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ABSTRACT

The United States Geological Survey has compiled data on water use in this country every fifth year since 1950. This document is the most recent of this series and presents data on water withdrawn for use in the United States in 1975. In the introduction, recent and present water use studies are discussed along with a description of the terminology involved. Withdrawal uses, discussed in the second section, involve withdrawal for public supplies, rural uses, irrigation, self-supplied industrial water, thermoelectric power, and hydroelectric power. Also in this section, a summary of off-channel water withdrawals and consumption is given. Other sections of this publication discuss non-withdrawal uses; trends in water use over 25 years; supply compared with cumulative, off-channel water withdrawals; and a bibliography. Data for this study were compiled from 407 areas using federal, state, and local information sources. Many tables and figures are used to help summarize the data and support the text. The last half of this document consists of 14 tables compiling the data for water use not covered in detail in the text. (MR)

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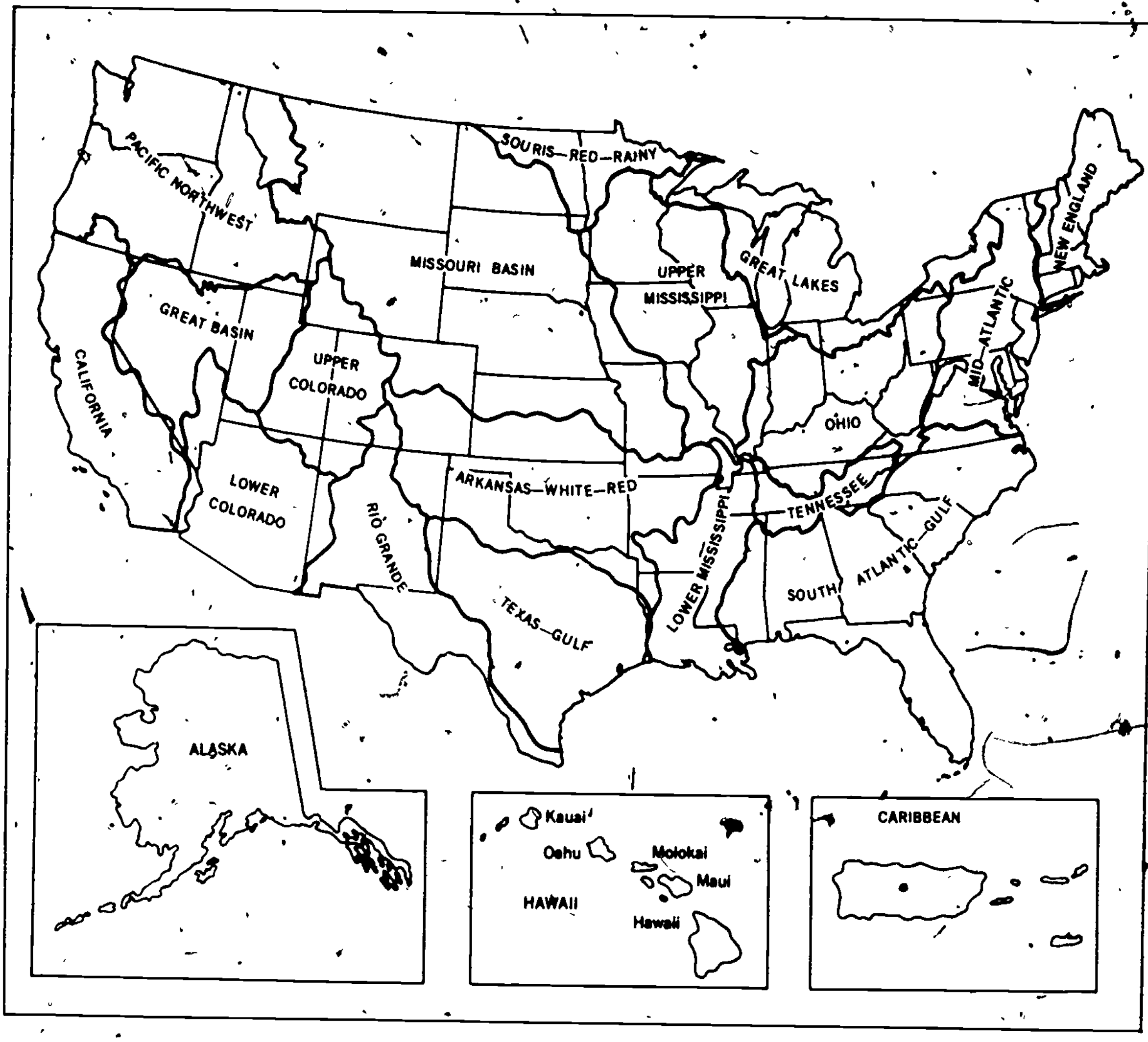

Map of the United States showing Water Resources Council regions, 1970.

Estimated Use of Water in the United States in 1975

By C. Richard Murray and E. Bodette Reeves

GEOLOGICAL SURVEY CIRCULAR 765

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Estimated Use of Water in the United States in 1975

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ABSTRACT

Estimates of water use in the United States in 1975 indicate that an average of about 420 bgd (billion gallons per day)—about 1,900 gallons per capita per day—was withdrawn for the four principal off-channel uses which are (1) public-supply (for domestic, commercial, and industrial uses), (2) rural (domestic and livestock), (3) irrigation, and (4) self-supplied industrial (including thermoelectric power). In 1975, withdrawals for these uses exceeded by 11.5 percent the 370 bgd estimated for 1970. Increases in the various categories of off-channel water use since 1970 were: approximately 12.8 percent for self-supplied industry (mainly in electric-utility thermoelectric plants), 7.6 percent for public supplies, 10.0 percent for rural supplies, and 10.8 percent for irrigation. Industrial water withdrawals included 70 bgd of saline water, a 30 percent increase in 5 years. The fifth principal withdrawal use, hydroelectric power (an in-channel use), amounted to 3,300 bgd, a 5-year increase of 20.7 percent. In computing total withdrawals, recycling within a plant (reuse) is not counted, but withdrawal of the same water by a downstream user (cumulative withdrawals) is counted. The quantity of freshwater consumed—that is, water made unavailable for further possible withdrawal because of evaporation, incorporation in crops and manufactured products, and other causes—was estimated to average 95 bgd for 1975, an increase of about 10 percent since 1970.

Estimates of water withdrawn from the principal sources indicated that 82 bgd came from fresh ground water, 1 bgd came from saline ground water, 260 bgd came from fresh surface water, 69 bgd came from saline surface water, and 0.5 bgd was reclaimed sewage.

The average annual streamflow—simplified measure of the total available water supply—is approximately 1,200 bgd in the conterminous United States. Total water withdrawn in 1975 for off-channel uses (withdrawals other than for hydroelectric power) amounted to about 34 percent of the average annual streamflow; 7.9 percent of the 1,200 bgd basic supply was consumed. However, comparisons of Water Resources Council regions indicate that the rate of withdrawal was higher than the locally dependable supply in the Mid-Atlantic, Missouri Basin, Texas-Gulf, Rio Grande, Lower Colorado, and California regions. Consumption amounted to nearly 24 percent of withdrawals in the conterminous United States; however, freshwater consumption amounted to only 6.5 percent of off-channel withdrawals in the 9 Eastern regions, which include the Mississippi and Souris Rivers, but to 44.2 percent in the 9 Western regions, ranging from 30 percent to nearly 70 percent. In the Rio Grande and Lower Colorado regions, freshwater consumption in 1975 continued to exceed the estimated dependable supply of freshwater.

INTRODUCTION

The purpose of this report is to present data on water withdrawn for use in the United States in 1975—a continuation of a series of reports containing similar kinds of data compiled by the U.S. Geological Survey for every fifth year since 1950. The district offices of the Geological Survey, some through their cooperative programs with State and local organizations, furnished statistical data showing amounts of water withdrawn and consumed in States and regions (frontispiece) for five major categories of withdrawal use. The quantitative assessments form a time series which shows trends in water use and is of value in appraising present—and planning future—utilization of the Nation's water resources. Quantities are shown in customary units used in the United States; however, they are expressed in metric units in another report by Murray and Reeves (1977).

Each type of use has characteristically different effects on the reuse potential of the return flow; this reuse potential is a measure of the quality and quantity of water available for subsequent use. For example, irrigation return flow may be contaminated by pesticides and fertilizers, and often, because of the high consumptive use, the mineral content of the return flow is greatly increased (degradation). Thus, irrigation return flow is, on the average, less than half of the water diverted for irrigation use and has little reuse potential. In contrast, nearly 90 percent of the water withdrawn for manufacturing and other industries, such as mining and construction, is returned to water sources for additional use. The nature and concentration of industrial water pollutants vary widely in place and time, and the ratio of the return flow to the original quantity diverted also varies. Generally almost 99 percent of the inflow to thermoelectric plants is discharged from the plants; the principal change in the water is an increase in its temperature. However, in some instances, with closed-circuit cooling the quantity of water consumed can nearly equal the inflow.

RECENT INVESTIGATIONS

Numerous reports on the subject of water use have been published in recent years. Generally these pertain either to a specific use or cover a particular area for which data on the various categories of water use are given. Since 1950, the U.S. Geological Survey has complied available information into quinquennial reports of water use in the United States (MacKichan, 1951, 1957; MacKichan and Kammerer, 1961; Murray, 1968; Murray and Reeves, 1972). The information collected for 1970 was used in other reports, almanacs, and statistical abstracts requiring a water-use base.

Reports of investigations of water use by State agencies are often a direct outgrowth of the Federal study. They are frequently the result of a cooperative project by a State agency and the U.S. Geological Survey. Some of the reports treat water use within the framework of the total water resources picture. One type of water-use study that has received considerable attention in recent years is systems analysis of water-use data for forecasting future water demands.

The report on land and water uses in the United States for 1964 was updated by the U.S. Department of Agriculture (1974a). The Bureau of Reclamation (1976a, b) published its 70th annual summary report of land and water use on project lands. A census of agriculture was taken in 1974 by the U.S. Bureau of the Census; the data are being published by counties, States and regions. The census of irrigation for 1969 by the U.S. Bureau of the Census (1973) presented detailed tables by farms and by irrigation organizations.

Information formerly contained in the U.S. Department of Agriculture "Livestock and Poultry Inventory" was published in separate reports on animal types by the Statistical Reporting Service, Crop Reporting Board (U.S. Dept. of Agriculture, 1975, 1976a, b, c, d). These inventories of livestock and poultry contained data of importance in estimating the quantities of water used for rural domestic and livestock purposes.

Information on private and public supplies formerly collected by the U.S. Public Health Service is being gathered by the Water Supply Division of the U.S. Environmental Protection Agency (1974, 1975a). Statistical data on the major public water-supply systems in the United States have been published by the American Water Works Association (1973). Their latest report presents operating data for 768 utilities in 1970 and 861 utilities in 1965.

One of the best summaries on water use for public supplies and other uses (Kammerer, 1976) forms Chapter 2 of "Handbook of Water Resources and Pollution Control."

A very comprehensive book on reducing residential water use was prepared by Milne (1976). Besides giving very explicit instructions on how to conserve water, an extensive bibliography is included that covers many facets of water-resource management.

The latest report of a series on water use in manufacturing was published by the U.S. Bureau of the Census (1975a) for the year 1973 as a companion volume to the 1972 census of manufacturing establishments. Reports on water use in mineral industries are produced similarly as companion volumes to the census of mineral industries by the U.S. Bureau of the Census (1975b). Certain aspects of industrial water use on pollution and public water supplies have been examined by Kollar and Brewer (1973, 1977) and price/cost sensitivity of water use in selected manufacturing industries has been analyzed by Kollar, Brewer, and McAuley (1976).

The Federal Power Commission (1976a) reported statistical data for 1973 on air and water quality control for thermoelectric plants; they also published data on hydroelectric power resources of the United States (1976b), and continued the publication of monthly statistics on electric power produced in the United States (1975b).

The U.S. Geological Survey (Giusti and Meyer, 1977) studied the water consumed by nuclear powerplants and their effect on the regional water-resource economy due to the increased competition for water. Hydrologic considerations included the need for modeling of low flows in terms of (1) ground-water inflow to a basin's rivers, (2) evapotranspiration from a basin, and (3) basin-wide consumptive water withdrawals.

PRESENT INVESTIGATION

The district offices of the U.S. Geological Survey compiled water-use data for 407 areas from Federal, State, and local sources of information. The data were then assembled and combined by States (including Puerto Rico and the Virgin Islands) and 21 Water Resources Council regions. The resulting tables show quantities of water used and consumed for five major categories of withdrawal use (1) public supply (domestic, commerce, and industry), (2) rural (domestic and livestock), (3) irrigation, (4) self-supplied industrial, and (5) hydroelectric power. (See tables 5 to 18.) Water used by electric utilities for thermoelectric power generation (both fossil fuel and nuclear energy) is part of the industrial use, but, because of the magnitude of thermoelectric-power water use, it is also listed separately as a subcategory (tables 9 and 16). Similarly, the two subcategories of rural use and the two for public supply are shown separately. These categories and subcategories have been used in the earlier Geological Survey water-use circulars and can be aggregated or disaggregated to obtain comparative figures for the various categories of water use—such as the threefold division into domestic, agricultural, and industrial—appearing in other water-use reports. The authors estimated water used for hydroelectric power generation in a few States by using statistics from two Federal Power Commission (1975b, 1976b) reports showing power generated in the 50 States and the gross static head and other pertinent information for individual plants.

TERMINOLOGY

The terms and units used in this report are similar to those used in previous reports in this series, such as in the report for 1970 (Murray and Reeves, 1972). When the term "water use" appears in this report, withdrawal use (the amount of water withdrawn from its source) is implied; this is equivalent to "intake" or "water requirement" as used in industry and agriculture, respectively. The principal requisite for withdrawal use is that water must be taken from a ground-water or surface-water source and conveyed to the place of use. If the water is used more than once by recycling, it will do the work of a greater quantity of water; the amount of this greater quantity, which is commonly called the "gross water use," is not evaluated in this report. If, however, the water is returned to a stream, lake, aquifer, or other source and then withdrawn anew, the summation of successive withdrawals gives the total or "cumulative withdrawal use."

The terms "water consumed," "consumptive use," or "consumption," as used in this report, refer to that part of the water withdrawn that is no longer available because it has been either evaporated, transpired, incorporated into products and crops, consumed by man or livestock, or otherwise removed from the water environment. Water that is discharged into saltwater bodies after being used, and is not recoverable from a practical standpoint, is not classed as consumed. Water with more than 1,000 milligrams of dissolved solids per liter of solution is classed as "saline" irrespective of the nature of the minerals present. In order for water to be classified as "reclaimed sewage" (also referred to as "other water" to distinguish it from that withdrawn from ordinary ground and surface water sources), the effluent from a sewage treatment plant must be diverted before it reaches a natural waterway and becomes part of the streamflow.

Water obtained from a water utility that serves the general public is classed as a "public supply;" if a public supply is either not available or not used, the water is "self-supplied." Individual families and small communities not served by a water utility are classed as "rural" with regard to water use.

In this report, water used to generate hydroelectric power (synonymous with "waterpower" in earlier reports) is included with withdrawal uses because of its diversion through powerplants. The term "off-channel uses" has been used to represent all withdrawal uses other than water withdrawn for hydroelectric power generation. The term "in-channel uses" encompasses all uses taking place within the river channel itself and therefore includes water used for hydroelectric power generation. The term "nonwithdrawal uses" includes water used for navigation; sport fishing, freshwater discharge into estuarine areas in order to maintain proper salinity, and the disposition and dilution of waste water. The evaluation of nonwithdrawal uses is outside the scope of this report.

Water-use data are reported as the average daily quantities used derived from the annual use. The use is generally expressed in million gallons per day to two significant figures; however, irrigation use is also given in units of 1,000 acre-feet per year. An acre-foot of water is the amount required to cover an acre (43,560 sq ft) to the depth of 1 foot (43,560 cu ft). A thousand of such units per year is very roughly equal to a flow of a million gallons per day for a year (1,000 acre-ft per yr equals 0.89 mgd). Common equivalents of these units are given in table 1.

