2
1981	77	35	59	158	10950	7.1
1982	254	75	174	652	35971	23.3
1983	94	41	76	197	14421	9.3
TOTAL	3910	1553	3259	14428	693902	449
MEAN	118	47	99	437	21027	13.6

1/Estimated value.

TABLE 25.—Annual streamflow from the Puerto Rico Water-Resource Region (21), 1951–83

Station	50016000	50029000	50046000	50048000	50055000	50057000	50071000	50092000	50114000	50121000	50124000	50144000	50147800
Year	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(ft^3/s)
1951													
1952													
1953													
1954													
1955													
1956													
1957													
1958													
1959													
1960	1/253	1/598	1/456	1/250	1/340	212	1/95	1/88	1/43	62	1/24	1/363	1/336
1961	1/214	1/532	437	1/182	309	160	1/79	1/70	1/38	74	1/23	1/329	1/311
1962	1/215	1/534	406	1/185	319	162	90	1/71	1/38	52	23	1/331	1/312
1963	1/146	1/418	285	77	157	71	69	1/39	1/29	70	30	1/272	1/269
1964	1/134	1/397	147	36	154	54	40	1/33	1/28	35	21	233	1/261
1965	1/187	1/487	266	116	225	125	59	1/58	37	25	20	302	1/295
1966	1/189	1/490	354	156	210	127	63	1/58	29	28	17	276	1/296
1967	1/124	1/381	177	1/26	62	42	40	28	27	27	13	189	1/255
1968	1/131	1/392	143	1/39	96	51	39	38	39	32	20	285	252
1989	1/225	1/551	403	1/202	260	175	90	68	54	29	24	354	285
1970	235	634	435	1/219	271	188	69	67	49	47	1/23	287	245
1971	292	686	824	1/285	356	239	83	106	46	1/56	1/25	370	392
1972	155	437	129	1/39	139	51	38	43	30	1/36	1/20	309	287
1973	151	401	145	1/148	152	134	66	41	30	1/45	1/22	302	293
1974	1/145	290	79	1/64	95	70	52	29	17	1/38	1/20	222	215
1975	1/215	527	1/345	1/185	200	162	84	69	50	1/48	1/23	386	244
1976	1/187	392	190	1/136	163	125	71	62	30	1/44	1/22	287	279
1977	1/159	310	36	1/88	134	88	48	45	27	1/40	1/21	246	179
1978	1/233	471	220	1/216	300	186	91	96	33	1/50	1/23	306	415
1979	1/309	691	524	1/347	526	286	140	117	47	1/61	1/26	460	381
1980	1/151	618	197	1/74	220	78	83	46	32	1/39	1/21	366	366
1981	1/176	573	215	1/117	226	110	70	52	41	1/42	1/21	300	318
1982	1/189	622	237	1/139	206	127	75	61	36	1/44	1/22	378	421
1983	1/207	481	200	1/172	233	152	67	67	27	1/47	1/22	225	217

Year	Total sonitored streamflow (ft^3/s)	Total streasflow (ft^3/s)	Total streamflow (8gal/d)
1951			1/4.8
1952			1/4.8
1953			1/4.8
1954			1/4.8
1955			1/4.8
1956			1/4.8
1957			1/4.8
1958			1/4.8
1959			1/4.8
1960	3121	10081	6.5
1961	2758	8943	5.8
1962	2738	8869	5.7
1963	1930	6271	4.1
1964	1571	5052	3.3
1965	2200	7076	4.6
1966	2294	7401	4.8
1967	1415	4536	2.9
1968	1556	5009	3.2
1969	2719	8768	5.7
1970	2769	8905	5.8
1971	3759	12187	7.9
1972	1714	5478	3.5
1973	1929	6251	4.0
1974	1335	4183	2.7
1975	2537	8162	5.3
1976	1987	6326	4.1
1977	1421	4436	2.9
1978	2640	8461	5.5
1979	3914	12673	8.2
1980	2290	7519	4.9
1981	2261	7331	4.7
1982	2556	8323	5.4
1983	2117	6712	4.3
TOTAL	55533	178955	159
MEAN	2314	7456	4.8

1/Estimated value.

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