Table 1.—*Hydraulic equivalents*

[Equivalent values, to three significant figures, are on the same horizontal line]

Million gallons per day (mgd)	Billion gallons per day (bgd)	Thousand acre-feet per year	Thousand cubic feet per second	Thousand gallons per minute	Million cubic meters per day
1.0	0.001	1.12	0.00155	0.694	0.00379
1,000	1.0	1,120	1.55	694	3.79
.893	.000893	1.0	.00138	.620	.00338
646	.646	724	1.0	449	2.45
1.44	.00144	1.61	.00223	1.0	.00545
264	.264	296	.409	184	1.0

WITHDRAWAL USES

Withdrawal use in this report embraces both off-channel and in-channel use and signifies that the water is physically withdrawn from a source, the locus of use can be either off-channel or in-channel. The subdivisions of off-channel uses in this report, which are (1) public supply (for domestic, commercial, and industrial uses),

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(2) rural (domestic and livestock), (3) irrigation, and (4) self-supplied industrial (including thermoelectric power generation), follow historical patterns of classification. Furthermore, with certain modifications of the subcategories they can be used readily in many water-use models. The classification of water used for developing hydroelectric power as a withdrawal use might be considered puristic, but, like other withdrawal uses, an actual withdrawal amenable to measurement takes place. Frequently, the quantities of the water withdrawn that return to a source after use (return flow) are difficult to measure; however, the amounts that do not return to a source (water consumed) are shown in most of the water-use tables which follow the text. Consumption of water for hydroelectric power generation is considered to be negligible and therefore is not shown.

PUBLIC SUPPLIES

The quantity of water withdrawn for public supplies in 1975 was estimated as 29 bgd (billion gallons per day) or an average of 168 gpd (gallons per day) for each individual served. (See tables 5 and 12.) Included in this quantity was water lost in the distribution systems and water supplied for carrying out public services such as firefighting, street washing, and water for municipal parks and swimming pools. It is estimated that losses and public uses accounted for about 36 percent of withdrawals. In 1975, public-supply systems served about 175 million people, about 80 percent of the population—a slight increase in percentage since 1970. Because of economic factors (including convenient access) many industrial and commercial establishments use public supplies, especially where the volume of water they require is small and the quality of the water must be high. Some large water-using industries also use public water systems for principal or auxiliary water supplies. Among the commercial users are institutions and facilities, both civilian and military, which are operated by various levels of government, local or Federal. Commerce and industry received approximately one-third of the public-supply withdrawals in 1975—9.1 bgd—the same proportion as in 1965 and 1970. The 6.7 bgd of water consumed (not available for reuse) by public water supplies amounted to nearly 23 percent of withdrawals, compared with 22 percent in 1965 and 1970. The larger cities were supplied principally by surface-water sources, which furnished nearly 64 percent of the public-supply water.

RURAL USES

The number of people who had their own supply of domestic water was 42 million in 1975—the same as in 1965 but a million more than in 1970. However, the quantity of water used increased to nearly 2.8 bgd from 2.6 bgd in 1970, a 7.4-percent increase. (See tables 6 and 13.) Similarly, the quantity of water used by livestock increased from 1.9 bgd to 2.1 bgd (14.5 percent). Only about 4.7 percent of the rural domestic water was surface water, but some 42 percent of the water used for livestock was surface water. The quantities of rural domestic and livestock water consumed in 1975 were 1.4 and 2.0 bgd; these were 50 and 95 percent of withdrawals, respectively. Frequently the high consumptive use for livestock results from failure to limit the amounts of water being supplied. In some instances, water from flowing artesian wells and unbraked windmills is allowed to run over the land surface where the water is either evaporated or transpired by nonproductive vegetation before it can rejoin a water source and be available for reuse.

The per capita rate for rural domestic use is about 66 gpd; this represents a quantity intermediate between estimated low withdrawal rates in homes without running water and estimated high withdrawal rates in rural homes that have running water and are equipped with modern high-water-requirement appliances.

IRRIGATION

The quantity of water withdrawn for irrigation in the United States, Puerto Rico, and the Virgin Islands in 1975 was estimated at 160 million acre-feet. (See tables 3, 7, and 14, and figs. 1, 3, and 10.) This was an average rate of 140 bgd, and the water was used on approximately 54 million acres of farmland. This represents an increase in water use of about 10.9 percent over the 1970 estimate and an increase in acreage of about 9.4 percent. It is to be expected that there will normally be large differences in water use from year to year where irrigation is used primarily to supplement natural rainfall.

Reliable estimates for consumptive use and for conveyance losses are difficult to obtain in States in which irrigation is a relatively new practice. Thus, some of the estimates of these types of data may be only rough approximations of actual conditions. Nevertheless, it is likely that better estimates were made of water used per acre in 1975 (than in 1970) and, in particular, that the values given for water lost in conveyance in 1975 were more realistic because of progressively better records being kept by irrigation districts. A detailed study of consumptive use of irrigation water in Wyoming was made by Trelease and others (1970); and similar studies have been made for specific areas in some of the Western States. A general study of water consumption and requirements for irrigation was made by Jensen (1973).

The quantity of irrigation water estimated as consumed in 1975 was 89 million acre-feet (80 bgd); this

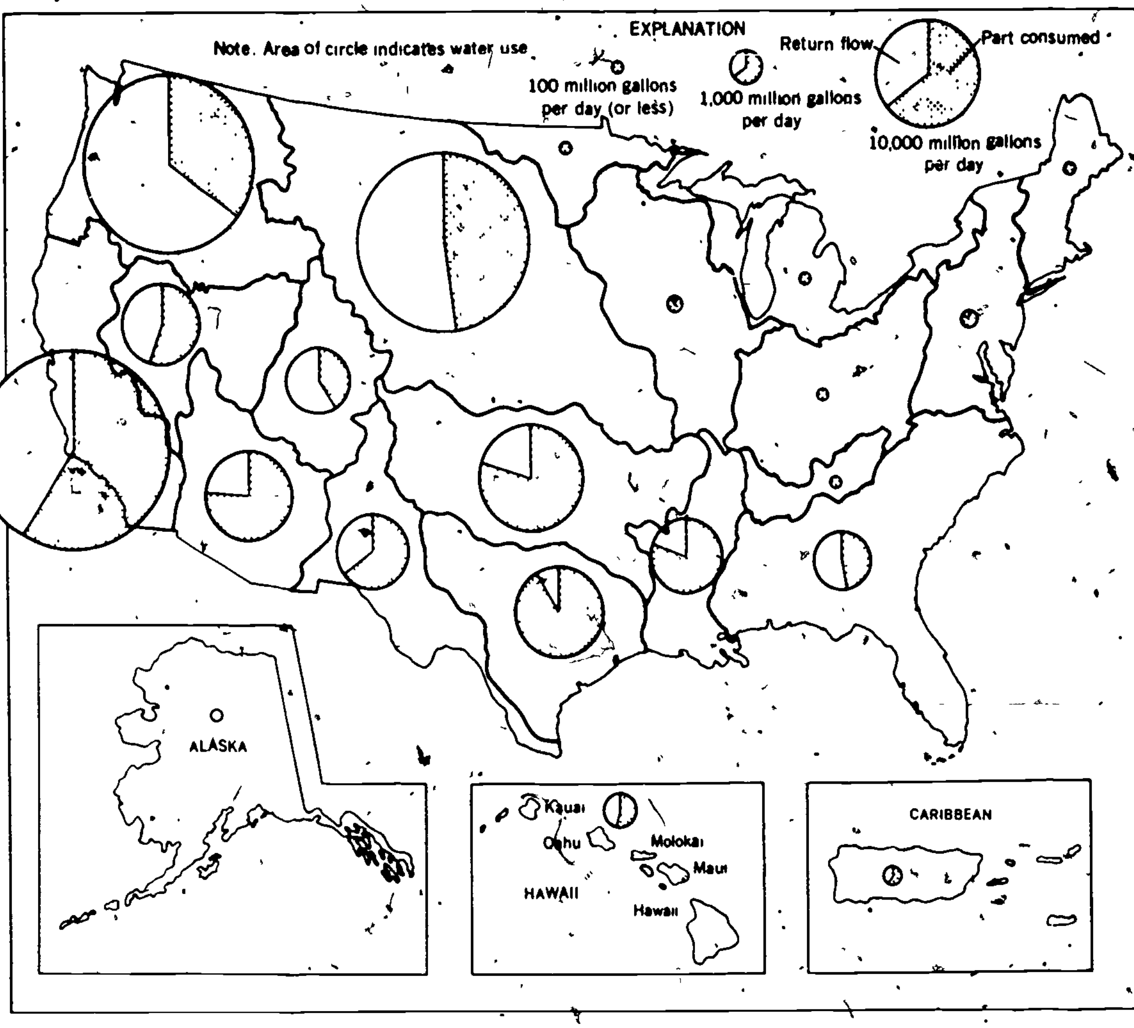

Figure 1.—Map of the United States showing irrigation water withdrawals, by regions, 1975

was about 56.4 percent of the water withdrawn. Conveyance loss was about 23 bgd or about 16 percent of 1975 irrigation withdrawals, 1 percent less than the estimate for 1970; the decrease is related to (1) increasing quantities of ground water being used in comparison with surface water and (2) the much shorter distance from the point of ground-water withdrawal to the area of use as compared with surface water. Of the water lost in conveyance, 30 percent was estimated to be lost through evapotranspiration, and the remaining 70 percent lost through deep or shallow percolation. Surface water furnished about 60 percent of the irrigation water and, except for a small fraction of 1 percent that was reclaimed sewage, ground water furnished the remainder. A 5-percent increase in the quantity of ground water for irrigation took place since 1970. The nine western regions used 93 percent of the water withdrawn for irrigation. In the Eastern United States, the South Atlantic-Gulf and Lower Mississippi regions accounted for most of the water used for irrigation.

SELF-SUPPLIED INDUSTRIAL WATER

More water is withdrawn for industrial water use than for any other category of withdrawal use. The amount used in 1975 increased 11.3 percent over that used in 1970. The amount of self-supplied industrial water used in the United States, Puerto Rico, and the Virgin Islands in 1975 was estimated as 240 bgd (tables 8 and 15) of which about 70 bgd was saline (29 percent). About 85 percent of the industrial water was withdrawn in the eastern part of the United States (figs. 2 and 3). Water used by thermoelectric powerplants in 1975 was about 200 bgd and constituted about 81 percent of industrial uses. Of the total water withdrawn by self-supplied industry, 92.6 percent of the water was used for cooling, and 29.3 percent of all self-supplied industrial water was saline (fig. 4).

No change in the relative proportion of source of supply was indicated in 1975 as ground water still supplied about 5 percent, surface about 95 percent, and

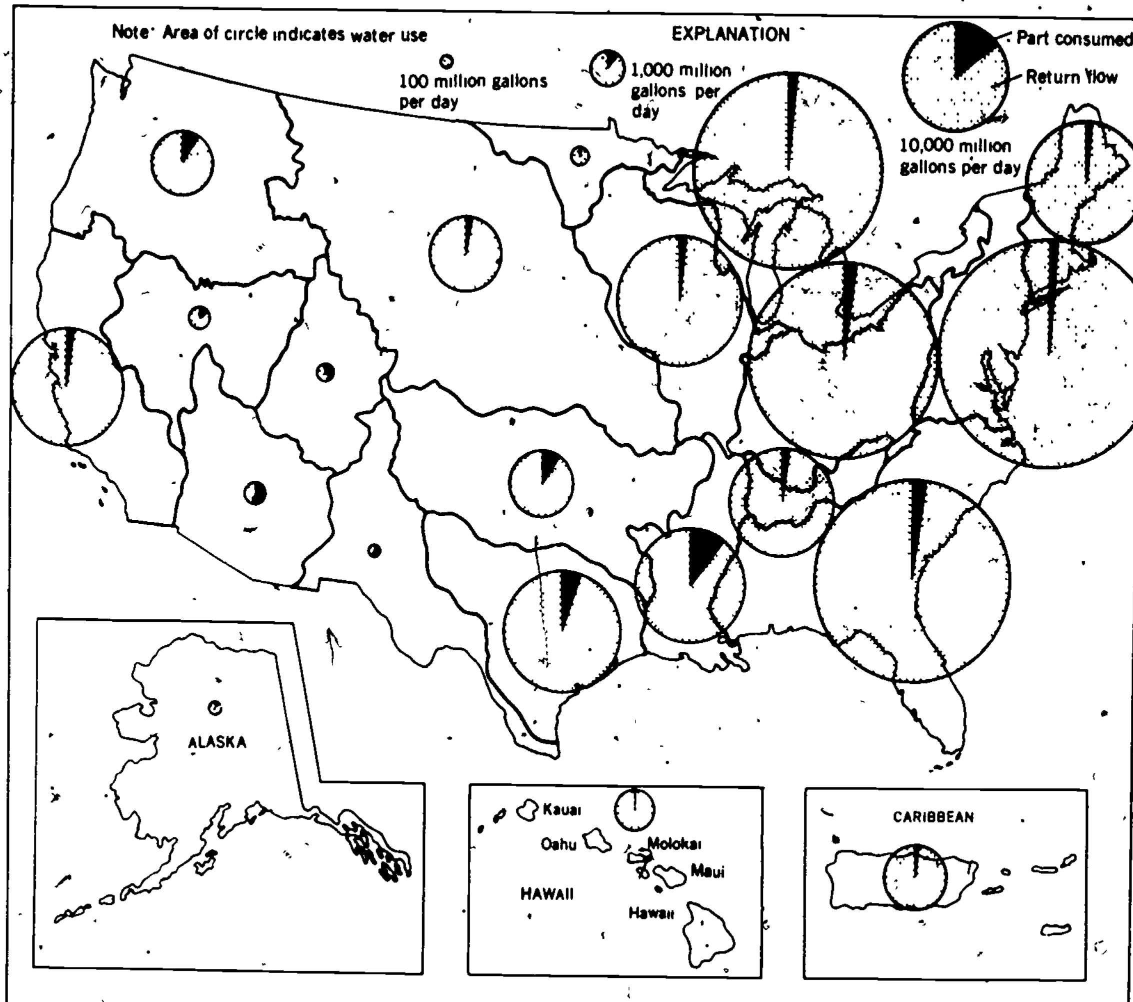

Figure 2.—Map of the United States showing self-supplied industrial water withdrawals, by regions, 1975.

reclaimed sewage only a fraction of 1 percent. For freshwater uses, water consumed was about 1.5 percent by thermoelectric plants, about 11 percent by other industries, and about 3.6 percent by all industries. These values are higher than previous ones, thus indicating increased reuse of water.

Water withdrawals for fish farming, fish hatcheries, and log ponds are considered industrial uses in this report. Industrial withdrawals for Arkansas and Alabama include appreciable quantities of water used for fish farming—300 mgd and 22.6 mgd, respectively.

THERMOELECTRIC POWER

In 1975, water used by thermoelectric plants amounted to about 190 bgd, an increase of about 18 percent over the 1970 estimate. This compares with a 26 percent increase in power production. Because of their large demand, thermoelectric plants furnish practically all of their own water; less than one-half of 1 percent is purchased from public supplies. Water used by electric-utility steamplants (tables 9 and 16) is tabulated separately from other industrial uses because of its magnitude. Not only does the power industry withdraw the largest quantity of water for off-channel use, but the rate of increase in usage by thermoelectric powerplants makes self-supplied industrial use the fastest growing of the major withdrawal uses (fig. 10).

Some preliminary data by the Federal Power Commission (1976c) on 1975 production, when compared with similar data in its 1970 report, show that electric utility production in 1975 reached a new record of over 1,918 billion kWh (kilowatt-hours). Thermoelectric (fuel-burning) plants generated nearly 1,617 billion kWh or 84.3 percent of the total. Included in this amount was nuclear plant production of 172 billion kWh or 9 percent of the total, a 689-percent increase since 1970. Total utility production, including hydroelectric, was 25 percent above that in 1970. Utility hydroelectric

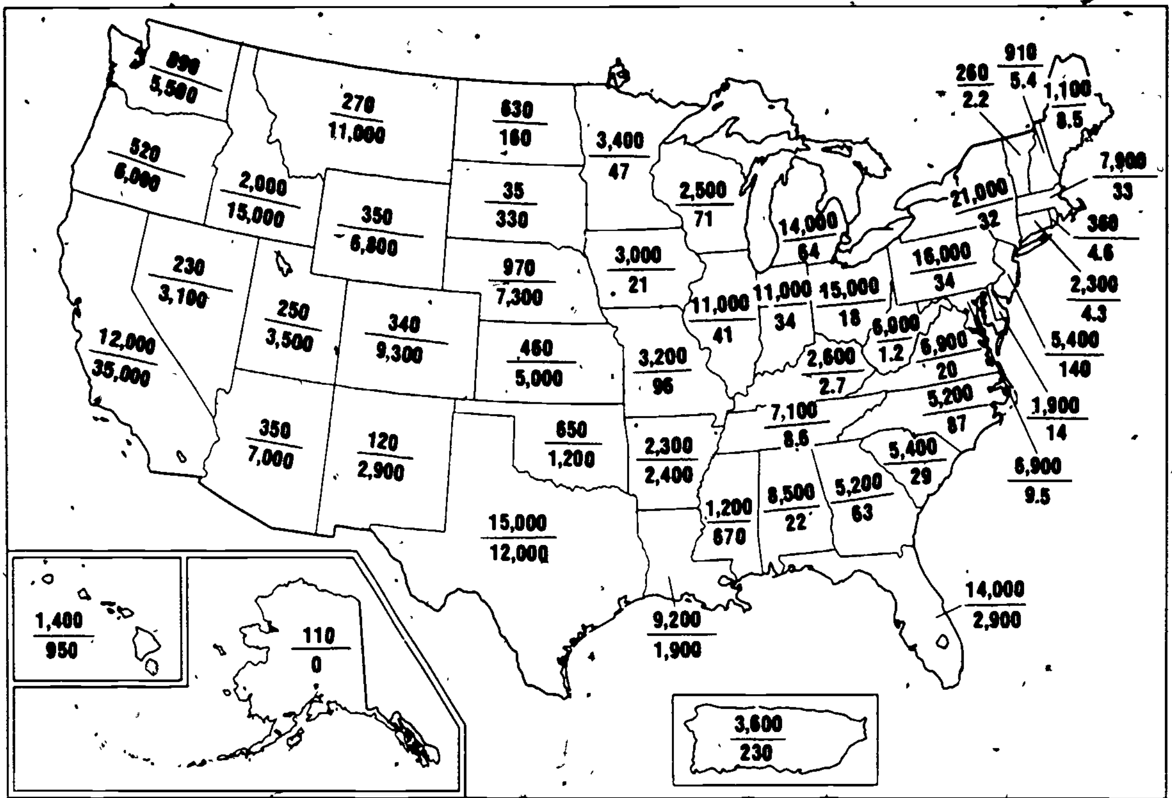

Figure 3.—Map of the United States showing self-supplied industrial water withdrawals (upper value) and irrigation water withdrawals (lower value), in million gallons per day, by States, 1975.

production, 301.5 billion kWh, was up 22 percent, and thermoelectric production was up 26 percent from the 1970 levels. Combined utility and industrial production of 2,003 billion kWh was 22 percent above the 1970 figure. Industrial production of 84.9 billion kWh in 1975 (about 4.2 percent of the combined total) was 21 percent less than industrial power generation in 1970. Water used by electric utilities in thermoelectric-power production is shown in tables 9 and 16, and that used by industrial establishments in generating their own thermoelectric power is included in "other self-supplied industrial uses" in tables 8 and 15.

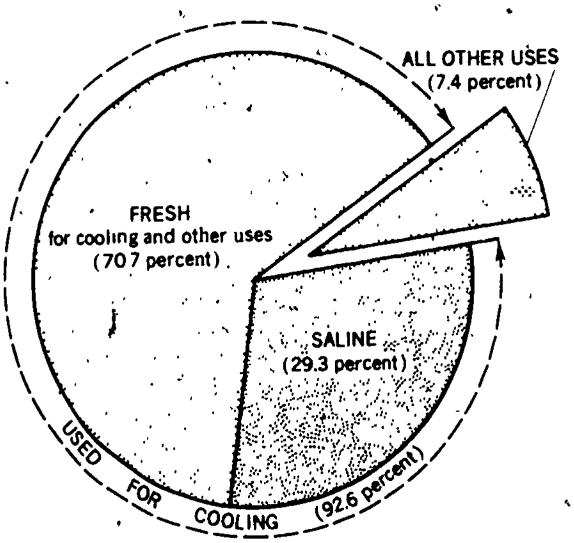

Figure 4.—Diagram showing characteristics of self-supplied industrial water use, 1975.

In 1975 about 99 percent of the total water withdrawn by thermoelectric plants was used for condensing spent steam from generators. Plants vary widely as to the techniques used in disposal of the cooling water after it has passed through the condensers. Where water is expensive or scarce, cooling towers or ponds (Federal Power Commission, 1969) are employed so that the same water can be used repeatedly in the condensers. Prevention of thermal pollution of the receiving water body is another factor that has caused some plants to resort to water-cooling devices. The quantity of water consumed by steamplants will increase as reuse of water becomes more prevalent. About 1 percent of the water withdrawn in 1975 was consumed, compared with one-half of 1 percent in 1970. Saline water constituted 33 percent of total withdrawals in 1975 compared with 28 percent in 1970. It is likely that increasing amounts of saline water will be used in thermoelectric powerplants; as the number of inland sites with adequate freshwater supplies for additional powerplants decreases, more plants will be located along the coasts.

HYDROELECTRIC POWER

Hydroelectric power production in the United States in 1975 was 22 percent greater than in 1970. The cumulative water withdrawal for hydroelectric power generation in 1975 was estimated as 3,300 bgd (2-3/4 times the average annual runoff in the conterminous United States). This compares with 2,800 bgd in 1970—an increase of about 20.7 percent (tables 11 and 18).

The quantities of water used for hydroelectric power in Michigan and Virginia were calculated from hydroelectric power production records of the Federal Power Commission (1975b, 1976b). The Commission also supplied data on water use for hydroelectric powerplants in Arizona, Iowa, and New Mexico. All other data was obtained through district offices of the U.S. Geological Survey.

Estimated quantities of water used may differ because of the manner in which individual estimators consider the amount of water from pumped storage that passes through hydroelectric plants. In keeping with the past practice of considering only the initial water withdrawal of an industrial establishment, gross water use (the equivalent amount of water that would be required if no reuse or recirculation occurred in the plant) is normally not reported in this water-use report. However, with respect to hydroelectric power where water-use data are derived from the amount of power developed and the height from which the water falls (without information regarding the number of times the water is pumped back to the storage reservoir), gross water use, rather than net withdrawal use, is obtained. As pumped storage becomes more prevalent, it will become an important factor in making water-use estimates. Although a very small quantity of water is evaporated in the generation of hydroelectric power, repeated reuse of water within a pumped-storage powerplant and the repeated reuse (cumulative withdrawals) which now occurs in successive plants downstream (3,300 bgd withdrawn compared with a total supply of 1,200 bgd), will cause some depletion of the available water supply. An estimated 11 bgd (Meyers, 1962) consumed by evaporation from principal reservoirs and regulated lakes (irrespective of purpose) in the 17 Western States, and classified as a nonwithdrawal use, is equivalent to about 11.5 percent of the consumption by all off-channel withdrawal uses in 1975. Total evaporation from reservoirs and regulated lakes throughout the United States is undoubtedly causing a considerably larger reduction in available water than that indicated for the Western States alone.

SUMMARY OF OFF-CHANNEL WATER WITHDRAWALS AND CONSUMPTION

The estimated withdrawal of 420 bgd for all off-channel uses (withdrawals for all purposes other than for hydroelectric power) in 1975 (tables 10 and 17) is about 11.5 percent greater than the 1970 withdrawal estimated by Murray and Reeves (1972). It indicates an average per capita withdrawal use of 1900 gpd (1,600 gpd fresh) for the United States, Puerto Rico, and the Virgin Islands. The percentages of off-channel withdrawal uses for the various categories in 1975 are shown in figure 5. Freshwater consumed in 1975 was estimated at 96 bgd, and the percentages of water consumed by the various categories of withdrawal uses are also shown in figure 5. The percentages are nearly the same as in 1970. Geographically, 84 percent of the water was consumed in the 17 Western States, a decrease of 2 percent since 1970, whereas 16 percent was consumed in the 31 Eastern States (fig. 6). The great difference in per capita water use in the western regions and in eastern regions is shown in table 2.

Per capita domestic use of water from public supplies by the relatively smaller population of the Western States is 27 percent higher than that of the Eastern States; however, per capita use in the West is only about 19 percent higher than per capita use in the East when commercial and industrial uses of public supplies are included. For all off-channel withdrawal uses, per capita use in the West is twice that in the East. When water used for hydroelectric power development is included, per capita use in the West is three times that in the East. Similarly, per capita consumption of water in the West far exceeds that in the East, being about 12.4 times as great. These high consumptive and withdrawal uses and

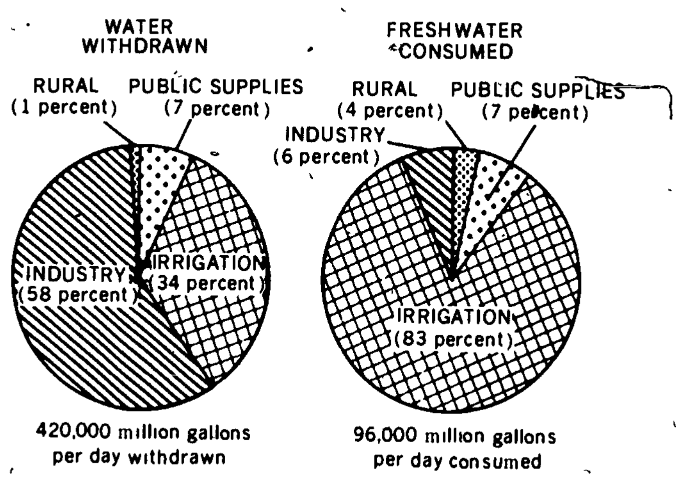

Figure 5.—Diagrams showing off-channel water withdrawals and freshwater consumed in 1975, by category.

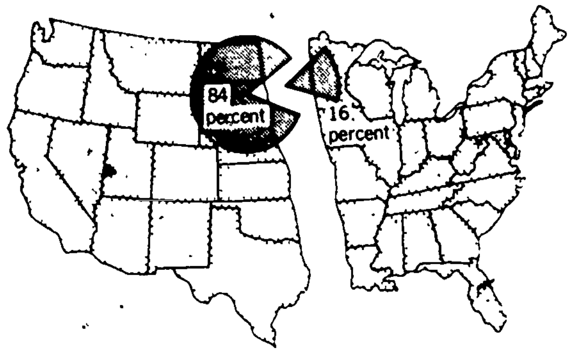

Figure 6.—Map showing freshwater consumed in the 17 Western States compared with that in the 31 Eastern States, 1975

the relative scarcity of water are major factors in the supply-versus-demand problems in the West.

In 1975, an average of about 82 bgd of fresh ground water, 1 bgd of saline ground water, 260 bgd of fresh surface water, and 69 bgd of saline surface water was withdrawn for off-channel uses (tables 10 and 17). Withdrawals (excluding hydroelectric use) of ground water and surface water, by States, are shown in figure 7

Table 2.—*Comparative per capita water withdrawals and water consumed (eastern and western Water Resources Council regions and total United States), in gallons per day, 1975*

[All per capita data in this table have been rounded to two significant figures]

	Public supplies only			Total population 1975 (millions)	All withdrawal uses		Fresh water consumed, all off-channel uses
	Population served (millions)	All uses	Domestic and public uses only[1]		Excluding hydroelectric power	Including hydroelectric power	
9 eastern WRC regions.	120.9	160	110	151.7	1,500	11,000	97
9 western WRC regions.	50.8	190	140	61.3	3,000	34,000	1,300
50 States and District of Columbia.	172.7	170	120	214.2	1,900	17,000	440

[1] Includes water losses in systems.

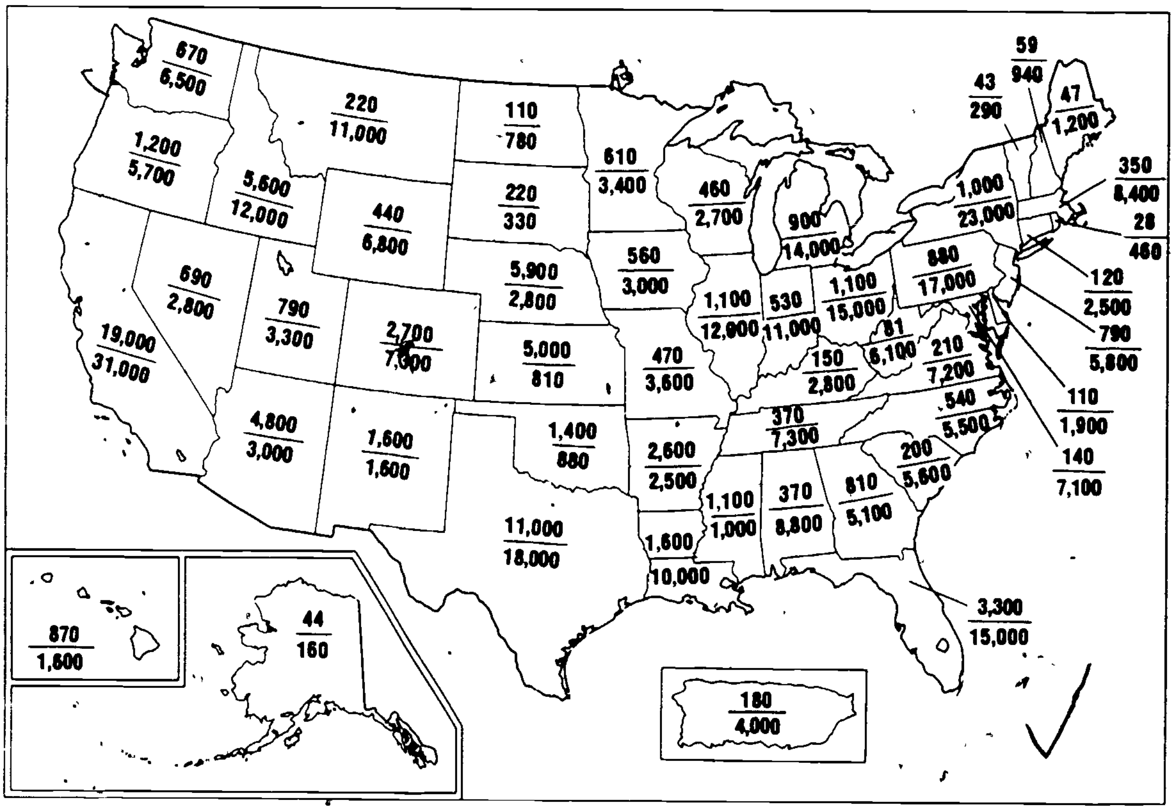

Figure 7.—Map showing off-channel water withdrawals from ground-water sources (upper value) and from surface-water sources (lower value), in million gallons per day, by States, 1975.

NONWITHDRAWAL USES

Nonwithdrawal uses, or water use not dependent on diversion of water from ground- or surface-water sources, usually are classified as flow uses or as onsite uses. Flow uses mentioned in the section on terminology are navigation, sport fishing habitat, freshwater sweetening of saline estuaries, and the disposition and dilution of waste water. All of these uses depend on water running freely in a defined channel. Onsite uses may occur (1) when water is present in a watercourse, lake, reservoir, or other body of water, or (2) they may occur when water is used to improve natural conditions. Evaporation from powerplant reservoirs, which results from establishment and operation of a withdrawal-type water project, is an example of the first type of onsite use, and use of water for wetlands improvement for wildlife habitat is an example of the second type. Thus, nonwithdrawal uses are important in maintaining the environment and water must be provided for them. Quantitative estimates are more difficult to make for nonwithdrawal uses than for withdrawal uses; however, methods and procedures for determining nonwithdrawal uses will have to be devised for effective water-resources management because such uses affect the quantity and quality of the available water resources for all uses. Evaluation of the magnitude of nonwithdrawal uses is not within the scope of this report.

TRENDS IN WATER USE, 1950–75

Table 3 shows the quantities of water withdrawn and consumed in the United States for 1950, 1955, 1965, 1970, and 1975. The quantities derived from freshwater and saline-water sources, ground- and surface-water sources, and from reclaimed sewage are shown. The percentage increases (or decreases) for the various categories of water use and sources of supply for the period 1970 to 1975 are also indicated. Data in table 3 for the period 1950 to 1970 were adapted from previous water-use circulars by MacKichan (1951, 1957) MacKichan and Kammerer (1961), Murray (1968), and Murray and Reeves, (1972).

Figures 8 through 10 show steady rates of increase in water uses with only surface water used for irrigation showing an irregular trend; the amount of surface water used for irrigation declined from 1950 to 1960, but increased about 8 percent between 1960 and 1965, and there was a 10-percent increase in the period 1965–70. The increase from 1970–75 was 3.7 percent. The average amount of water required per acre for irrigation in 1975 (2.9 acre-ft per acre) was slightly greater than in

Table 3 —*Changes in water withdrawals and water consumed in the United States, in billion gallons per day, 1950–75*

[Partial figures may not add to totals because of independent rounding]

	1950	1955	1960	1965	1970	1975	Percent increase or decrease 1970–75[1]
Total population (millions)	150.7	164	179.3	193.8	[2]205.9	[3]217.5	5.6
Total withdrawals	200	240	270	310	370	420	11.7
Public supplies	14	17	21	24	27	29	7.9
Rural domestic and livestock	3.6	3.6	3.6	4.0	4.5	4.9	10.3
Irrigation	[4]110	110	110	120	130	140	10.9
Self-supplied thermoelectric power use	[5]40	72	100	130	170	190	18.0
Other self-supplied industrial use	[5]37	39	38	46	47	44	[illegible].6
Sources from which water was withdrawn							
Fresh ground water	34	47	50	60	68	82	21.7
Saline ground water	([6])	.65	.38	.47	1.0	1.0	-6.0
Fresh surface water	[7]160	180	190	210	250	260	5.1
Saline surface water	[7]10	18	31	43	53	66	30.9
Reclaimed sewage	([6])	.2	.1	.7	.5	.5	2.2
Water consumed by off-channel uses	([4])	([6])	61	77	[8]87	[8]95	9.9
Water used for hydroelectric power	1,100	1,500	2,000	2,300	2,800	3,300	20.7

[1] Calculated from original unrounded computer printout figures for the two years.

[2] Including Puerto Rico.

[3] Including Puerto Rico and Virgin Islands.

[4] Including an estimated 30 bgd in irrigation conveyance losses.

[5] Estimated distribution of 77 bgd reported by MacKichan (1951).

[6] Data not available.

[7] Distribution of 170 bgd of freshwater and saline water reported by MacKichan (1951).

[8] Freshwater only.

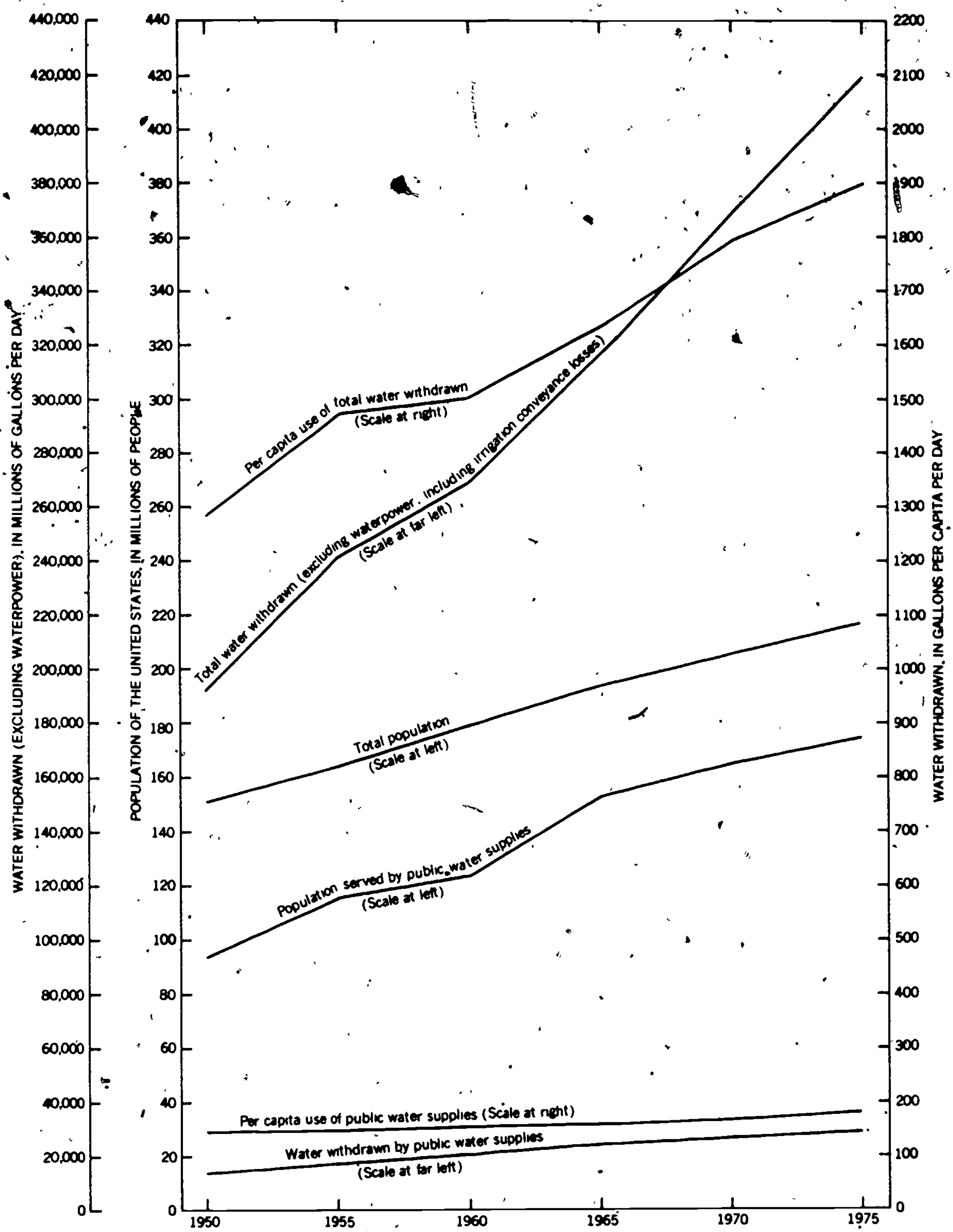

Figure 8 —Graph showing trends in population and withdrawals of water in the United States, 1950–75.

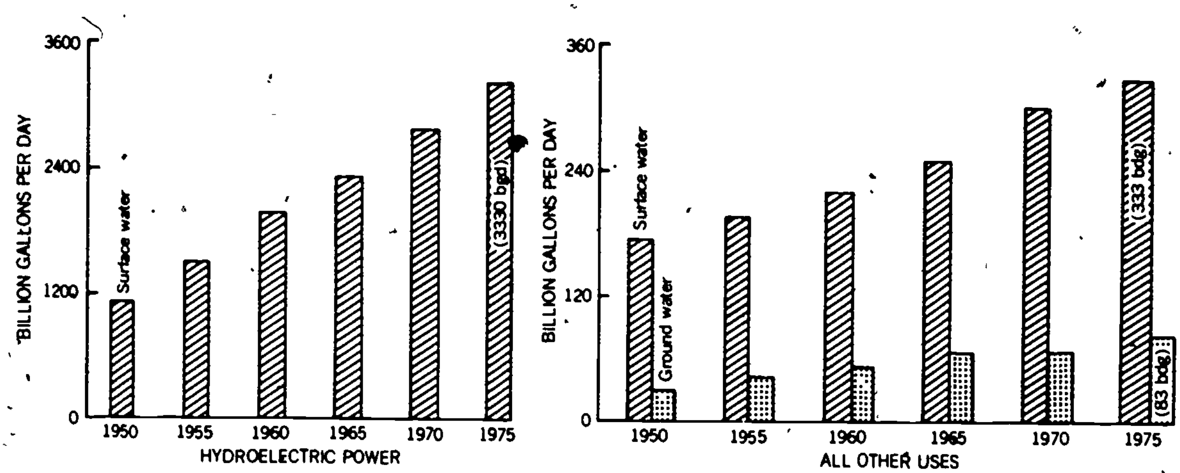

Figure 9 —Graphs showing trends in use of water for hydroelectric power and in all other withdrawal uses combined, 1950–75.

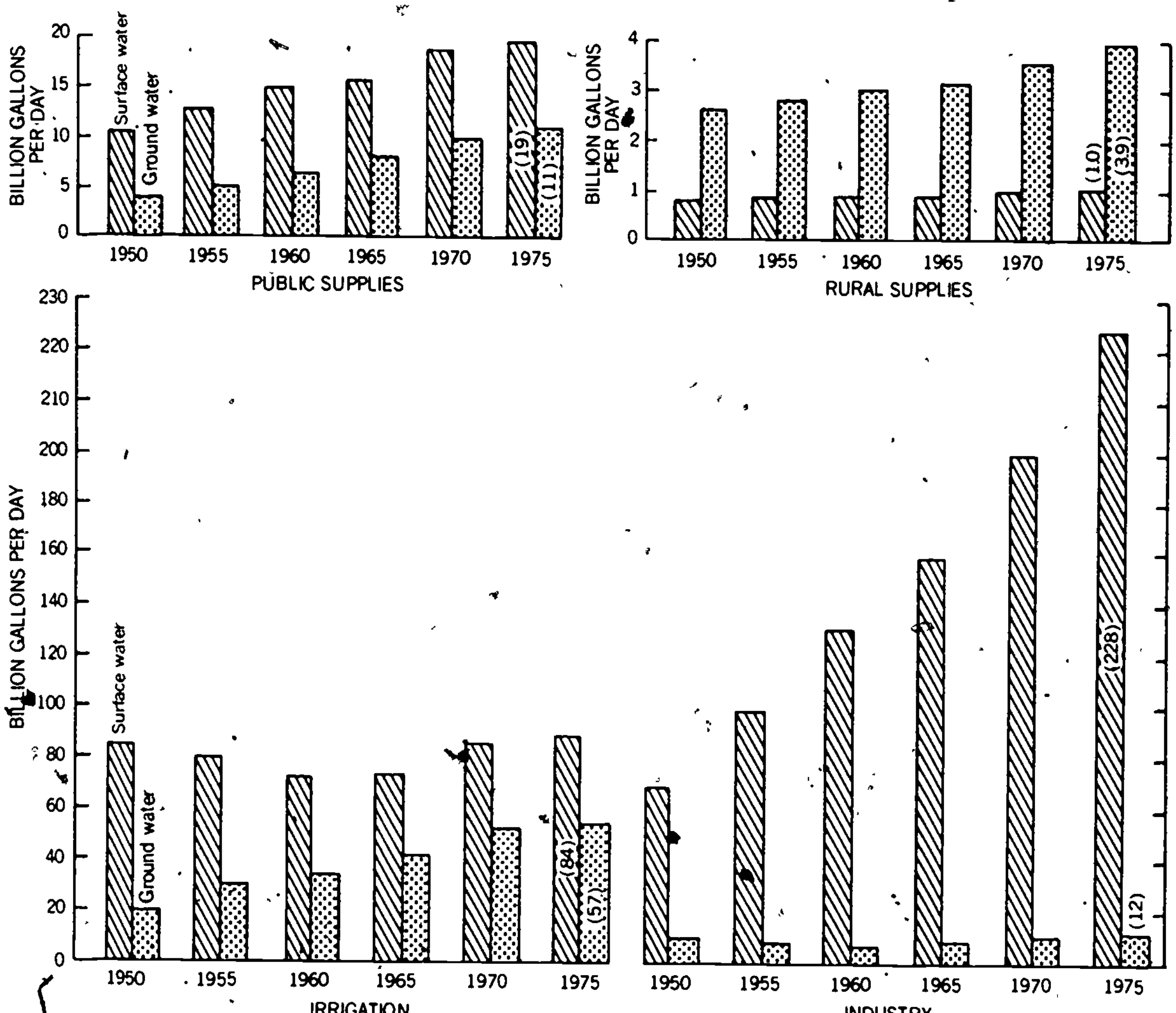

Figure 10—Graphs showing trends in use of water for public supplies, rural supplies, irrigation, and self-supplied industry, 1950–75

1970 and slightly less than in 1965 and 1960. However, the acreage irrigated in 1975 was about 9.4 percent greater than in 1970; this is considerably less than the 13-percent increase that took place from 1960 to 1965 and from 1965 to 1970.

The quantities of water withdrawn and consumed in 1975 were compared to projections and estimates made in the past of 450 bgd by Picton (1960), 510 bgd by Eliasberg (1960), 385 bgd by the Water Resources Council (1968), and 400 bgd by Wollman and Bonem (1971). Their projected water-use estimates for 1975 averaged 435 bgd, which is remarkably close to the current estimate of 415–420 bgd.

It appears that less water has been used than was forecast in the earlier estimates but slightly more than forecast in the latter ones. Trends established over the period 1950–70 have not changed greatly during the period 1970–75 (figs 8–10). A general slackening in the rate of increase for most uses over the past 5 years is detectable and confirmed when data of the last column of table 3 is compared with similar data for 1965–70 from U.S. Geological Survey Circular 676 (Murray and Reeves, 1972) Irrigation was exceptional in showing an increase of 10.8 percent for 1970–75 compared with 8 percent for 1965–70. Both thermoelectric power and general industrial water withdrawals showed marked declines in rates of change compared with the 1965–70 rates. A shift in the source of supply is also shown by table 3 which indicates that the withdrawal of ground water increased by more than 20 percent from 1970–75, an even greater increase in withdrawal of saline surface water, 30.3 percent, took place from 1970–75 The increase from 1970–75 in water withdrawals for hydroelectric power almost equaled the 22-percent increase for 1965–70. Despite the slowdown in the rate of increase in withdrawals, the percentage increases in withdrawals averaged about twice the rate of population growth. The changes shown by table 3 and figures 8–10 can be attributed to several important factors:

1. The deleterious effect on the economy caused by the 1973 oil embargo had a braking effect on water use.
2. Opportunities to develop additional fresh surface-water supplies are becoming less, thereby limiting this type of development and causing a switch to either ground water or saline surface water.
3. A continually increasing demand on a finite quantity of a commodity builds up stresses of various types, including economic—the law of supply and demand. The effect of cost increases influence the quantities and alternative options of water use and may determine the point at which waste-water reuse becomes cost effective (Schmidt and Ross, 1975).
4. The increased cost of fossil and nuclear fuel has put a premium on hydroelectric power development so that, both in 1970 and 1975, the hydroelectric power produced exceeded 15 percent of public utility power production, and increased water use was over 20 percent for each of the 5-year periods.
5. Availability of water in a particular year, especially streamflow, strongly affects the quanitty of water used for irrigation and hydroelectric power development.

SUPPLY COMPARED WITH CUMULATIVE, OFF-CHANNEL WATER WITHDRAWALS

Generally, demand for water must be met by the locally available supply. The quantity available in some areas is much the same year after year, but in other regions unpredictable differences occur that result in variations from year to year. In addition to the yearly differences, seasonal differences of available water are to be expected in most areas. Cumulative withdrawals decrease the streamflow, and return flows increase it, thereby producing a net balance of available surface supply at a given time and place. In order to compensate for the various irregularities in availability, established practices of water-resources management include storage of water in reservoirs and artificial ground-water recharge. Importation of water from regions with greater natural supplies is also practiced in some areas. Woodward (1957) made estimates of dependable supplies in 1955 (based on the minimum monthly flow at major points of use under existing conditions of development) and made a forecast of the dependable supply in 1980 (based on assumptions of future water-management practices).

Important methods of determining dependable supply are the statistical analysis of streamflow records and evaluation of the degree to which reservoir storage assists streamflow in maintaining a satisfactory available supply. A number of papers on these subjects have been published. C. H. Hardison furnished water-supply data from such studies for the first national assessment of the Water Resources Council (1968). Table 4 shows cumulative, off-channel water withdrawals in 1975 compared with estimated dependable supply and with streamflow—both the total annual runoff and that runoff exceeded in 90 percent of the years. Comparisons of these data show a very favorable situation to exist in the South Atlantic-Gulf, Northwest Pacific, and Ohio (which includes the Cumberland River) regions—all are areas of abundant supply. A somewhat less favorable relationship exists in the other seven eastern regions.

In the eastern regions (excluding the Great Lakes region) and in the Pacific Northwest region, values for

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"annual flows exceeded in 90 percent of the years" are high compared with dependable supplies (and off-channel withdrawals), which indicates that there is a natural dependability of supply. However, in the Souris-Red-Rainy region, the Missouri Basin region, the Texas-Gulf region, the Rio Grande region, the Upper Colorado region, the Lower Colorado region, and the Great Basin region, the flows exceeded in 90 percent of the years are less than the dependable supplies and are less than the cumulative, off-channel water withdrawals in six of these seven regions (the exception is the Souris-Red-Rainy region), which indicates that these areas are most susceptible to drought and water shortages.

In the West, the Missouri Basin and Arkansas-White-Red regions have moderately large water supplies and favorable supply-to-demand relationships. In the Texas-Gulf region, cumulative, off-channel water withdrawals form a large percentage of runoff, and are greater than the 1980 estimated dependable supply and greater than the annual flow exceeded in 90 percent of the years; 30 percent of the water withdrawn is consumed (excluding any saline-water consumption) which is high compared with consumption in the eastern regions. The situation in the Rio Grande region is similar to that in the Texas-Gulf region; however, the supply is only a small fraction of that present in the latter region, and the consumption in the Rio Grande region is greater than the dependable supply. The small quantity of water available in the Upper Colorado region has been made dependable through water-management practices; however, much of the flow is withdrawn for off-channel uses and about half of this water is consumed. Both water withdrawals and consumption in the Lower Colorado region exceed the supply originating in the area; this is made possible by augmentation of the supply by inflow of water from the Upper Colorado region, importation of surface water, repeated withdrawals of the same surface water, and mining of ground water. Large ground-water withdrawals are characteristic of the Texas-Gulf, Rio Grande, Arkansas-White-Red, Lower Colorado, and California regions. These regions contrast sharply with numerous others in which fresh surface-water withdrawals approach total withdrawals in magnitude. Considering the small, naturally available water supply in the Great Basin region, off-channel water withdrawals and water consumption are high. In the California region, the amount of runoff is moderately high; however, a large percentage of the runoff is withdrawn. The cumulative, off-channel water withdrawal in the California region is nearly twice the dependable supply, and the amount of water consumed exceeds the amount of fresh surface water withdrawn and approaches Woodward's estimate of the dependable supply for 1980. Here again, mining of ground water, repeated withdrawals of the same surface water, and importation of surface water have made possible the high withdrawals and consumptions. In the Hawaii region, only about 20 percent of the runoff is used and 6 percent is consumed; withdrawals are principally from aquifers (ground water).

In addition to the need for an adequate water supply, water-quality conditions must be suitable if supply and demand are to be in balance. For this reason, it is necessary to anticipate the magnitude of the various categories of water use (with their attendant consumption) in the future. The different uses vary widely as to the degree to which they degrade the supply and affect the reuse potential of the return flows. Trends established over the past 25 years, assuming near normal streamflows, indicate that the magnitude of withdrawals in the United States in 1980 may be about 220 bgd for thermoelectric power, 140 bgd for irrigation, 50 bgd for self-supplied industry, 30 bgd for public supplies, and 5 bgd for rural domestic and stock purposes. However, these estimates are subject to large errors, and changes in the rate of population growth will affect the magnitude of future withdrawals, especially those for public supplies. Any marked departure from normal precipitation and resulting streamflow would strongly affect the withdrawals for irrigation, industry, and hydroelectric power. The estimated cumulative, off-channel, water withdrawal of 450 bgd in 1980 is less than that estimated about 15 and 20 years ago in the reports of Picton, Eliasberg, and Woodward. Wollman and Bonem (1971) indicated that extensive recirculation of water may greatly lower water withdrawals in 1980, and the Committee on Technologies and Water, National Academy of Sciences (1971) has also discussed technical developments which may affect water supply and water use in the future. The Committee placed emphasis on developments which would improve the supply and lower the demand. However, as of 1975, it appeared that greater stresses would have to develop on the supply-demand situation to bring about large decreases in water withdrawals in the near future.

Figure 11 shows relationships of supply, withdrawal use, and consumptive use for the conterminous United States. Similar comparisons for the 17 Western States are given in figure 12. The figures indicate that the aggregated, off-channel withdrawals of freshwater in the conterminous States are about 73 percent, and that consumption is about 20 percent, of the estimated dependable supply (473 bgd) for 1975 (obtained by interpolation from Woodward's values). In the Western States (nearly equivalent to the nine western regions),

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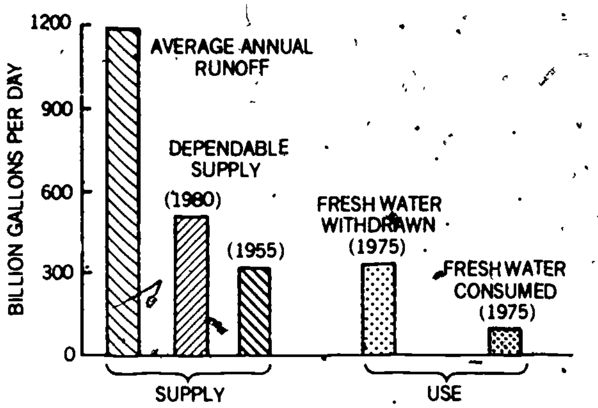

Figure 11.—Graph showing water supply and cumulative, off-channel water withdrawals in the 48 conterminous States.

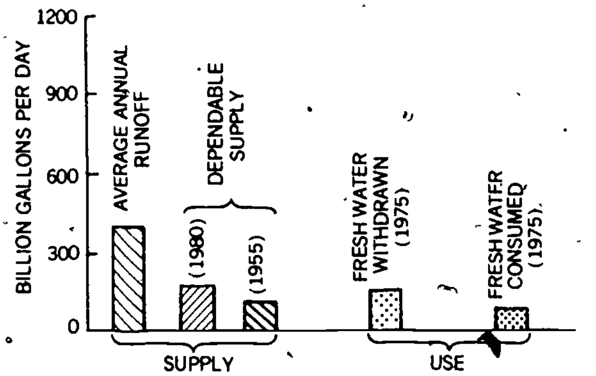

Figure 12.—Graph showing water supply and cumulative, off-channel water withdrawals in the 17 Western States

cumulative, off-channel withdrawals (163 bgd) are over 80 percent of the estimated dependable supply (200 bgd) for 1975 and consumption (80 bgd) is about 40 percent of that supply. Two factors limit the usefulness of these figures—the cumulative, off-channel withdrawal totals represent to an unspecified degree a number of repeated withdrawals of the same water by different users, and the withdrawal data also represent national or regional averages and, therefore, hide local water shortages. Such shortages often lead to reuse so that gross use can exceed the dependable supply; however, the recycling within a plant leads to increased consumption. Water that has been consumed is, of course, no longer available for reuse; therefore, consumption of 40 percent of the water in the West under the present regimen presages continuing and increasing water-supply problems. Also, loss (consumption) of a large percentage of the water in any region may cause serious impairment (degradation) in the quality of the remaining water and, in addition, the volume and flow (velocity) of the remaining water may be insufficient for essential non-withdrawal uses—even for those which have no quality-of-water constraints.

As long as there is no slackening of the rates of water withdrawal and water consumption, major attention must be given to water-management problems so that maximum benefits will be obtained from use of the Nation's water resources. In addition, to increased storage facilities, artificial recharge of ground water, suppression of evaporation and unproductive transpiration, and interbasin transfer of water, improvements are needed in other techniques such as artificial induction of precipitation and desalination of water.

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Table 4.—*Supply compared with cumulative, off-channel water withdrawals, by region, 1975*

[Partial figures may not add to totals because of independent rounding]

Regions	Area[1] (1,000 sq mi)	Average runoff[1]		Estimated denpendable supply[2], 1980 (bgd)	Withdrawals[3] 1975 (bgd)	Fresh-water consumed 1975 (bgd)	Annual flow[1] exceeded in 90 percent of years (bgd)	Fresh surface water withdrawn[3] 1975 (bgd)
		Inches per year	Bgd					
New England	59	24	67	22	14	0.44	49	4.4
Mid-Atlantic	102	18	84	36	52	1.6	68	22
South Atlantic-Gulf	270	15	197	75	43	3.7	129	24
Great Lakes	126	12	75	69	36	1.1	54	35
Ohio	163	16	125	48	36	1.2	75	34
Tennessee	41	21	41	14	11	.28	28	10
Upper Mississippi	190	7.2	65	31	19	.80	36	16
Lower Mississippi	96	17	79	25	16	5.5	38	11
Souris-Red-Rainy	59	2.2	6.2	3	.4	.09	2	.3
Missouri Basin	515	2.2	54	30	35	15	29	25
Arkansas-White-Red	265	6.0	73	20	15	9.0	36	6.2
Texas-Gulf	175	3.9	32	17	22	8.0	11	9.7
Rio Grande	136	.8	5.0	3	5.4	3.5	2	3.0
Upper Colorado	110	2.5	13	13	4.1	1.7	8	3.9
Lower Colorado	137	.5	3.2	2	8.5	6.3	1	3.5
Great Basin	185	1.0	7.5	9	6.9	3.6	3	5.4
Pacific Northwest	271	16	210	70	33	11	148	26
California	120	9.0	62	28	51	23	30	22
United States (conterminous)	3,020	8.3	1,200	515	409	95	747	261
Alaska	590	(4)	(4)	(4)	.2	.01	(4)	.2
Hawaii	6.4	44	13	(4)	2.5	.56	(4)	.7
Caribbean	3.4	(4)	(4)	(4)	4.1	.24	(4)	.5
Grand total	3,620	(4)	(4)	(4)	416	96	(4)	263

[1] Modified from table 31, U.S. Geological Survey Circular 556, p. 52.
[2] Woodward (1957), p. 49, with minor modifications.
[3] Including some minor interregional diversions.
[4] Data not available.

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Table 5.—*Water used for public supplies, by States, 1975*

[Partial figures may not add to totals because of independent rounding]

State	Population served			Water withdrawn				Water delivered		
	Ground water (thousands)	Surface water (thousands)	All water (thousands)	Ground water (mgd)	Surface water (mgd)	All water (mgd)	Per capita (gpd)	Industrial and commercial uses (mgd)	Domestic use and losses[1] (mgd)	Freshwater consumed (mgd)
Alabama	872	1,520	2,390	120	380	500	210	270	240	40
Alaska	98.9	84.8	184	35	46	81	442	1.0	80	4.1
Arizona	819	1,070	1,880	270	130	400	211	60	340	200
Arkansas	746	740	1,490	89	120	210	139	70	140	62
California	8,540	11,300	19,900	1,700	2,000	3,700	185	720	3,000	1,500
Colorado	273	1,910	2,180	54	380	440	200	100	340	110
Connecticut	283	2,120	2,400	34	290	320	134	110	210	110
Delaware	242	193	435	29	45	74	171	16	59	16
Florida	6,010	807	6,820	980	170	1,100	168	210	930	590
Georgia	1,080	2,500	3,580	150	410	570	158	320	250	120
Hawaii	767	41.8	808	170	11	180	228	36	150	55
Idaho	477	42.7	520	110	10	120	236	6.9	120	34
Illinois	3,690	7,000	10,700	700	1,400	2,100	199	630	1,500	21
Indiana	1,620	2,010	3,630	230	300	530	146	160	370	53
Iowa	1,520	505	2,030	220	80	300	146	86	210	44
Kansas	883	815	1,700	140	150	290	170	70	220	82
Kentucky	304	2,250	2,550	38	220	260	101	87	170	26
Louisiana	1,630	1,680	3,310	200	300	500	152	76	430	280
Maine	153	591	744	19	87	110	143	36	71	21
Maryland	404	2,850	3,250	47	430	480	147	86	390	23
Massachusetts	1,420	3,920	5,350	170	600	780	145	330	450	39
Michigan	1,400	5,670	7,070	240	950	1,200	168	650	530	98
Minnesota	1,580	1,120	2,700	180	180	360	135	140	220	36
Mississippi	1,510	256	1,760	180	34	210	120	46	170	62
Missouri	825	3,010	3,840	120	490	610	158	110	490	120
Montana	159	339	498	42	91	130	267	51	82	49
Nebraska	945	210	1,160	220	62	290	248	69	220	57
Nevada	256	290	545	72	100	170	321	59	120	52
New Hampshire	354	330	684	38	41	79	115	23	55	4.3
New Jersey	2,470	4,170	6,630	370	590	960	145	190	770	190

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New Mexico	727	64	791	170	17	190	236	11	180	83
New York	4,030	13,600	17,700	560	2,200	2,700	154	1,300	1,400	520
North Carolina	512	2,370	2,880	57	430	490	169	200	290	97
North Dakota	189	206	395	24	26	50	130	3.5	46	29
Ohio	2,740	5,770	8,510	400	1,000	1,400	167	210	1,200	210
Oklahoma	1,090	1,560	2,640	140	200	340	130	110	230	140
Oregon	344	852	1,200	65	160	230	190	86	140	46
Pennsylvania	1,860	7,540	9,400	350	1,300	1,700	178	480	1,200	170
Rhode Island	213	639	852	14	95	110	128	66	44	5.5
South Carolina	240	1,100	1,340	59	270	320	242	130	190	49
South Dakota	315	141	456	39	18	58	126	22	36	14
Tennessee	1,320	2,060	3,380	170	270	440	130	140	300	50
Texas	4,370	5,190	9,560	840	840	1,700	176	550	1,100	730
Utah	526	462	988	180	150	330	331	27	300	130
Vermont	104	194	298	16	29	45	150	15	30	5.4
Virginia	679	3,030	3,710	77	370	440	119	200	240	32
Washington	1,840	1,150	2,990	270	500	770	256	330	430	130
West Virginia	317	687	1,000	33	120	150	154	72	83	.4
Wisconsin	1,450	1,510	2,960	190	270	460	156	210	250	46
Wyoming	114	178	292	22	33	56	191	16	40	16
District of Columbia	0	716	716	0	150	150	215	50	100	15
Puerto Rico–Virgin Islands	408	1,920	2,320	59	230	290	125	18	270	42
United States[2]	64,700	110,000	175,000	11,000	19,000	29,000	168	9,100	20,000	6,700

[1] Includes public use.
[2] Including Puerto Rico and Virgin Islands.

Table 6.—*Water for rural use, in million gallons per day, by States, 1975*

[Partial figures may not add to totals because of independent rounding]

State	Domestic use				Livestock use				Domestic and livestock uses			
	Withdrawn			Fresh-water consumed	Withdrawn			Fresh-water consumed	Withdrawn			Fresh-water consumed
	Ground water	Surface water	All water		Ground water	Surface water	All water		Ground water	Surface water	All water	
Alabama	59	0	59	59	15	20	34	34	74	20	93	93
Alaska	6.2	3.0	9.2	.4	0	0	0	0	6.2	3.0	9.2	.4
Arizona	32	0	32	24	30	13	43	43	62	13	74	66
Arkansas	46	0	46	46	28	19	48	48	75	19	94	94
California	120	8.6	120	74	42	59	100	54	160	68	230	130
Colorado	12	1.4	13	2.7	22	16	38	34	34	17	51	37
Connecticut	50	0	50	26	.5	2.5	3.0	3.0	50	2.5	53	29
Delaware	10	0	10	1.1	2.9	0	2.9	2.3	13	0	13	3.4
Florida	200	2.0	200	49	51	12	63	63	250	14	270	110
Georgia	59	0	59	59	9.6	15	24	24	69	15	84	84
Hawaii	.3	0	.3	.3	5.6	.1	5.7	5.2	5.9	.1	6.0	5.5
Idaho	27	3.9	31	7.6	20	2.0	22	19	47	5.9	53	27
Illinois	14	3.2	17	12	32	10	42	42	46	13	60	54
Indiana	91	13	100	31	38	27	65	59	130	40	170	90
Iowa	51	.1	51	20	94	22	120	120	140	22	170	140
Kansas	58	4.2	62	59	30	35	65	64	88	39	130	120
Kentucky	34	4.0	38	30	4.6	42	46	46	38	46	84	77
Louisiana	42	0	42	42	9.8	8.7	18	18	51	8.7	60	60
Maine	14	1.4	16	5.3	0	0	0	0	14	1.4	16	5.3
Maryland	49	0	49	32	10	.5	11	11	60	.5	60	43
Massachusetts	25	0	25	3.0	.8	.6	1.4	1.4	26	.6	27	4.4
Michigan	160	0	160	26	19	5.7	25	22	180	5.7	190	48
Minnesota	89	0	89	8.7	66	11	77	76	150	11	170	85
Mississippi	21	0	21	19	11	17	29	29	33	17	50	48
Missouri	42	15	58	26	39	120	150	140	81	130	210	170
Montana	20	0	20	20	18	18	36	35	38	18	55	55
Nebraska	20	0	20	20	93	23	120	110	110	23	140	130
Nevada	7.9	.5	8.4	5.0	3.9	8.0	12	8.8	12	8.5	20	14
New Hampshire	8.2	.3	8.5	.4	.3	.6	.9	.8	8.5	.9	9.4	1.2
New Jersey	110	0	110	53	1.5	.8	2.3	2.1	110	.8	110	55

New Mexico	24	.6	24	13	13	31	44	43	37	32	68	56
New York	120	0	120	12	25	13	38	34	150	13	160	47
North Carolina	140	0	140	140	45	6.8	52	52	190	6.8	190	190
North Dakota	17	.1	17	17	12	7.6	20	20	28	7.7	36	36
Ohio	99	.11	110	77	35	23	58	54	130	34	170	130
Oklahoma	26	4.6	31	28	9.1	60	69	69	35	64	100	96
Oregon	150	19	170	150	3.0	19	22	22	160	38	190	170
Pennsylvania	120	0	120	12	44	7.4	51	38	170	7.4	170	50
Rhode Island	4.4	0	4.4	.7	.1	.1	.2	.2	4.5	.1	4.6	.9
South Carolina	46	0	46	46	27	33	60	60	73	33	110	110
South Dakota	15	.6	15	10	94	13	110	92	110	14	120	100
Tennessee	41	0	41	11	6.4	32	38	34	47	32	79	45
Texas	120	0	120	120	120	64	180	180	230	64	300	300
Utah	23	.2	23	2.2	34	3.2	37	11	57	3.4	60	14
Vermont	16	2.4	19	.9	5.7	3.0	8.7	8.7	22	5.4	27	9.6
Virginia	84	.2	84	4.3	6.0	19	25	15	90	19	110	19
Washington	39	11	50	18	4.1	1.9	6.0	3.1	44	13	56	21
West Virginia	21	.7	22	.1	.9	6.5	7.4	6.4	22	7.2	29	6.5
Wisconsin	70	0	70	6.9	55	16	70	70	130	16	140	77
Wyoming	7.9	1.1	9.0	6.4	4.1	16	20	19	12	17	29	26
District of Columbia	0	0	0	0	0	0	0	0	0	0	0	0
Puerto Rico–Virgin Islands	2.2	18	20	4.3	1.4	7.7	9.1	9.1	3.6	26	30	13
United States[1]	2,700	130	2,800	1,400	1,200	890	2,100	2,000	3,900	1,000	4,900	3,400

[1] Including Puerto Rico and Virgin Islands.

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Table 7.—*Water used for irrigation, by States, 1975*

[Partial figures may not add to totals because of independent rounding]

State	Acres irrigated (1,000 acres)	Total water withdrawn (1,000 acre-feet per year): Ground water	Surface water	Reclaimed sewage	All water	Freshwater consumed (1,000 ac-ft/yr)	Conveyance loss (1,000 ac-ft/yr)	Total water withdrawn (million gallons per day): Ground water	Surface water	Reclaimed sewage	All water	Freshwater consumed (mgd)	Conveyance loss (mgd)
Alabama	32	7.2	17	0	24	24	0	6.6	15	0	22	22	0
Alaska	0	0	0	0	0	0	0	0	0	0	0	0	0
Arizona	1,400	4,700	3,100	60	7,900	6,000	280	4,200	2,800	54	7,000	5,400	250
Arkansas	1,400	2,300	390	0	2,700	2,000	190	2,100	350	0	2,400	1,800	170
California	9,000	18,000	20,000	180	39,000	23,000	5,900	17,000	18,000	160	35,000	21,000	5,300
Colorado	3,100	2,800	7,500	90	10,000	5,700	1,200	2,500	6,700	80	9,300	5,100	1,000
Connecticut	15	.4	4.4	0	4.8	4.8	0	.4	3.9	0	4.3	4.3	0
Delaware	22	14	2.1	0	16	16	0	12	1.8	0	14	14	0
Florida	2,000	1,400	1,800	0	3,200	1,400	240	1,200	1,600	0	2,900	1,300	220
Georgia	120	26	44	0	71	71	0	24	40	0	63	63	0
Hawaii	140	480	580	0	1,100	560	500	430	520	0	950	500	450
Idaho	3,800	3,900	13,000	6.2	17,000	5,300	4,800	3,500	12,000	5.6	15,000	4,700	4,300
Illinois	68	32	14	0	46	46	0	29	12	0	41	41	0
Indiana	43	26	11	0	37	37	0	24	10	0	34	33	0
Iowa	57	21	2.6	0	23	23	0	18	2.2	0	21	21	0
Kansas	3,000	5,200	370	0	5,600	4,300	120	4,600	330	0	5,000	3,800	110
Kentucky	10	.1	2.9	0	3.0	2.9	0	.1	2.6	0	2.7	2.6	0
Louisiana	780	900	1,300	0	2,200	2,200	690	810	1,100	0	1,900	1,900	610
Maine	21	0	9.5	0	9.5	9.5	0	0	8.5	0	8.5	8.5	0
Maryland	22	4.6	5.9	.2	11	10	0	4.1	5.2	.2	9.5	9.4	0
Massachusetts	39	12	25	0	37	37	0	11	22	0	33	33	0
Michigan	110	27	44	0	72	72	0	24	40	0	64	64	0
Minnesota	140	26	26	0	52	52	0	24	23	0	47	47	0
Mississippi	390	620	140	0	750	380	75	550	120	0	670	340	67
Missouri	260	100	6.0	0	110	85	2.5	91	5.5	0	96	76	2.3
Montana	2,400	120	12,000	0	12,000	3,000	2,800	110	11,000	0	11,000	2,700	2,500
Nebraska	5,600	5,900	2,300	0	8,200	6,400	1,700	5,200	2,100	0	7,300	5,800	1,600
Nevada	860	590	2,900	3.7	3,500	1,700	800	530	2,600	3.3	3,100	1,500	720
New Hampshire	6.0	0	6.1	0	6.1	6.0	0	0	5.4	0	5.4	5.3	0
New Jersey	130	120	40	0	160	120	0	110	36	0	140	110	0

New Mexico	1,100	1,500	1,800	0	3,200	1,600	24	1,300	1,600	0	2,900	1,400	21
New York	83	21	15	0	36	35	0	19	13	0	32	32	0
North Carolina	500	59	38	0	97	97	0	53	34	0	87	87	0
North Dakota	130	54	130	0	180	170	18	48	120	0	160	150	16
Ohio	41	6.2	14	0	20	18	0	5.5	13	0	18	16	0
Oklahoma	1,000	1,100	180	0	1,300	910	16	1,000	160	0	1,200	820	14
Oregon	2,100	1,000	5,700	4.0	6,700	3,400	1,900	920	5,100	3.6	6,000	3,000	1,700
Pennsylvania	29	6.9	32	0	39	39	0	6.1	28	0	34	34	0
Rhode Island	3.8	.5	4.7	0	5.2	5.2	0	.4	4.2	0	4.6	4.6	0
South Carolina	42	10	22	0	32	32	0	8.9	20	0	29	29	0
South Dakota	200	55	320	0	370	200	160	49	280	0	330	180	150
Tennessee	19	3.6	6.1	0	9.7	9.0	.7	3.3	5.3	0	8.6	8.1	.7
Texas	8,600	10,000	2,600	60	13,000	12,000	480	9,400	2,300	53	12,000	11,000	430
Utah	1,700	540	3,300	1.0	3,900	2,400	430	480	3,000	.9	3,500	2,200	390
Vermont	2.3	.4	2.0	0	2.4	2.4	0	.4	1.8	0	2.2	2.2	0
Virginia	44	4.2	18	0	22	13	3.4	3.7	16	0	20	12	3.0
Washington	1,600	260	5,900	0	6,200	2,500	1,200	230	5,300	0	5,500	2,200	1,000
West Virginia	2.4	0	1.4	0	1.4	1.4	0	0	1.2	0	1.2	1.2	0
Wisconsin	130	57	22	0	79	62	0	51	20	0	71	56	0
Wyoming	1,700	300	7,300	0	7,600	2,200	1,800	270	6,500	0	6,800	2,000	1,600
District of Columbia	0	0	0	0	0	0	0	0	0	0	0	0	0
Puerto Rico–Virgin Islands	66	100	160	0	260	160	60	89	140	0	230	140	54
United States[1]	54,000	63,000	94,000	410	160,000	89,000	25,000	57,000	84,000	360	140,000	80,000	23,000

[1] Including Puerto Rico and Virgin Islands.

Table 8. —*Self-supplied industrial water use, in million gallons per day, by States, 1975*

[Partial figures may not add to totals because of independent rounding]

State	Thermoelectric power (electric utility) use: Water withdrawn: Fresh ground water	Thermoelectric: Water withdrawn: Surface water: Fresh	Thermoelectric: Water withdrawn: Surface water: Saline	Thermoelectric: Water withdrawn: Total fresh-water	Thermoelectric: Water consumed: Fresh	Thermoelectric: Water consumed: Saline	Other industrial uses: Water withdrawn: Ground water: Fresh	Other: Ground water: Saline	Other: Surface water: Fresh	Other: Surface water: Saline	Other: Reclaimed sewage	Other: All water: Fresh	Other: All water: Saline	Other: Water consumed: Fresh	Other: Water consumed: Saline	All industrial uses: Water withdrawn: Fresh	All industrial uses: Water withdrawn: Saline	All industrial uses: Fresh-water consumed
Alabama	2.2	6,900	110	6,900	25	0.2	160	5.0	1,200	96	0	1,400	100	83	6.0	8,300	210	110
Alaska	3.2	18	1.0	21	1.0	0	0	0	90	0	0	90	0	0	0	110	1.0	1.0
Arizona	33	110	0	140	41	0	190	0	18	0	0	210	0	170	0	350	0	210
Arkansas	2.0	1,700	0	1,700	3.0	0	340	0	270	0	0	610	0	240	0	2,300	0	240
California	380	1,100	9,200	1,500	32	60	390	240	41	500	1.7	430	740	170	36	1,900	9,900	210
Colorado	32	100	0	130	12	0	58	7.3	130	9.4	0	190	17	47	3.5	320	17	59
Connecticut	.3	720	1,200	720	4.7	0	31	1.0	290	1.0	0	320	2.0	12	11	1,000	1,200	16
Delaware	27	0	1,400	27	0	0	24	0	110	370	0	130	370	5.4	0	160	1,800	5.4
Florida	61	1,600	11,000	1,700	36	91	780	48	160	15	0	940	63	250	11	2,600	11,000	290
Georgia	15	3,500	510	3,500	42	0	550	0	570	11	0	1,100	11	79	0	4,700	520	120
Hawaii	142	32	980	170	0	0	97	15	94	0	0	190	15	4.0	0	360	990	4.0
Idaho	7.0	0	0	7.0	1.8	0	1,900	0	120	0	0	2,000	0	150	0	2,000	0	160
Illinois	7.7	9,100	0	9,100	5.0	0	240	31	1,400	0	0	1,600	31	80	0	11,000	31	85
Indiana	1.6	7,300	0	7,300	65	0	140	2.5	3,100	0	0	3,300	2.5	130	0	11,000	2.5	200
Iowa	2.0	2,700	0	2,700	15	0	180	0	130	0	0	310	0	6.0	0	3,000	0	21
Kansas	42	250	0	300	35	0	130	0	39	0	0	170	0	59	0	460	0	95
Kentucky	1.8	2,300	0	2,300	45	0	75	0	200	0	0	280	0	29	0	2,600	0	74
Louisiana	37	5,400	0	5,500	300	1.7	440	36	3,000	260	0	3,500	300	590	49	8,900	300	890
Maine	1.0	23	600	24	0	0	12	0	420	9.4	0	430	9.4	6.0	0	460	610	6.0
Maryland	1.0	420	5,200	420	2.0	18	32	0	310	720	150	490	720	35	6.0	910	6,000	37
Massachusetts	0	880	6,400	880	0	0	140	0	390	160	0	520	160	34	16	1,400	6,500	34
Michigan	0	12,000	0	12,000	0	0	60	400	1,500	0	0	1,500	400	96	120	13,000	400	96
Minnesota	33	2,800	0	2,800	58	0	220	0	380	0	0	600	0	42	0	3,400	0	100
Mississippi	13	120	540	130	8.0	9.0	330	0	190	0	0	510	0	72	0	640	540	80
Missouri	7.3	3,000	0	3,000	29	0	170	0	70	0	0	240	0	5.0	0	3,200	0	34
Montana	0	160	0	160	.3	0	26	0	85	0	0	110	0	11	0	270	0	12
Nebraska	270	620	0	890	8.4	0	84	0	.8	0	0	85	0	4.2	0	970	0	13
Nevada	7.9	87	0	95	22	0	55	13	58	0	7.7	120	13	49	11	220	13	71
New Hampshire	0	74	620	74	0	0	13	0	200	0	0	210	0	11	0	280	620	11
New Jersey	1.2	890	3,400	890	.8	1.7	202	0	470	430	0	670	430	77	13	1,600	3,800	78

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New Mexico	[illegible]	22	0	41	33	0	65	10	7.0	0	0	72	10	52	5.3	110	10	85
New York	[illegible]	7,200	12,000	7,400	15	25	130	3.4	1,400	35	0	1,600	38	140	2.3	9,000	12,000	150
North Carolina	.1	3,500	950	3,500	45	20	250	0	500	0	0	740	0	72	0	4,300	950	120
North Dakota	.3	620	0	620	19	0	3.1	2.7	8.1	0	0	11	2.9	5.0	.8	630	2.9	24
Ohio	23	12,000	0	12,000	78	0	500	0	1,900	0	0	2,400	0	72	0	15,000	0	150
Oklahoma	1.0	180	0	180	53	0	58	140	270	0	0	330	140	94	140	510	140	150
Oregon	0	22	0	22	0	0	80	0	420	0	0	500	0	20	0	520	0	20
Pennsylvania	3.8	11,000	160	11,000	230	1.0	350	0	4,400	43	0	4,700	43	340	4.0	16,000	200	570
Rhode Island	0	0	330	0	0	0	7.8	.3	22	0	0	30	.3	3.0	0	30	330	3.0
South Carolina	.1	5,000	8.7	5,000	59	.2	54	0	300	32	0	350	32	33	0	5,300	41	92
South Dakota	1.0	5.4	0	6.4	3.3	0	18	4.5	6.6	0	0	24	4.7	2.5	.5	31	4.7	5.8
Tennessee	0	5,800	0	5,800	50	0	150	0	1,200	0	0	1,300	0	120	0	7,100	0	170
Texas	38	8,900	2,800	8,900	390	28	420	0	450	2,400	9.0	880	2,400	380	0	9,800	5,100	770
Utah	0	15	0	15	8	0	65	4.0	120	49	0	190	53	43	40	200	53	51
Vermont	0	250	0	250	94	0	5.2	0	9.6	0	0	15	0	1.8	0	260	0	96
Virginia	0.9	3,400	2,500	3,400	0	0	42	0	840	70	0	880	70	8.4	0	4,300	2,600	8.4
Washington	0	7.0	0	7.0	7.0	0	130	0	710	41	0	840	41	130	6.0	850	41	130
West Virginia	0	5,400	0	5,400	1.2	0	26	0	630	0	0	660	0	57	0	6,000	0	58
Wisconsin	0	2,200	0	2,200	30	0	92	0	220	0	0	310	0	31	0	2,500	0	61
Wyoming	1.1	180	0	180	24	0	120	24	25	0	0	140	24	9.8	0	330	24	34
District of Columbia	0	130	0	130	2.0	0	.8	0	.6	0	0	1.4	0	.3	0	130	0	2.3
Puerto Rico–Virgin Islands	0	0	3,300	0	5.0	2.0	33	0	98	200	0	130	200	37	5.4	130	3,500	42
United States[1]	1,400	130,000	64,000	130,000	1,900	260	9,600	980	29,000	5,400	170	38,000	6,400	4,200	490	170,000	70,000	6,100

[1] Including Puerto Rico and Virgin Islands.

Table 9.—*Water used for electric utility generation of thermoelectric power, in million gallons per day, by States, 1975*

[Partial figures may not add to totals because of independent rounding]

State	Condenser and reactor cooling					Other thermoelectric uses					Water consumed	
	Self-supplied			Public supplies	Self-supplied and public supplies	Self-supplied			Public supplies	Self-supplied and public supplies		
	Fresh ground water	Surface water				Fresh ground water	Surface water					
		Fresh	Saline				Fresh	Saline			Fresh	Saline
Alabama	0	6,600	100	0	6,800	2.2	250	2.1	0.1	250	25	0.2
Alaska	2.2	18	1.0	0	22	0	0	0	0	0	1.0	0
Arizona	33	110	0	0	140	0	0	0	0	0	41	0
Arkansas	2.0	1,700	0	0	1,700	0	0	0	0	0	3.0	0
California	380	1,100	9,200	0	11,000	0	0	0	0	0	32	60
Colorado	32	100	0	0	130	0	.1	0	.1	.2	12	0
Connecticut	0	720	1,200	.1	1,900	.3	3.7	3.7	1.0	8.7	4.7	0
Delaware	27	0	1,400	0	1,500	0	0	0	0	0	0	0
Florida	52	1,600	11,000	1.5	13,000	8.5	2.3	0	1.6	12	36	91
Georgia	0	3,500	510	0	4,000	15	74	1.5	0	90	42	0
Hawaii	140	32	980	0	1,200	0	0	0	0	0	0	0
Idaho	6.8	0	0	0	6.8	.2	0	0	0	.2	1.8	0
Illinois	.7	8,800	0	1.0	8,800	7.0	320	0	3.0	320	5.0	0
Indiana	1.2	7,200	0	1.0	7,200	.4	110	0	0	110	65	0
Iowa	2.0	2,600	0	14	2,700	0	81	0	.3	82	15	0
Kansas	42	250	0	0	300	0	0	0	0	0	35	0
Kentucky	0	2,200	0	0	2,200	1.8	90	0	14	110	45	0
Louisiana	0	5,300	0	0	5,300	37	120	0	0	150	300	1.7
Maine	0	22	600	0	620	1.0	1.0	0	1.0	3.0	0	0
Maryland	0	410	5,200	0	5,600	1.0	10	0	0	11	2.0	18
Massachusetts	0	880	6,400	0	7,200	0	0	0	0	0	0	0
Michigan	0	12,000	0	0	12,000	0	58	0	0	58	0	0
Minnesota	32	2,700	0	15	2,800	.7	57	0	.3	58	58	0
Mississippi	11	120	540	0	660	2.0	0	0	0	2.0	8.0	9.0
Missouri	7.3	3,000	0	0	3,000	0	0	0	0	0	29	0
Montana	0	160	0	0	160	0	0	0	0	0	.3	0
Nebraska	270	620	0	84	970	0	0	0	0	0	8.4	0
Nevada	5.9	87	0	0	93	2.0	0	0	.3	2.3	22	0
New Hampshire	0	74	620	0	700	0	0	0	0	0	0	0
New Jersey	0	880	3,400	0	4,300	1.2	3.2	33	5.1	43	.8	1.7

New Mexico	19	22	0	0	41	0	0	0	0	0	33	0
New York	0	6,800	12,000	36	19,000	190	370	0	6.0	570	15	24
North Carolina	0	3,500	950	0	4,500	.1	36	0	0	36	45	20
North Dakota	.3	620	0	0	620	0	0	0	0	0	19	0
Ohio	17	12,000	0	42	12,000	5.9	130	0	1.3	140	78	0
Oklahoma	1.0	180	0	0	180	0	1.4	0	.4	1.8	.53	0
Oregon	0	22	0	0	22	0	0	0	0	0	0	0
Pennsylvania	1.3	11,000	160	0	11,000	2.5	96	0	0	98	230	1.0
Rhode Island	0	0	330	0	330	0	0	0	0	0	0	0
South Carolina	0	4,900	8.3	0	4,900	.1	40	.4	0	41	59	.2
South Dakota	.8	5.3	0	.2	6.3	.2	.1	0	0	.3	3.3	0
Tennessee	0	5,800	0	0	5,800	0	0	0	0	0	50	0
Texas	37	8,900	2,800	4.9	12,000	1.3	2.8	.3	.1	4.5	390	28
Utah	0	15	0	0	15	0	0	0	0	0	8.0	0
Vermont	0	220	0	0	220	0	22	0	0	22	94	0
Virginia	0	3,400	2,500	0	5,900	.9	0	0	0	0	0	0
Washington	0	7.0	0	0	7.0	0	0	0	0	0	7.0	0
West Virginia	0	5,200	0	0	5,200	0	140	0	0	140	1.2	0
Wisconsin	0	2,200	0	0	2,200	0	0	0	0	0	30	0
Wyoming	.4	180	0	0	180	.7	4.9	0	0	5.6	24	0
District of Columbia	0	130	0	0	130	0	0	0	0	0	2.0	0
Puerto Rico–Virgin Islands	0	0	3,300	5.0	3,300	0	0	0	0	0	-5.0	2.0
United States[1]	1;100	130,000	64,000	200	190,000	290	2,000	41	35	2,400	1,900	260

[1] Including Puerto Rico and Virgin Islands.

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Table 10.—*Summary of water withdrawn, except for hydroelectric power, in million gallons per day, by States, 1975*

[Partial figures may not add to totals because of independent rounding]

State	Population (thousands)	Fresh-water per capita use (gpd)	Water withdrawn including irrigation conveyance losses: Ground water: Fresh	Ground water: Saline	Ground water: Fresh and saline	Surface water: Fresh	Surface water: Saline	Surface water: Fresh and saline	Reclaimed sewage	All sources: Fresh	All sources: Saline	All sources: Fresh and saline	Conveyance losses	Fresh-water consumed
Alabama	3,577	2,500	370	5.0	370	8,600	200	8,800	0	8,900	210	9,100	0	260
Alaska	404	500	44	0	44	160	1.0	160	0	200	1.0	200	0	5.6
Arizona	2,245	3,500	4,800	0	4,800	3,000	0	3,000	54	7,800	0	7,800	250	5,900
Arkansas	2,116	2,400	2,600	0	2,600	2,500	0	2,500	0	5,100	0	5,100	170	2,200
California	21,113	1,900	19,000	240	19,000	21,000	9,700	31,000	160	41,000	9,900	51,000	5,300	23,000
Colorado	2,534	4,000	2,700	7.3	2,700	7,300	9.4	7,300	80	10,000	17	10,000	1,000	5,300
Connecticut	3,111	460	120	1.0	120	1,300	1,200	2,500	0	1,400	1,200	2,700	0	160
Delaware	575	450	110	0	110	150	1,800	1,900	0	260	1,800	2,100	0	39
Florida	8,485	810	3,300	48	3,300	3,600	11,000	15,000	0	6,900	11,000	18,000	220	2,300
Georgia	5,023	1,100	810	0	810	4,600	520	5,100	0	5,400	520	5,900	0	390
Hawaii	809	1,900	850	15	870	650	980	1,600	0	1,500	990	2,500	450	560
Idaho	824	21,000	5,600	0	5,600	12,000	0	12,000	5.6	17,000	0	17,000	4,300	4,900
Illinois	10,692	1,200	1,000	31	1,100	12,000	0	12,000	0	13,000	31	13,000	0	200
Indiana	5,367	2,100	530	2.5	530	11,000	0	11,000	0	11,000	2.5	11,000	0	370
Iowa	2,824	1,200	560	0	560	3,000	0	3,000	0	3,500	0	3,500	0	220
Kansas	2,319	2,500	5,000	0	5,000	810	0	810	0	5,800	0	5,800	110	4,100
Kentucky	3,391	860	150	0	150	2,800	0	2,800	0	2,900	0	2,900	0	180
Louisiana	3,790	3,000	1,500	36	1,600	9,900	260	10,000	0	11,000	300	12,000	610	3,200
Maine	1,059	550	47	0	47	540	610	1,200	0	590	610	1,200	0	41
Maryland	4,106	360	140	0	140	1,200	6,000	7,100	150	1,500	6,000	7,400	0	110
Massachusetts	5,785	390	350	0	350	1,900	6,500	8,400	0	2,200	6,500	8,800	0	110
Michigan	9,141	1,600	500	400	900	14,000	0	14,000	0	15,000	400	15,000	0	310
Minnesota	3,890	1,000	610	0	610	3,400	0	3,400	0	4,000	0	4,000	0	270
Mississippi	2,315	680	1,100	0	1,100	470	540	1,000	0	1,600	540	2,100	67	530
Missouri	4,806	860	470	0	470	3,600	0	3,600	0	4,100	0	4,100	2.3	400
Montana	694	17,000	220	0	220	11,000	0	11,000	0	12,000	0	12,000	2,500	2,800
Nebraska	1,528	5,700	5,900	0	5,900	2,800	0	2,800	0	8,700	0	8,700	1,600	6,000
Nevada	610	5,800	670	13	690	2,800	0	2,800	11	3,500	13	3,500	720	1,600
New Hampshire	826	460	59	0	59	320	620	940	0	380	620	1,000	0	21
New Jersey	7,436	370	790	0	790	2,000	3,800	5,800	0	2,800	3,800	6,600	0	440

New Mexico	1,147	2,800	1,600	10	1,600	1,600	0	1,600	0	3,200	10	3,200	21	1,600
New York	19,530	610	1,000	3.4	1,000	11,000	12,000	23,000	0	12,000	12,000	24,000	0	740
North Carolina	5,367	940	540	0	540	4,500	950	5,500	0	5,100	950	6,000	0	490
North Dakota	617	1,400	100	2.7	110	780	0	780	0	880	2.7	880	16	240
Ohio	10,751	1,500	1,100	0	1,100	15,000	0	15,000	0	16,000	0	16,000	0	510
Oklahoma	3,260	650	1,200	140	1,400	880	0	880	0	2,100	140	2,300	14	1,200
Oregon	2,091	3,300	1,200	0	1,200	5,700	0	5,700	3.6	6,900	0	6,900	1,700	3,200
Pennsylvania	11,828	1,500	880	0	880	17,000	200	17,000	0	18,000	200	18,000	0	830
Rhode Island	930	160	27	.3	28	120	330	460	0	150	330	480	0	14
South Carolina	2,818	2,100	200	0	200	5,600	41	5,600	0	5,800	41	5,800	0	280
South Dakota	680	800	220	4.5	220	330	0	330	0	540	4.5	550	150	300
Tennessee	4,170	1,800	370	0	370	7,300	0	7,300	0	7,600	0	7,600	.6	270
Texas	12,236	1,900	11,000	0	11,000	13,000	5,100	18,000	62	23,000	5,100	29,000	430	13,000
Utah	1,197	3,400	790	4.0	790	3,300	49	3,300	.9	4,000	53	4,100	390	2,400
Vermont	476	700	43	0	43	290	0	290	0	330	0	330	0	110
Virginia	4,920	990	210	0	210	4,600	2,600	7,200	0	4,900	2,600	7,500	3.0	71
Washington	3,497	2,100	670	0	670	6,500	41	6,500	0	7,200	41	7,200	1,000	2,500
West Virginia	1,800	3,400	80	0	80	6,100	0	6,100	0	6,200	0	6,200	0	66
Wisconsin	4,418	710	460	0	460	2,700	0	2,700	0	3,200	0	3,200	0	240
Wyoming	414	17,000	420	24	440	6,800	0	6,800	0	7,200	24	7,200	1,600	2,100
District of Columbia	716	400	.8	0	.8	280	0	280	0	290	0	290	0	18
Puerto Rico–Virgin Islands[1]	3,220	210	180	0	180	500	3,500	4,000	0	680	3,500	4,100	54	240
United States[2]	217,482	1,600	82,000	980	83,000	260,000	69,000	330,000	530	350,000	70,000	420,000	23,000	96,000

[1] Preliminary data subject to revision.
[2] Including Puerto Rico and Virgin Islands.

Table 11.—*Water used for hydroelectric power, by States, 1975*

State	Mgd	1,000 acre-feet per year	State	Mgd	1,000 acre-feet per year	State	Mgd	1,000 acre-feet per year
Alabama	160,000	180,000	Maine	75,000	84,000	Oregon	490,000	550,000
Alaska	910	1,000	Maryland	19,000	21,000	Pennsylvania	80,000	90,000
Arizona	20,000	23,000	Massachusetts	17,000	19,000	Rhode Island	54	60
Arkansas	52,000	59,000	Michigan	65,000	73,000	South Carolina	0	0
California	81,000	91,000	Minnesota	10,000	12,000	South Dakota	69,000	77,000
Colorado	4,200	4,700	Mississippi	0	0	Tennessee	190,000	210,000
Connecticut	6,300	7,000	Missouri	7,300	8,200	Texas	14,000	15,000
Delaware	0	0	Montana	69,000	77,000	Utah	2,100	2,300
Florida	10,000	12,000	Nebraska	8,000	8,900	Vermont	14,000	16,000
Georgia	56,000	62,000	Nevada	4,600	5,100	Virginia	27,000	30,000
Hawaii	200	200	New Hampshire	26,000	29,000	Washington	900,000	1,000,000
Idaho	92,000	100,000	New Jersey	0	0	West Virginia	25,000	28,000
Illinois	16,000	18,000	New Mexico	430	480	Wisconsin	71,000	79,000
Indiana	25,000	28,000	New York	310,000	340,000	Wyoming	6,900	7,700
Iowa	28,000	32,000	North Carolina	62,000	69,000	District of Columbia	8.0	9.0
Kansas	520	590	North Dakota	14,000	16,000	Puerto Rico–Virgin Islands	300	340
Kentucky	140,000	150,000	Ohio	370	420			
Louisiana	4,800	5,400	Oklahoma	60,000	67,000	United States[1]	3,300,000	3,700,000

[1] Including Puerto Rico and Virgin Islands.

Table 12.—*Water used for public supplies, by regions, 1975*

[Partial figures may not add to totals because of independent rounding]

Water Resources Council region	Population served: Ground water (thousands)	Population served: Surface water (thousands)	Population served: All water (thousands)	Water withdrawn: Ground water (mgd)	Water withdrawn: Surface water (mgd)	Water withdrawn: All water (mgd)	Water withdrawn: Per capita (gpd)	Water delivered: Industrial and commercial uses (mgd)	Water delivered: Domestic use and losses[1] (mgd)	Freshwater consumed (mgd)
New England	2,460	7,600	10,000	280	1,100	1,400	139	570	830	180
Mid-Atlantic	8,670	26,100	34,800	1,300	4,000	5,300	153	1,700	3,700	760
South Atlantic-Gulf	9,610	8,380	18,000	1,500	1,700	3,100	173	1,100	2,000	930
Great Lakes	3,130	14,900	18,000	460	2,700	3,100	175	1,400	1,800	410
Ohio	4,920	10,500	15,400	700	1,500	2,200	142	640	1,600	240
Tennessee	562	1,810	2,370	79	250	330	139	120	210	40
Upper Mississippi	7,220	9,350	16,600	1,200	1,800	2,900	177	860	2,100	170
Lower Mississippi	3,740	1,560	5,300	470	280	750	141	150	590	310
Souris-Red-Rainy	177	190	366	22	26	48	130	6.4	41	20
Missouri Basin	2,760	4,000	6,760	490	720	1,200	180	340	870	290
Arkansas-White-Red	2,450	3,450	5,900	370	570	930	158	270	670	330
Texas-Gulf	3,780	4,460	8,240	670	690	1,400	165	430	930	560
Rio Grande	1,040	433	1,470	280	74	350	238	97	250	190
Upper Colorado	78	230	309	26	51	77	248	10	67	26
Lower Colorado	994	1,240	2,230	320	190	510	230	97	420	240
Great Basin	625	579	1,200	190	190	380	316	48	330	140
Pacific Northwest	2,680	2,140	4,810	458	710	1,200	242	440	720	230
California	8,560	11,300	19,900	1,700	2,000	3,700	185	730	3,000	1,500
Alaska	99	85	184	35	46	81	442	1.0	80	4.1
Hawaii	767	42	808	170	11	180	228	36	150	55
Caribbean	408	1,920	2,320	59	230	290	125	18	270	42
United States[2]	64,700	110,000	175,000	11,000	19,000	29,000	168	9,100	20,000	6,700

[1] Includes public use.
[2] Including Caribbean region.

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Table 13.—*Water for rural use, in million gallons per day, by regions, 1975*

[Partial figures may not add to totals because of independent rounding]

Water Resources Council region	Domestic use				Livestock use				Domestic and livestock uses			
	Withdrawn			Fresh-water consumed	Withdrawn			Fresh-water consumed	Withdrawn			Fresh-water consumed
	Ground water	Surface water	All water		Ground water	Surface water	All water		Ground water	Surface water	All water	
New England	110	2.0	110	36	3.7	4.9	8.6	8.5	110	6.9	120	44
Mid-Atlantic	380	2.2	380	110	68	27	95	76	440	29	470	180
South Atlantic-Gulf	510	2.1	510	340	150	96	240	240	660	98	750	560
Great Lakes	280	3.9	290	61	60	25	84	78	340	29	370	140
Ohio	280	25	300	140	78	110	180	170	360	130	490	300
Tennessee	42	0	42	25	9.3	28	38	32	51	28	79	57
Upper Mississippi	190	7.8	200	48	200	63	260	250	380	70	450	300
Lower Mississippi	77	.5	78	68	25	23	48	47	100	23	130	120
Souris-Red-Rainy	24	.1	24	11	13	2.8	16	16	37	2.9	40	27
Missouri Basin	130	14	140	110	300	180	480	440	430	190	620	550
Arkansas-White-Red	100	6.8	110	97	86	140	220	220	190	140	330	310
Texas-Gulf	100	0	100	100	85	51	140	140	190	51	240	240
Rio Grande	25	7	26	17	18	20	37	37	42	20	63	54
Upper Colorado	6.5	1.2	7.7	3.1	6.0	9.3	15	14	12	10	23	17
Lower Colorado	36	0	36	27	32	17	49	47	68	17	85	74
Great Basin	28	.9	29	5.7	38	9.6	47	20	66	10	76	25
Pacific Northwest	220	34	260	180	28	25	53	47	250	59	310	220
California	120	8.6	130	76	42	58	100	54	160	67	230	130
Alaska	6.2	3.0	9.2	.4	0	0	0	0	6.2	3.0	9.2	.4
Hawaii	3	0	.3	.3	5.6	.1	5.7	5.2	5.9	.1	6.0	5.5
Caribbean	2.2	18	20	4.3	1.4	7.7	9.1	9.1	3.6	26	30	13
United States[1]	2,700	130	2,800	1,400	1,200	890	2,100	2,000	3,900	1,000	4,900	3,400

[1] Including Caribbean region.

Table 14.—*Water used for irrigation, by regions, 1975*

[Partial figures may not add to totals because of independent rounding]

Water Resources Council region	Acres irrigated (1,000 acres)	Total water withdrawn (1,000 acre-feet per year)				Freshwater consumed (1,000 ac-ft/yr)	Conveyance loss (1,000 ac-ft/yr)	Total water withdrawn (million gallons per day)				Freshwater consumed (mgd)	Conveyance loss (mgd)
		Ground water	Surface water	Reclaimed sewage	All water			Ground water	Surface water	Reclaimed sewage	All water		
New England	86	13	50	0	64	64	0	12	45	0	57	57	0
Mid-Atlantic	290	170	95	.2	260	220	2.3	150	84	.2	230	200	2.0
South Atlantic-Gulf	2,700	1,500	1,900	0	3,400	1,600	240	1,300	1,700	0	3,100	1,500	220
Great Lakes	180	48	62	0	110	100	0	44	56	0	99	94	0
Ohio	73	12	27	0	38	36	.2	10	24	0	34	32	.2
Tennessee	24	2.3	5.8	0	8.1	7.6	.5	2.2	5.0	0	7.2	6.9	.5
Upper Mississippi	340	120	47	0	160	150	.1	100	42	0	150	140	.1
Lower Mississippi	2,700	3,700	1,800	0	5,500	4,400	940	3,300	1,600	0	4,900	4,000	840
Souris-Red-Rainy	41	29	18	0	46	46	.2	26	16	0	42	41	.2
Missouri Basin	12,000	9,800	22,000	90	32,000	15,000	6,400	8,800	20,000	80	28,000	14,000	5,700
Arkansas-White-Red	6,600	8,900	2,400	2.6	11,000	9,000	290	8,000	2,103	2.4	10,000	8,000	260
Texas-Gulf	5,300	6,700	1,100	34	7,900	7,300	170	6,000	1,000	31	7,100	6,500	160
Rio Grande	2,000	2,100	3,300	22	5,400	3,540	450	1,900	2,900	20	4,900	3,200	400
Upper Colorado	1,300	67	4,100	0	4,200	1,700	560	60	3,700	0	3,700	1,500	500
Lower Colorado	1,500	4,900	3.500	64	8,400	6,400	330	4,400	3,100	58	7,520	5,700	300
Great Basin	2,400	1,200	5,600	5.2	6,800	3,800	1,200	1,000	5,000	4.7	6,000	3,400	1,000
Pacific Northwest	7,500	5,100	26,000	10	31,000	11,000	8,200	4,500	24,000	9.2	28,000	9,900	7,400
California	9,300	19,000	21,000	180	40,000	24,000	6,100	17,000	19,000	160	35,000	21,000	5,500
Alaska	0	0	0	0	0	0	0	0	0	0	0	0	0
Hawaii	140	480	580	0	1,100	560	500	430	520	0	950	500	500
Caribbean	66	100	160	0	260	160	60	89	140	0	230	140	54
United States[1]	54,000	63,000	94,000	410	160,000	89,000	25,000	57,000	84,000	360	140,000	80,000	23,000

[1] Including Caribbean region.

Table 15. —*Self-supplied industrial water use, in million gallons per day, by regions, 1975*

[Partial figures may not add to totals because of independent rounding]

Water Resources Council region	Thermoelectric power (electric utility) use						Other industrial uses									All industrial uses		
	Water withdrawn				Water consumed		Water withdrawn							Water consumed		Water withdrawn		Fresh-water con-sumed
	Fresh ground water	Surface water		Total fresh-water			Ground water		Surface water		Re-claimed sewage	All water						
		Fresh	Saline		Fresh	Saline	Fresh	Saline	Fresh	Saline		Fresh	Saline	Fresh	Saline	Fresh	Saline	
New England	1.3	1,900	9,200	1,900	96	0	200	1.3	1,300	170	0	1,500	170	64	27	3,400	9,300	160
Mid-Atlantic	170	14,000	25,000	14,000	140	46	630	3.4	3,700	1,700	150	4,500	1,700	340	25	19,000	27,000	470
South Atlantic-Gulf	91	18,000	14,000	18,000	210	120	1,900	53	2,600	150	0	4,500	210	540	17	22,000	14,000	750
Great Lakes	64	25,000	0	25,000	52	0	300	400	6,900	0	0	7,200	400	370	120	32,000	400	420
Ohio	32	27,000	0	27,000	280	0	740	20	5,200	0	0	6,000	20	360	0	33,000	20	640
Tennessee	0	8,700	0	8,700	59	0	140	0	1,500	0	0	1,600	0	120	0	10,000	0	180
Upper Mississippi	34	13,000	0	13,000	96	0	690	15	1,100	0	0	1,800	15	98	0	15,000	15	190
Lower Mississippi	27	6,000	0	6,000	290	1.7	950	34	3,300	260	0	4,200	300	810	47	10,000	300	1,100
Souris-Red-Rainy	0	190	0	190	1.2	0	1.9	1.3	30	0	0	32	1.3	4.7	.2	230	1.3	5.9
Missouri Basin	310	3,900	0	4,200	68	0	400	30	120	5.8	0	520	36	52	3.7	4,700	36	120
Arkansas-White-Red	56	2,800	0	2,800	95	0	290	140	630	3.6	4.3	920	140	270	140	3,800	140	370
Texas-Gulf	32	7,600	2,800	7,600	380	28	340	.9	330	2,400	4.7	670	2,400	290	0	8,300	5,100	680
Rio Grande	22	5.2	0	28	20	0	83	9.4	8.9	0	0	92	9.4	55	5.3	120	9.4	75
Upper Colorado	0	160	0	160	60	0	28	5.1	63	0	0	90	5.1	27	.4	250	5.1	87
Lower Colorado	38	110	0	150	47	0	210	.2	58	0	6.9	280	.2	190	0	430	.2	240
Great Basin	4.3	78	0	83	5.7	0	120	17	120	49	.8	250	66	63	51	330	66	69
Pacific Northwest	7.0	29	0	36	8.8	0	2,100	0	1,300	41	0	3,400	41	310	6.0	3,400	41	310
California	380	1,100	9,200	1,500	32	60	390	240	55	500	1.8	450	740	180	37	1,900	9,900	210
Alaska	2.2	18	1.0	21	1.0	0	0	0	90	0	0	90	0	0	0	110	1.0	1.0
Hawaii	140	32	980	170	0	0	97	15	94	0	0	190	15	4.0	0	360	990	4.0
Caribbean	0	0	3,300	0	5.0	2.0	33	0	98	200	0	130	200	37	5.4	130	3,500	42
United States[1]	1,400	130,000	64,000	130,000	1,900	260	9,600	980	29,000	5,400	170	38,000	6,400	4,200	490	170,000	70,000	6,100

[1] Including Caribbean region

Table 16.—*Water used for electric utility generation of thermoelectric power, in million gallons per day, by regions, 1975*

[Partial figures may not add to totals because of independent rounding]

Water Resources Council region	Condenser and reactor cooling: Self-supplied: Fresh ground water	Condenser and reactor cooling: Self-supplied: Surface water: Fresh	Condenser and reactor cooling: Self-supplied: Surface water: Saline	Condenser and reactor cooling: Public supplies	Condenser and reactor cooling: Self-supplied and public supplies	Other thermoelectric uses: Self-supplied: Fresh ground water	Other thermoelectric uses: Self-supplied: Surface water: Fresh	Other thermoelectric uses: Self-supplied: Surface water: Saline	Other thermoelectric uses: Public supplies	Other thermoelectric uses: Self-supplied and public supplies	Water consumed: Fresh	Water consumed: Saline
New England	0	1,900	9,200	0.1	11,000	1.3	24	3.7	2.0	31	96	0
Mid-Atlantic	27	14,000	25,000	36	39,000	140	300	33	9.3	480	140	46
South Atlantic-Gulf	63	18,000	14,000	1.5	31,000	28	330	4.0	1.7	360	210	120
Great Lakes	8.2	25,000	0	34	25,000	56	300	0	3.1	360	52	0
Ohio	20	26,000	0	9.8	26,000	13	420	0	15	450	280	0
Tennessee	0	8,600	0	0	8,600	0	74	0	0	74	59	0
Upper Mississippi	28	13,000	0	30	13,000	6.5	420	0	3.1	430	96	0
Lower Mississippi	0	5,900	0	0	5,900	27	120	0	0	140	290	1.7
Souris-Red-Rainy	0	190	0	0	190	0	1.0	0	0	1.0	1.2	0
Missouri Basin	310	3,900	0	85	4,300	.9	25	0	.1	26	68	0
Arkansas-White-Red	46	2,800	0	0	2,800	10	1.7	0	.4	12	95	0
Texas-Gulf	31	7,600	2,800	4.9	10,000	1.1	2.5	.3	.1	4.0	380	28
Rio Grande	22	5.2	0	0	27	.2	0	0	0	.2	20	0
Upper Colorado	0	160	0	0	160	0	2.1	0	0	2.1	60	0
Lower Colorado	36	110	0	0	150	2.0	0	0	.3	2.3	47	0
Great Basin	4.3	78	0	0	83	0	0	0	0	0	5.7	0
Pacific Northwest	6.8	29	0	0	36	.2	0	0	0	.2	8.8	0
California	380	1,100	9,200	0	11,000	0	0	0	0	0	32	60
Alaska	2.2	18	1.0	0	22	0	0	0	0	0	1.0	0
Hawaii	140	32	980	0	1,200	0	0	0	0	0	0	0
Caribbean	0	0	3,300	5.0	3,300	0	0	0	0	0	5.0	2.0
United States[1]	1,100	130,000	64,000	200	190,000	290	2,000	41	35	2,400	1,900	260

[1] Including Caribbean region.

Table 17.—*Summary of water withdrawn, except for hydroelectric power, in million gallons per day, by regions, 1975*

[Partial figures may not add to totals because of independent rounding]

State	Population (thousands)	Fresh-water per capita use (gpd)	Water withdrawn including irrigation conveyance losses: Ground water: Fresh	Ground water: Saline	Ground water: Fresh and saline	Surface water: Fresh	Surface water: Saline	Surface water: Fresh and saline	Reclaimed sewage	All sources: Fresh	All sources: Saline	All sources: Fresh and saline	Conveyance losses	Fresh-water consumed
New England	11,803	420	600	1.3	610	4,400	9,300	14,000	0	5,000	9,300	14,000	0	440
Mid-Atlantic	40,169	620	2,700	3.4	2,700	22,000	27,000	49,000	150	25,000	27,000	52,000	2.1	1,600
South Atlantic-Gulf	26,405	1,100	5,400	53	5,500	24,000	14,000	38,000	0	29,000	14,000	43,000	220	3,700
Great Lakes	22,311	1,600	1,200	400	1,600	35,000	0	35,000	0	36,000	400	36,000	0	1,100
Ohio	21,131	1,700	1,800	20	1,900	34,000	0	34,000	0	36,000	20	36,000	.2	1,200
Tennessee	3,319	3,200	270	0	270	10,000	0	10,000	0	11,000	0	11,000	.4	280
Upper Mississippi	19,455	970	2,400	15	2,400	16,000	0	16,000	0	19,000	15	19,000	.1	800
Lower Mississippi	6,458	2,500	4,800	34	4,900	11,000	260	11,000	0	16,000	300	16,000	840	5,500
Souris-Red-Rainy	681	520	86	1.2	87	270	0	270	0	350	1.2	360	.2	94
Missouri Basin	8,907	3,900	10,000	30	10,000	25,000	5.8	25,000	80	35,000	36	35,000	5,700	15,000
Arkansas-White-Red	7,758	1,900	8,800	140	9,000	6,200	3.6	6,200	6.5	15,000	140	15,000	260	9,000
Texas-Gulf	10,449	1,600	7,200	.9	7,200	9,700	5,100	15,000	35	17,000	5,100	22,000	160	8,000
Rio Grande	1,991	2,700	2,300	9.4	2,300	3,000	0	3,000	20	5,400	9.4	5,400	400	3,500
Upper Colorado	449	9,000	130	5.1	130	3,900	0	3,900	0	4,100	5.1	4,100	500	1,700
Lower Colorado	2,640	3,200	5,000	.2	5,000	3,500	0	3,500	64	8,500	.2	8,500	300	6,300
Great Basin	1,434	4,800	1,400	17	1,400	5,400	49	5,500	5.5	6,800	66	6,900	1,000	3,600
Pacific Northwest	6,572	5,000	7,300	0	7,300	26,000	41	26,000	9.2	33,000	41	33,000	7,400	11,000
California	21,117	2,000	19,000	240	19,000	22,000	9,700	32,000	160	41,000	9,900	51,000	5,500	23,000
Alaska	404	500	44	0	44	160	1.0	160	0	200	1.0	200	0	5.6
Hawaii	809	1,900	850	15	870	650	980	1,600	0	1,500	990	2,500	450	560
Caribbean[1]	3,220	210	180	0	180	500	3,500	4,000	0	680	3,500	4,100	54	240
United States[2]	217,482	1,600	82,000	980	83,000	260,000	69,000	330,000	530	350,000	70,000	420,000	23,000	96,000

[1] Preliminary data subject to revision.
[2] Including Caribbean region.

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Table 18.—*Water used for hydroelectric power, by regions, 1975*

Water Resources Council region	Mgd	1,000 acre-feet per year	Water Resources Council region	Mgd	1,000 acre-feet per year	Water Resources Council region	Mgd	1,000 acre-feet per year
New England	130,000	150,000	Souris-Red-Rainy	0	0	Great Basin	3,800	4,200
Mid-Atlantic	220,000	240,000	Missouri Basin	150,000	170,000	Pacific Northwest	1,500,000	1,700,000
South Atlantic-Gulf	210,000	230,000	Arkansas-White-Red	110,000	120,000	California	74,000	83,000
Great Lakes	290,000	330,000	Texas-Gulf	18,000	20,000	Alaska	910	1,000
Ohio	230,000	250,000	Rio Grande	1,200	1,400	Hawaii	200	230
						Caribbean	300	340
Tennessee	240,000	270,000	Upper Colorado	13,000	15,000			
Upper Mississippi	110,000	130,000	Lower Colorado	24,000	27,000	United States[1]	3,300,000	3,700,000
Lower Mississippi	4,100	4,600						

[1] Including Caribbean region.